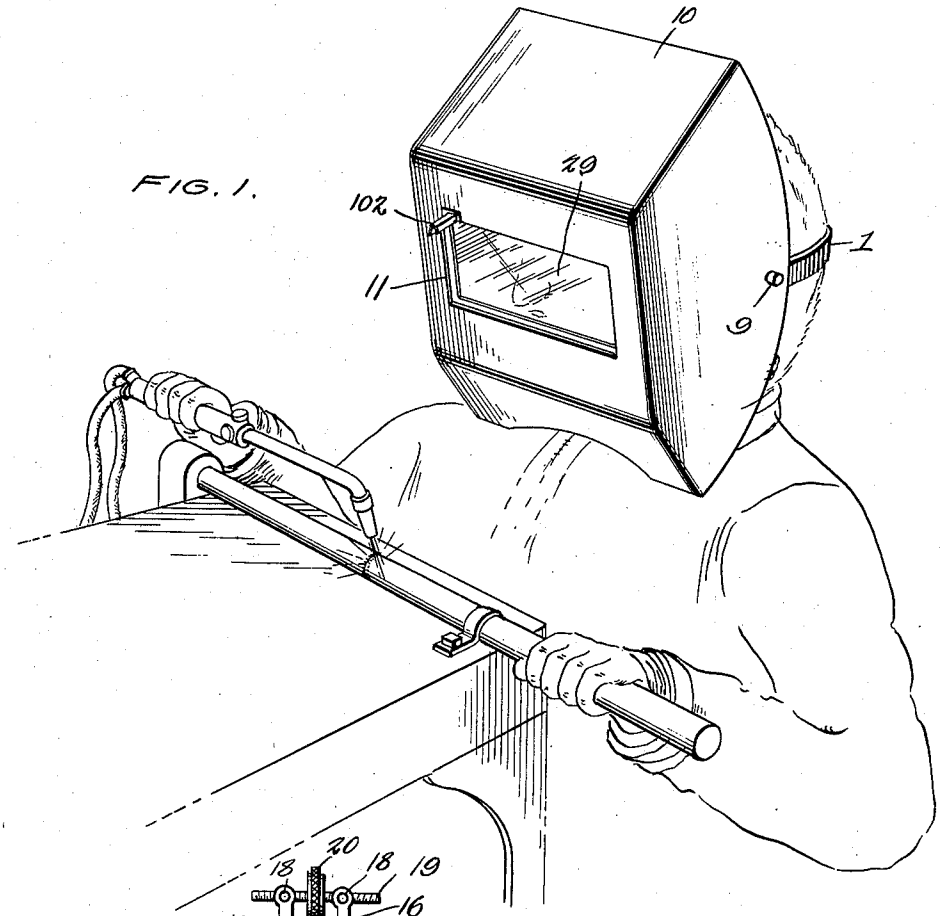
July 5, 1938. B. YETTNER 2,122,923

WELDER'S HEADGEAR

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FIG. 1.



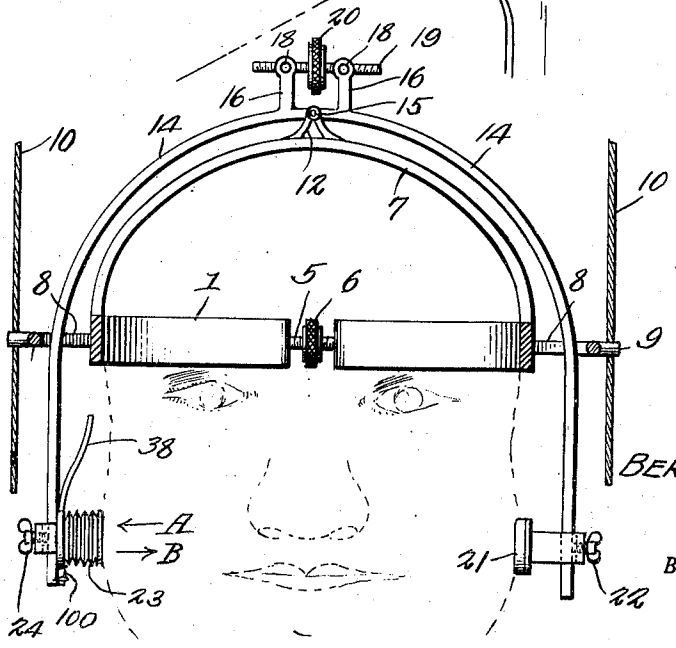


FIG. 2.

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FIG. 3.

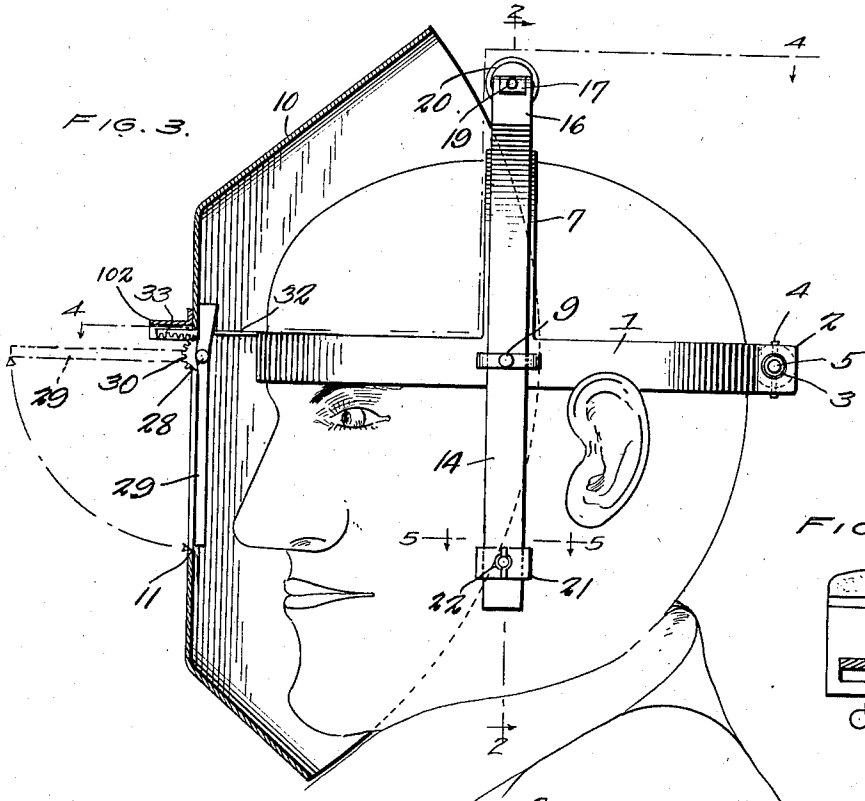
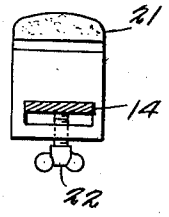


FIG. 5.



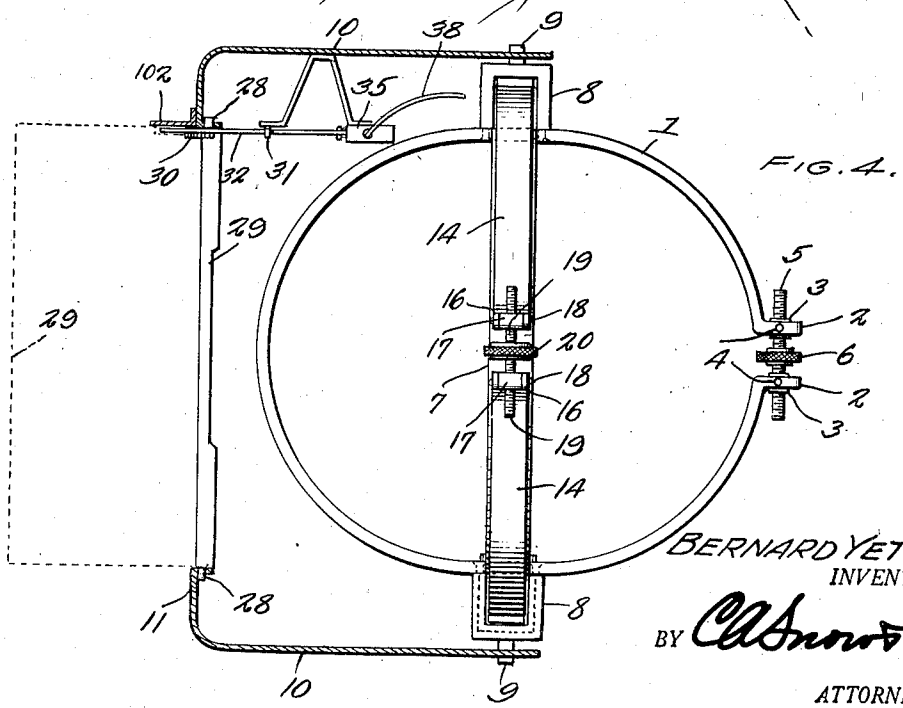


FIG. 4.

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FIG. 6.

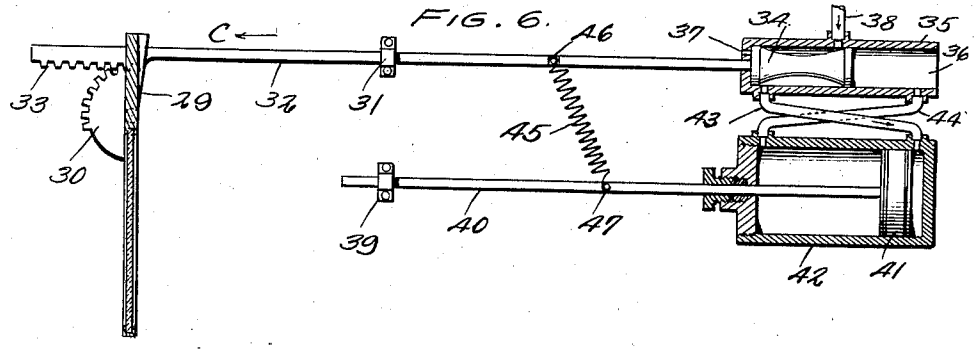


FIG. 7.

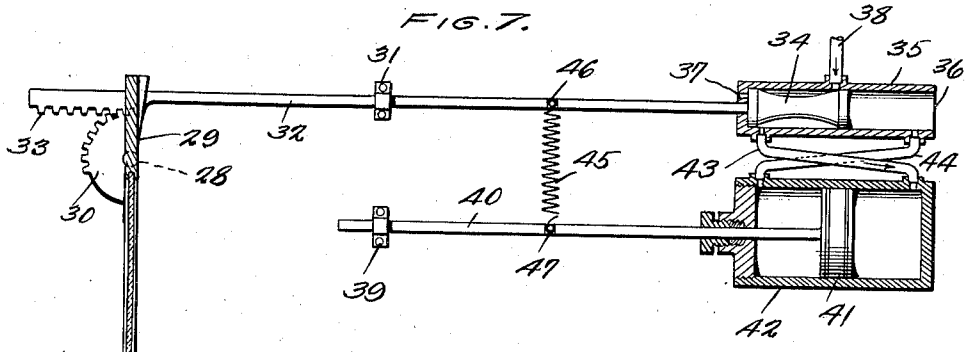
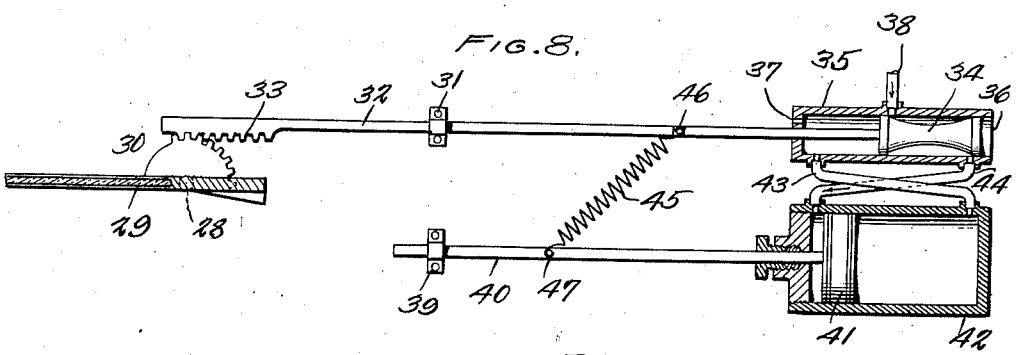


FIG. 8.



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Patented July 5, 1938 2,122,923

UNITED STATES PATENT OFFICE

2,122,923

WELDER'S HEADGEAR

Bernard Yettner, San Francisco, Calif.

Application February 1, 1938, Serial No. 188,141

6 Claims. (Cl. 2—8)

This invention aims to provide novel means whereby an operator, by closing his jaws tightly together, can open or close the shutter which constitutes part of a hood worn by welders. The invention aims to provide novel means for mounting the device on the welder's head, so that air pressure can be produced, and to provide novel valve and piston means whereby an actuating spring may be so shifted that it will close or open the shutter at the will of an operator.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the present invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings:

Fig. 1 shows in perspective, a device of the class described, mounted on the head of a workman;

Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 3;

Fig. 3 is a section through the device, from front to back, most parts remaining in elevation;

Fig. 4 is a section on the line 4—4 of Fig. 3;

Fig. 5 is a section on the line 5—5 of Fig. 3;

Figs. 6, 7 and 8 are sectional views showing the piston, spring and valve mechanism in different positions.

In carrying out the invention, there is provided a carrying frame, made of any desired material. The frame embodies a horizontal head band 1, supplied at its back with parallel, rearwardly extended fingers 2, wherein nuts 3 are pivoted at 4, a screw 5 being right and left hand threaded into the nuts 3. For the rotation of the screw 5, a wheel 6 is secured to the screw, between the fingers 2. The screw 5 constitutes an adjusting device whereby the band 1 may be made to fit properly around the head of the wearer, as shown in Fig. 3. An arch 7 is connected at its lower ends to the sides of the head band 1, and prevents the head band from sliding downwardly. The head band 1 and the arch 7 preferably are made of the same material.

At its sides, the head band 1 is equipped with outstanding U-shaped supports or guides 8, having trunnions 9, whereon a hood 10 is mounted, the construction being such that the hood can be tilted backwardly, from a position in front of the face of the wearer, when desired. The hood 10 is supplied with an opening 11, the opening being located in the front part of the hood 10.

To the crown of the arch 7 is secured (Fig. 2) a bracket 12, the inner ends of curved depending arms 14 being pivoted at 15 to the bracket. Near to their upper ends, the arms 14 are supplied with upstanding fingers 16 wherein nuts 17 are pivotally mounted, as shown at 18, a screw 19 being right and left hand threaded into the nuts 17. The screw 19 is operated by means of a wheel 20, secured to it and located between the fingers 16.

A jaw pad 21 is held on one of the arms 14 by a set screw 22, for vertical adjustment. On the other of the arms 14 an air pump, preferably a bellows 23 is secured for vertical adjustment, by means of a set screw 24, the bellows 23 having an air admitting check valve 100. The arms 14 pass downwardly through the supports and guides 8 on the head band 1. Owing to the fact that the set screws 24 and 22 are provided, the bellows 23 and the jaw pad 21 may be adjusted vertically, so that they will cooperate properly with the rear ends of the lower jaw of the wearer. By means of the screw 19, the arms 14 may be adjusted inwardly and outwardly on the pivot element 15, transversely of the face of the wearer, so that the jaw pad 21 and the bellows 23 will bear against the rear ends of the lower jaw of the wearer.

In the hood 10 are rotatably mounted stub shafts 28 at the ends of a panel 29 adapted to cooperate with the opening 11 in the hood 10, the construction being such that the panel 29 can be swung upwardly and downwardly as shown in Fig. 3 of the drawings. The panel 29 is so constructed that, when it is in the depending solid line position of Fig. 3, it will cut off all rays proceeding from a welding with a torch or the like which rays, for well known reasons, should be shut off from the face of the operator.

A gear segment or pinion 30 is secured to one of the stub shafts 28 of the panel 29. A guide 31 is mounted on the hood 10. In the guide 31, a valve rod 32 is mounted for reciprocation. At its forward end, the valve rod 32 has a rack 33, meshing with the gear segment or pinion 30 of the panel 29 and protected by a guard 102 on the hood 10 when the rack is advanced.

It is made manifest in Figs. 6, 7 and 8 that a valve 34 is secured to the rear end of the valve

rod 32. The valve 34 is tapered from its ends toward its intermediate portion. The valve 34 is mounted for reciprocation in a tubular valve casing 35 secured to the hood 10. The tubular valve casing 35 is open at its rear end, as shown at 36, and at its forward end it is provided with a vent port 37. A conduit 38 leads from the bellows 23 to the intermediate portion of the valve casing 35.

A guide 39 is secured to the arm 25. A piston rod 40 is mounted for reciprocation in the guide 39. The piston rod 40 is connected to a piston 41 operating in a cylinder 42 carried by the hood 10. A conduit 43 connects the forward end of the valve casing 35 with the rear end of the cylinder 42. A conduit 44 connects the rear portion of the valve casing 35 with the forward portion of the cylinder 42.

A push spring 45 is provided. One end of the push spring 45 is connected at 46 to the slidable valve rod 32, and the opposite end of the push spring is connected at 47 to the slidable piston rod 40, as shown in Figs. 6 to 8.

When the parts are arranged as shown in Fig. 6, the point 46 of connection between the push spring 45 and the valve rod 32 is ahead of the point 47 of connection between the spring and the piston rod 40, and the spring 45 moves the valve rod 32 in the direction of the arrow C in Fig. 6, the rack 33 on the valve rod cooperating with the segment 30 on the panel 29, and the panel being held closed with respect to the opening 11 in the hood 10.

If the operator wishes to move the panel 29 from the closed position of Fig. 6 to the open position of Fig. 8, with regard to the aperture 11 in the hood 10, he clinches his jaws tightly together, and the tissues of the face, adjacent to the rear end of the lower jaw, move outwardly in the direction of the arrow A in Fig. 2. The check valve 100 closes, the resilient bellows 23 is collapsed, and air under pressure is caused to move through the conduit 38 into the valve casing 35 (Fig. 6), around the valve 34, through the conduit 43 and into the cylinder 42, behind the piston 41.

As the piston 41 is advanced to the position of Fig. 7, the air in the cylinder 42 ahead of the piston 41 exhausts through the conduit 44 and through the open rear end 36 of the valve casing 35. As the piston 41 advances toward the position of Fig. 8, the point 47 of connection between the push spring 45 and the piston rod 40 is advanced with respect to the point 46 of connection between the push spring and the valve rod 32. The tendency of the spring 45 now is to carry the valve rod 32 and the valve 34 back to the position of Fig. 8, the rack 33 on the valve rod 32 cooperating with the segment 30 on the shutter 29 to open the shutter with respect to the aperture 11 in the hood 10. The operator now can relax his jaws, the bellows 23 expanding, owing to their resiliency, air entering the bellows through the check valve 100, the movement of the bellows being in the direction of the arrow B in Fig. 2.

The parts now are in the position of Fig. 8, the panel 29 being opened. Should the operator wish to close the panel 29, he clinches his jaws again, the bellows 23 being compressed, and air being forced through the conduit 38 into the valve casing 35. The air passes around the valve 34 (Fig. 8) and through the conduit 44, into the cylinder 42, ahead of the piston 41. The piston 41 moves backwardly, and the air behind the piston is exhausted through the conduit 43, the valve casing 35 and the port 37 in the valve casing. When the piston 41 moves backwardly as aforesaid, the points 47 and 46 of connection between the spring 45 and the piston rod 40 and the valve rod 32, respectively, are shifted, so that the spring 45 assumes the position depicted in Fig. 6, whereupon the spring 45, acting compressively, will move the valve rod 32 in the direction of the arrow C of Fig. 6, the rack 33 on the valve rod cooperating with the gear member 30 of the shutter 29, to move the shutter to closed position with respect to the opening 11 in the hood 10.

The device is simple in construction and affords a means under the control of an operator whereby the shutter 29 may be moved positively and instantaneously to and from closed position. Especial attention is directed to the way in which the bellows 23 operates. It functions simply by clinching the jaws tightly together, there being no occasion for moving the head of the operator as a whole. Gravity is not depended upon to open or close the panel 29, the panel being practically counterpoised, as shown at 28. Since the panel 29 is counterpoised, the spring 45 may be light, and the cylinder 42 and the valve casing 35 may be small, the entire operative structure being light and being capable of being operated by a small amount of air pressure.

Having thus described the invention, what is claimed is:

1. In a device of the class described, a frame, a hood carried by the frame and having an opening, a pivotally mounted shutter controlling the opening, an air pump, means for mounting the air pump on the frame in such position that the air pump will be actuated when the lower jaw of the operator is closed with respect to the upper jaw, mechanism for moving the shutter to and from closed position with respect to the opening of the hood, and means actuated by the pump for operating said mechanism.

2. In a device of the class described, a frame, a hood carried by the frame and having an opening, a pivotally mounted shutter controlling the opening, an air pump, means for mounting the air pump on the frame for vertical adjustment, thereby to locate the pump properly with respect to the lower jaw of the wearer, mechanism for moving the shutter to and from closed position with respect to the opening of the hood, and air pressure means actuated by the pump for operating said mechanism.

3. A device of the class described, constructed as set forth in claim 1, and wherein the pump is located in a substantially horizontal position, whereby it may be actuated by an outward movement of the tissues of the face of an operator, when his jaws are closed tightly together.

4. In a device of the class described, a frame, a hood carried by the frame and having an opening, a movable shutter controlling the opening, arms pivoted to the upper portion of the frame, an air pump so located that it will be actuated when the jaws of the wearer are closed, a cheek pad disposed opposite to the air pump, means for mounting the air pump and the cheek pad, each, on one arm for vertical adjustment, means for moving the arms to adjust the positions of the pump and the cheek pad horizontally, mechanism for moving the shutter to and from closed position with respect to the opening of the hood, and air pressure means actuated by the pump for operating said mechanism.

5. In a device of the class described, a frame, a hood carried by the frame and having an open-

ing, a pivotally mounted shutter controlling the opening, an air pump, means for mounting the air pump on the frame in such position that the air pump will be actuated when the lower jaw of the operator is closed with respect to the upper jaw; a cylinder carried by the frame; a piston slidable in the cylinder, a piston rod connected to the piston, a casing carried by the frame, a conduit connecting the forward end of the casing with the rear end of the cylinder, a conduit connecting the rear end of the casing with the forward end of the cylinder, a valve slidable in the casing and controlling the conduits, a conduit leading from the air pump to the casing, a valve rod connected to the valve and having means for operating the shutter, and a compression spring having its ends attached to the valve rod and to the piston rod.

6. In a device of the class described, a frame shaped to fit the head of a wearer, a hood carried by the frame and having an opening, a pivotally mounted shutter controlling the opening, members carried by the frame for approximately parallel movement, a compression spring connecting said members, means for operatively connecting one of said members with the shutter to open and close the shutter, and means operated by the jaw of the wearer for shifting the points of connection between said members and spring, whereby the spring will open the shutter or close the shutter at the will of an operator.

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