

No. 844,340.

PATENTED FEB. 19, 1907.

C. FELL.

TROUGH SYSTEM FOR PIPE WELDING APPARATUS.

APPLICATION FILED JUNE 7, 1906.

3 SHEETS—SHEET 1.

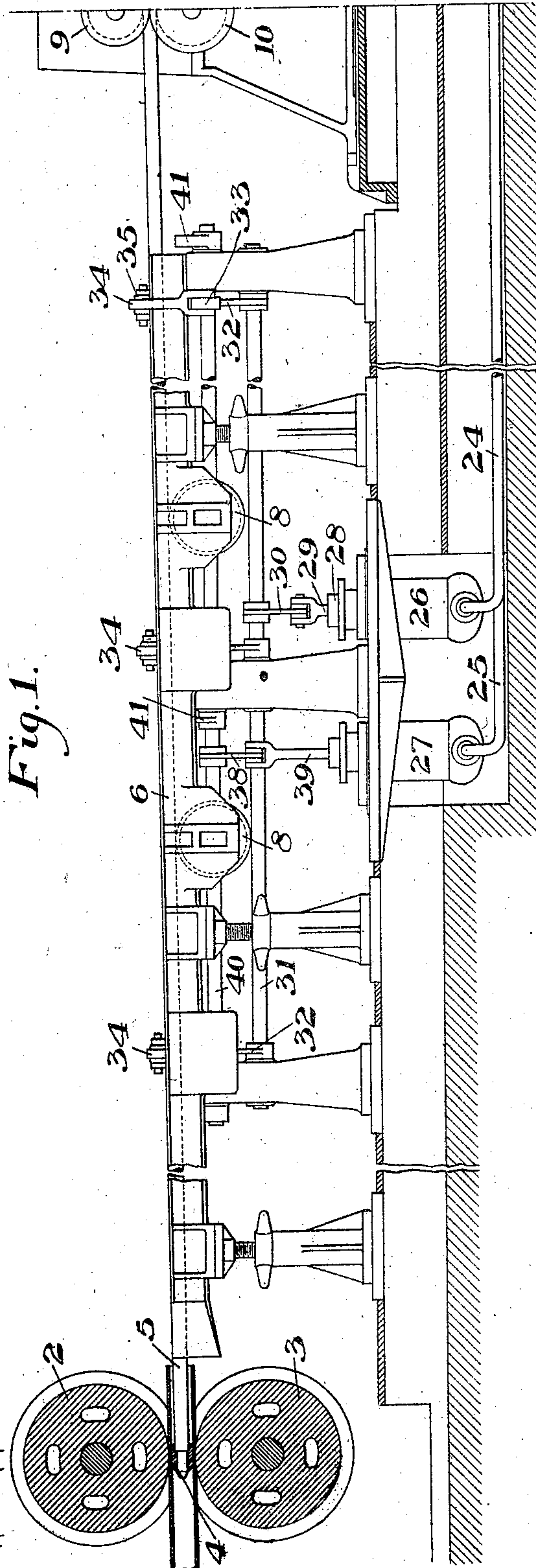


Fig. 1.

WITNESSES

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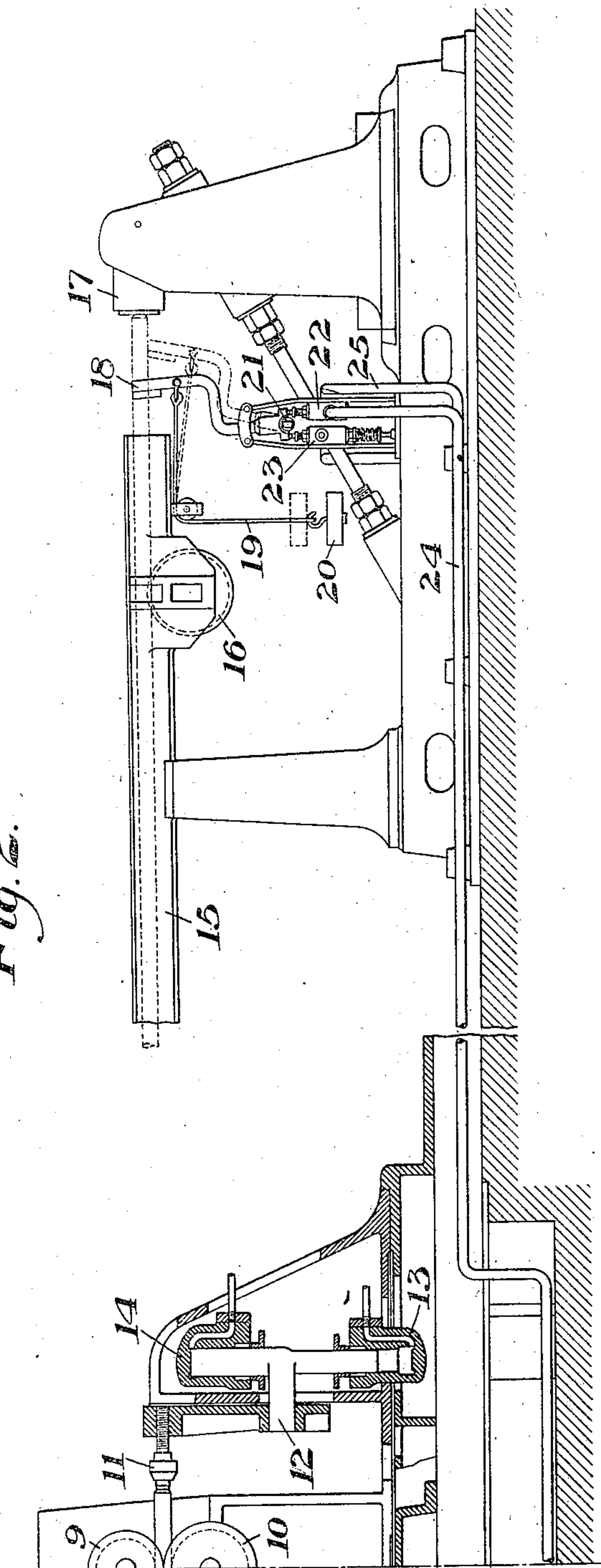
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3 SHEETS—SHEET 2.

Fig. 2.



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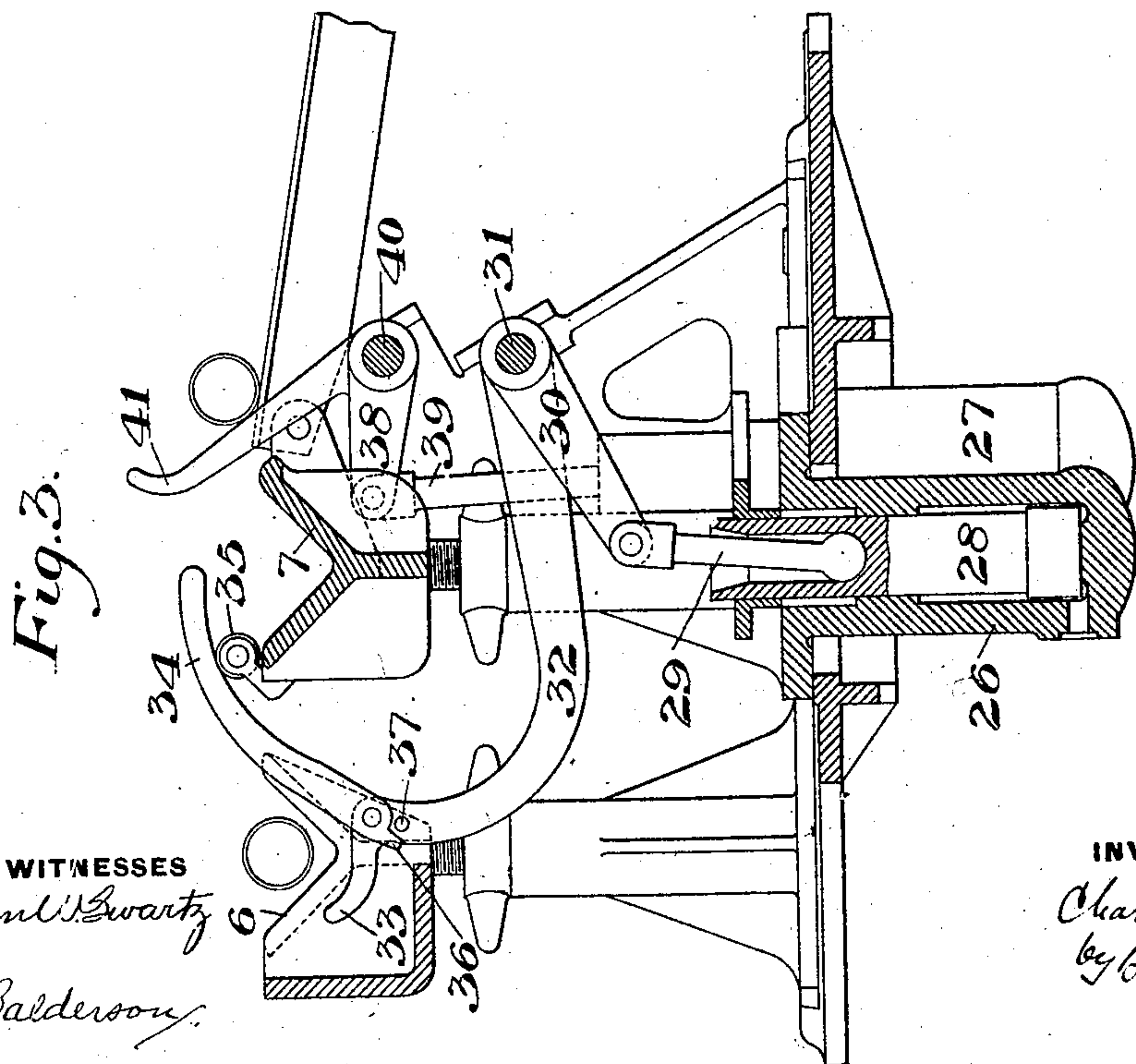
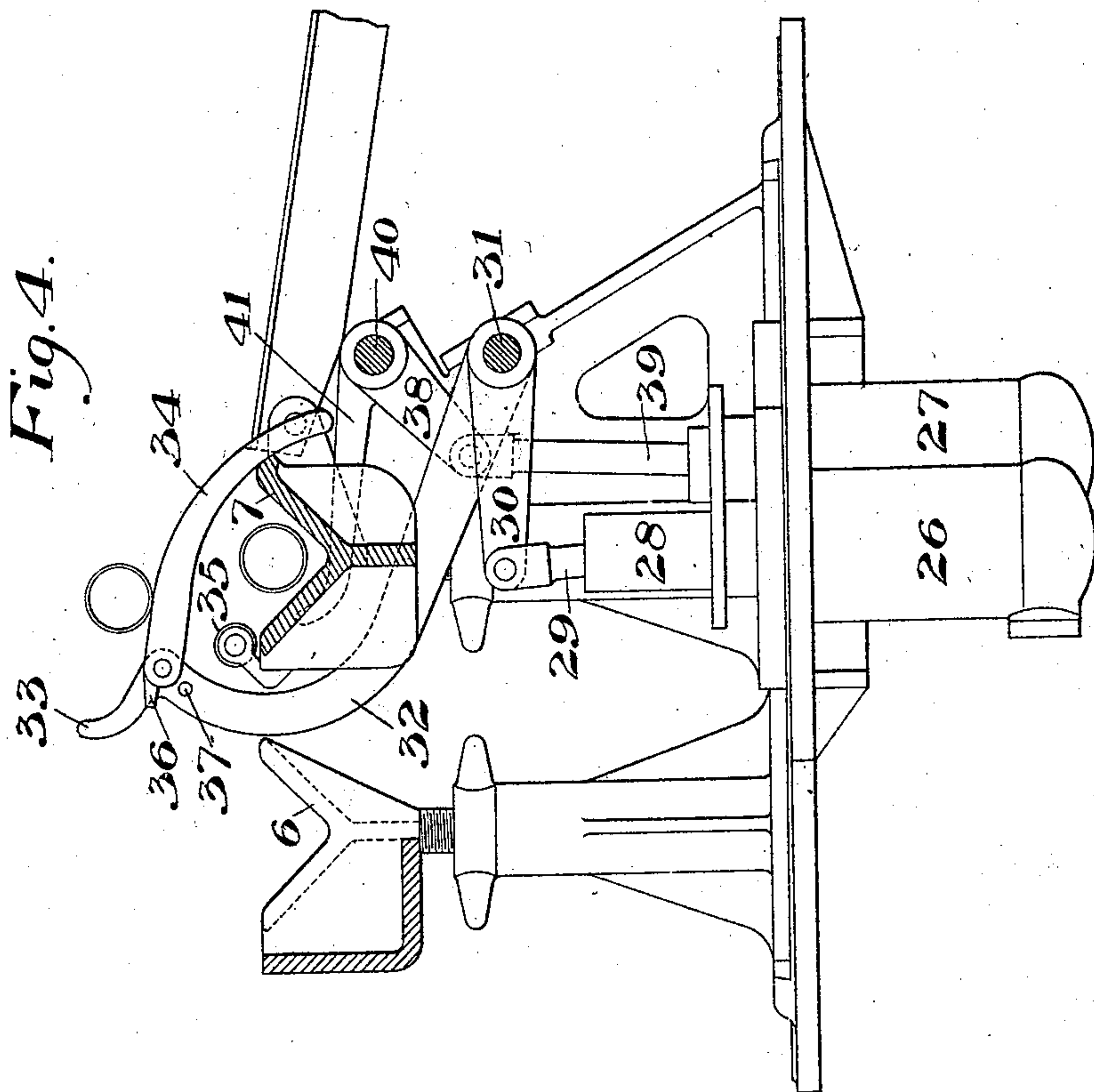
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CHARLES FELL, OF ELYRIA, OHIO, ASSIGNOR TO NATIONAL TUBE COMPANY,
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TROUGH SYSTEM FOR PIPE-WELDING APPARATUS.

No. 844,340.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed June 7, 1906. Serial No. 320,538.

To all whom it may concern:

Be it known that I, CHARLES FELL, of Elyria, Lorain county, Ohio, have invented a new and useful Trough System for Pipe-Welding Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 are successive broken side elevations, partly in section, which together show the essential parts of the system; and Figs. 3 and 4 are cross-sections showing the discharge mechanism at different positions.

My invention relates to the drawing of the mandrel from welded pipe and also the discharge of the pipe from the receiving-trough.

The object of the invention is to provide for automatically discharging the pipe as the welding-bar is withdrawn and also to provide simple and efficient mechanism for withdrawing the bar.

A further object of the invention is to provide for a duplicate trough system involving the above features which may be used either on a single or multiple trough arrangement.

In the drawings, 2 and 3 represent upper and lower welding-rolls, of which there are two sets in the apparatus, shown located side by side at the corresponding openings of the heating-furnace.

4 is the welding-ball carried on the end of the welding-bar 5, which extends back within the trough 6. There are two of these troughs 6 and 7, located side by side and in line with the two sets of welding-rolls, each trough having a series of separated carrying-rollers 8, over which the pipe passes during welding.

In the rear of each trough is a pair of pinch-rolls 9 and 10, in the rear of which is a back-stop 11, adjustably mounted on a cross-head or support 12, carried upon the double plunger of the single-acting vertical cylinders 13 and 14.

In the rear of the pinch-rolls and back-stop are the supplemental troughs 15, having rollers 16, over which the mandrel-bar passes as it is withdrawn by the pinch-rolls. In the backward movement of the welding-bar it strikes the snubbing-post 17, which stops its further movement, and before reaching this post it acts upon the lever 18, which is normally in its path. A flexible connection 19,

having a weight 20, normally holds this lever in its lifted position. The lever is pivoted at 21 and acts upon the inlet and exhaust valves 22 and 23 in the pipes 24 and 25, leading to cylinders 26 and 27, one for each welding-trough. The plunger 28 of cylinder 26 has link 29, connecting it to rock-arm 30, secured to shaft 31. The shaft 31 is provided with curved ejector-levers 32, having the fixed nose portions 33 and the pivoted link portions 34, which rest on the small rollers 35 of the trough 7. The movement of the links 34 in one direction is limited by fingers 36, contacting with pins 37 on the levers 32.

The rock-arm 38, connected by link 39 to the plunger of cylinder 27, actuates a rock-shaft 40, having ordinary ejector-levers 41.

In the operation of the device after a pipe is welded and passes into trough 6 the operator actuates the cylinders 13 and 14 to lower the back-stop 11, whereupon the pinch-rolls will draw out the welding-bar until its rear end strikes the snubbing-post. As the bar passes the lever 18 it will shift this lever, so as to supply fluid to the cylinder 26. This will occur after the mandrel-bar has been drawn out of the tube or pipe lying in the trough 6. The cylinder 26 will thereupon actuate the levers 32 and cause them to move from the position of Fig. 3 into that of Fig. 4. The levers 32 are staggered relative to the levers 41 and pass over the trough 7, so that there is no interference between the two sets of ejectors. The pinch-rolls are then reversed in their motion by the operator and act to carry the welding-bar backwardly to normal position. As soon as the welding-bar passes forwardly the lever 18 is drawn back by the counterweight, thus causing the supply and opening the exhaust of the air-valve, which will cause the plunger 28 to lower, thus drawing back the ejector-levers of trough 6 into the position of Fig. 3. The welding-bar is then carried forward far enough to permit the raising of the back-stop 11, which will hold the welding-bar for the next pipe to pass through the welding-rolls.

The operation in trough 7 is the same as that in trough 6, so that a single operator from a pulpit can control the entire trough system, including the pinch-rolls, trough-ejector mechanism, back-stops, &c.

The advantages of my invention result

from the reduced amount of labor necessary, since less operators are needed to handle the apparatus.

The system may be used with either a single set of rolls or a number of sets of welding-rolls, the stripping mechanism for the welding-bar may be varied, as well as the trough-ejector mechanism, and many other changes may be made without departing from my invention.

I claim—

1. In welding apparatus, a trough having pipe-ejector mechanism, stripping mechanism arranged to withdraw the welding-bar from a pipe in the trough, and a device located in position to be actuated by the movement of the welding-bar and arranged to start the ejector mechanism into movement at a predetermined point in the travel of the welding-bar; substantially as described.

2. In welding apparatus, a trough having side ejector mechanism, a pinch-roll device arranged to strip the welding-bar from the pipe, and a device located in position to be actuated by the movement of the welding-bar, and arranged to start the ejector mechanism into movement at a predetermined point in the travel of the welding-bar; substantially as described.

3. In pipe-welding apparatus, a trough, side ejector mechanism therefor, stripping mechanism for withdrawing the welding-bar, a movable back-stop under the control of the operator, and an element in the rear of said back-stop and in the path of the welding-bar,

said element being arranged to start the ejector mechanism into movement; substantially as described.

4. In pipe-welding apparatus, a trough, side ejector mechanism therefor, a motor for the ejector mechanism, a stripping device, a movable back-stop under the control of the operator, and an element in the path of the mandrel-bar and in the rear of the back-stop, said device controlling the valve for the ejector-motor; substantially as described.

5. In welding apparatus, a trough, ejector mechanism therefor, reversible pinch-rolls, a movable back-stop, and a lever in the path of the welding-bar and in the rear of the back-stop, said lever having connections controlling the movement of the trough-ejector mechanism; substantially as described.

6. In welding apparatus, a trough or receiver, ejector mechanism therefor, a pair of pinch-rolls arranged to withdraw the welding-bar, a movable back-stop under the control of the operator, another back-stop to stop the stripping movement of the bar, a lever in the path of the bar near the rear back-stop, and a motor controlled by the movement of the latter lever and having connections arranged to actuate the trough-ejector; substantially as described.

In testimony whereof I have hereunto set my hand.

CHARLES FELL.

Witnesses:

H. J. ELLEN,
E. H. MOUNTAIN.