

No. 767,098.

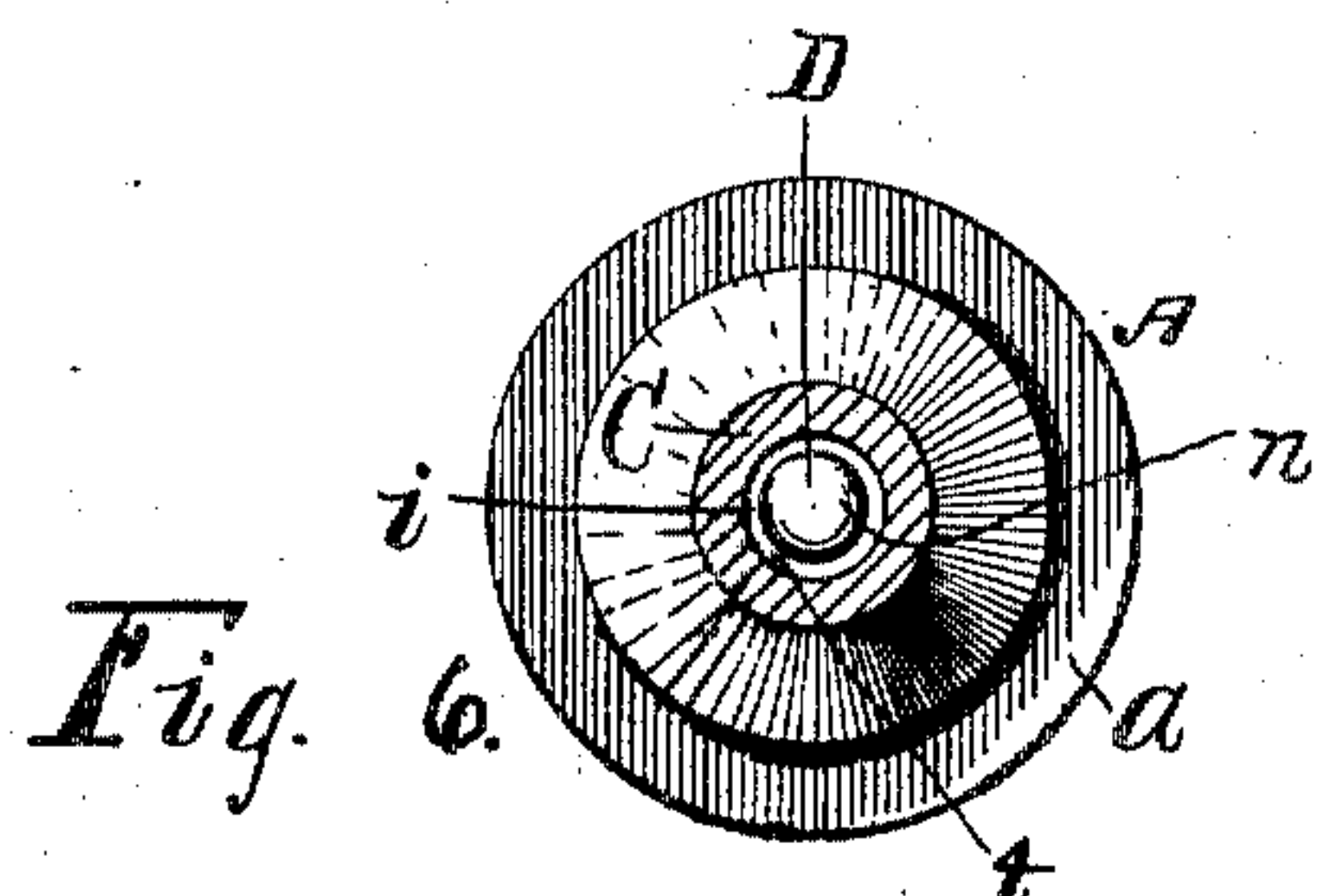
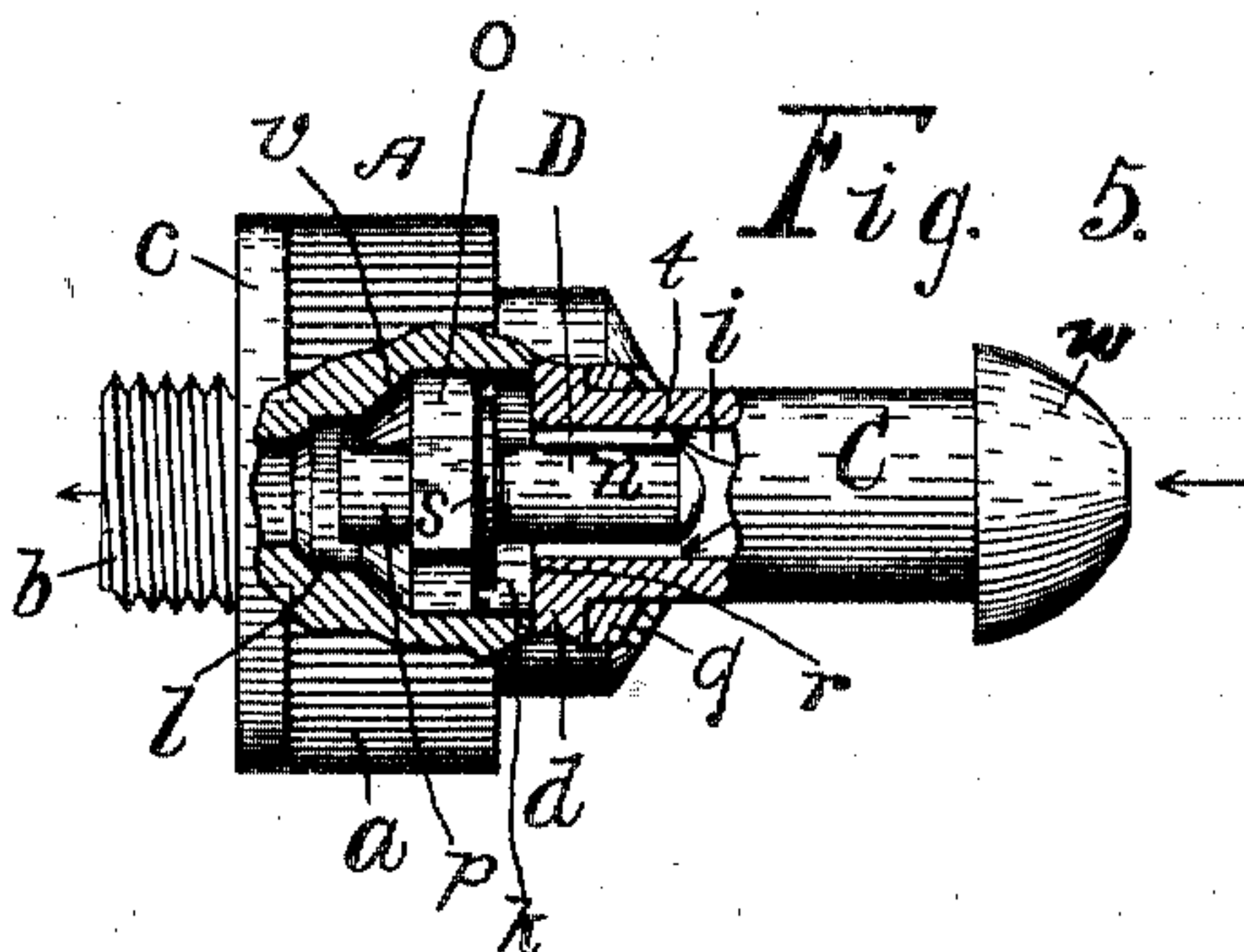
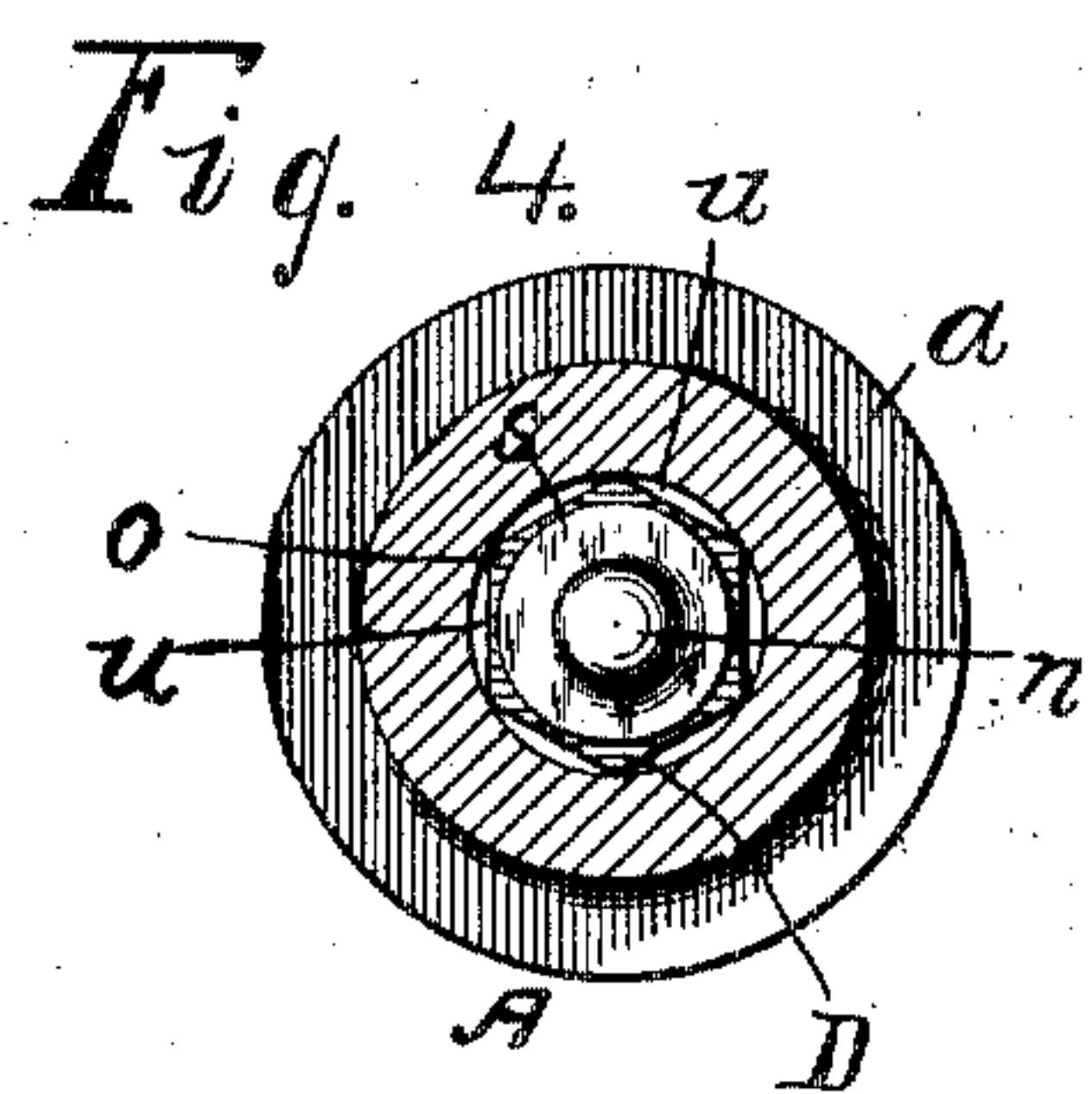
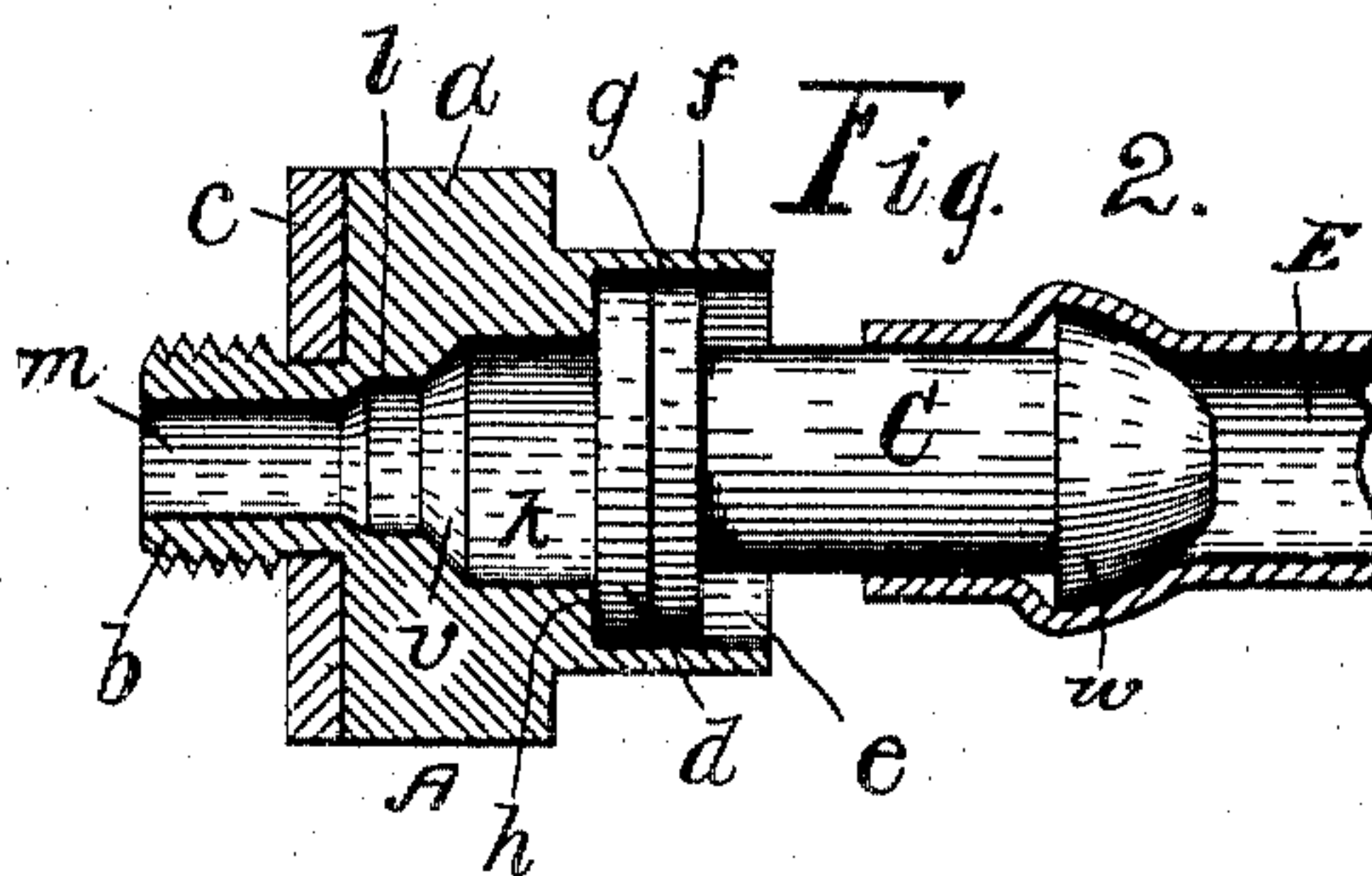
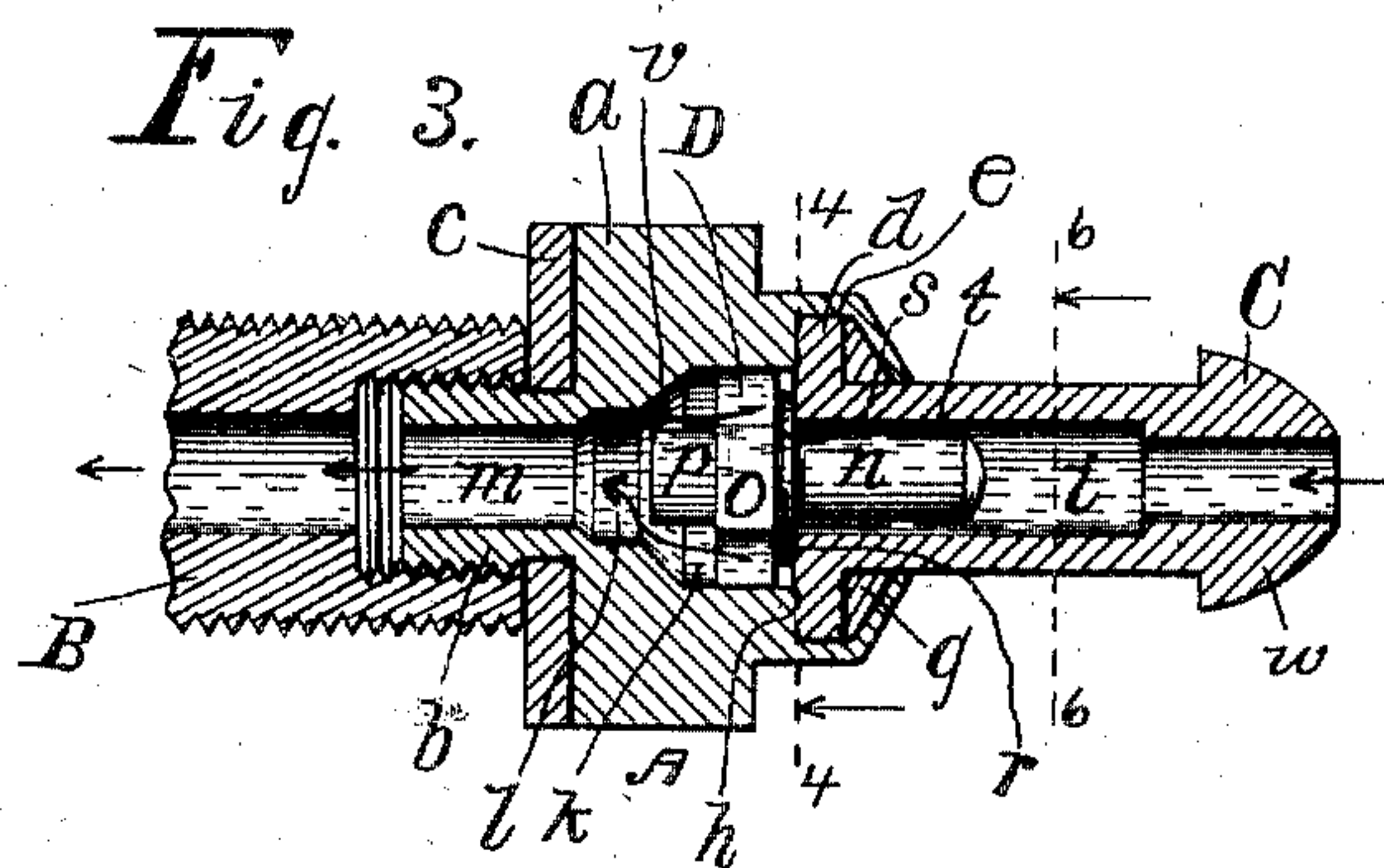
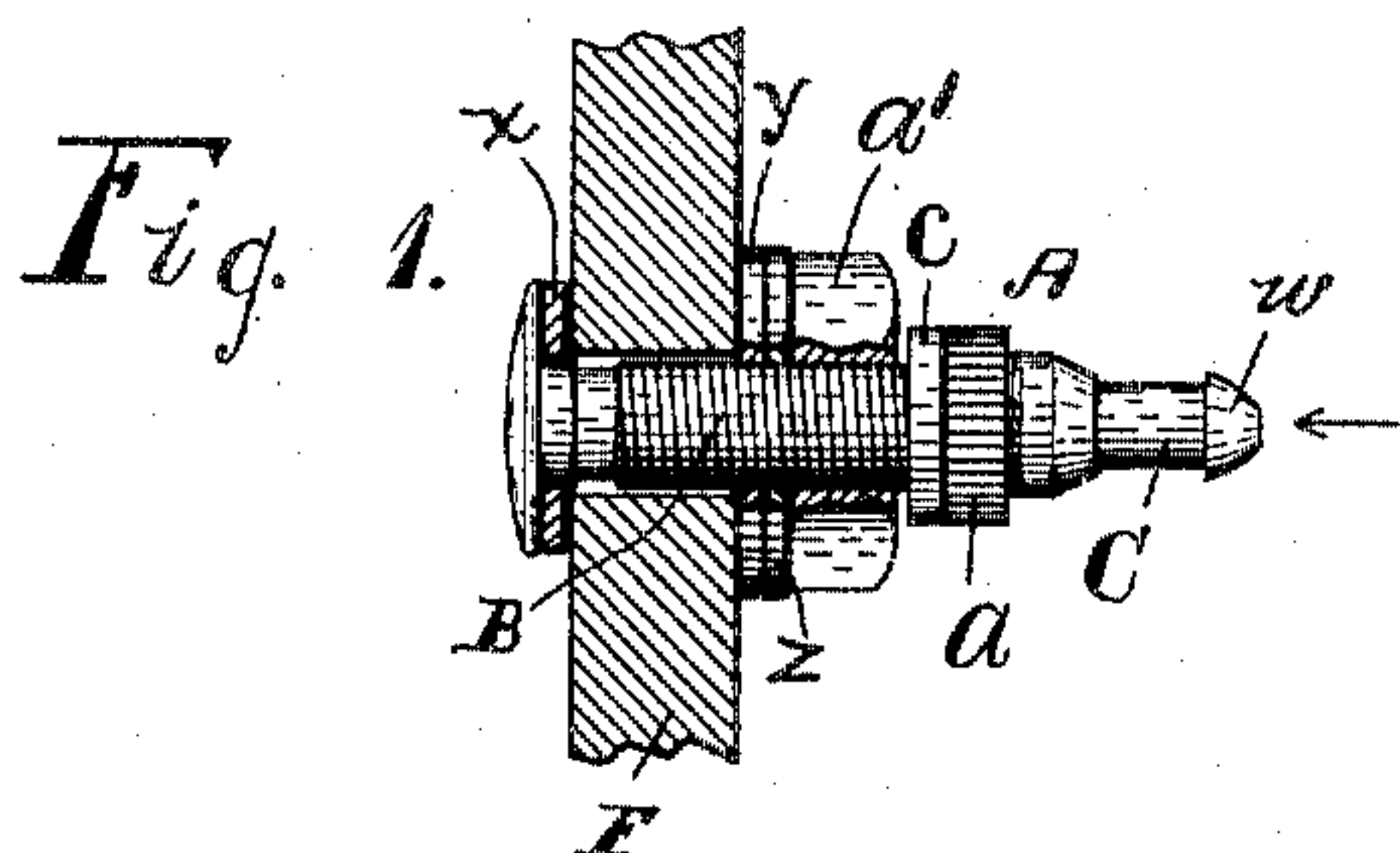
PATENTED AUG. 9, 1904.

C. H. BELDEN.

AIR VALVE.

APPLICATION FILED NOV. 18, 1903.

NO MODEL.



Attest:  
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# UNITED STATES PATENT OFFICE.

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## AIR-VALVE.

SPECIFICATION forming part of Letters Patent No. 767,098, dated August 9, 1904.

Application filed November 18, 1903. Serial No. 181,679. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. BELDEN, of Clifton Springs, in the county of Ontario and State of New York, have invented a new and  
5 useful Improvement in Air-Valves, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention is an air-valve, designed for  
10 use in inflating air-inclosures generally, but more particularly for filling and inflating storage air-tanks for general use.

The invention comprises a hollow body-piece with reduced threaded end to screw into  
15 a socket or other part connected with the air tank or inclosure. To the body-piece is attached coaxially a swivel-nipple to which to connect the hose leading from the air-pump, the nipple being free to turn upon its axis  
20 independent of the holding body-piece. A check-valve is employed, partly within the body-piece and partly in the nipple, to act against the latter, to form an air-tight joint in the matter of holding the compressed air  
25 in the tank.

Other objects and advantages of the invention will be brought out and made to appear in the following description, reference being had to the accompanying drawings, forming a part  
30 of this specification.

Figure 1 is a side elevation of my improved receiving air-valve and associated socket. Fig. 2 is a longitudinal axial section of the body of the device, showing the latter before  
35 the thin shell or wall of the nipple-chamber is spun down to inclose the flange of the nipple, the latter appearing in elevation and the valve being omitted. Fig. 3 is a longitudinal axial section of the device, showing  
40 the interior construction. Fig. 4 is a transverse section of the body-piece, taken on the dotted line 4 4 in Fig. 3. Fig. 5 is a side elevation of the device with parts broken out and axially sectioned, showing the check-valve  
45 open. Fig. 6 is a transverse section of the nipple on the dotted line 6 6 in Fig. 3, further

showing the annular air-space around the stem of the valve. Fig. 1 is drawn to a scale one-third that of the remaining figures.

In the drawings, A is the main part or body  
50 of the device, it being cylindrical in form, with the part *a* of largest diameter knurled on its convex surface. The body A is formed with a reduced coaxial threaded part *b* to screw into a threaded socket or short tube B,  
55 a packing-ring *c*, of fibrous material, being interposed between the parts A and B. The body A is formed with a series of coaxial cavities *e*, *k*, *v*, *l*, and *m*, Fig. 2, in a line and together forming a continuous opening  
60 through said body-piece from end to end. These cavities are of different diameters and all cylindrical, except the cavity *v*, which is flaring or conical and connects the cavity or  
65 chamber *k* with the smaller chamber *l*, as shown. The first and largest cavity or nipple-chamber *e* is surrounded by a thin cylindrical wall or shell *f*, primarily made straight or truly longitudinal, as shown in Fig. 2, but  
70 subsequently bent inward, as shown in Figs. 1 and 3.

C is a cylindrical nipple for the device, formed with a head *w* for receiving and holding the hose E for the inflowing current of  
75 air, said nipple having a flange or ring *d* at its base. In constructing the device the flanged base of the nipple is inserted in the chamber *e* and seated against a shoulder *h* of the body-piece A, the latter and the nipple being co-  
80 axial. The shoulder *h* constitutes the bottom of the cavity or chamber *e* and is adjacent to the cavity *k* and in a plane at right angles with the axis of the nipple. The nipple is provided with a ring *g*, of yielding packing,  
85 adjacent to the flange *d* and inserted in the cavity *e*, as stated, the projecting end of the thin shell *f* being bent or turned down upon the ring of packing by the process of spinning to inclose and firmly hold the base of the  
90 nipple, the spun part taking a conical form, as shown, and while the joint between the nipple and the body A is air-tight the nipple may



turn upon its axis in its seat in the body A, as by a swivel motion.

The nipple C is hollow, it having an enlarged chamber *i* extending upward from the base adjacent to the chamber *k* of the body A. Within the chamber *k* of the body is placed a longitudinally-movable valve D, having a stem *n* extending into the chamber *i* of the nipple, as shown. The main part *o* of the valve is usually made polygonal in form, preferably hexagonal, as shown in Figs. 3, 4, and 5, with sometimes a short rearward extension *p* into the minor chamber *l*. The valve D seats at *r* against the base of the nipple, there being usually employed a ring *s*, of packing material, on the stem of the valve to form an air-tight joint against the end of the nipple when the valve is forced outward by the air-pressure within the tank.

The valve D is shown in its closed position against the nipple in Fig. 3 and in its open position apart from the nipple and against the large end of the conical side or wall of the flaring chamber *v* of the body A in Fig. 5.

The stem *n* of the valve D is made considerably less in diameter than that of the chamber *i* in the nipple, leaving an annular space *t* around the stem, and when the valve is in its open position air forced by the pump into the nipple will flow inward along said annular space *t* into the chamber *k*. When the valve D is forced open or to the bottom of the chamber *k* by the intruding air from the pump, the polygonal part *o* will rest against the large end of the conical wall of the chamber *v*, as stated, and as the part *o* is not circular it will not fit said conical wall all around; but openings *u*, Fig. 4, for the passage of the air will be formed one at the inner end of each face of the part *o*. The aim in constructing the device is to so form the adjacent parts that when the valve is against said conical wall it shall not form a close joint with the wall; but openings shall be left beneath it through which the forced air may flow out of the body A and through the part B into the tank.

Usually the tube B is passed through a wall or side F, Fig. 1, of the air-tank, there being placed a packing-ring *x* under the head of the tube within the tank, as shown. Without the tank is a similar ring *y*, of packing, upon the tube and a metal washer *z*, the whole being pressed or held firmly together by a nut *a'*, threaded upon the tube, as shown, the threaded part *b* of the body-piece A being inserted in the projecting end of the tube, as previously stated.

The construction of this air-valve is such that it may be conveniently employed as a permanent terminal or tip for the india-rubber hose attached to and leading from the air-pump, this being a common use for the de-

vice. Thus employed it may be readily applied to use by turning or screwing its projecting threaded end *b* into a corresponding internally-threaded socket or part connected with the tank or other inclosure to be inflated, the swivel nature of the nipple C admitting of thus turning the body of the air-valve without twisting the hose.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An air-valve having a body-piece, a nipple held coaxially in the body-piece, the body and nipple having adjacent cavities, and a longitudinally-movable valve occupying said cavities, there being a passage for air through said nipple and the body-piece, the body-piece having a bendable portion engaging a part on said nipple to hold the same to the body-piece.

2. An air-valve having a body-piece, a flanged nipple held coaxially in said body-piece, the body and nipple having adjacent cavities, there being a passage for air through the body-piece and the nipple, a longitudinally-movable valve occupying said cavities, the body-piece having a bendable portion engaging over the flange of the nipple, and a beveled packing between the flange of the nipple and the bent-over part of the body-piece and forming a water-tight swiveled connection.

3. An air-valve comprising a cylindrical body-piece having an internal shoulder and a cylindrical cavity adjacent to the shoulder, a nipple having an axial cavity, with its base resting against said shoulder and held by the body-piece, a valve occupying both said cavities and adapted to move longitudinally therein, a conical cavity in the body-piece adjacent to said cylindrical cavity, the valve having a polygonal head adapted to meet the wall of said conical cavity.

4. An air-valve having a body-piece, a nipple having a cavity, seated against a shoulder of the body-piece and held by the latter, the body-piece having a cavity, and a valve in the cavity of the body-piece, a stem on the valve occupying the cavity in the nipple, the valve forming an air-tight joint with the base of the nipple, there being an annular space around the stem of the valve.

5. An air-valve comprising a cylindrical body-piece formed with a series of coaxial cavities in a line and forming a continuous opening through the body-piece, one of said cavities having a thin, flexible wall, a hollow nipple having a flanged base seated within said thin wall, the latter being bent inward to inclose said flanged base of the nipple, and a valve in the base-piece with a part occupying the space in said nipple.

6. An air-valve having a body-piece, a nipple held coaxially by the body-piece, there being a passage for air through both body-piece

and the nipple, a valve occupying cavities in  
both body-piece and the nipple, the nipple held  
in flexible bent-over portions of the body-piece  
and being seated in an enlarged cavity in the  
5 body-piece and free to turn on its bearings in  
the body-piece.

In witness whereof I have hereunto set my

hand, this 14th day of November, 1903, in the  
presence of two subscribing witnesses.

CHARLES H. BELDEN.

Witnesses:

ENOS B. WHITMORE,  
MINNIE SMITH.