

No. 720,840.

PATENTED FEB. 17, 1903.

T. McL. PARK.
AUTOMATIC LOADING DEVICE.

APPLICATION FILED NOV. 1, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

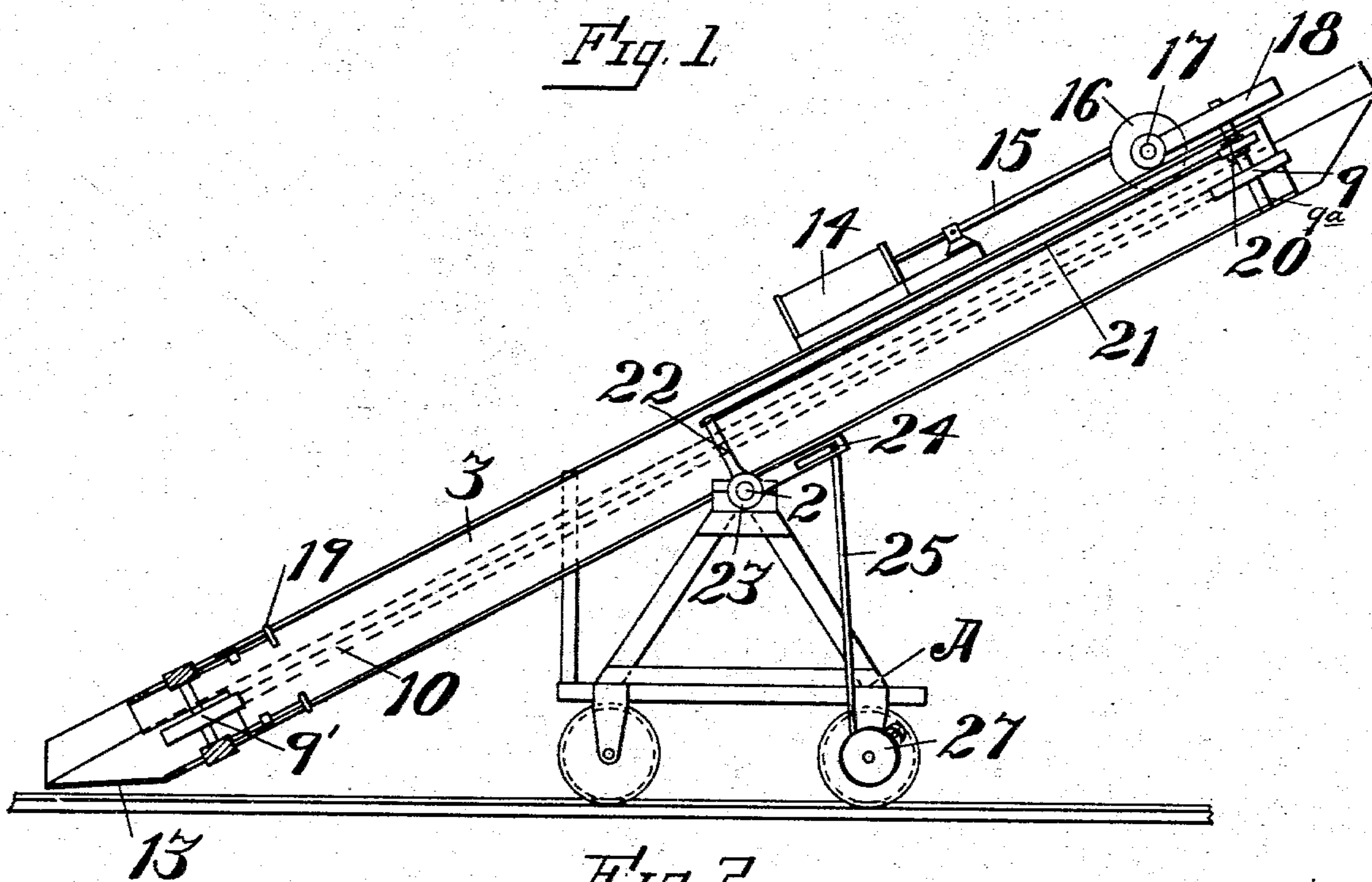


Fig. 2.

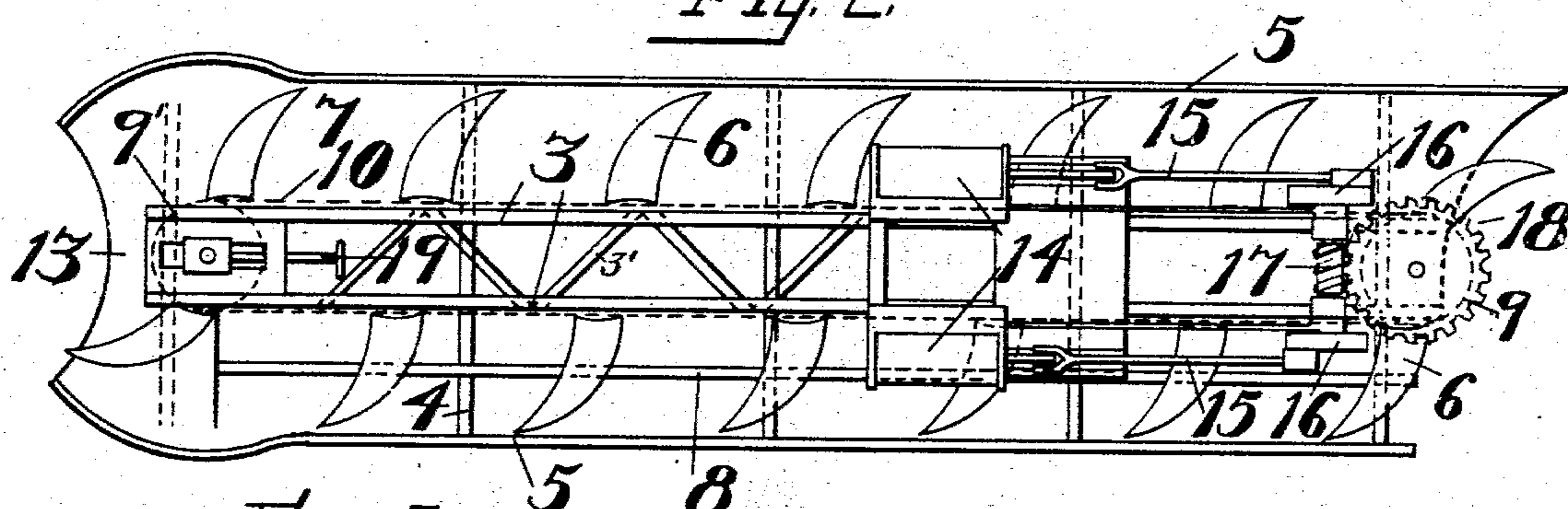


Fig. 3.

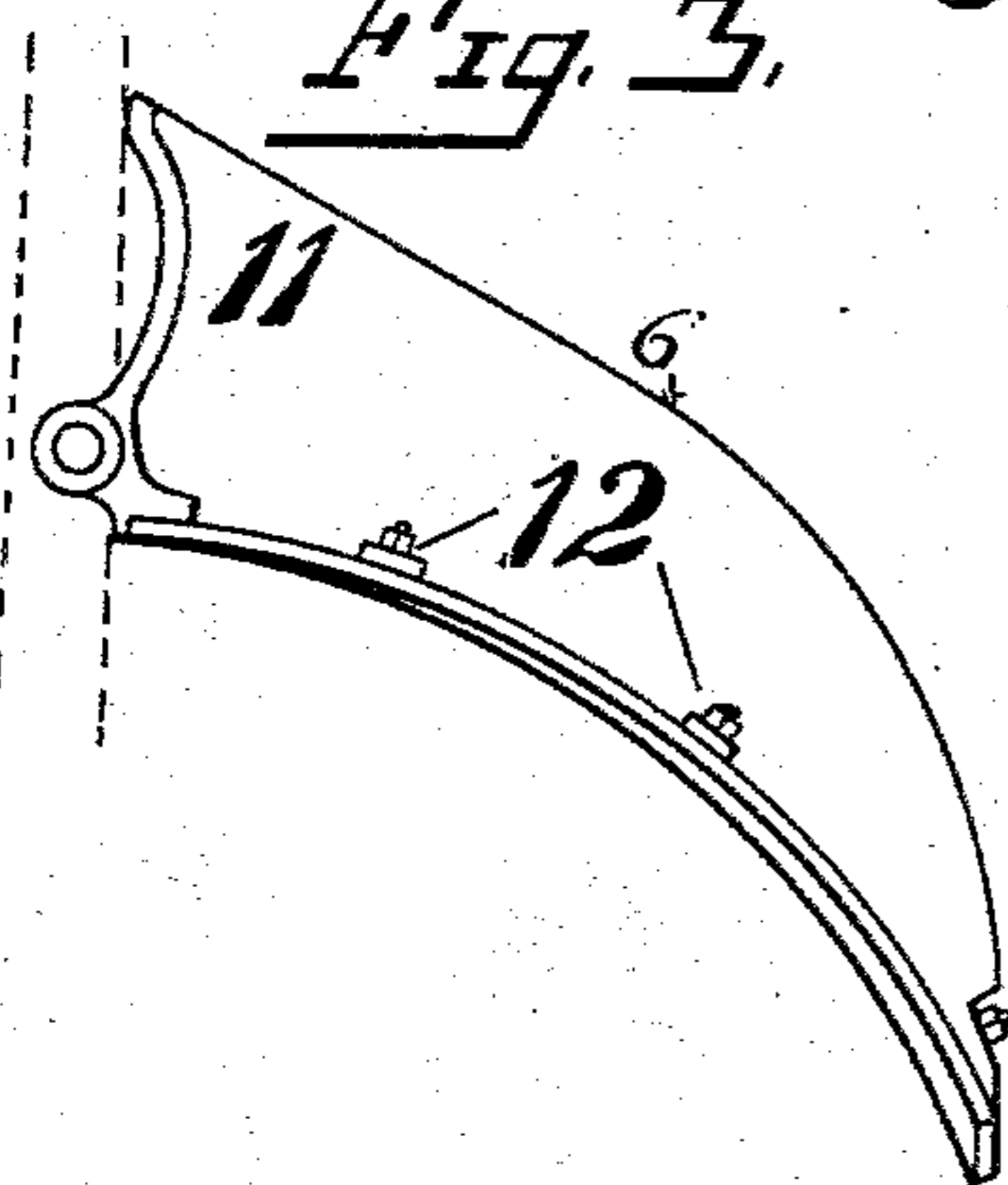


Fig. 4.

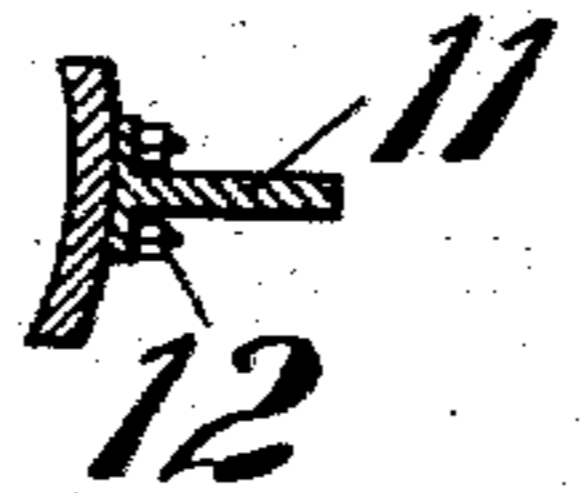
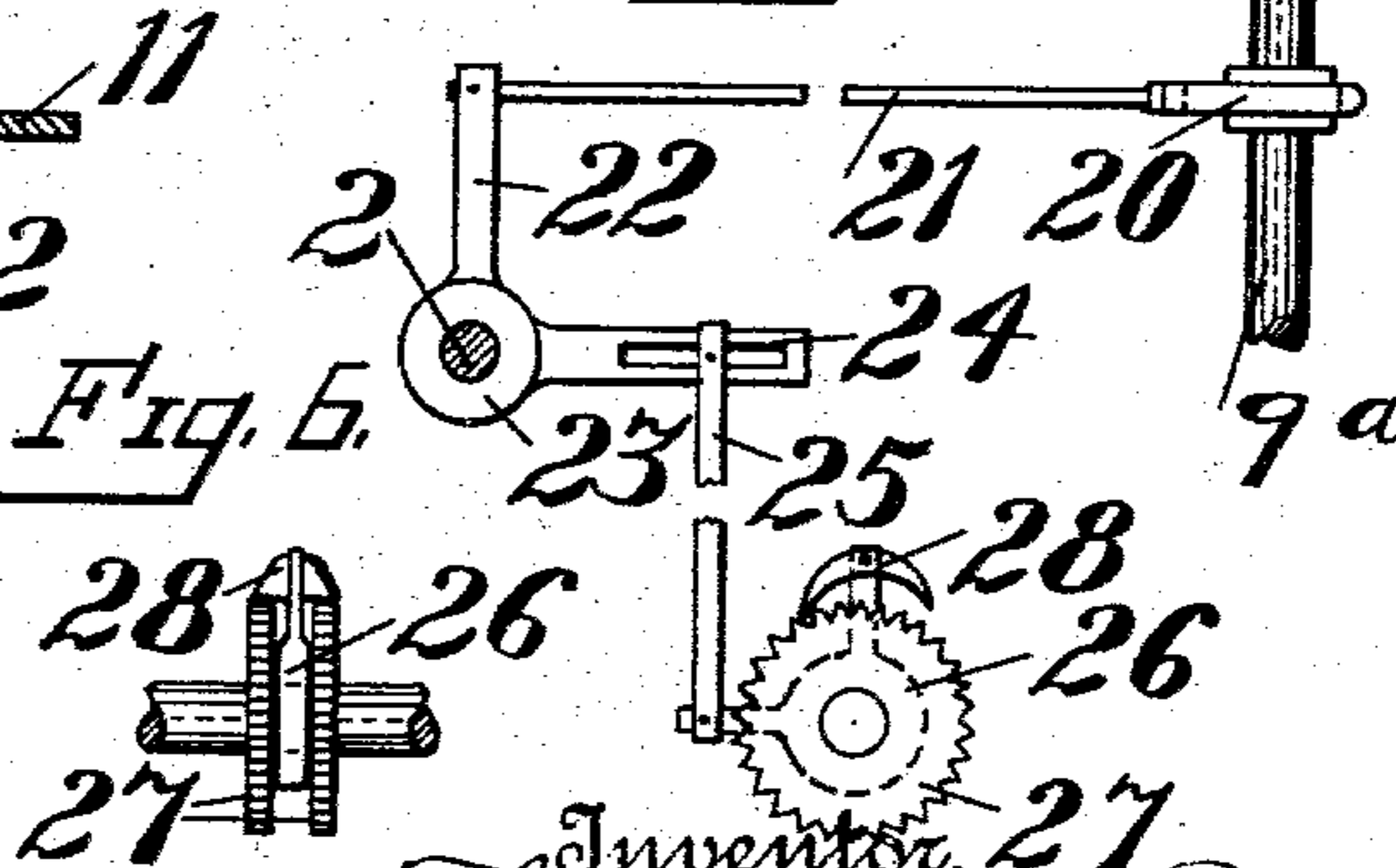


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 7.

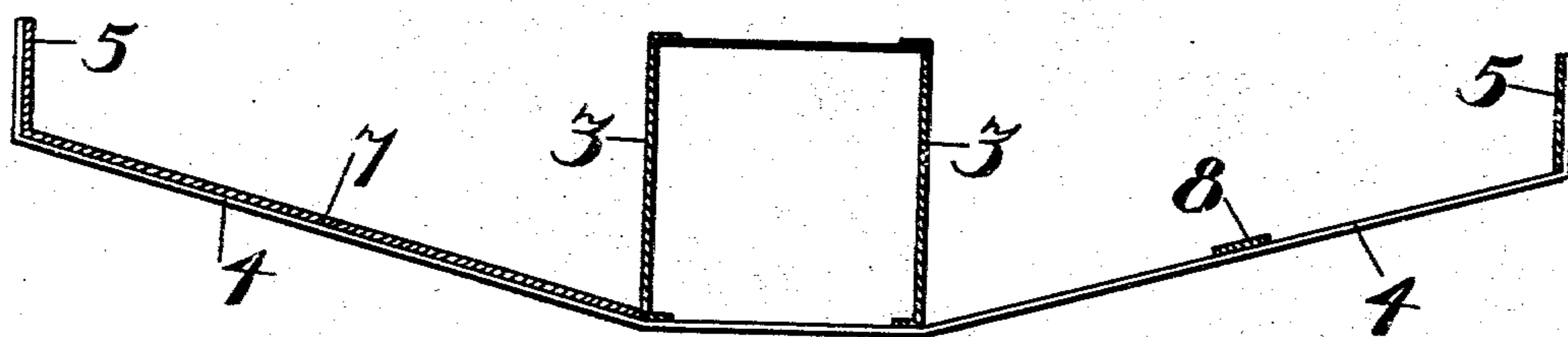
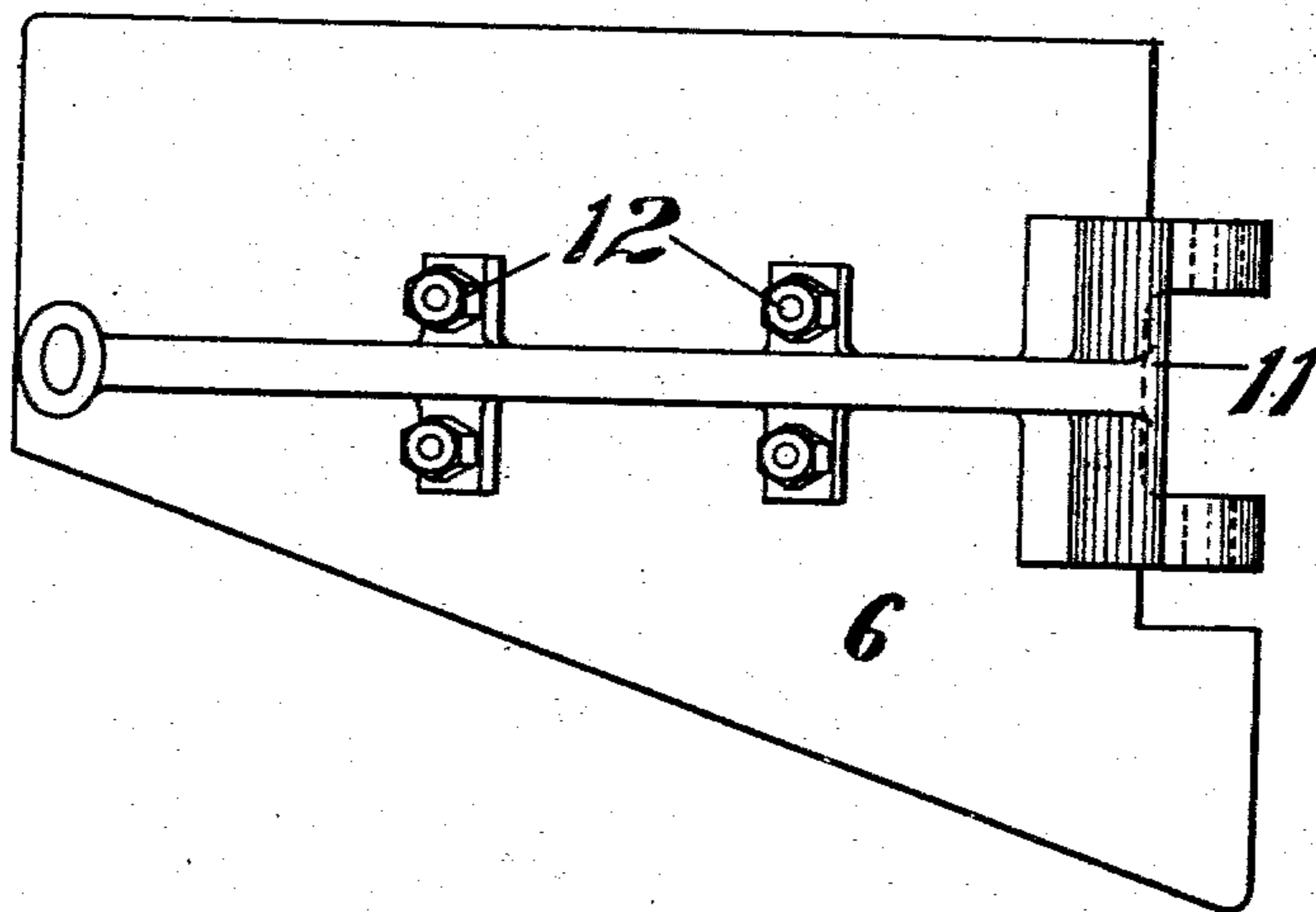


Fig. 8.



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UNITED STATES PATENT OFFICE.

THOMAS McLEAN PARK, OF DARRINGTON, WASHINGTON.

AUTOMATIC LOADING DEVICE.

SPECIFICATION forming part of Letters Patent No. 720,840, dated February 17, 1903.

Application filed November 1, 1902. Serial No. 129,736. (No model.)

To all whom it may concern:

Be it known that I, THOMAS McLEAN PARK, a citizen of the United States, residing at Darrington, county of Snohomish, State of Washington, have invented an Improvement in Automatic Loading Devices; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in machines for loading ore, gravel, coal, and other material upon cars or wagons. Its object is to provide a machine of simple construction which will do away with hand-shoveling wherever possible, and is particularly designed for work in mining and excavating operations.

It consists of the parts and the construction and combination of parts to be hereinafter more fully described, having reference to the accompanying drawings, in which—

Figure 1 is a longitudinal central section of my invention. Fig. 2 is a top plan view of same. Fig. 3 is a top view of carrying-blade. Fig. 4 is a cross-section of same. Fig. 5 is a view of moving mechanism. Fig. 6 is a front view of double ratchet. Fig. 7 is a cross-section of conveyer-frame. Fig. 8 is a rear view of carrying-blade.

A represents a wheeled carriage or truck of suitable design, upon which the tilting frame of my apparatus is centrally supported, as at 2. This frame comprises two main channel-pieces 3, disposed with their flanges adjacent to each other and connected rigidly together by cross-plates and lattice-bars 3'.

4 represents brackets extending outwardly and upwardly from the lower edges of each of the channel-pieces and supporting at their ends the vertical walls 5, which are parallel with the said channel-pieces. These outer walls are of sheet metal properly stiffened with light angles, and the spaces between these walls and the pieces 3 form troughs, through which the blades 6 of the endless conveyer travel. One of the troughs is provided with a bottom 7, consisting of a steel plate secured to the brackets and supporting the load carried by the blades, while the other trough is open-bottomed, except for a bar 8, which serves as a support for the return of the empty blades or brackets. 9 9' are horizontally-disposed sprockets at either end of the

frame, around which passes an endless link belt 10, to which said blades or buckets 6 are pivoted. The latter each comprises a web or bracket portion pivoted to the chain and having a flange or heel 11 bearing against the chain and a curved shear portion removably secured to the web, as shown at 12. If desired, the buckets could be cast in one piece; but they are preferably made as shown and described for the reason that the shears can be readily changed for different sizes suitable for different materials handled and when worn out can be replaced quickly and at small expense. The chain 10 slides on and is supported against the web of the pieces 3, and the bottom edges of the blades are so inclined that when in operation the latter are at their lowest point of travel these edges will be approximately parallel with the ground and be adapted to sweep up a load onto the correspondingly-inclined floor 7.

13 is a metal shoe secured to the front end of the tilting frame, having its bottom inclined correspondingly with the bottom edge of the shovels and its sides gradually curving upward till they meet the slanting bottoms of the conveyer-troughs.

Any suitable means may be employed to run the conveyer. In the present instance I have shown a two-cylinder engine 14, mounted upon the frame and driven by compressed air or other suitable propelling medium derived from any convenient source. The piston-rods 15 connect with cranks 16 to drive a horizontal worm-shaft 17, suitably journaled on the frame. The shaft of sprocket 9 carries a gear 18, meshing with the worm. A worm-shaft is used in order to obtain the proper speed for the conveyer relative to the engine speed. The tension of the chain may be regulated by suitable take-up devices, as 19, in connection with the shaft of sprocket 9'.

The conveyer-frame is so balanced on its pivot 2 as automatically to incline itself in order that the shoe 13 will follow the floor of the tunnel.

By mounting the device on wheels it can be moved forward or backward, as desired. When the location of the machine is to be changed, the frame is tilted into horizontal position and held there by suitable means.

In operation the machine is moved along

the track to a desired location. The frame is then inclined to bring the apron end close to the ground, so that the material may be readily scooped up by the revolving buckets.

- 5 The latter carry their loads up over the floored portion 7, discharging at the rear or elevated end of the machine into cars or wagons and returning over the guide-bar 8.

- 10 The backward and forward movement of the machine may be conveniently effected in the following manner: The shaft 9^a of sprocket 9 carries an eccentric 20, which connects by a rod 21 with an arm 22 on a sleeve 23, turnable on pivot-shaft 2. The sleeve carries a
15 slotted arm 24, which is connected by a rod 25 with a collar 26, turnable between the members of the double ratchet 27, which latter is secured to a truck-axle. The collar 26 carries the double pawl 28, which is adapted
20 to be tilted in either direction to engage the teeth, according as the machine is to be run in one direction or the other. The movement of the eccentric about the shaft of sprocket 9 causes the rod 21 to reciprocate, and this re-
25 ciprocating movement is transformed through the medium of the rocker-arms 22 24 and connections with the ratchet into a rotary movement of the truck-axle, as readily understood. When the machine is at work, the pawl is
30 thrown into horizontal position and will disengage the teeth altogether, so that the truck will remain stationary. The direction of the truck will be forward or backward, according as the pawl is tilted. By shifting the
35 end of the rod 25 in the slot in arm 24 the length of stroke of rod 25 may be varied to engage one or more teeth on the ratchet and advance the machine more or less rapidly, as desired.

- 40 While the machine is here shown as mounted on a track, it is obvious that it can be provided with flat wheels to run upon the ground.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

- 45 1. The combination in a loading device of a support, an elongated conveyer-frame pivotally mounted thereon, a trough along the side of said frame, sprockets journaled in the
50 ends of said frame and turnable in a plane parallel with said trough, a conveyer traveling around said sprockets and cooperating with said trough, an engine on said frame, a worm-
55 shaft operated from said engine and connections between said worm-shaft and the axle of one of said sprockets whereby power is transmitted to drive the conveyer.

2. In a loading device, a support; an elongated conveyer-frame thereon; a trough in
60 said frame, sprockets journaled in the frame and turnable in a plane parallel with said trough; an endless conveyer passing around the sprockets and having pivoted brackets supported at substantially right angles to the

direction of travel of the conveyer; and shear- 65 blades removably secured to the brackets.

3. In a loading device the combination of a support, a tilting conveyer-frame thereon, a trough along the side of said frame, sprockets carried by the frame on axes perpendicular 70 to the frame, an endless chain conveyer having arms lying parallel with the bottom of the trough and cooperating with said trough, said arms comprising brackets pivoted to the chain of said conveyer and curved removable shear 75 portions on said brackets, said portions having their lower edges conforming to the bottom of the trough.

4. The combination in a loading device of a truck, a conveyer-frame pivotally mounted 80 thereon, sprockets carried by said frame and turnable on axes perpendicular to said frame, an endless conveyer traveling about said sprockets, an engine on said frame, connections between said engine and sprockets to 85 drive the latter, and connections between the axle of one of said sprockets and a truck-axle whereby the apparatus may be moved forward or backward by the same power operating the conveyer. 90

5. The combination in a loading device, of a truck, a conveyer-frame pivotally mounted thereon, horizontally-disposed sprockets on said frame, an endless conveyer passing 95 around said sprockets, an eccentric on the axle of one of said shafts, a bell-crank lever turnable upon the pivot-axle of the conveyer-frame, connections between said eccentric and bell-crank lever and connections including a pawl-and-ratchet mechanism between said 100 bell-crank lever and a truck-axle.

6. The combination in a loading device, of a truck, a conveyer-frame thereon, horizontal sprockets on said frame, an endless carrier traveling about said sprockets, an eccentric 105 on the axle of one of said sprockets, a pawl-and-ratchet mechanism in conjunction with a truck-axle, and connections between said eccentric and said mechanism whereby motion is communicated from the sprocket-shaft 110 to the truck-axle to move the apparatus.

7. The combination in a loading device, of a truck, a conveyer-frame supported thereon, horizontally-disposed sprockets on said frame, a conveyer passing about said sprockets, a 115 bell-crank lever carried by said frame, means by which said lever is oscillated, one arm of said lever being slotted, a rod having one end adjustable in said slot, and connections between said rod and a truck-axle whereby the 120 latter may be rotated on the oscillation of said lever.

In witness whereof I have hereunto set my hand.

THOMAS MCLEAN PARK.

Witnesses:

E. L. DAWSON,
C. M. WEBBER.