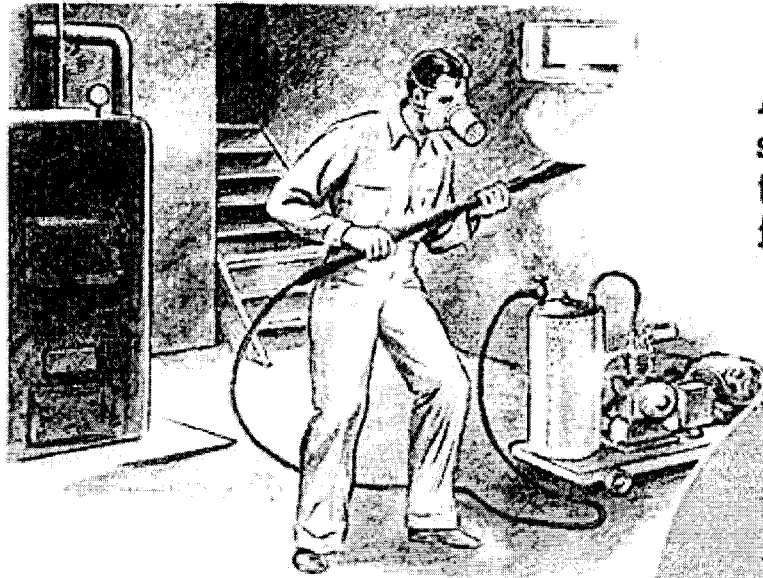


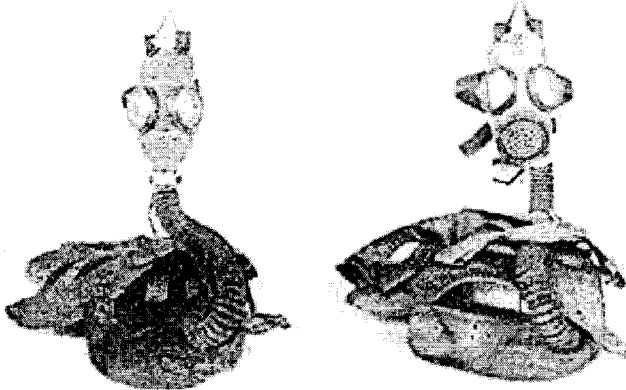
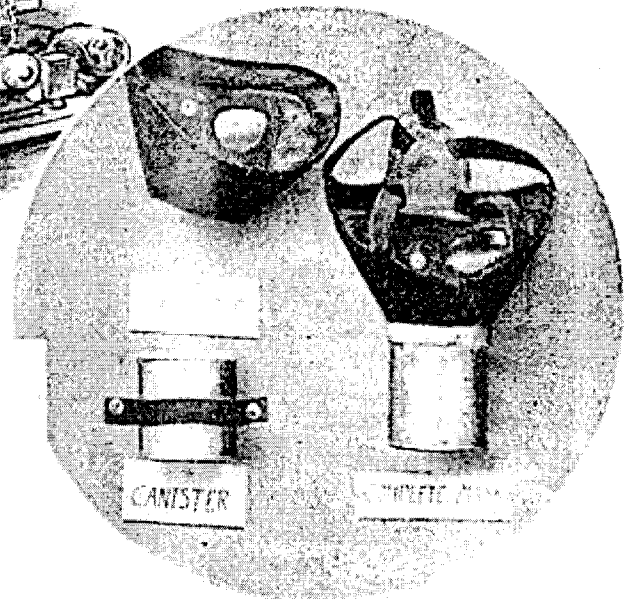
A GAS MASK For Fumigating Purposes

(from *Modern Mechanics* - 1938)



An army officer describes the construction of a practical fumigation mask.

A mask for spraying and fumigating purposes is a necessary protection against dangerous fumes. This practical gas mask is made from ordinary household materials.



The completed gas mask and basic materials used in constructing mask are pictured above. Left—Two types of commercial masks of practical design.

A SERVICEABLE gas mask which will prove highly efficient when working in smoke and dust can be easily constructed by anyone from common materials and at little or no cost. While the respirator unit about to be described is not as efficient as some commercial types it is, nevertheless, quite satisfactory for ordinary disinfecting use.

A few pieces of duck cloth, leather, celluloid, a tin container, cotton wadding and activated charcoal comprise the materials used in making the mask. Most any workshop will yield all necessary materials except the activated charcoal and this can be obtained at the corner drug store.

To make the respirator a pattern is first drawn on stiff cardboard to the shape and size shown in the pattern illustration. This size is satisfactory for the average adult. If one

has an unusual face, a little experimentation will enable one to make the required changes in dimensions to meet his particular needs.

The facepiece is made from double thickness of tightly woven medium weight waterproof duck or leather which is treated on the contact surface between the layers with boiled linseed oil to which has been added 10% of castor oil.

The two faceblanks are cut from selected duck cloth according to pattern made as outlined above. The contact surfaces of the facepieces are dampened with the oil and then stitched in place by hand prior to sewing on a shoe machine. With a little patience all the sewing can be done by hand.

Eyepieces are next cut from clear celluloid or cellulose acetate film in the form of squares approximately three inches on the side with

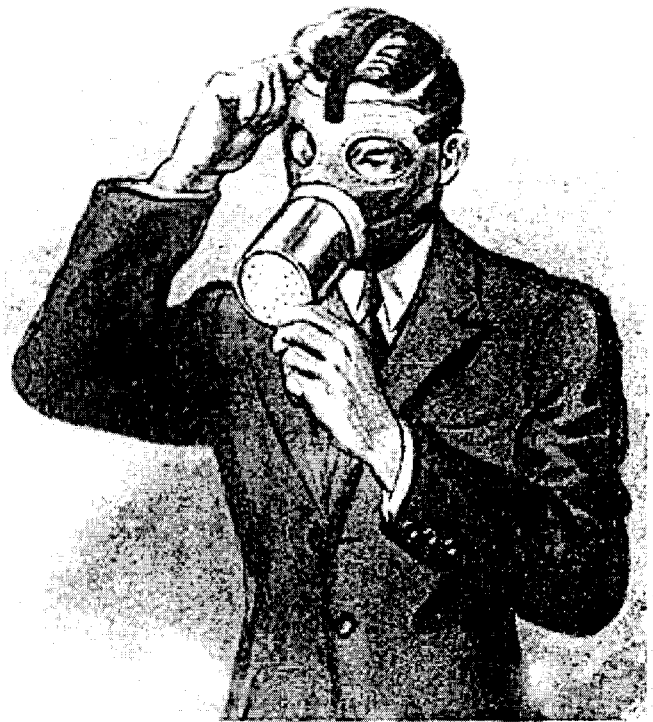
A GAS MASK For Fumigating Purposes

by Major M. E. Barker, C.W.S.

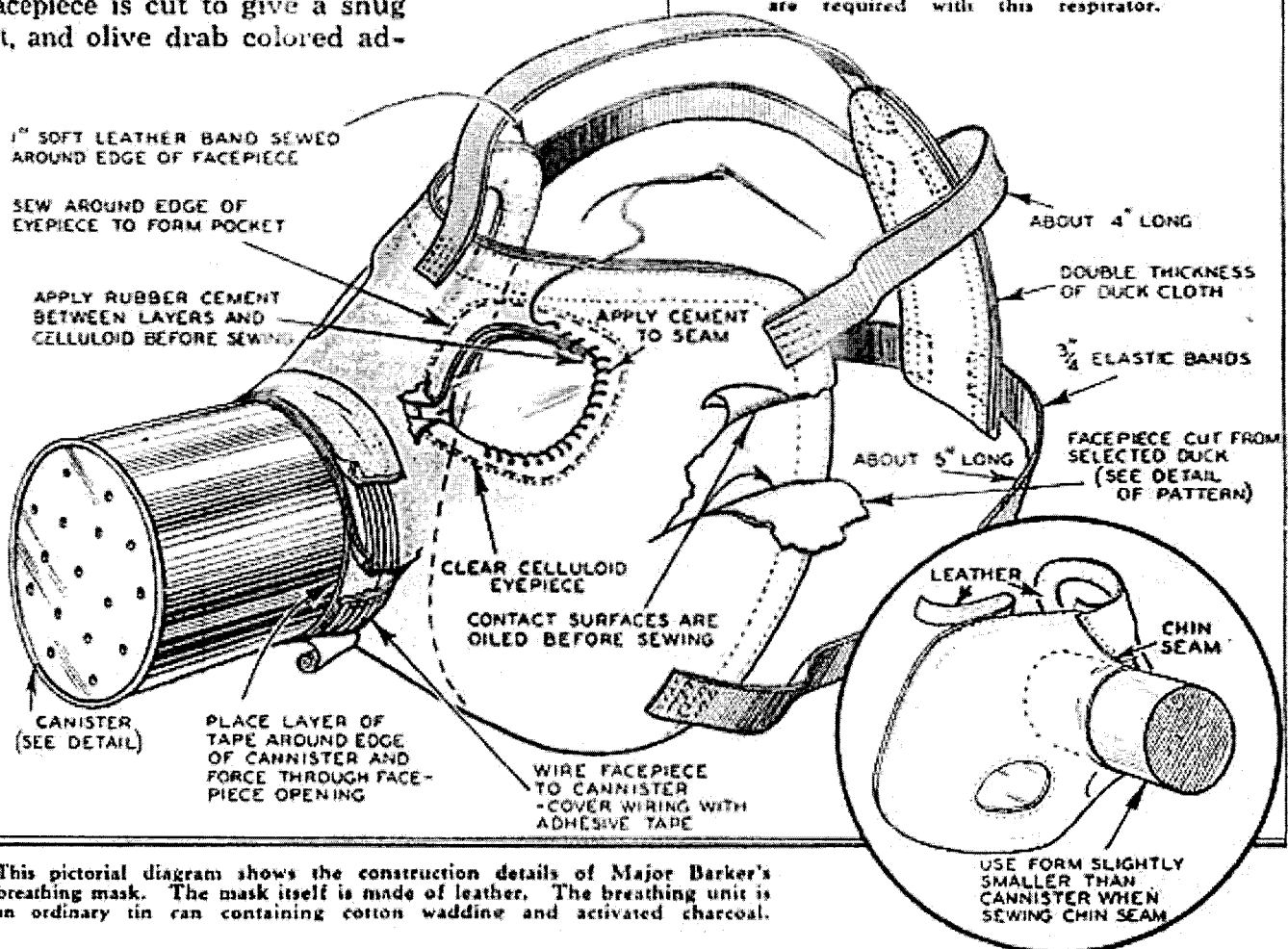
the corners rounded. The eyepieces are then slipped in place between the two layers of the facepiece and the facepiece served around the edge of the eyepiece. Cellulose acetate or rubber cement is then applied between the lens and the two layers of the facepiece and the facepiece is sewed through the eyepiece and cement applied to the seam. This procedure is necessary in order to produce a gas tight fit of the eyepieces in a facepiece of this design.

A band of soft leather about one inch wide is cut to fit the inside of the facepiece. This is sewed in place with two seams. The purpose of the soft leather is to give an air tight fit between the edges of the facepiece and the face.

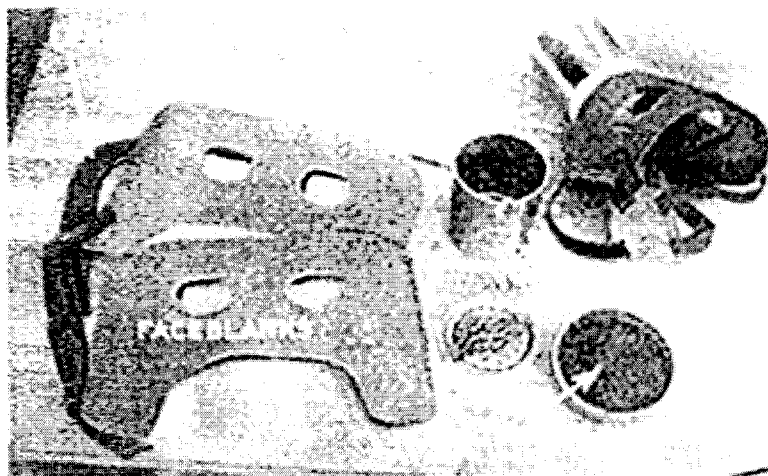
The chin seam is now put together over a piece of wood slightly smaller than the tin can to be used as a canister. The chin seam is thoroughly sewed in place, the leather band inside the outer edge of the facepiece is cut to give a snug fit, and olive drab colored ad-



Quickly slipped over the head, the gas mask is ready for immediate use. No annoying breathing tubes are required with this respirator.



This pictorial diagram shows the construction details of Major Barker's breathing mask. The mask itself is made of leather. The breathing unit is an ordinary tin can containing cotton wadding and activated charcoal.



Here is the gas mask before the assembling operation. Celluloid eyepieces are sewed between leather face blanks. A completed mask, ready for use, is shown at upper right.

hesive tape is used to bind the seam and render it airtight.

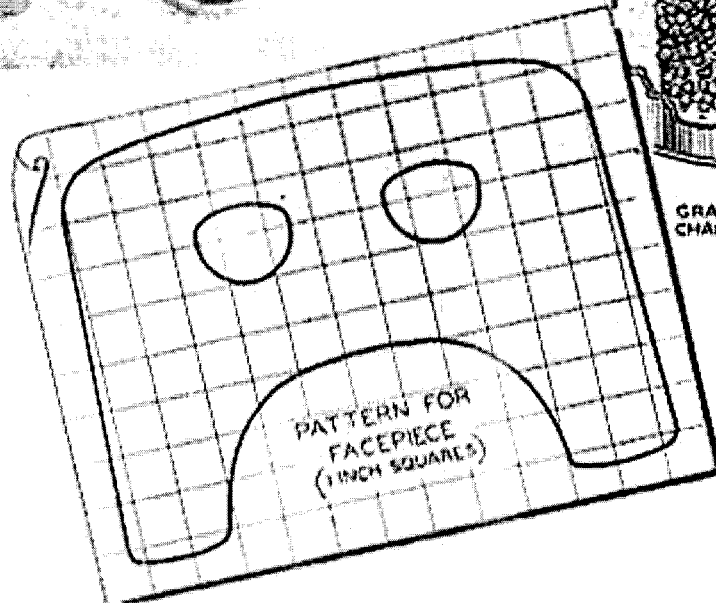
Five pieces of standard elastic $\frac{3}{4}$ of an inch wide are sewed to the facepiece so that one elastic strap passes over the center of the forehead, one along each temple and one just above the point of the jaw on each side of the face.

This spacing of the head harness elastic straps is necessary to give the facepiece a snug fit on the face and to carry the suspended weight of the canister.

A pad about three by four inches in size made of two thicknesses of duck cloth of the same variety as used in the facepieces is now sewed to the ends of the elastic so as to give a tight fit to the facepiece for the average wearer. This is best determined by actual test. However, the temple straps should be about four inches long between the pad and the edge of the facepiece while the chin and forehead straps should be approximately five inches in length.

The canister is made from a standard size No. 3 commercial tin can by perforating the top and bottom each with about one hundred small holes such as produced by a six-penny nail. The can can be cut off about one inch in length and still produce a satisfactory canister which is easier to wear, although the can as purchased is satisfactory.

The inside of the canister is coated with liquid glue or a good grade of adhesive of some other type. A piece of absorbent cotton pad in the form of thin layers, is now cut to

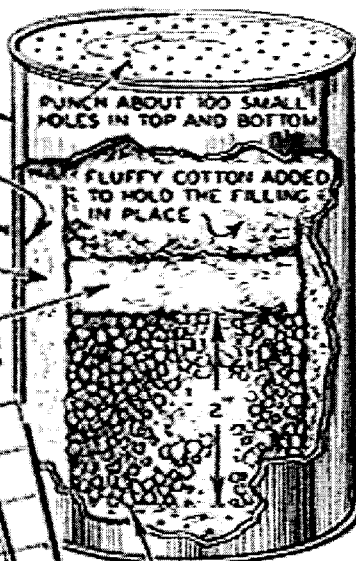


STANDARD SIZE NO. 3 TIN CAN

COAT INSIDE WITH LIQUID GLUE

PLACE LAYER OF ABSORBENT COTTON ALL AROUND THE INSIDE OF CAN

ADDITIONAL LAYER OF COTTON GLUED IN PLACE



PUNCH ABOUT 100 SMALL HOLES IN TOP AND BOTTOM

FLUFFY COTTON ADDED TO HOLD THE FILLING IN PLACE

GRANULES OF ACTIVATED CHARCOAL (BUCKSHOT SIZE)

DETAIL OF CANISTER

Cross-sectional view of the filter canister is illustrated above. A No. 3 tin can with both ends punched with small holes contains the filtering materials. Left—Cut the face blanks from the pattern shown here.

fit the can. These two layers are now placed in the can and the edges pressed against the can to secure adhesion.

Activated charcoal in granules about the size of buckshot is now filled in the canister to a depth of about two inches, then an additional layer of absorbent cotton cemented in place and ordinary fluffy cotton added on top to hold the filling in place. The top is then rolled into place on the can. This can be done in satisfactory fashion with a pair of small round nosed pliers.

The hole in the facepiece is now sewed with two seams about $\frac{1}{2}$ inch apart. A layer of adhesive tape is fastened around the top of the canister and the canister is slipped through the hole in the facepiece. If the work has been well done a small amount of force is required to push the canister through the facepiece, but there is ample stretch to the facepiece to accommodate the canister. The facepiece after being wired to the canister and the wire covered with adhesive tape is now ready to wear.

The mask outlined above is highly effective in removing dust, smoke and obnoxious gas from the air breathed by wearer.