

R. F. DEVINE.
MECHANICALLY OPERATED TONGS.
APPLICATION FILED DEC. 16, 1908.

976,052.

Patented Nov. 15, 1910.

Fig. 2.

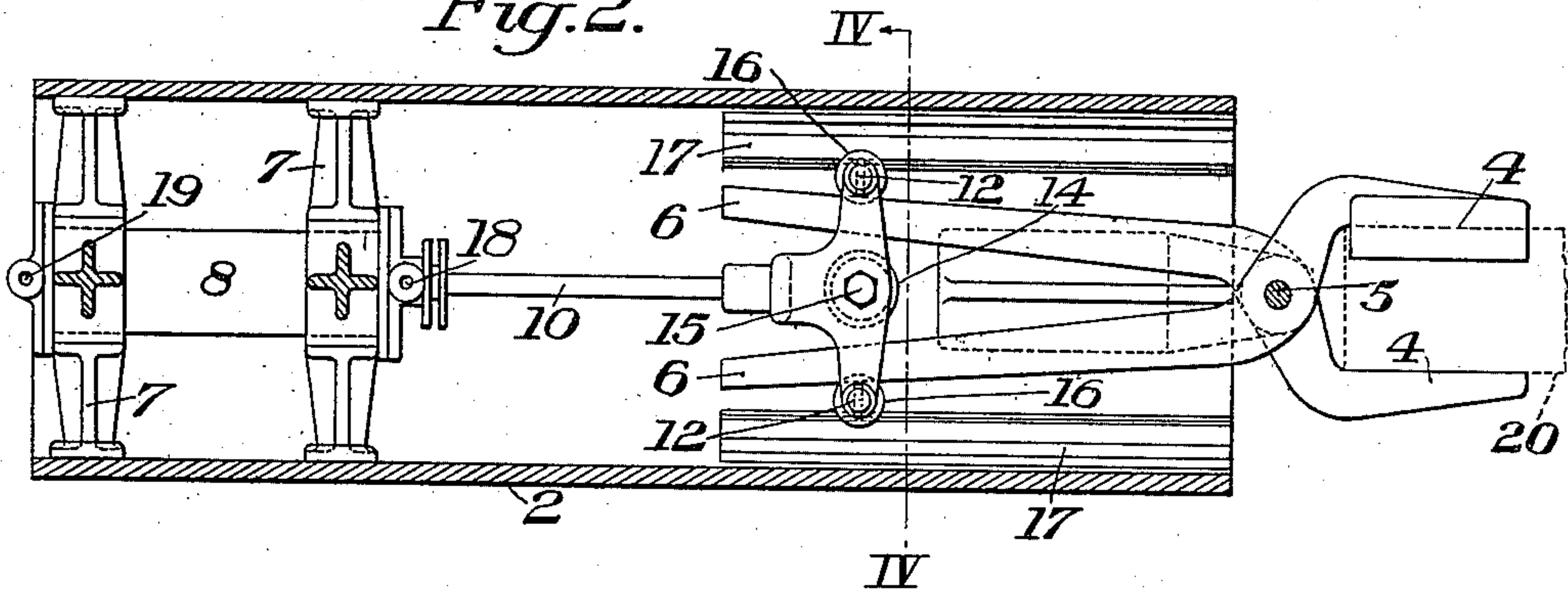


Fig. 3.

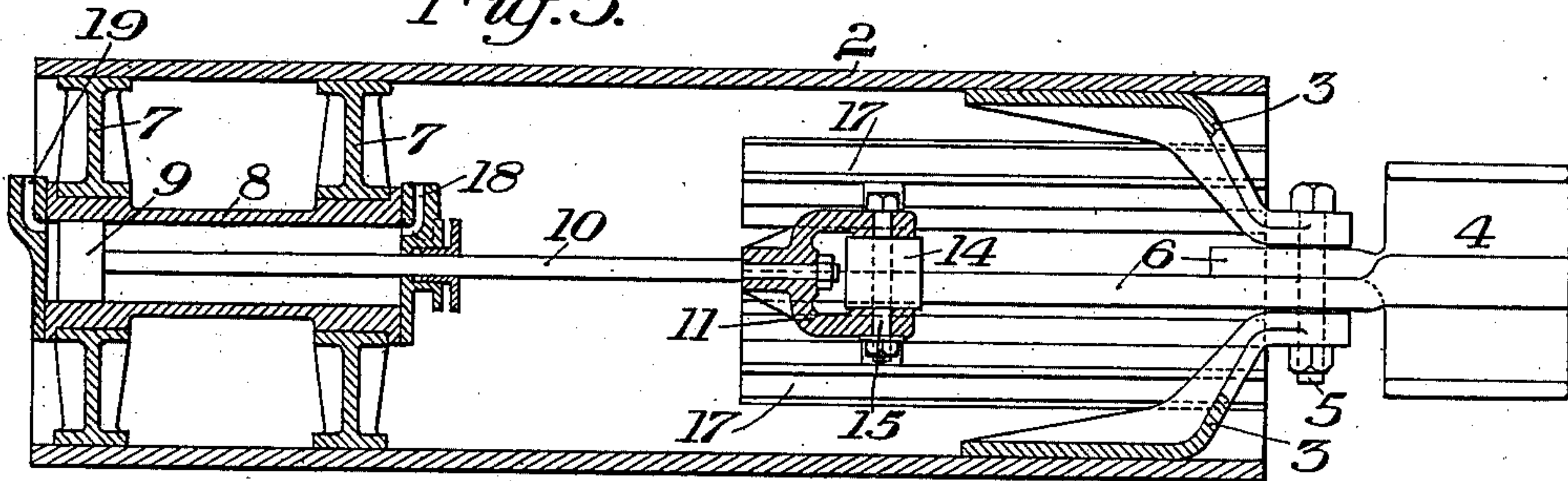
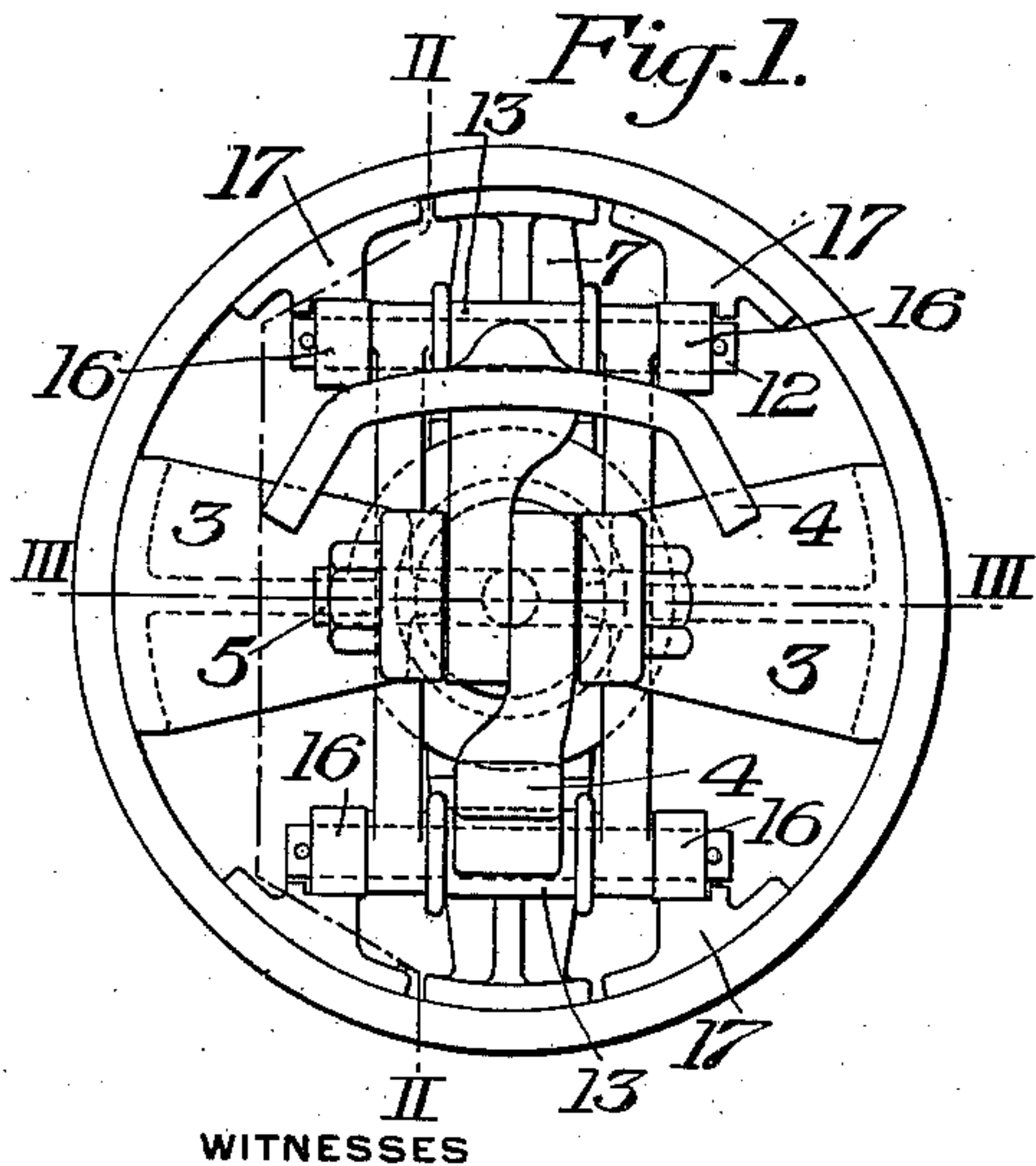


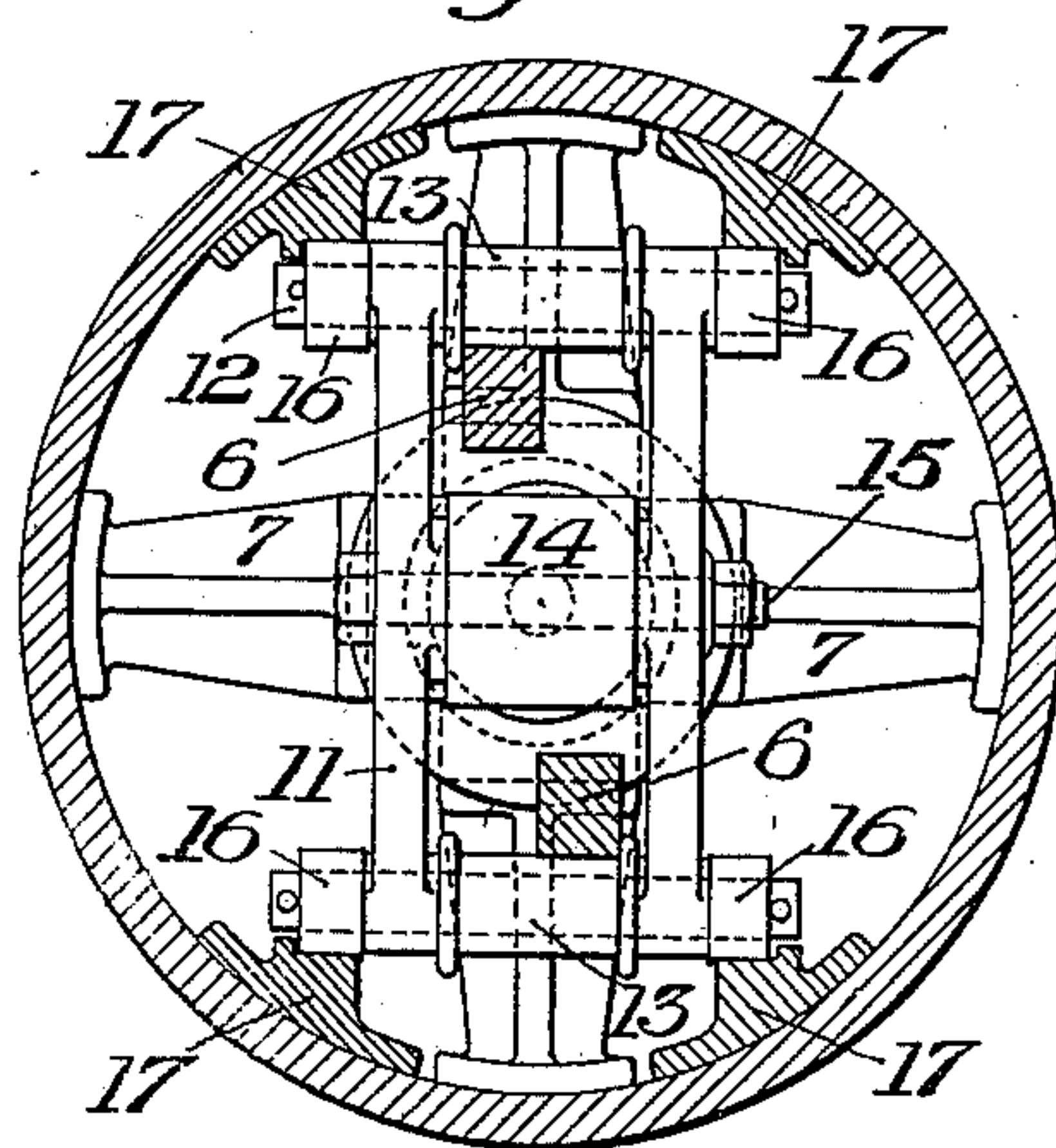
Fig. 1.



WITNESSES

R. A. Balderson
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Fig. 4.



INVENTOR

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UNITED STATES PATENT OFFICE.

ROBERT F. DEVINE, OF ERIE, PENNSYLVANIA.

MECHANICALLY-OPERATED TONGS.

976,052.

Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed December 16, 1908. Serial No. 467,791.

To all whom it may concern:

Be it known that I, ROBERT F. DEVINE, of Erie, Erie county, Pennsylvania, have invented a new and useful Mechanically-Operated Tongs, 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—

Figure 1 is a front view of one form of tongs and operating mechanism embodying my invention; Fig. 2 is a longitudinal section on the line II—II of Fig. 1; Fig. 3 is a similar view on the line III—III of Fig. 2; Fig. 4 is a transverse section on the line IV—IV of Fig. 1.

My invention relates to mechanically operated tongs, and is designed to provide a cheap, durable, efficient and positive means to operate the tongs.

My invention consists of a suitable frame work to which the members of the tongs are pivoted, which frame work is also provided with suitable guides on which is mounted an opening and closing device for the tongs. This frame work is connected to a crane or any other device on which a pair of tongs of this character is used, and is connected in any manner to meet the requirements of the work in which the tongs are to be used.

As the manner of securing the frame work forms no part of this application I have not shown any means for connecting such frame to the device with which it is to be connected.

The precise nature of my invention will be best understood by reference to the accompanying drawings, which will now be described, it being premised, however, that changes can be made in the details of construction and general arrangement, without departing from my invention.

In the drawings the numeral 2 designates the supporting frame, which in this case is illustrated as a tube open at both ends and to the front end of which are secured the brackets 3. The outer ends of these brackets are bent inwardly, and between them is supported a pair of tongs 4 by means of their pivot pin 5 which projects through orifices in the ends of the brackets and is provided with a head at one end and a nut on the other.

These tongs are provided with the usual rearwardly extending reins 6 which project into the tube 2. Mounted in the rear end of the tube 2 are the spiders 7 in which is mounted the cylinder 8 having a piston 9

provided with a piston rod 10. To the outer end of this rod is connected the bifurcated cross-head 11.

Journalled on pins 12 and between the ends of the bifurcated cross-head 11, are the flanged rollers 13; 14 is a roller journalled in the central portion of the bifurcated cross-head on the screw 15. 16, 16, are rollers journalled on the outer ends of the pins 12 each of which runs on a flanged guide 17 secured to the inner wall of the tube 2.

The rearwardly extending reins 6 of the tongs 4 project between the two members of the bifurcated cross-head, the upper rein lying between the central roller 14 and the upper flanged roller 13, while the lower rein lies between the central roller 14 and the lower flanged roller 13.

The cylinder 8 is provided with the respective forward and rear ports 18 and 19, which are connected in any manner to valve mechanism for admitting pressure to and exhaust from both ends of the cylinder.

In the drawings the jaws of the tongs are shown closed upon a piece 20 and the piston is moved to the extreme left of the cylinder. When it is desired to release the article, the tongs are moved to a point where the article is to be deposited and the controlling valve is shifted to admit pressure through the port 19 and open the port 18 to exhaust, thereby shifting the piston and the cross-head 11 to the right. The rollers 13 will release the reins 6 and the roller 14 will contact with the inner sides of the reins and open the jaws to release the piece 20 and to grasp the next piece.

The advantages of my invention result from providing a frame supporting a pair of tongs pivoted thereto, and a reciprocating member mounted in suitable guides on the frame to open and close the tongs. Also, in providing antifriction rollers to open and close the tongs, and a second set of rollers which contact with the guides. Also, in providing positively operated means to open and close the tongs and to hold the tongs in their closed position to retain the article in the jaws thereof.

I claim:—

1. In mechanically operated tongs, a tubular carrier having inwardly extending brackets, a pair of tongs having two members pivoted to each other and to said brackets, said tongs having reins within the carrier and angularly disposed with relation to

each other, a reciprocating member mounted in guides within the carrier and surrounding the reins, the reciprocating member engaging the reins to close the tongs when moved in one direction, and means to move the reciprocating member; substantially as described.

2. In mechanically operated tongs, a carrier having inwardly extending brackets, a pair of tongs pivoted to said brackets and having rearwardly extending reins, guides on the carrier, a reciprocating member engaging the guide and surrounding the reins and means to move the reciprocating member to draw the reins toward each other to close the tongs; substantially as described.

3. In mechanically operated tongs, a tubular carrier, a pair of tongs pivoted to the carrier and having reins extending within the carrier, guides in the carrier, a reciprocating member within the carrier to open and close the tongs, rollers bearing on the guides, rollers bearing on the reins, and a pressure operated piston within the carrier to move the reciprocating member, substantially as described.

4. In mechanically operated tongs, a carrier, a pair of tongs pivoted to the carrier, a rearwardly projecting inclined rein projecting from each member of the tongs, flanged guides on the carrier, a reciprocating member having rollers bearing on the flanged guides, rollers within the reciprocating member engaging each of the inclined reins to open and close the tongs, and means to move the reciprocating member; substantially as described.

5. In mechanically operated tongs, a carrier, a pair of tongs pivoted to the carrier, a rearwardly projecting inclined rein pro-

jecting from each member of the tongs, flanged guides on the carrier, a reciprocating member having rollers bearing on the flanged guides, rollers within the reciprocating member engaging each of the inclined reins to open and close the tongs, and a pressure actuated piston to move the reciprocating member; substantially as described.

6. In mechanically operated tongs, a carrier, a pair of tongs pivoted to the carrier, a rearwardly projecting inclined rein projecting from each member of the tongs, flanged guides on the carrier, a pressure cylinder having a piston therein, a piston rod, a bifurcated cross-head connected to the piston rod, having rollers engaging the flanged guides and rollers journaled between the members of the cross head engaging the reins of the tongs; substantially as described.

7. In mechanically operated tongs, a tubular carrier, a pair of tongs having two members pivoted to each other and to the carrier, said members comprising reins and jaws, the jaws extending beyond the end of the carrier and the reins extending within the carrier, a reciprocating member within said carrier and arranged to open and close the jaws, a cylinder within said carrier, and a piston connected to the reciprocating member and within the cylinder arranged to move said member; substantially as described.

In testimony whereof, I have hereunto set my hand.

ROBERT F. DEVINE.

Witnesses:

K. R. KANE,

CHARLES G. BREVILLIER.