G. M. LA SHELL & W. A. SWEM.

LOADING AND UNLOADING DEVICE.

APPLICATION FILED NOV. 3, 1909.

989,910.

Patented Apr. 18, 1911.

4 SHEETS—SHEET 1.

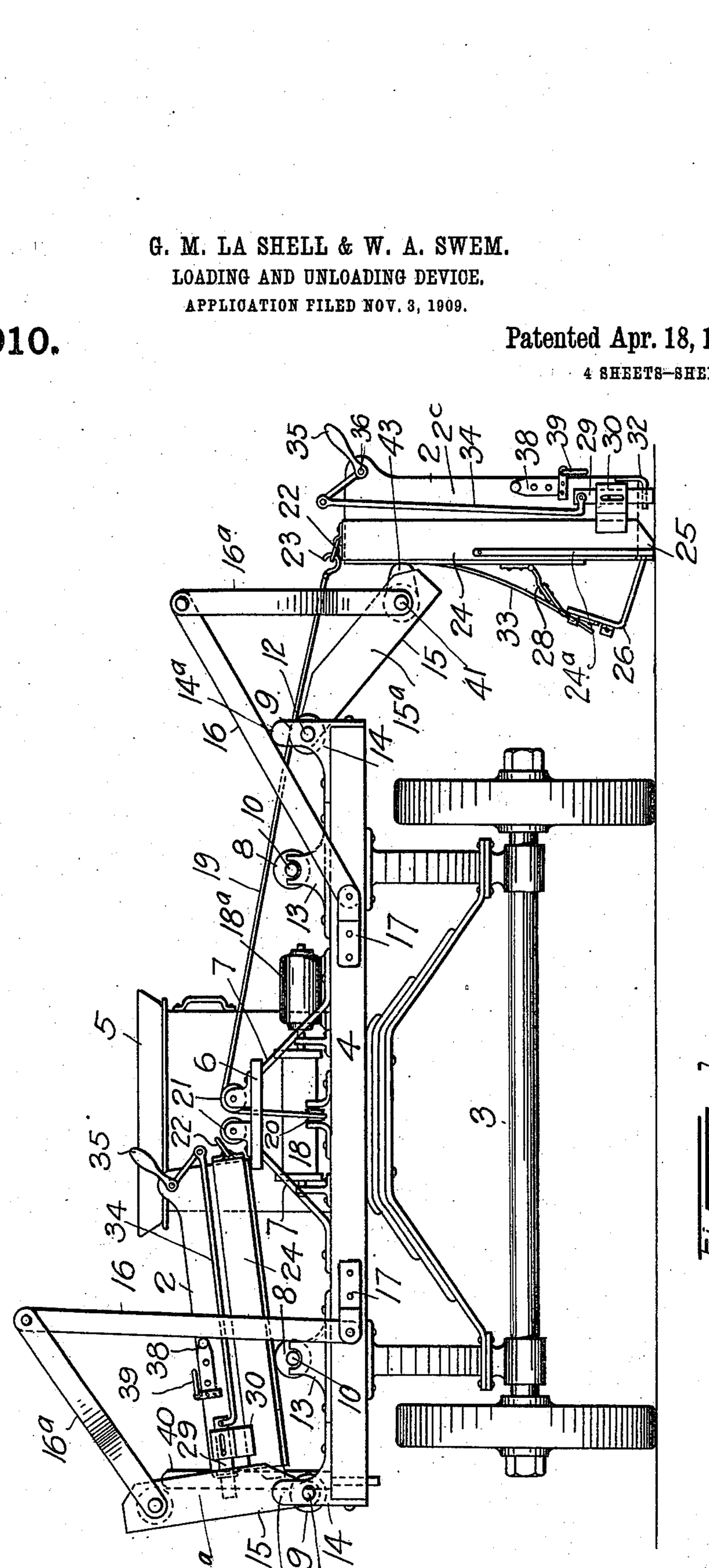

FIG. 1.

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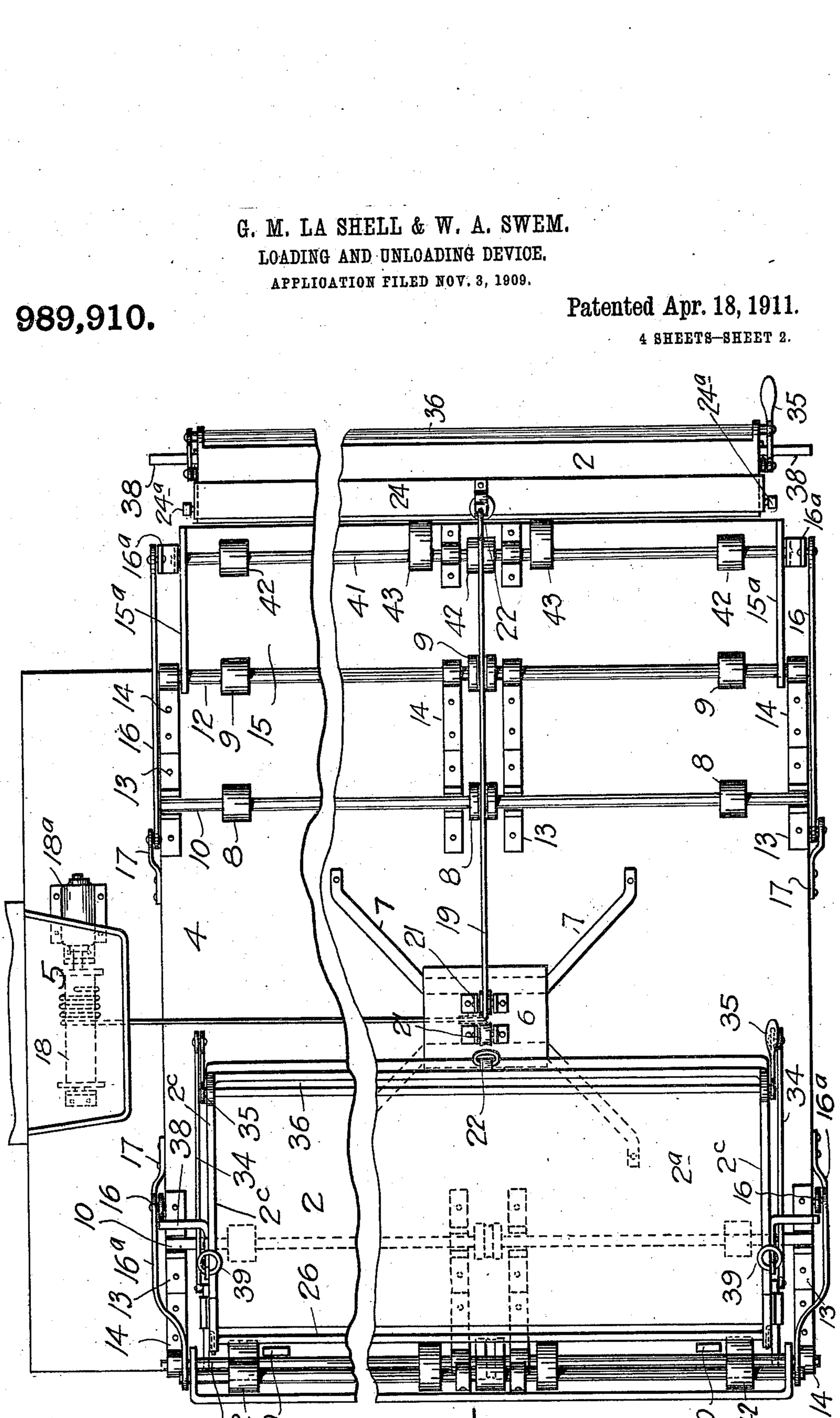

FIG. 2.

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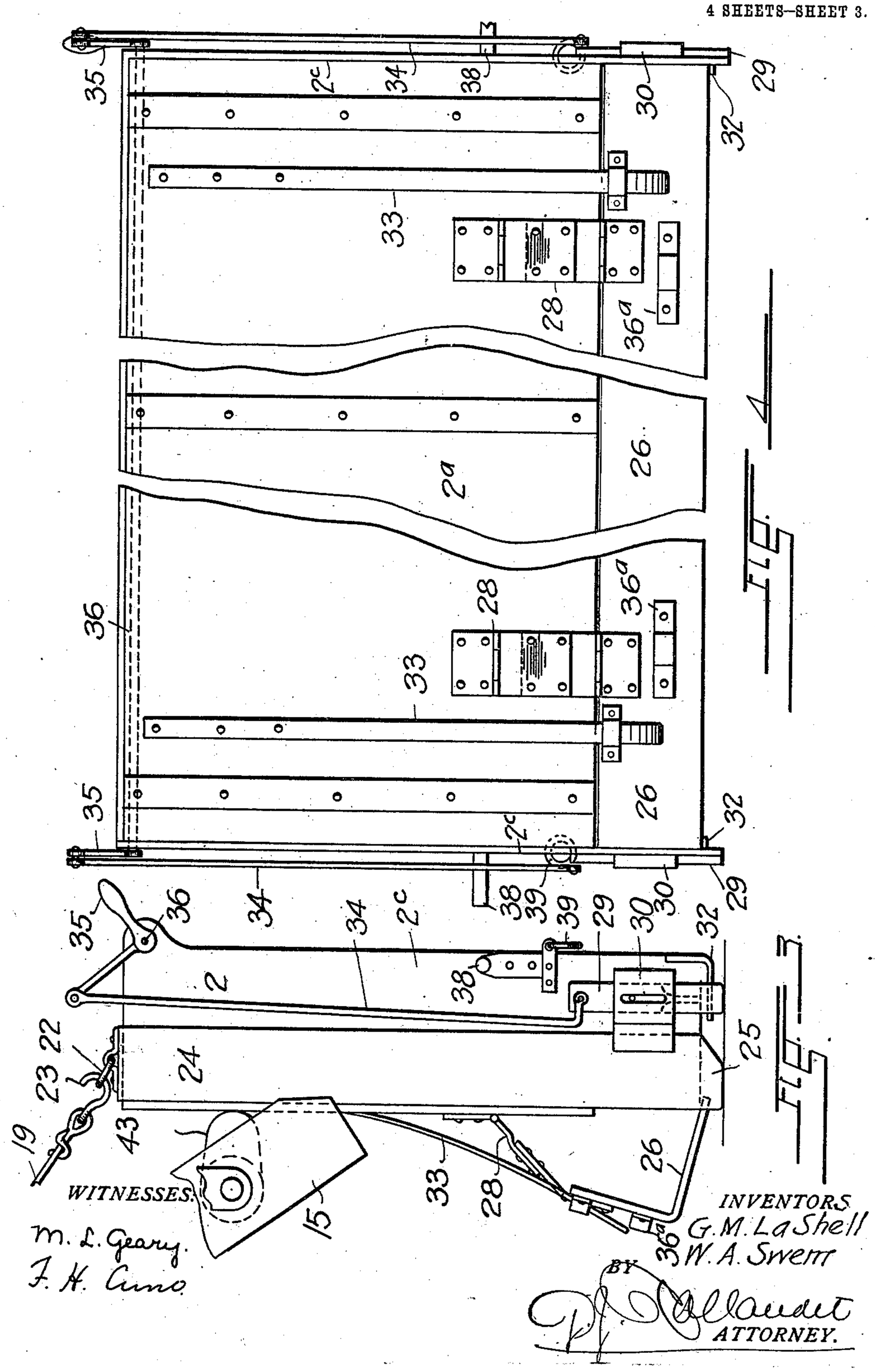

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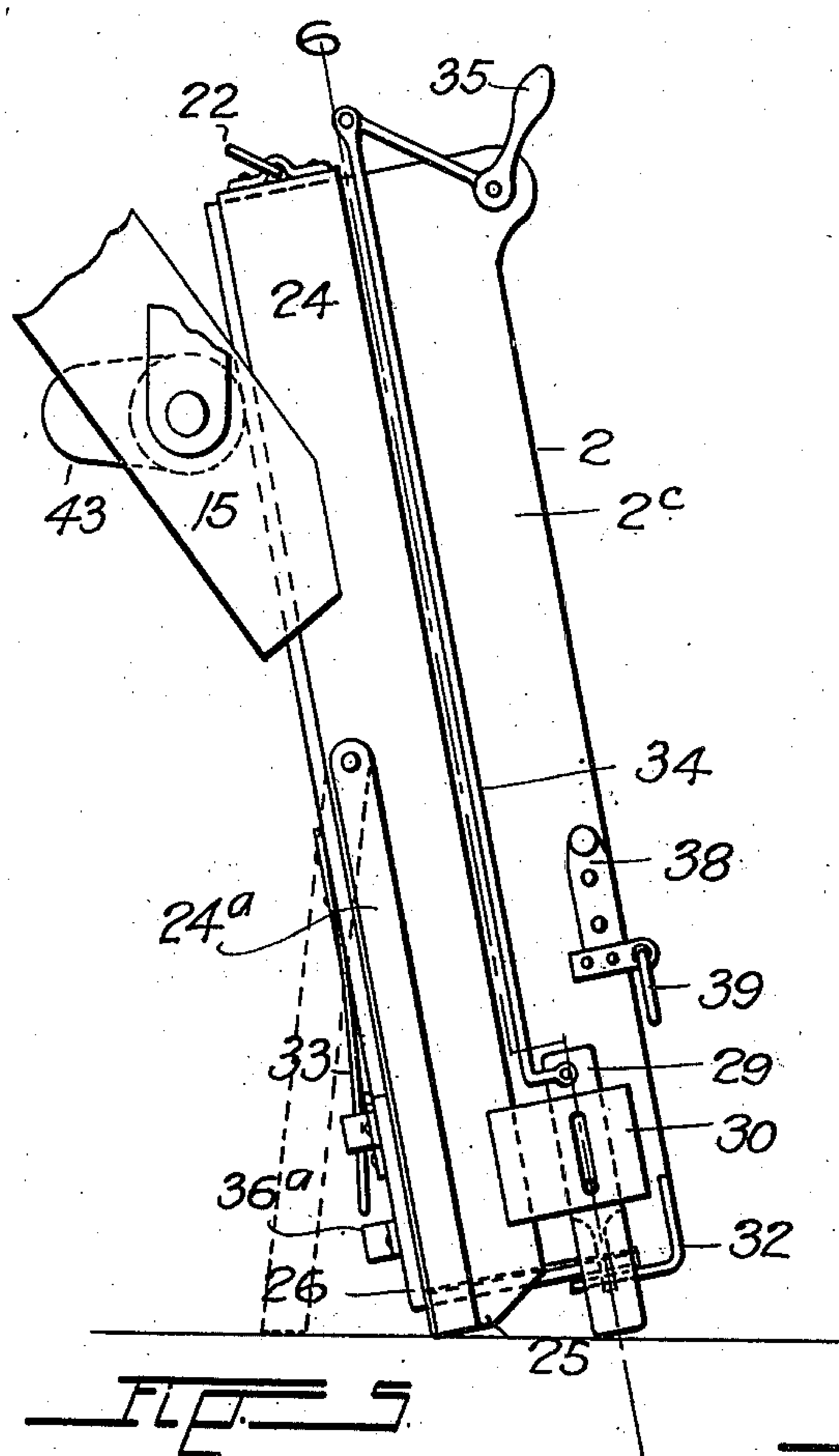

FIG. 5.

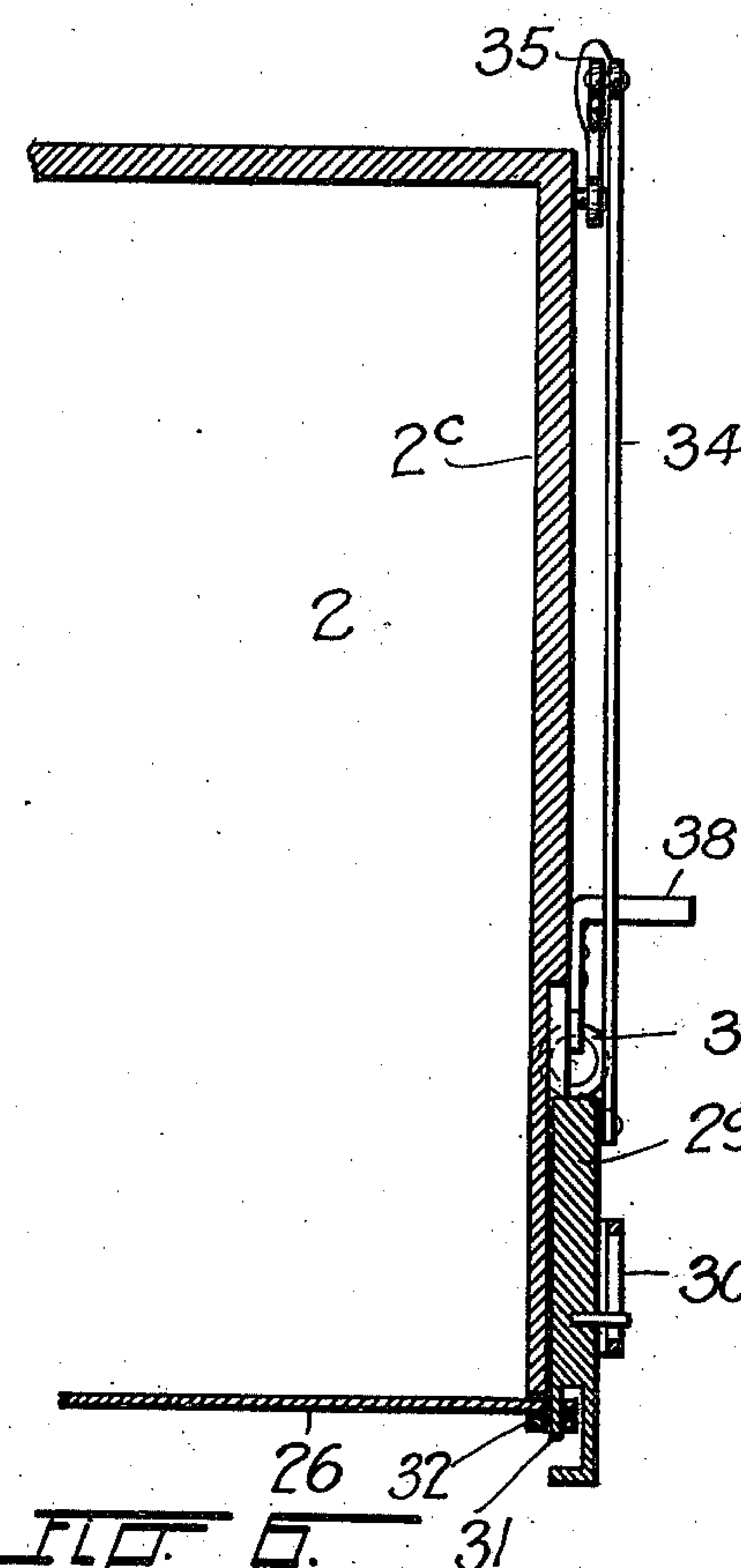

FIG. 6.

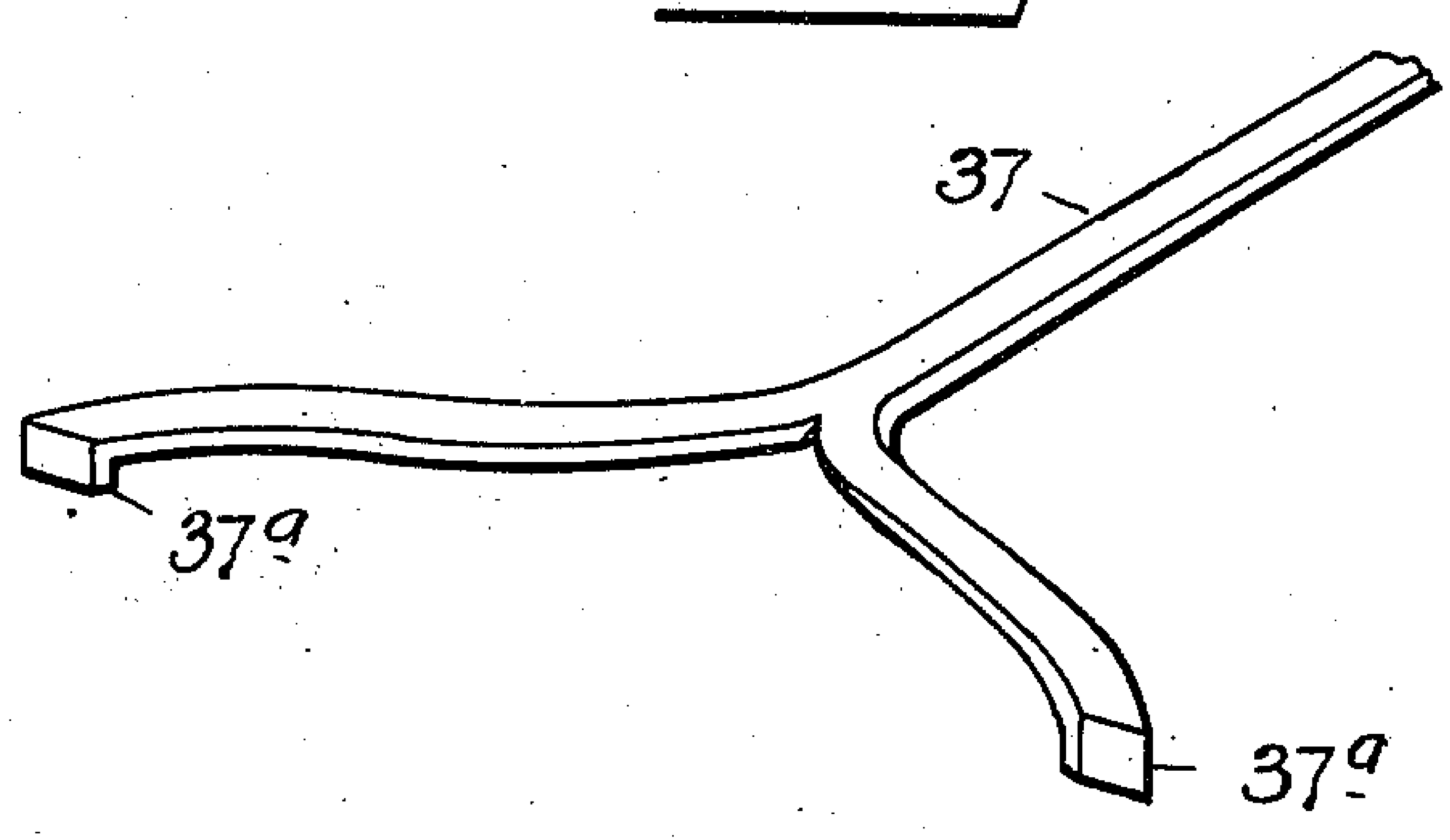

FIG. 7.

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UNITED STATES PATENT OFFICE.

GEORGE M. LA SHELL AND WILLIAM A. SWEM, OF DENVER, COLORADO.

LOADING AND UNLOADING DEVICE.

989,910. Specification of Letters Patent. **Patented Apr. 18, 1911.**

Application filed November 3, 1909. Serial No. 526,105.

To all whom it may concern:

Be it known that we, GEORGE M. LA SHELL and WILLIAM A. SWEM, citizens of the United States of America, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Loading and Unloading Devices, of which the following is a specification.

Our invention relates to loading and unloading apparatus for vehicles and its main object resides in the provision of a simple but highly effective mechanism by means of which bricks, boxes, blocks and other similar articles may be loaded upon the vehicle in the minimum of time and deposited upon the ground or at any selected elevation, in regular stacked arrangement, without manipulation.

While our invention is particularly adapted for use on automobiles whose high initial cost and expense of maintainance render saving of time in loading unloading of paramount importance, it may be used effectually on other vehicles and, although we preferably effect the deposition of the goods to be unloaded by automatic means, the said act may be accomplished manually by the use of our invention without the labor and exertion usually required to this purpose.

Objects of the invention other than that stated hereinbefore will appear in the following description, reference being had to the accompanying drawings in the various views of which like parts are similarly designated and in which—

Figure 1, represents an end view of a vehicle with our unloading apparatus in operative position, Fig. 2, a fragmentary plan-view of the same, Fig. 3, an end view of the movable receptacle comprised in the construction, in the position it occupies while its contents are deposited on a floor or other surface, Fig. 4, a fragmentary rear elevation of the receptacle shown in Fig. 3, Fig. 5, a view similar to Fig. 3 showing the receptacle in the position when it first engages the floor and before its contents are deposited thereon, Fig. 6, a transverse section taken along the line 6—6 Fig. 5 and Fig. 7, a perspective view of a lever used in manually operating the depositing contrivance of the receptacle above referred to.

In Figs. 1 and 2 of the drawings, our invention is shown in duplex form, in which two receptacles 2 are mounted upon a truck 3 to be lowered over opposite sides thereof.

The receptacle and the mechanism by which it is operated, at one side of the truck is an exact duplicate of that at the other side and the said mechanisms operate independently, for which reasons an explanation of the construction and operation of one of them will be sufficient to convey a clear understanding of our invention.

On vehicles smaller than that shown in the drawings, but one receptacle is employed, which may be lowered over the tail-end instead of the side thereof and it will be understood from the following description, that the position and arrangement of the unloading apparatus on the truck upon which it is supported may be varied in other ways without departure from the principle of our invention.

The truck 3 carries a platform 4 provided with the usual driver's seat 5. Each of the receptacles 2 through the instrumentality of which the goods are loaded upon and unloaded from the vehicle, is, in the form of our invention shown in Figs. 1 and 2, normally supported in an inclined position upon an elevated platform 6 which is connected with the floor of the vehicle by means of spider-legs 7, and upon anti-friction rollers 8 secured upon a shaft 10 which is revolubly mounted, in boxes 13 on the vehicle platform 4.

A second shaft 12 mounted in parallel relation to the other, in boxes 14 near the edge of the floor 4, carries anti-friction rollers 9 which support the receptacle during its downward movement, and this shaft serves furthermore as an axle for a skid 15 which is pivotally held thereon at one of its extremities, and which is connected with the vehicle by means of two sets of hinged links 16 and 16[a] the outer ends of which are respectively attached to ears 17 on the edge of the platform 4 and to the parallel upright sides 15[a] of the skid 15. The latter is provided, at its free extremity, with a revoluble transverse shaft 41, carrying anti-friction rollers 42 over which the receptacle 2 moves during the unloading operation, and cams 43 which maintain the said receptacle in an upright position when supported on the ground as is shown in Figs. 1 and 3 of the drawings.

Mounted upon a convenient portion of the vehicle (in the forms shown in the drawings

upon the platform 4 below the driver's seat 5) is a winch 18 which may be actuated by hand or by suitable mechanical means, such as an electric motor 18[a].

A rope 19 wound upon the winch 18, is rove over a sheave 20 which is revolubly mounted below the elevated platform 6, and thence extends upwardly in between two sheaves 21 mounted upon the said platform, over either one of which it may be passed to be connected with one of the receptacles 2. The latter are, to this purpose provided at one of its ends with a ring 22 and the rope 19 has a hook 23 adapted to be inserted therein.

The receptacle 2, which has been repeatedly referred to in the preceding description, consists of an open, rectangular box which is reinforced by a surrounding metallic band 24 which, at the lower side of the box, is formed with outwardly projecting, short legs 25 whose function will be explained hereinafter.

One of the sides of the box (hereinabove referred to as the lower side) constitutes, when the receptacle is in the lowered position shown in Figs. 3 and 5, the bottom upon which the articles contained therein are temporarily supported and it is composed of an angular plate 26 which is movably connected with the true bottom 2[a] of the box by means of double hinges 28.

The plate 26 is maintained in its normal, closing position by means of two latch-bars 29 which are longitudinally slidably mounted in clevises 30 upon the end-surfaces 2[c] of the box and which carry detents 31 adapted to occupy normally registering apertures in the end of the plate 26 and in lugs 32 which project outwardly from the ends 2[c] of the box.

Leaf-springs 33 secured upon the under surface of the box in engagement with the angular plate 26, serve to move the latter from beneath the load supported thereon when the box is in the upright position shown in Fig. 3, after the detents 31 on the bars 29 have been withdrawn from the apertures they normally occupy.

To manually operate the latch bars 29, they are connected by means of rods 34, extending along the ends 2[c] of the box, with bell-crank levers 35 which are coöperatively fixed upon a shaft 36, revolubly mounted at the opposite side of the box, and the movable plate 26 has two U-straps 36[a] for the reception of the inturned extremities 37[a] of the bifurcated bar 37, shown in Fig. 7 of the drawings, which may be employed to aid the springs 33 in removing the plate 26 from beneath the load temporarily carried thereon.

Outwardly projecting straps 38 on the end 2[c] of the box, are adapted to engage the links 16 during the upward movement of the receptacle for the purpose of returning the skid 15 to, and maintaining it in its normal, substantially upright position shown on the left hand side of Fig. 1, and rings 39 are provided at the same ends of the box for the attachment of ropes in case it is desired to raise the box to an elevation above that of the platform 4.

Having thus described the mechanical construction of our invention, its operation will be readily understood.

The receptacle 2, when in its normal position upon the truck 3, as shown on the left-hand side of Fig. 1 of the drawings, rests upon the end of the platform 6 and upon the anti-friction rollers 8 on the shaft 10 and it is maintained in its position by one or more stakes 40, the lower ends of which are inserted in openings in the platform 4 of the vehicle or in the loops usually provided to that purpose while the skid 15 is held in a slightly inclined position by the engagement of the stops 38 on the box with the links 16 of the flexible connections between the skid and a relatively stationary part of the vehicle.

After the receptacles 2 have been loaded with bricks or other similarly formed articles of merchandise in the usual manner, the vehicle is moved to its destination and the contents of the boxes are deposited on the ground or other surface, in a regular stacked arrangement, without manipulation of any kind, in the following manner:—

After the hook 23 on the rope 19 has been inserted in the ring 22 of the box to be unloaded, the stakes 40 are removed, which allows the box to move outwardly over the antifriction rollers 8 and 9, impelled by gravitation and restrained by its connection with the winch 18 which as usual, is provided with a brake. During the outward movement of the box, the skid is lowered by its gravitative tendency, until it occupies the position shown on the right-hand side of Fig. 1, in which it is supported upon extensions 14[a] of the boxes 14, and affords, by means of the rollers 4[f] on the shaft 41, a support for the box. After the center of gravity of the box has reached a point beyond the line of contact of the latter with the rollers 42, the receptacle will cant downwardly until the legs 25 engage the ground. The box on thus lighting on the surface upon which its load is to be deposited, momentarily occupies a slanting position, as is shown in Fig. 5, and then, impelled by the weight of its load, moves toward the perpendicular to assume the position illustrated in Fig. 3.

The latch-bars 26 which normally project beyond the legs 25 on the box, are, during this movement, forcibly brought in engagement with the ground, with the result that the detents 31 are withdrawn from the aper-

tures in the lugs 32 and the plate 26, and the latter, impelled by the action of the springs 33, is moved outwardly from beneath the load which, in consequence, is deposited upon the ground in the same regular order in which they were placed in the receptacle.

The box may be reloaded while it is supported in an inclined position upon the ground by means of legs 24ª which to this purpose are pivotally secured upon the end surfaces thereof. When the receptacle is in this position, its weight is carried upon the legs 24ª and 25 while the bars 29 are in their normal position, so that when the plate 26 is moved to its original position, it will be locked in place by the detents 31, to support the load placed in the receptacle. The vehicle may in the meantime be used to convey previously loaded boxes to their destination and it will thus be observed that the vehicle may be kept in motion continually, with the exception of the short time required to load and unload the boxes, a feature which as hereinbefore explained is of great importance when the appliance is used in connection with an automobile truck.

The loaded receptacle is subsequently raised by means of the winch 18 until it has again reached its normal position and it is, during this movement, followed by the skid 15 by reason of the engagement of the stops 38 with the links 16, as hereinbefore explained.

When it is desired to deposit the load of the box upon a surface elevated above that of the platform 4, a rope terminating in three hooked connections, is by means of the latter, attached to the rings 22 and 39 and the box is raised by means of the winch to the desired elevation when, by proper manipulation of the said connections and the rope associated therewith, it is brought successively in the positions shown in Figs. 5 and 3.

The mode of operating the movable plate 26 by means of the lever 37 and the cranks 35 has been explained in the foregoing description and needs no further explanation at this point.

It will be observed that the action of the double hinges 28, will cause an initial horizontal movement of the plate 26, to be followed by an upward movement only after it is relieved from all or the greater part of the weight of the load contained in the box.

Having thus described our invention what we claim and desire to protect by Letters Patent is:—

1. In a loading and unloading apparatus, a receptacle open at one of its sides, a support for the contents of the receptacle, normally closing said opening, means for locking said support in its closed position, and means for withdrawing the same from beneath its load, said locking means being constructed to release said support by impingement upon the surface upon which the load is to be deposited when, during downward movement of said receptacle, the support reaches a position immediately above said surface.

2. In a loading and unloading apparatus, a receptacle open at one of its sides, and a support for the contents of the receptacle, normally closing said opening and adapted to be withdrawn from beneath its load, when during downward movement of the receptacle, it has reached a position immediately above the surface upon which the load is to be deposited, whereby said load may descend onto said surface without disturbing the arrangement of the articles of which it is composed.

3. In a loading and unloading apparatus, a receptacle open at its lowermost side, a support for the contents of the receptacle, hinged to the latter and normally closing said opening, means for maintaining said support in its closed position and means for withdrawing said support from beneath its load by moving it about its hinge, when released, whereby said load is free to descend onto a subjacent surface.

4. In a loading and unloading apparatus, a receptacle open at one of its sides, a member normally closing said side, a means for withdrawing said member so as to allow articles contained in the receptacle to descend onto a subjacent surface, a vehicle adapted to movably support said receptacle in an inclined position, a winch, and a flexible connection between the latter and the receptacle.

5. In a loading and unloading apparatus, a receptacle open at one of its sides, a member normally closing said side, a means adapted to hold said member in a closing position and to release the same by engagement with a surface upon which the receptacle is deposited, a means for withdrawing said member when released, so as to allow articles contained in the receptacle to descend onto the said surface, a vehicle adapted to movably support the receptacle in an inclined position, a winch, and flexible connection between the latter and the receptacle.

6. In a loading and unloading apparatus, a receptacle open at one of its sides, a member normally closing said side, a means for withdrawing said member so as to allow articles contained in the receptacle to descend onto a subjacent surface, a vehicle adapted to movably support said receptacle in an inclined position, and a retractable obstruction for holding the same against downward motion.

7. In a loading and unloading apparatus, a receptacle, a vehicle adapted to movably

support the same in an inclined position, a means for holding said receptacle against downward motion and a skid adjustably connected with the vehicle and adapted to support the receptacle when moving beyond an edge of the vehicle bed.

8. In a loading and unloading apparatus, a receptacle open at one of its sides, a member normally closing said side, a means for withdrawing said member so as to allow articles contained in the receptacles to descend onto a subjacent surface, a vehicle adapted to support said receptacle in an inclined position with its open side lowermost, a means for holding said receptacle against downward motion, and a means adapted to cause said receptacle to alight on its open side, when moved from the said vehicle.

9. In a loading and unloading apparatus, a receptacle, a vehicle adapted to support the same in an inclined position, means adapted to hold the receptacle against downward motion, a skid adjustably connected with the vehicle and adapted to support the receptacle while moving beyond the vehicle-bed, and coöperative means on said skid and said receptacle whereby movement of the latter in either direction is converted into a corresponding movement of the former.

10. In a loading and unloading apparatus, a receptacle, a vehicle adapted to support the same in an inclined position, a winch connected with said receptacle to lower and raise the same, a skid normally in a raised position on said vehicle and adapted, when lowered, to support the receptacle while moving beyond the vehicle-bed, and coöperative means on said receptacle and on said skid, adapted to maintain the latter in its raised position while the receptacle is supported on the vehicle, and to return the same to its raised position during upward movement of the receptacle.

11. In a loading and unloading apparatus, a receptacle, a vehicle adapted to support the same in an inclined position, a winch connected with said receptacle to lower and raise the same a skid normally in a raised position on said vehicle and adapted, when lowered, to support the receptacle while moving beyond the vehicle-bed, a flexible connection between the skid and the vehicle, the said receptacle having a projection, adapted to engage said connection so as to maintain the skid in its raised position while the receptacle is supported on the vehicle, and to return the same to its raised position during upward movement of the receptacle.

In testimony whereof we have affixed our signatures in presence of two witnesses.

GEORGE M. LA SHELL.
WILLIAM A. SWEM.

Witnesses:
G. J. ROLLANDET,
M. L. GEARY.