

908,052.

Patented Dec. 29, 1908.
2 SHEETS—SHEET 1.

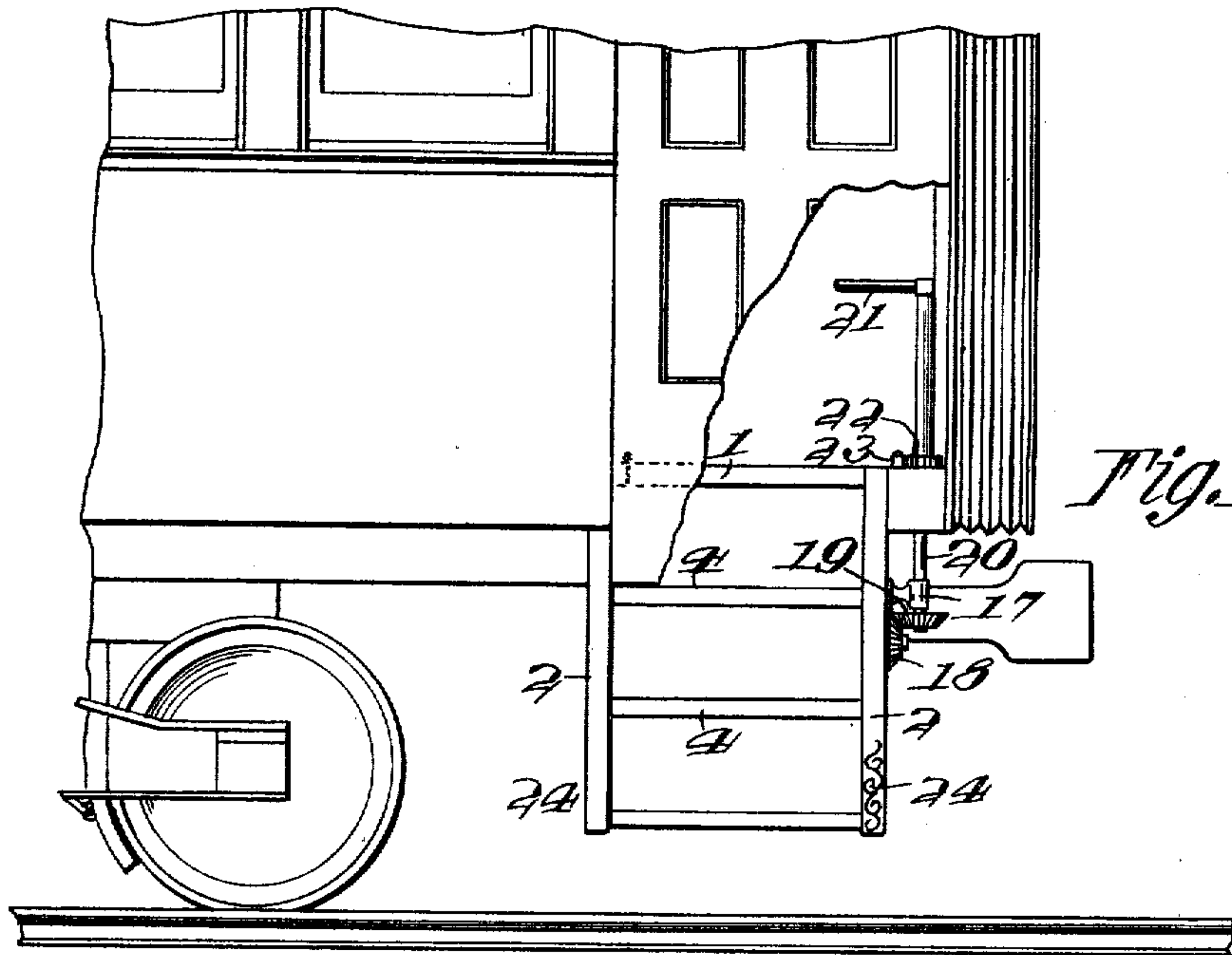


Fig. 1.

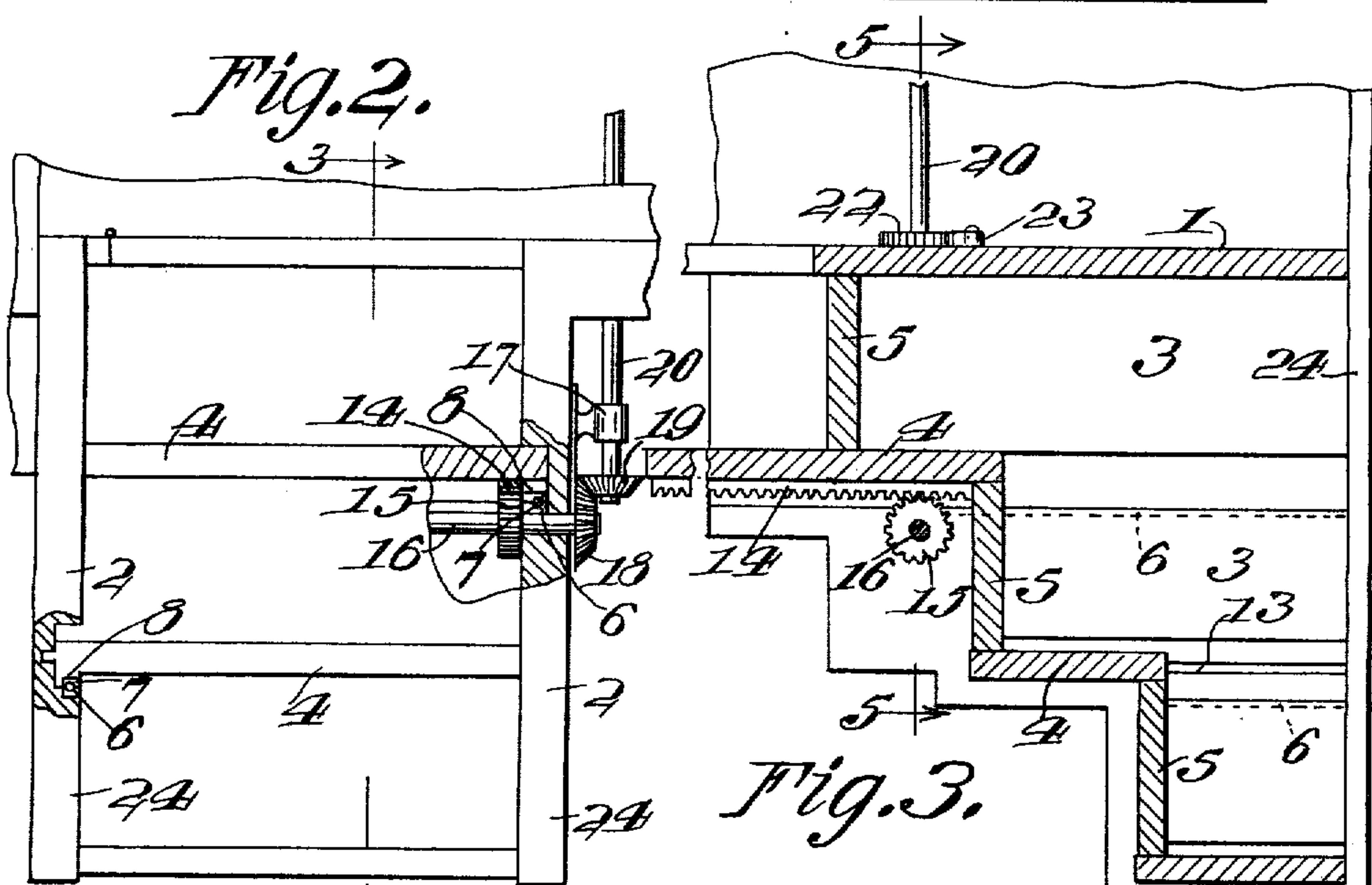


Fig. 3.

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2 SHEETS—SHEET 2.

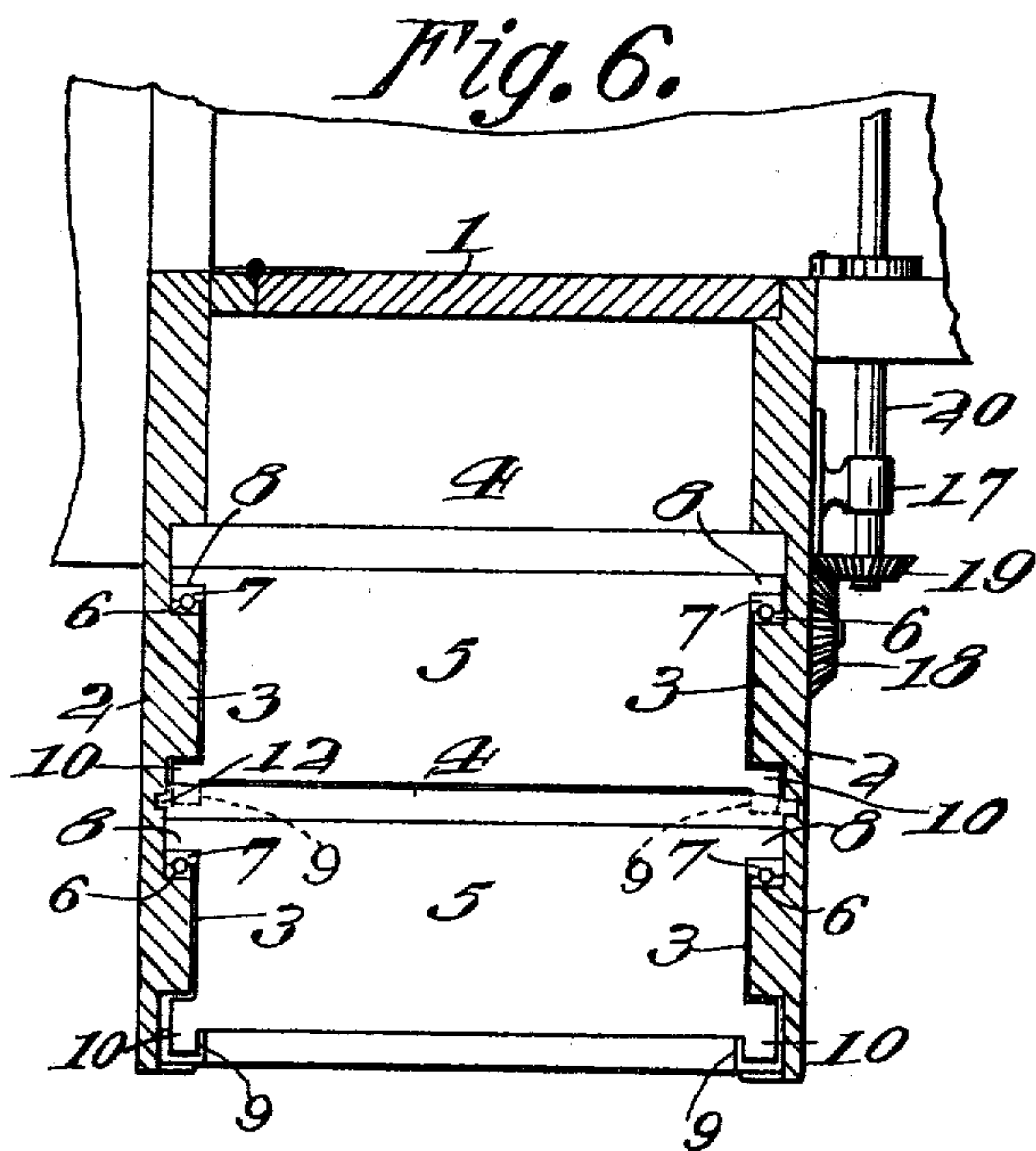
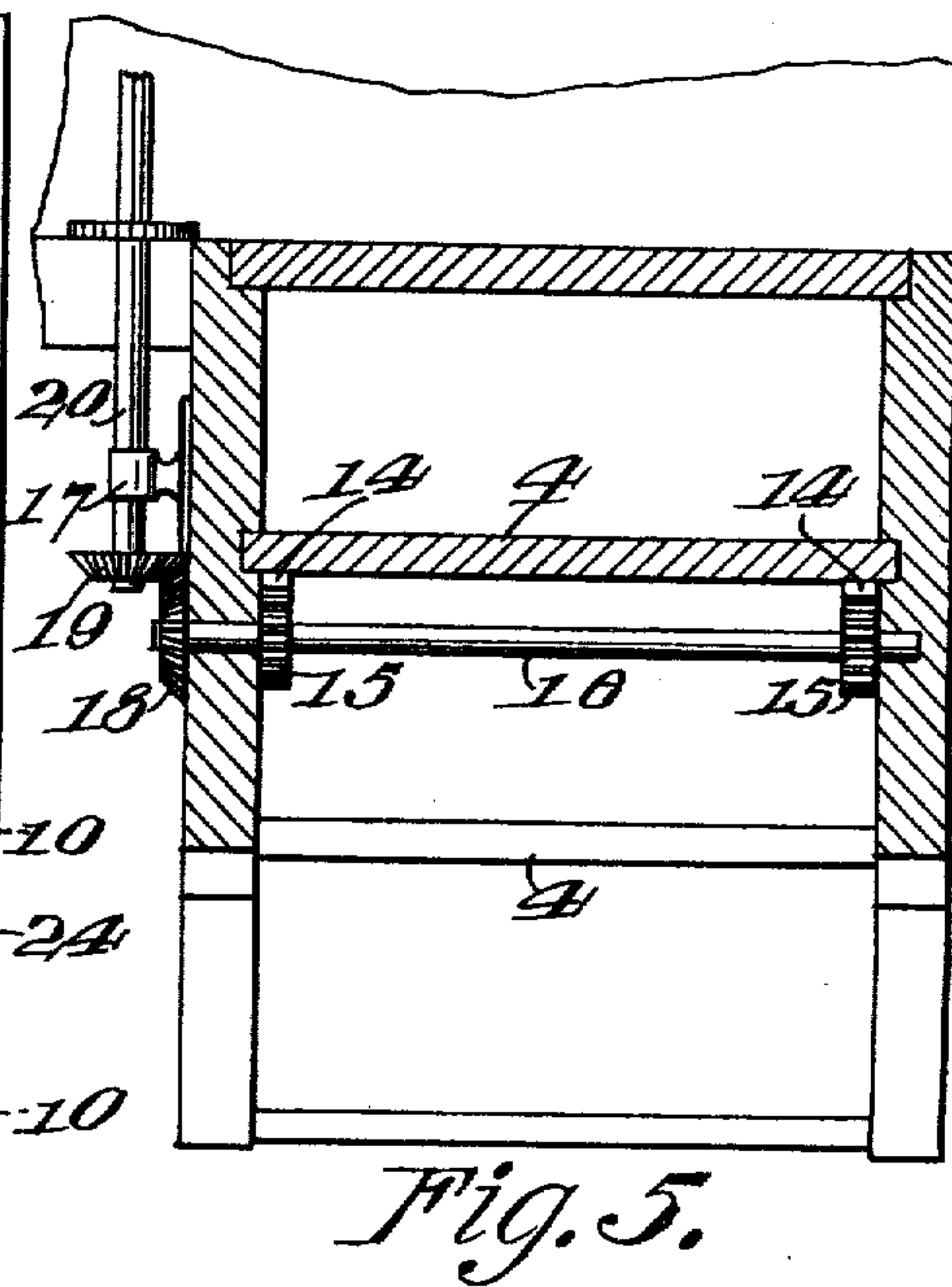
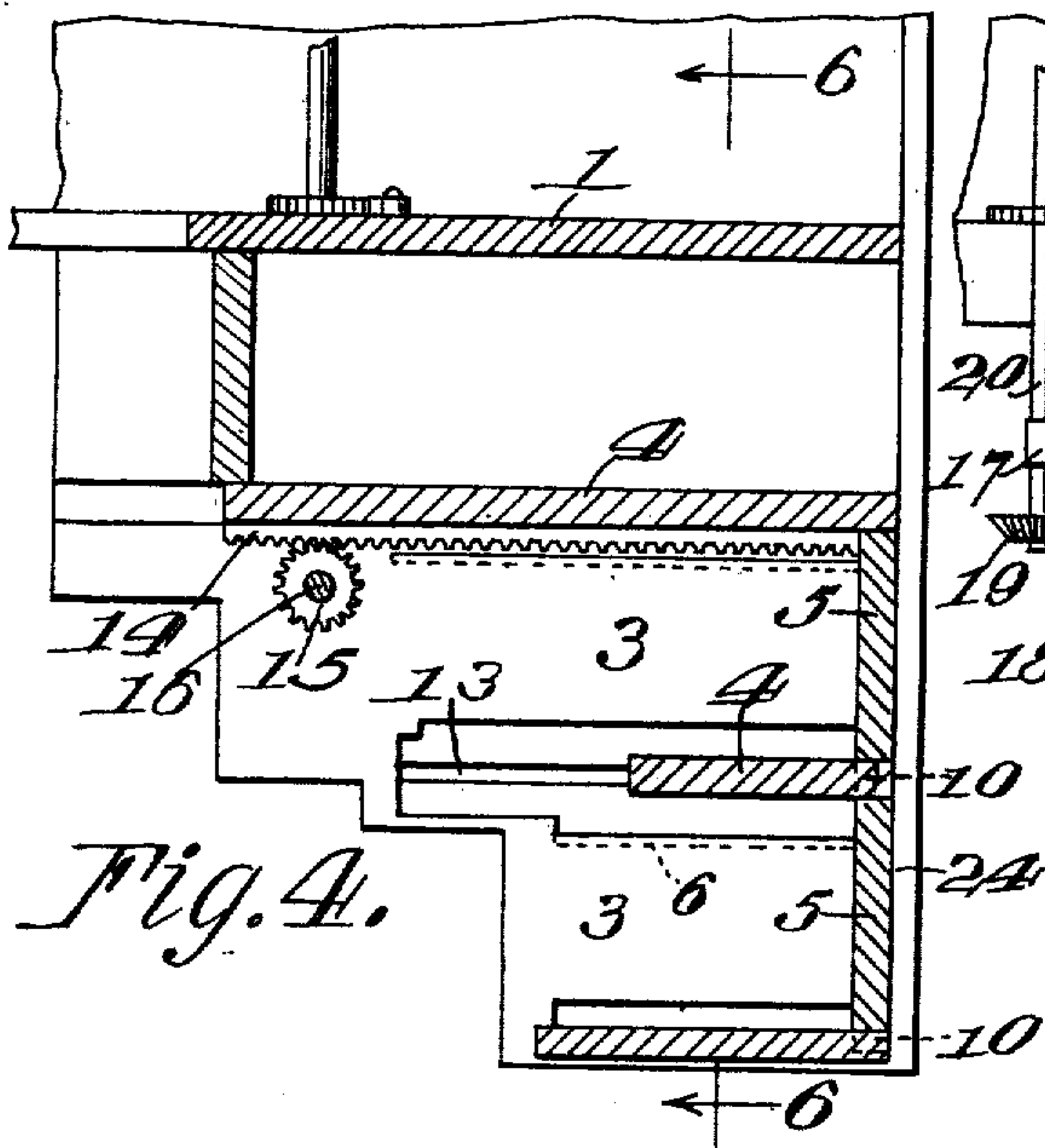
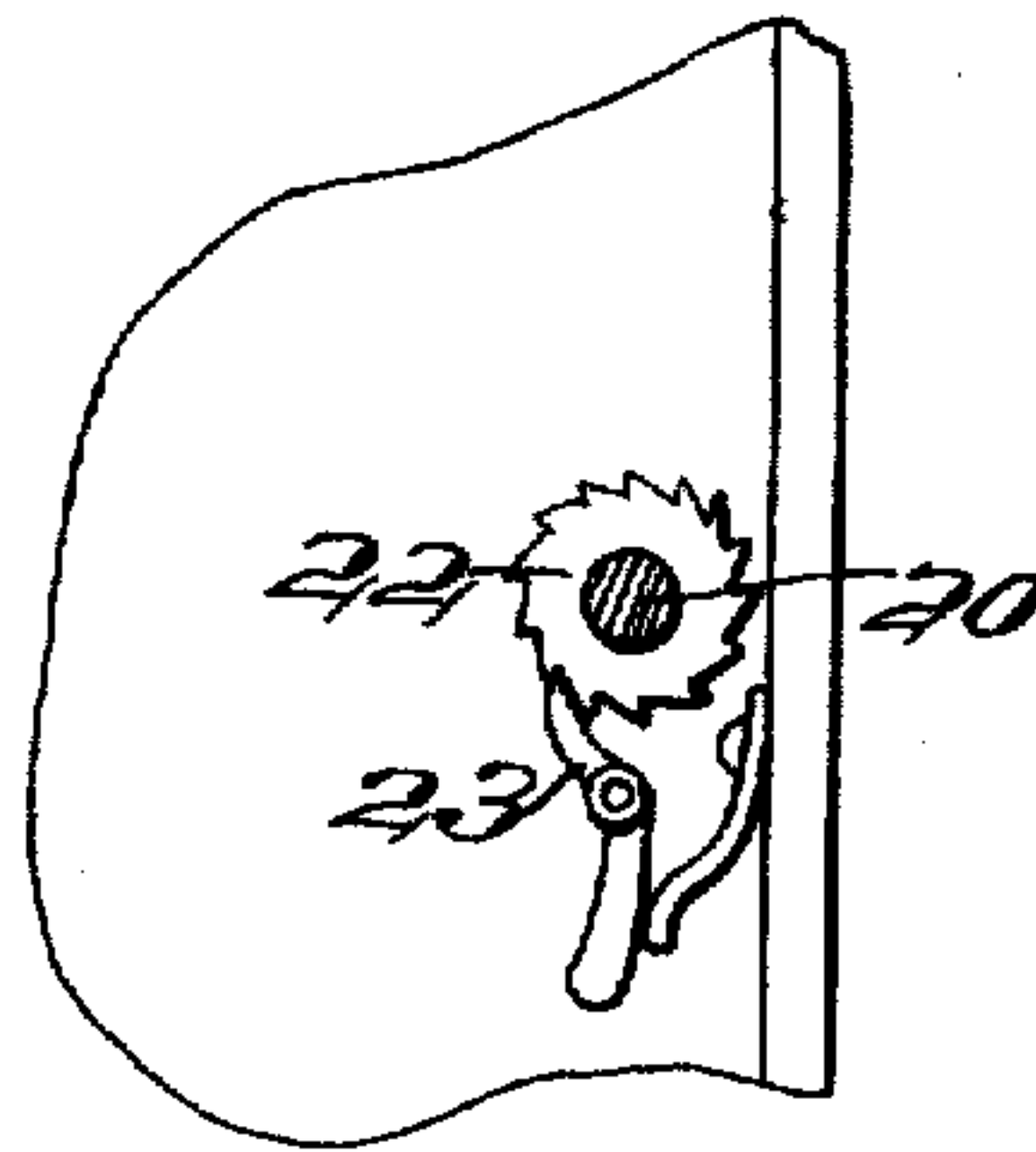


Fig. 7.



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UNITED STATES PATENT OFFICE.

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FOLDING CAR-STEP.

No. 908,052.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Application filed July 20, 1908. Serial No. 444,369.

To all whom it may concern:

Be it known that I, GEORGE J. WAGNER, a citizen of the United States, residing at Marion, in the county of Grant and State of Indiana, have invented certain new and useful Improvements in Folding Car-Steps; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in folding car steps.

The object of the invention is to provide steps of this character adapted to be opened and closed to operative and inoperative positions, and which, when in a closed or folded position, will effectually prevent getting on or off the car.

A further object is to provide means whereby the steps may be readily shifted to an open or closed position.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side view of a portion of a car and platform, showing the application of the invention thereto; Fig. 2 is a side view of the platform and steps, parts being broken away; Fig. 3 is a vertical sectional view on a line 3—3 of Fig. 2; Fig. 4 is a similar view with the steps in closed position; Fig. 5 is a vertical sectional view on the line 5—5 of Fig. 3, looking in the direction of the arrow; Fig. 6 is a detail vertical sectional view on the line 6—6 of Fig. 4; and Fig. 7 is a detail plan view of a fragment of the platform showing the operating shaft in section and the arrangement of the locking gear and pawl connected thereto.

Referring more particularly to the drawings, 1 denotes the car platform, to which are secured the side pieces, 2, of the steps, said side pieces having arranged on their inner surfaces a series of horizontally disposed spaced cleats, 3, which are adapted to slidably support the steps, 4.

The cleats, 3, are engaged by the recessed ends of the risers, 5, of each of the steps, and in the upper edges of each of the cleats, 3, is formed a longitudinally disposed

groove, 6, which forms a ball-race, in which anti-frictional bearing balls, 7, are adapted to travel, said balls being held in recesses, 8, formed in the overlapping upper portions of the recessed ends of the risers.

In the ends of all but the upper step are formed recesses, 9, with which are engaged downwardly projecting guide lugs, 10, formed on the adjacent lower edges of the risers, said lower edges of the risers being slidably engaged with the upper surface of each next lower step. On the ends of the intermediate step are formed longitudinally projecting guide lugs, 12, which are adapted to engage guide grooves or channels, 13, formed in the adjacent walls of the side pieces, 2, of the steps.

On the under side of the upper step adjacent to the inner surface of the side pieces, 2, are secured rack bars, 14, which are engaged by operating pinions, 15, fixedly mounted on a transversely disposed shaft, 16, which is journaled in the side pieces, 2, of the steps. One end of the shaft, 16, projects through one of the side pieces, 2, and on the projecting end of the shaft, 16, is fixed a bevel gear, 18, which is operatively engaged with a similar gear, 19, mounted on the lower end of an operating shaft, 20, which is journaled in a suitable bearing on the bracket, 17, and projects upwardly through the platform, 1, and is provided on its upper end with a crank handle, 21, by means of which the gears, 18 and 19, are operated to revolve the shaft, 16, which movement is imparted through the pinions, 15, to the rack bars, 14, to move the upper step inwardly or outwardly to an open or closed position. The movement of the upper step is imparted to the next lower step by means of the lugs, 10, on the riser of said upper step, which engage the recesses, 9, in the ends of said next lower step, thus causing said step to be moved inwardly and outwardly to an open or closed position with the upper step. On the shaft, 20, adjacent to the upper side of the platform, 1, is secured a ratchet wheel, 22, which is adapted to be engaged by a foot-operated pawl, 23, pivotally mounted on the platform.

On the outer edges of the side pieces, 2, and over the ends of the cleats, 3, are secured finishing strips, 24, the outer surfaces of which may, if desired, be ornamented in any suitable manner. The edges of each of the steps and the outer surface of the risers,

may, if desired, be provided with any suitable ornamentation.

The lowermost step and the riser between the upper step and the platform are immovable and rigidly secured to the side pieces of the steps. The uppermost step is shifted to an open and closed position by means of the gearing herein described, and the steps between the upper step and the lowermost step are connected to each other in the manner described and are operated by the movement of the upper step which is imparted to each successive lower step by the connections described.

The steps are primarily intended for use on steam railway cars, but it is obvious that they may also be advantageously employed in connection with street railway cars, and by means of the operating mechanism herein shown and described, the steps may be quickly and easily moved to an open and closed position.

From the foregoing description, taken in connection with the accompanying drawing, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claims.

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

1. The combination with a car platform, of side pieces secured thereto, guide cleats arranged on the inner sides of said side pieces, a series of steps having a sliding engagement with said cleats, an operating gearing connected with the uppermost step whereby the latter is retracted and projected, and means on said upper step to engage the next lower step to move the latter to an operative and inoperative position.

2. The combination with a car platform, of side pieces secured thereto, guiding and supporting cleats secured to the inner surface of said side pieces, a series of steps having

risers provided with recessed ends adapted to engage said cleats, an anti-frictional bearing between said risers and cleats, means operated from the platform of a car to move the upper step to an open or closed position, and means to connect said upper step to the next lower step whereby the latter is moved to an open and closed position by said upper step.

3. The combination with a car platform, of side pieces secured thereto, a series of steps slidably engaged with said side pieces and adapted to be moved to an open or closed position, rack bars secured to the upper step, an operating shaft geared to said lugs, means whereby said shaft is operated from the platform of the car to move the upper step to an open or closed position, and means whereby the next lower steps are operated by said upper step.

4. The combination with a car platform, of side pieces secured thereto, a series of steps slidably engaged with said side pieces, rack bars secured to the rear end of the uppermost step, an operating shaft geared to said rack bars, a crank shaft geared to said operating shaft and projecting upwardly above said platform, a crank handle on said shaft, a ratchet wheel fixed to the shaft, and a locking pawl adapted to be engaged with said ratchet wheel.

5. The combination with a car platform, of side pieces secured thereto, a series of steps slidably engaged with said side pieces, the lower steps of said series having recessed ends, connecting lugs arranged on the risers of each step to engage the recessed ends of the next lower step, whereby said steps are operatively connected together, and means to retract and project the upper step from the platform of the car and through the connection between said step and the lower steps to retract and project said lower step when the upper step is operated.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE J. WAGNER.

Witnesses:

J. W. FUDGE,

F. H. WHITCOMB.