

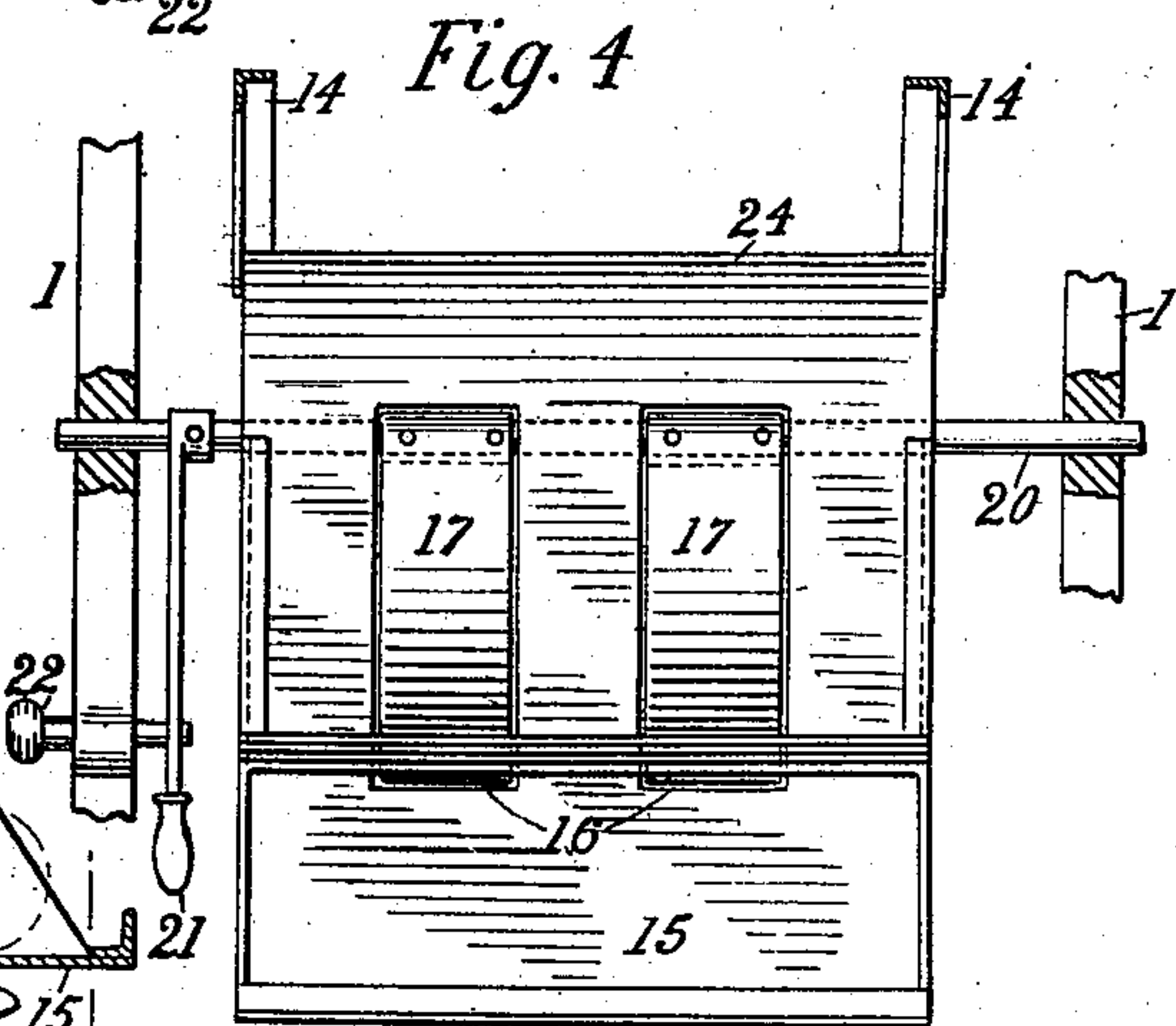
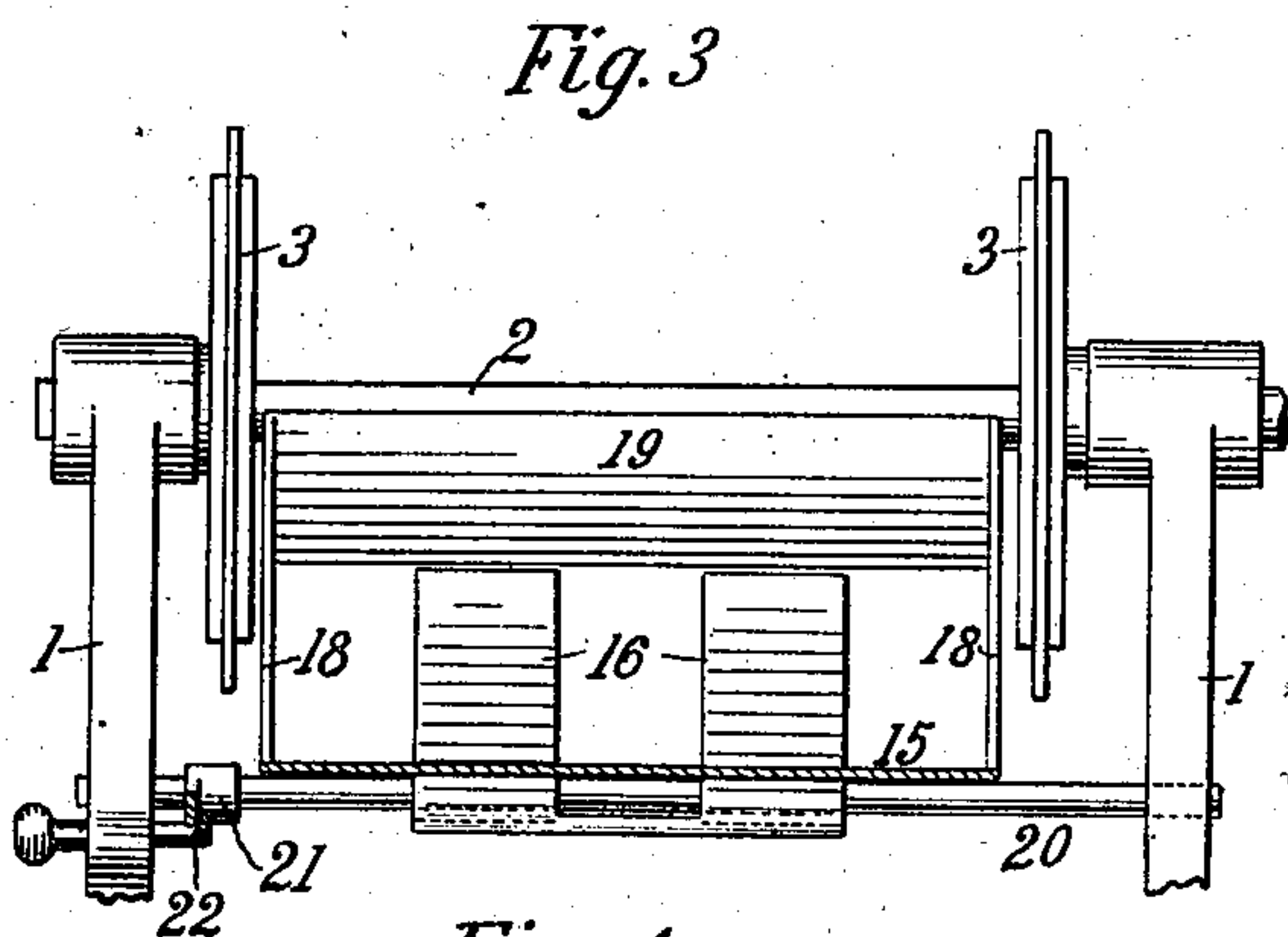
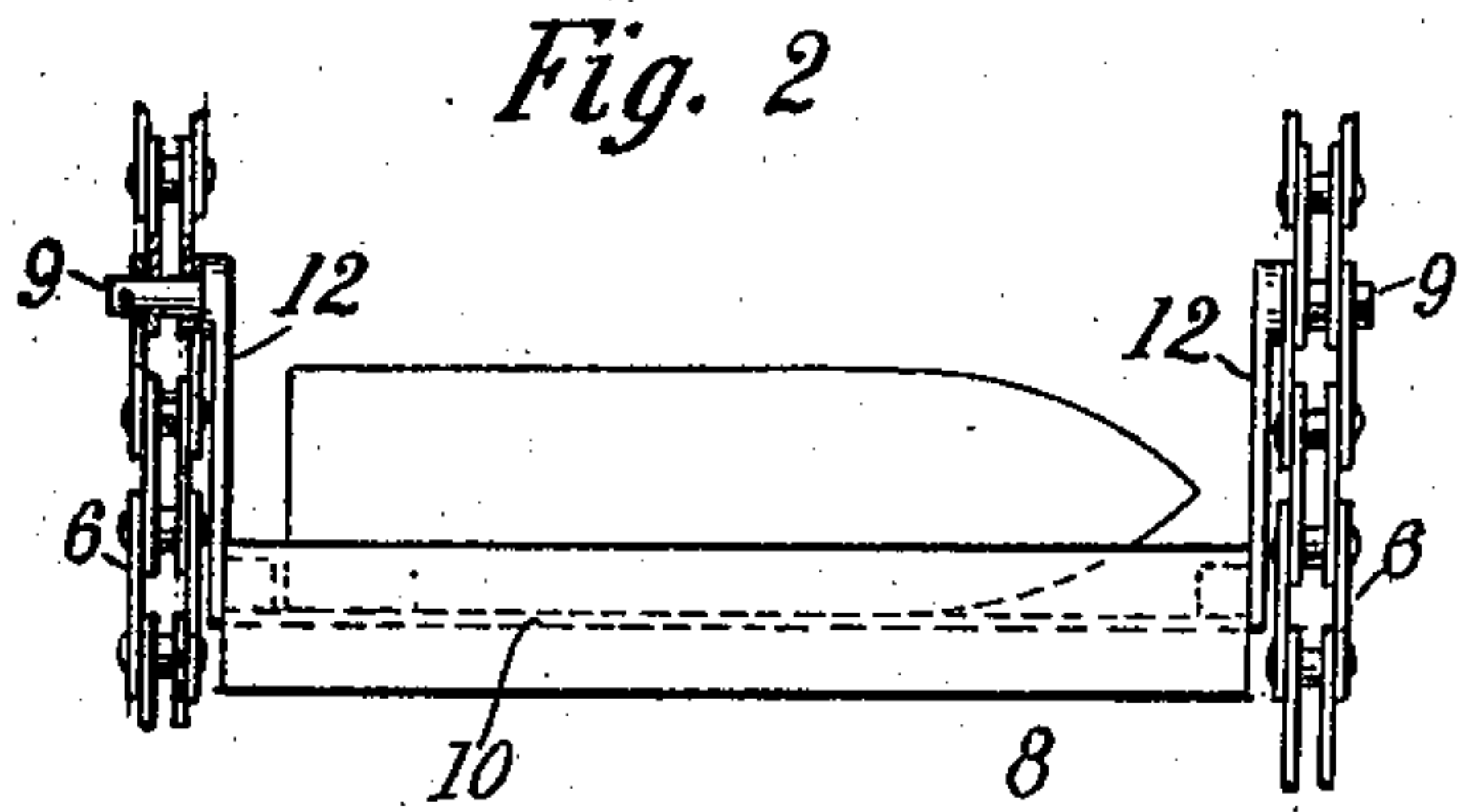
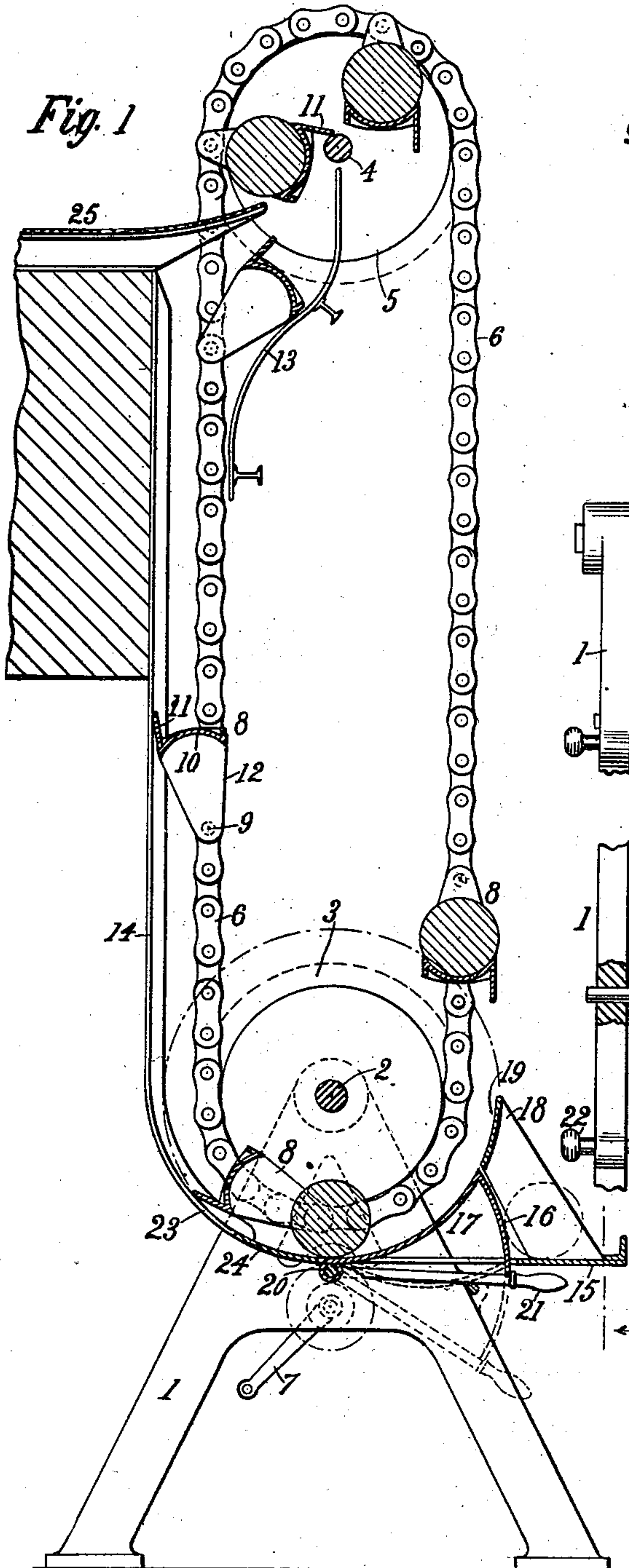
No. 660,998.

Patented Oct. 30, 1900.

R. R. RAYMOND.  
HOISTING APPARATUS.

(Application filed Aug. 21, 1899.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 660,998, dated October 30, 1900.

Application filed August 21, 1899. Serial No. 727,875. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT R. RAYMOND, a citizen of the United States, residing at Boston, in the county of Suffolk, State of Massachusetts, have invented a new and useful Improvement in Hoisting Apparatus, of which the following is a specification, reference being had to the drawings accompanying and forming a part thereof.

10 The present invention relates to hoisting apparatus, and is especially designed to be used in connection with heavy ordnance for the purpose of elevating individual charges from a lower plane, as an ammunition storage-  
15 room, to a higher plane, as the point of support of a gun.

The object of the invention is to provide a simple means whereby the heavy cartridges or shells may be easily handled and placed  
20 upon an endless traveling device and automatically discharged at the point of delivery in an easy manner, so that there shall be no danger of explosion of the charges. At the same time the construction embodying the  
25 invention is such that the discharging devices are of the simplest character and operate positively.

In the drawings I have illustrated a construction embodying my invention, which,  
30 while it shows one form of my invention which I deem now to be a preferred form, I do not wish to be limited thereto, as the construction may be susceptible of variation without departing from the spirit of the in-  
35 vention.

In the drawings, Figure 1 is a view partly in side elevation and partly in vertical cross-section. Fig. 2 is a detail view in elevation of one of the carriers. Fig. 3 is an elevation  
40 view of the loading devices looking in the direction of the arrow of Fig. 1. Fig. 4 is a plan view of the loading devices.

Like letters of reference refer to like parts throughout the several views of the drawings.

45 Referring to the drawings in detail, 1 designates the lower frame of the construction, which may be of any suitable form and supports a shaft 2, on which are keyed sprocket-wheels 3.

50 4 designates the upper shaft, upon which are secured the upper sprocket-wheels 5.

Endless chains 6 pass around the upper and lower sprocket-wheels. Any suitable construction may be availed of for driving the chains, and in the drawings I have shown a  
55 crank 7. The carriers are suspended or freely hung on the chains 6 by means of shafts 9, so that when unconstrained in their upward movement when they carry the load they will assume a vertical position, which they will  
60 maintain while they pass a portion of the curved surface of the upper sprocket-wheels and, in fact, until they come in contact with the tilting or tripping device to effect the discharge of the load. Each of these carriers  
65 consists of a bottom plate 10 and a tailpiece 11, being secured to the chains by the side pieces 12; but other forms of carrier may be used that will perform the functions herein described.

The means whereby each of the carriers automatically picks up its load and discharges the same consists of the following: Near the upper end of the travel of the chains and between the upward and downward ascending  
75 and descending chains is a guide-piece 13, which receives the carriers immediately after they have discharged their loads. At the time of discharging the load the carrier is in inverted position, and this guide 13 operates to  
80 maintain it in that position and at the same time to deflect it from the central vertical line of the apparatus until at the end of said guide 13, which is curved outwardly, the carrier, by reason of the fact that its center of gravity  
85 is gradually deflected upon the opposite side of the central line of the descending chains, is thrown upon the guideway or track 14, which maintains it in inverted position throughout the remainder of the downward travel. The  
90 reason for this is that the load which the carrier is to take up is taken on at the lowermost point of the chain and the carrier is to scoop up or push along its load until it is entirely supported upon the carrier.

95 The means whereby the load is thrown in the path of the carrier and automatically taken up thereby consists of the following: At the lowermost point of the travel of the two chains is a loading-table 15, provided  
100 with two pivoted segments 16, having a curved face 17, coinciding with the circumference of



a circle of which the central point is the center of the shaft 2. This loading-table 15 is also provided with two upstanding arms 18, which are provided with a curved portion 19, which constitutes a continuation of the curved surface 17 of the pivoted segments. The segments before referred to are secured to a shaft 20 and are moved by any desirable means, as a handle 21. Any suitable locking device may be provided for this handle, and in the drawings I have shown a simple push-bolt 22. The downward guide 14 terminates in a curved portion 23, which meets a curved loading-platform 24, extending clear across from chain to chain.

It is evident that the loading devices may be variously modified so long as there are present a platform for the load at the lowermost path of travel of the carriers, a table or other means for feeding the load to the platform either separate from or integral with the platform, and an inclined or curved surface or guide, which may be either part of the platform or separate therefrom, as shown in the drawings, the purpose of which is to keep the load in engagement with the carrier until it is supported thereby or their equivalents.

As the carriers ascend upon the endless chains and approach the upper sprocket-wheels their vertical position is maintained by reason of the method of suspension until the load has passed the central shaft 4 and the tailpiece 11 of the carrier comes in contact with said shaft 4. The further movement of the endless chains then effects a tilting of the carrier, as illustrated in Fig. 1, so that the load is discharged upon the receiving-table 25. After this, as before described, the carrier is carried downward in an inverted position by means of the guides 13 and 14.

In the mechanism illustrated in the drawings the load is taken up as follows: A suitable shell or other load is placed upon the table 15, the segments 16 are lowered by means of the crank 21, and the shot or other load rolls forward upon said segments, and as the segments are brought up to a normal position the load is thrown upon the loading-platform directly in the path of travel of the carriers and the segments are closed or locked by means of the push-bolt 22. The next carrier which comes along will engage or scoop up the shell or other object constituting the load and carry it to the point of delivery, as before explained. If for any reason the segments 16 should not be locked in their closed or normal position, the carrier would simply push the load out of the way and would pass on without taking it up.

I have above illustrated and described the preferred forms of my construction and of the several parts thereof. It is evident, however, that various changes and modifications of the same may be made without departing from the spirit of my invention, and I do not intend, therefore, to limit myself to the specific con-

struction shown. I intend also when using the word "chains" in the specification and claims to include thereby the use of a single chain when desirable.

The advantages of my construction will be apparent. The loads, which may be shot or anything else, are engaged by the carrier at the lowest point of its travel and carried clear around to the opposite side of the endless chains and automatically discharged there by means at the same time simple and positive. Also the labor required for loading the device is of the very smallest degree and the pick-up is automatic.

What is claimed as new is—

1. In an apparatus of the character described, endless chains, one or more carriers freely hung or suspended between said chains, means whereby said carriers are caused to descend in an inverted position, and means whereby they engage and take up individual loads, substantially as specified.

2. In an apparatus of the character described, endless chains, one or more carriers freely suspended between said chains, a platform at the lowermost path of travel of the carriers consisting of a load-support and a guide for keeping the load in engagement with the carrier until supported thereby, guides or means for inverting the carriers and maintaining them in inverted position as they descend, and means for automatically presenting loads to said carriers on said platform.

3. In an apparatus of the character described, endless chains, one or more carriers freely suspended between said chains, a platform at the lowermost path of travel of the carriers having an inclined extension whereby the load is kept in engagement with the carrier until supported thereby, means for causing the carriers to descend in an inverted position, means for presenting the carriers to the loading-platform in a partly-inverted position, and means for presenting the loads to said carriers on said platform.

4. In an apparatus of the character described, endless chains, one or more carriers freely suspended between said chains, a platform at the lowermost path of travel of the partly-inverted carriers, means for presenting the carriers to the platform in a partly-inverted position, and movable guides for automatically keeping the load in engagement with the carrier until supported thereby, substantially as specified.

5. In an apparatus of the character described, endless chains, one or more carriers freely suspended between said chains, a loading-platform situated at the lowermost path of travel of the carriers, a loading device consisting of a table, the floor of which has one or more pivoted segments with curved faces and means for raising the ends of said curved portions, whereby the faces thereof are made to correspond generally with the line of travel of the carriers, substantially as specified.



6. In an apparatus of the character described, endless chains, one or more carriers freely suspended between said chains, a loading-platform situate at the lowermost path of travel of the carriers, a loading device consisting of a table, the floor of which has one or more pivoted segments with curved faces and means of raising the outer ends of said curved portions, and one or more arms carrying curved plates which form continuations of the curved faces of the pivoted segments when raised, substantially as specified.

7. In an apparatus of the character described, endless chains, a carrier freely suspended between said chains and consisting of a bottom plate and a tailpiece, a tripping device adapted to engage the tailpiece and temporarily to arrest its motion and tip the carrier, a loading-platform at the lowermost path of travel of the carrier, and means for presenting said carrier to said platform in a partly-inverted position whereby it engages and takes up a load on said platform.

8. In an apparatus of the character described, endless chains, a carrier freely suspended between said chains, and consisting of a bottom plate and a tailpiece, a tripping device, and an inner guide adapted to deflect the tailpiece and invert said carrier, substantially as specified.

9. In an apparatus of the character described, endless chains, one or more carriers supported thereon, a tripping device adapted to engage with and tip said carriers, means for inverting said carriers, and maintaining

them in an inverted position, a loading-platform at the lowermost point of travel of said carriers, and means for presenting said carriers to loads on said platform in a partly-inverted position.

10. In an apparatus of the character described, endless chains, one or more carriers supported thereon, an inner guide for deflecting and inverting the carriers and an outer guide for maintaining the carriers in inverted position, substantially as specified.

11. In an apparatus of the character described, endless chains, one or more carriers freely supported thereon, an inner guide for deflecting and inverting the carriers, outer guides for maintaining the carriers in inverted position, said outer guides being inwardly curved at their lower ends, and a curved platform extending between said guides and situate at the lower and inner ends thereof, substantially as specified.

12. In an apparatus of the character described, endless chains, one or more carriers freely supported thereon, an inner guide for deflecting and inverting the carriers, an outer guide for maintaining the carriers in inverted position, and a loading-platform at the lower and inner end of said guide, said platform being upwardly inclined in the direction of the upward path of travel of the carriers.

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