

F. S. SNYDER & A. F. BURT.

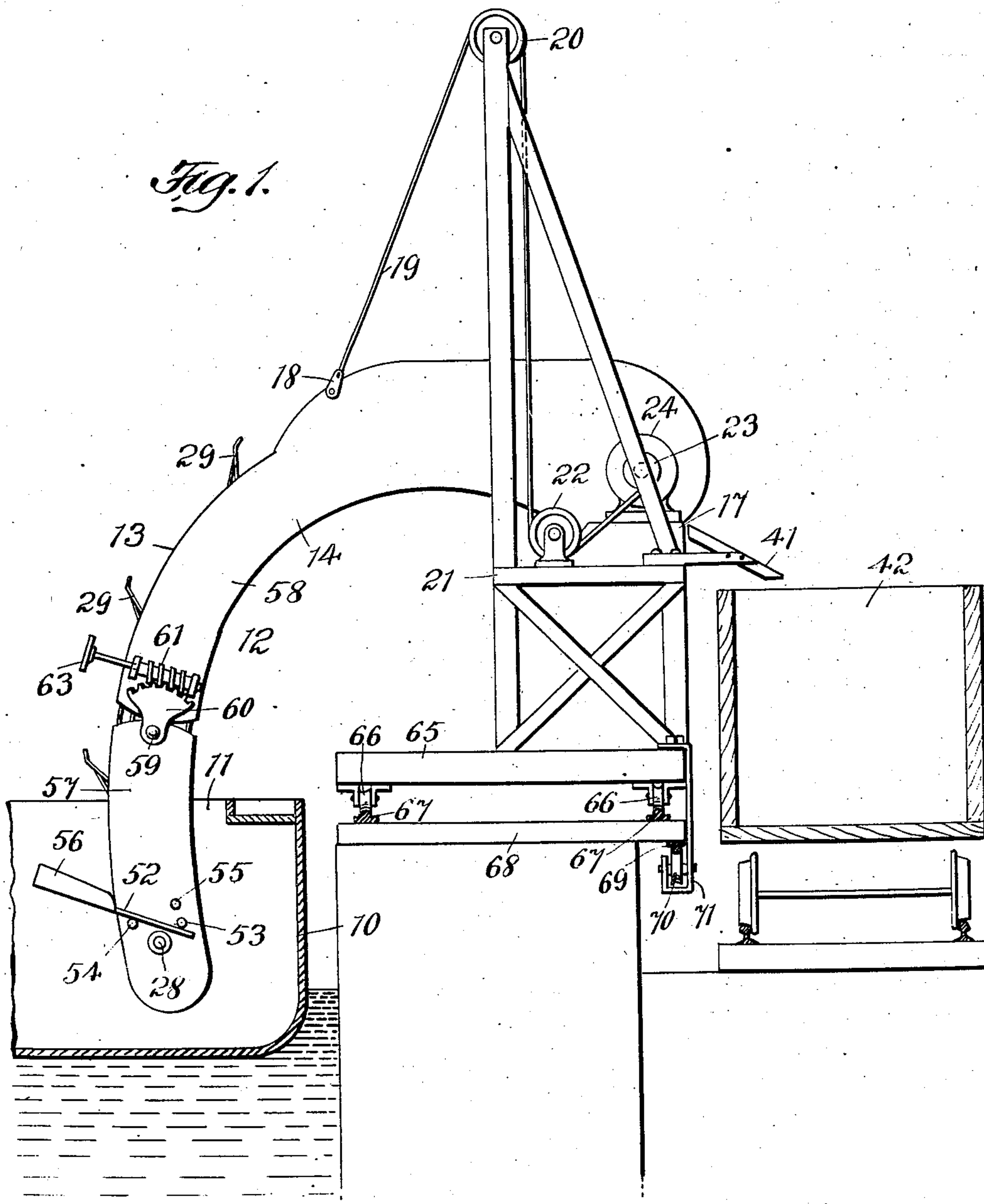
UNLOADING APPARATUS.

APPLICATION FILED JAN. 18, 1908.

946,282.

Patented Jan. 11, 1910.

4 SHEETS—SHEET 1.



Witnesses
Julius H. [Signature]
M. A. Haffey

Inventors
F. S. Snyder
A. F. Burt
By their Attorneys
Criswell & Criswell

F. S. SNYDER & A. F. BURT.

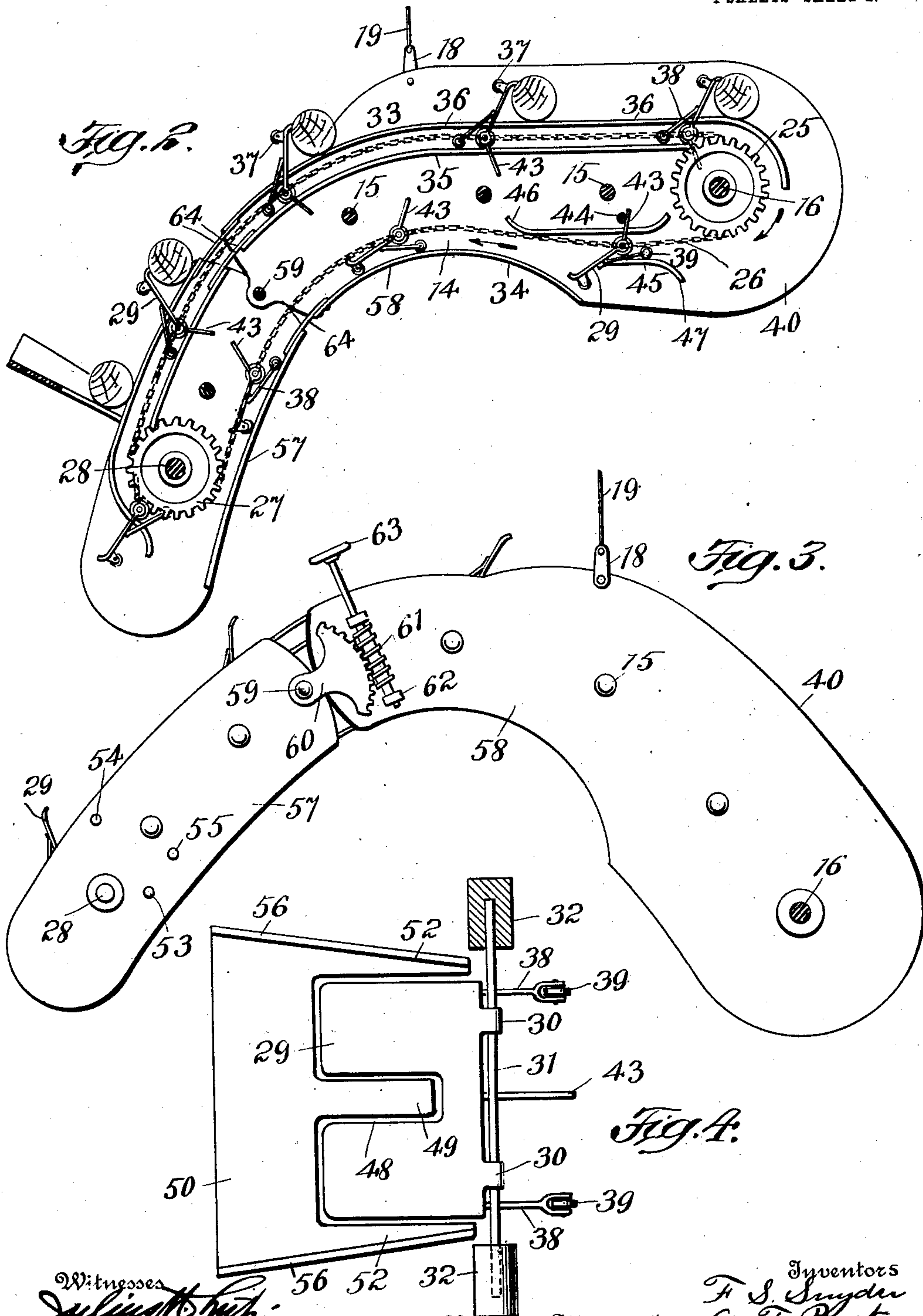
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Witnesses
Julius H. Hutz
H. A. Hutz

By their Attorneys

Inventors
F. S. Snyder
A. F. Burt
Criswell H. Criswell

F. S. SNYDER & A. F. BURT.

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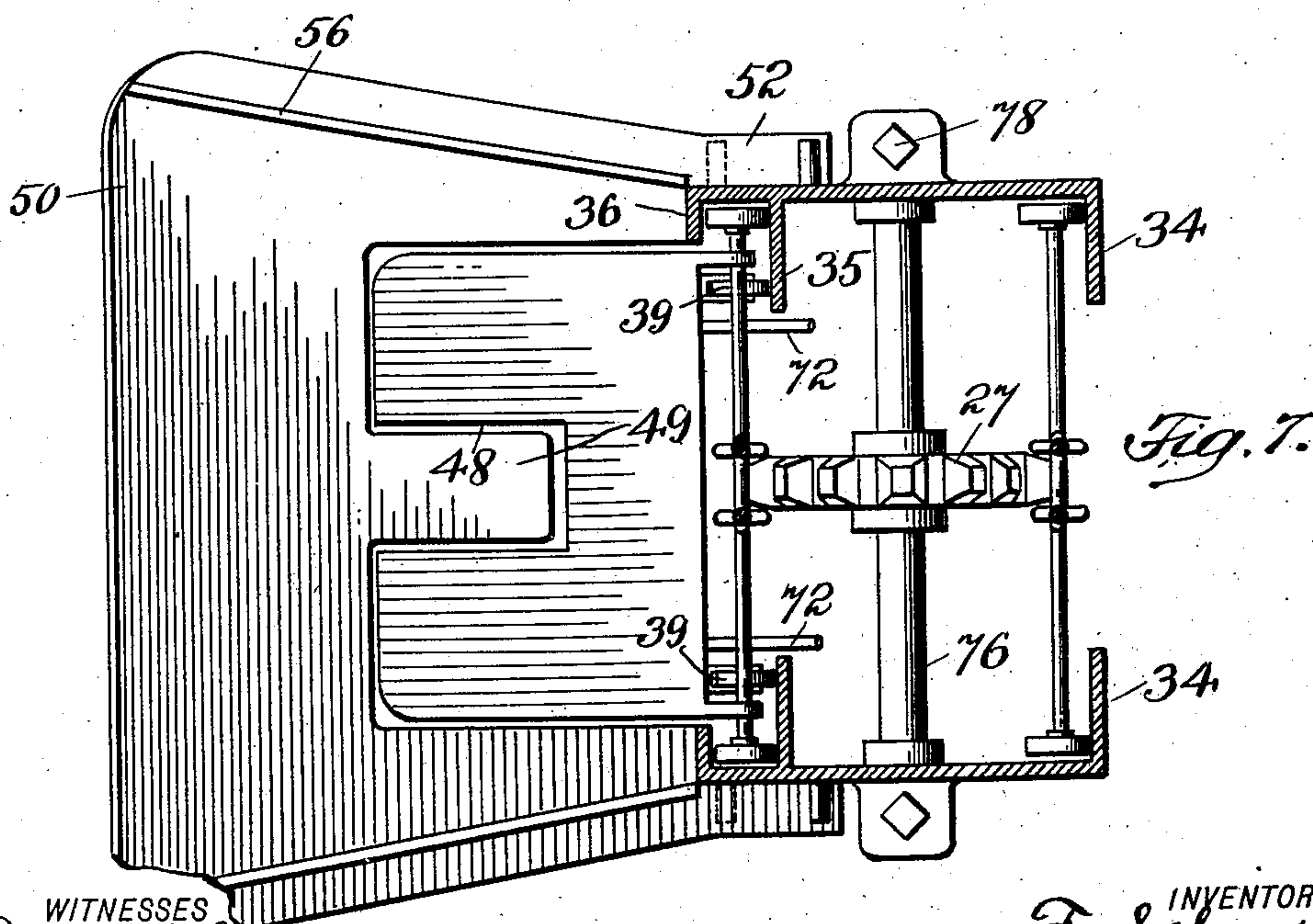
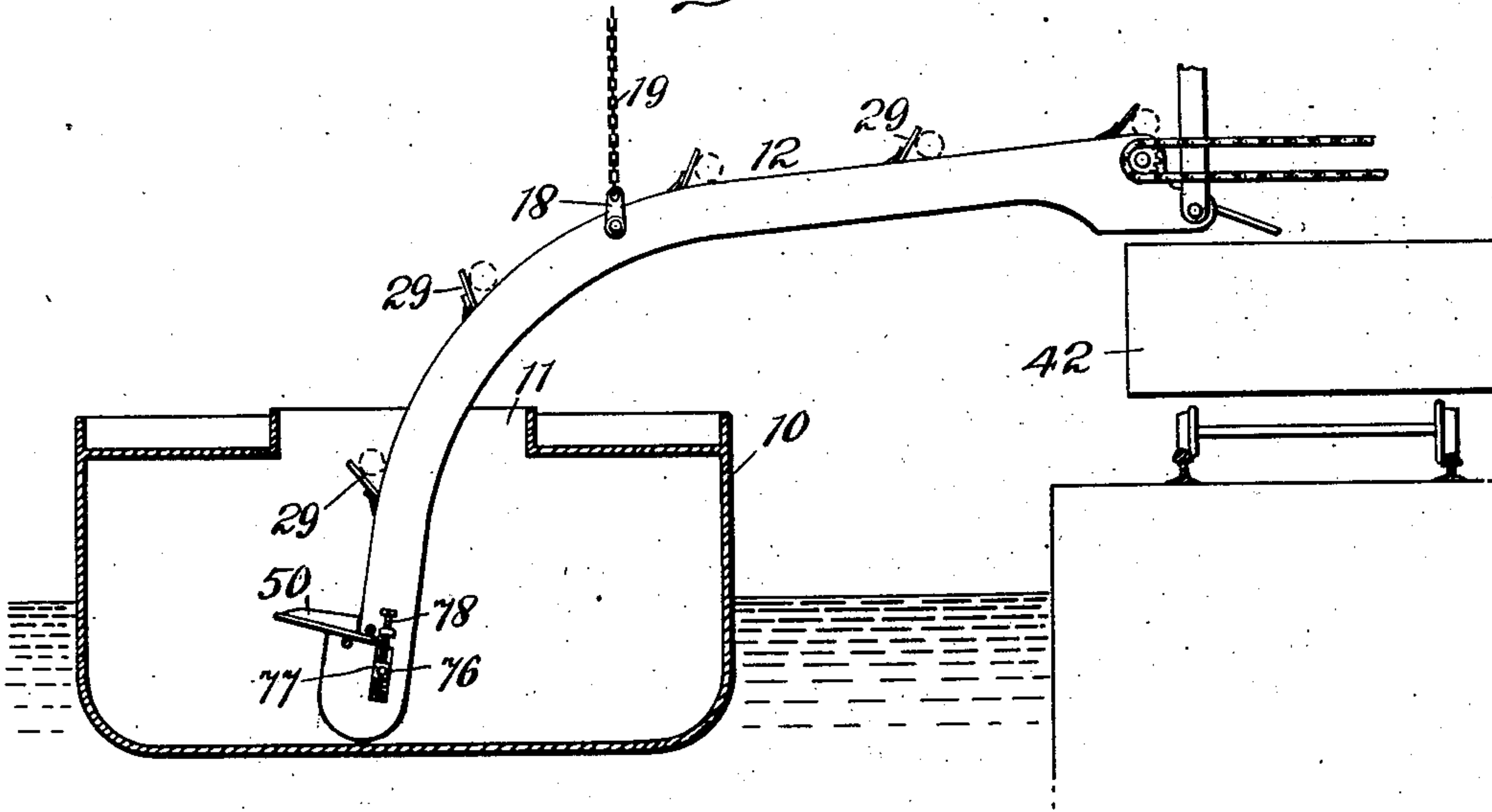
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4 SHEETS—SHEET 3.

Fig. 5.



WITNESSES

Julius Burt
M. A. Haffey

INVENTORS
F. S. Snyder
A. F. Burt
BY

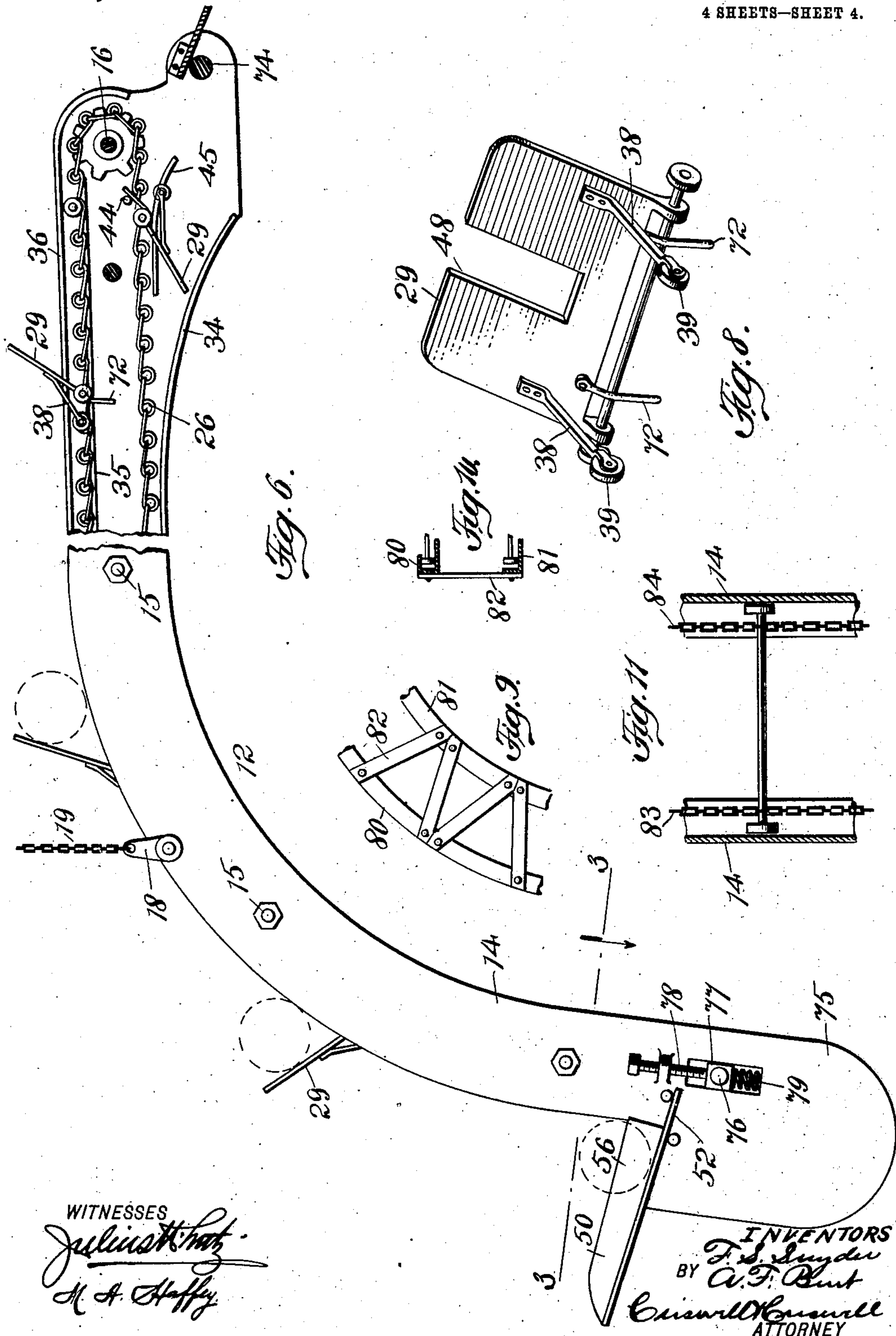
Criswell Criswell
ATTORNEYS

F. S. SNYDER & A. F. BURT.
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WITNESSES
Julius H. Haffey
H. A. Haffey

INVENTORS
BY *F. S. Snyder*
A. F. Burt
Ernest W. Russell
ATTORNEY

UNITED STATES PATENT OFFICE.

FREDERICK S. SNYDER AND ALONZO F. BURT, OF WHITEHALL, NEW YORK.

UNLOADING APPARATUS.

946,282.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed January 18, 1908. Serial No. 411,463.

To all whom it may concern:

Be it known that we, FREDERICK S. SNYDER and ALONZO F. BURT, citizens of the United States, and residents of Whitehall, county of Washington, and State of New York, have invented certain new and useful Improvements in Unloading Apparatus, of which the following is a full, clear, and exact description.

10 This invention relates more particularly to an apparatus for unloading pulpwood from a vessel to an elevator or to cars.

The primary object of the invention is to provide simple and efficient means whereby 15 pulpwood or other material may be readily transferred from a boat, car or other container, and discharged into an elevator or car without handling, and which is so arranged that it may be readily raised or lowered, so that all the material in the boat or 20 vessel may be removed, and which apparatus may be raised out of the way of the boat or vessel when not in use.

A further object of the invention is to 25 provide means which may be operated continuously, and which may be employed to raise coal, ashes, sand, or other material and transfer it from a boat, car or other container, and which is so constructed that the 30 elevating means is properly protected and will not be interfered with while operating the apparatus.

With these and other objects in view, the invention will be hereinafter more particularly 35 described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a vertical 40 section through a boat showing the apparatus in full lines in position to receive the material and to discharge the same into a car located convenient to the apparatus. Fig. 2 is a vertical longitudinal section of 45 the apparatus. Fig. 3 is a side elevation of the apparatus showing its position while unloading a boat that has a high deck load. Fig. 4 is a detail plan, partly in section, of one of the buckets and platform. Fig. 5 is

a side elevation, partly in section, showing 50 a somewhat different form of apparatus. Fig. 6 is an enlarged side elevation, partly in section, of the unloading apparatus shown in Fig. 5. Fig. 7 is a transverse section of the lower portion of the apparatus. 55 Fig. 8 is a detail perspective view of one of the buckets used in connection with the apparatus of Figs. 5 and 6. Figs. 9 and 10 show how the frame may be made of structural steel; and Fig. 11 shows how two 60 chains may be used.

While the apparatus is shown as applied to unloading a boat or vessel, and as if the frame was made of sheet metal, it will be understood that the apparatus may be em- 65 ployed for various purposes and in various connections, and that the frame work as well as any of the other parts may be made of structural steel or other material suitably braced, so that the same may be light and 70 strong, and that the frame may be of any suitable form to adapt it for the various uses to which it may be put without departing from the character of the invention.

The vessel 10 may represent a canal boat 75 having the usual hatchway or opening 11 through which material may be elevated, and adapted to be lowered in the hatchway is an elevating apparatus 12. This apparatus may be variously constructed. As 80 shown the frame 13, is of metal, and in practice we may make the said frame in a skeleton form by employing steel and suitably bracing the parts together in substantially the same way as is employed in 85 building columns, girders and the like, though the construction of the frame may be varied as desired. The sides 14 of the frame are held apart and suitably braced by bolts 15, and said frame is pivoted to a bar or 90 shaft 16 arranged upon any suitable support as a base 17. The frame may be fixed or it may be adjustable along a shaft to adapt it to be adjusted to various positions, or the entire support may be moved lengthwise of 95 the vessel as will be presently described, and to permit the apparatus to be placed in various positions in order that all the ma-

terial convenient to the hatchway may be entirely removed; and while only one unloading apparatus is shown two or more may be employed so that the unloading may take place from several hatchways of the vessel at the same time. The pivoting of the frame to the shaft 16 permits the apparatus to be raised or lowered as the material is unloaded, and also permits the apparatus to be raised entirely free of the boat or vessel, which is very desirable, and in fact necessary where the boat is provided with masts. To secure this result, we may provide on the frame 13 of the apparatus an eye bolt or other attaching means 18 at any suitable point, and connected to this bolt is a cable or other flexible connection 19, which passes over a pulley 20, Fig. 1, located upon the frame 21, and said cable passes around a second pulley 22, and from there to a drum 23, which may be operated by means of a motor 24 or otherwise. The said motor 24 may be so arranged that the shaft 16 will serve as the armature shaft, or as a continuation thereof. By this means the apparatus may be raised or lowered when the motor is operated, and if desired may be moved entirely clear of the boat or vessel 10.

The frame 13 has a sprocket wheel 25 secured to the shaft 16, and passing around the sprocket wheel is an endless chain 26, which may be of any suitable form, and said chain also passes around a sprocket wheel 27 secured to a transverse shaft 28 located near the outer portion or lower end of the apparatus, so that when the shaft 16 is rotated, the sprocket wheels will impart movement to the chain in the direction indicated by the arrows. The frame 13 may be of any desired form and length, and is preferably curved, and to the chain 26 is secured a plurality of buckets 29. These buckets may be variously constructed according to the use to which they may be put. For unloading pulpwood, they are preferably flat, and have one edge thereof slightly curved to engage the logs of pulpwood, and projecting from the inner edge thereof are lugs 30 in which is held a shaft 31. This shaft 31 is provided at its ends with rolls 32, and said rolls have recesses therein, so that the shafts 31 will not project entirely there-through, and as said buckets are moved by the chain 26 the rollers 32 will travel along the track 33 in their upward movement, and along the track 34 on its downward movement. The track 33 comprises an inner member 35 and an outer member 36 projecting inward from each side 14 of the frame of the apparatus, and the track 34 comprises a single member projecting inward from each frame. The buckets 29 are provided near their upper edge with rollers 37, which are held in brackets on said buckets, and projecting from said buckets are bars or

brackets 38 on the lower ends of which are rollers 39, which are adapted to engage the lower rail or member of the track 33, so as to properly hold the buckets in their proper position while carrying the logs of pulpwood upward to be discharged. The member 36 of the track 33 is somewhat extended to guide the logs as they are discharged, and the sides 14 of the frame of the apparatus are somewhat enlarged, as at 40, so as to form a guide or chute for the pulpwood as the latter is discharged, particularly when the apparatus is used in the position shown in Fig. 3 for a high deck load, and as the pulpwood is discharged it passes to an inclined platform or chute 41, and from there to a car or other container 42, which has its track arranged convenient to the apparatus.

To cause the buckets to move within the frame during the downward movement thereof, after discharging the material, we provide one or more trips 43. These trips 43 are in the form of bars which project inward from the buckets 29, and as the chain 26 passes around the sprocket 25 it will engage the pin, stop or projection 44, and will tilt the bucket and swing the same with the shaft 31 as a pivot, so as to force its outer end inward, and to cause the roll 37 near the outer surface thereof to ride upon the inner side or face of the track 34. The frame is provided with a supplemental track 45, which serves to guide the rollers 32 and said track has two members 46 and 47 one of which is longer than the other, and both tracks have their ends flared so that the friction rolls 32 will readily pass between the same in their downward movement. The track 34 is somewhat shorter than the track 33, and as will be seen when the buckets are passing downward after the same have been forced inward by means of the bar 43 and pin or projection 44, the said buckets will travel along the inner surface of the track 34 with the rolls 39 and 37 supporting the same. By this means the buckets are moved within the frame on the downward movement so that they will not project beyond the outer surface thereof, and will thereby be entirely free of any obstructions, and cannot strike or engage any part of the vessel in case the frame of the apparatus should rest against the same.

The buckets in their upward movement as they pass around the sprocket wheel 27 will engage the inner curved end of the member 36 of track 33, and will automatically open or assume their proper relative position, so as to project beyond the frame in position to receive the pulpwood logs. The buckets 29 are provided centrally thereof with an opening or slot 48, and in this opening is adapted to enter a tongue or projection 49 of a platform 50. This platform 50 may be of any suitable form and has inward projecting ends

52, which are adapted to rest between pins or lugs 53, 54, and 55, so as to be supported in position to receive the logs so that the latter may pass in position to be engaged by the buckets 29. The platform 50 has flared side-guiding walls 56, and the projecting parts 52 when arranged between the lugs 54 and 53 will be supported in an inclined position so as to extend upward, and when arranged between the lugs 54 and 55 will have a different inclination according to the position of the apparatus. The arrangement of the platform not only makes the same detachable and readily applied to the apparatus, but the tongue 49 thereof assists in causing the logs to be always engaged by the buckets.

It is desirable in many instances to have the lower part of the apparatus frame adjustable to adapt it to move relatively to the other part of the apparatus. For this purpose the frame of the apparatus comprises two members 57 and 58. These members are pivoted together at 59, and to the member 57 is held a worm or segmental gear 60, the teeth of which is engaged by a worm or screw 61, which is held in lugs 62 on the member 58, and has its stem or shaft provided with a handle 63 by means of which said member 57 may be moved relatively with respect to the member 58. When thus constructed each track 33 and 34 must be divided, and at the joint between the members 57 and 58 of the apparatus each member of each track is provided with a spring or other plate 64, which is adapted to close the space between the joints in the tracks, so that the rolls of the buckets will readily pass along said tracks.

The support and frame 21 may be made of wood or metal of any suitable construction, and said frame may have its platform 65 provided with wheels 66 on the under surface thereof, which are adapted to travel along the rails of a track 67. The rails of the track are held to the ties 68, and to the ties is held a third rail 69, along which is adapted to travel one or more wheels 70, each of which is supported by a bracket 71 carried by the platform 65. The wheels 70 may be for the purpose of a guide and are so arranged that the weight of the apparatus will not tip the supporting frame.

The operation of the apparatus will be readily understood from the foregoing description when taken in connection with the accompanying drawings. In unloading a vessel of pulpwood or like material, it is only necessary for the logs to be placed upon the platform 50, and by reason of its incline they will naturally position themselves so as to rest against the rail or outer surface 43 of the frame 13, the tongue 49 of said platform serving to prevent the log from falling into the open space or opening for

the passage of the bucket. As the endless chain 26 is operated by imparting motion to the drive shaft 16 the successive buckets will engage the logs, and will carry them along the outer surface of the frame 13 as shown in Fig. 2, and when they reach the upper end of the frame they will fall or be discharged on to a platform or chute 41, and from there into the car 42 or other receptacle provided to receive the logs as they are transferred from the boat. In this way it is unnecessary to handle the logs except to place them on the platform, and the apparatus is so made that it may be readily adjusted in position to receive the logs, and that by the means disclosed two or more of the apparatuses may be employed, so that the boat or other container may be quickly unloaded.

In Figs. 5 to 8 the construction of the buckets and their mode of operation is substantially the same as already described, except that there are two bars 72 serving as trips instead of one, and the buckets are not shown as being provided with rolls near their outer edge. The frame 73 is shown as supported by a shaft 74 to which it is pivoted, and said frame is not divided into relatively movable members. This frame is enlarged at its lower end to form a boot 75, and the lower shaft 76, around which passes the endless chain, is adjustable by having said shaft 76 journaled in movable boxes 77, and these boxes are engaged by screws 78 to force them in one direction, while springs 79 force the boxes in the opposite direction. This permits the slack in the endless chain to be taken up, and the boot serves to protect the buckets from injury. The platform shown is substantially the same as in the other figures.

While we have shown the frame of the apparatus as of a particular form and made curved so as to adapt it for the particular purpose of unloading boats, and have shown the frame as being solid at the sides and braced by transverse bolts, it is to be understood that the apparatus may be made to unload or transfer, coal, ashes, sand or other material, and that the form of the apparatus may be varied to suit various requirements, as well as to construct the buckets in such a way as to hold and positively carry the material according to the nature thereof, and that the frame may be made much lighter by constructing the same as shown in Figs. 9 and 10. In these figures the frame has the U-shaped bars 80 and L-shaped bars 81, which are joined together by the plates or bars 82, and on the inside thereof if necessary, so as to provide a light, effective, and strong frame for the apparatus.

In Fig. 11 the frame may be constructed in any suitable way, and instead of having a single endless chain 26, the buckets may

be operated by a chain having two members 83 and 84, which are properly secured to the axles 85 of the buckets, and are adapted to move along the rails or tracks of the frame 14.

From the foregoing it will be seen that a simple, effective and continuously moving carrying means is provided in which the material as pulpwood may be quickly transferred from a boat or other container to a suitable discharge point, that the said device may be longitudinally or vertically adjusted to permit it to be readily lowered into the boat or to be quickly raised so as to be entirely out of the way of the boat when not in use, and that the device is so constructed that the buckets will not be interfered with by any obstruction, as the said buckets after discharging the material are made to move entirely within the frame, and therefore cannot be injured while the apparatus is being operated.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:—

1. In a device of the character described, the combination with a frame having a double upper track, and a single lower track, said tracks extending substantially the length of said frame, of endless carrying means arranged to move within the frame, carriers pivotally held to the endless carrying means and adapted to move therewith, trips secured to said carriers, and means for automatically engaging said trips to cause said carriers to be properly positioned with relation to the return track after the material has been discharged.

2. The combination with a frame having a double upper track and a single lower or under track, of shafts journaled in the frame, sprockets secured to the shafts, endless chain device movable around the sprockets, means for adjusting one of the shafts, means for imparting motion to the other shaft, a plurality of buckets pivotally held to the chain device, trips projecting from the buckets, and means for successively engaging the trips to move the buckets on their pivots to cause the same to swing in a plane parallel to the chain device for the purpose set forth.

3. The combination with a frame having a two part double upper track and a two part single lower track, of shafts journaled in the frame, said frame comprising two members pivotally held together, sprockets secured to the shafts, endless chain device movable around the sprockets, means for imparting motion to one of the shafts, a plurality of buckets pivotally held to the chain device, trips projecting from the buckets, and means engaging the trip to move the buckets on their pivots so as to cause the same to swing within the frame.

4. The combination with a frame, of an endless chain movable within the frame, means for imparting motion to the chain, a plurality of buckets each pivotally held to the chain and having a flat body portion against which the material to be transferred is adapted to rest, a shaft with rolls held to each bucket, brackets projecting from one side of the buckets and having rolls on the ends thereof adapted to rest on and travel along a part of the frame, bars forming trips projecting from the buckets, a stop carried by the frame and located near the discharging point of the apparatus and adapted to engage the trips on the buckets so as to swing the buckets on their pivots.

5. The combination with a frame having a divided double upper track and a divided single lower track, of shafts journaled in the frame said frame having two parts pivotally held together, sprockets secured to the shaft, endless chain devices movable around the sprockets, means for imparting motion to one of the shafts, a plurality of buckets pivotally held to the chain device, plates for closing the joints between the divided tracks, trips projecting from the buckets, and a stop successively engaging the trips to move the buckets on their pivots to swing the same within the frame.

6. The combination with a frame having an upper track and a single lower track, of an endless chain movable within the frame, means for imparting motion to the chain, a plurality of buckets each pivotally held to the chain and having a flat body portion against which the material to be transferred is adapted to rest, a shaft with rolls held to each bucket, brackets projecting from one side of the buckets and having rolls on the ends thereof adapted to rest on and travel along said tracks, bars forming trips projecting from the buckets, a projection carried by the frame and located near the discharging point of the apparatus and adapted to engage the trips on the buckets so as to swing said buckets on their pivots to move entirely within the frame after discharging the material until again in position to receive the material to be transferred.

7. The combination with a frame, of an endless chain movable therein, a plurality of shafts secured to said chain and movable therewith, rollers on the ends of said shafts, said chains being connected to said shafts at a point intermediate of the ends of the latter, an approximately flat carrier having ears at one edge pivotally engaging each shaft, means located intermediate of the ends of each carrier and adjacent said shaft for sustaining the same in operative position, and rollers adjacent the opposite edge of said carrier.

8. The combination with a frame, of an endless chain movable therein, a plurality of

shafts secured to said chain and movable
therewith, rollers on the ends of said shafts,
said chains being connected to said shafts at
a point intermediate of the ends of the lat-
5 ter, an approximately flat carrier having
ears at one edge pivotally engaging each
shaft, inclined brackets extending from
lower edge of each carrier and constructed
to sustain the latter in operative position,

and rollers adjacent the opposite edge of 10
said carrier.

This specification signed and witnessed
this 10th day of January, A. D. 1908.

FREDERICK S. SNYDER.

ALONZO F. BURT.

Witnesses:

G. C. DONEHUE,

C. W. PRICE