No. 780,367. PATENTED JAN. 17, 1905.

J. F. METTEN.

AMMUNITION HOIST.

APPLICATION FILED MAY 28, 1904.

5 SHEETS—SHEET 1.

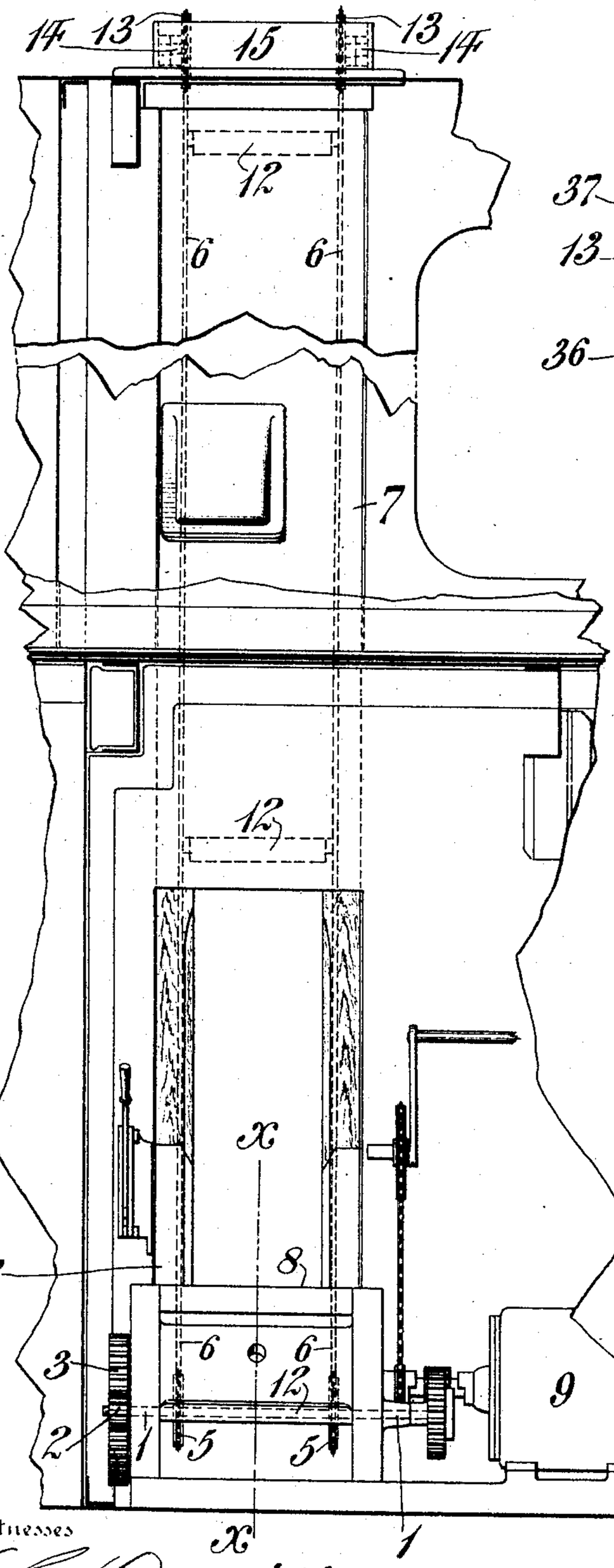

fig. 1.

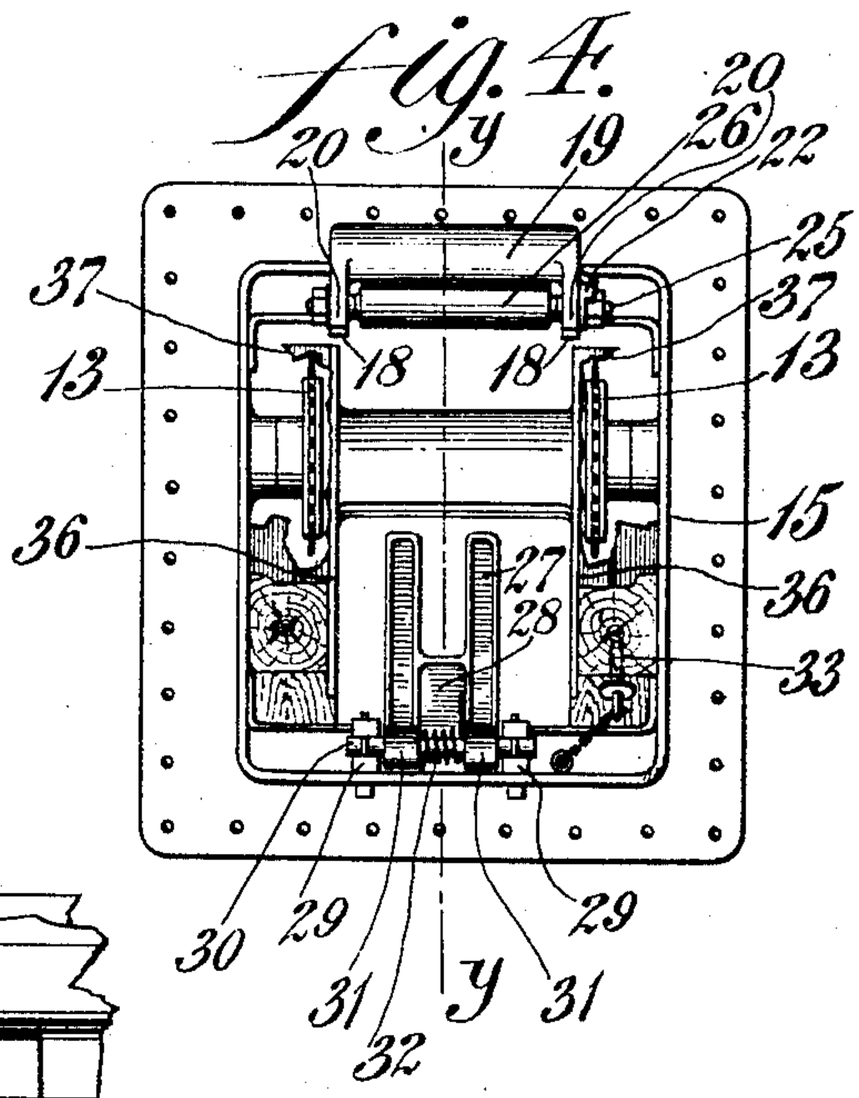

fig. 4.

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5 SHEETS—SHEET 2.

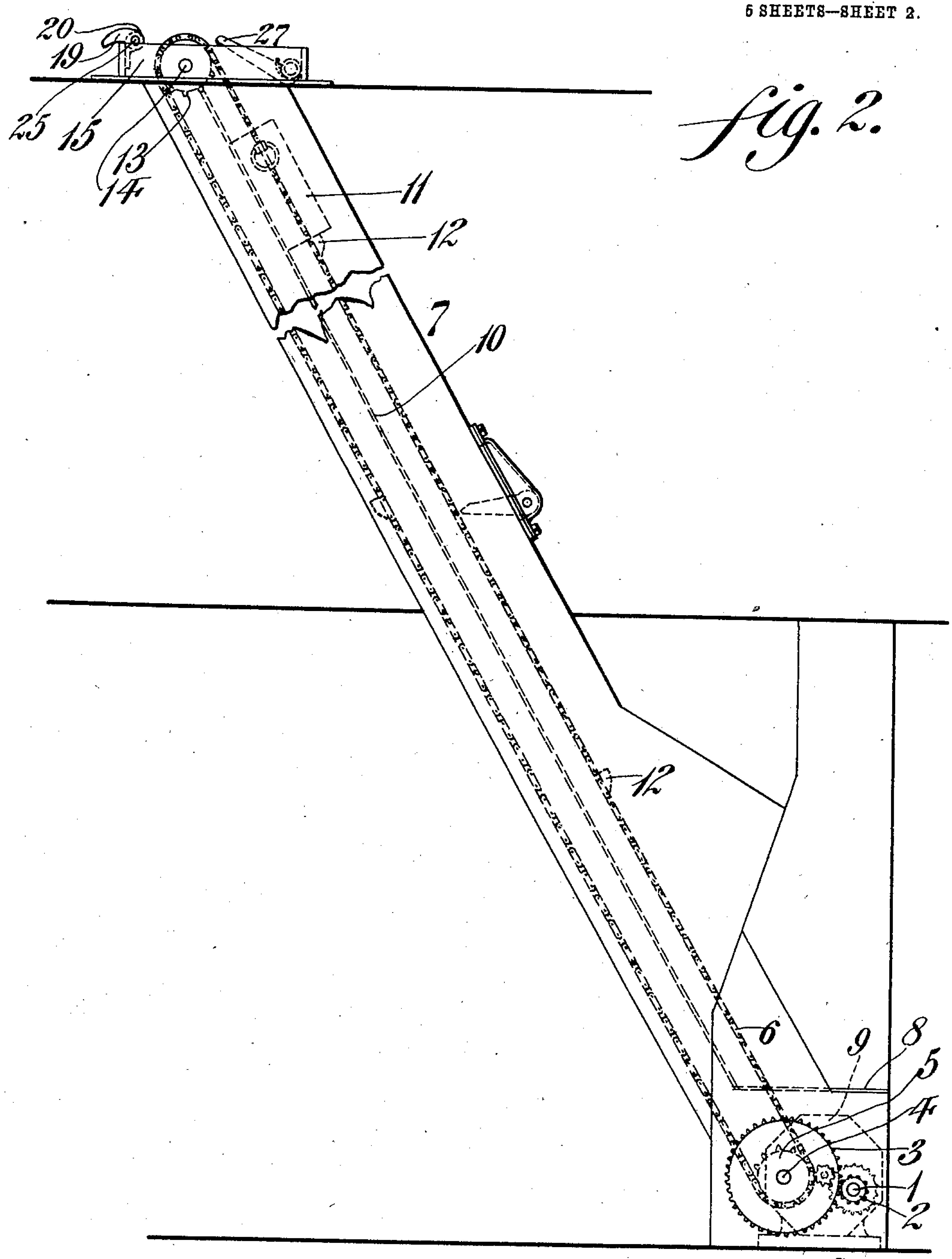

Fig. 2.

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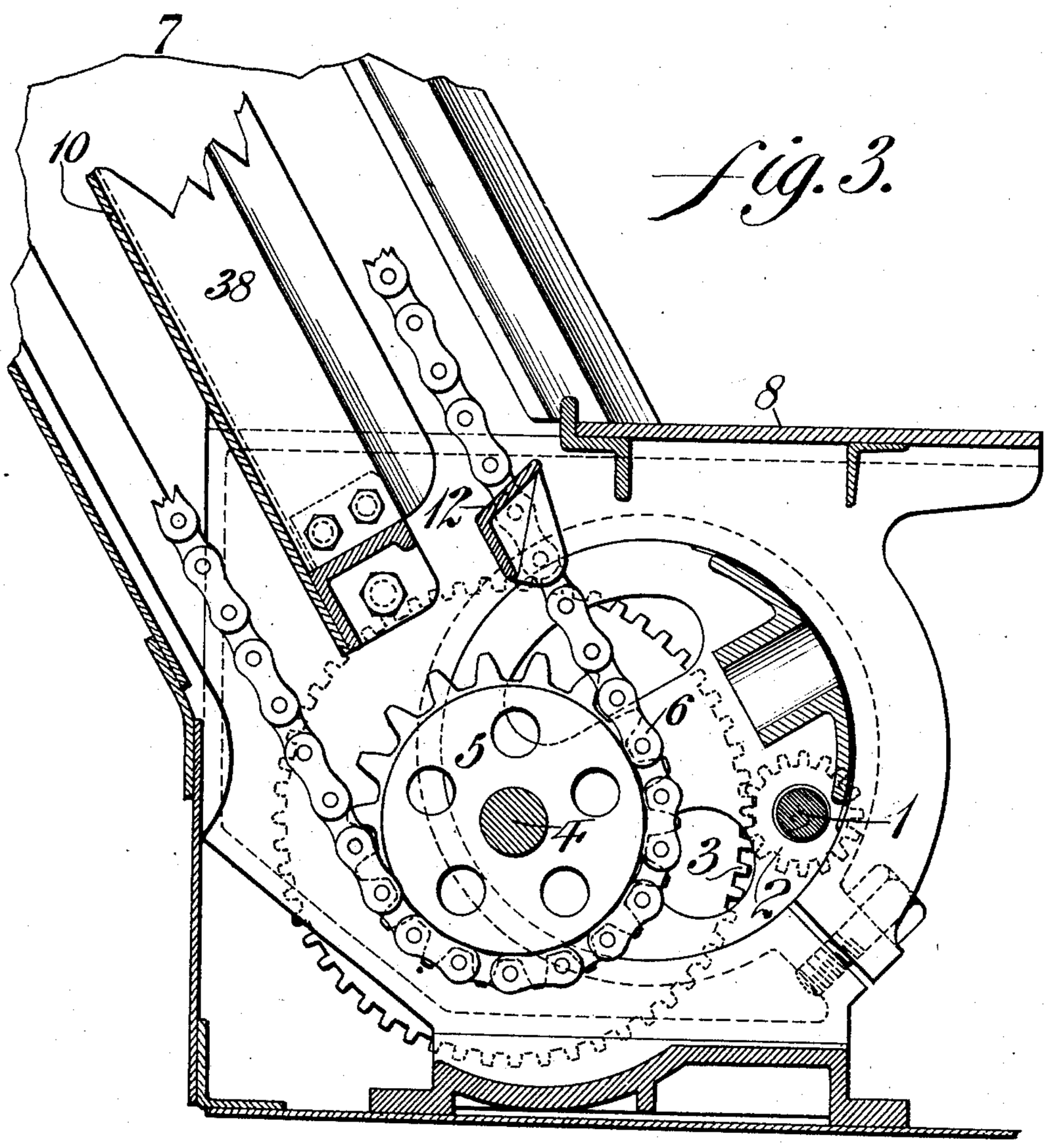

fig. 3.

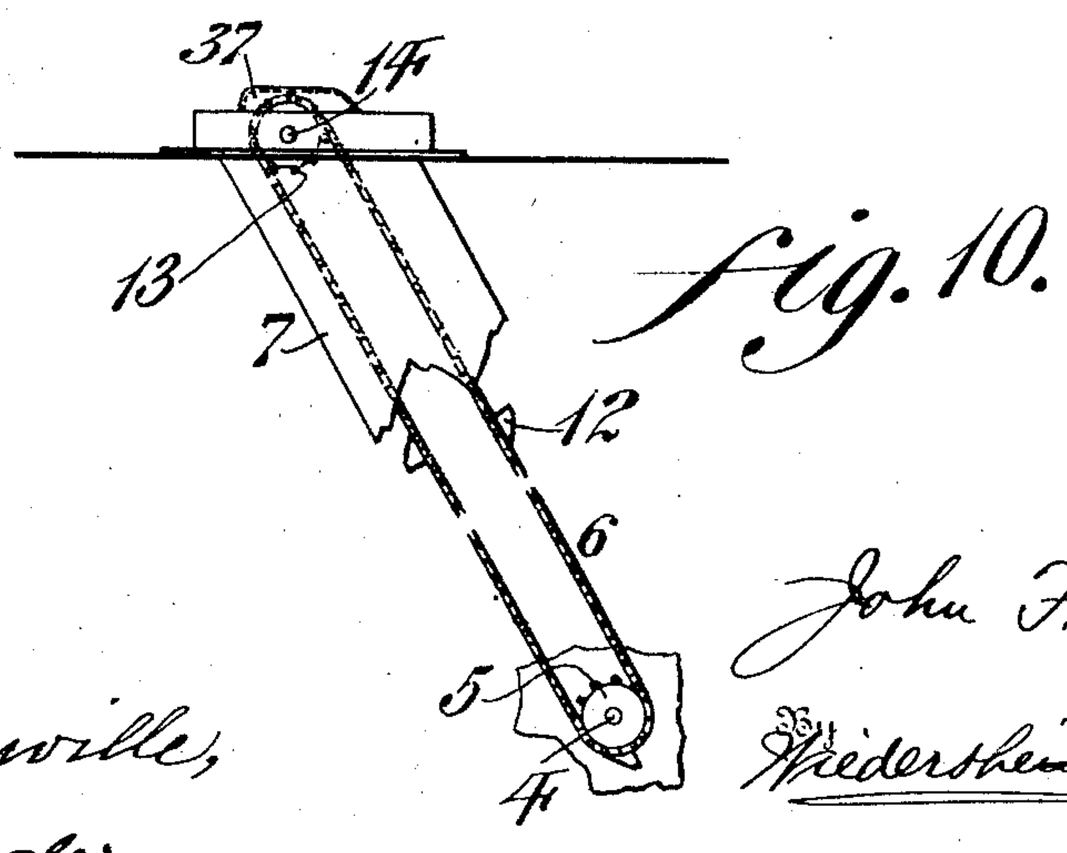

fig. 10.

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5 SHEETS—SHEET 4.

Fig. 5.

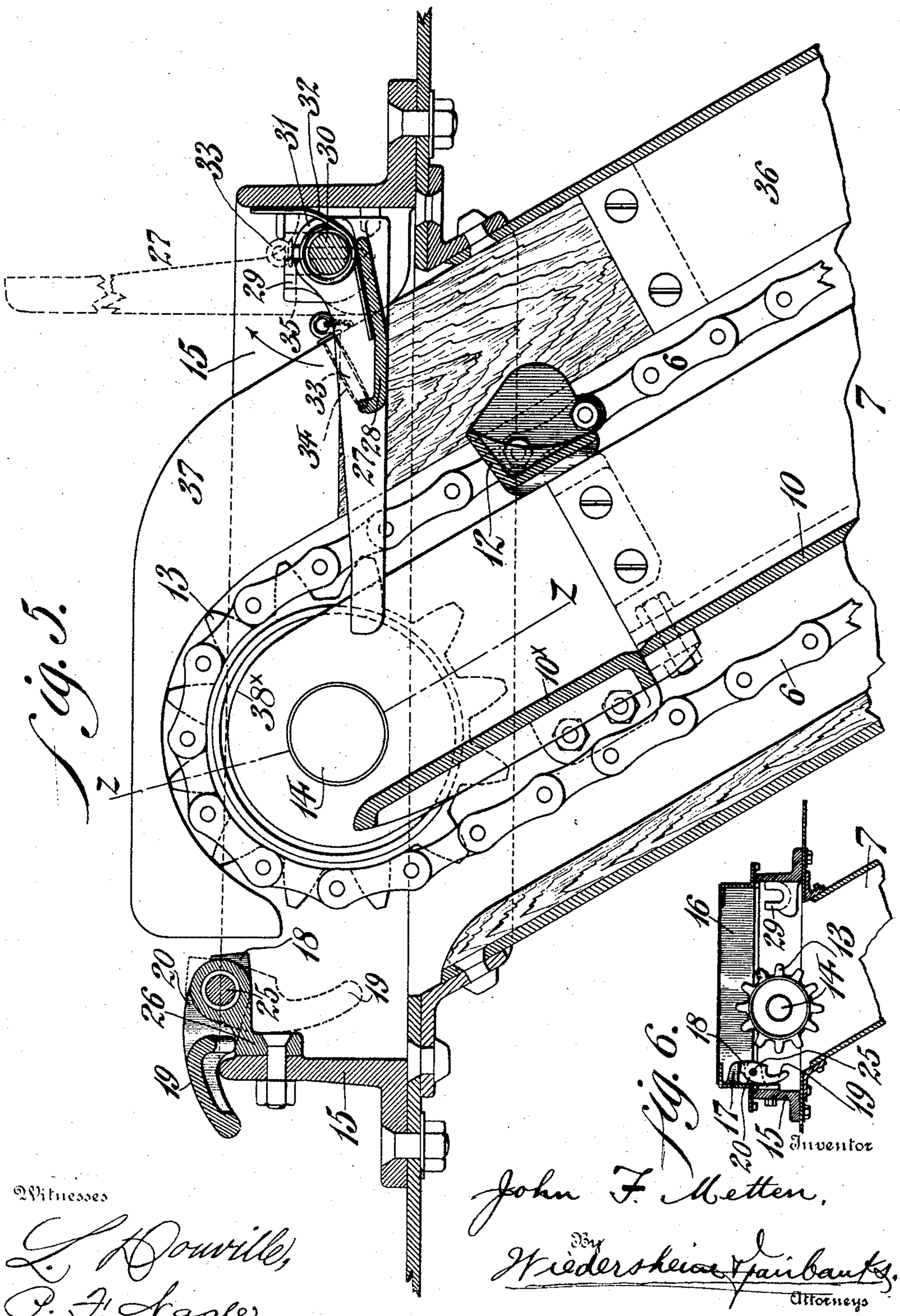

Fig. 6.

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5 SHEETS—SHEET 5.

Fig. 7.

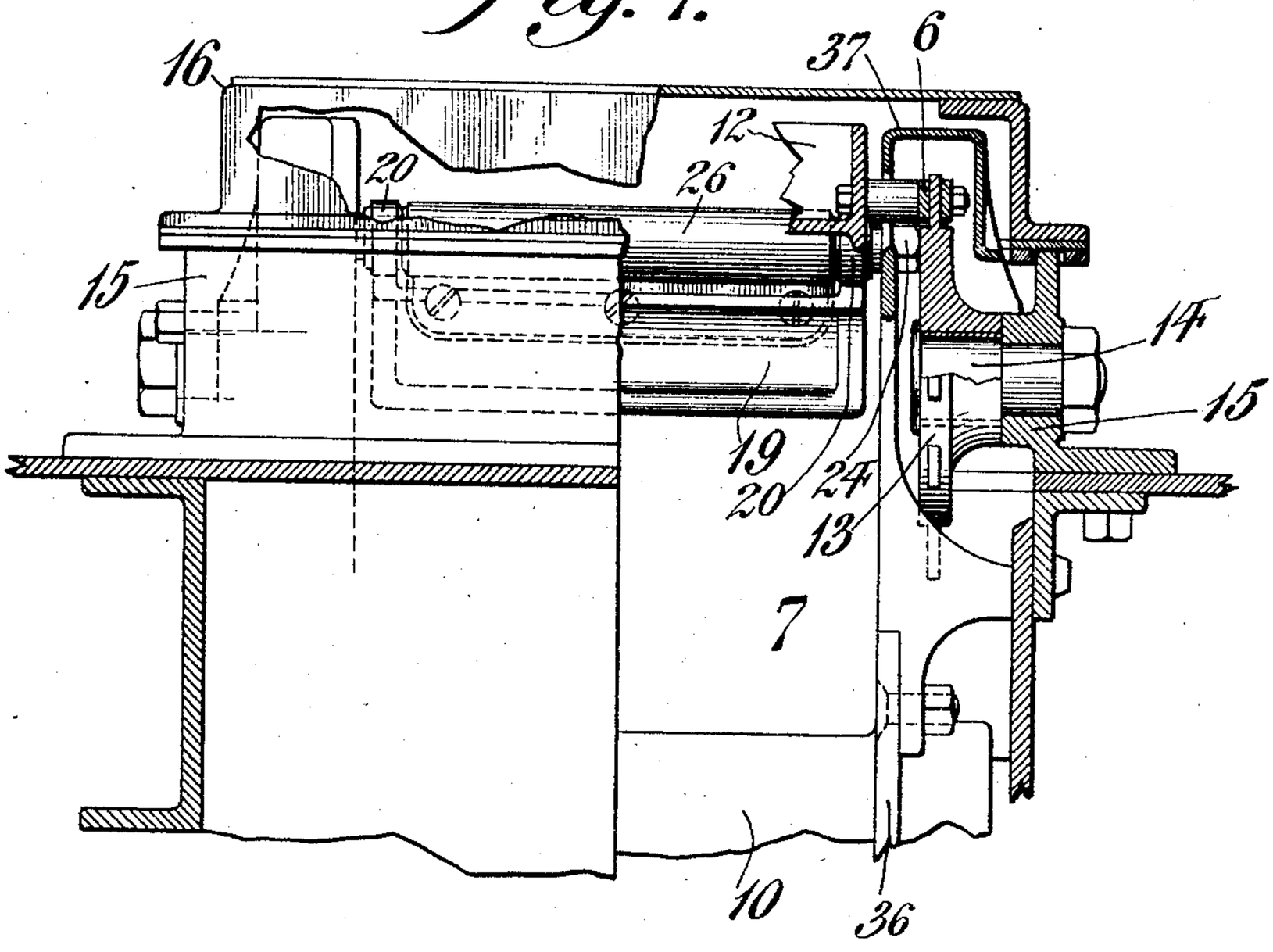


Fig. 8.

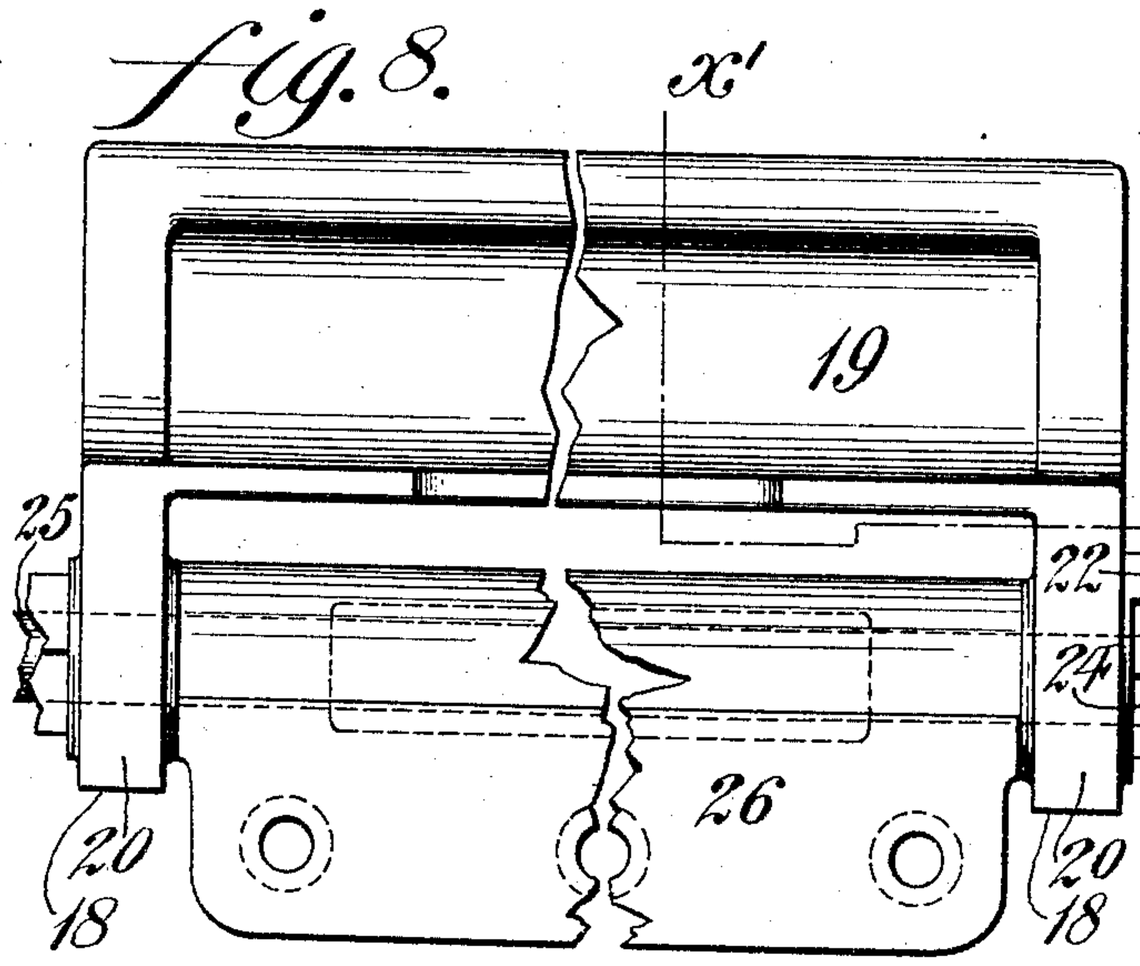
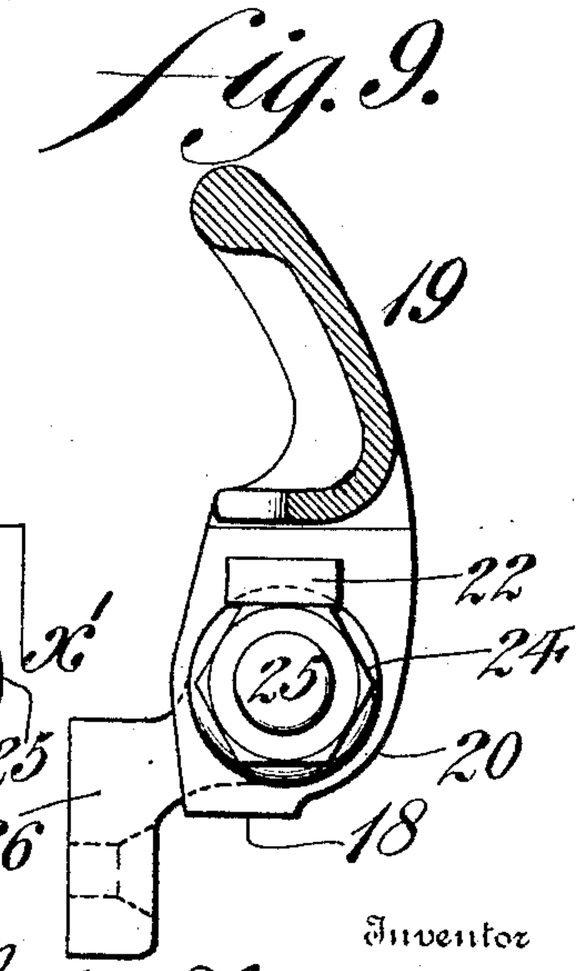


Fig. 9.



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No. 780,367. Patented January 17, 1905.

UNITED STATES PATENT OFFICE.

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AMMUNITION-HOIST.

SPECIFICATION forming part of Letters Patent No. 780,367, dated January 17, 1905.

Application filed May 28, 1904. Serial No. 210,195.

To all whom it may concern:

Be it known that I, JOHN F. METTEN, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Ammunition-Hoists, of which the following is a specification.

My invention relates to an improved mechanism for the delivery of ammunition or other articles from ammunition-hoists such as are used on battle-ships. These usually consist of a trunk in which is located a carrier consisting of two endless chains mounted on pairs of sprocket-wheels at the upper and lower ends of the hoists, the trunk being provided with a division-plate between the raising and lowering sides of the same. The ammunition in its various forms is loaded into the trunk through a lateral opening in its lower end and delivered on the gun-deck. The device is also used when ammunition is being taken on board for lowering the boxes into the magazines, the direction of movement of the chains being reversed for this purpose. At the upper end of the trunk is fitted a delivery-table, which may be provided with rollers and is so connected with the frame that it may be stowed beneath the hatch-cover when this is in place. In my device the delivery-table may be folded back within the hatch or hatch-frame without removing any of the parts and is firmly held in position by the hatch-cover, so as not to interfere with the movement of the hoist. This is important when the hoist is being used for drill purposes in bad weather.

The objects of my invention are to protect the top of the hoisting-trunk from injury by or interference with the article hoisted, to provide a new form of delivery-table, to provide a new mechanism by which the articles hoisted are guided from the hoist to the receiving-deck, to make possible the folding back of the delivery-table when not in use within the hatch-cover of the hoisting-trunk, to provide means on the delivery-table for preventing its accidental interference with the operating mechanism when it is not in use, to prevent the articles hoisted from becoming engaged with any of the hoisting mechanisms, and to guard the upper sprockets by a new and improved construction.

Figure 1 represents a front elevation of an ammunition-hoist embodying my invention. Fig. 2 represents a side elevation of Fig. 1. Fig. 3 represents, on an enlarged scale, a section on line *x x*, Fig. 1. Fig. 4 represents a plan view of the head-gear to which my present invention relates. Fig. 5 represents, on an enlarged scale, a section on line *y y*, Fig. 4. Fig. 6 represents, on a reduced scale, a section similar to that seen in Fig. 1, but showing certain parts omitted therefrom for the sake of clearness of illustration and the cover in place. Fig. 7 represents a partial section on line *z z*, Fig. 5, but with the cover in place. Fig. 8 represents an enlarged view in elevation of the delivery-table detached from the position seen in Figs. 4, 5, and 6. Fig. 9 represents a section on line *x' x'*, Fig. 8. Fig. 10 represents a side elevation showing the general relation of the endless chain to its trunk.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates the shaft to which power is initially applied, said shaft carrying the pinion 2, which meshes with the gear 3, mounted on the shaft 4, which revolves the lower sprocket-wheels 5, around which pass the sprocket-chains 6. These are two in number and located one at each side of the trunk 7, at or near the lower portion of which is located the loading-table 8. Power is communicated to the shaft 1 by means of an electric or other motor 9 and intermediate power-transmission devices, which I do not deem necessary to describe in detail, since the same form *per se* no part of my present invention. The trunk 7 is provided with a division-plate 10, against which the box of ammunition 11 rests and slides during its ascent, said box being carried by means of the carriages 12, which extend transversely between the chains 6 and are arranged to pass

upward on the front or hoisting side of the division-plate 10. Said chains pass over the upper sprockets 13, which rotate on suitable inwardly-projecting bearings 14, which are mounted in the walls of the upper hatch-frame 15, the latter projecting above the deck, whereby the principal operative parts are rendered more accessible than heretofore.

16 designates a water-tight hatch hinged or otherwise secured to the frame or combing 15, so that it can be swung back when the hoist is discharging or receiving ammunition, said hatch being provided with an inwardly-extending lug 17, as will be understood from Fig. 6, which has a flat base adapted to rest upon the projecting lug 18 of the delivery-table 19. This table is in the form shown a curved apron whose greatest dimension, in this case its width, is transverse to the hoisting-chains. In the delivery position its length extends from the end of the guide formed by the division-plate beyond the edge of the hatch which it is intended to protect. It receives the ammunition-box or other article hoisted from the hoisting mechanism and guides it clear of the trunk to the receiving-deck. The table 19 is provided at each end with rearward extensions 20, pierced to receive a shaft 25, on which the table is pivoted. Laterally extending from one of the projections 20 is a lug 22, which, as shown in Fig. 9, engages with one side of a nut 24, threaded on the shaft 25, which passes through and finds its bearing within the bracket 26. As clearly shown in Figs. 5 and 8 of the drawings, the bracket 26 is rounded at its upper surface to form an inward extension of the table 19.

As shown in Fig. 6 of the drawings, the lug 17 in the hatch-cover 16 bears against the squared end 18 of the table 19 when the hatch is in position, so that any movement of the table in the path of the sprocket-wheel 13 or of the carriers 12 is prevented. Secured to the side of the frame 15 opposite the table 19 is a movable catch or safety-pawl 27, shown in Fig. 4 as consisting of a pair of arms projecting into the space through which the article hoisted passes. The pawl 27, comprising a pair of arms and their integral connecting-web 28, is pivoted in suitable brackets 29 on a shaft 30, passing through bearings 31. A spring 32 normally acts to force the pawl 27 into its operative position and assists when the box or other article reaches the top of the hoist in forcing it over toward the table 19. The safety catch or pawl 27 forms a stop to prevent the improper passage of the box or other article downward through the hoist. When it is desired to reverse the direction of movement of the sprocket-chains, so as to use the device for lowering ammunition to the magazine-deck, the stop is raised to the position shown in dotted lines, Fig. 5, and a pin 33, normally stowed in an opening 34, is passed through a hole 35 in the bearing 31 and through the shaft 30 to hold the pawl in its vertical or non-operative position.

I have shown the front plate of trunk 7 as provided with flanges 36, located inwardly of the chains 6 to guide the box or article hoisted in its movement, and as having an extension 37 at its upper end, which forms a cover for the sprocket-wheels at each side of the device. The division-plate head-piece $10^{\times}$ is provided with flanges $38^{\times}$, extending across the faces of sprocket-wheels 13 and forming extensions of division-plate 10 and division-plate guides 38, the face of these guides being on the same plane as the guides 36 on front of trunk 7. The parts 36, 37, 38, and $38^{\times}$ act efficiently in preventing the rope handles with which ammunition-boxes are customarily provided from engaging in the sprocket-chain or the teeth of the sprocket-wheel.

It will be evident that various changes may be made by those skilled in the art which will come within the scope of my invention, and I do not, therefore, desire to be limited in every instance to the exact construction herein shown and described.

The construction shown is essentially adapted for hoisting small-arm ammunition usually packed in boxes; but, if desired, slight modifications may be made, as in the shape of the trunk and shape of the division-plate. When it is desired to use the hoist for handling large sizes of fixed ammunition or ammunition with shell and powder cans separate, such as is used in six-inch and seven-inch naval guns, I may, if desired, make the division-plate of curved section to better guide this character of ammunition.

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

1. In an ammunition-hoist, a hatch-frame having walls projecting above the deck located at the upper end of the trunk and a delivery-table pivoted within said hatch-frame and adapted to extend over and cover the upper edge of said hatch-frame when in operative position and to be stowed within said hatch-frame when not in use.

2. In an ammunition-hoist, a hatch-frame located at the upper end of the trunk, and projecting above the deck, a delivery-table pivoted within said hatch-frame and adapted to cover the edge of said hatch-frame and to be stowed within said hatch-frame when not in use, and a hatch-frame cover provided with an inwardly-extending projection adapted to coact with a portion of said table for retaining said table in its stowed position.

3. In an ammunition-hoist, a hatch-frame located at the upper end of the trunk, and projecting upwardly from the deck, a bracket secured within said hatch-frame and located above said deck, and a delivery-table pivoted to said bracket and forming therewith ammu-

nition-receiving means, said table being adapted to cover the edge of the hatch when in its operative position and to be stowed within said hatch-frame above said deck when not in use.

4. In an ammunition-hoist, a hatch located at the upper end of the trunk, a bracket secured within said hatch, a delivery-table pivoted to said bracket and forming therewith ammunition-receiving means, said table being adapted to cover the edge of the hatch when in its operative position and to be stowed within said hatch when not in use, a lug on said table, a hatch-cover and a projection within said hatch-cover adapted to engage with said lug for preventing the movement of said table when in its stowed position.

5. In an ammunition-hoist, a hatch located at the upper end of the trunk, a bracket within said hatch, a safety-pawl pivoted to said bracket, said bracket and the pivot of said pawl having apertures adapted to register when said pawl is in its non-operative position, and a pin detachably engageable in said apertures.

6. In an ammunition-hoist, a trunk, a pair of sprocket-wheels at the upper end of said trunk, chains on said sprocket-wheels passing through said trunk, a division-plate located between the raising and lowering sides of said chains and flanges on said division-plate within said chains and having extensions at their upper ends between said sprockets whereby an article hoisted is prevented from coming in contact with said chains or said sprockets.

7. In an ammunition-hoist, a trunk, a hatch located at the upper end of said trunk, a pair of sprocket-wheels at the upper end of said trunk, a pair of sprocket-wheels at the lower end of said trunk, chains on said sprocket-wheels passing through said trunk, a division-plate located between the front and rear side of said chains, a delivery-table pivoted within said hatch, a pawl suitably pivoted, means for operating said chains in either direction and means for holding said pawl out of its normal position when said chains are operated in one direction.

8. In a delivery apparatus, a hatch-frame projecting upwardly above the level of the delivery-floor in combination with a table hinged within said frame to overhang the edge of said frame in one position and to lie within the frame in the other position thereof.

9. In a delivery apparatus, a hatch-frame, a bracket secured to said frame, having a lug thereon, and a pivot-bolt pivoting said table in said bracket and secured from turning in said table by said lug.

10. In a delivery apparatus, a hatch-frame and a table pivoted within the same and adapted to cover the frame in its operative position in combination with a hatch positively engaging said table in its inoperative position to hold the same in said position.

11. In a delivery apparatus, a hatch-frame having an opening, a swinging table adapted to cover said frame and means for pivoting said table located between the body of said table when in operative position and the middle of the hatch-opening.

12. In a delivery apparatus, a hatch-frame having an opening, in combination with a table adapted to overhang said frame and pivoted nearer the middle of said opening than is the portion of the frame which it overhangs.

13. In an ammunition-hoist, a hatch-frame, a bracket secured thereto and having a curved upper surface, and a table pivotally secured to said bracket and coöperating in its upper position with the surface of said bracket to receive the ammunition and guide it over said hatch-frame.

14. In a delivery apparatus, a hatch-frame, in combination with a table pivotally mounted with its major portion overhanging and supported by said hatch-frame when said table is in its operative position.

15. In a delivery apparatus, a hatch-frame having an opening in combination with a table adapted to overhang said frame, and pivoted at the side toward the opening of the hatchway.

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