

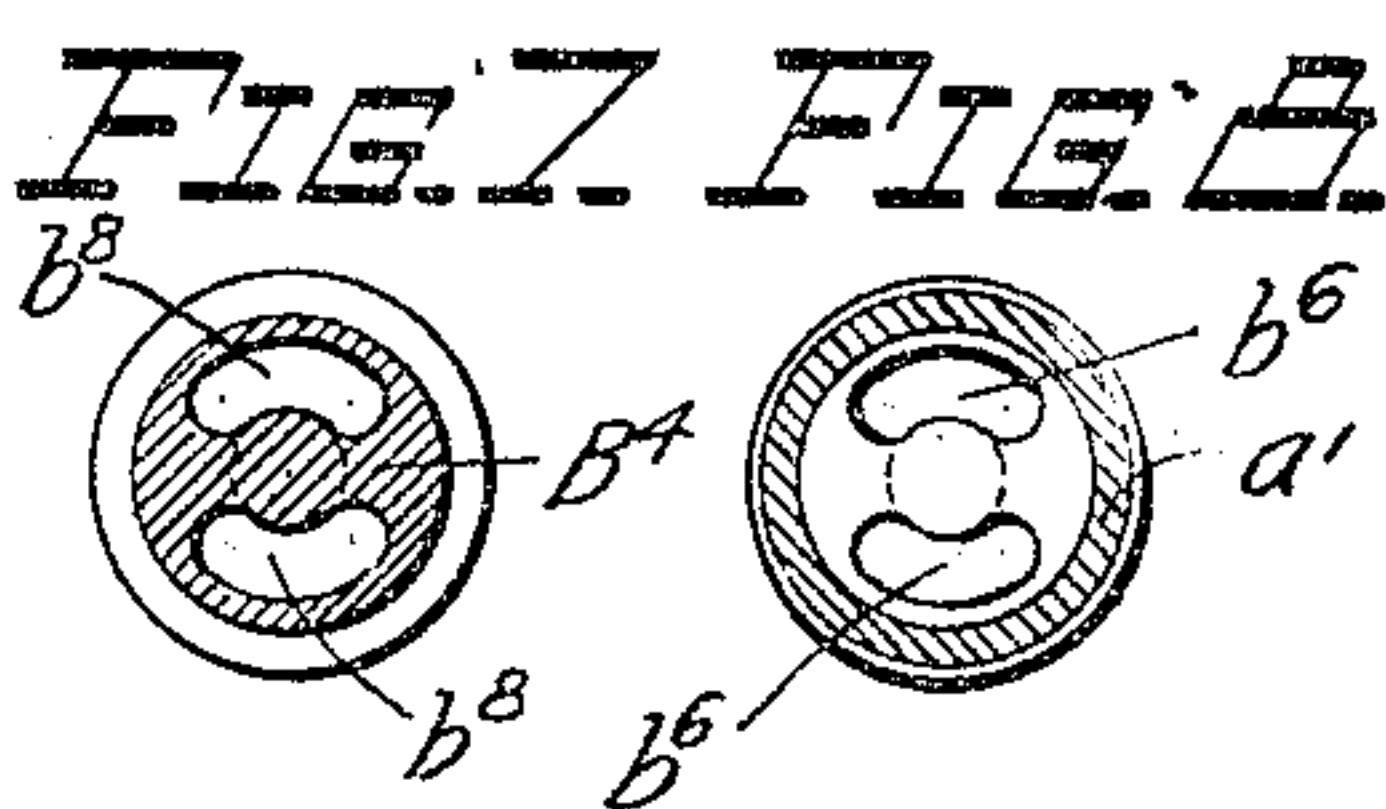
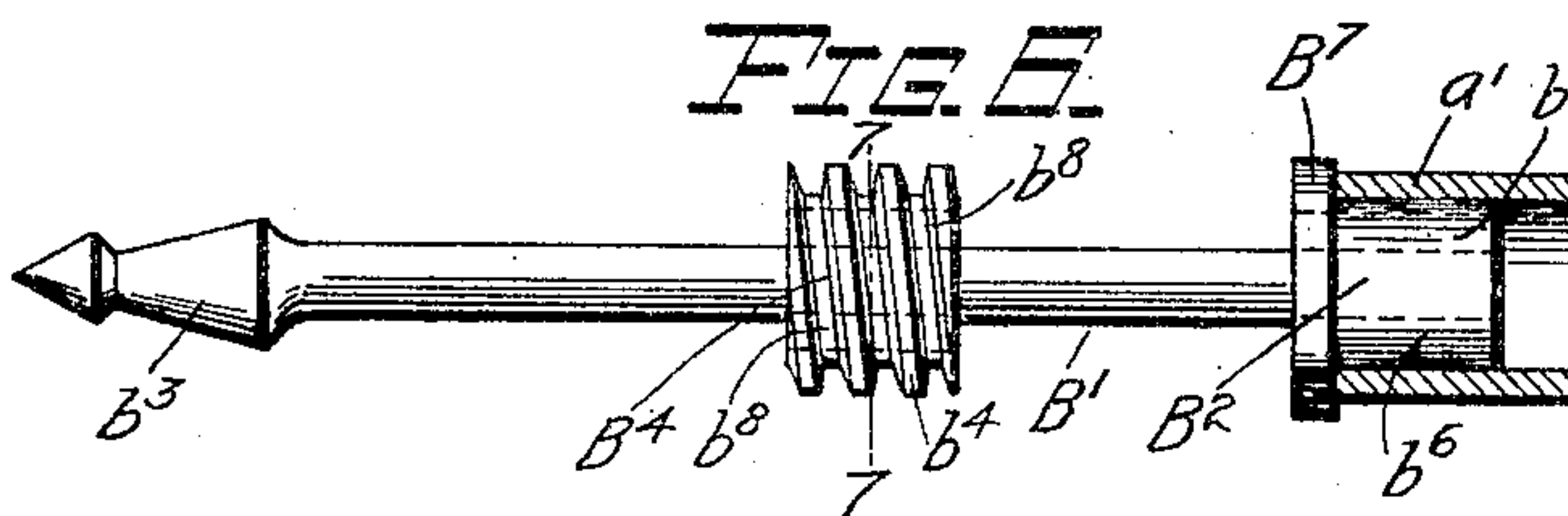
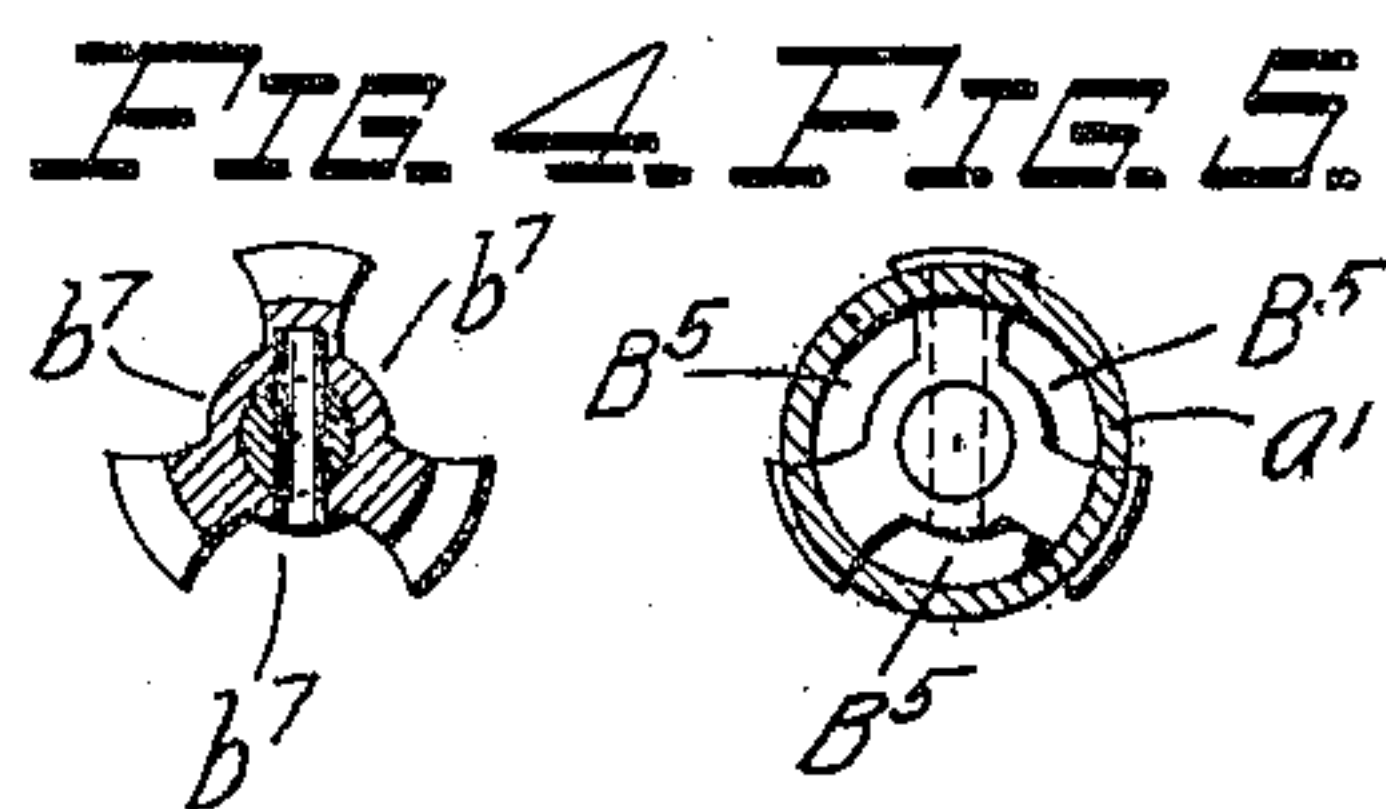
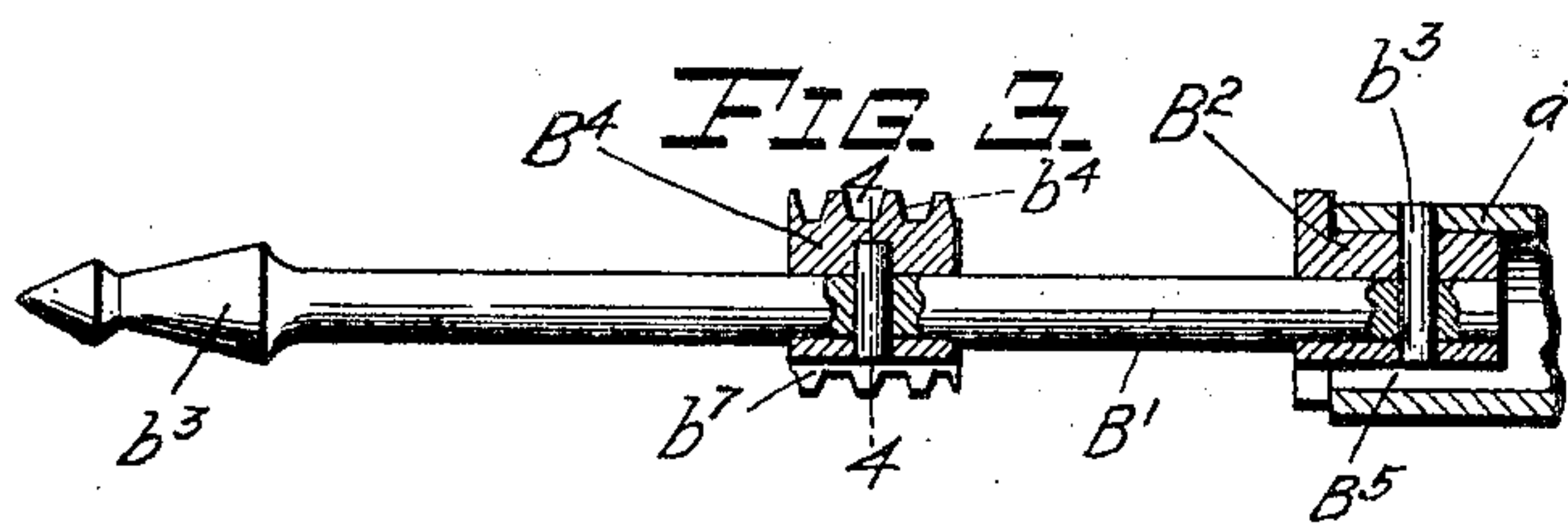
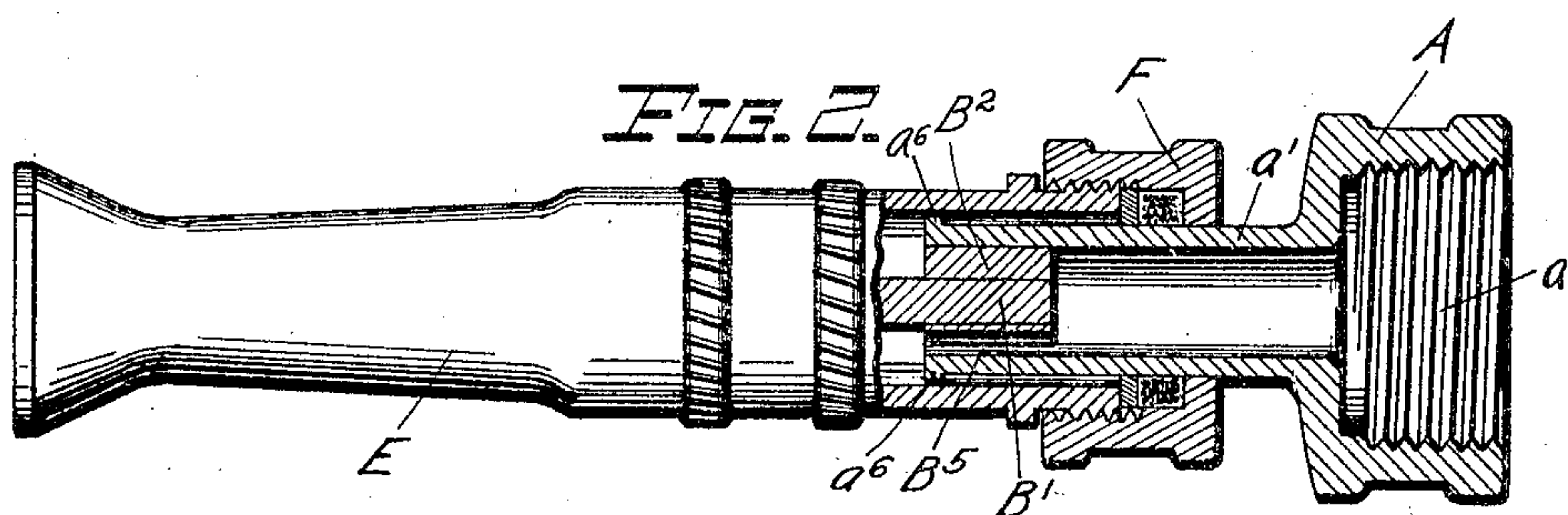
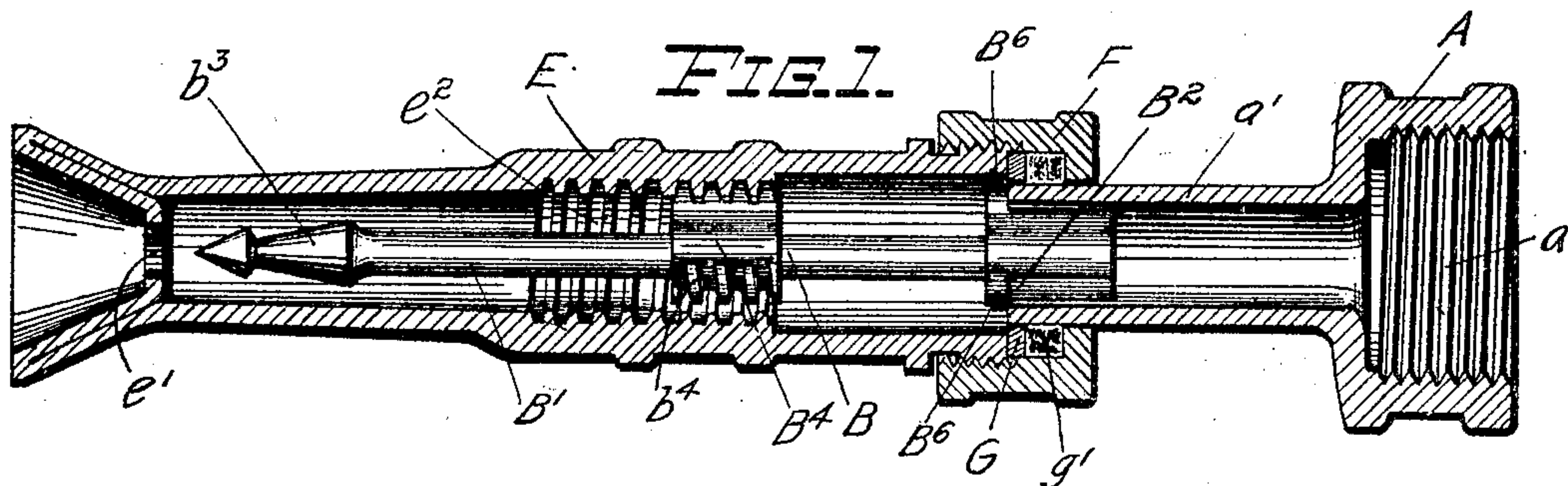
No. 797,927.

PATENTED AUG. 22, 1905.

F. L. TITSWORTH & H. B. SHERMAN.

NOZZLE.

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UNITED STATES PATENT OFFICE.

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NOZZLE.

No. 797,927.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, FREDERICK L. TITSWORTH, of Kenosha, Wisconsin, and HOWARD B. SHERMAN, of Battlecreek, Michigan, have invented certain new and useful Improvements in Nozzles; and we hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in hose-nozzles, and in particular is an improvement upon the nozzle shown and described in patent to H. B. Sherman, No. 742,133, granted October 20, 1903, the object of the present invention being to simplify the construction of such nozzle and produce a more direct water-passage therethrough, so that the force of the stream delivered thereby will be less retarded, and to lessen the cost of manufacture thereof.

The present invention has particular reference to the spindle portion of the apparatus, and we have shown in the drawings several slight modifications of the construction of the spindle, all embodying substantially the same novel features, and we will describe the invention as illustrated in the drawings and refer to the claims for summaries of the particular parts and features of construction constituting the invention and for which protection is desired.

In said drawings, Figure 1 is a longitudinal section through the nozzle open, showing the spindle in elevation. Fig. 2 is a side view of the nozzle closed, partly in section, showing a slight modification of the hose connection. Fig. 3 is a side view of a part of the section with a slight modification of the construction of the spindle. Fig. 4 is a section on line 4 4, Fig. 3. Fig. 5 is a rear end view of the spindle shown in Fig. 3. Fig. 6 is a detail elevation of another slight modification of the spindle. Fig. 7 is a section on line 7 7, Fig. 6. Fig. 8 is an end view of Fig. 6.

A designates the hose connection or base of nozzle, comprising an internally-threaded socket portion *a*, adapted to be screwed onto the ordinary nipple attached to the end of a hose or pipe and provided with a contracted neck *a'*, to which the valve-spindle B is attached, and on which neck slides the stuffing-

box F, attached to the rear or inlet end of the adjustable sleeve, which incloses the spindle.

The spindle B comprises a central stem or rod portion B' of much smaller diameter than the interior of the sleeve E or neck *a'*, but arranged axially thereof, and is connected to the neck by means of an enlargement or butt B² on its rear end, which is closely fitted within the outer end of the neck and may be secured thereto in any suitable manner. We preferably secure it either by wiping or sweating it therein or riveting it. In Fig. 3 it is shown as secured by a rivet *b*³, and in Fig. 6 it is shown as secured by wiping or soldering. Beyond the butt B² the stem is provided with a threaded enlargement or boss-section B⁴, which is externally screw-threaded, as at *b*⁴, to engage the internal threads *e*² of the sleeve E, which said sleeve may be, and preferably is, constructed substantially as described in the aforesaid Sherman patent. The engagement of the sleeve with this threaded section or enlargement B⁴ of the spindle and through the stuffing-box F with the neck *a'* of the base A keeps the sleeve in axial alinement with the spindle and neck and allows it to move longitudinally thereof, as is necessary to open or close the nozzle. The sleeve has an outlet *e'* in its outer end, adapted to be closed by a valve *b*³ on the outer end of the spindle-stem B', substantially as described in said Sherman patent.

The threaded enlargement B⁴ and the butt B² may be formed integrally with or separately from the stem B'. As shown in Figs. 1 and 6, they are formed integral therewith; but preferably, and as shown in Figs. 2 and 3, they are formed separately therefrom and secured thereto by rivets, as in Figs. 3, 4, and 5, or by wiping or soldering, as indicated in Fig. 2.

In order to afford free passage of water the butt of the spindle is preferably formed with peripheral longitudinal channels B⁵, as indicated in Figs. 2, 3, and 5, or it may have axial perforations *b*⁶, as indicated in Figs. 6 and 8. Similarly the enlargement or boss B⁴ is preferably provided with peripheral longitudinal channels *b*⁷, as indicated in Figs. 3 and 4, or may have longitudinal passages *b*⁸, as indicated in Figs. 6 and 7. In either case it will be observed that a practically direct and

continuous passage is afforded for the water from the base A to the outlet e' , there being no abrupt or sudden deflections of the water current to lessen the force thereof. By this construction, furthermore, we can obtain a larger sectional area of water-passage through the nozzle as compared with the ordinary construction in which the spindle is tubular and the water conducted axially therethrough.

The described construction obviously requires less metal in the spindle than is necessary where it is made tubular with a central water-passage and is easier to manufacture and less costly.

The spindle might be made from a rod having longitudinal grooves and irregular sections, such as indicated in Fig. 4, for example. In this case the butt and enlargement could be formed integral with the stem B' ; but preferably the butts and enlargements may be cut from rods of suitable section and secured to a stem of proper diameter, as above explained.

A packing-ring G and packing g' are slipped on the neck between the stuffing-box and end of the sleeve, and in order to prevent the stuffing-box and sleeve being accidentally moved off the neck the butt may be provided with peripheral projections B^6 , as indicated in Fig. 1, which extend outward slightly beyond the outer diameter of the neck and prevent the stuffing-box coming off, or in the form shown in Figs. 6 to 8 the butt may have a peripheral flange B^7 for this purpose, or in the structure shown in Fig. 2 the inner end of the neck a' may be provided with an out-turning flange a^6 for such purpose. Any of these constructions will prevent the stuffing-box being pulled off. Preferably the butt is constructed to form the stop for the stuffing-box, as it facilitates the assembling of the parts, since the stuffing-box can be freely slipped on the neck before the spindle is attached thereto.

The base and spindle may be formed of drawn or spun metal, as described in said Sherman patent, or cast. The stuffing-box may be made of drawn or spun metal, from rod-brass, or cast or in any other regular way. The spindle may also be formed integrally from rolled rods, or the stem of the spindle may be formed from one rod and the enlargement and butts formed from other rods and afterward connected to the stem, or the enlargement and butt may be cast and attached to the stem afterward. The spindle may be formed from a large rivet or from a rod with the tip screwed on, riveted on, or soldered on, the screw portion riveted on, soldered on, or attached in other way and with the rear portion fastened on in like manner. In other words, this spindle may be made of fluted rod, or it may be made of a small round rod with the other pieces attached, or it may be made of a rivet. In this case the head of the rivet would be used to form the tip and the other two por-

tions would be secured thereon in suitable manner. We do not restrict ourselves to either cast, wrought, or spun metal in the construction of the nozzle.

If the stem, butt, and enlargement are made integral, as indicated in Fig. 1, from a fluted rod, or cast, the construction, as compared with that in Sherman's patent, No. 742,133, is much cheaper, as it requires much less metal and less machine-work than the spindle shown in said patent. Parts of spindle are made integral. Instead of using round rods we use specially-shaped rods of cross-section corresponding to the section in Fig. 4, so that the water-channels b^7 b^5 are formed in drawing the rod. These channels in the rod materially lessen the waste and work required in reducing the intermediate or stem parts to desired form. The preferred form—to wit, that in which the butt, enlargement, and stem are formed separately and assembled—as indicated in Fig. 3, is even more economical in construction than that shown in Fig. 1. In this case the butts and enlargements are cut from rods having the sectional contour indicated in Figs. 4 and 5.

The operation of the nozzle is obvious from the drawings and is so well understood that explanation thereof is unnecessary.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A hose-nozzle comprising a base, a sleeve, and a spindle within the sleeve attached to the base, said spindle comprising a solid axial stem of small diameter, a butt of larger diameter on the rear end of the stem and attached to the base, said butt having longitudinal water-channels in its periphery exterior to the stem, and an enlargement on the stem in advance of the butt having exterior threads to engage the internal threads of the sleeve and longitudinal water-channels in its periphery exterior to the stem, substantially as specified.

2. In a nozzle, the combination of a sleeve, a base having a neck of small diameter, a stuffing-box on said neck engaging the sleeve, a spindle having a stem of smaller diameter than the internal diameter of the neck, a butt on the rear end of the stem and of larger diameter, said butt being attached to the neck and having longitudinal water-channels exterior to the stem and radially-extending parts projecting beyond the surface of the neck adapted to retain the stuffing-box thereon, substantially as described.

3. In a nozzle, the combination of a sleeve, a base having a reduced tubular neck, and a spindle comprising a stem of smaller diameter than the internal diameter of the neck, a butt on the rear end of the stem and of larger diameter, said butt being attached to the neck and having longitudinal water-channels external to the stem, a valve on the front end of

the stem, and an enlargement on the sleeve intermediate the butt and valve having exterior threads engaging the internal threads of the sleeve and longitudinal water-passages exterior to the stem, substantially as described.

4. In combination, a base having a reduced neck, a stuffing-box, a spindle having a stem of smaller diameter than the interior of the neck, a butt on the rear end of said stem adapted to fit within and secured to the neck, said butt being provided with longitudinal water-channels exterior to the stem; with an enlargement or boss of larger diameter than the stem and secured thereto in advance of the butt, said boss having exterior threads engaging the internal threads of the sleeve and longitudinal water-passages exterior to the stem between said enlargement and the sleeve, substantially as described.

5. The herein-described nozzle, comprising a base, a stuffing-box slidingly mounted on the base, a sleeve attached to said stuffing-box having an internally-threaded portion and a water-outlet, a spindle-stem of smaller diameter than the neck, a butt of larger diameter than the stem secured to the rear end thereof, adapted to fit into the neck and secured thereto, and provided with longitudinal water-passages exterior to the stem; and an externally-threaded enlargement or boss of larger diameter than the stem and secured thereto, and adapted to engage the internally-threaded por-

tion of the sleeve, and provided with longitudinal water-passages exterior to the stem, substantially as and for the purpose described.

6. The herein-described nozzle, comprising the base having a reduced tubular neck, a stuffing-box, a sleeve having an internally-threaded portion and a water-outlet, a spindle within the sleeve comprising a stem of smaller diameter than the interior channels of the neck, a butt or enlargement of larger diameter than the stem and secured on the rear end thereof adapted to fit within the end of the neck and secured thereto, and provided with longitudinal water-passages exterior to the stem; an externally-threaded boss or enlargement secured on the stem in advance of the butt adapted to engage the internally-threaded portion of the sleeve and provided with longitudinal water-passages exterior to the stem, and a valve on the outer end of the stem adapted to close the outlet-opening in the sleeve, all substantially as and for the purpose described.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

FREDERICK L. TITSWORTH.
HOWARD B. SHERMAN.

In presence of—

FRANK M. ANDRESS,
EDITH M. BARNES.