

No. 616,409.

Patented Dec. 20, 1898.

W. K. CRAWFORD.
DIVING APPARATUS.

(Application filed Aug. 24, 1898.)

(No Model.)

Fig. 1.

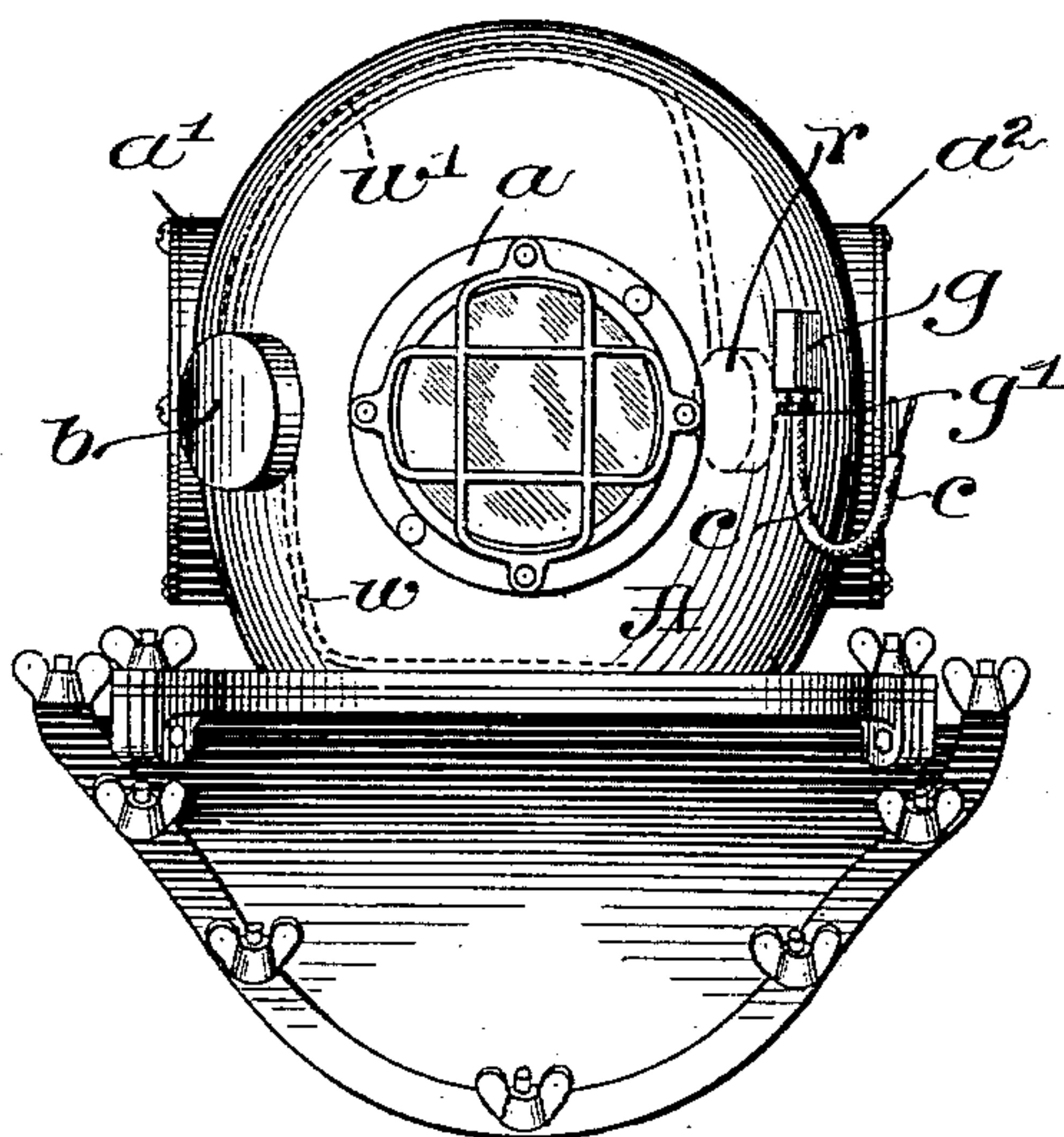


Fig. 2.

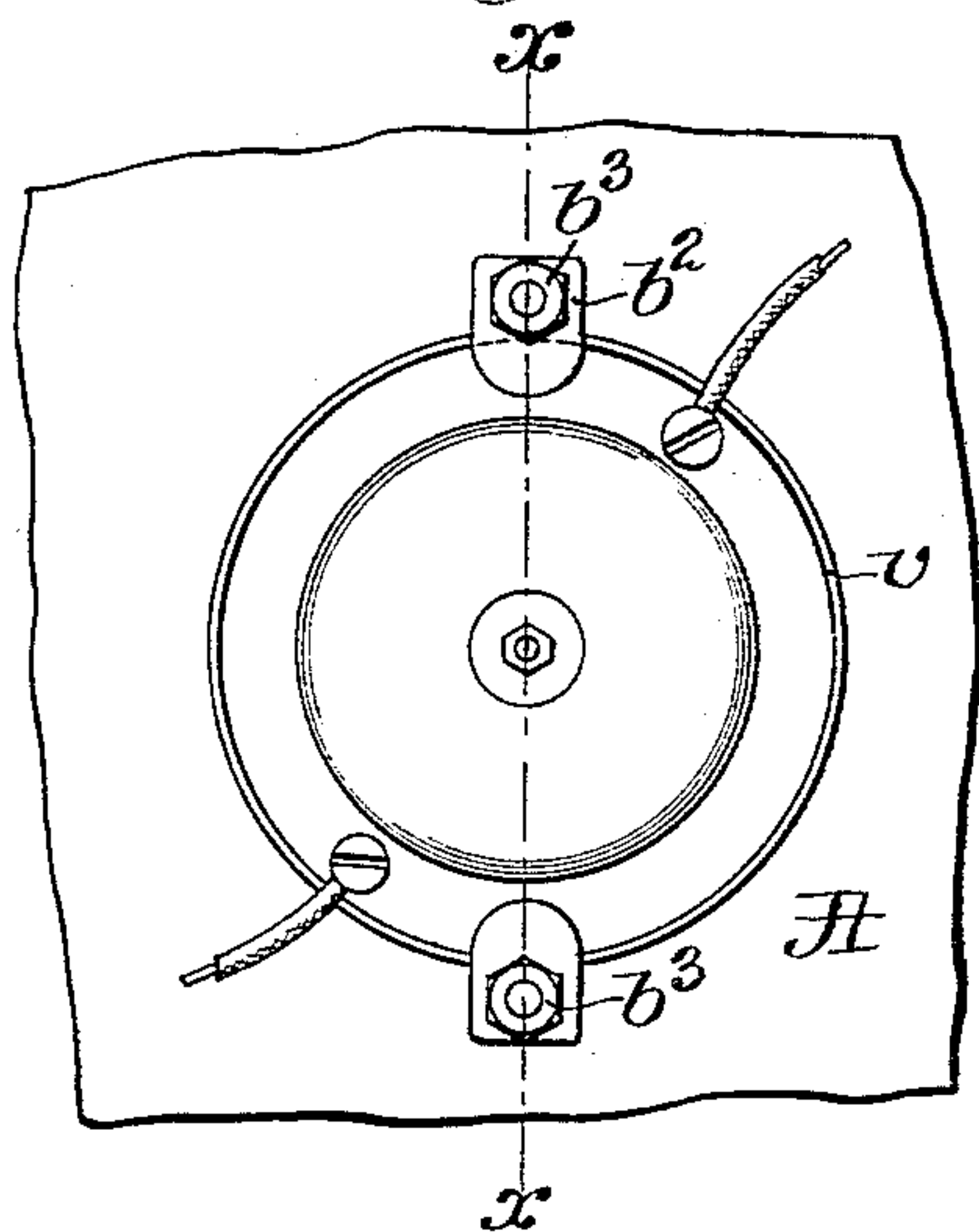
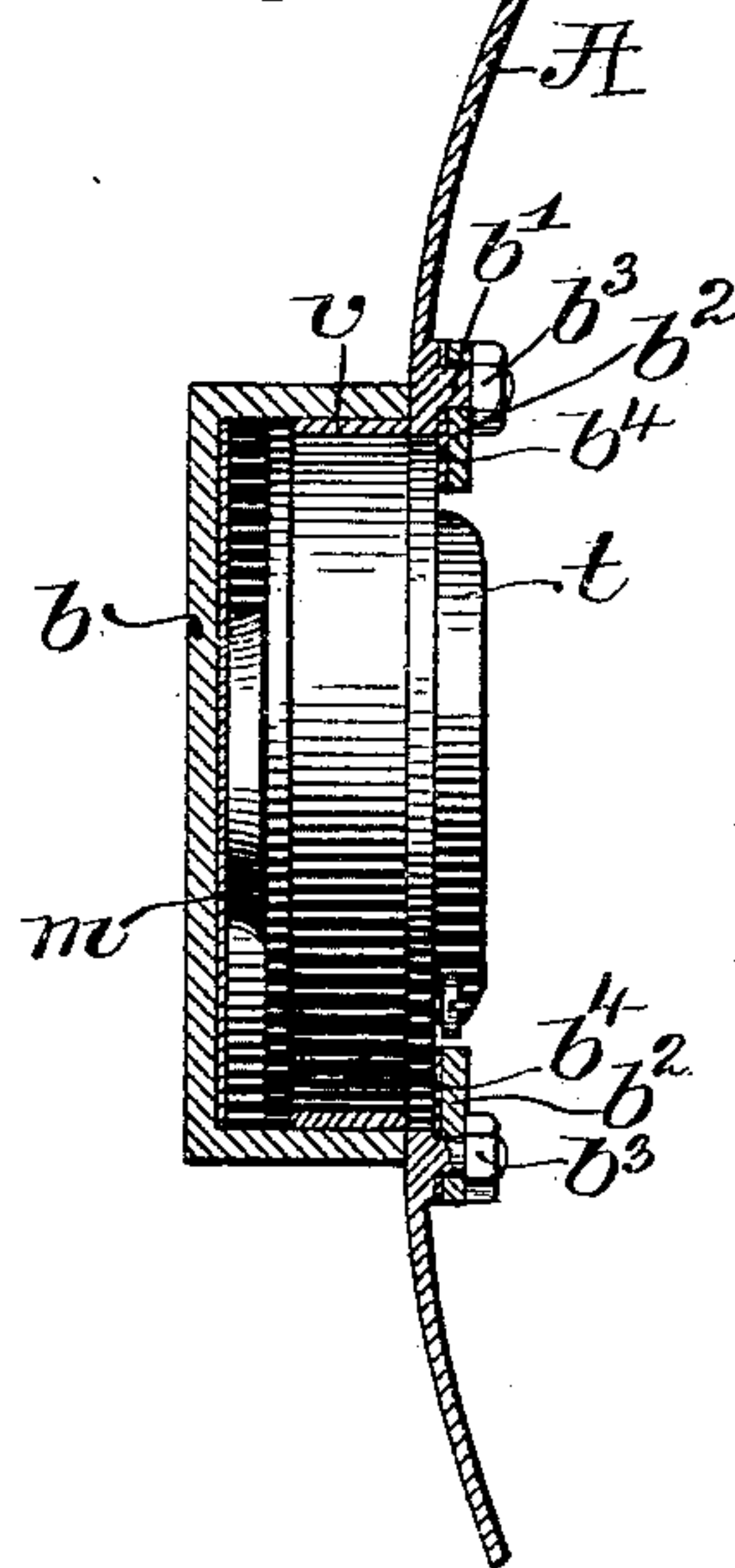


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM K. CRAWFORD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO
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DIVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 616,409, dated December 20, 1898.

Application filed August 24, 1898. Serial No. 689,374. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM K. CRAWFORD, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Diving Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is an improvement in connection with submarine telephones, and relates particularly to a diver's helmet, whereby I provide an improved telephonic means of communication between the diver and the attendants at the surface.

Heretofore it has been customary in the most improved divers' helmets to provide an ordinary telephone receiver and transmitter simply by fastening them on the inside of the helmet, increasing the size of the helmet sufficiently to permit of such attachment. The result is, however, that when the telephone instruments are thus secured they greatly restrict the movements of the diver and also increase the size and weight of the helmet to such an extent that his activity is materially hampered. Accordingly I have devised an improved helmet which need not be larger or heavier than the usual helmet and which does not in the least incommode the diver, my invention consisting in providing a closed pocket projecting from the helmet at one side of the face-plate, which constitutes the front sight-opening, said pocket containing the transmitter, and the wires from the latter leading to the opposite side of the helmet, where the receiver is located and where all the wires are conducted through a gland to the outside.

In the drawings, Figure 1 represents my improved helmet in front elevation. Fig. 2 is an enlarged view in elevation looking from the inside of the helmet and showing the transmitter in place. Fig. 3 is a central vertical section of Fig. 2.

The helmet A is of usual construction, and hence need not be herein described in detail. It has a face-plate *a*, with usual sight-openings, through which the diver may look forward, and side sight-openings *a'* *a''*, through which the diver may look at either side, as required, simply by turning his head in the helmet in usual manner.

At one side of the sight-opening *a*, herein shown as at the left-hand side thereof viewing Fig. 1, I provide a pocket *b*, shown in enlarged elevation and section in Figs. 2 and 3, where it will be seen that it extends flush with the inner side of the helmet and projects therefrom practically integrally therewith, so as to form a protuberance, with a cavity opening inwardly, accessible to the diver within the helmet. This cavity is of a size to contain snugly therein a transmitter *t*. Between the transmitter and the back of the pocket *b* I interpose a sheet of mica *m*, and also surround the transmitter with a band of insulating substance, such as a strip of vulcanite or fiber *v*.

At the inner edge of the cavity or pocket *b* I provide suitable locking devices, herein shown as comprising studs *b'*, on which are pivoted buttons *b''*, clamped in place by nuts *b'''* and having on their under sides an insulating covering *b''''*, preferably of mica.

The wires from the transmitter are led preferably in opposite directions, as indicated at *w w'*, to a gland *g*, provided with a tightening-nut *g'*, and thence the wires pass by a cable *c* to the surface in usual manner.

I have indicated the receiver *r* located at the rear, as a diver naturally carries his head forward; but inasmuch as the receiver and gland *g* do not constitute a part of my present invention I have not deemed it important to show the details thereof.

In practice the transmitter *t* is placed against the sheet of mica *m* and surrounded by the strip *v*, whereupon the buttons or other securing devices *b''* are turned down, as shown in the figures, so as to bring their mica covering *b''''* against the transmitter, and then they are locked in place by the tightening of the nuts *b'''*.

From the construction above described it will be evident that moisture cannot possibly get access to or find lodgment in the pocket *b*, inasmuch as it is entirely closed from the outside, being practically or, if desired, actually integral with the body of the helmet. Also because of its location the transmitter is accessible to the diver practically without changing his position, it being necessary merely to turn the head very slightly to the

diver's right in order to talk through the telephone, so that if the diver should inadvertently get in a cramped position he will have no difficulty in communicating with those at
5 the surface. The greatest advantage, however, of my invention resides in the fact that the diver can move his head freely without any danger whatever of injuring the transmitter or injuring himself by contact there-
10 with. This is an advantage of very great importance in the practical work of diving, inasmuch as the conditions and situations in which a diver is placed in the water at considerable depth are such that this conven-
15 ience enables him to prosecute his work with very much greater facility and rapidity than were possible with the former constructions of diver's helmet.

Having described my invention, what I
20 claim as new, and desire to secure by Letters Patent, is—

1. The combination with a diver's helmet, of a pocket projecting outwardly therefrom and secured substantially integrally there-
25 with at one side of the front sight-opening thereof, said pocket having a form and size adapted to receive a telephone-transmitter snugly therein, and means for removably locking the transmitter in place substantially
30 flush with the inside of the helmet, substantially as described.

2. In a diver's helmet, a pocket projecting from the body of the helmet and secured substantially integrally thereto, studs at the inner edge of said pocket, buttons pivotally mounted on said studs, and provided with an insulating covering or surface on the side next said pocket, combined with a transmitter occupying said pocket and having a layer of insulating material surrounding the transmitter and between it and the sides of said pocket, substantially as described.

3. The combination with a diver's helmet, of a pocket projecting therefrom and secured substantially integrally thereto at one side of the front sight-opening, a gland secured to the helmet at the opposite side of said sight-opening, a transmitter secured within said pocket and having its inner face substantially flush with the inner wall of the helmet, wires from said transmitter led within the helmet around the walls thereof to said gland and thence outwardly through the latter, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM K. CRAWFORD.

Witnesses:

GEO. H. MAXWELL,
JOHN C. EDWARDS.