Feb. 13, 1940. R. E. LOCHER 2,190,074

WELDER'S HELMET

Filed Nov. 9, 1938

FIG. 1.

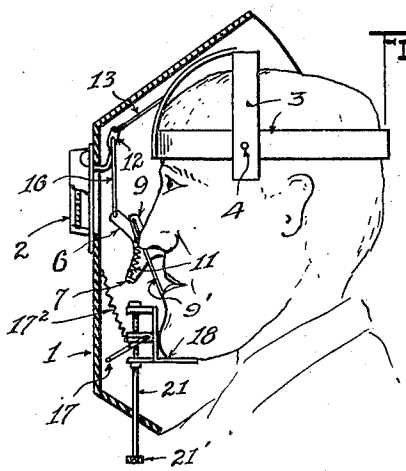


FIG. 2.

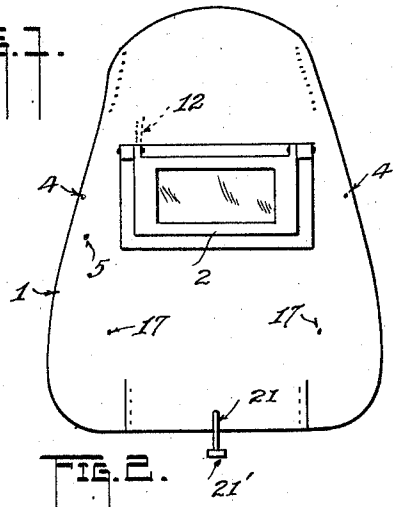


FIG. 3.

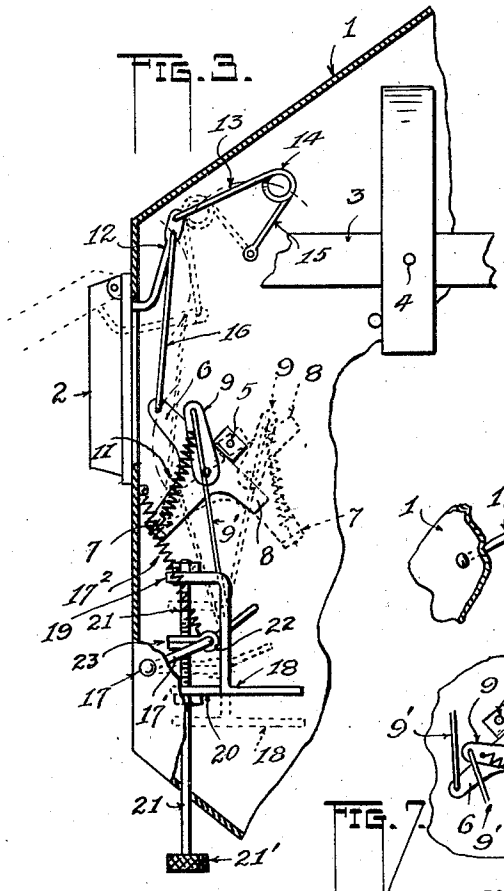


FIG. 5.

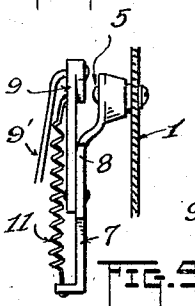


FIG. 5.



FIG. 4.

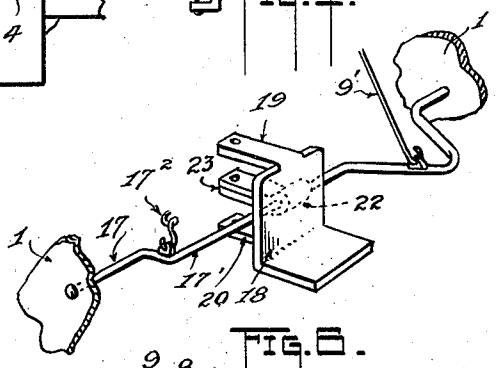


FIG. 6.

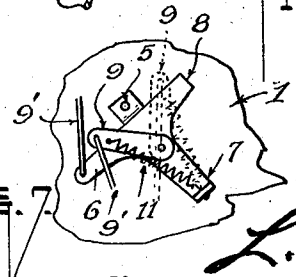


FIG. 7.

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WELDER'S HELMET

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Application November 9, 1938, Serial No. 239,602

6 Claims. (Cl. 2—8)

This invention pertains to welder's hoods or helmets wherein a structure is employed to operate the usual hinged window of such helmet by means of the operator's lower jaw, or chin.

It is old to thus operate or control the window but herein I provide a new and novel means for so doing in a more positive manner.

An object of the invention, therefore, is to furnish a new form of operating mechanism of simple type by which the window is easily and positively opened and closed and positively held in either extreme position.

Another object lies in providing a chin operated part that is readily adjustable in order to suit the needs and desires of the user of the helmet.

Still another object is to extend an adjusting control member through and outside the helmet body for operating such part whereby to be within easy reach of the operator by which he may quickly provide for the most convenient location of the chin operated part to his particular needs. Other objects and advantages will be brought out in the following description of the construction and operation of my improved helmet parts.

To the end that the invention will be clearly understood, the appended drawing is provided wherein:

Figure 1 is a side elevation in longitudinal section of the helmet of my invention;

Figure 2 is a front elevation of the same;

Figure 3 is similar to Figure 1, but on a much larger scale, showing the mechanism of the helmet;

Figure 4 is a side elevation of the part of the mechanism shown in Figure 3 but on a slightly larger scale;

Figure 5 is a rear elevation of part of what is illustrated in Figure 4;

Figure 6 illustrates in perspective a crank shaft and certain parts shown in Figure 3, and

Figure 7 is a front elevation of a structure appearing in Figure 3 but in a different position of adjustment from that in said figure.

In the first three figures 1 designates any usual body portion comprising the hood or helmet, 2 indicating the customary hingedly mounted window, while 3 is the head-band pivoted at the point 4 upon the sides of the said body portion 1 in any usual way.

Pivotally mounted on a side portion of the body at 5 is a swingable member or lever of a single part which in the present instance comprising, for descriptive purpose, three arm extensions 6, 7 and 8, see Figures 3, 4 and 7, the pivot at 5 lying substantially midway between the arm extensions 6 and 8 and in line with the arm extension 7.

Pivoted to the member or lever thus identified at substantially its middle is one end of a lever-arm 9 free to swing between limits, as will appear, an abutment 10 on the rear side of said arm 9, Figure 5, serving to engage upon the top edge of the arm extensions 6 and 8 as better understood by a study of Figure 7, a coil spring 11 extending between the free end of said arm and the extremity of the arm extension 7 and connected at its ends to each.

Affixed to the inner side of the window 2 is an arm 12. This arm extends upwardly inside the body 1 and to whose free end is freely attached an arm 13 of a coil spring 14, another arm 15 of the latter being pivotal in any desired manner to an adjacent wall of the said body 1, the coil of said spring being free to swing in an arcuate path about the place of pivotal attachment of said arm 15, see dotted lines in Figure 3. Loosely attached to the said free end of the arm 12 is a rod 16 whose other end is likewise attached to the arm extension 6 of the lever previously mentioned.

Below the position of the latter in this instance is a part taking the form of a crank shaft 17, Figure 6, journaled at its ends in the side portions of the body 1, the main portion 17' of said shaft being offset from the pivotally supported ends as shown in Figures 3 and 6. Normally the crank-shaft is held in a raised position, or about as shown in Figure 3, by a coil spring 17^2 connected to an arm of said shaft, see Figure 6, and connected also to the body 1, for example, the limit of the raised positions being set due to a rod 9' connected to and between the described arm 9 and an arm of said crank-shaft, the extent of action of said spring being limited by such rod and arm connection, and due also to the connection of the levers 6, 7, 8 and the rod 16 at the arm 12 of the window. Midway the length of the crank shaft is a member 18 in position to lie just beneath and to be engaged by the operator's chin, see Figure 1.

Said member 18 includes two spaced arm extensions 19 and 20 at its forward side through which extends, vertically, a portion, such, for example, as a thread bar 21, whose lower extremity extends through the lower wall of the helmet and which is provided with a convenient knob 21' by which to rotate the said thread bar, there being any suitable provision for preventing the latter having endwise movement through said

extensions 19 and 20. Between the said extensions is a part 22 engaging freely about the shaft portion 17', an arm 23 of said part having a threaded hole to receive the said thread bar. Due to the fact that the spring 17^2 has control of the crank-shaft and holds the same normally in a raised fixed position it is clear that as the thread bar is turned in one direction or the other the chin member 18 will be raised or lowered with respect to the said shaft portion 17' whereby a change in the distance between said member 18 and the head-band 3 is effected.

When the window is closed as shown in Figures 1 and 2 the parts described have the positions relative to each other as shown in continuous lines, it being noted that due to the pull of the spring 17^2 the abutment 10 of the arm 9 of Figure 5 is made to lie upon the arm extension 6.

When the operator depresses the member 18 by lowering his chin or jaw the pull of the spring 17^2 is overcome as the shaft 17 is rocked, and through the pull on the rod 9' the lever 6, 7, 8 is swung to the left on its pivot to take up the broken line position in Figure 3 which corresponds also with the position shown in Figure 7.

In this action the rod 16 is drawn downward to thus swing the window to open position, the coil spring 14 at this time swinging about the pivoted end of its arm 15 meanwhile exerting its force in its tendency to spread apart its arms 13—15; such tendency at once serving to hold the window open, as was its tendency, previously, to maintain the latter in its closed position. Chin pressure having been removed from the member 18 the window remains open, therefore, the shaft 17 regaining its normal raised position with which action the rod 9' together with the spring 11 throws the lever-arm 9 from the arm extension 6 over upon the arm extension 8, Figure 7, whereupon a succeeding lowering of the member 18 swings the lever 6, 7, 8 to the right, or back to normal, to close the window.

Naturally, the two movements to open and close the window occasion the swing of the lever-arm 9 to opposite sides of the pivot 5 of the said lever 6, 7, 8, the other described parts being so coordinated therewith as to bring about the desired end.

The adjustability of the chin member 18 is quite important. This is due to the fact that not all operators place the head-band in the same way upon the head so that said head-band may be higher or lower on the head. Too, heads vary in length of measurement in individuals, requiring some such adjustment as provided for herein in order that the lowered jaw or chin may perform its service in the best and easiest manner possible.

Important, also, is the provision for adjustment of the member 18 from a position outside the helmet by means of the knot 21', for example, since thereby such adjustments may be made without requiring the finger or hand to be placed inside the helmet at great inconvenience, and the attendant chance of disarranging the set or position of the helmet on the head. The desired adjustments may be made while the chin and member 18 are in exact comfortable and satisfactory relation since to raise the helmet on the pivot of the head band 3 for adjustment purpose would at once destroy the exact desired relation and fitting of the chin and the member.

In some of the claims that part of arm of the crank-shaft to which the rod 9' is attached will be referred to as a "rockable arm" in the interest of brevity.

I claim:

1. In a helmet for the purpose described, the combination with the helmet body and a hinged window therefor having an arm fixed with respect thereto, of a U-shaped spring the arms of which normally tend to spread, the extremity of one of said arms having a pivoted mounting on said body and adapted to swing about such mounting, the other arm being pivotally connected directly with said arm of the window and swingable with the latter to either of the window positions in the swing of the entire spring about said mounting of the first named arm thereof, and means connected to a part of the named structure for positively swinging the window in either direction.

2. In a helmet for the purpose described, the combination with the helmet body and a hinged window therefor having an arm fixed with respect thereto, of a U-shaped spring the arms of which normally tend to spread, the extremity of one of said arms being pivotally mounted on said body, the other arm being pivotally connected to the said arm of the window and swingable about the mounting of said spring while acting to maintain the window in either of its extreme positions, a member pivoted between its ends on the body, a rod connected to and between one extremity of the member and part of the described structure, and a lever-arm pivotally mounted including an abutment adapted in the swing thereof to engage the member at either side of the pivot thereof for rocking said member on its pivot, and means for manually operating said rod when the helmet is in position of the head of the wearer.

3. In a helmet for the purpose described, the combination with the helmet body and a hinged window therefor having an arm fixed with respect thereto, of a U-shaped spring the arms of which normally tend to spread, the extremity of one of said arms being pivotally mounted on said body, the other arm being pivotally connected to the said arm of the window and swingable about the mounting of the spring while acting to swing the window toward either of its extreme positions, a member pivoted between its ends on the body, a rod connected to and between one extremity of the member and a part of the described structure, and a lever-arm pivotally mounted on the said member between the extremities thereof and including an abutment adapted in a swing of said lever arm to engage either extension of said member for rocking latter on its pivot, and means for manually operating said rod when the helmet is in position of the head of the wearer.

4. In a helmet for the purpose described, the combination with the helmet body and a hinged window therefor having an arm fixed with respect thereto, of a U-shaped spring the arms of which normally tend to spread, the extremity of one of said arms being pivotally mounted on said body, the other arm being pivotally connected to the said arm of the window and swingable about the mounting of the spring while acting to swing the window toward either of its extreme positions, a member pivoted between its ends on the body adapted for swinging movement, a rod connected to and between one end of the member and part of the previously named structure, a swingable lever-arm pivoted on the member between the said ends thereof and including an

abutment to engage the said member at either side of its pivot, elastic means connected to and between the member and said lever-arm adapted to swing the latter with respect to said member in a swing of the same, a manually operated member, and a rod connected to and between the latter and the said lever-arm.

5. The invention according to claim 4 including a spring in control of the said manually operated member to urge it toward the named member.

6. In a welder's helmet, in combination with the body thereof and a hinged window having an arm, of a rod connected to the arm, means to shift the rod in two directions for opening and closing the window, a second means to rock the first said means, a cranked shaft journaled on the body, an arm carried by a crank portion of the shaft, said crank portion being free to turn therein, a thread-bar having threaded engagement with the arm, a member in which the thread-bar is journaled, said thread-bar adapted to shift the member with respect to the arm, and a rod connecting a crank portion of the shaft with the named second means.

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