

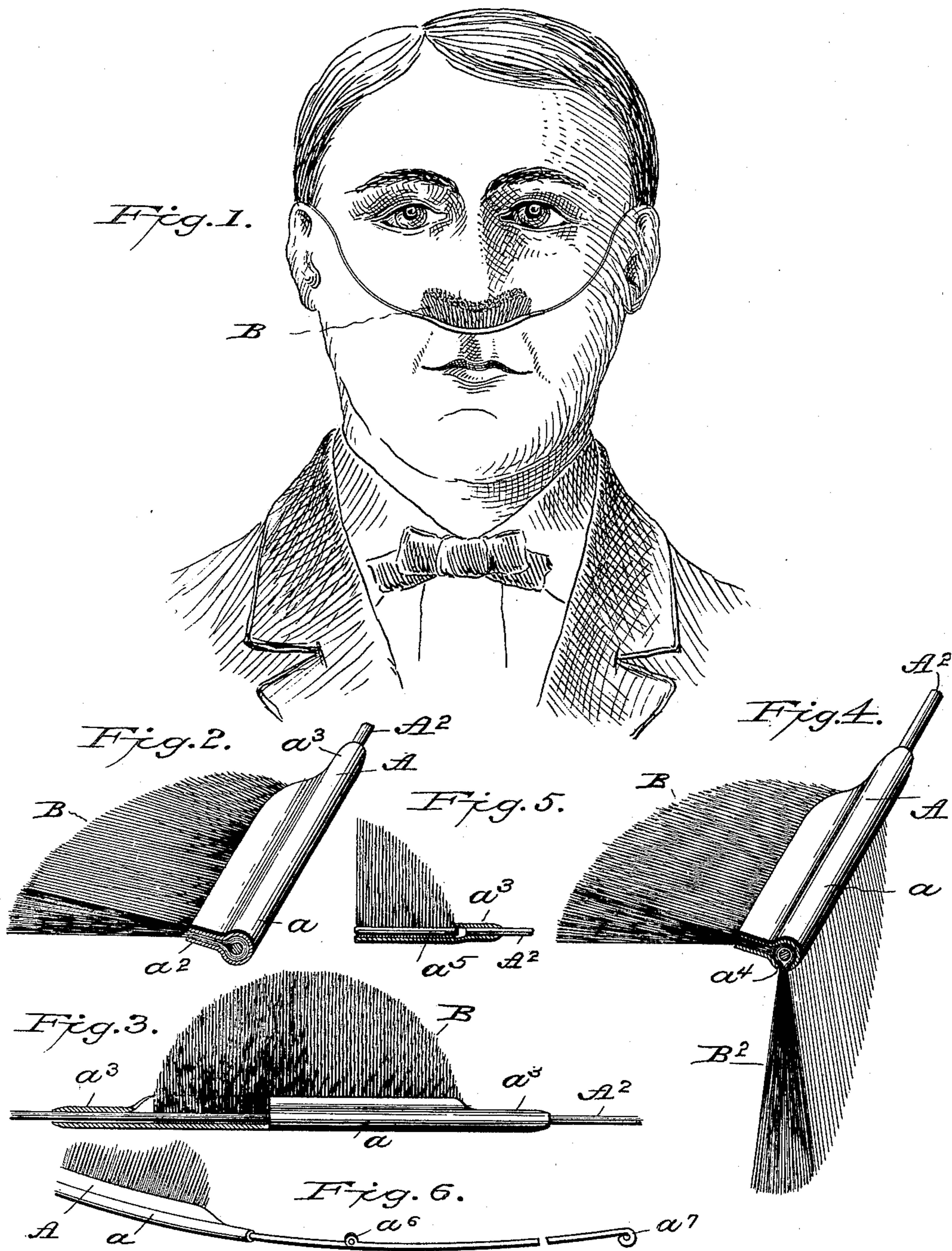
No. 630,242.

Patented Aug. 1, 1899.

C. B. LAKIN.  
RESPIRATOR.

(Application filed July 2, 1898.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## RESPIRATOR.

SPECIFICATION forming part of Letters Patent No. 630,242, dated August 1, 1899.

Application filed July 2, 1898. Serial No. 685,066. (No model.)

### *To all whom it may concern:*

Be it known that I, CORYDON B. LAKIN, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Respirators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object is, without inconvenience to the user and in a ready, simple, and thoroughly efficient manner, to preclude entrance of dust, germs, or like deleterious substances into the nose, throat, and lungs and at once to present a means of disinfecting and medicating the air passing to the lungs. Heretofore many devices have been constructed for this purpose; but an inherent objection to all has been that in use they are troublesome of adjustment and highly inconvenient by reason of weight or size.

In mills, foundries, and machine-shops, more particularly in the latter, where a workman is stationed at a grinding or polishing machine, the air is always charged with floating particles of mineral and metallic substances, which, entering the nose and throat, are productive of great inconvenience at the time and frequently in the end are injurious to such an extent as to cause death. To present an efficient respirator, it is essential that the same shall be of such construction that it may be worn without its presence being a constant source of irritation and annoyance to the wearer, as where such defects attend its use a prospective user would prefer running the risks of injury rather than submit himself to the inconvenience and discomfort by being burdened by a device no matter how efficient it may be. The necessary concomitants of such a device are therefore that it should be light in weight, readily adjustable to position, and without in any way interfering with the breathing, to preclude any entrance of dust or germs of disease, and which shall be self-adjusting to the parts designed to be protected.

To these ends, therefore, the invention consists in a respirator comprising a suitable frame or support adapted to occupy a position beneath the nose of the wearer and to be held in place by ordinary bows, such as are employed in connection with spectacles, the sup-

port carrying the material to constitute the shield or dust-arrester. The frame is by preference bent to such shape as closely to hug the upper lip of the wearer, and the dust-arrester comprises rows of outward-projecting, flexible, and readily-yieldable fibers, preferably of hair or bristles, which in use will lie snugly against the walls of the nostrils, and thus prevent the entrance of dust or germs at these points and also from beneath. The fibers may be of hair or bristles, as stated, or of fine non-corrosive metal, or of any other substance suited to the purpose. The outer ends of the fibers are unconfined and are thus free to yield in any direction to cause them in use to conform to the contour of the nose of the wearer. In addition to the fibers of the shield for protecting the nose additional fibers of the same or different materials may project downwardly to cover the mouth of the wearer, and thus preclude entrance of deleterious substances through the mouth.

In the accompanying drawings, forming a part of this specification and in which like letters of reference indicate corresponding parts, I have illustrated a form of embodiment of my invention with a modification, it being understood that other forms of embodiment thereof may be employed without departing from the spirit of the same, and in the drawings—

Figure 1 is a view in elevation, showing a human head with my respirator positioned thereon. Fig. 2 is a detached view in perspective, showing the manner in which the fibers or hairs are held in place within the frame. Fig. 3 is a view in front elevation, partly in section, displaying the frame before it is bent to shape to fit the wearer. Fig. 4 is also a view in perspective detail, showing a combined nose and mouth guard. Fig. 5 is a view in elevation, partly in section, showing a slightly-modified form of the manner in which the bows are assembled with relation to the frame; and Fig. 6 is a perspective detail view showing a modified form of bow, wherein a hinge is employed to permit the two members of the bow to be folded to reduce the space occupied by the respirator when carried on the person.

Referring to the drawings and to Figs. 1, 2, and 3 thereof, A designates the frame or support of the respirator, the same being constructed, by preference, of any metal which in

use will be non-corrosive, preferably of silver or aluminium. This frame is struck up from a single piece of metal and is bent to form a cylindrical body portion  $a$  and side flanges  $a^2$ , as clearly shown in Fig. 2. The tufts or bunches of fibers—in this instance of hairs or bristles—composing the shield B are secured within the frame by being bent upon themselves, with the bends housed within its cylindrical portion  $a$  and with the center portion of the bow  $A^2$  passing through the bends, after which the flanges  $a^2$  are crimped or otherwise brought together in such manner as firmly to hold the tufts in place. In addition to the flanges for holding the tufts in place within the frame a suitable cement or adhesive may be included around the bends, thus further to give security to the assemblage of the tufts. The ends of the frame are reduced to form tubular projections  $a^3$ , at which points the bows are firmly attached, as by being soldered or otherwise secured therein. These bows may be formed of a single piece of wire passing through the frame and bent at each end in such manner as to lie along the cheek of the wearer, with the ends hooked to pass over the ears of the wearer, the metal of which the bows are made to be of resilient character in order to cause the shield always to press beneath the nose of the wearer, as shown in Fig. 1. The unconfined extremities of the fibers or hairs are fashioned as a whole, by preference, into a semicircle, as shown in Fig. 3, so that in use the longest hairs will be at the center of the nose and the shorter at the nostrils, and by reason of the yielding character of the hairs these will closely hug against the nostrils with sufficient pressure to exclude thoroughly and effectively the entrance of dust or the like to the nostrils, the exclusion being rendered more effective by the moisture of the breath upon the filaments of the shield; but the assemblage of the hairs is not of such character as to interfere in the least with the free breathing of the wearer, so that in use any discomfort will be entirely obviated.

In addition to the shield B for precluding the entrance of dust to the nostrils I may in some instances employ an additional shield  $B^2$  to fit over the mouth of the wearer, thus to prevent entrance of dust or the like to the lungs through the mouth, this shield to be constructed of hair or other fibrous material, and held in place by the bows in the same manner as that described in connection with the shield B, the frame to be provided with openings  $a^4$  on its lower side, through which the tufts of the shield  $B^2$  project, the construction of the whole rendering it easily detachable from the face to be washed and resupplied with disinfectants or medicaments and returned to position for use.

As shown in Figs. 1, 2, 3, and 4, the bows are formed from a continuous piece of wire passing through the frame; but, if preferred, these bows may each comprise a separate

piece of wire secured in place in the tubular projections  $a^3$ , as shown in Fig. 5, the fibers or tufts to be secured in place by a separate piece of wire  $a^5$ . Instead of having the bows continuous from end to end I may, if preferred, employ hinges, as  $a^6$ , at any point or points in the bows whereby to permit of their being folded up, as in the manner of an ordinary pair of spectacles, thus to shorten the length of the device and to permit of its being readily carried in the pocket. In addition to this the end of each bow may be provided with a knob or may be bent upon itself, as at  $a^7$ , to prevent any inconvenience to the wearer.

I am aware that knitted fabrics and fabrics made of horsehair woven to present a reticulated surface have been employed as a shield in a respirator and also that sponge and other materials have been employed for the same purpose, but in all of these the shield has been confined throughout its entire area by a frame, whereas in my device only the rear portion, or that which will lie against the face of the wearer, is confined, the outer end or portion of the shield being free to yield, and thus readily to adjust itself to the nostrils and mouth of the wearer and to admit of a free passage of air to and from the lungs.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A respirator comprising a frame shaped to conform to the face, and a shield held by the frame and constructed of hair or bristles secured at their inner portions in said frame, leaving the unconfined extremities free to yield and thus to adjust themselves to the part to be protected, substantially as described.

2. A respirator comprising a frame and a shield carried thereby, the shield being composed of hair or bristles bent upon themselves and confined within the frame, and a wire passed through the bends of the bristles, substantially as described.

3. A respirator comprising a frame and a shield carried thereby, the shield being composed of hair or bristles bent upon themselves and confined within the frame, and a wire passed through the bends of the bristles and having its extremities formed into bows, substantially as described.

4. A respirator comprising a frame and shields carried thereby, and adapted to fit, respectively, under the nose and over the mouth of the wearer, the shields being constructed of hair or bristles bent upon themselves and confined within the frame, and bows carried by the frame, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CORYDON B. LAKIN.

Witnesses:

R. M. ELLIOTT,  
E. H. PARRY.