

H. T. INGRAM.

FLEXIBLE PIPE.

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999,564.

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Fig. 1.

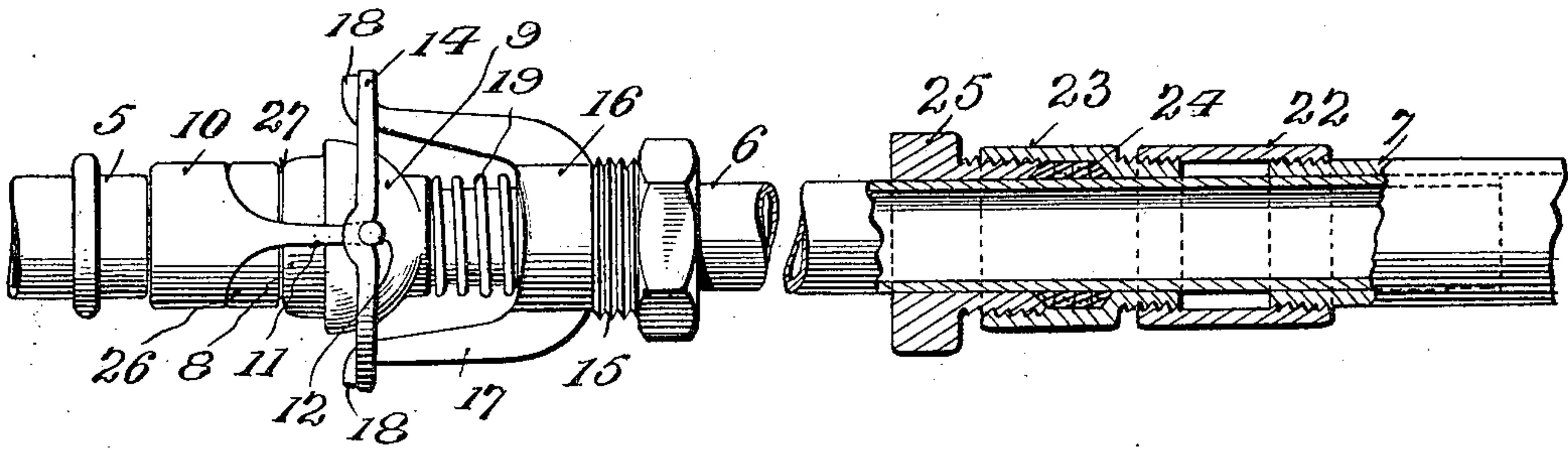


Fig. 2.

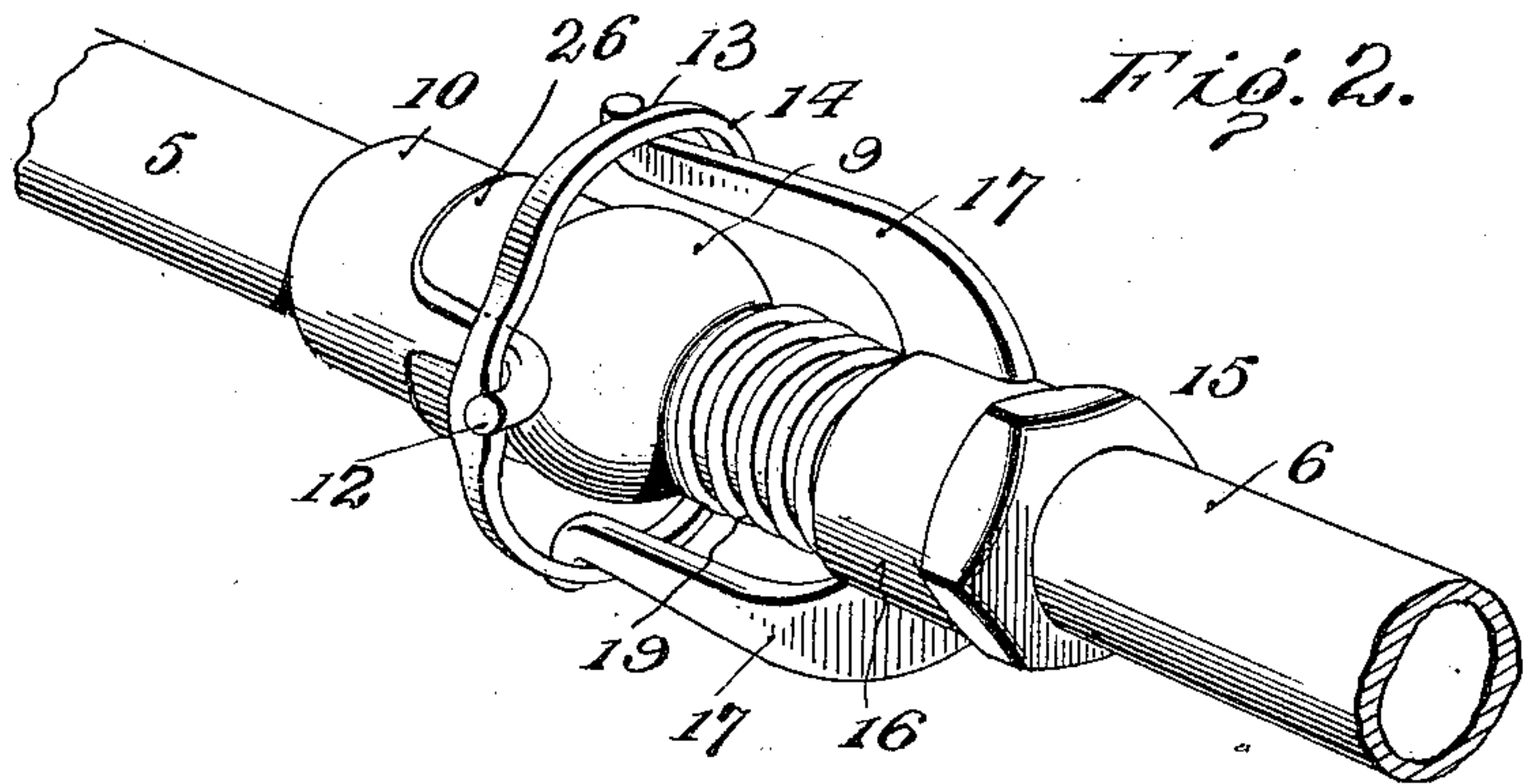
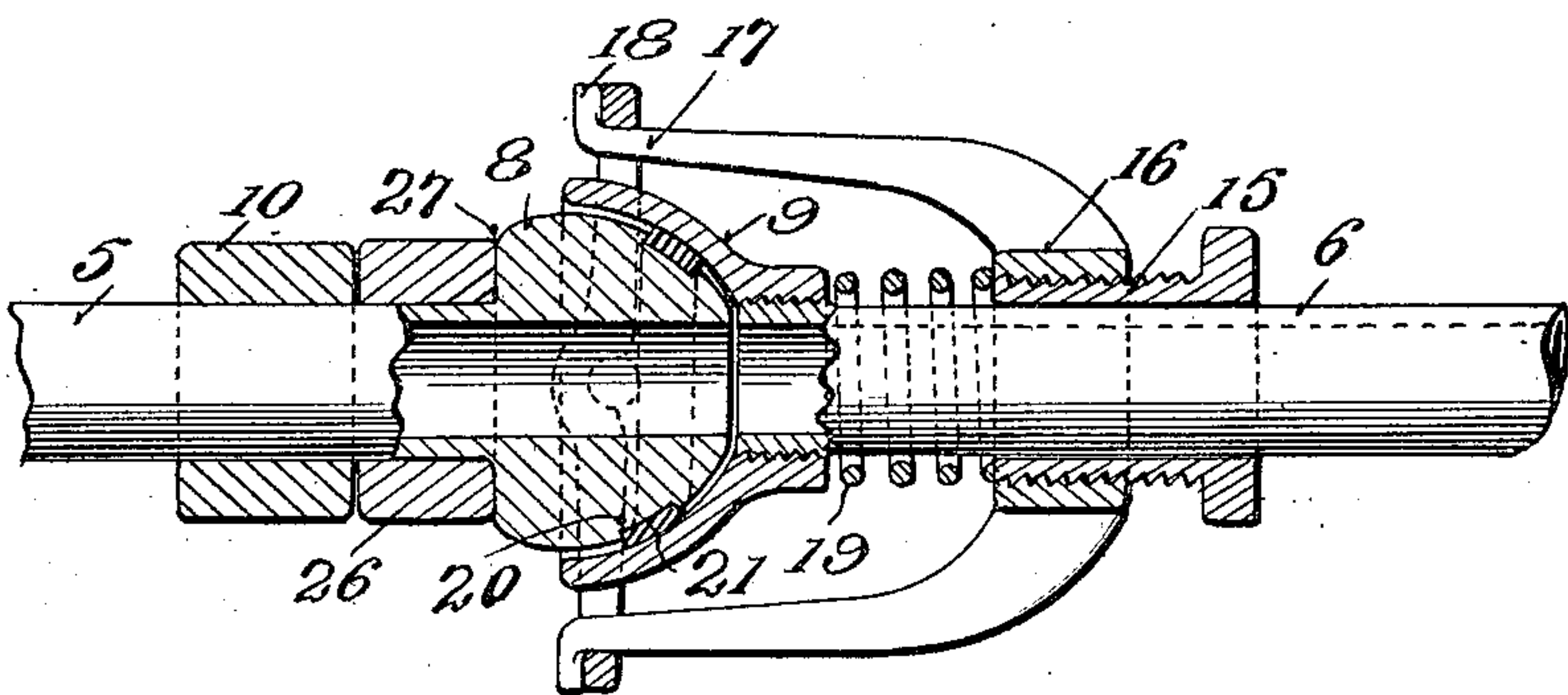


Fig. 3.



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FLEXIBLE PIPE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HOWARD T. INGHAM, citizen of the United States, residing at Fairfield, in the county of Jefferson and State of Iowa, have invented certain new and useful Improvements in Flexible Pipes, of which the following is a specification.

This invention relates to flexible fluid conductors and has for its object the provision of a strong, durable and thoroughly efficient device of this character, the construction of which is such that the conductor may be lengthened or shortened and bent in any direction without danger of leakage.

A further object is to provide a flexible conductor including a plurality of pipe sections, one of which is provided with a semi-spherical head, and the other with a correspondingly shaped socket, the latter being yieldably supported in contact with the head so as to permit lateral movement of one relatively to the other, while at the same time insuring a fluid tight joint between the parts.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation partly in section of a flexible conductor constructed in accordance with my invention; Fig. 2 is a detail perspective view of the universal joint or connection between two of the pipe sections; Fig. 3 is a longitudinal sectional view of Fig. 2.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The fluid conductor forming the subject matter of the present invention comprises a plurality of pipe sections 5, 6 and 7, one of which is provided with a substantially semi-

spherical head 8 adapted to enter a correspondingly shaped socket 9 threaded on the adjacent end of the intermediate section 6. A collar 10 is loosely mounted on the pipe section 5 and is provided with a plurality of laterally extending arms 11, the terminals of which are bent to produce angularly disposed fingers 12, which latter are seated in recesses 13 formed in the adjacent face of a connecting ring 14. A threaded sleeve 15 is loosely mounted for sliding movement on the intermediate section 6 and is provided with a collar 16 having a plurality of arms 17, similar in construction to the arms 11 and also provided with angularly disposed terminal fingers 18 which enter seating recesses in the opposite side of the connecting ring 14. A coil spring 19 is interposed between the collar 16 and the socket member 9 for the purpose of normally and yieldably holding the socket member in contact with the head 8, the tension of the spring 19 being adjusted by rotating the sleeve 15, as best shown in Fig. 3 of the drawings. The head 8 is provided with an annular recess 20 in which is seated a packing 21, which latter bears against the interior wall of the socket member 9 and serves to effectually prevent leakage, while at the same time permitting the pipe sections 5 and 6 to move in any direction.

In order to permit a slight longitudinal movement of the intermediate pipe section 6, the latter is slidably mounted within the pipe section 7, there being a sleeve 22 threaded on the pipe section 7 and engaging the threaded end of a cup or gland 23, the packing 24 in said gland being pressed laterally into engagement with the pipe section 6 to prevent leakage of air or other fluid when the cap piece 25 is rotated.

If desired, a collar 26 may be interposed between the collar 10 and a shoulder 27 on the head 8 for the purpose of properly spacing the parts and taking up any wear incident to the operation of the coupling.

Thus it will be seen that air or other fluid is free to pass from the pipe section 5 through the passage in the head 8 and intermediate pipe section 6 to the pipe section 7 regardless of the angular position of the section 5 with respect to the section 6, while at the same time the conductor may be lengthened or shortened by reason of a tele-

scopic connection between the sections 6 and 7, the gland 23 effectually preventing leakage during the adjustment of the conductor.

Having thus described the invention, what is claimed as new is:

1. A flexible conductor including mating pipe sections, one of which is provided with a semispherical head and the other with a correspondingly shaped socket receiving said head, a connecting ring disposed at the junction of the head and socket, collars loosely mounted on said pipe sections and provided with laterally extending arms engaging the connecting ring, and means carried by one of the pipe sections for yieldably supporting the head in engagement with the socket.

2. A flexible conductor including mating pipe sections, one of which is provided with a semispherical head and the other with a correspondingly shaped socket receiving said head, a connecting ring surrounding the head and socket and provided with oppositely disposed seating recesses, collars loosely mounted on the pipe sections and provided with laterally extending arms engaging the seating recesses in the connecting ring, and a spring interposed between one of said collars and the socket for yieldably supporting the latter in engagement with the head.

3. A flexible conductor including mating pipe sections, one of which is provided with a semispherical head and the other with a correspondingly shaped socket receiving said head, a connecting ring disposed at the junction of the head and socket, a threaded sleeve loosely mounted on one of the pipe sections, a collar threaded on said sleeve and provided with laterally extending arms engaging one side of the connecting ring, a second collar loosely mounted on the mating pipe section and provided with similar arms engaging the opposite side of the connecting ring, and a spring interposed between the threaded sleeve and the socket for yieldably supporting the head in engagement with said socket, the tension of the spring being adjusted by rotating the threaded sleeve.

4. A flexible conductor including mating pipe sections, one of which is provided with a semispherical head and the other with a correspondingly shaped socket receiving said head, there being a shoulder formed on the rear of the head, a connecting ring surrounding the head and socket, a collar loosely mounted on one of the pipe sections and provided with laterally extending arms engaging one side of the ring, a spacing

member interposed between said collar and the shoulder of the head, a second collar loosely mounted on the mating pipe section and provided with similar arms engaging the opposite side of the connecting ring, a packing interposed between the head and socket, and a coil spring bearing against the socket for yieldably supporting the latter in engagement with the packing.

5. A flexible conductor including mating pipe sections, one of which is provided with a semispherical head and the other with a correspondingly shaped socket receiving said head, a connecting ring disposed at the junction of the head and socket and having its opposite sides formed with spaced seating recesses, a collar loosely mounted on one of the pipe sections and provided with laterally extending arms having angularly disposed terminal fingers engaging the seating recesses on one side of the connecting ring, a sleeve loosely mounted on the mating pipe section, a collar threaded on the sleeve and provided with similar arms having terminal fingers engaging the seating recesses on the opposite side of the connecting ring, a packing interposed between the head and socket members, and a coil spring bearing against the socket member.

6. A flexible conductor including terminal and intermediate pipe sections, one end of the intermediate pipe section being slidably mounted in the adjacent terminal pipe section, a sleeve threaded on one of the terminal pipe sections, a gland engaging the sleeve and having a circumferential pocket for the reception of a packing, a cap threaded in the gland for compressing the packing around the intermediate pipe section, a semispherical head carried by the other terminal pipe section and seated in a corresponding socket formed on the adjacent end of the intermediate pipe section, a collar fastened on the last mentioned terminal pipe section and provided with laterally extending arms, a second collar loosely mounted on the intermediate pipe section and provided with similar arms, a connecting ring engaging the terminals of said arms, and a spring surrounding the intermediate pipe section and bearing against the socket member for normally and yieldably supporting said socket member in engagement with the head.

In testimony whereof I affix my signature in presence of two witnesses.

HOWARD T. INGHAM. [L. S.]

Witnesses:

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