

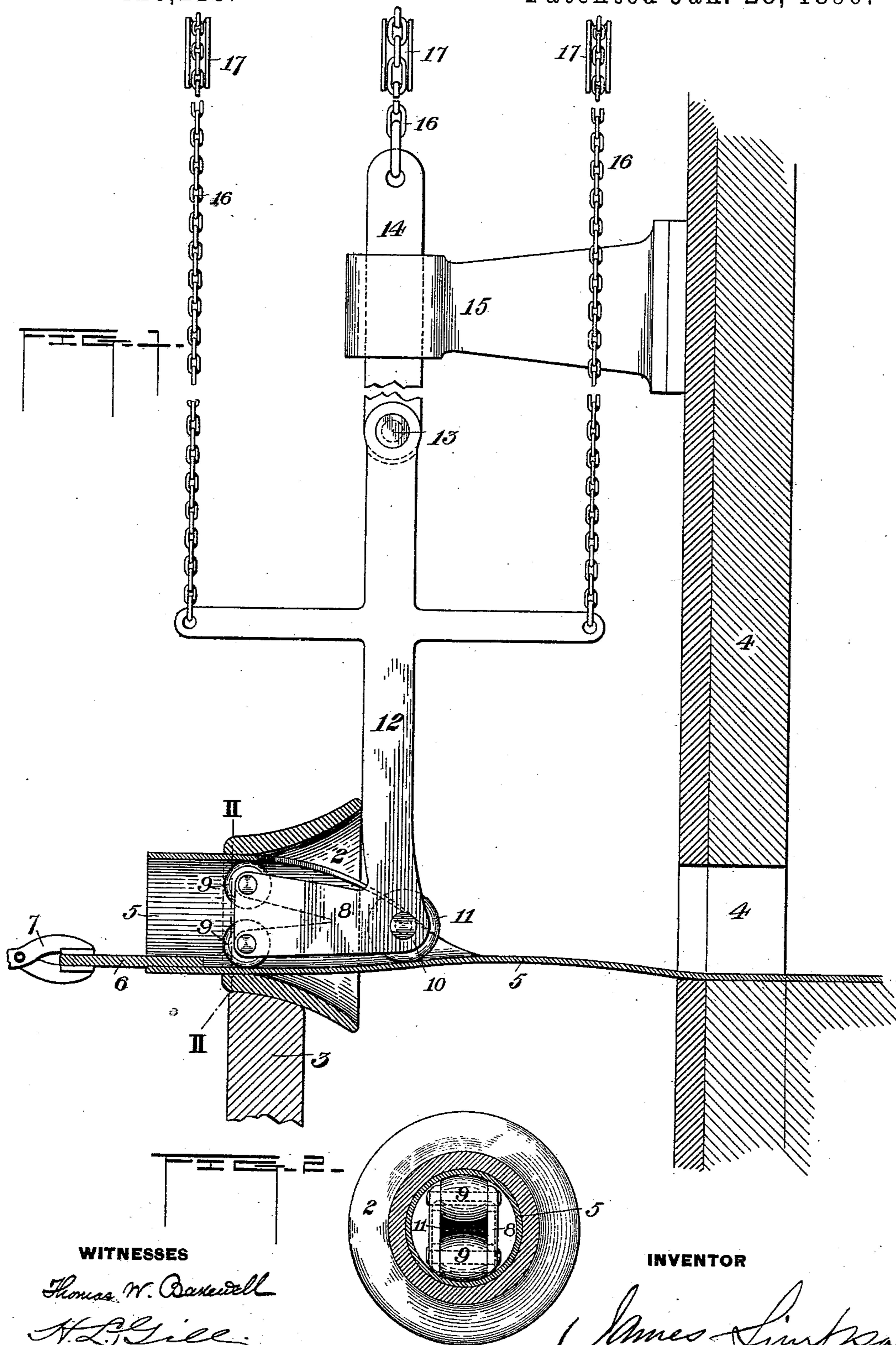
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4 Sheets—Sheet 1.

J. SIMPSON.
PIPE WELDING APPARATUS.

No. 420,213.

Patented Jan. 28, 1890.



WITNESSES

Thomas W. Bassett
H. L. Gill

INVENTOR

James Simpson

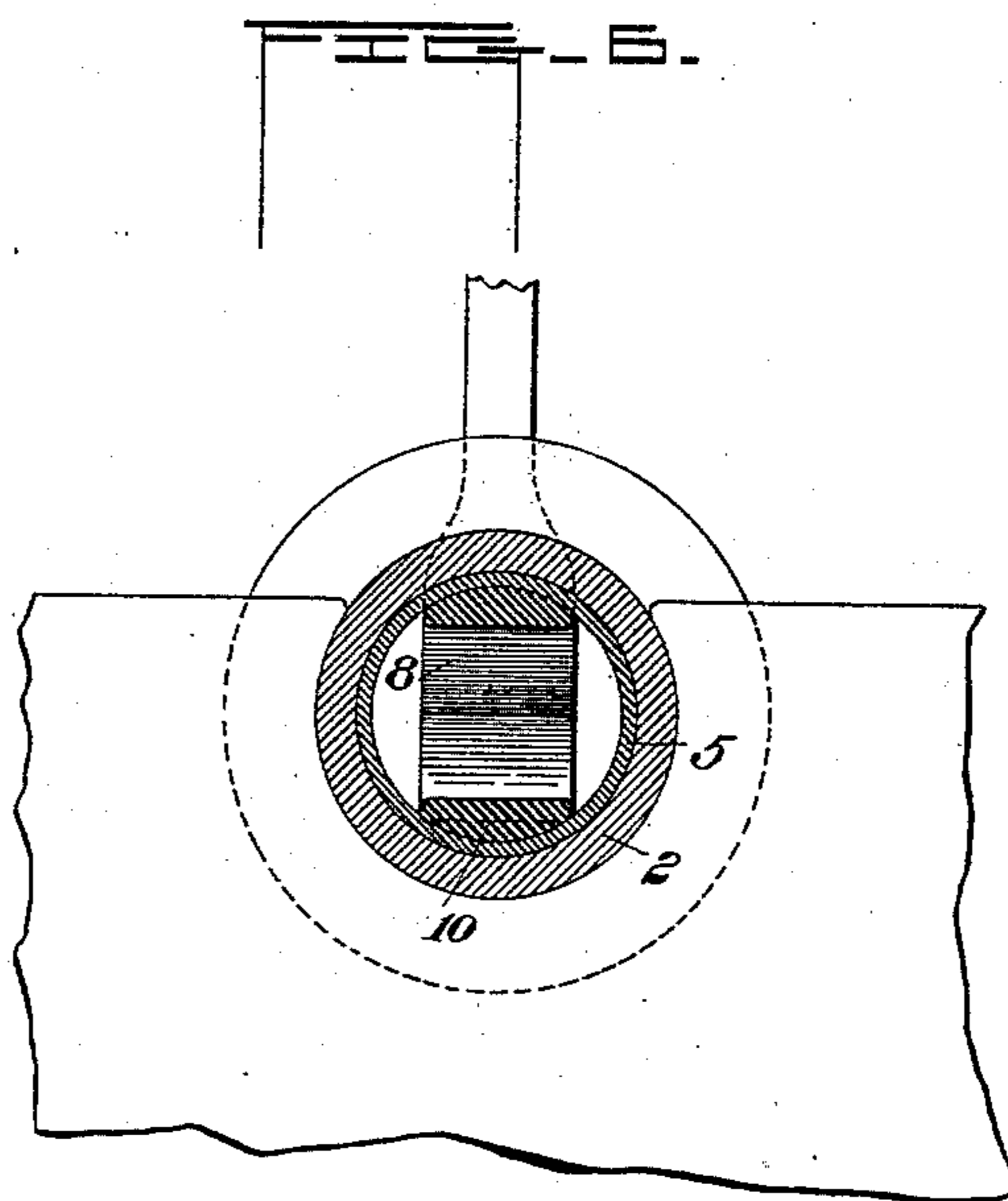
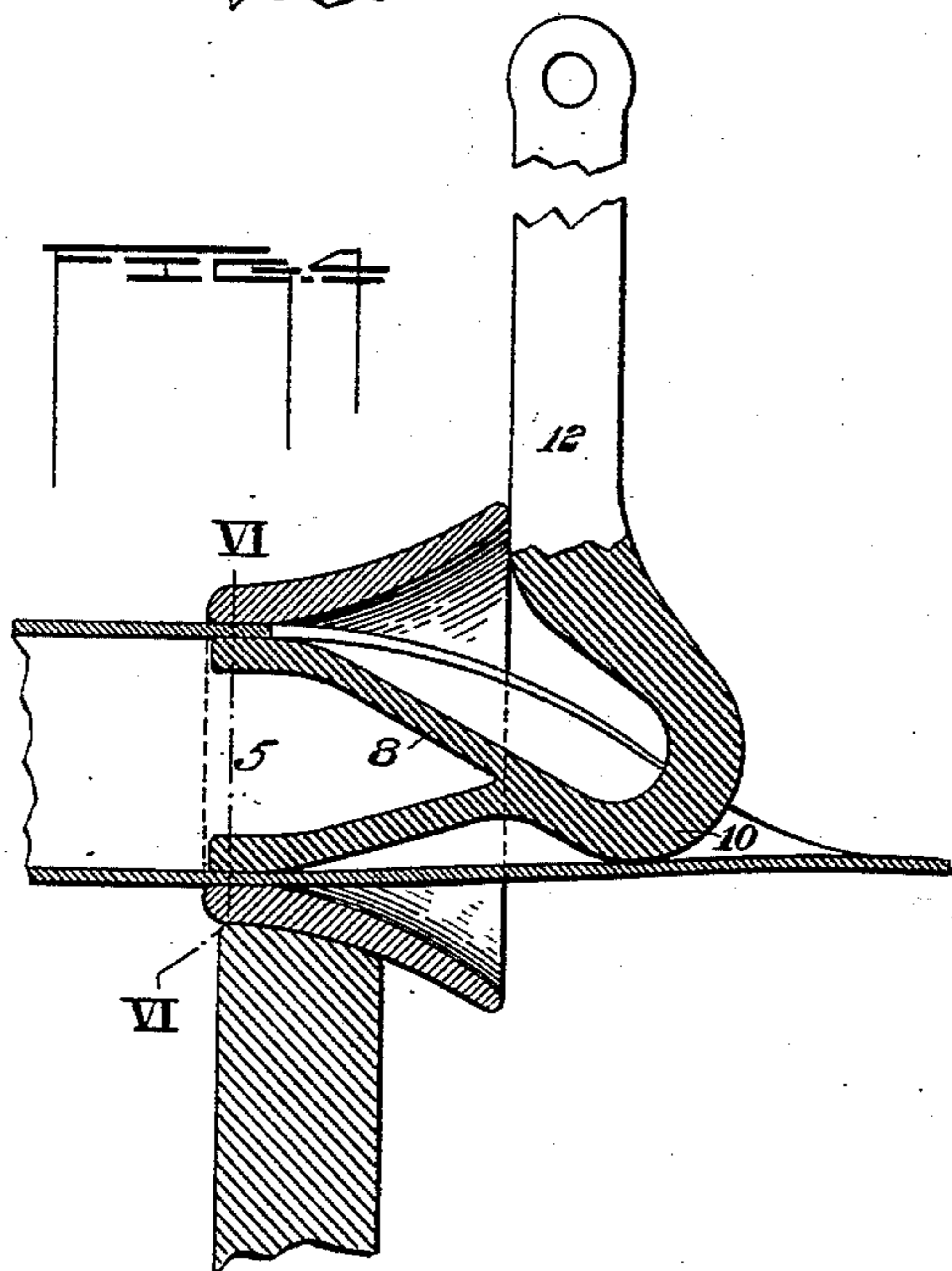
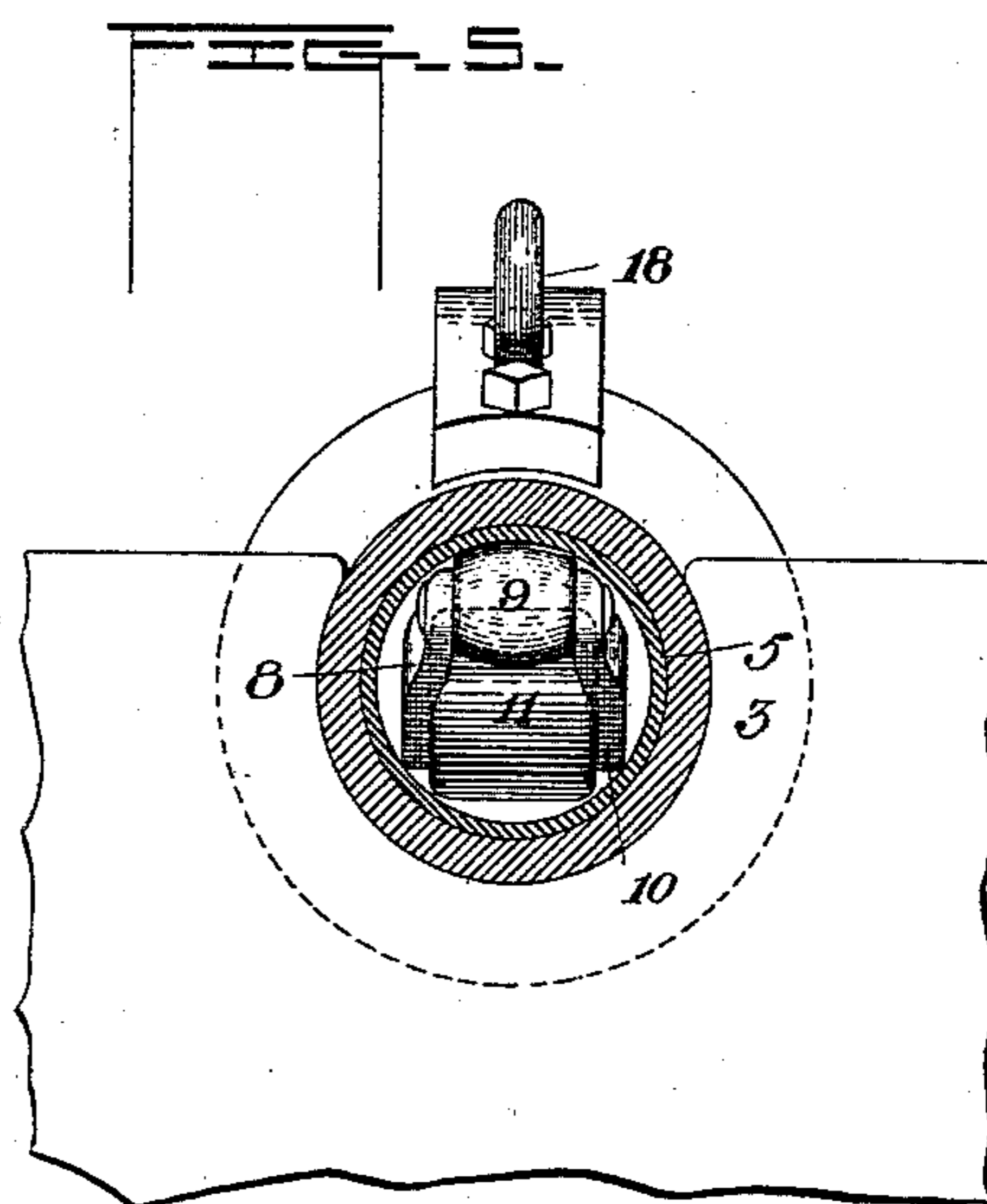
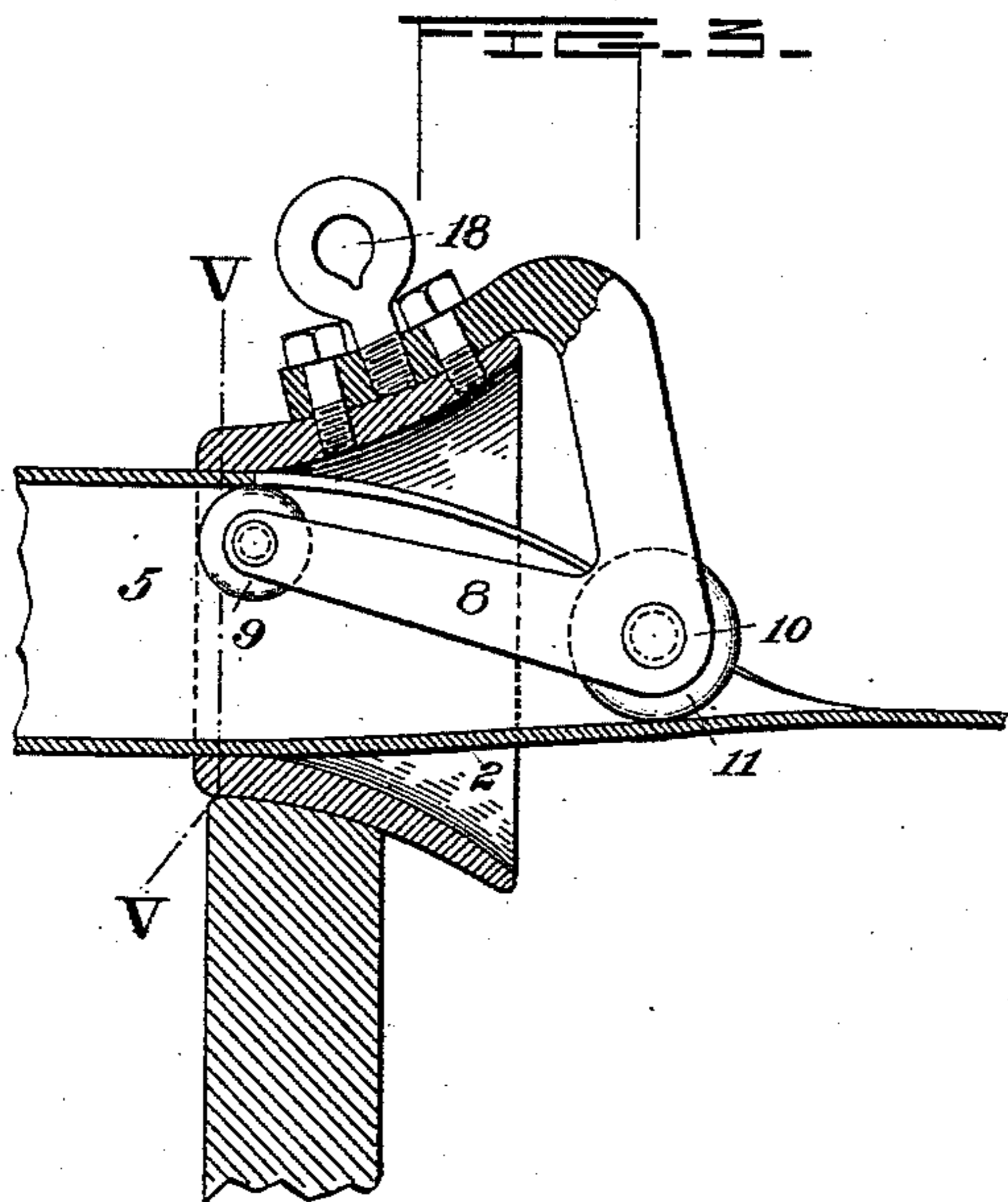
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WITNESSES

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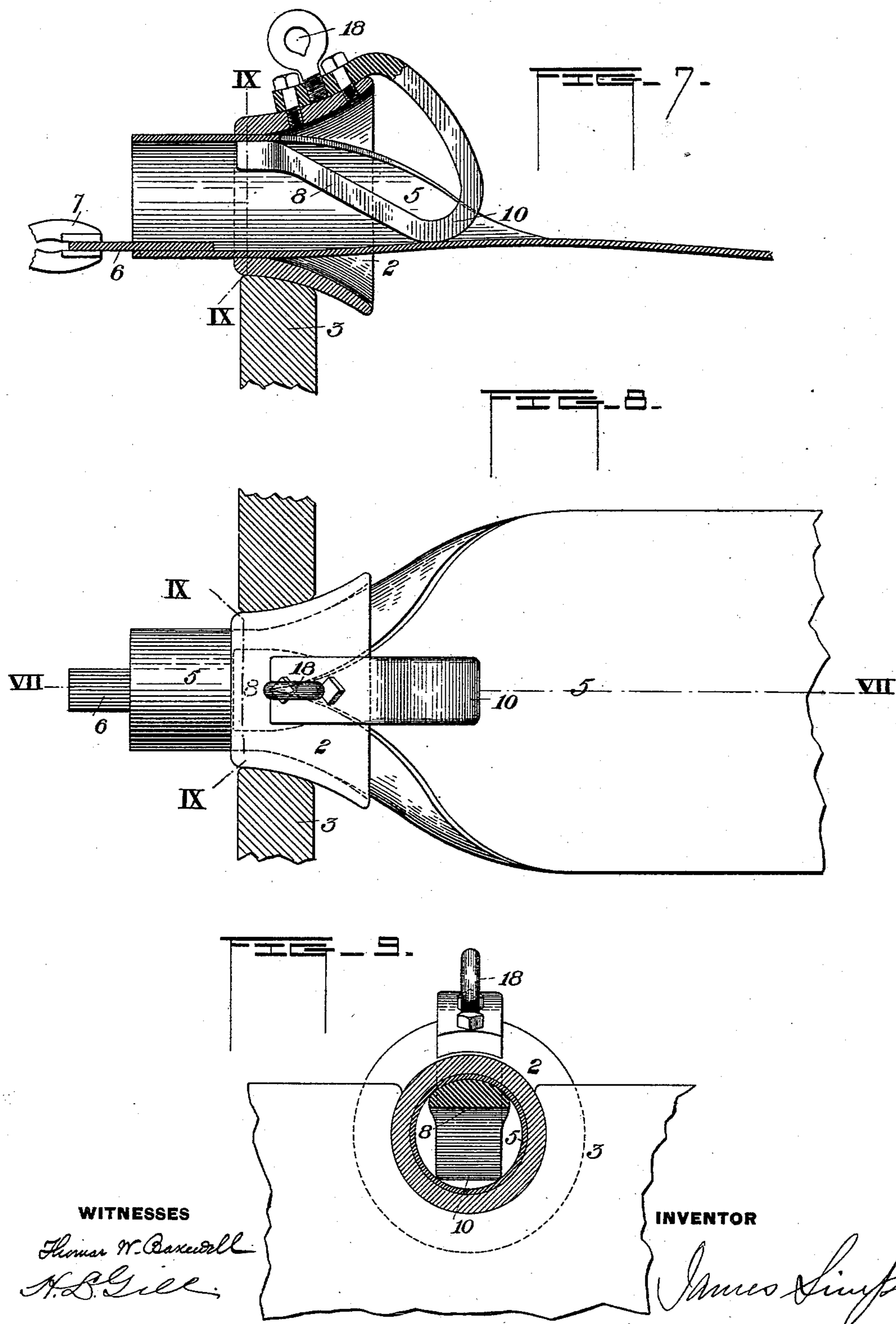
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4 Sheets—Sheet 3.

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WITNESSES

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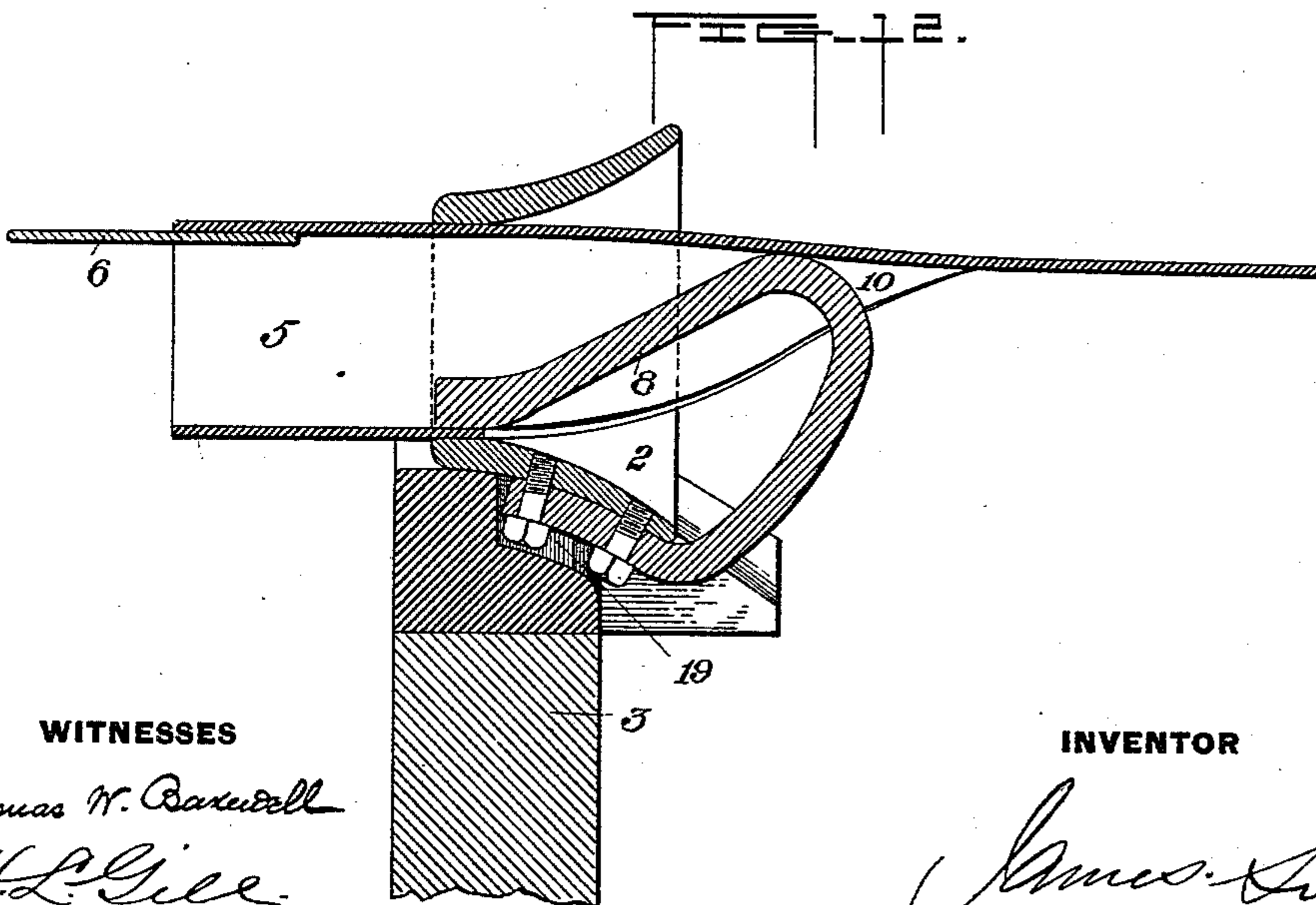
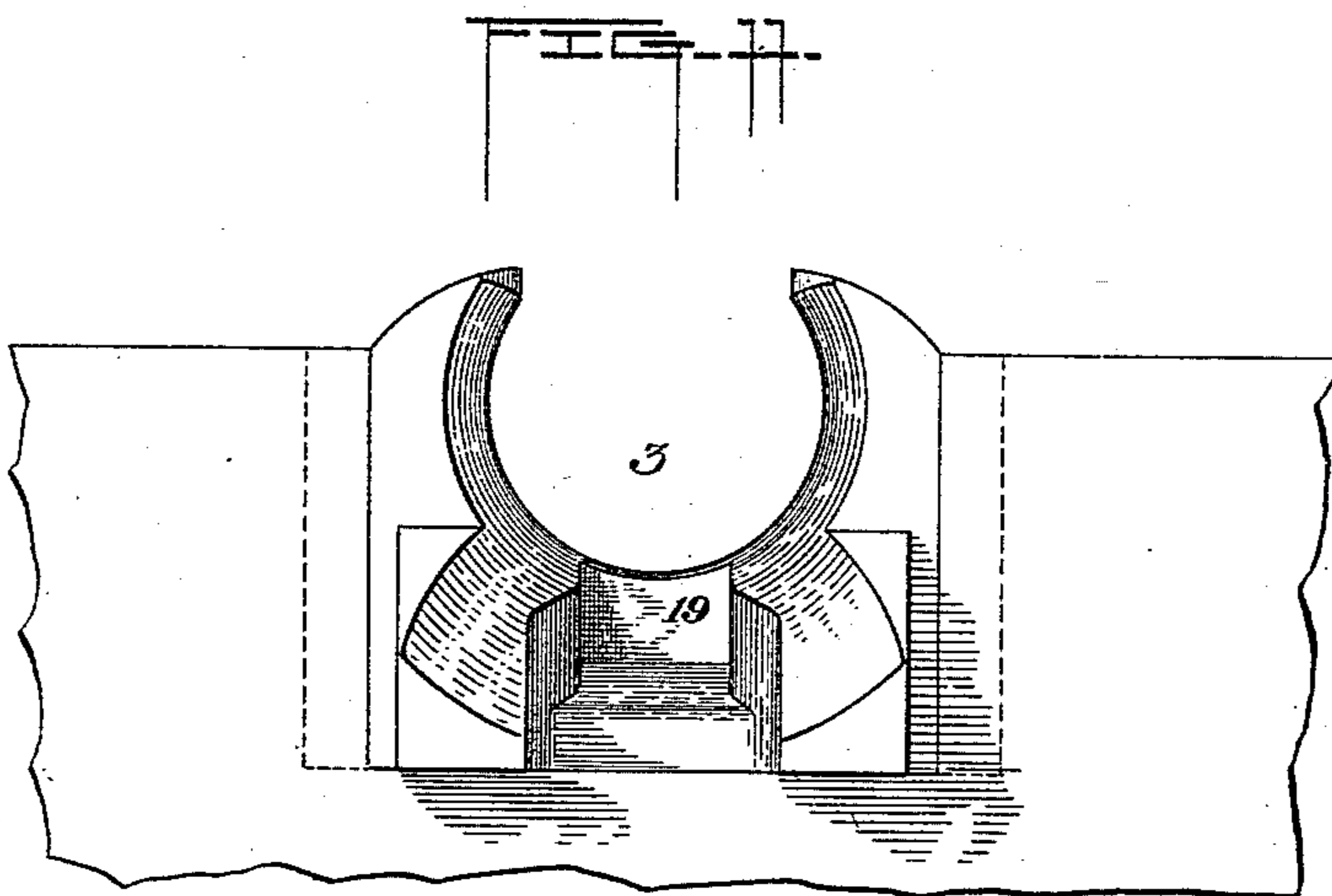
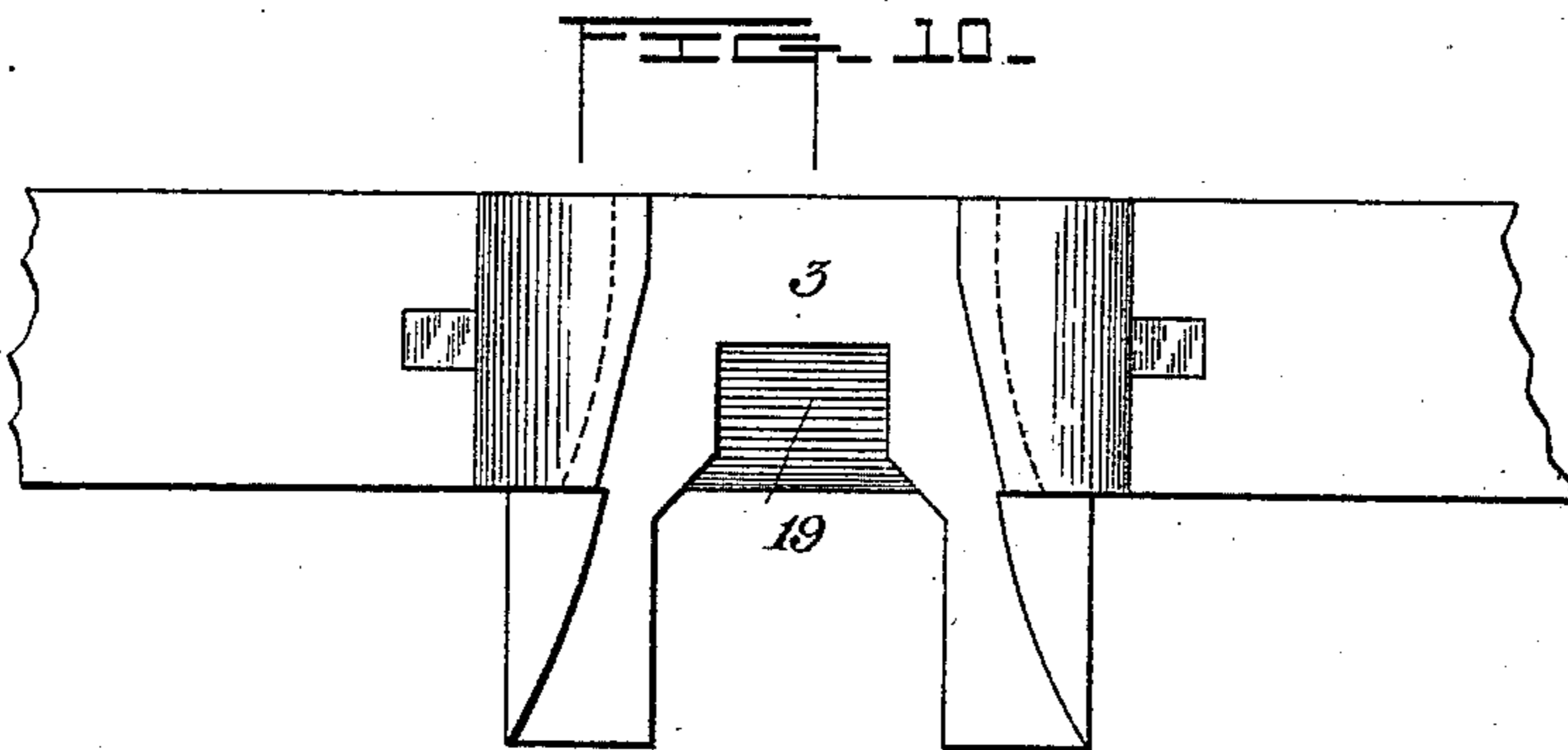
(No Model.)

4 Sheets—Sheet 4.

J. SIMPSON.
PIPE WELDING APPARATUS.

No. 420,213.

Patented Jan. 28, 1890.



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES SIMPSON, OF MCKEESPORT, PENNSYLVANIA.

PIPE-WELDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 420,213, dated January 28, 1890.

Application filed October 18, 1889. Serial No. 327,449. (No model.)

To all whom it may concern:

Be it known that I, JAMES SIMPSON, of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Pipe-Welding Apparatus, of which the following is a full, clear, and exact description.

My invention relates to certain improvements upon the form of pipe-welding bell described in my patent, No. 402,689, granted to me May 7, 1889, and is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of my improved apparatus, showing it in connection with the usual draw-bench and skelp-heating furnace. Fig. 2 is a front view of the bell and the parts therein contained, the bell being shown in section on the line II II of Fig. 1. Figs. 3 and 4, Sheet 2, are vertical sectional views illustrating modified forms of my improvement. Figs. 5 and 6 are vertical cross-sections on the lines V V of Fig. 3 and VI VI of Fig. 4, respectively. Fig. 8 is a plan view illustrating another modification. Fig. 7 is a vertical longitudinal section on the line VII VII of Fig. 8. Fig. 9 is a vertical cross-section on the line IX IX of Figs. 7 and 8. Fig. 10 is a plan view, and Fig. 11 an end view, of the bell-holder. Fig. 12 is a vertical section of the bell and bell-holder, showing the bell reversed.

Like symbols of reference indicate like parts in each.

Heretofore in the manufacture of pipe there has always been a difficulty experienced (especially in the use of thin pipe-iron) in preventing the edges from turning in in the bell and thus making an irregular projecting seam on the interior of the pipe and a rough seam on the outside, which spoil it for practical use, rendering it impracticable to cut screw-threads on the exterior. This fact is the source of great loss in the manufacture of pipe, and it is the object of my invention to prevent it. To this end I employ in connection with the pipe a tongue or seam-support in the bell arranged to bear on the skelp at the inner side of the seam and also on the skelp at an opposite point. This constitutes one of the items of my invention. In the use of the apparatus of my prior patent it is some-

times difficult to cause the tongue or seam-support to bear directly on the seam; but a device which bears on at least two points in the interior of the skelp is self-centering and will always adjust itself in proper position to prevent the edges of the seam from turning in.

A second item of my invention consists in a heel or creasing device which bears on the skelp, preferably at or near the place of its entrance into the mouth of the bell, and thus facilitates the bending or turning up of the skelp and makes the formation of the pipe easier and more accurate than has hitherto been possible.

A third item of my invention consists in using an anti-friction roller or rollers as the bearing end for the seam-support or heel, or both, the purpose being to prevent these parts from exerting frictional resistance to the passage of the skelp through the bell.

My invention further consists in certain details of construction hereinafter described, and succinctly defined in the claims.

Referring now to Figs. 1 and 2, 2 represents the pipe-welding bell, which is or may be of the usual form.

3 is the bell-holder, which is shown in detail in Figs. 10, 11, and 12.

4 is the front wall and door of the skelp-heating furnace.

5 is the skelp, shown in the operation of being drawn from the furnace through the bell in which its ends are bent round and welded so as to form the hollow pipe.

6 is the usual tang welded to the skelp, and 7 are the tongs which seize the tang and afford means for pulling the skelp through the bell. The seam-supporting device 8 consists of a piece of metal adapted to fit within the skelp in the bell and to bear thereon at the seam, and also at an opposite point, as shown in Fig. 1. To this end it may conveniently be bifurcated, as shown in the drawings. At these bearing-points there are preferably anti-friction rollers 9, which may be laterally curved or ellipsoidal in form, so as to conform to the internal shape of the pipe, as shown in Fig. 2, and the rear of the device is also preferably provided with a heel 10, serving the purpose above indicated, and having

a roller 11, which bears on the skelp. This device may be supported or held in proper position relatively to the bell by various means, a desirable form of which is shown in Fig. 1. A vertical rod 12 extends from the heel of the seam-supporting device, and is pivotally connected at 13 to a slide 14, which moves in bearings 15, projecting from the furnace-wall.

16 are chains connected with arms projecting laterally from the rod and passing over pulleys 17, so as to afford easy means for raising and lowering the apparatus.

The operation is as follows: In using the apparatus, as the skelp is being drawn through the bell the seam-support 8 is lowered into position at the rear of the bell, and is inserted into the latter, as shown in Fig. 1. The fact that two rollers are used causes them to center themselves in the skelp and to bear thereon against the inner side of the forming seam as well as on a point opposite thereto, while the engagement of the supporting-rod or shank 12 with the rear edge of the bell limits the forward motion of the rollers and prevents their jamming therein. At the same time the rear roller 11, bearing on the skelp, tends to fold it up into the proper tubular form and to facilitate its entrance into the bell. When the skelp has been drawn completely through the bell, the seam-supporting device may be removed by raising the chains, and if at first the rear chain be lifted more than the other it has the effect of tipping back the lower portion of the rod 12 and of withdrawing the seam-support from the bell.

The advantages of my improved device constructed as above described will be appreciated by those skilled in the art. It makes the skelp easy to be drawn through the bell, causes the skelp to turn up symmetrically and to unite at the edges to form a better and smoother seam than is otherwise possible, and enables the skelp to be worked at a high heat without danger of becoming misshapen.

The device may be modified in various ways within the scope of my invention, as stated in the claims of the patent. For example, it may be inverted in position, so as to bear on the under side of the skelp, in which case the skelp would be folded downwardly and the seam would be at the lower portion of the bell instead of at the upper portion thereof. This is illustrated in Fig. 12, in which the bell-holder is shown as provided with a recess 19, in which that part of the tongue or seam-support on the outside of the bell fits and centers itself, so as to hold the bell in proper position. This recess is also shown in Figs. 10 and 11.

Other modifications in form are shown in the drawings. Thus in Figs. 3 and 5 the device is constructed so that the seam-support is fixed to the exterior of the bell and pro-

jects into the interior thereof from the rear, and the bell is provided with a ring or eye 18 for the attachment of a chain to hold the bell in proper position. In this form of the device, as in that shown in Figs. 7 and 12, but a single bearing on the skelp inside the bell is shown. It is provided with anti-friction rollers 9 and 11, one directly supporting the seam and the other bearing on the skelp at the rear of the bell. In the device shown in Fig. 12 no anti-friction rollers are shown.

In Figs. 4 and 6 the device is shown constructed as in Fig. 1, except that there are no rollers at the heel and at the ends of the bifurcated portion. This bifurcated portion may conveniently be made of spring metal, so that the forked jaws, when in the bell shall be somewhat in a state of compression toward each other and shall tend to diverge and to spread themselves against the interior of the pipe. The action of this form of my improvement, as regards its self-centering and the supporting of the seam and the creasing of the skelp, is substantially the same as that explained with reference to Fig. 1.

The device shown in Fig. 7 is similar in construction to that shown in Figs. 3 and 5, except that no friction-rollers are used. All of these forms may, of course, be reversed in position, as before explained, and other modifications will suggest themselves to the skilled pipe-maker. For example, a friction-roller or rollers may be used at the front or seam-supporting part of the device, and not at the heel, or vice versa; and I intend to cover, also, as of my invention, the use of a heel or creaser, with or without the seam-support, and the use of a seam-support having an anti-friction roller, whether the heel be used or not.

I therefore claim as my invention—

1. In combination with a pipe-welding bell, a tongue arranged within the bell, and having an anti-friction roller which supports the seam, substantially as and for the purposes described.

2. In combination with a pipe-welding bell, a skelp-creaser which is situated at the rear of the bell and bears on the skelp at an intermediate portion only of its width, substantially as and for the purposes described.

3. In combination with a pipe-welding bell, a tongue which bears against the pipe in the bell at opposite points, so as to support the seam, substantially as and for the purposes described.

4. In combination with a pipe-welding bell, a tongue arranged within the bell, directly inside the position of the seam, to afford a support thereto, and a heel which is connected with said tongue and bears on the skelp at the rear of the bell, substantially as and for the purposes described.

5. In combination with a pipe-welding bell, a tongue having anti-friction rollers which bear against the pipe in the bell at opposite

points, so as to support the seam, substantially as and for the purposes described.

5 6. In combination with a pipe-welding bell, a seam-support or tongue which bears against the pipe in the bell at opposite points, so as to support the seam, and a heel which is connected with said tongue and bears on the skelp at an intermediate portion of its width, substantially as and for the purposes described.
10

7. In combination with a pipe-welding bell, a seam-support or tongue arranged within

the bell, and having an anti-friction roller which supports the seam, said roller having a periphery laterally curved to conform to the internal shape of the pipe, substantially as and for the purposes described. 15

In testimony whereof I have hereunto set my hand this 26th day of September, A. D. 1889.

JAMES SIMPSON.

Witnesses:

WM. M. BELL,
E. G. RANKIN.