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ON
JAPANESE CHEMICAL WARFARE

Volume V

Part B

JAPANESE CHEMICAL WARFARE
EQUIPMENT AND MATERIEL

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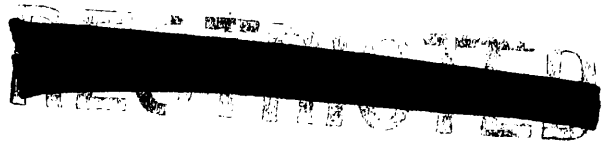
2.) GAS MASK AND CANISTER TESTING EQUIPMENT

Items in this group operate generally on the following principle: A blower forces the air through a chamber in which ammonia is generated. This ammonia filled air is brought to a region where it is confined by the gas mask part being tested (usually a facepiece fitted to a dummy head.) If a leakage occurs, it is indicated by phenolphthalein saturated strips placed at likely points of leakage.

The shell wall of a closed canister is conceivably checked in this manner.

The units contained manometers for line pressure indication for determination of resistance values.

These units used as canister testers will not give an indication of efficiency of the chemical filters or the duration of protection afforded by the canister. For this reason their practicability is quite limited.



645-TESTER, MASK, TABLE MODEL

General:

Color:	Reddish Brown
Markings:	Japanese characters on name plate.
Components:	Wooden table, 2 metal dummy heads, 3 mercury manometers, ammonia container, pressure equalizer bottle, electric moto air pump, 2 exhaust regulators.
Dimensions:	48½" high, 24-3/4" wide, 40½" long.
Weight:	172 lbs.

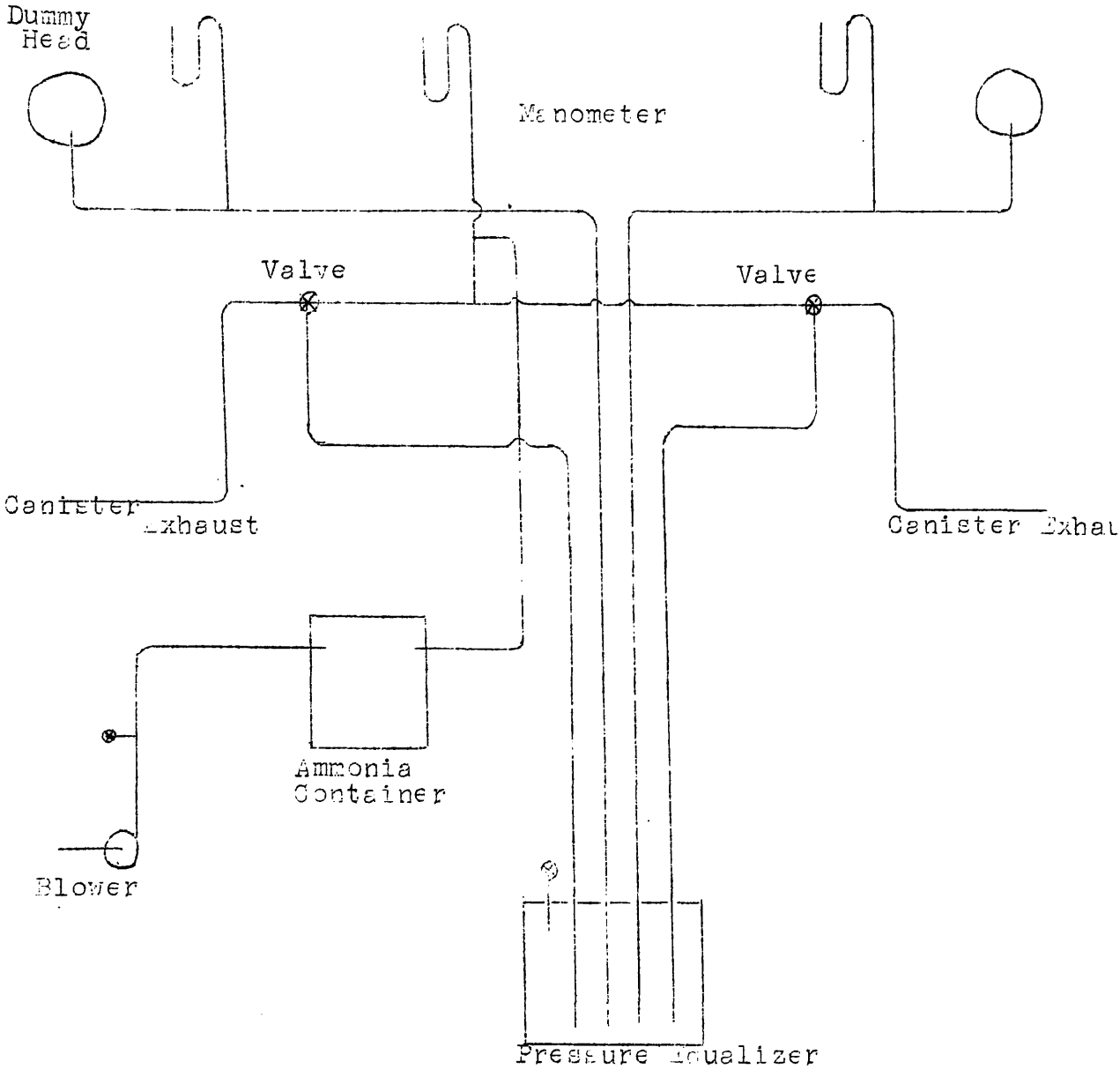
Description: This machine tests gas mask canisters for canist life and resistance and facepieces for leakage. It functions similar to the sewing machine type reported in the Japanese Chemical Warfare Notebook.

The dummy heads and manometers are mounted on th table top; the motor, air pump and pressure bottle are in the compartment below. The ammonia container is inserted in a circular hole in the table top directly behind the manometers. and consists of a iron pot with a glass bottle inside. The lid is sealed by four bolts with wing nuts.

The center manometer indicates the pressure in the system while the manometer on each side registers the line pressure to the dummy head on its corresponding side. Each head has one outlet only. The two valves mounted on the panel are connected in the line to each canister and permit exhaust thru the canisters.

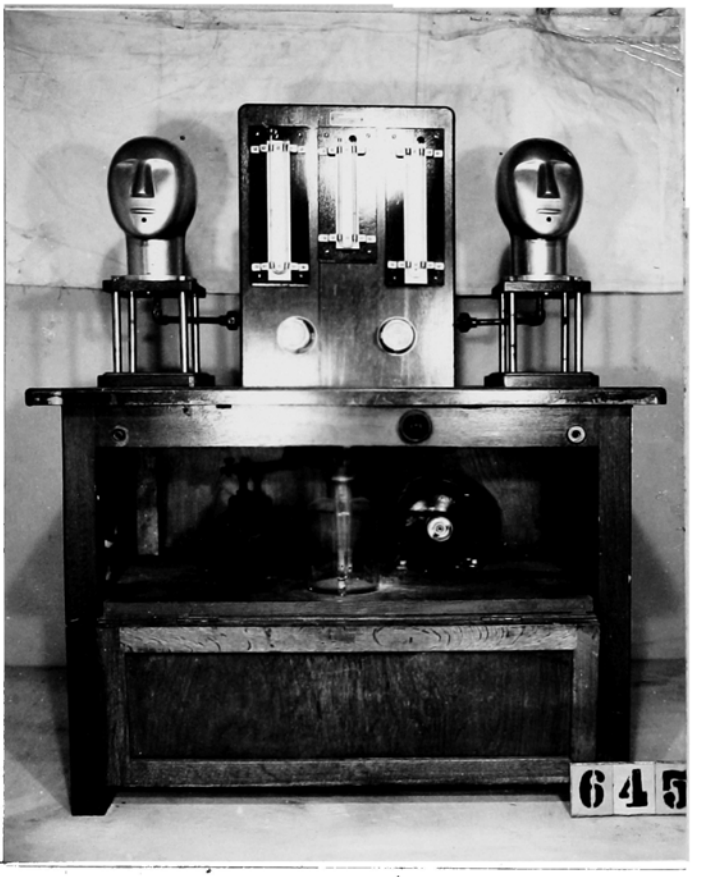
Remarks: This tester is probably used in plants manufacturing gas masks and laboratories. The attached diagram indicates air flow through the system.

[redacted]

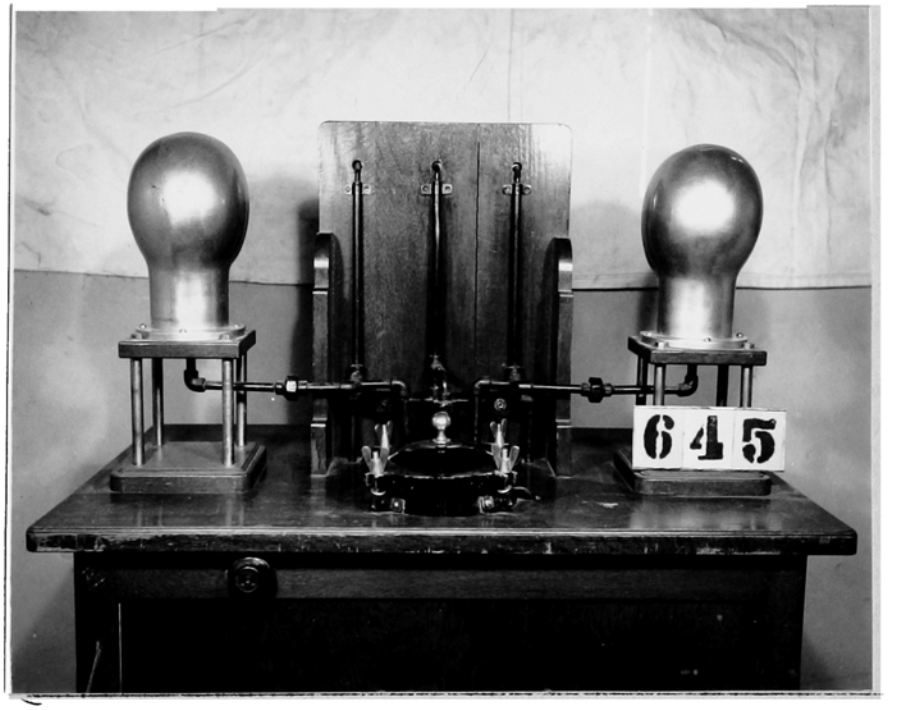


645-TESTER, MASK, TABLE MODEL

[redacted]



645-TESTER, MASK, TABLE MODEL (FRONT VIEW)



645-REAR VIEW

[redacted]

646-TESTER, MASK, TABLE MODEL

General:

Color:	Reddish Brown
Markings:	Manufacture name in English on name plate.
Components:	Wooden table, 2 metal dummy heads, 3 mercury manometers, ammonia containers, pressure equalizer bottle, electric motor, air pump, 5 exhaust regulators.
Dimensions:	50" long, 28½" wide, 52½" high.
Weight:	215 lbs.

Description: This model is similar to Item 645. It is larger than Item 645 and has 5 exhaust regulators which facilitate a more thorough check on the mask. As there is a hole in the nose and mouth of the dummy's head, the exhaust can come from both.

The two top regulators marked 91 control only the connections which presumably lead to two canisters. The middle two marked 87 regulate the respective nose exhaust, the bottom regulator sends the exhaust through the mouth of either or both heads depending on the setting. As the top exhaust regulators are marked 91 and the middle ones 87 it is thought this tester was used primarily for those types of gas masks.

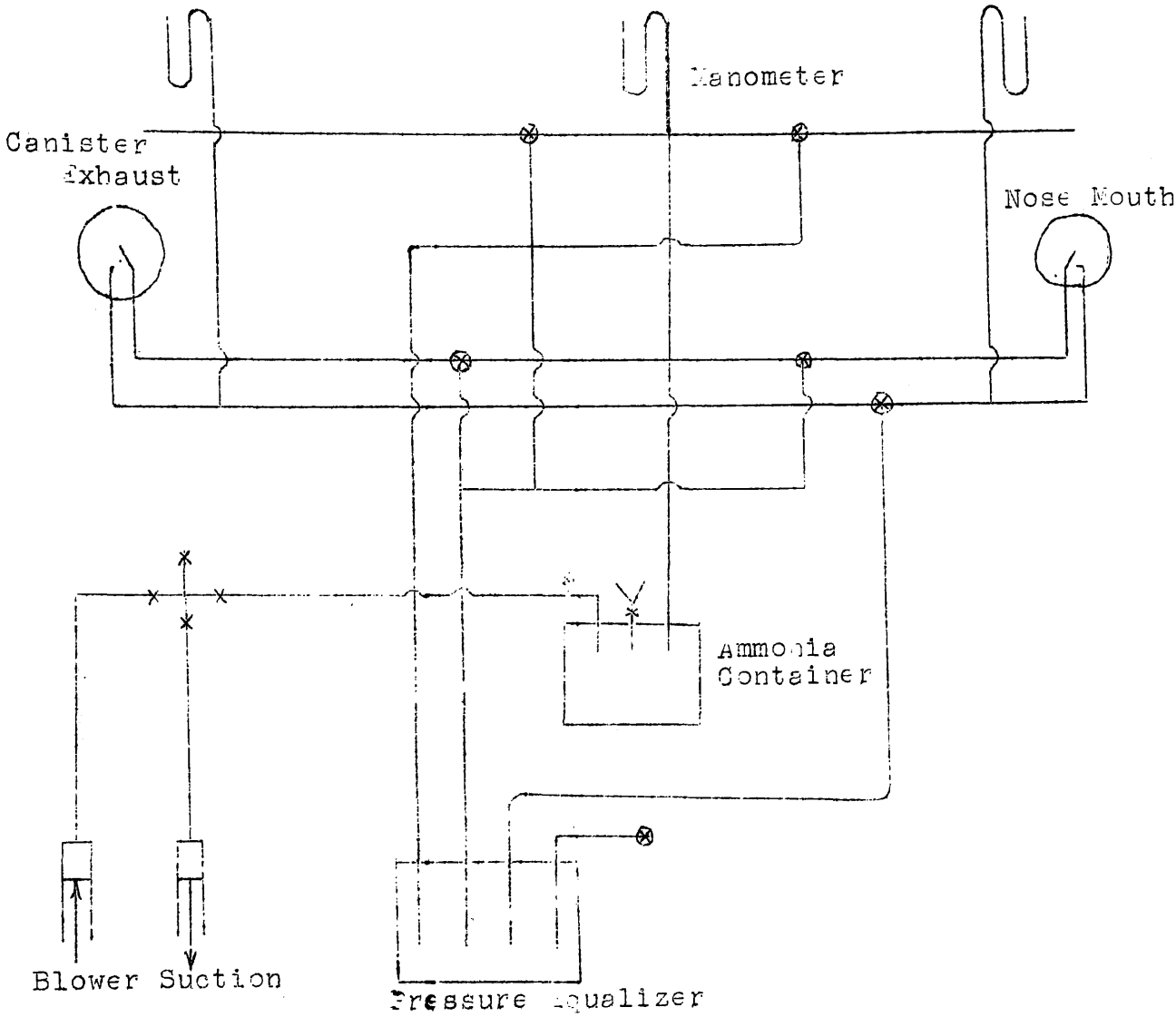
The air pump has two connections, which permit using it as a blower or as a suction pump.

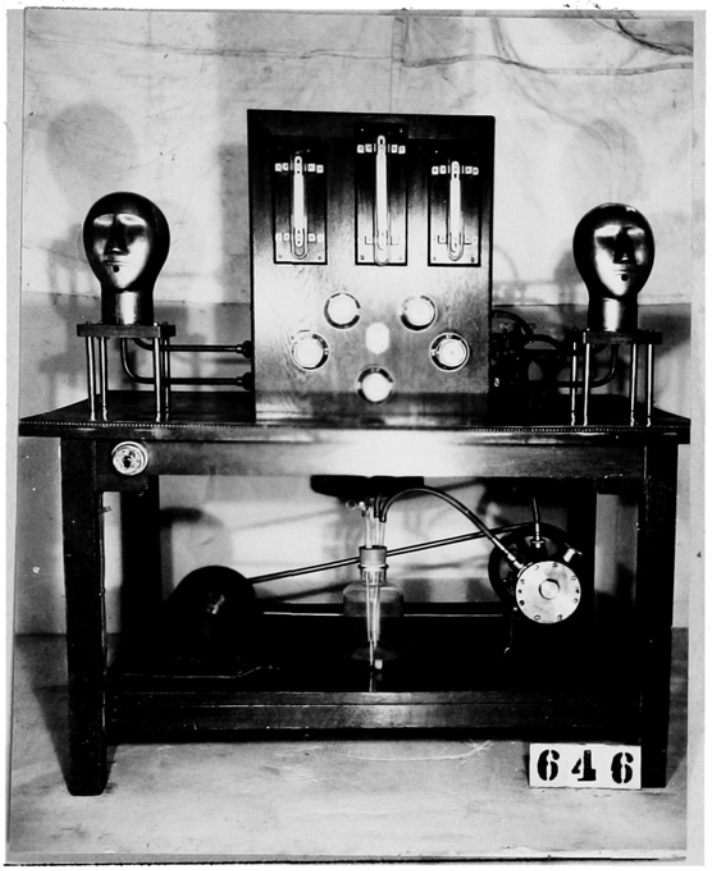
The dummy heads and manometers are mounted on top of the table. The ammonia container is inserted in the table top as in model 645. The motor and air pump are mounted on a shelf under the table. On this model the ammonia contain has an attached funnel and valve so ammonia can be added as a liquid without slowing up the testing.

Remarks: The attached chart indicates the air circulation and function of this machine.

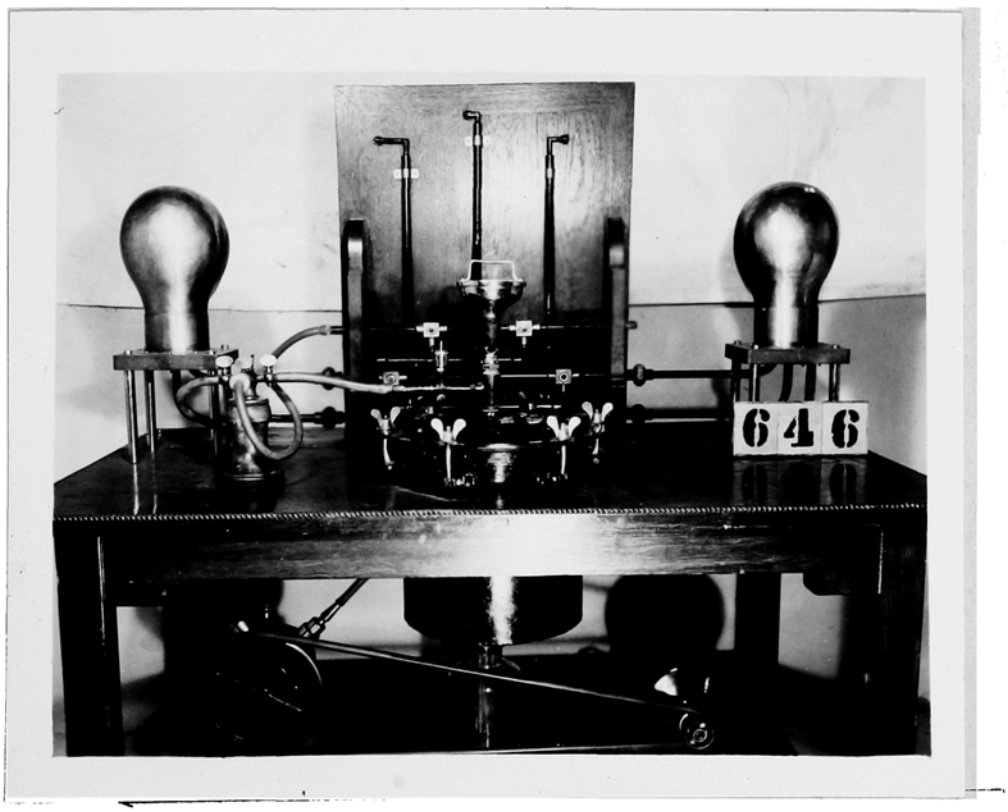
[redacted]D

646-TESTER, MASK, TABLE MODEL





646-TESTER, MASK
TABLE MODEL
(FRONT VIEW)



646-REAR VIEW

[redacted]

General:

Color-	Dark oak
Markings-	Japanese characters on name plate
Dimensions-	26 in. long, 11½ in. wide, 12 in. high
Weight-	38 lbs.

Description: This machine tests gas mask canisters for leakage and resistance, facepieces for leakage.

This machine is the same as the top section of the sewing machine type previously reported in Japanese C W Notebook except that an electric motor has been added. The motor is mounted on the stand for convenience in carrying and is moved behind or below the driving wheel when setting up for operation.



[redacted]

TESTER, CANISTER, FIELD

General:

Color: None

Markings: Name plate giving manuf cturer, and date of manufacture.

Dimensions: 11½" high, 8½" wide, 6" deep.

Description: This apparatus is contained in a metal case, which is stoutly constructed and is carried by a leather strap attached to loops on each side. The front and top of the case opens wide by means of hinges. On the inside of the top panel is a label carrying complete directions for the use of the device. On the inside of the front panel is a resistance indicator. The box contains a clamp for holding the gas mask canister tightly down against a rubber pad in the center of which is a vent. When in operation, a fixed air pump forces air through this vent into the inlet port of the canister. The outlet port of the canister is plugged with a rubber stopper provided in the kit. The relative resistance is measured on the above mentioned indicator.

Remarks: The above report was taken from the "Weekly Report of Investigation of Japanese Chemical Warfare Hq. XXIV Corps, APO 235, San Francisco, EEIST (Gml Sec) G-2 dtd 9 Dec. 45. According to this report this apparatus was the only one of its kind found and was in good condition. According to the name plate it was manufactured by the Nippon Chemical Industry Co. Ltd., in May 1932. It was found in Korea.





TESTER, CANISTER, FIELD

Case open. Note air pump on right side and resistance indicator on inside of front panel.

[redacted]

500A-TESTER, CANISTER, LABORATORY TYPE

General:

Color-	Light oak
Components-	Carrying box, 2dummy heads, motor, blower, ammonium carbonate jar, phenolpathalein jar, 2 regulator valves, 2 connections, small pan.
Dimensions-	23½ in long, 11 3/4 in wide, 22 in. high
Weight-	65 lbs.

Description: This unit tests gas mask facepieces for leakage and canisters for leakage and resistance.

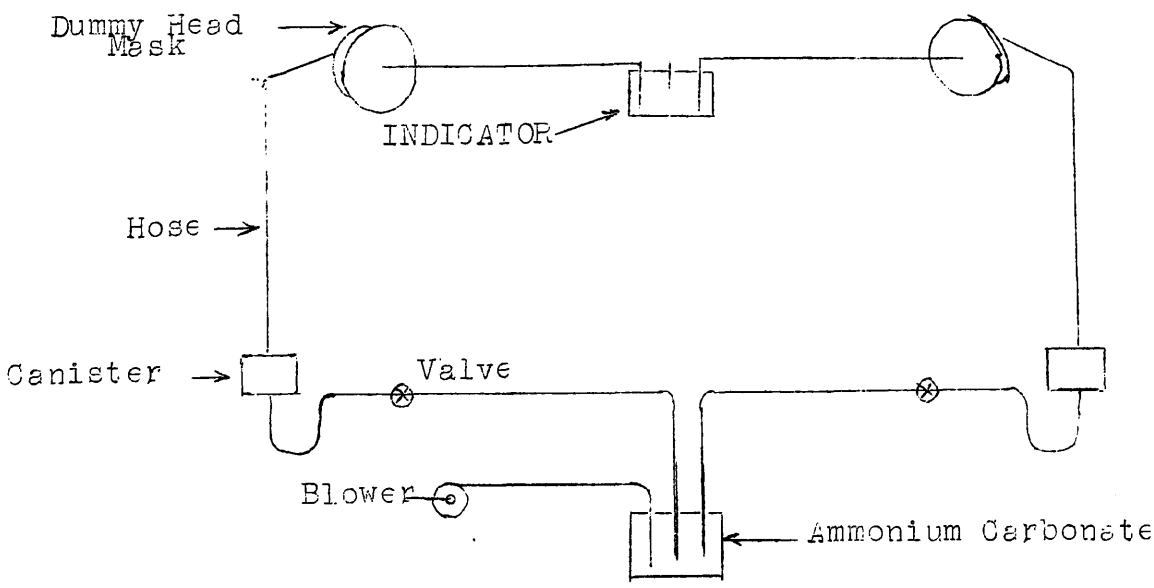
The unit consists of the tester and carrying box. The box, having a lid, side door, and two handles can be used as a support for the tester.

The tester consists of a box like base on which are mounted two dummy heads each having a single outlet at the mouth. Beneath the heads is the compartment for motor, blower, and an ammonium carbonate jar. From this tubing leads to two canister connections on the outer front edge of the case and to the front compartment containing the phenolphthalein solution.

On the underside of the carrying box lid, the two canister connecting tubes and a pan are mounted. These are removed when operating the unit.

Air flows from the blower to the ammonium carbonate jar, splits into two tubes each leading through a regulating valve to the canister connections. With masks in place it goes through the canister, air tube, facepiece, dummy heads and through the phenolphthalein indicator jar. Presumably after the canister is exhausted the indicator turns red. Leaks around the facepiece are indicated by a cloth saturated with indicator solution.

Remarks: The accompanying sketch shows the flow through the system.





500A-T.STER, C.NI.TER, LABORATORY TYPE

[redacted]

BOOB-TESTER, CANISTER, LABORATORY TYPE

General:

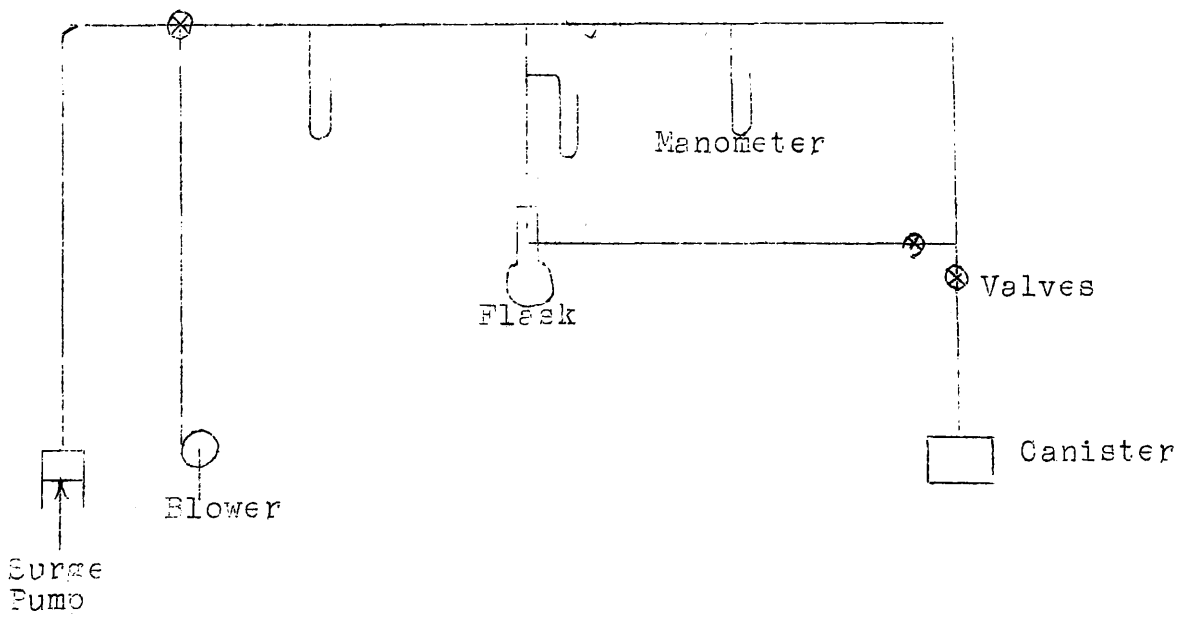
Color-	Dark Oak
Components-	Electric motor, blower, pump, electirc heater, 3 manometers, ammonia flask, flask container, dummy canister, canister clamp stand, three neck bulb.
Dimensions-	21 in long, 16½ in wide, 25 3/4 in high
Weight-	100 lbs.

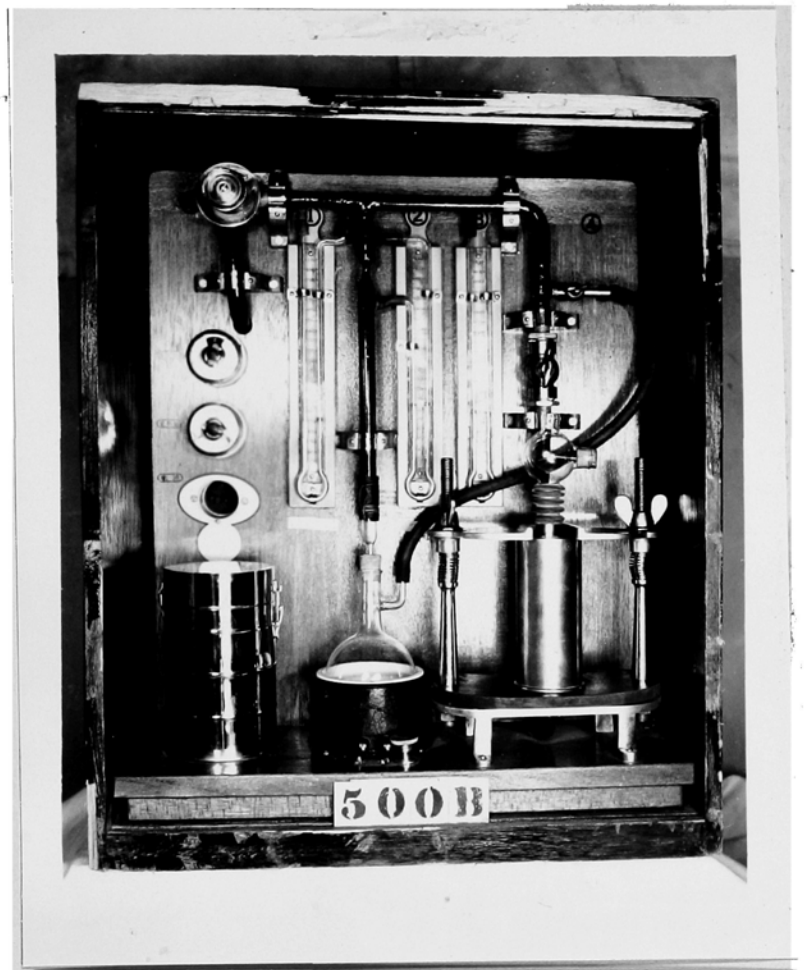
Description: This unit tests canisters for resistance. It is composed of two main parts, the tests and carrying box. The tester can be removed from the carrying box or can be used without removing.

The carrying box of wooden construction has two iron carrying handles. This box has a removable panel on each side.

The tester unit consists of a wooden base with a vertical panel attached to the center. On the rear of the panel, the motor, blower and pump are mount d; on the front are located regulator valve manometers, heater, flask flask container, dummy canister, canister clamp stand, glass bulb, electrical inlet, motor switch and heater switch. Air pumped through the canister may be constant flow from the blower or by adjusting a swithh, an intermittent flow from a small surge pump simulating breathing. In the canister holder may be the canister to be tested or a dummy to determine whether air is flowing properly through the unit. Ammonia enters the system from a flask containing a solution which is heated. Above the canister is placed litmuspaper in a glass bulb to indicate when the canister no longer gives protection from the ammonia.

Remarks: The accompanying sketch shows the flow system.





500B Tester, Canister
Laboratory Type
(Front View)



500B Rear View

3.)MISCELLANEOUS

In this group of items are the pulmotors which had probably been used for asphyxia cases occurring in the CW military establishments where these were found. These inhaler units are of German design probably first purchased from the Germans then copied. The equipment is well made. The units are generally of the Draeger type.

From information taken from a translation of a manuel "Explanation of Anti-Gas Hygiene Materials," 4th edition, published by the Medical Affairs Section of the medical administration department in April 1935, it was learned that units of this type were intended for use in "March casualty collecting units" and field hospitals. Translation stated, "3 sets of Draeger type automatic respirator are to be used for March casualty collecting unit", 2 sets for each field hospital. The same number of sets of Draeger type oxygen respirators to be used with the respective units referred to above.

343-OXYGEN INHALATOR, TYPE 3

General:

Color:	Grey
Markings:	Japanese characters in black on box.
Components:	Pressure regulator, gauge, air flow meter, oxygen masks, rubber hose.
Dimensions:	13½" long, 7-3/4" wide, 6" high.
Weight:	11 lbs.

Description: This unit, contained in a small wooden carrying case, consists of a pressure regulator, oxygen facepiece, gauge flow meter and rubber tubing. A few accessories such as a wrench for the regulator, and copper wire strainers are also included. The regulator is cylindrical, 3-3/4" in diameter, 4½" long and is made of light metal. It is equipped with both an automatic valve and an emergency valve.

The flow meter is attached between the pressure regulator and mask to indicate the amount of oxygen entering the mask.

Remarks: The pressure regulator is evidently to be attached to a cylinder of oxygen. It has an emergency valve which can be connected for use if the regular valve does not function.



344A-OXYGEN INHALER, HOSPITAL, BOX

General:

Color:	Brown
Markings:	Japanese characters in white on lid.
Components:	Pulmotor, oxygen cylinder, carbon dioxide cylinder, 3 pressuregauges, 3 masks, medical tools and pouch, 2 wrenches
Dimensions:	7in. high, 16 in. wide, 28½ in. long.
Weight:	61 lbs.

Description: This unit consists of a Draeger Pulmotor, an oxygen cylinder, carbon dioxide cylinder, and pressure gauges. The unit is contained in a wooden box, two iron handles facilitate carrying. The lid is hinged at one end and is secured by two suit case fasteners.

The pulmotor, cylinders and gauges are mounted in the box; the inhaler bag andtool pouch are fastened to the inside of the lid. When open the lid is held in an almost vertical position by means of a 15 in. strip of hinged strap iron. This unit can put into use in a very short time. It is built compactly and could very well be used in the field or hospital.

Remarks: Attached is a translation of instructions for using this unit. It can be used both as a pulmotor and as an oxygen inhaler. Thisself sustained unit isof German design and Japanese manufacture dated 1939.

Instruction of
DRAEGER PULMOTOR
(Extract)
Kawasaki Ship-Building Company

1. There are 3 kinds of masks, for men, women, and children.
2. The mask will be connected to the formed end of the flexible metal hose.
3. The mask will be attached to the face tightly, and vaseline will be applied to the edge of the mask.
4. The handle of the pressure regulating vlave will be turned to the position where word "Pulmotor" can be read.
5. The pulsations of the pulmotor will be 14 to 18 times per minute.
6. When the pulmotor does not operate automatically, move the lever with hand back and forth about 15 times per minute.
7. Large amount of oxygen isneccessary for a patient suffocated by poison gas or carbon monoxide. For this purpose ther is a special adjusting valve called Fusatz-Sauerstoff to turn to the mark "Auf". Then air with 50% of oxygen will be supplied.

   For a common patient, this special adjusting valve will not be used, andthe posibdon of the valve will be on the mark "Zu."
8. When the patient starts to respirate by himself, the pulmotor will be use as an ordinary oxygen inhaler. Turn the alternate lever to "Inhalation." And the mask will be changed with a common mask.
9. Carbon dioxide cylinder, for respirating stimulation, is attached with the pulmotor and serves 3 to 6% of carbon dioxide to the air, which can be adjusted by the bolve and pressure gauge.



344A-OXYGEN INHALER, HOSPITAL BOX

[redacted]

344B-OXYGEN INHALER, HOSPITAL, STAND

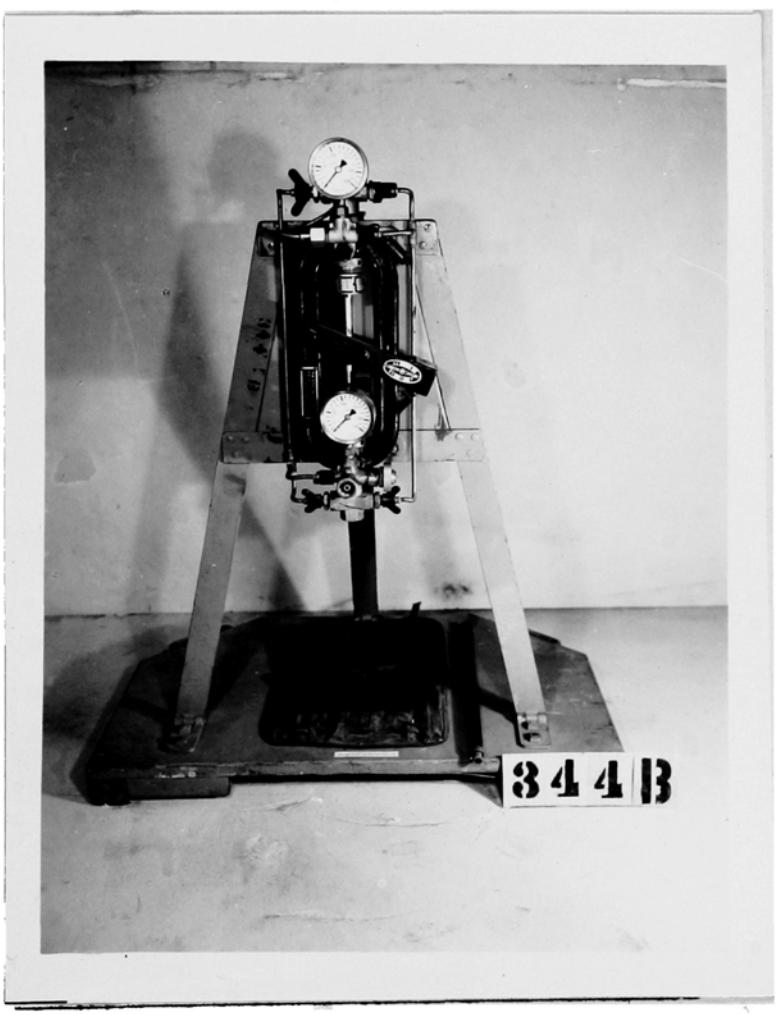
General:

Color:	Grey
Markings:	Japanese characters on name plate.
Components:	Folding stand, 2 pressure gauges, hand pump.
Dimensions:	41 1/2" high, 23" wide, 35" long.
Weight:	87 lbs.

Description: This unit consists of a stand on which is mounted a hand operated air compressor. The stand has a heavy wooden base 23" wide, 35" long and has three 36" long, 2" wide, 1/8" thick strap iron hinged legs. The two front legs are vertical, the third acts as a brace. It is fastened to the base at the rear and locks into position at a 45° angle.

The pump has valves, two gauges and three outlets for connecting cylinders. There is a tool kit attached to the base board. This stand can be folded flat against the base for carrying.

Remarks: From information gathered by the collecting team this unit is used in connection with the other sections of item 344 as part of a hospital type inhaler.



344C-OXYGEN INHALER, HOSPITAL, ACCESSORIES

General:

Color:	Brown.
Markings:	Japanese characters in white on lid.
Components:	2 masks, 2 screw drivers, oil can, 3 medical instruments, 2 wrenches, pressure gauge, head harness.
Dimensions:	10" high, 22½" wide, 30½" long.
Weight:	49 lbs.

Description: This item consists of a wooden box having a hinged lid secured by two hasps. It is reinforced by metal bands along the edges and two metal straps around the body of the box. There are two metal handles.

This box contains replacement parts and accessories for the Draeger Pulmotor, Item 344A. Apparently quite a few pieces are missing since the box capacity is much greater than the volume of the parts.



RESTRICTED

344D-OXYGEN INHALER, DRAEGER

General:

Color:	Light oak.
Markings:	Japanese characters in red on top and side.
Components:	Oxygen cylinder, pressure guage, oxygen mask, hose.
Dimensions:	25" long, 12" wide, 6-3/4" high.
Weight:	31 lbs.

Description: The box is made of wood and the hinged lid covers half of the top. It is secured by two suit case fasteners. The box is carried by one metal handle.

The inhaler consists of oxygen bottle, gages and valves for regulating the flow, a bladder, metal tubing and a nose piece.

Remarks: It is of German manufacture similar to Item 344A but of simpler design and probably older.



[redacted]

344E-OXYGEN CHARGER

General:

Color:	Brown
Markings:	Japanese characters in white on lid.
Components:	Wooden box, pressure gauge assembly, tool kit, hand pump and handle.
Dimensions:	24-3/4" long, 13½" wide, 10½" high.
Weight:	111 lbs.

Description: This unit consists of a wooden box with a sliding metal lid and two straps around the girth. Two rope handles are used for carrying. It consists of a hand operated pump for building up air pressure within a cylinder. Attached to the pum are gauges and valves for regulating the flow. This unit can be operated while in the box by removing the lid and opening a part for the pump handle.

A kit of tools is also included with the unit.

Remarks: This unit is a later model of the same type unit as Item 344 B.



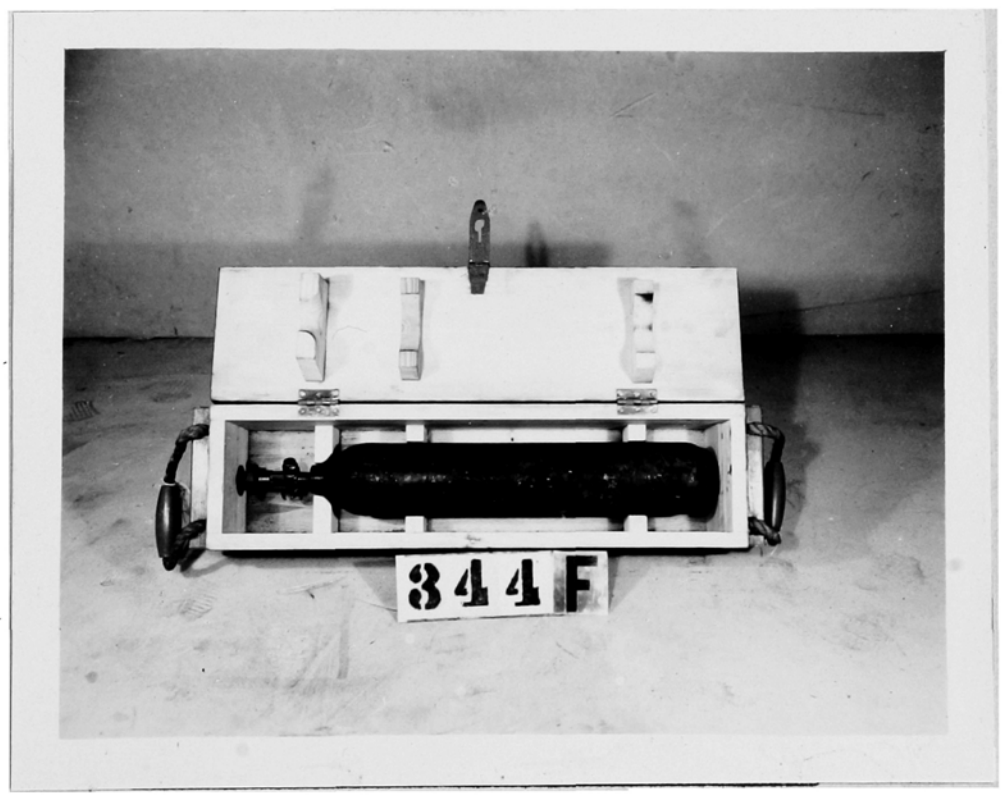
344F-OXYGEN CYLINDER

General:

Color-	Pea green
Markings-	Japanese characters in black on box
Components-	Wooden box, oxygen cylinder
Dimensions-	28 3/4 in. long, 7½ in. wide, 7½ in. high
Weight-	37 lbs.

Description: This box contains an oxygen cylinder. The box is made of wood, reinforced by angle irons on corners. It is carried by two rope handles. The lid is hinged and secured by a hasp. The cylinder isheld in place by three braces. With valve connection the cylinder is 26 in. long, 4 in. diameter, green in color.

Remarks: This cylinder is used with Items 344B and E.



[redacted]

639-OXYGEN INHALATOR, Mk 4

General:

Color-	Brown
Markings-	Japanese characters in white on box.
Components-	Wooden box, metal case, mask, pressure gauge.
Dimensions_	29½ in long, 16 in. wide, 9½ in high
Weight -	52 lbs.

Description: Thisunit consists of a portable oxygen respirator in a wooden box. It comprises a face mask, connecting tubes and a metal encased pack fitting the wearer's back. Thispack is 17 inches long, 13 inches wide, and 6½ inches thick.

Within the pack there is an oxygen bottle, respiratory bag, purifying canister, pressure regulating valves, inhaling and exhaling valve arrangements, safety valve andother connections. A pressure gauge on the outside indicates oxygen pressure.

The box contains accessories such as wrenches, anti dim plates, anti freeze liquid, and extra rubber gaskets.

A complete list of parts and extracts of the instruction booklet accompanying this Kawasaki Type Modified Model Mark 4 Oxygen Respirator is packed with the box.

Remarks: It is believed that this respirator is intended for industrial use possibly in coal mines. The purifying canister used with this apparatus and the oxygen bottle are the same as that used with Item 640.



[redacted]

640-OXYGEN INHALATOR, TRAINING, MK. 1

General:

Color:	Light oak.
Markings:	Japanese characters in black on box.
Components:	Wooden box, oxygen cylinder, air purifying canister, mask, hose connection.
Dimensions:	22⅛" long, 15¼" wide, 6-3/4" high.
Weight:	35 lbs.

Description: This unit is contained in a wooden carrying case. The case is well made and is reinforced by angle irons on each corner. The lid is hinged and secured by two suit case fasteners.

The unit consists of an oxygen cylinder, air purifying canister with valves and pressure gauge attached to a curved metal carrier, which is worn on the back. The mask has a facepiece of black leather with a head harness.

Remarks: This unit is similar to item 639, but is an older model dated 1935. It is made for training use according to information from the collecting teams. It is of German design.



B.) CHEMICAL AGENT DETECTOR EQUIPMENT

The items covered in these reports indicate that the Japanese have done considerable work on the development of CW agent detectors however have failed to consolidate the work into any set which is capable of covering the entire field of agents to be encountered in the field. The nearest approach to the U.S. M-9 Detector Kit are the Detector Pumps, type A and B (items 603 and 604).

Although some of the detectors were undoubtedly designed for rear area and civilian defense use, a use requiring less rugged packing, most of the detectors were inadequately packaged. The items could not be conveniently carried by an individual, either combat or rear area soldier, in the performance of his other duties.

Insturctions on some of the detector equipment was inadequate, failed to give purpose for which the agent was designed as well as incomplete directions for use, hence only specially informed persons could utilize the equipment.

Although this field is relatively minor insofar as complete CW preparation is concerned it offers evidence of the lack of coordination of effort and development in the CW field, a fact noticeable in most of Japans' CW activities.

Blister gases are considered in the majority of the detectors covered by these reports.

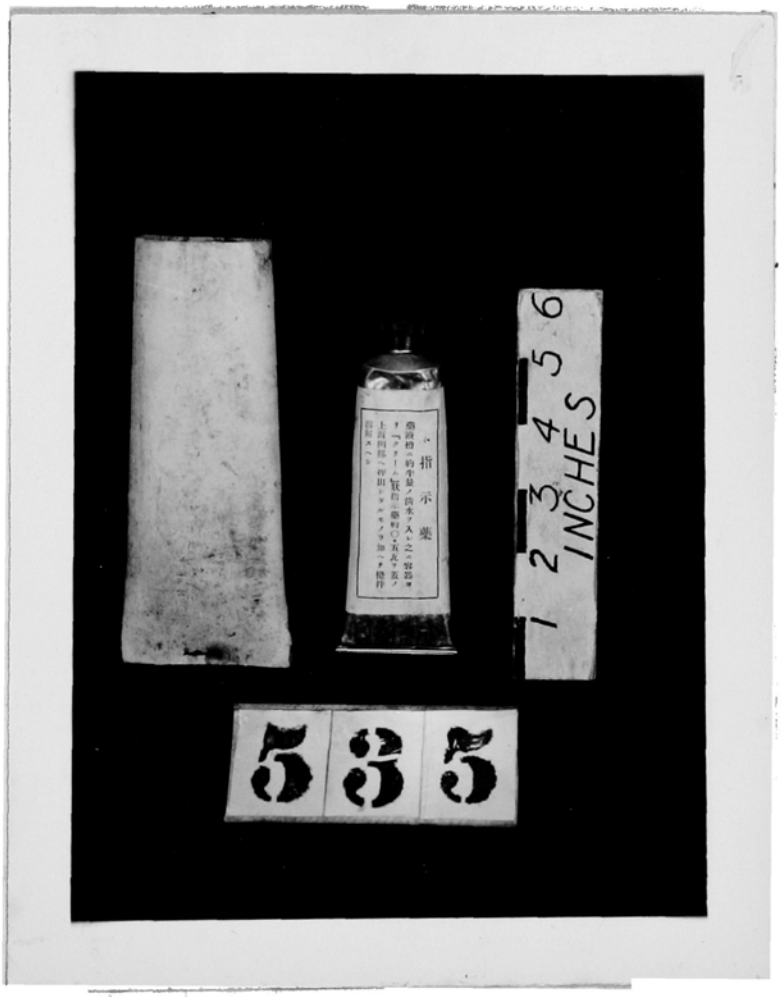
535-DETECTOR AGENT

General:

Color-	Unpainted metal
Markings-	White label giving directions for use.
Dimensions-	5½ in. long, 1¼in. diameter at top
Weight-	100 grams

Description: The tube is shaped like a shaving cream tube and is made of tin. There is a black screw-on cap on the end. The contents of the tube is a white cream. There is also a clear liquid that oozes from the cream which has the odor of alcohol.

Remarks: The exact chemical composition of the contents is unknown and the purpose of it is unknown. A partial examination revealed that it contained phenolphthalein and alcohol. From the translation of the label the following information was obtained: "Mix 0.5 grams of the contents in a half tank of water. Stir until it is a transparent liquid."



[redacted]

424-DETECTOR CHEMICALS, CIVILIAN, GAS

General:

Color:	White rectangular box.
Markings:	Japanese characters in black.
Dimensions:	5-3/4" long, 1½" wide, 2-3/4" high.
Weight:	.471 lbs.

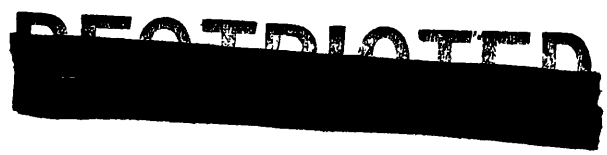
Description: The box containing the chemicals is made of cardboard and has a slip on top attached to the bottom with a string. It is sealed at one end with a round green seal bearing Japanese characters and the outline of a gas mask.

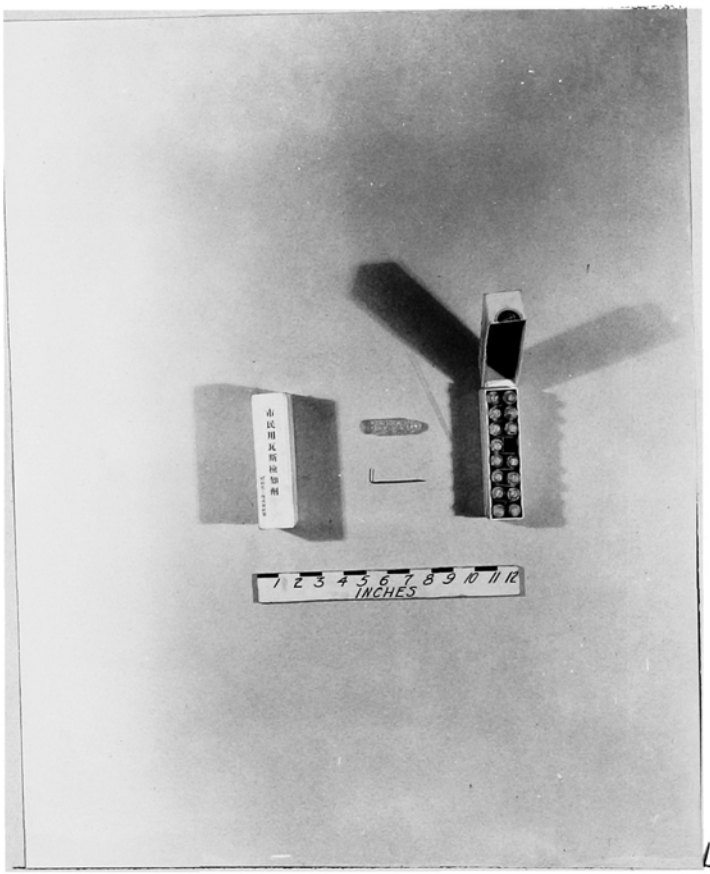
The chemicals are in the form of small gray granules contained in glass ampoules, 16 to the box. The ampoules are 2-3/8" long and 9/16" diameter, with a concave drpression in the base and a tapered tip.

A translation of the instructions on the box is as follows: "Detector chemicals are in glass ampoules. The bottom of the ampoule will be opened by the cracker, a small pointed instrument of metal (two of which are in each box). The chemicals are then dispersed at the point where a persistent gas is supposed to exist. If a persistent gas does exist the chemicals will turn black and emit a slight purple smoke. The chemicals lose their effiency if allowed to come in contact with air so if all the chemicals in an ampoule are not used at one time the unused portion should be discarded."

The detector chemicals are principally a mixture of selenium dioxide and a sulfate.

Remarks: The detector chemicals effect a good test for persistent gases.





424-DETECTOR CHEMICALS, CIVILIAN, GAS

RESTRICTED

686-DETECTOR KIT, PERSISTENT GAS, FOR AIR DEFENSE

General:

Color:	Buff cloth container
Markings:	Japanese characters giving nomenclature and manufacturer.
Components:	Outside cloth cover, Inside cardboard container, 10 glass ampoules.
Dimensions:	6½" long, 3" wide, 4½" high.
Weight:	385 grams.

Description: Outside cloth cover: The cloth cover is made of canvas and the flap is secured by a snap fastener. On the back of the cover there are two loops for attaching this container to the belt.

Inside cardboard container: The container is made of heavy cardboard which is reinforced by wire staples. There are cardboardpartitions inside that form ten separate compartments for the ampoules. Underneath the cover there are directions for use, written in Japanese.

10 glass ampoules: The ampoules contain small grey granular particles. There are two small rods that are used to pierce the glass ampoules.

Remarks: The following information was obtained from the translation of the label: "Crack the ampoule and spread the contents in the area suspected of being contaminated. The agent will turn a reddish brown upon contact with a persistent gas. There is also a substitute liquid which will also turn the agent reddish brown. The substitute liquid is used for training purposes. The efficency of the agent is lost when exposed to air. Therefore all the agent in one ampoule will be used at once."

One container of the substitute liquid, mentioned above, was present for examination. The container is 5¼ in. high, 4 in. long, 3 in. wide. The composition of this liquid is not known as no analysis was made. The picture 647D shows the container of the substitute liquid.

A partial analysis of the contents of the ampoule was made and was found to contain silica gel as a base and selenous acid which upon contact with mustard gas gives a red-orange color.

[redacted]



686-DETECTOR KIT, PERSISTENT GAS, FOR AIR DEFENSE

[redacted]

539-DETECTOR PAPER, MK 11

General:

Color:	Neutral Colored Cardboard box.
Markings:	Identification on outside of cover in black and a small paper label on the inside of cover giving instructions for use.
Components:	Four plastic capped, cellophane wrapped, brown glass vials, and four rolls of test papers.
Dimensions:	3-3/4" x 1" x 8½".
Weight:	7 ozs.

Description: There are two types of test paper contained in the cardboard box, and there are two rolls of each type. Each roll of test paper is rolled into a protective strip of red cellophane One type paper is black on the sides, the other is pale orange in tint. The black edged paper must be moistened with the liquid reagent before using. The orange tinted paper is ready to use. The instructions state that the ready to use paper will turn red-purple and that the other paper will turn blue. The agent to give this reaction was not stated.

Remarks: The ready to use paper was found to be a Thymol Blue neutral test paper. The red-purple color called for would indicate an acid gas. The solution reagent for the other paper was not completely determined, but a copper salt and alcohol were found present. The gas for which this test kit is intended is not known.



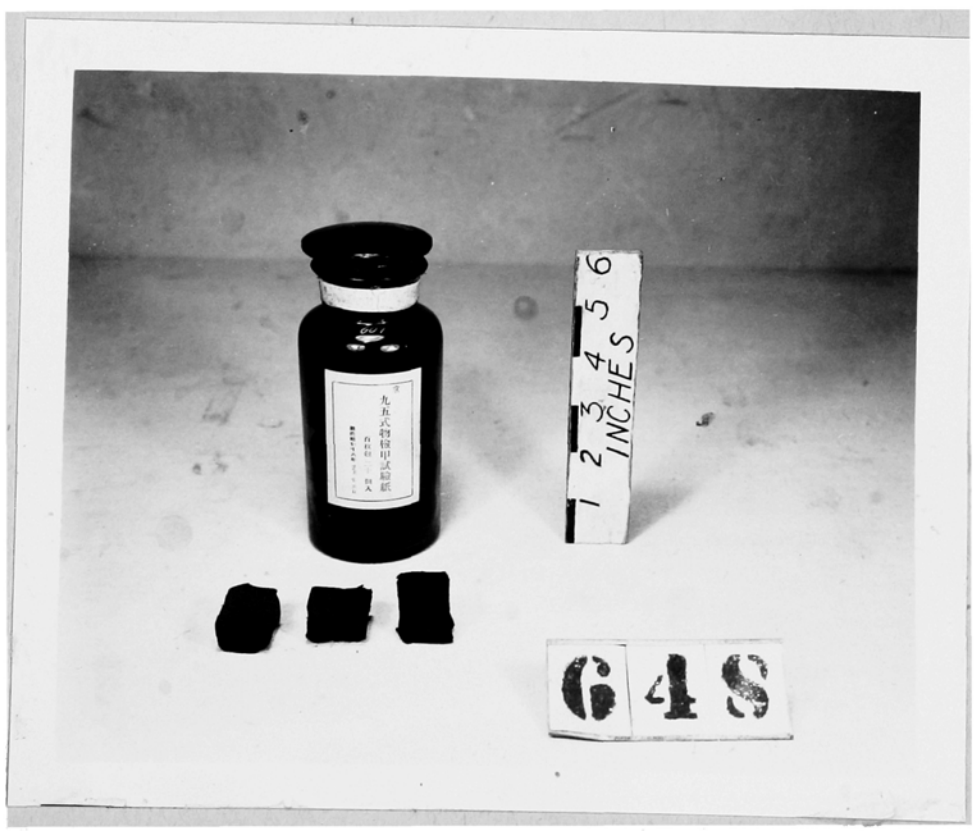
[redacted]

648-DETECTOR PAPER, TYPE 95 A

General:

Color:	Brown bottle containing black paper strips
Markings:	White paper label on the bottle descriptive of the item and giving the manufacturing date (Dec. 29, 1943).
Components:	Brown glass wide mouthed jar with ground glass stopper which contains bundles of moist black filter paper strips which were found to be impregnated with an iodine test solution.
Dimensions:	The jar is filled with 20 bundles of 100 strips each. Each strip measures 1 inch by ½ inch.
Weight:	The full jar weighs 1½ lbs.

Description: The item is essentially a jar of iodine test paper made from small strips of filter paper and bundled in units of 100. These strips were found to be very moist. Upon testing one of these strips with a solution containing hydrazine they were found to bleach to white.



[redacted]

346-DETECTOR PLATE AND PAINT, VESICANT, TYPE A AND B

General:

Color:	Unpainted Japanese Cedar.
Markings:	Japanese characters in black
Dimensions:	Box A-17" long, 11½" wide, 9½" high
	Box B-14" long, 11½" wide, 9½" high
Weight:	Box A 35 lbs. Box B 26 lbs.

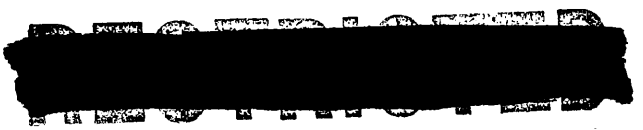
Description: Two unpainted wooden boxes made of native cedar comprise the two containers. The larger box, "A", contains the plate and its stand. The smaller box, "B", contains the accessories. The lid on each opens on two metal hinges, painted brown. When the lid is closed, it can be fastened with a hasp and swivel hook. Box "A" has two hasps and box "B" has one. Both boxes have rope handles on each end.

Box "A" is divided into three compartments. In the middle section there are one hundred and fifty plates, wrapped in bundles of fifty. The two side sections hold a corresponding number of stands. The plate is of thin sheet metal, seven inches square, coated with a light blue substance that leaves a smooth dull finish. A hole, 7/16" in diameter, in the center of the plate allows the passage of the stand. The latter is a metal rod, 9½" long, looped at one end and pointed at the other. A one inch offset is located three and one-half inches from the pointed end. The stand is painted a dark brown.

Box "B" consists of sixteen packages. Two of these are cardboard and contain eight small bottles of waterproofing. The remaining fourteen packages contain the detecting chemicals. A translation of the directions reads, "Dissolve all of Detector 'A' in 500 cc of warm water. After solution cools add "Detector 'B'." Both components are packed together in separate bags. Bag "A" contains 15 gm of brown translucent flakes and serves as the binder. Bag "B" contains 500 gm of a pale blue powder and is the active vesicant detector chemical.

The stand is inserted thru the hole in the plate and hangs on the offset. The pointed end of the stand is then thrust into the ground. The presence of vesicant gases is indicated by a darkening of the plate. Mustard caused a medium blue and Lewisite a dark blue-black coloration of the plate. The waterproofing is used as a protective coating to protect the exposed surface of the plate when shipped to the field laboratory for examination. The detector solution is used to recoat used plates.

Remarks: These plates were used in field experiments to determine the dispersion of vesicant gases.





346-DETECTOR PLATE AND PAINT, VESICANT, TYPE A AND B

603-DETECTOR PUMP, GAS, TYPE A

General:

Color:	Unpainted metal
Markings:	White label with black Japanese characters covered with a strip of yellow transparent material.
Dimensions:	13" long, 2-3/4" diameter
Weight:	2 lbs.

Description: The pump, similar in design to an insect sprayer, has three parts, plunger, cylinder, and valve housing. The plunger, 2-7/16" diameter and 1-1/8" thick, has two bushings. A double lock nut holds the plunger on the plunger rod. The rod, 3/8" diameter and 9" long, passes through the cap, which screws to the rear end of the cylinder. At the other end of the rod, the handle, 7/8" diameter and 2-3/4" wide, is fastened with a screw. The cylinder, 8" long, is threaded at both ends. The valve housing is threaded to screw on the forward end of the cylinder. The lower section of the housing is 2-3/4" long but the intake and outlet are located on a cut out section, 1" from the end. The intake is 1" by 5/16" with rounded ends; the outlet is 7/16" by 5/16", almost round. Inside the intake there is a canister of charcoal. A metal strip, cushioned with rubber, has apertures corresponding to the intake and outlet and clamps over these. A 1-5/8" by 1-3/16" metal flap pivots to form an extension of the flat surface of the cutout.

Detector tubes are an accessory part of the pump. There are four types, identified by the color painted on the tip of the tube, yellow, blue, red, and black. The size and shape of the tubes are identical, 3-3/4" long, 3/16" diameter, and tapered at both ends. The black and yellow tipped tubes are filled with a white granular material, the red with a rust-colored material, and the black with a strip of paper. The tubes come twelve of one color in a cotton pouch.

To use the detector, break both ends of a yellow, a blue, and a red tube, and insert these in the intake openings. Break one end of a black tube and insert that, broken end first, into the outlet opening. Pull back on the plunger. Air will enter through the three tubes, pass through the charcoal filter, and fill the cylinder. The charcoal will filter out gases other than carbon monoxide. Then break the exposed end of the black tube and push back the plunger. A rubber flutter valve on the inside of the intake closes that opening and the air is forced through the tube inserted in the outlet. Gas in the air will be indicated by a change in the color of the filling in the tube. A chart on the cylinder, translation on following page, explains the reactions of the tubes with each gas and also the danger of each gas.

Remarks: The canister of charcoal within the pump is necessary to remove all gases from air passing through except carbon monoxide, because black tube in the outlet will not show a true test for carbon monoxide in the presence of other gases.

Translation of Charts on Detector pumps, Gas-Types A And B

Color of Tube	Finding	Intensity of Color	Strokes	Physiological Indication
Yellow	Vesicant A & B	1	5 Times	Dangerous to breathe
		2		Injures skin in 5 minutes
		3		Dangerous to breathe
Blue	Toxic A	1	5 Times	Dangerous to breathe
		2		Terribly dangerous
		3		Terribly dangerous
Red	Toxic B	1	1 Time	Not dangerous
		2		Dangerous for more than 30min
		3		Very Dangerous
Black	Carbon Monoxide	1	1 Time	Beware
		2		Dangerous for more than 30min
		3		Very Dangerous

Color of Tube	Remarks:
Yellow	The colorations show after dipping in water.
Blue	
Red	Sneezing Gas shows the same colorations
Black	

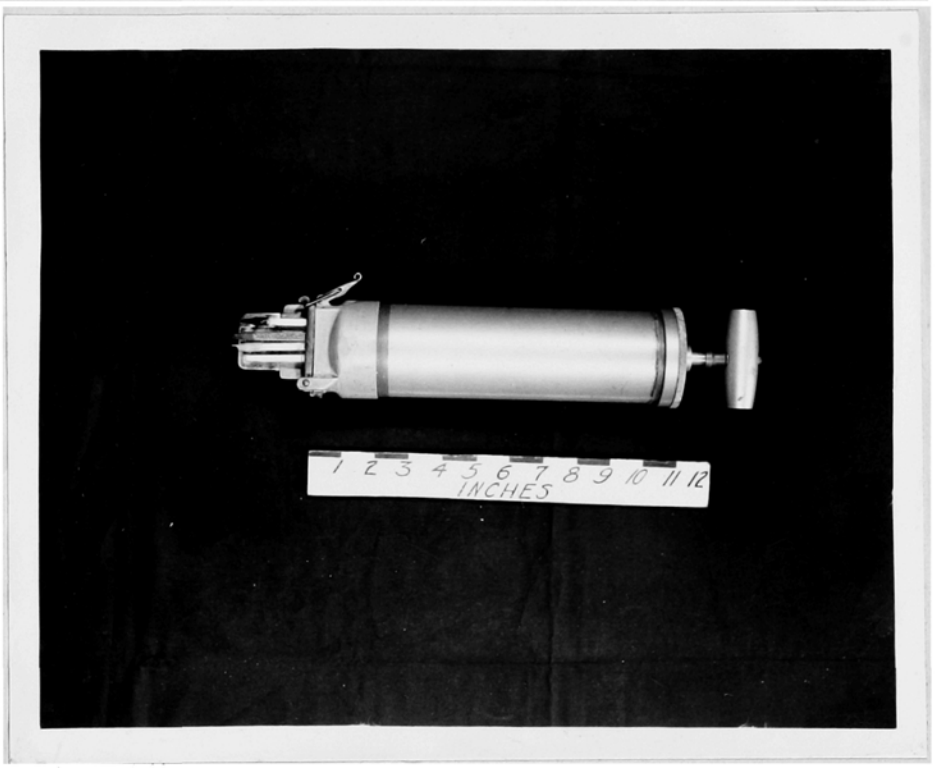
Notes: 1. Vesicant A & B are known to be Mustard and Lewisite respectively.

2. Toxic A is believed to be diphenylcyanarsine.

3. Toxic B is believed to be diphenylchloroarsine.

[redacted]





603-DETECTOR PUMP, GAS, TYPE A

[redacted]

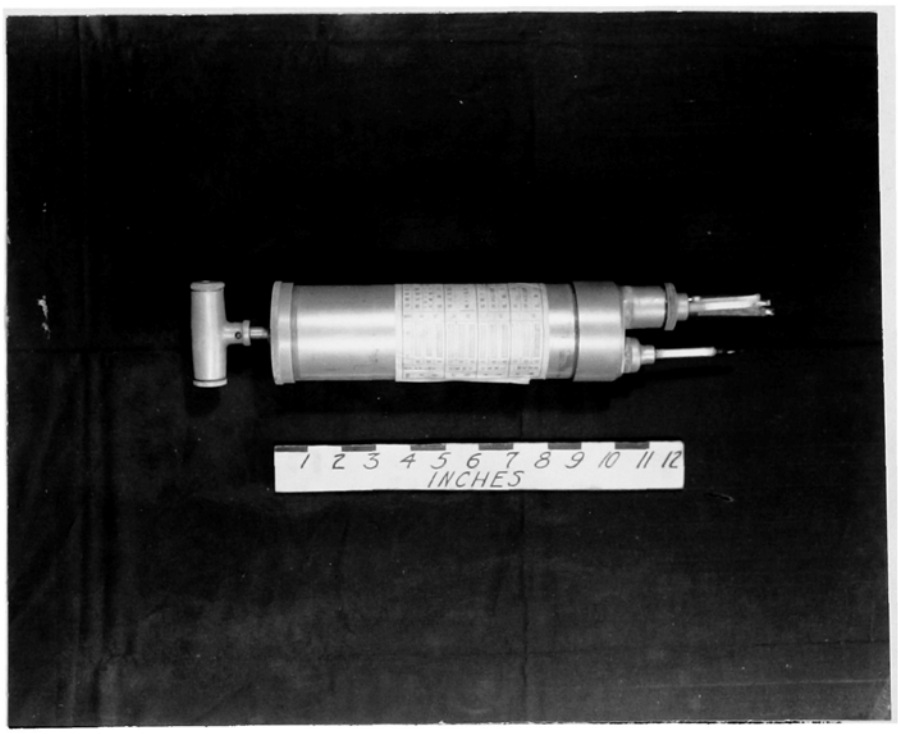
604-DETECTOR PUMP, GAS, TYPE B

General:

Color:	Unpainted metal
Markings:	None
Dimensions:	13" long, 2-3/4" diameter
Weight:	2 lbs.

Description: This pump is similar to type A. The distinguishing feature is the valve housing. The base of the type B valve housing is 2-3/4" diameter and 1¼" thick. Protruding from the base are the outlet and inlet cylinders. The latter, 1-7/8" long, 1-3/8" diameter, is filled with charcoal. The air enters through three holes in the soft rubber cap of the inlet. The outlet, 1" long, 1" diameter, has a single hole containing a rubber washer. Both of these projections are knurled to facilitate unscrewing them from the housing base.

Remarks: This pump is used in the same manner as the type A. Yellow, blue, and red tubes are inserted in the intake and the black tube goes in the outlet. The translation of the chart on type B detector pump, Gas, is the same as that of type A.



[redacted]

345-DETECTOR TAPE ROLL, VESICANT

General:

Color:	Container-natural finished wood Tape -bluish gray
Markings:	Japanese characters in black
Contents:	56 tape rolls, 5 sticks for spreading tape.
Dimensions:	33" long, 9½" wide, 12" high
Weight:	38 lbs.

Description: The container is an ordinary wooden box. The top is fastened to the box by hinges in back and by two turn clamps in front. On each end of the box is a rope handle, pulled through a slotted wooden plate and knotted.

The inside of the box is divided lengthwise into two sections. One section contains 56 rolls of cloth. Each roll is wrapped in red cellophane and is 4" long and 2½" in diameter. The cloth is 33" long, 9" wide, and is made of a light cotton material coated with a detector solution which gives it a bluish-gray color. Each length of cloth is rolled on a small wooden cylinder with holes in each end to permit attaching it to a tape-spreading stick.

In the other section of the box are 5 small sticks, 23-3/4" long. On one end of each stick is a metal attachment which permits a tape roll to be inserted. Two prongs, each containing a small round lug, are provided for this purpose. When used, a tape roll is connected to a spreading stick, the exposed end of the cloth is tied to some anchored object, and the stick used to spread the length of cloth over the desired area.

Remarks: Mustard and Lewsite were applied to the Vesicant Detector tape, causing the appearance of a dark blue blot. The vesicant detector tape roll is used on airfields, unrolled over landing strips or other suspected areas.





345-DETECTOR TAPE ROLL, VESICANT

[redacted]

C.) COLLECTIVE PROTECTOR EQUIPMENT

The Japanese collective protectors have been designed especially in the smaller units, to have blowers of two types, and canisters to be used interchangably with the rest of the protector equipment.

The blower units are of two types, hand powered, usually by one or two men and electrically driven. Obviously electricity would not always be available for the operation of the electrically powered blowers, hence for a safety factor the hand powered blowers are available as replacements. This policy supports the general contention of a gasoline starved economy, in that no gasoline powered units have been found. The U.S. equipment using the more dependable gasoline engine power source does have more capacit per unit size than does the Japanese equipment.

It is believed that the large units were to be used only for protection in the home islands.

All of the development and standardization of this equipment was apparently completed preceding the war years as is reflected in the type numbers, 93,97 which are 1933 and 1937 respectively. There are no evidences of improvements in the 1940's on the models covered in these reports.

Most of the units in this category are well made and are available with well packaged, adequate accessories and replacement parts.

Canisters were made to provide mechanical as well as chemical action on gas, as no performances tests were made, it is not known how effective these units are.

DECLASSIFIED

348-BLOWER, TYPE 93 HAND OPERATED

General:

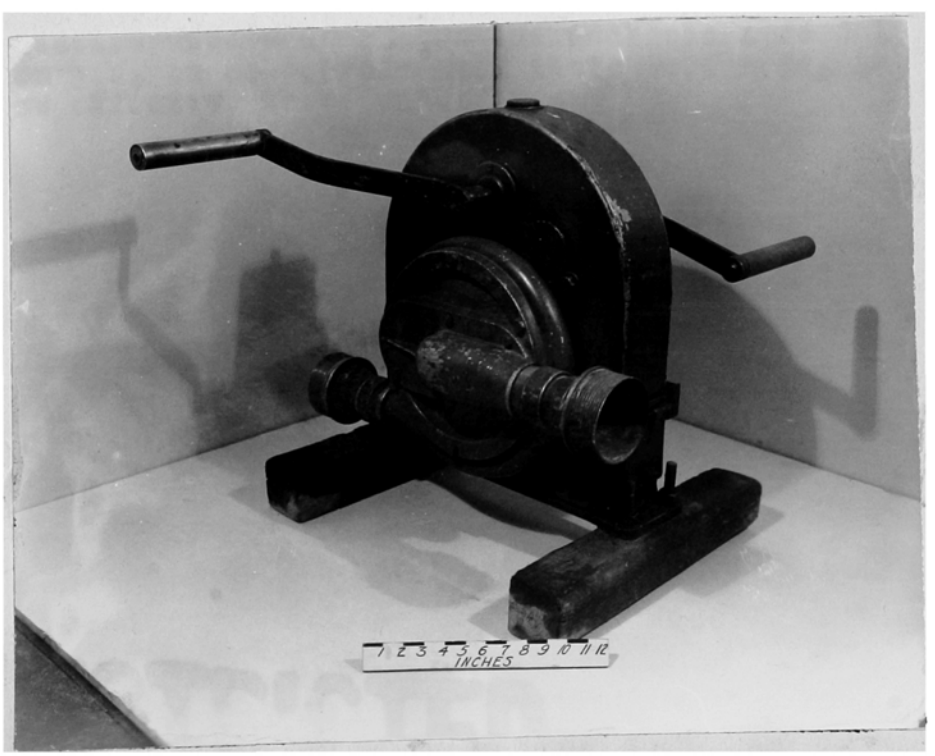
Color:	Brown
Dimensions:	25" long, 12" wide, 23" high
Weight:	114 lbs.

Description. The blower is hand operated by one or two men. Turning handles are provided, one on each side of the blower. Two air openings, threaded pipes, are part of the blower. One receives the air coming through canister and hose. The other serves as air inlet into a building.

The blower is mounted on two wooden blocks.

Tests show that at fifteen turns per minute of the handles the air capacity of the blower is approximately 100 cu. ft. per minute.

Remarks: This blower is used in Japanese collective protectors with any one of a number of the standard collective protector canisters.



[redacted]

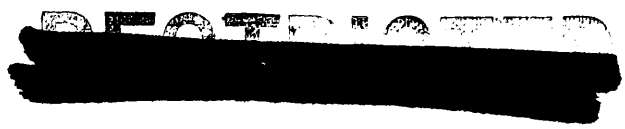
348A-ACCESSORIES FOR TYPE 93 HAND OPERATED BLOWER

General:

Color:	Brown
Markings:	Japanese label inside cover
Contents:	Accessories for Type 93 Hand Operated Blower.
Dimensions:	29" long, 17-3/8" wide, 10½" high.
Weight:	74.5 lbs.

Description. The container is a wooden box reinforced with steel bands. Two turn-clamps lock the top to the front of the box. On each end of the box is a rope handle, pulled through metal bands and knotted. The inside of the box is divided into two layers with each layer sub-divided into small compartments. A translation of the label lists the following items in the box:

Hose	A	5 ea
	B	5 ea
Cover		1 ea
Connecting Hose		2 ea
4-litre Oil Can		1 ea
Fixing Bolt		4 ea
Sinking Box A		1 ea
Contents:		
Spanner	A	1 ea
	B	1 ea
Double Wrench		2 ea
Single Wrench		3 ea
Screw Driver		1 ea
Sinking Box B		1 ea
Contents:		
Cotton Rags, About 2 Kg.		





348A-ACCESSORIES FOR TYPE 93 HAND OPERATED BLOWER

[redacted]

349-BLOWER, LARGE, HAND OPERATED

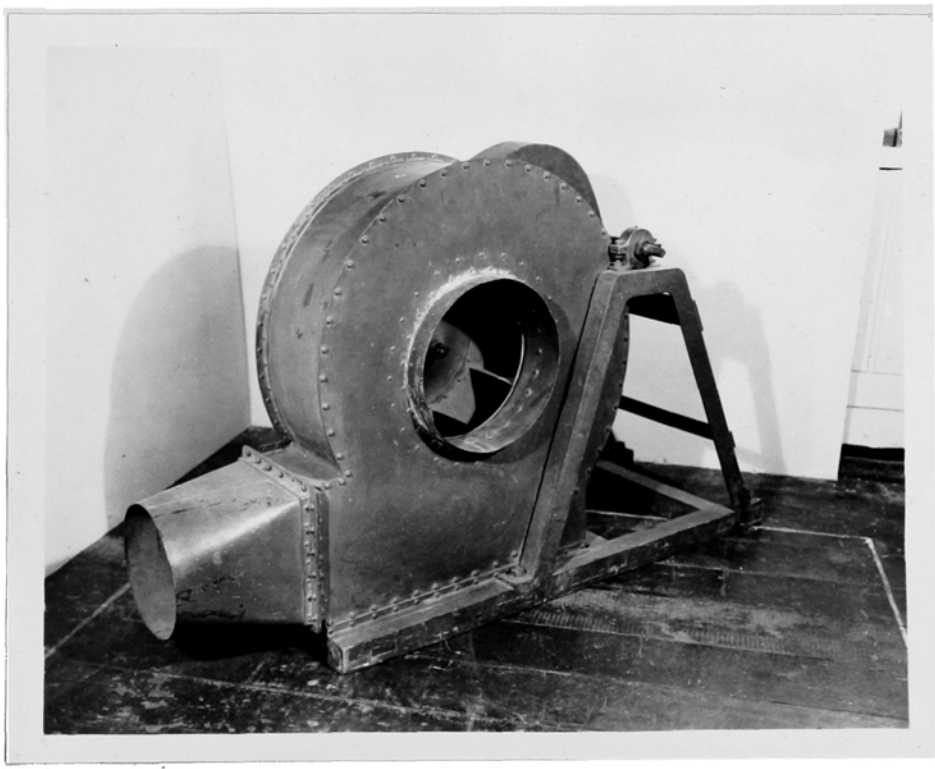
General:

Color:	Brown
Dimensions:	51" long, 21¼" wide, 37" high
Weight:	317.5 lbs.

Description: The blower is similar in design to the small one, type 93, used in the collective protectors. Two turning handles are provided, one on each side, so that two men may operate the ventilator. It is supported by a heavy metal frame.

An estimated 1000 cu. ft. of air per minute are forced through the ventilator when approximately twelve turns per minute is the handle turning rate.

Remarks: This blower is used more frequently to clear a closed place of toxic gas than as part of a collective protector.



[redacted]

350-BLOWER, TYPE 94, MOTOR OPERATED

General:

Color: Brown
Dimensions: 24½" high, 25" long, 22" wide.
Weight: 179 lbs.

Description: Both the motor and blower units are encased together so that little internal description can be given on either unit.

A label on the motor is translated as follows:
Direct current motor
HP-1.5 R.P.M.-3400
Voltage-220 Amp-7
Separated Coil
The label on the blower is translated as follows:
Wind Volume - 510 cu. ft. / min
Wind pressure - 15 cm. of water column
R.P.M.-3400

Remarks: Although this blower is presumably used in a collective protector, no canisters were found which could be used with it.



[redacted]

351-BLOWER, TYPE 93, MOTOR OPERATED

General:

Color:	Greenish brown.
Dimensions:	21-3/4" long, 15½" wide, 19½" high
Weight:	160.5 lbs.

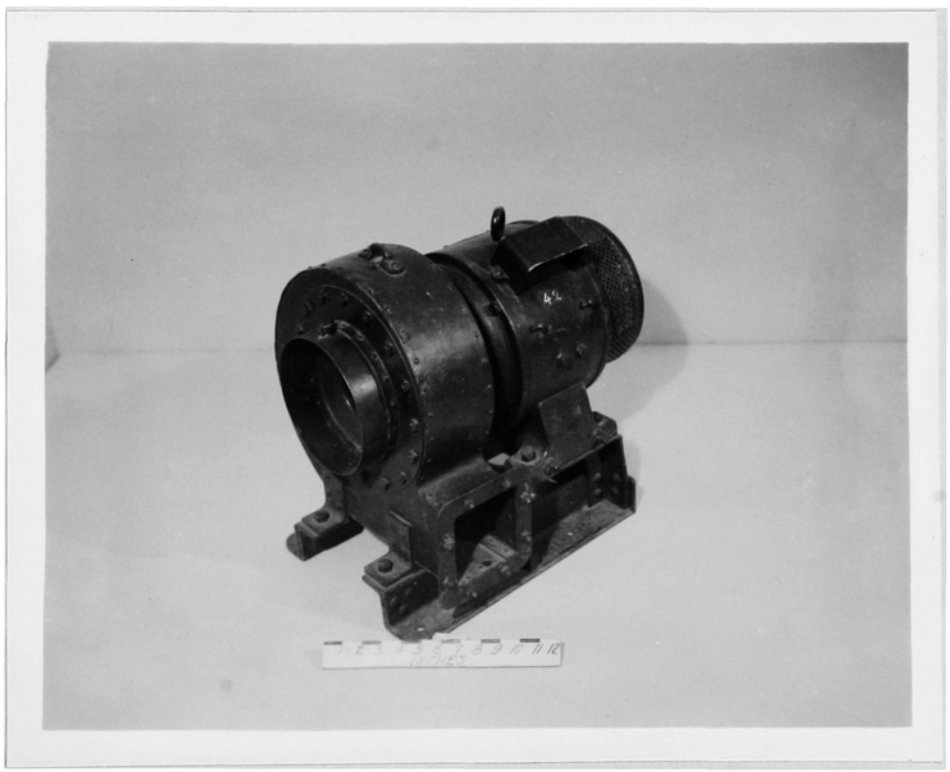
Description: The motor and the blower are connected by means of a drive shaft between the two.

The motor is a DC separated coil type. The plate on the motor revealed the following characteristics:

Voltage - 220 Amp - 4.5
HP - 1 RPM - 3000

Judging by the size of the unit, approximately 500 cu. ft. of air per minute would be the estimate of the capacity of the unit.

Remarks: This motor driven blower may be used in place of the hand operated type in the collective protectors.



[redacted]

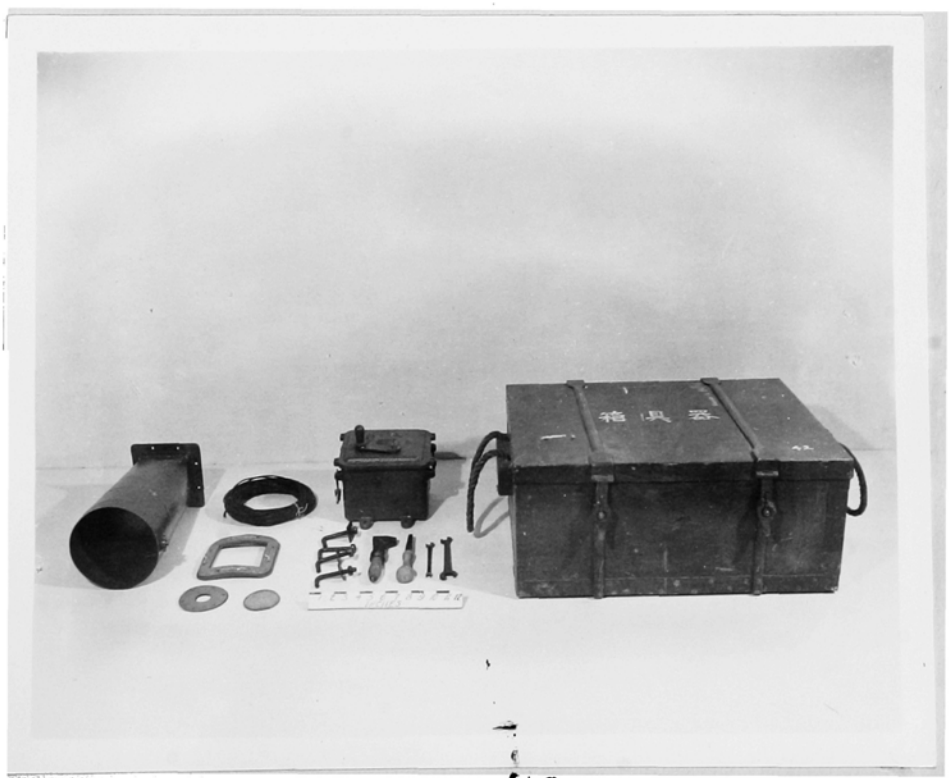
351A-ACCESSORIES FOR BLOWER, TYPE 93, MOTOR OPERATED

General:

Color:	Brown
Markings:	Japanese characters in white
Contents:	Box containing accessories for Blower, Type 93, Motor Operated.
Dimensions:	24" long, 18½" wide, 10-3/4" high.
Weight:	41.5 lbs.

Description: The container is a wooden box reinforced with metal bands. Two turn-clamps are provided for locking the top to the front of the box. Two rope handles are provided on opposite sides of the box. The bottom of the box is divided into sections which contain the following items:

1 coil of electrician's wire
1 small screwdriver
2 small wrenches
felt gaskets for removable parts on the motor
1 cone shaped connection, slightly tapered, 15¼" long, with gaskets and clamps for attaching it to the motor.
1 rheostat whose label reads:
Airtight
Voltage - 220 Current - 4.5 amps.
HP - 1 Resistance - 33 ohms



DECLASSIFIED

594-COLLECTIVE PROTECTOR, TYPE 97 CANISTER

General:

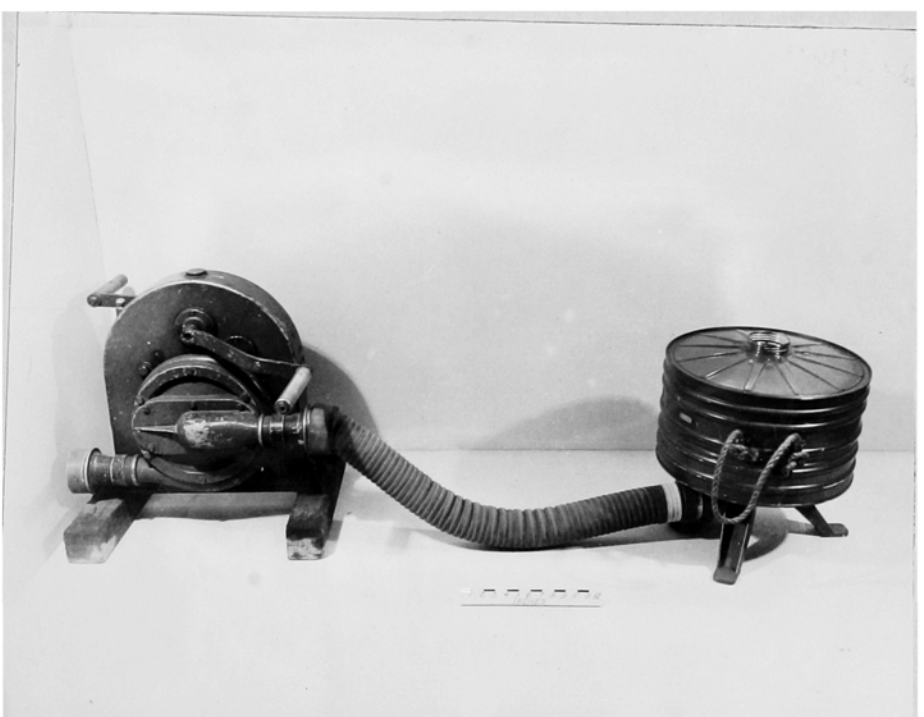
Components: Type 97 Canister
Accessories for Type 97 Canister
Blower, Type 93 Hand Operated

Total Weight: 170.5 lbs.

Description: The individual components of this collective protector are described in reports under titles as listed in components.

As shown in the photograph, the canister is set on the three legged stand with the metal cap removed from the air intake opening on the top of the canister. A length of hose screwed to a threaded opening at the bottom of the stand has its other end connected to the intake side of the blower. The hand operated blower draws the contaminated air through the canister and makes the purified air available within a gas proofed room or shelter.

Remarks: More than one length of hose may be put in the distance between canister and blower if required by the construction of the shelter.



[redacted]

594A-CANISTER, TYPE 97

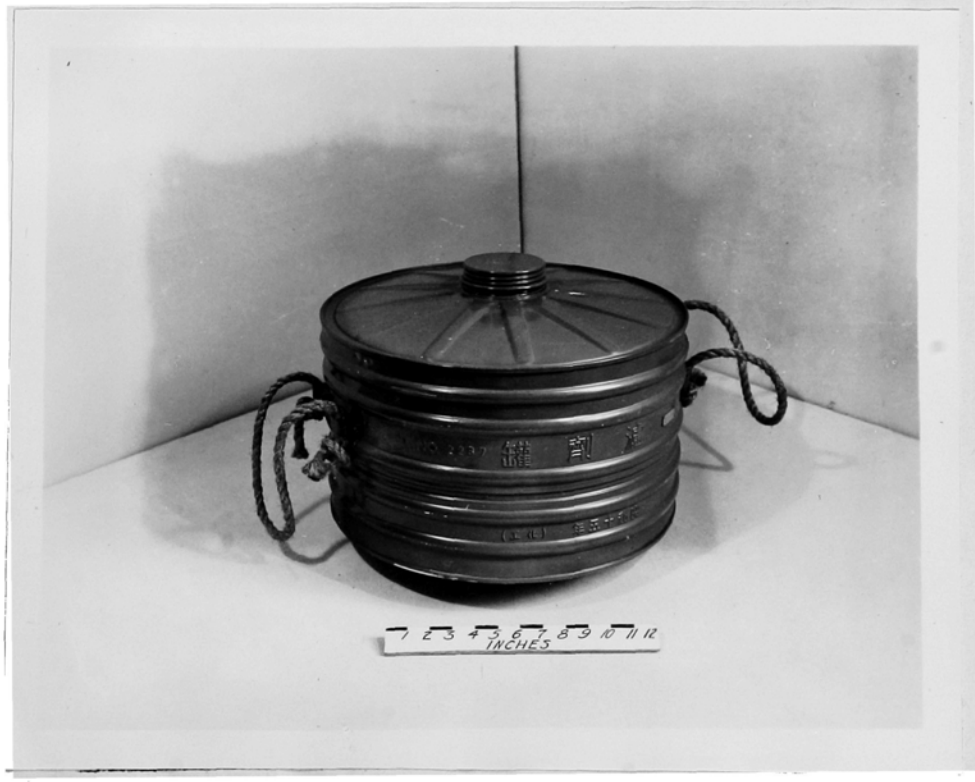
General;

Color:	Brown
Markings:	Stamped Japanese characters.
Contents:	Six filter plates composed of cotton shoddy, one layer of charcoal.
Dimensions:	14-3/4" high, 17⅛" diameter.
Weight:	42.5 lbs.

Description: This canister, used in a collective protector, has a corrugated metal shell. In the center of the top is the air inlet, a hole 3-3/4" in diameter. A metal screw-on cap protects the inside of the canister when not in use. In the center of the bottom of the canister is the outlet to the blower. The outlet is 5¼" in diameter. The canister sits on the three-legged stand which comes in the box of accessories. On two sides of the canister are rope handles, pulled through metal rings and knotted.

The top layers of the canister are the mechanical filter element. There are six of these composed of compressed cotton shoddy. The bottom section of the canister is a 4" thick layer of charcoal, the chemical filter. A thin dead air space separates each of the adjacent layers.

Contaminated air is drawn down through the canister first for mechanical removal of particles then adsorption by the chemical filter of the toxic agents. The purified air makes its exit out of the bottom of the canister.







594A-CANISTER, TYPE 97

[redacted]

5943-ACCESSORIES FOR TYPE 97 CANISTER

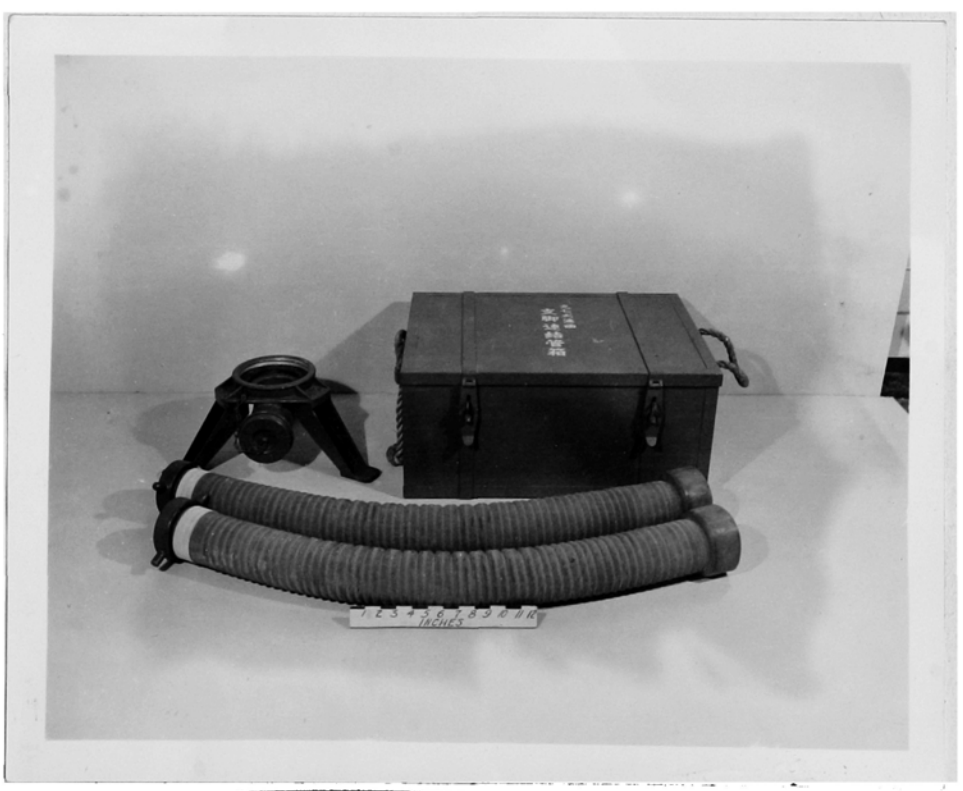
General:

Color:	Brown
Markings:	Japanese characters in white
Contents:	Two heavy rubber hoses and a metal three-legged stand.
Dimensions:	24" long, 18½" wide, 10-3/4" high

Description: This container is a wooden box with metal reinforcing strips along the edges. Around the box are two more strips of metal which provide a support for two hinges and two fasteners. On each end of the container are handles made of rope, pulled through metal rings and knotted.

In the box are two rubber hoses and a metal stand. The hoses are of a heavy, durable rubber and are corrugated. Each hose is 40" long and 3½" in diameter. At one end of each hose is an enlargement and across the open face are thin strips of rubber, bracketed to the sides so that they form a cross. Around the other end of both hoses is an inch wide metal coupling, threaded on the inside.

The tripod stand is 7½" high. The top of the stand is the opening to an L shaped tube, 3" diameter, which has its outlet on one side of the stand. The connection for the inlet of the tube is a threaded adapter, containing a heavy black gasket. The outlet is closed with a metal screw-on cap.



[redacted]

594C-CANISTER, TYPE 97, LARGE

General:

Color:	Brown
Markings:	Two metal labels which were translated: 1. Filter Box Anti-Air Raid Manufact. No.-1052 Nov., 1943 Resistance 47mm of Water Showa Kako Co., Ltd. 2. MILITARY SECRET
Components:	Canister, filter pads, lime-charcoal agent
Dimensions:	29 inches high, 39 inches in diameter
Weight:	350 pounds full

Description: This canister was described in detail by the Laboratory Section of t the 99th Chemical Service Co. in their CMTR # 10 (q.v.).

Remarks: See 99th Chemical Service Co. CMTR # 10.



RESTRICTED

594D-COLLECTIVE PROTECTOR, TYPE 97, LARGE, CANISTER

General:

Color-	Brown painted
Markings-	As indicated in description below
Components-	Conical canisterbase section, exhaust fan, intake elbow, outlet stand pipe.
Dimensions-	The truncated conical base sedtion has a basal diameter of 34 inches and a frustum length of 21 inches. The intake elbow has an inside diameter of 7 inches and is 13 inches high. The exhhaust fan has roughly the overall dimension of a 19 inch cube. The outlet stand pipe is 7 inches on the inside diameter and 57 inches high.
Weight-	Base section- 172 lbs, Intake elbow- 32 lbs., Exhaust fan- 98 lbs., Outlet stand pipe- 17½ lbs.

Description: The canister base section is a conical frustum with a rubber collared throat for insertion of the canister (594 C) outlet neck. The base section is built up essentially of heavy sheet metal. The throat may be partially or completely closed by an internal damper which operates on a worm screw motivated by a crank wheel. A metal tag below the crank wheel is slotted and has an indicator arrow which functions on the worm. The characters for "Open" and "Close" are on this plate and arabic graduations from 1 thru 10. Stenciled in white near thiswheel the following was translated; "Model 100 Showa Chemical Industries Co."

A centrifugal type exhaust fan is attached by a rubber hose connection to the outlet pipe in the side of the base section. A red enameled metal rating plate on the fan motor gave the following information; "3 Phase, 1 HP, 200-220 V, 50-60 cycle, 1400-1700 RPM." The arabic numeral 1 was painted in white on the motor case.

A stand pipe isbolted directly to the fan exhaust with 8 bolts and is sealed to it by meand of a rubber gasket. A white arrow painted on this pipe indicates the direction of air flow when the fan is in operation. Near the discharge end of thistube is a plastic window slot which permits direct reading of a calibrated rotatable drum. This drum is motivated by propeller vanes operating against the strong resistance of a helical spring.

The final component of the item, the intake elbow, couples directly to the intake end of the canister (item 594 C). The coupling is rubber gasketed and iseffected by a four spoked coupling ring. A crank operated quick opening, damper is built into the elbow. An arrow indicator attached directly to the crank rides an uncalibrated scale which ismarked, as translated, "Open" on one end and "Closed" on the other. A flexible tube leads from an orifice in the damper plate to an external coupling for a "Pressure Gauge" as indicated by a small metal tag.

Remarks: This item isfor use in conjuntion withitem 594 C. This collective protector would be used for large buildings, was designed for use in metropolitan areas or for high echelon headquarters.

Photograph shows the collective protector set up with the Type 97 Large Canister (594 C) in place.



594D-COLLECTIVE PROTECTOR,TYPE97, LARGE, CANISTER

[redacted]

598-COLLECTIVE PROTECTOR, CHARCOAL TYPE CANISTER

General:

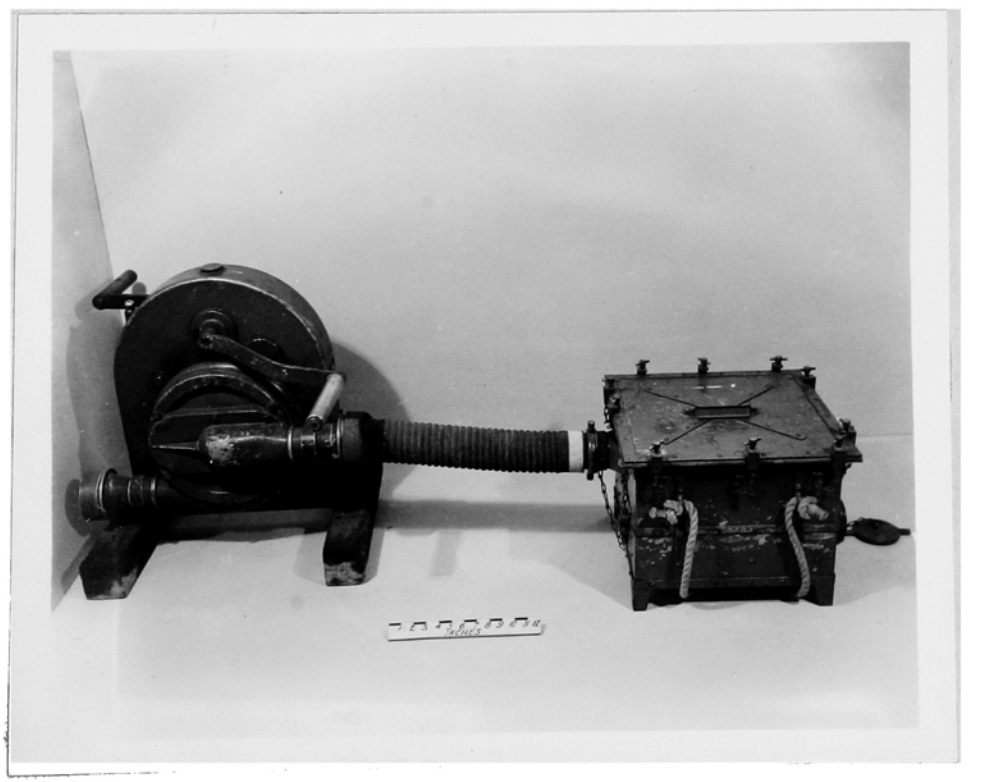
Components: Charcoal Type Canister
Accessories for Charcoal Type Canister
Blower, Type 93 Hand Operated

Total Weight: 176 lbs.

Description: The individual components of this collective protector are described in reports under titles as listed in components above.

As shown in photograph the metal cap is removed from air intake opening on bottom of one side. A length of hose screwed to the threaded opening on top of opposite side of intake has its other end connected to the intake side of the blower. The hand operated blower draws the contaminated air through the canisters and makes the purified air available within a gas proofed shelter.

Remarks: If necessary any number of hose connections may be made between blower and canister.



598A-CANISTER, CHARCOAL TYPE

General:

Color:	Olive drab
Markings:	None
Contents:	Filter plate, charcoal absorbent
Dimensions:	22" long, 18" wide, 15" high

Description: The canister is made of a heavy metal reinforced with riveted metallic bands. The top extends over the sides approximately an inch. Twelve screw clamps, three on each side, are used to fasten the top to the canister. A metallic handle is soldered to the center of the top, and two rope handles for carrying purposes are pulled through metal rings on two sides of the container and knotted. Four small metal legs support the canister. An inlet valve, 3" in diameter, is near the bottom of one side. Although the inlet itself is round, its base, which is bolted to the side of the container, is rectangular. When the inlet valve is not used, it is covered with a screw-on metal cap. An outlet valve which connects to a hose running to the blower is at the top of the opposite side from the inlet. It is identical with the inlet valve.

Inside the container, from bottom to top, the following layers may be found:

Toxic Air - A dead air space which receives the toxic air from the outside.

Filter Plate - An inch thickness of vegetable fibre waste, composed chiefly of cotton shoddy.

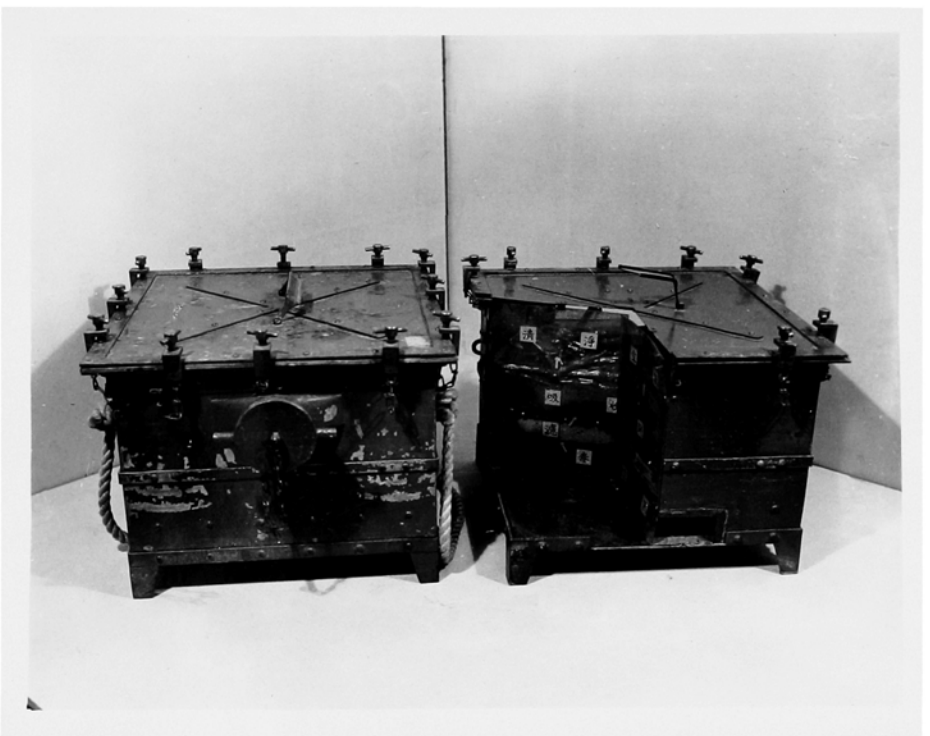
Absorbent - A three inch layer of activated charcoal.

Purified Air - A dead air space which receives pure air from the charcoal.

Remarks: As indicated in item number 598, Collective Protector with charcoal canister, the Blower draws the contaminated air in at the bottom for mechanical removal of foreign particles and then through the chemical filter for adsorption of toxic agents. The pure air then passes through the blower and into the building.

No information is available as to what type number this canister might have.





598A-CANISTER, CHARCOAL TYPE

RESTRICTED

598B-CANISTER, CHARCOAL TYPE, REPLACEMENT

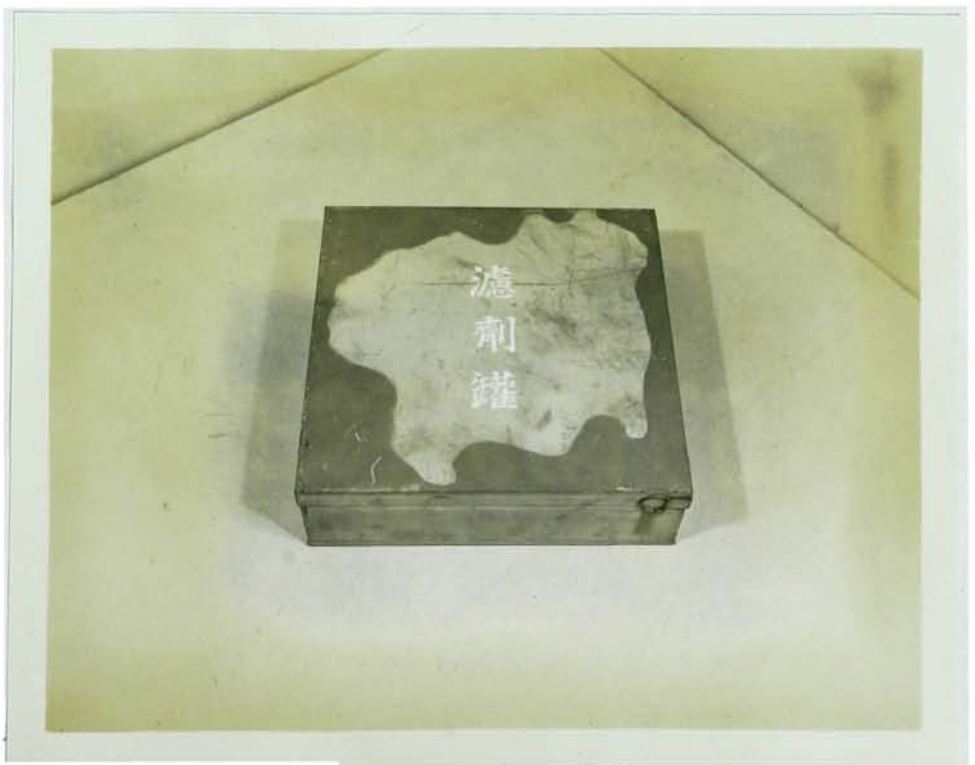
General:

Color:	Olive drab
Markings:	Japanese characters in white
Contents:	Charcoal particles
Dimensions:	16" long, 15-3/4" wide, 4-3/4" high
Weight:	24 lbs.

Description: The container is a plain sheet-metal box with a sealed band around it near the top. This band is pulled off in order to remove the top of the container.

The inside of the container is filled with charcoal absorbent, identical with the adsorbent used in the Canister, Charcoal Type.

Remarks: This unit is a replacement for the charcoal absorbent in the Canister, Charcoal Type. When the original charcoal is no longer effective, it is removed and this unit put in its place.





599-COLLECTIVE PROTECTOR, CAUSTIC SODA TYPE CANISTER

General:

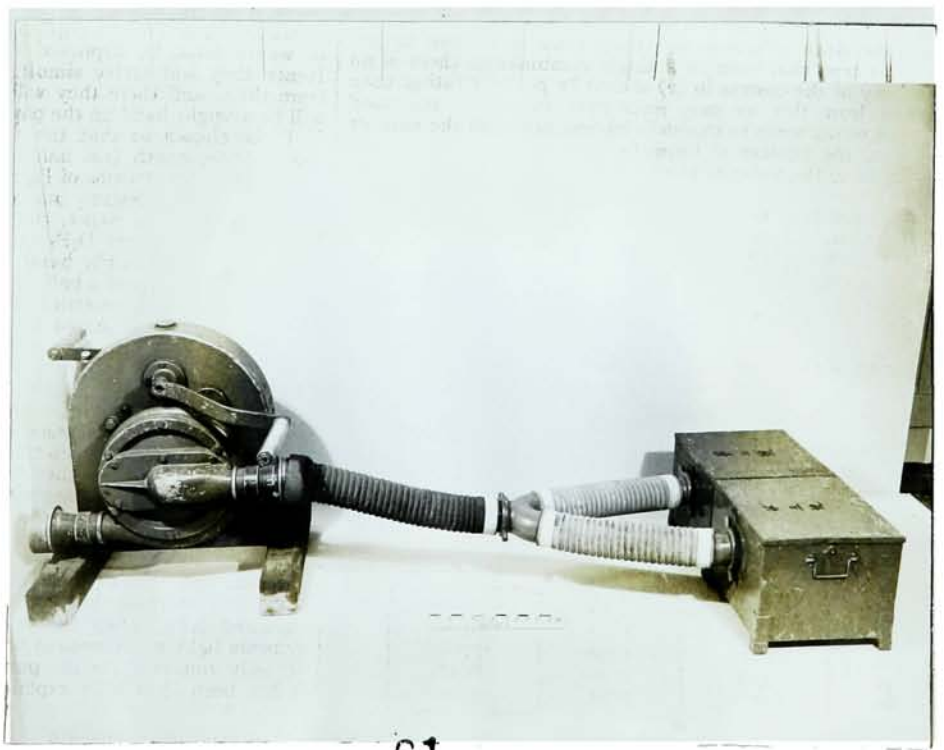
Components: Caustic soda type canisters
Accessories for caustic soda type canisters.
Blower, type 93 Hand Operated

Total Weight: 172 lbs.

Description: The individual components of this collective protector are described in reports under titles as listed in components above.

As shown in photograph two caustic soda type canisters are used simultaneously. A length of hose screwed to the threaded opening on the side of each canister has its other end connected to the intake side of the V-shaped hose connecting unit. A hose screwed to the threaded end at the vertex of the V-shaped hose connecting unit is connected to the intake opening of the blower. The hand operated blower draws the contaminated air thru each of the canisters and makes the purified air available within a gas proofed shelter.

Remarks: If necessary any number of hose connections may be made between blower and the vertex of the V-shaped connecting unit.



599A-CANISTER, CAUSTIC SODA TYPE

General:

Color:	Olive drab.
Markings:	Japanese characters in black.
Contents:	Two sections of alternate layers of wire screen and fused caustic soda.
Dimensions:	13" long, 12½" wide, 10-3/4" high
Weight:	Estimated weight is between 40-45 lbs., because unit is not complete.

Description: The canister is constructed of sheet metal having four short legs for supports. The cover may be removed by releasing the small metal catch on each of the four sides.

As shown in photograph, there are two handles on opposite sides of the canister so that it may be carried easily, and on the third side there is a round metal plug, 3½" in diameter, which is the connection for the hose between the canister and the blower.

Inside the canister are two sections, both identical in that they consist of alternate layers of thin wire screens and blocks of fused caustic soda. Each layer of caustic is divided into eight sections with each section containing uniform rows of holes, 3/8" diameter.

Remarks: This unit is used with item number 599, collective protector, caustic soda type. The contaminated air passes through the caustic soda neutralizing the toxic agents before being pumped into the gas proof shelter.

Keep caustic soda away from water because of it being highly soluble and away from high temperatures because of a low melting point. No information is available as to what type number this filter canister might be.



599B-ACCESSORIES FOR CAUSTIC SODA TYPE CANISTER

General:

Color:	Olive drab
Markings:	Japanese characters in black
Contents:	Three straight hoses, one V-shaped hose, one metal stand, one flow meter.
Dimensions:	25¼" long, 16½" wide, 13½" high
Weight:	61.5 lbs.

Description: The container is a wooden box with two hinges connecting the lid to the back of the box. A turn buckle locks the box in front. Two rope handles, pulled through metal rings and knotted are on opposite sides of the container.

The inside of the box is divided into two sections one below the other, separated by a wooden shelf. The upper compartment contains three heavy rubber hoses, each being 21" long. All three are identical except that one has a rubber spout on one end while the other two have a threaded metal ring. The other end of the three hoses has a threaded metal ring with two tips which may be grasped to enable screwing the hose into place. The three lengths of hose are corrugated.

The lower compartment of the box contains a V-shaped hose, a metal stand, and a flow meter. The hose unit is composed of two lengths of hose each 15¼" long, connected to a V-shaped metal tube. The outer end of each hose is also connected to a short length of metal tubing which contains a threaded metal ring with two tips. The vertex of the V-shaped tube is threaded around the outside for connecting it to another length of hose.



RESTRICTED

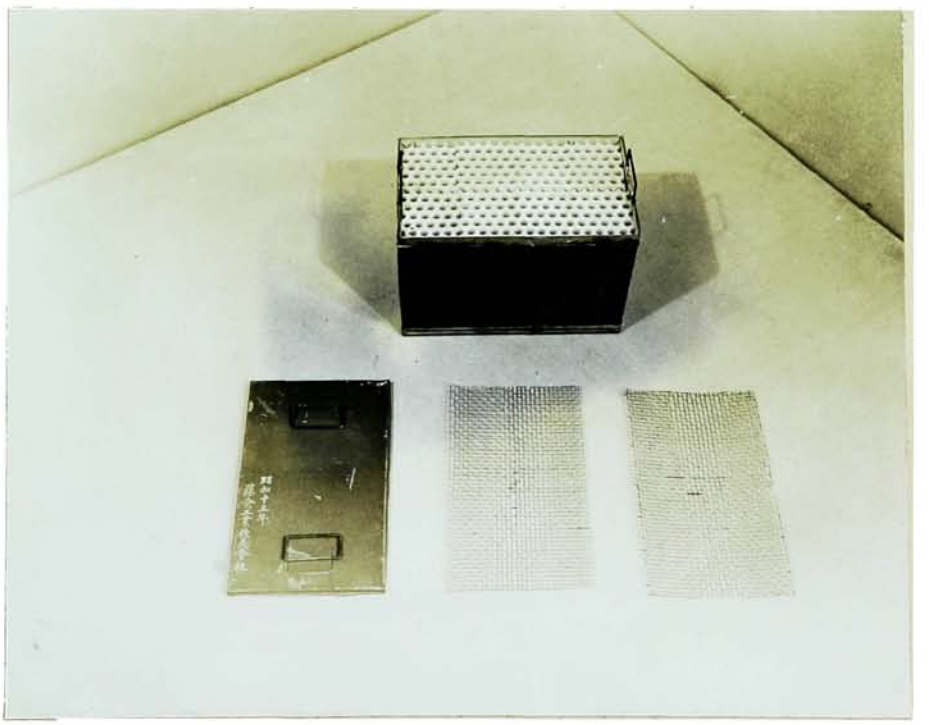
599C-CANISTER, CAUSTIC SODA TYPE, REPLACEMENT

General:

Color:	Olive drab.
Markings:	Japanese characters in white
Contents:	Alternate layers of thin wire screen and caustic sodium hydroxide
Dimensions:	10½" long, 6-3/8" wide, 7" high
Weight:	17.3 lbs.

Description: The container is made of painted sheet metal. Both the top and bottom of the container may be removed by tearing off the thin strip of metal which is wound completely around the container. At either end of the tip is a small wire handle.

Inside the container are alternate horizontal layers of wire screen and fused sodium hydroxide. The contents are exactly the same as one section of the caustic soda type filter canister. This unit is considered a replacement, merely slipped into place inside the larger container when its contents are no longer usable.



[redacted]

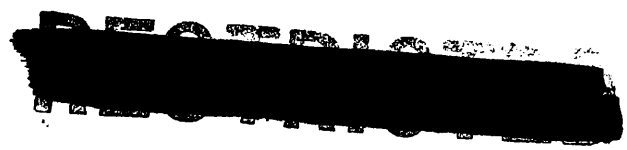
D.) DECONTAMINATING EQUIPMENT

The Japanese seem to have done well in the development of units for the decontamination of blister gas contaminated equipment. Many of the units are mobile making them readily available to a large number of personnel on a wide front. Apparently the Japanese realized the possibility of not being able to supply each high echelon unit with this type of equipment and foresaw the advisability of the mobile unit.

All of the large decontaminating equipment operates on the principle of mechanical removal of the casualty agent, by the use of hot air superheated steam, or hot water. No tests were made to determine effectiveness, however it appears likely that the units would work well. The equipment was well made.

Bleaching powder was obviously the mainstay in small scale decontamination operation. Literature references indicate that the Japanese planned to use bleach in dry mixes and slurries in much the same manner as prescribed in the U.S. Army.

There have been no evidences of any agent developed by the Japanese comparable to the U.S. agent, DANC.



403-DECONTAMINATING AGENT, MK 5 POWDER

General:

Color:	Olive colored with wide green band.
Markings:	Large white paper label.
Components:	Box, powder, measuring cup within box.
Dimensions:	$6\frac{1}{2}$" x 9" x 9".
Weight:	17 lbs.

Description: This item is packaged as a powder contained in a cardboard carton covered with rubberized fabric. The fabric may be torn around the cover by a rip cord for quick opening of the carton. The corners of the carton are further reinforce with rubberized fabric. The contained agent was tentatively identified as a mineral filler of colloidal nature intimately mixed or impregnated with sodium hypochlorite bleach. It is believed that the filler acts somewhat as an absorbing agent in effect. The agent, when mixed with water, has a slight detergent action which is partially due to the colloidal nature of the filler and partially to the frothing nature of the NaOCl.

Remarks: The translation of the label indicates that this agent is to be used to decontaminate vesicants on the body, clothing, or instruments.



534-DECONTAMINATING AGENT, MK 6, POWDER

General:

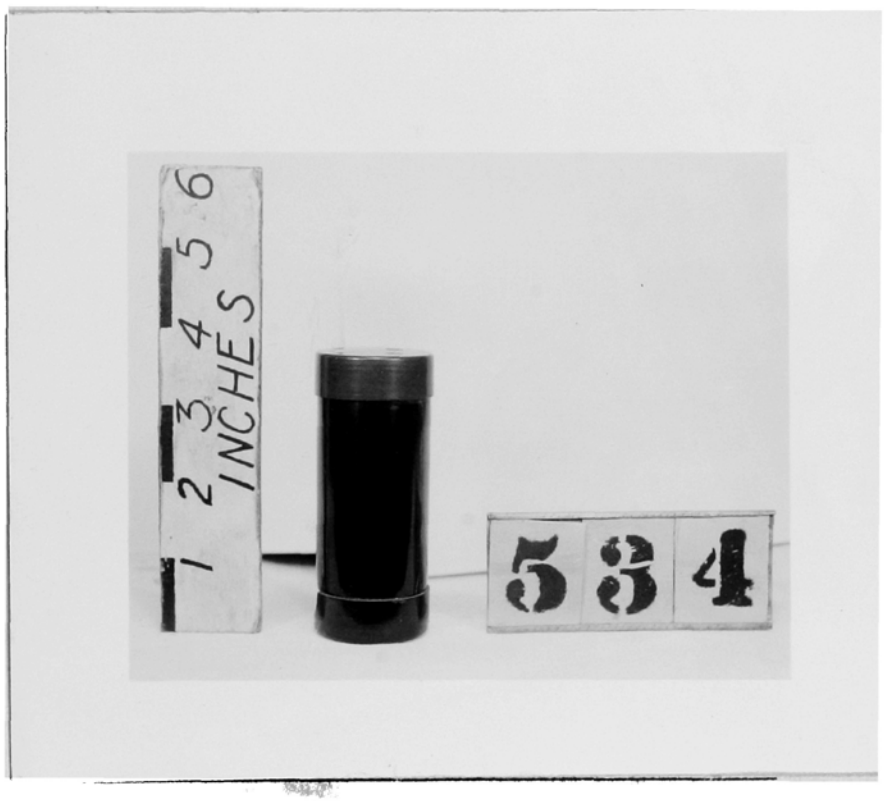
Color:	Black with one end brown.
Markings:	Japanese characters are impressed in both caps.
Components:	Four compartmented plastic tube with two plastic screw caps.
Dimensions:	3-3/4" in length, 1⅛" diameter.
Weight:	3 ozs.

Description: This item is in the form of a plastic tube with brown plastic screw cap on one end and a black, left threaded screw cap on the other end. The part of the tube towards the brown end is separated into three unequal, longitudinal compartments. The part of the tube at opposite end forms a singl the fourth, compartment. The largest of the three longitudinal compartments is filled hydrated lime. The next largest is filled with powdered sulphate of iron. The smallest is filled with hypochlorite of lime. The large compartment in the black capped end is filled with a grey charcoal ash.

The translated instructions for the use of this decontaminator indicate that it is intended for the decontamination of drinking water which has been contaminated by Lewisi or Epidemic Bacilli. One tube will render 10 litres of water potable. In use, the brown end is opened first and its three agents are stirred into the water for 10 minutes. Then the black end is opened and the grey powder is stirred in for five minutes and the water permitted to clear.

Remarks: This decontaminator follows closely the principles of water purification adopted by most municipal waterworks in the United States. The hypochlorite furnishes active chlorine which is the decontaminating agent. The hydrated lime and sulfate of iron react to form a colloidal floc which aggregates and clarifies the water. The charcoal of the charcoal ash will make the water even more potable. It is believed that this decontaminator should prove effective.

[redacted]



534-DECONTAMINATING AGENT, MX 6, POWDER

[redacted]

DECONTAMINATING APPARATUS, PORTABLE

General:

Color:	Brown
Markings:	A metal name-plate attached to the underside of the chest lid states name of the kit and lists articles contained.
Components:	Two boxes
Dimensions:	Larger box: 23½" long, 10½" wide, 11" high. Smaller Box: 15-3/4" x 6" x 3-7/8".

Description: This apparatus comes packed in two chests. The larg box contains the following:

Portable can	1 each
Spray nozzle	2 each
Filter for can	1 each
Spout extension (light gage)	1 each
Extra filter screens	2 each
Spanner wrench	1 each

The smaller box contains the following:

Spout extensions (heavy gage)	1 each
Spray nozzles	2 each
Spanner wrench	1 each
Belt,webbing,with hook for carrying	1 each

Essentially, this piece of equipment is a can (appro 1½ gal. capacity) which closely corresponds to the garden variety sprinkling can. The can has a handleacross the top and at the back, and a long projecting spout with a spray nozzle. The can is brass, painted dark green. The noøzles are unpainted white metal The main can body is 5⅛" tall with an outside diameter of 7-3/4". Fitted snugly into a projecting collar on top of the can is an eliptical metal insert with wire mesh filter. The insert is 3-5/8 deep, 4-3/4" long, and 2-3/8" wide. The can is filled through this insert; it is believed that the powdered lime is placed in the insert where lumps are broken down by pouring water over the lime. The filtered slurry passed through into the body. The slurry passes out of the can through the spout and the spray nozzle. To use the spray, the can must be tipped forward by the operator. Spray nozzles in the large chest have such fine perforations that only a very dilute decontaminating solution could be passed through. The nozzles in the small chest are differently constructed, with one large center opening surrounded by small perforations. If there were a means of connecting the spout extension and these nozzles to the can, a heavier mixture could be used.

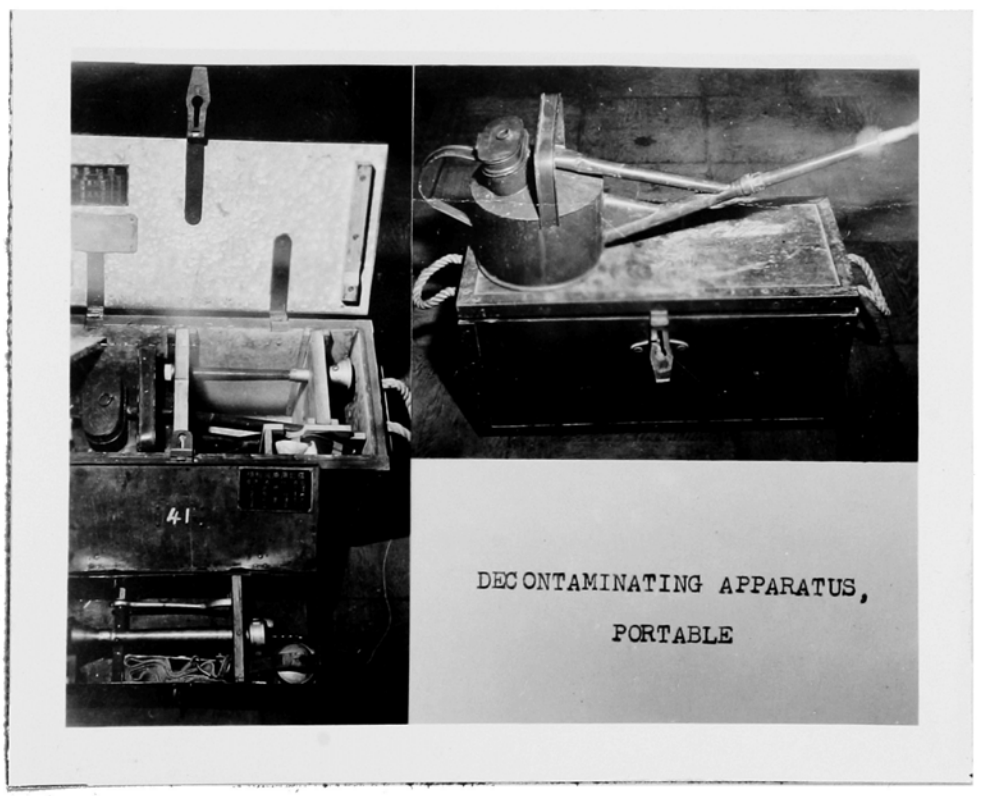
Remarks: No method can be determined by which the heavy gage spout extension in the small box could be fitted to the can. That the two chests are related seems evident from design of the components, but possibly the smaller chest contains components for a different model portable decontaminationg apparatus. Because the two chests are related and because they were found together, they are reported under the single title above. It is also appare that the smaller chest is not a complete kit in itself.

[redacted]

DECONTAMINATING APPARATUS, PORTABLE (cont)

There is the possibility that an adapter might have been included in the original equipment, in that by means of such an adapter, the spout extension in small chest could actually been fitted to the can.

Reference: This report was taken directly from "EEIST Technical Intelligence Report #7 from Korea", transmitted in ltr. Hq., XXIV Corps, APO 235, EEIST (Cml. Section) to Chief Cml. Warfare Service, Washington D.C., dtd 25 October 1945. Apparently this item has not been recovered in Japan.



[redacted] 70

512 DECONTAMINATING UNIT, HORSE CARRIED, STEAM, TYPE 99 MK A

General:

Color: Brown

Markings: Individual parts tagged, white characters on black label.

Components:

			Total Weights
A.	Power Unit	1 each	73 lbs
B.	Water Pump	1 each	90 lbs
C.	Oil Burner	1 each	71 lbs
D.	Super Heater	1 each	83 lbs
E.	Evaporator	1 each	80 lbs
F.	Furnace	1 each	48 lbs
G.	Water Tank	1 each	52 lbs (Empty)
H.	Decontaminating Chamber	2 each	75 lbs
I.	Oil Cans	2 each	20 lbs (Empty)
J.	Water Cans	4 each	19.5 lbs (Empty)
	Chamber Accessory Box	2 each	25 lbs (Empty)
	Hose, Cable, and spare parts Box.	1 each	55 lbs (lacking some parts)

Description: This decontaminating unit breaks down into 18 packs that can either be carried by nine horses or transported by truck. Decontamination is accomplished by the use of live steam on the contaminated clothing. The toxic agent is removed both mechanically and by hydrolysis.

The steam-generating system consists of the water pump and oil burner, both driven by the one cylinder, gasoline engine power unit, the furnace, the evaporator, and the superheater. The water is supplied from a collapsible rubber tank, containing approximately 30 gallons of water carried in the four water cans.

The water is circulated through coils in the furnace, coils in the evaporator where it is heated to steam, about 150° C. From there the steam goes to the decontaminating chambers. The oil burner, suppleid with Diesel oil from the two oil cans, ejects the fuel into the furnace where it is ignited by a spark from a magneto on the burner. The heater and evaporator are on top of the furnace.

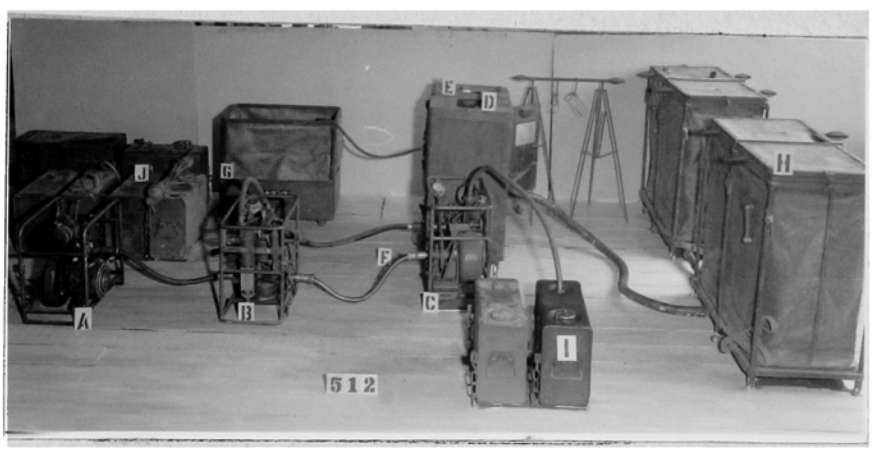
There are two collapsible rubber decontaminating chambers, each with a capacity of sixteen uniforms. The contaminated clothing is placed on hangers that are hung on two rods across the top of each chamber. When the clothing has been steamed, the rods are lifted out of the chamber and placed on two tripods for the clothing to dry. Four of these tripods are strapped to the furnace when the unit is broken down.

Performance: No tests were made to determine the effectiveness of this unit but a report taken from an ATIS translation states that it can decontaminate 100 uniforms per hour.

Remarks: The ATIS translation report states that this unit carries a bleach and the contaminated clothing was neutralized in a thin bleach slurry before steaming. Upon inspection, no facilities for a bleach could be found.

References: CW Intelligence Digest No. 6, dated 4 March 1945.

[redacted]



512-DECONTAMINATING UNIT, HORSE CARRIED, STEAM, TYPE 99 Mk A

513 DECONTAMINATING UNIT, HORSE CARRIED, HOT AIR, TYPE 99 MK B

General:

Color: Brown

Components:

		Weight
A-Air Blower	1 each	79 lbs
B-Oil Burner	1 each	71 lbs
C-Power Unit	1 each	73 lbs
D-Top-left Oven Section	1 each	72 lbs
E-Top-right Oven Section	1 each	76 lbs
F-Bottom-left Oven Section	1 each	74 lbs
G-Bottom-right Oven Section	1 each	70 lbs
H-Decontaminating Chamber	4 each	101 lbs
I-Oil Can	2 each	20 lbs (Empty)

Description: This decontaminating unit breaks down into a number of compact packs that can be carried by truck or by horses. Decontamination is accomplished by the evaporation of the toxic agent by hot air generated in the unit.

The air-heating system consists of the air-blower and the oil-burner, both driven by the one cylinder gasoline engine, power unit, and the oven. Air enters the four-sectional oven through a vent in the top-right section and circulates through the oven. The oil-burner, supplied with Diesel oil from the two oil cans, ejects the fuel into the bottom-right oven section where it is ignited by a spark from a magneto on the burner. The air blower draws the hot air, about 150° C., from the bottom-left oven section and blows it into the decontaminating Chambers.

There are four collapsible, metal, decontaminating chambers. Five trays, constructed of wooden slats, slide in each chamber. The contaminated articles are placed on these trays. Top, bottom, and sides of the chamber come apart and with the trays make two flat packs for ease of transporting the unit.

Performance: No tests were made to determine the effectiveness of this unit but a report taken from an ATIS translation states that it can decontaminate 80 pairs of shoes or twenty suits of protective clothing per hour. When suits are decontaminated, the trays are not used; the suits are placed on hangers and suspended from rings inside the chambers.

Remarks: The ATIS translation report states that the unit breaks down into 18 pack each weighing eighty-one pounds. The weight of each pack varies slightly as shown above. The chambers break into two packs each, making a total of seventeen. The eighteenth pack may be an accessory box that was missing from the reported unit.

The power unit and the oil burner in this unit are identical to those used in Decontaminating Unit, Horse Carried, Steam, Type 99 Mk A (Item 512)

Reference: CW Intelligence Digest No. 6, dated 4 March 1945.



513-DECONTAMINATING UNIT, HORSE CARRIED, HOT AIR, TYPE 99Mk B

[redacted]

340-DECONTAMINATING UNIT, ARMORED, TRAILER MOUNTED

Specifications:

Overall: Length: 11 ft. 8 in.
Width: 5 ft. 4 in.
Height: 4 ft. 2 in.
Clearance: 10-3/4 in.
Armor: 3/16 in.
Suspension: two bogies, paired, resisted by an 8-leaf spring

Track: Ground Contact: 3 ft. 4 in.
Width: 6½ in.
Pitch: 3 in.
Bogies: 18 in. diameter
Front Sprocket: 10-3/4 in. outer diameter: 12 cogs
Rear Idler: 11 in. diameter
Distance between Idler and Sprocket: 6 ft. 1-3/4 in
Height to Center of Sprocket: 1 ft. 4 in.
Tow Bar: 2 ft. 11 in. long.

Description: This decon unit is a full-track, armored trailer, designed to spread dry chloride of lime. The hull is suspended on each side on a pair of rubber-tired bogies, resisted by an eight-leaf spring.

The trailer has an estimated capacity of 1000 lbs. of chloride of lime. It is filled from the top; the lid slips on and fastens with a number of luggage-type catches. The inside of the hull tapers slightly into twin troughs at the bottom. Two square-ribbon type, rotating mixers keep the decontaminating agent loose and two screw-conveyers push steady streams into the two rotating dispensers at the rear of the trailer. The centrifugal force of the rotating dispensers spread the lime on the ground in the rear of the trailer.

The operation of this unit is entirely mechanical. The two mixers, conveyers, and dispensers are geared to the sprockets, turned by the track when the vehicle is in motion. These can be thrown in or out of gear by two shifts, the right hand unit by the shift on the right, left hand unit by the shift on the left. The gear shifts are accessible through two small hatches on the front of the trailer.

The trailer is towed by a modified Type 94 Tankette. To facilitate operating from the inside of the tankette, the units can be thrown in gear by manually-operated winches, mounted on a frame that is bolted to the inside of the tankette's rear hatch. Electricity for the small tail-light on the rear of the trailer is drawn from an auxilary battery in the tankette. The control leads and wires between the two vehicles are protected by a flexible conduit.

Performance: No trial runs were made to determine the efficiency of this unit.

Remarks: Several other model tankettes have been designed to tow this trailer. The latest of these is the "TEKE", a modified Type 97 Tankette that mounts neither a turret nor a gun. The old Type 92 was originally equiped for this purpose.

RESTRICTED





340-DECONTAMINATING UNIT, ARMORED, TRAILER MOUNTED

[redacted]





340-DECONTAMINATING UNIT, ARMORED, TRAILER MOUNTED

341 DECONTAMINATING UNIT, MOBILE, HOT AIR, TYPE 99 MARK B

General:

Color:	Brown or Camouflage		
Dimensions:	Complete Unit -	Length:	18' 2"
		Width :	6' "
		Height:	8' 8"
	Decontaminating Chamber	Height:	3' 1"
		Width :	2' 1"
		Depth :	2' 11"

Engine: 6 Cylinder, Valve-in-head, Gasoline.
Transmission: 4 Forward Speeds and 1 reverse.

Description: The Type 99 Mark B Decontaminating Unit is mounted on a six-wheel truck, similar in size to a U.S. Army 2 1/2 ton 6 x 6 truck. Decontamination is accomplished by the evaporation of the toxic agent by the hot air generated in the unit. The unit is controlled from a panel directly behind the driver's seat. A gage connected to a thermocouple in each chamber registers the temperature in each chamber. Hot air entering these chambers can be regulated by levers.

Components and controls of the air-heating system are conveniently located between the driver's seat and the control panel. An air-pump on the right, driven from the truck's transmission, forces the air into the heater and from there through air ducts into the chambers. The heater is an oil-burning unit, drawing its fuel from an auxiliary tank beneath the truck.

There are six decontaminating chambers, three on side, mounted on the rear body of the truck. A hinged platform on each side of the vehicle drops into position by the chambers at a convenient height for the operators. Inside the chamber there are ten trays upon which the contaminated articles are placed; two trays slide in on each of five pairs of brackets. These trays are constructed of wooden slats. The decontaminating is done by batch.

Performance: No tests were made to determine the effectiveness of this unit but a report taken from an ATIS translation states that it can decontaminate 240 pairs of shoes and 84 sets of protective equipment per hour. The hot air generator, according to this report, has a capacity of greater than 1000 cu ft. of air per minute heated to 300 F., with a maximum temperature of 480 degrees F.

Reference: CW Intelligence Digest No. 6, dated 4 March 1945.



341-DECONTAMINATING UNIT, MOBILE, HOT AIR, TYPE 99 MARK B

[redacted]

Translation of Legend Flow Diagram for Truck 99-B

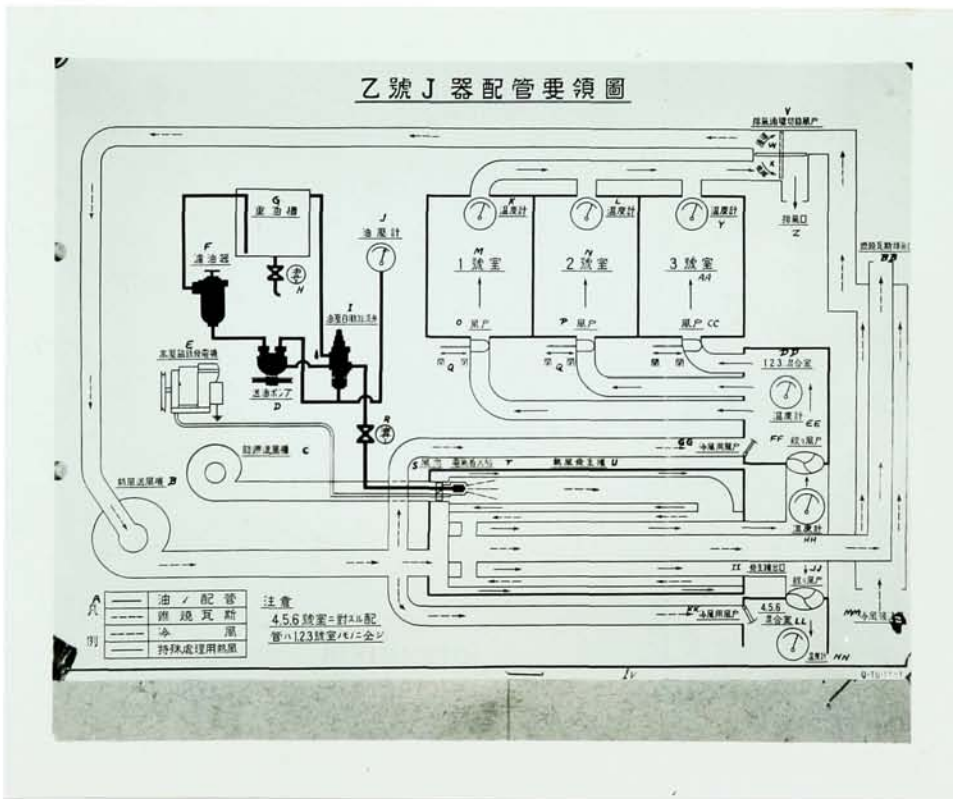
a. Preface

------RED Oil distributing pipe
------RED Combustion gas
------GREEN Cold air
------GREEN Special hot air conductor

b. Hot air ventilator
c. Ventilator for burning
d. Oil supply pump
e. Magnets-high pressure
f. Oil filter
g. Heavy oil vat
h. Oil valve
i. Oil pressure-automatic arrangement
j. Oil pressure gauge
k. Temperature gauge
l. " "
m. Room 1
n. Room 2
o. Air entrance
p. Air entrance
q. Open and close
r. Oil valve
s. Fan
t. ???????
u. Hot air outbreak tube
v. Exhausted air and circulation shutter
w. Circulation
x. Exhausted air
y. Temperature gauge
z. Exhaust
aa. Room 3
bb. Exhaust for combustion gas and exhausted air
cc. Air entrance
dd. 1.2.3 mixing chamber
ee. Temperature gauge
ff. Entrance for compressed air
gg. Cold air entrance
hh. Temperature gauge
ii. Exit of out break tube
jj. Compressed air
kk. Cold air entrance
ll. 4.5.6. Mixing room
mm. Cold air intake
nn. Temperature gauge

ADDENDA TO ITEM 341:

A report from the XXIV Corps, EEIST (Cml Sec) G-2 describing various CW items included this item. On the unit examined by the Korea teams a flow diagram was found with the unit. This diagram was not found in the unit examined in Japan, hence it has been extracted from the aforementioned report. Below is a photocopy of the diagram followed by the translations of legend.



342-Decontaminating Unit, Mobile, Steam, Type 99, Mk A

General:

Color: Brown or Camouflage

Dimensions: Complete Unit - Length 17 ft. 7 in.
Width 6 ft. 3 in.
Height 8 ft.

Decontaminating Chamber - Height 3 ft.
(2 identical) Width 2 ft.
Depth 5 ft.

Engine: 6 cylinder, valve-in-head, gasoline driven.
Transmission: 4 forward speeds and 1 reverse

Description: The Type 99 Mark A Decontaminating Unit is mounted on a six-wheel truck, similar in size to a U.S. Army 2½ ton 6x6 truck. Decontaminating is accomplished by the use of live steam at a temperature of 150°-200°C, on the contaminated clothing which is placed in the chamber. The agent is removed both mechanically and by hydrolysis.

The unit is controlled from a panel directly behind the driver's seat. Pressure and temperature throughout the system are registered on pressure gauges (white-faced dials) and thermometers (black-faced dials).

The majority of the components of the steam-generating system are conveniently located behind the driver's seat. Water is stored in a tank on the left-hand side of the truck. A water pump, belt driven off the transmission, pumps the water through coils in a heating chamber where it is heated to steam. From there, the steam goes to the chambers. There are two oil-burning heating units, one beneath the water tank and one in the heating chamber. Oil is stored in a tank on top left center of the truck.

There are two large decontaminating chambers, both extending across the rear of the truck. These have doors on both sides. The truck bed is tilted so that the right side is about four inches higher than the left. A hinged platform on the right side drops into position by the chambers at a convenient height for the operators to load the chambers. The contaminated clothing is placed on hangers, hung on rollers that fit on two brackets alon the side of the chamber. These roll down to the far side of the chamber until they are stopped by a "catch". After steaming, the clothing can be taken out from the left chamber-door. There is a timer on top of each chamber that can be set for ten minute interva

Performance: No tests were made to determine the effectiveness of this unit but a report taken from an ATIS translation states it can decontaminate 200 uniforms per hour. The boiler, according to this generates 330 to 375 lbs. of steam per hour.

Remarks: The ATIS translation report stated that this unit carried a bleaching agent which was used to neutralize the toxic agent before steaming. Upon examination of this vehicle, no facilities for such a bleach could be found.

References: CW Intelligence Digest No. 6, dated 4 March 1945.



342-DECONTAMINATING UNIT, MOBILE, STEAM, TYPE 99 MK. A

[redacted]

Translation of Legend on Flo: Diagram for Truck, 99-A.

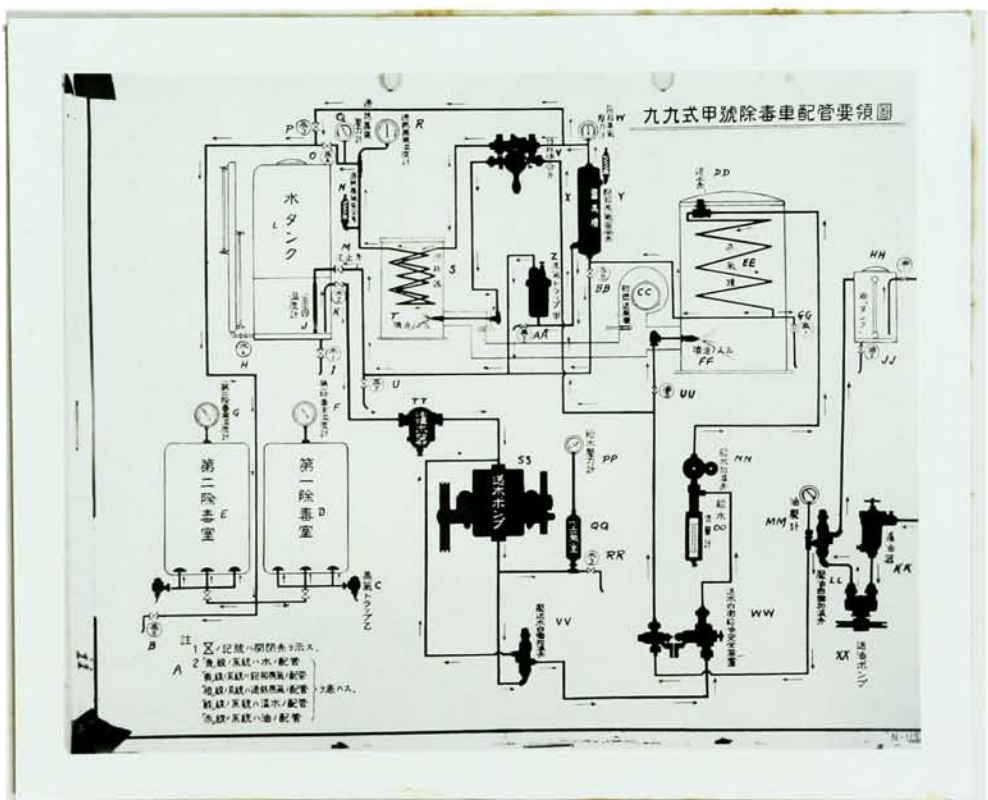
a. Directions

1. X Valve
2. Blue-water supply
   Yellow-saturated steam
   Orange-superheated steam
   Green-hot water
   Red-oil distribution

b. Steam valve 6
c. Steam trap B
d. Room 1 Decontaminating Cha ber
e. Room 2
f. Temperature gauge for room 1
g. " " " " 2
h. Water valve 4
i. " " 1
j. Temperature gauge
k. Water valve 2
l. Water tank
m. Counter stopper 2
n. Safety valve for super heated steam
o. Steam valve 4
p. " " 3
q. Manometer for super heated steam
r. Temperature gauge for super heated steam
s. Super heated
t. Nozzle of oil burner
u. Steam valve 2
v. Special plumbing arrangement
w. Manometer for saturated steam
x. Main steam vat
y. Safety valve for saturated steam
z. Steam trap A
aa. Steam valve 7
bb. " " 5
cc. Ventilator for burning
dd. Counter stopper
ee. Steam tank
ff. Nozzle of oil blower
gg. Steam valve 1
hh. Oil valve 1
ii. Oil tank
jj. Oil valve 2
kk. Oil filter
ll. Oil pressure, automatic ar ngement
mm. Oil pressure gauge
nn. Water supply arrangement
oo. " " "
pp. Manometer for water supply
qq. Air compartment
rr. Water valve 3
ss. Water supply pump
tt. Water filter
uu. Oil 3
vv. Water pressure, automatic arrangement
ww. Automatic safety apparatus or water and oil
xx. Oil supply pump

ADDENDA TO ITEM 342:

A report from the XXIV Corps, EUSAK (Cml Sec) G-2 describing various CW items included this item. On the unit examined by the Korea teams a flow diagram was found with the unit. This diagram was not found in the unit examined in Japan, hence it has been extracted from the aforementioned report. Below is a photocopy of the deagram followed by the translations of legend.



DECONTAMINATING TRUCK, CLOTHING, STEAM AND HOT WATER

Description: This vehicle is a Model 1938 Ford V-8, one ton truck, elaborately fitted to serve decontaminating purposes. The main unit is a small, low pressure steam boiler which by steel tubes directly into the water reservoir, heats the water contained therein. The reservoir tank, 2500 liter capacity, and the burner occupy almost the entire truck bed. The heating unit, burning either wood or coal, is fueled through a small door at the rear of the truck. Mounted in the center of the truck, just forward of the tank, is a large water pump. It has a 3 inch intake line and a 1½ inch outlet on each side. Hoses carried in the side compartments fit these outlets and are evidently designed for use in the decontamination of large areas. The dismantled sections of a complete shower arrangement, including spray heads, are carried on top of the tank. This showersystem, relying on the central pump for pressure connects to outlets at the forward end of the tank. There are also outlets one on each side, for steam from the boiler, to lines which could be used for decontamination. In addition to the facilities already noted, the truck is equipped with four ground sprayers, one projecting before each front wheel and one behind each back wheel. Decontamination is accomplished by use of the hot water or steam.

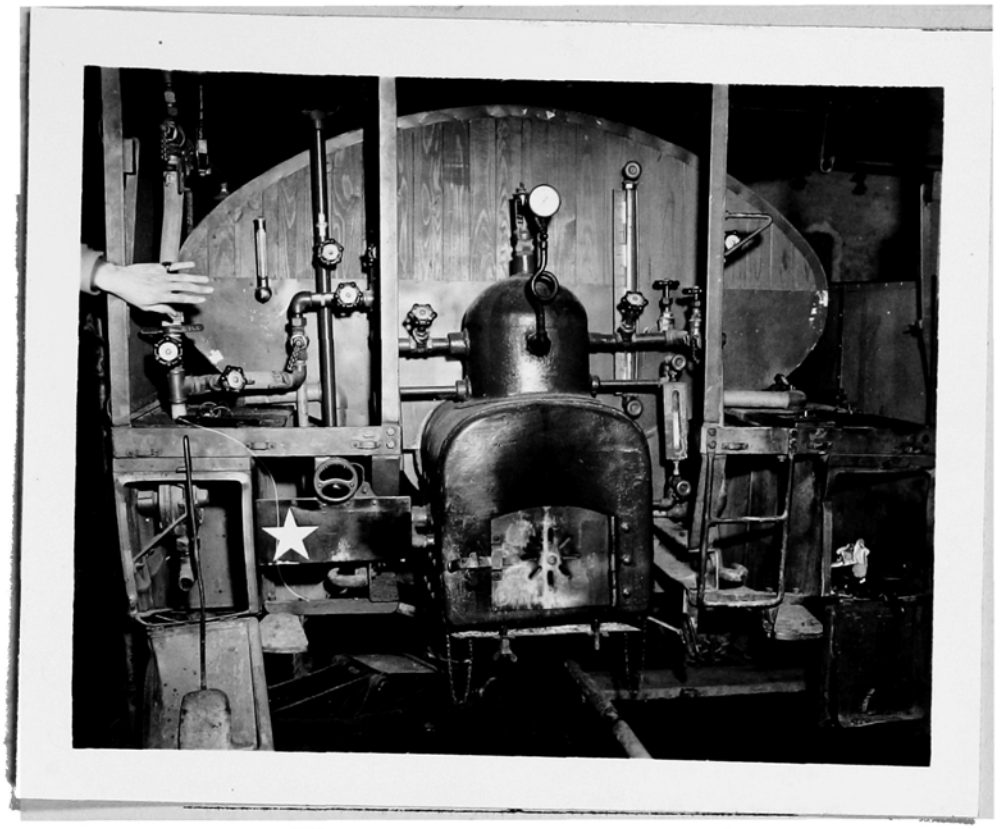
Remarks: It is believed that this vehicle is used in conjunction with a Decontaminating Truck, Shoe in that the hot air truck carries the full tent equipment for the hot water truck. Based on direct study of this material and on references in various captured documents, it appears that the tents, when erected, can be used as follows:

a. When connected to the hot air truck: for decontamination of shoes leather goods, weapons, and any other materials which cannot be exposed to water or steam.

b. When connected to the hot water truck: for decontamination of personnel clothing, textiles, etc.

Reference: The information above was submitted by Hq. XXIV Corps, APO 235, San Francisco, EEIST (Cml Sec) G-2 9 Dec 45 in a "Weekly Report on the Investigation of Japanese Chemical Warfare". The unit was found in Korea.

[redacted]



Close-up rear view



Close-up side view showing 3 inch suction line and 1½ inch outlet line

DECONTAMINATING TRUCK, SHOE, HOT AIR

Description: This vehicle is a Model 1938 Ford V-8, one ton truck. It has a specially designed body which carries the main unit, a hot air generator, and in the side compartments, the steel poles and canvas for the erection of field decontaminating stations.

The heating unit consists of a three gallon gasoline (alcohol can be used) tank with a hand-operated air compressor. The fuel, under pressure, is ejected through three jets which are similar in appearance and operation to commercial tourches. The flame shoots out against a baffle constructed of small pieces of fire resistant ceramic. Beyond the baffle is a large air chamber at the end of which is a rotory fan. This entire arrangement is inclosed in a steel oven-like body which lined with asbestos. Directly above the burner is a cylindrical flu with adjustable opening to regulate air-intake. A fan driven by a small gasoline motor, draws the air into the oven above the heating unit and through the chamber. The hot air is blown out of the chamber through two rectangular ports directly above the fan. Canvas conduits attach to these ports and carry the air to the field decontaminating units. There is a port on each side of the vehicle indicating that a decontaminating station is erected on each side of the vehicle.

Remarks: Attempts to operate the heater showed a great weakness in the pressure tetentive qualities of the unit. A gage on the hand compressor indicates a maximum of "7". It is not stated whether this means 7 Kg., 7 lbs., 70 lbs., or 70 kg. It is assumed that 7 kg would be an absolute minimum for any operation of the burner.

The above information was submitted by Hq. XXIV Corps, APO 235, San Francisco, EEIST (Cml Sec) G-2, dtd 9 Dec 45 in a "Weekly Report of Investigation of Japanese Chemical Warfare." The unit was found in Korea.

[redacted]



REAR VIEW OF AIR-HEATING UNIT



Side view illustrating rectangular air-port, tent equipment, and in the upper rack rolled bamboo mats for use as flooring of the tents.

DECONTAMINATING TRUCK, SHOE, HOT AIR

558-SPRAYER, DECONTAMINATING, 5 gal., PORTABLE

General:

Color:	Drab brown painted box.
Markings:	Black enameled brass plate on inside of box which identifies the contents.
Components:	Box, sprayer, tools and spare parts.
Dimensions:	Outside dimensions of box 17½" x 21½" x 23½".
Weight:	77 lbs.

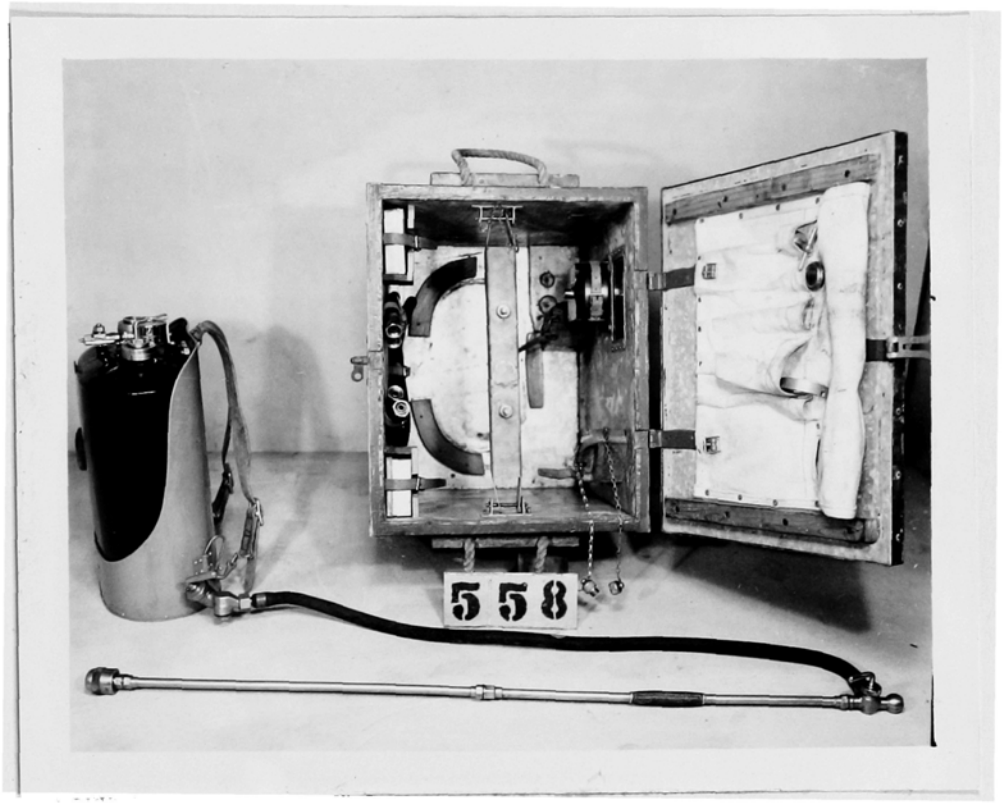
Description: This item is contained in a galvanized sheet lined wooden box with heavy strap hinges and hasp. The box is reinforced on its edges with angle iron and has two rope handles. A six compartment, canvas, buckle fastened tool bag is screw attached to the inside of the box cover. Some of the tools appear to be lacking. The tool bag was found to contain a spanner wrench, an insert wrench, and a small brass orifice bellows.

The box contains a black enameled five gallon steel tank which rides in a grey enameled, sheet metal, leather strapped pack board. It is believed that some form of pressure gas tank had been at one time fastened to the front of this packboard. A quick opening valve and sludge trap unit couples to the lower side of the tank on the operator's right. A yard length of pressure hose connects this outlet with a smaller quick opening valve which attaches to a two section spray tube. Nozzles for the spray tube with spare screens for the sludge trap are kept in a metal box strapped to the inside of the unit container. Two spare pressure hoses are also strapped to the inside. The face of the tank (away from the packboard) is tapped with a 2¼ inch port which is covered with a screw on cap. This port is sealed with a disc of heavy safety glass locked place and well gasketed. Two red marks on the glass probably indicate proper filling level. Spare glass discs and gaskets are contained in another metal can strapped to the inside of the box. A four way gas inlet valve connects to the top of the tank. One leg of this valve is attached to a pressure gauge (Kg per sq cm 0 to 4). Two capped filling wells are in the top. Each well has a filter screen insert. A funnel for filling is strapped to the inside of the box. The tank is securely nested in the box and locked in place with a locking bar.

Remarks: A strong odor of medication (as of Ungentine) was noted in the tank and sludge trap. The translation of the label refers to this tank as a "poison sprayer". It is doubtful if this item was ever intended for vesicant decontamination.

The item is packed as for animal portage.

[redacted]



558-SPRAYER, DECONTAMINATING, 5 gal., PORTABLE

642A-SPRAYER, DECONTAMINATING, FIRE EXTINGUISHER, LARGE

General:

Color:	Unfinished bronze.
Markings:	Japanese characters on a metal plate.
Components:	Cylinder, pump, 3 valves.
Dimensions:	8" dia.; 29 inches to top of pump handle (when down).
Weight:	15½ lbs. (empty).

Description: The cylinder is made of sheet bronze in three sections. The seams and joints rivetted or welded. The top section is 3 inches long, the second, 9 inches and the third 10 inches. The second and third are joined with a 1½ inch band. No rivets are used at this joint. A fourth section 3 inches high, is welded to the base of the cylinder. This section serves as a base and protects the bottom of the cylinder.

The pump shaft is 19 inches long and has a 9½ inch wooden pump handle clamped to the upper end.

Extending from opposite sides of the cylinder top are a safety valve and what appears to be the port for filling the tank. The former is about 1½ inches high and has a wing nut cap for adjusting. The port extends up 2 inches at the outside. It has a diameter of 1½ inches and is threaded. The cap has a 4 inch wooden handle which is removable.

Near the base of the cylinder and extending from opposite sides are two spigots, probably the outlets. One appears to be broken off, but the other extends out 2½ inches; the outermost end is threaded, indicating another connection, probably a hose. The spigot has a 1-3/4" handle for adjusting the valve.

There are several loops and eyes which are probably for holding carrying straps. A 20 inch piece of 3 inch brass striping has been bolted to the base of the apparatus. Its function is undetermined.

Translations: On metal plate near top:
"Maruyama Manufacturing Co. Ltd.
1.2-chome Kajiya and cho, Kanda-ku, Tokyo
Phone No. Kanda (25), 1331,1333.

Remarks: This unit is apparently a standard fire extinguisher which had been designated as a decontaminating apparatus. No noticeable changes in construction or function had been made.

[redacted]



6424-SPRINKLER, DECONTAMINATING, FIRE EXTINGUISHER, LARGE

[redacted]

642B-SPRAYER, DECONTAMINATING, FIRE EXTINGUISHER, SMALL

General:

Color:	Unfinished metal.
Markings:	Japanese characters on 2 metal plates, one paper label (damaged), and painted on in two places, in red and black.
Components:	Cylinder, pump, nozzle.
Dimensions:	7 inches diameter, 24 inches high to top of pump handle (when down).
Weight:	10 lbs. (empty).

Description: The cylinder is made in four sections, all joints being welded or riveted and welded. The middle sections are joined by metal bands. Another section at the base serves as a ring stand for the unit. An opening large enough for a person's foot is in this ring, apparently be to permit steadying the apparatus when it is in use.

The pump shaft is about 17 inches long and has a 6 inch wooden handle clamped to the upper end.

The 13 inch nozzle is connected to an outlet valve housing. The valve is controlled by turning the nozzle.

An inlet pipe extending from the bottom of the cylinder and bent to extend through the side is an indication that this apparatus may have been put into a bucket or similar vessel and used only as a pump.

In the front of the cylinder are two screwed in devices. The upper is possibly a hole to fill an outer shell in the tank with chemicals; the other has a valve set up and may be a regulator between the solution flow and the chemical shell.

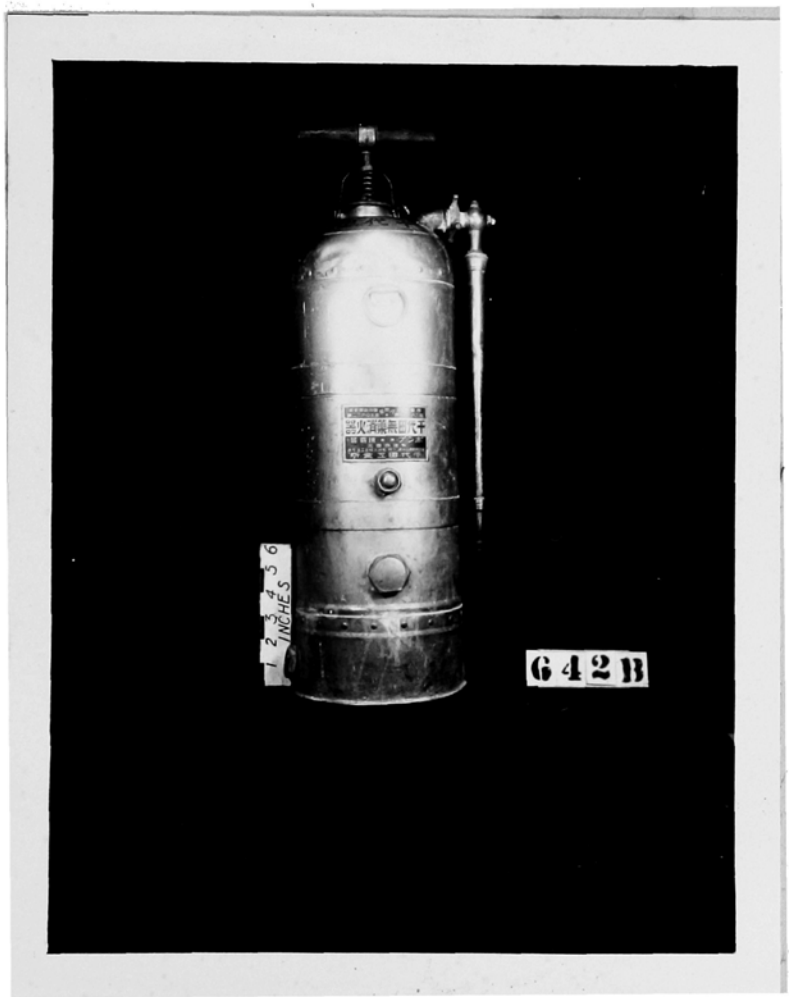
Two metal rings are attached near the top; a light metal handle is hooked on the top, just below the pump attachme

Translations: Upper metal plate:

Chiyoda.
"Patent No. 38181"
Lower metal Plate:
Volume of 8 sho. (3.84 gal.)
Practical New Device Registration No. 50822
Patent No. 38181
"Chiyoda Fire Extinguisher without Chemicals".
Combination Pump and Spray.
Chiyoda Industrial Plant
"2-chome, Yamamoto-Cho, Nojimachi-ku, Tokyo.
"Phone No. Kudau 3257"

The paper label is almost completely destroyed, but what is left indicates that it gave the proper location for this extinguisher in the place where it was in use, the chief of the section, etc.

Remarks: This unit appears to be a commercial type fire extinguisher which may have been considered adequate for decontamination work.



6423-SPRAYER, DECONTAMINATING, FIRE EXTINGUISHER, SMALL

[redacted]

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