

No. 865,096.

PATENTED SEPT. 3, 1907.

G. E. FOSTER.  
PIPE TURNING MACHINE.  
APPLICATION FILED MAY 1, 1907.

2 SHEETS—SHEET 1.

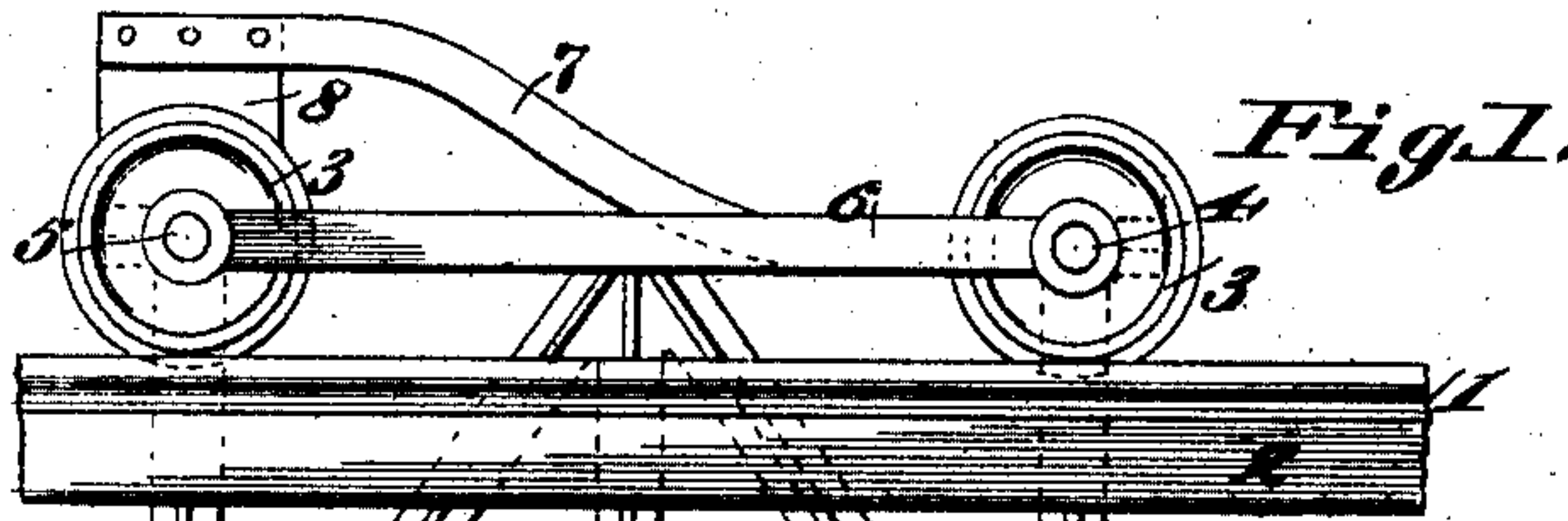


Fig. 1.

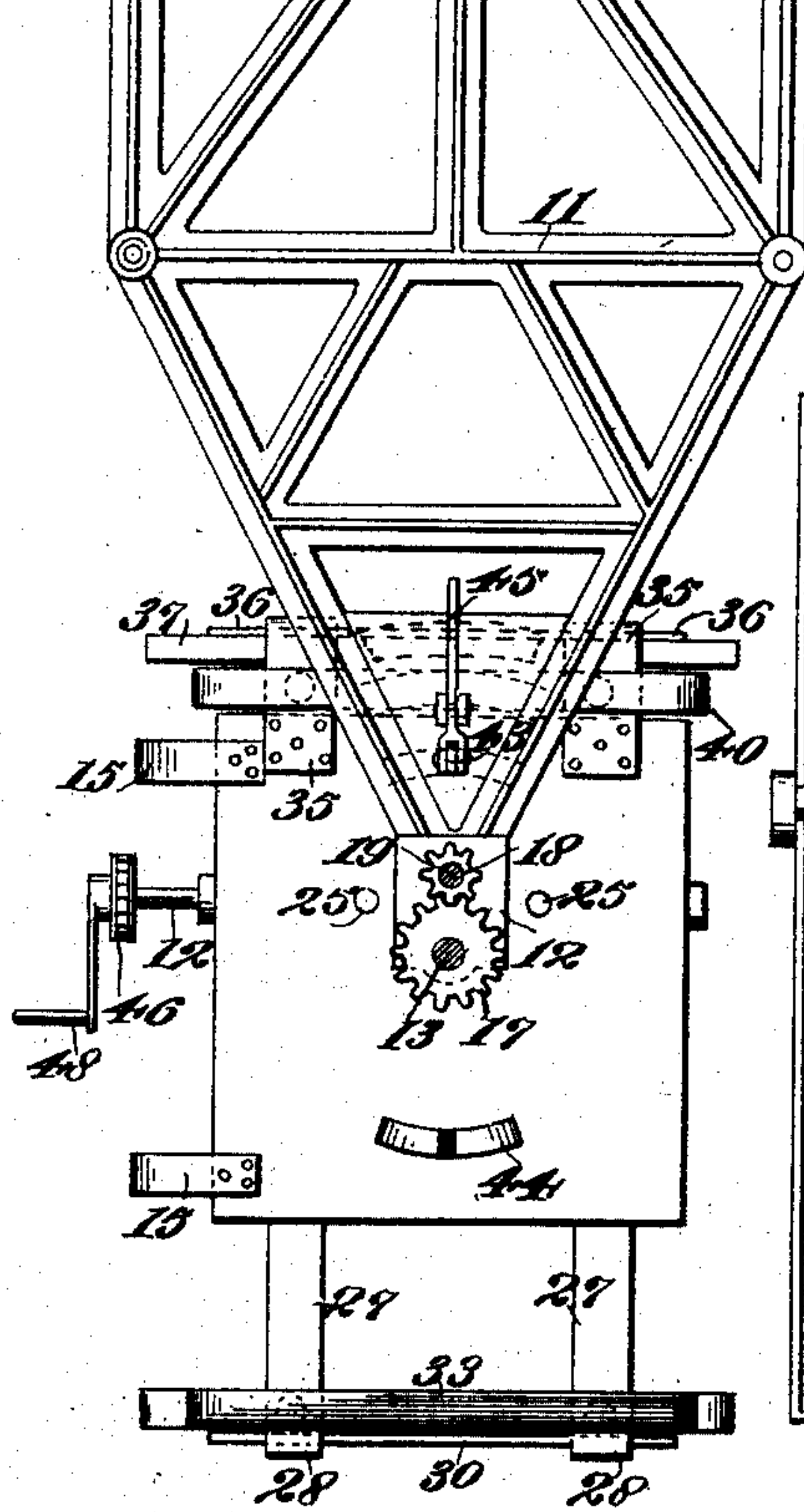


Fig. 2.

Fig. 3.

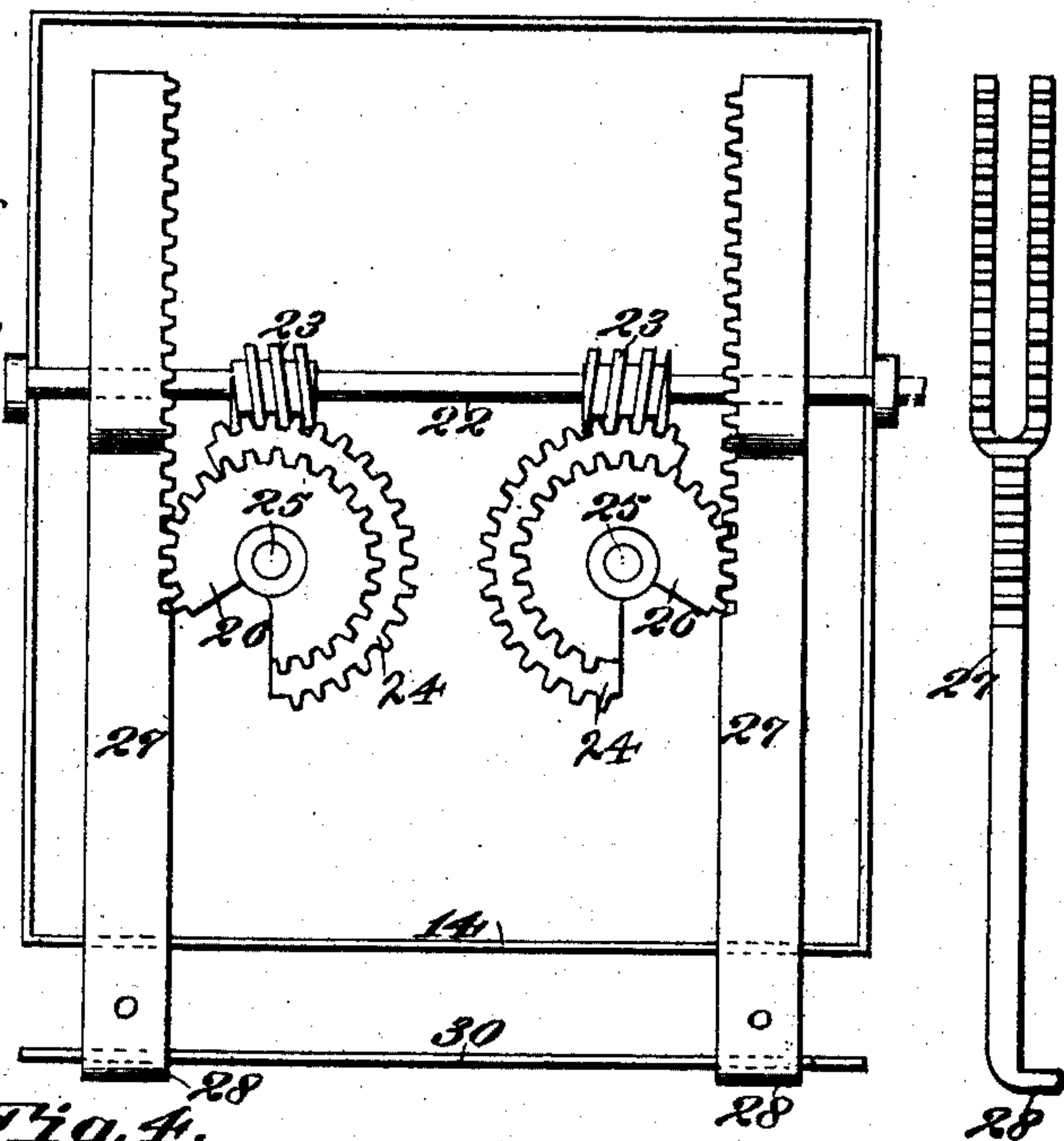
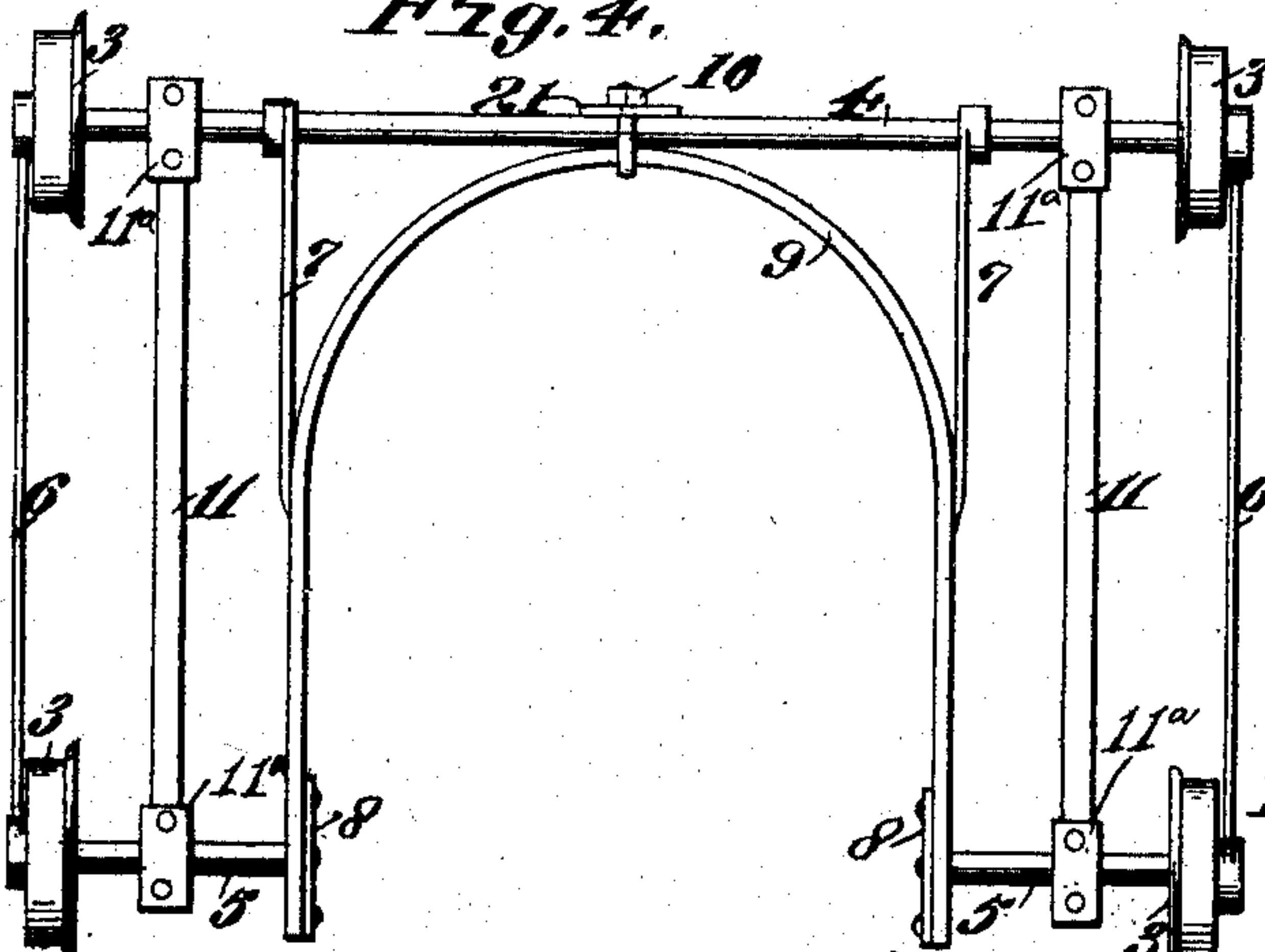


Fig. 4.



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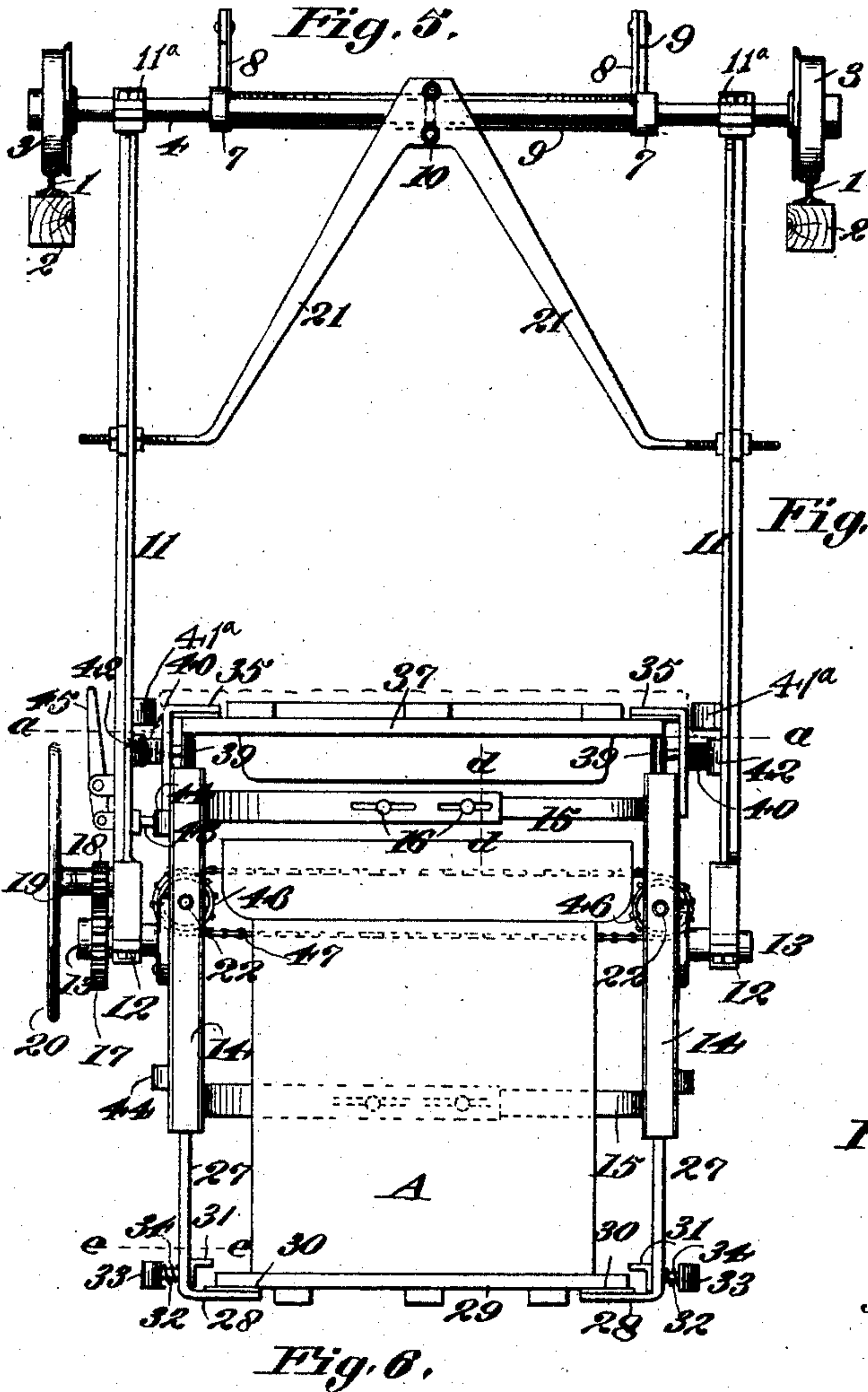
Inventor:  
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by J. D. Rippey  
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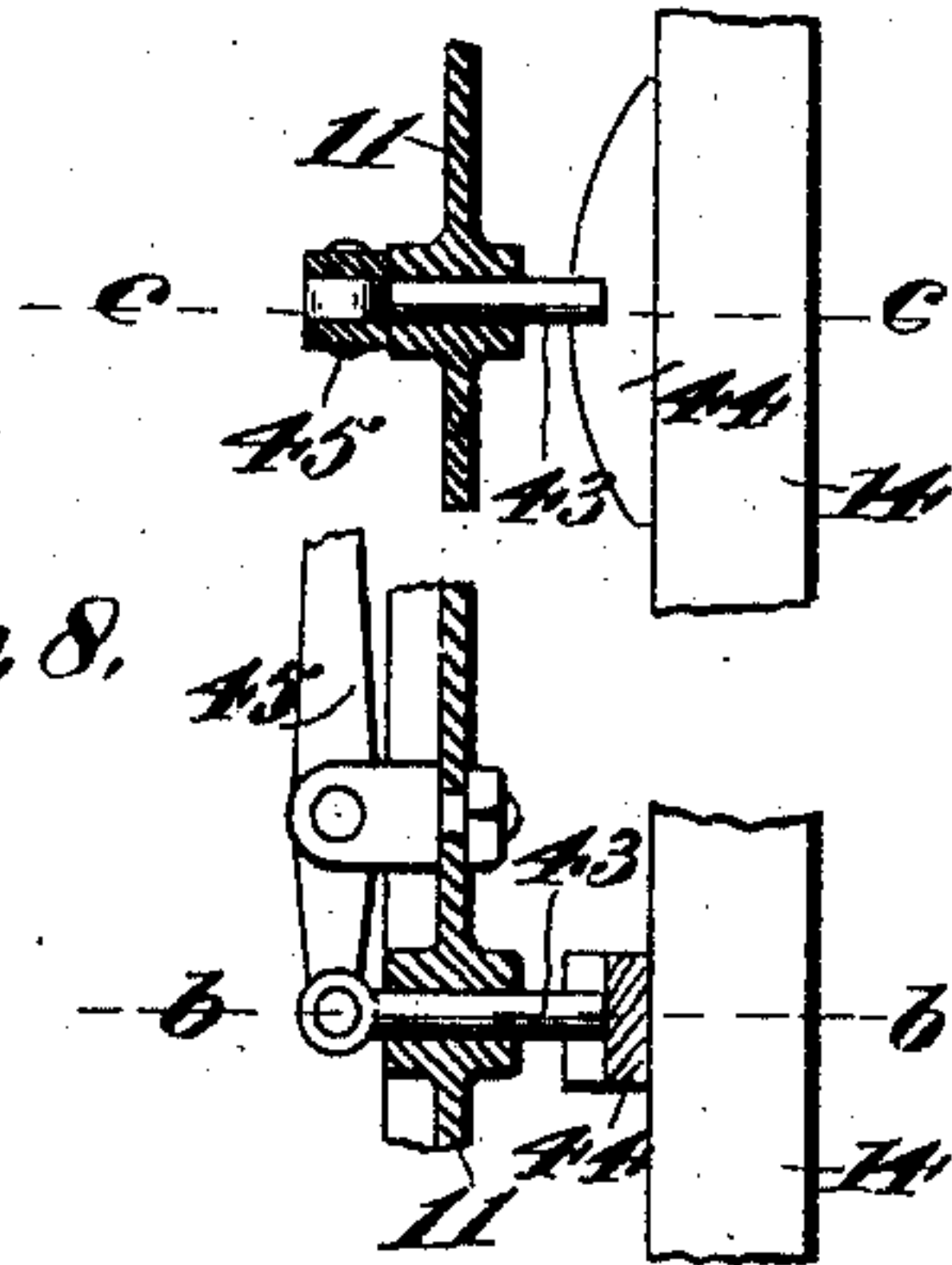
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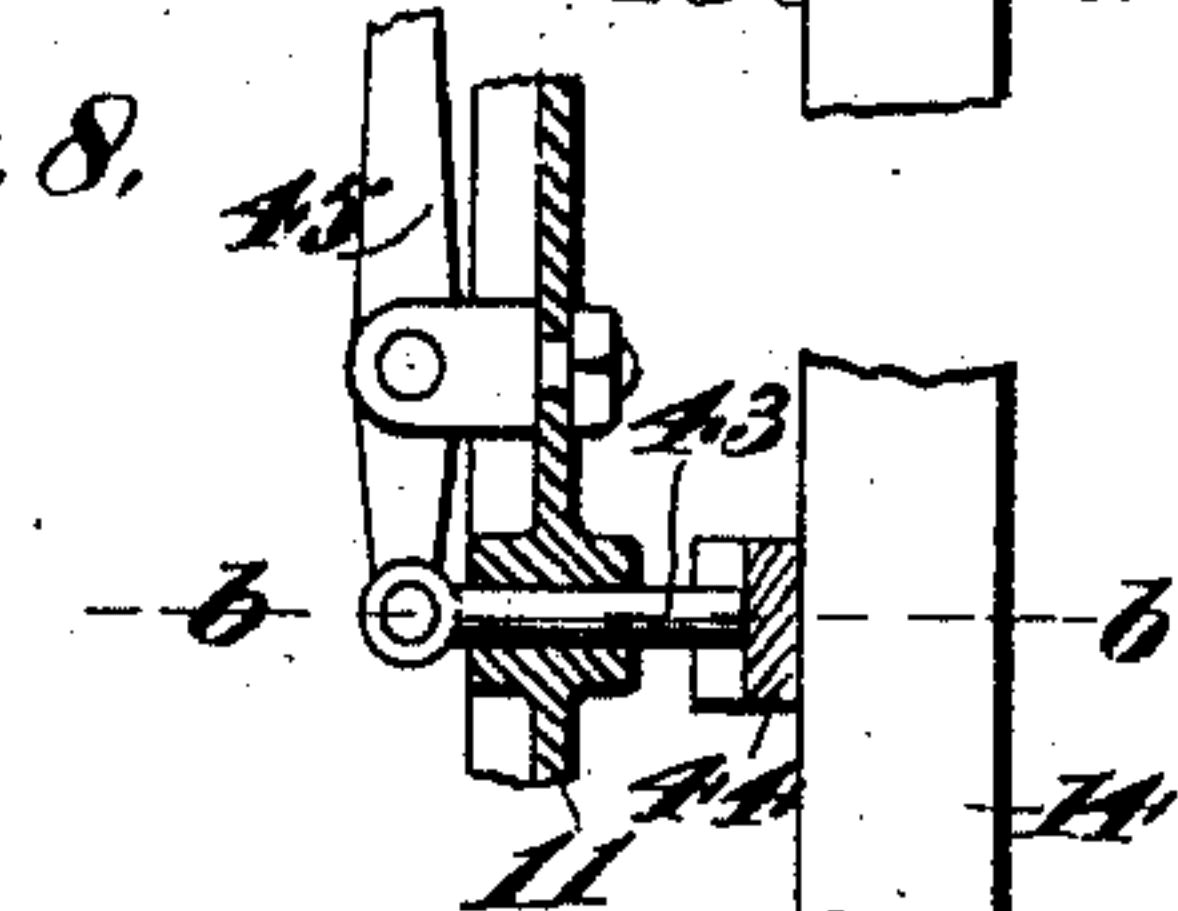
2 SHEETS—SHEET 2.



*Fig. 7.*



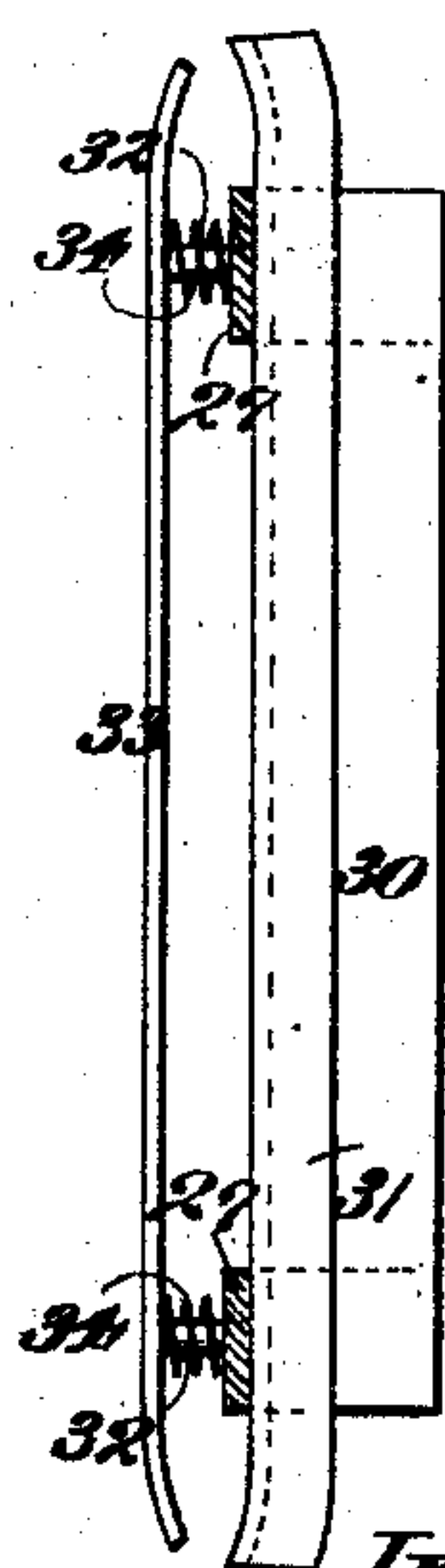
*Fig. 8.*



*Fig. 9.*



*Fig. 10.*



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# UNITED STATES PATENT OFFICE.

GEORGE E. FOSTER, OF EAST ALTON, ILLINOIS.

## PIPE-TURNING MACHINE.

No. 865,096.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed May 1, 1907. Serial No. 371,267.

*To all whom it may concern:*

Be it known that I, GEORGE E. FOSTER, a citizen of the United States, residing at East Alton, Illinois, have invented a new and useful Pipe-Turning Machine, of which the following is a specification.

My invention relates to the manufacture of pipe of clay or from other plastic materials, and it consists of the novel construction, combination and arrangements of parts hereinafter shown, described and claimed.

10 The principal object of my invention is to facilitate the handling of large pipe while in the plastic state after it has been formed by the ordinary pipe press in the usual way, and consists of the combination of arrangements as shown by the drawings forming a part of these specifications.

15 Figure 1 is a side elevation of the machine. Fig. 2 is a view of the clamping and lowering mechanism. Fig. 3 is a side view of one of the sliding racks contained within the sides of the pipe receiver. Fig. 4 is a plan view of the truck. Fig. 5 is an end elevation of machine, showing the manner of lowering a pipe from the receiver. Fig. 6 is a sectional view on the line *a-a* of Fig. 5 looking downward. Fig. 7 is a sectional view taken on the line *b-b* of Fig. 8 showing the arrangement of the locking device whereby the pipe receiver is held in its vertical positions. Fig. 8 is a sectional view of the same devices along the lines *c-c* of Fig. 7. Fig. 9 is a sectional view on the lines *d-d* of Fig. 5, illustrating the arrangement of a reinforced 30 brace between the two sides of the pipe receiver. Fig. 10 is a sectional view of the rack extensions taken approximately on the lines *e-e* of Fig. 5 looking downward and showing the construction of the pipe board carrier.

35 The machine consists of a truck in the form of U laid in a horizontal plane, and operates upon two parallel rails 1 laid on supports 2 which are suspended in any suitable way. The truck is mounted on four anti-friction wheels 3, one pair of which are on the continuous axle 4, and the other pair are on the separate axially alined trunnions 5. The trunnions 5 are connected at their outer ends with the axle 4 by two side members 6, and two members 7 extend from said axle to vertical members 8 which are attached to the inner ends of said trunnions and to the extremities of a U-shaped bar 9 whose arch is attached to the axle 4 by a clamp device 10. The members 7 thus act as 45 braces to hold and support the inner ends of the trunnions 5. All of these parts so assembled and joined constitute a strong and efficient truck frame which is calculated to withstand the usage to which the machine should be subjected. This truck frame affords ample room for adjustment of the pipe receiver carrier frames that may be required to suit the various sizes 55 of pipe to be operated upon. It is to be noted that

there is considerable space between the wheels 3 and the members 7 so that the mechanism suspended by the truck may be moved together or apart, as desired.

The two side frames 11 are suspended from the axle 4 and the trunnions 5, being secured by clamp caps 60 11<sup>a</sup>. Said frames are strongly reinforced by a series of integral or rigid braces. The outer lines of the upper portion of these frames are parallel. The lower ends are substantially V-shaped and carry enlarged portions at their lower ends in which are bearings 12. 65 Said frames are held rigid by means of a brace 21 secured to U-shaped bar 9 and axle 4 by clamp and nuts 10. The brace 21 has threaded spindles at its outer ends, each being provided with two nuts. Said spindles protrude through holes in the frames 11 and afford means to hold said frames the proper distance 70 apart. A trunnion 13 is journaled in each bearing of the side frames 11, said two trunnions being axially alined. The inner end of each trunnion is attached by a plate to a frame 14, said two frames being joined 75 by two braces 15. Each brace comprising a channel member and a flat member resting in the channel, said two members being fastened by bolts 16 extending through holes in the channel member and slots in the flat member, affording means for enlarging or 80 reducing the size of the pipe receiver, as side frames 11 are adjusted to that end.

One of the trunnions 13 has a gear wheel 17 rigidly attached thereto and meshed with a pinion 18 on a trunnion 19. A hand wheel 20 on the end of the trunnion 19 affords means for rotating the enmeshed pinion and gear wheel, and thereby the trunnion 13. Since the frames 14 are rigidly united by the braces 15, it follows that the entire receiver comprising said two frames or sides 14 and their connections and the parts supported 90 thereby will be rotated by operation of said hand wheel 20. A shaft 22 is journaled in bearings in each of the frames 14. Two worm screws 23, one right and one left hand, are on each shaft within its frame 14 (Fig. 2), said worms meshing with gear segments or wheels 24 on 95 trunnions 25 within the frames. On each of the worm wheels 24 and forming a part thereof are two spur gears 26. Two racks 27 of the construction shown in Figs. 2 and 3, project vertically into each frame 14, being meshed with the wheels 26 and having extensions protruding through holes in the frames. The protruding 100 ends of said racks 27 have inwardly extending hooks 28 adapted, when extending downward, to hold an ordinary pipe board 29. A bar 30 is attached to the hooks 28 on each pair of racks thereby holding them in proper 105 relation, or the racks, their extensions, and bar 30 may be formed of one piece. An angle iron member 31 extends across each pair of the rack extensions, being carried on the inner ends of sliding bolts 32 which operate through holes in said rack extensions and whose outer 110



ends are connected by bars 33. A spring 34 encircles each of said bolts 32, actuating them outwards and holding angle irons 31 against the rack extensions, but permitting operation to move the edges of the angle iron so as to support the pipe board 29 when required.

The opposite ends of the pipe receiver frames 14 carry brackets or hooks 35, which are connected and reinforced by bars or plates 36, being adapted to receive and hold an ordinary socket or plug board 37. Bolts 38 operate through holes in the vertical portions of the hooks 35, and the inner ends of each pair of said bolts are connected by a plate 39, while the outer ends of said bolts are connected by bars 40. Springs 41 (Fig. 6) encircle the bolts 38 and actuate them outward, tending to hold the plates 39 against the hooks 35 and away from the plug board 37. A cam 42 is on each frame 11 in position so that, when the frame is in the position as shown in Fig. 5, the plates 39 are held inward under the edges of the plug board 37, being actuated inward by the bars 40 rubbing against the cams 42 as the pipe receiver moves to such position. Likewise the angle iron 31 will be actuated inward when the pipe receiver is turned to reverse the ends of the frame by the bars 33 rubbing against the cams 41<sup>a</sup>.

The pipe receiver will be held in either position by a lock bolt 43 operating through a hole in one of the side frames 11 in position to engage in holes in blocks 44 attached to one side of the pipe receiving frame 14. A lever 45 pivotally carried by the frame 11 affords means for operating said lock bolt. A sprocket wheel 46 is attached on each of the shafts 22 and connected by linkbelt or chain 47 whereby said shafts may be rotated synchronously. A crank 48 on one of the shafts 22 affords means for manually rotating said shafts 22. Since said shafts 22 are enmeshed with the racks 27 through the medium of intermediate gearing, it is obvious that rotation of the shafts moves the racks 27.

The operation of the machine is as follows: The machine is placed before the pipe press (not shown) in the adjustment shown in Fig. 1, the pipe press being leftward from the machine. The plug board 37 is upheld by the bars 39. The pipe issues from the press with the socket end down. The plug board 37 is then removed from its position in the turning frames and is inserted under the pipe issuing from the press. The frame, comprising the various parts supported by the trunnions 13, is then turned one-half of a revolution by means of the hand wheel 20 as required to bring the open side or end of the frame to correspond with the U-shaped truck whose open side is toward the press. The machine is then moved toward the press, the open side of the truck and frame suspended therefrom permitting close approach. The hooks 35 being downward pass under the plug board 37 whereon the pipe rested after it was inserted under the pipe, said hooks then supporting the plug board and pipe. When the receiver frame is turned to position the plates 30 at the upper end of the frame, said plates are held at an elevation above the end of the pipe sufficient to permit subsequent treatment and trimming of the pipe as required to perfect it. Rotation of the crank 48 in proper direction lowers the racks 27, and thereby the plates 30. The board 29 is then inserted above the end of the pipe and the crank 48 is rotated until the said board is bound against the end of the pipe by the

hooks 28 and the plates 30. Then the lock-bolt 40 is released from the block 44 and the wheel 20 is operated to turn the receiver frame end for end as required to rest the pipe upon the board 39 and place the board 37 above the pipe. The crank 48 is now operated to lower the racks 27 and thereby the board 29 and the pipe thereon to permit removal thereof. The board 37 is upheld by the plates 39 which are pushed inward under the board by the bars 40 rubbing against the cams 42, as illustrated in Fig. 5. The machine has now completed its full work and is ready for another operation.

I am aware that there may be variations and alterations in the construction and operation of the machine within equivalent limits without departing from the spirit and scope of my invention.

Without restricting myself to exact or inessential details, what I claim and desire to secure by Letters Patent is—

1. In a pipe turning machine, a U-shaped truck frame mounted on wheels, two adjustable vertical side frames suspended from said truck, means connected with said vertical side frames for moving them inward from and outward toward the truck wheels, and a receiver frame carried by said pipe frames, substantially as specified.

2. In a pipe turning machine, a truck frame, two inwardly and outwardly adjustable side frames suspended therefrom, a brace 21 connected to said side frames and adjustable to move said side frames inward and outward, an enlarged portion on the lower end of each side frame, trunnions supported in said enlarged portions, and a receiver frame supported by said trunnions, substantially as specified.

3. In a pipe turning machine, two inwardly and outwardly adjustable side frames, two housing frames revolvably supported by said frames, two hooks at one end of each of said housing frames, a plate connecting the hooks on each housing frame, two trunnions supported by each housing frame, a worm wheel and pinion on each trunnion, a rack meshing with each pinion, a board supported by said racks, and means for operating the pinions to raise and lower the racks, substantially as specified.

4. In a pipe turning machine, two housing frames, two trunnions in each frame, a worm wheel and a pinion on each trunnion, two racks extending into each housing frame, one of said racks being meshed with each pinion, hooks on said racks, a shaft journaled in each housing frame, worms on said shafts meshing with said worms on said trunnions, and means to operate said shafts, substantially as specified.

5. In a pipe turning machine, two housing frames, two trunnions in each housing frame, a worm wheel and a pinion on each trunnion, racks meshing with said pinions, a board carried by said racks, means in connection with said worms for operating said pinions to raise and lower the racks, hooks attached to one end of said housing frames, bolts operating in holes in said hooks, plates connected to said bolts, springs for actuating the bolts in one direction, cams for actuating the bolts in the other direction, and a plug board between said plates and said hooks.

6. In a pipe turning machine, the combination with the parts 27 and the hooks thereon, of bolts operating through holes in said parts 27, angle-iron members on the inner ends of said bolts, bars connecting the outer ends of said bolts, springs for actuating said bolts outward, cams for actuating said bolts inward, and a board adapted to be supported in one position by the hooks on said parts 27 and in another position by said angle-irons, substantially as specified.

7. In an apparatus of the character described, two frames, means for adjusting said frames different distances apart, two side frames pivoted to said first named frames, two racks in each of said side frames, a crank, two shafts arranged to be rotated by said crank, gear connections between said crank and said shafts, a platform carried by



said racks, a platform at the opposite end of said two side frames, means to turn the side frames end for end, and a lock to hold them in different positions, substantially as specified.

- 5 8. In an apparatus of the character described, a truck, two depending frames attached to said truck, means for adjusting said frames different distances apart, two side frames pivoted to said first-named frames, two racks in each side frame, manually operable means to move the  
10 racks vertically, a platform carried by said racks, angle irons carried by said racks, means for revolving the two

side frames synchronously, angle irons carried by the racks, means for moving the angle irons to support the platform at required times, and a platform at the opposite end of the side frames, substantially as specified.

15

In testimony whereof, I hereunto affix my signature to this specification this 27th day of April, 1907, in the presence of two witnesses.

GEORGE E. FOSTER. [L. S.]

Witnesses:

J. A. LYNN,

HENRY CARPENTER.