

No. 891,656.

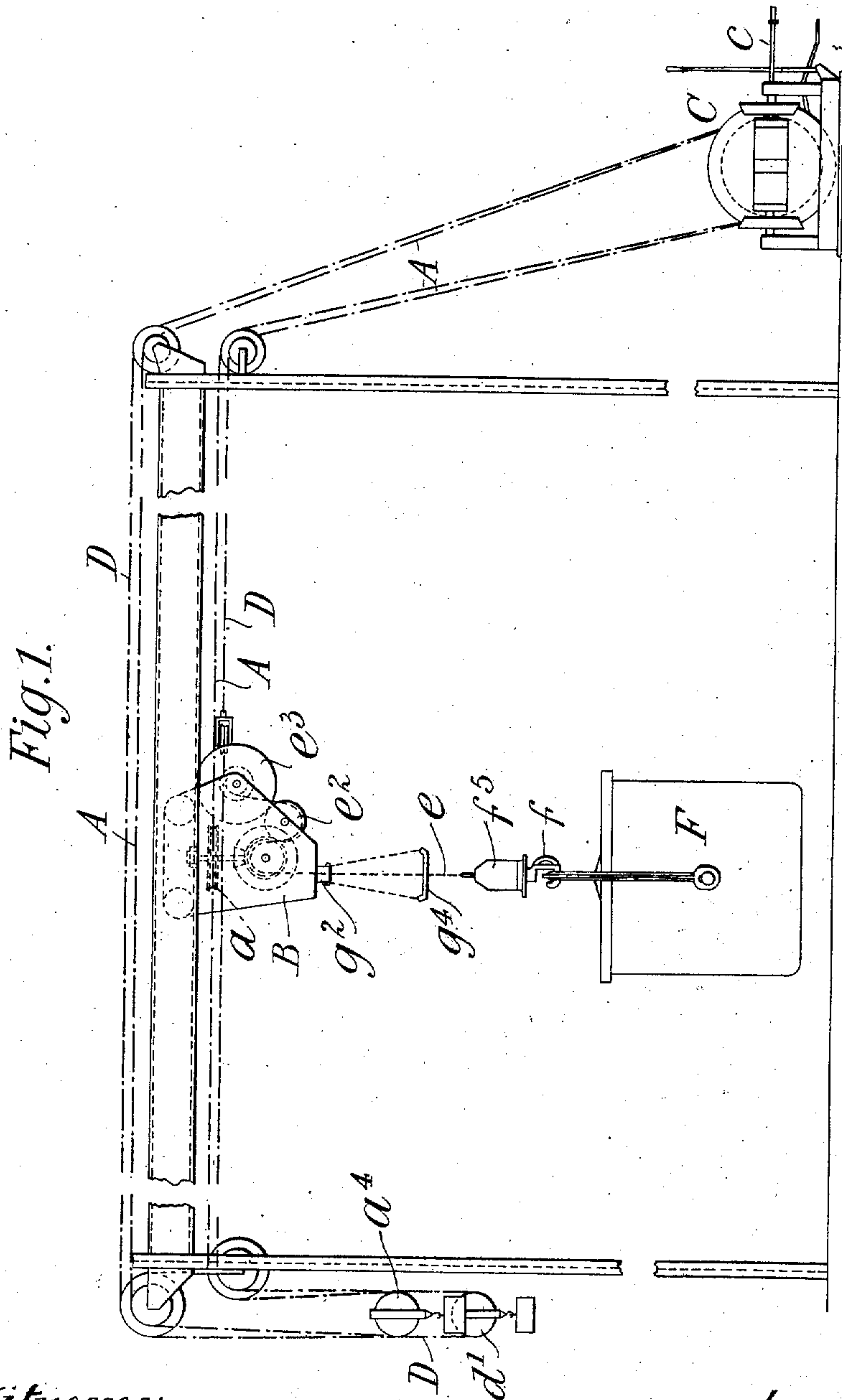
PATENTED JUNE 23, 1908.

H. A. L. BARRY.

MEANS FOR DUMPING OR DISCHARGING MATERIALS FROM BUCKETS.

APPLICATION FILED OCT. 12, 1907.

5 SHEETS—SHEET 1.



Witnesses:

Henry Pankhurst
Gilbert Mitchell

Inventor:

Herbert Alfred Lucas Barry

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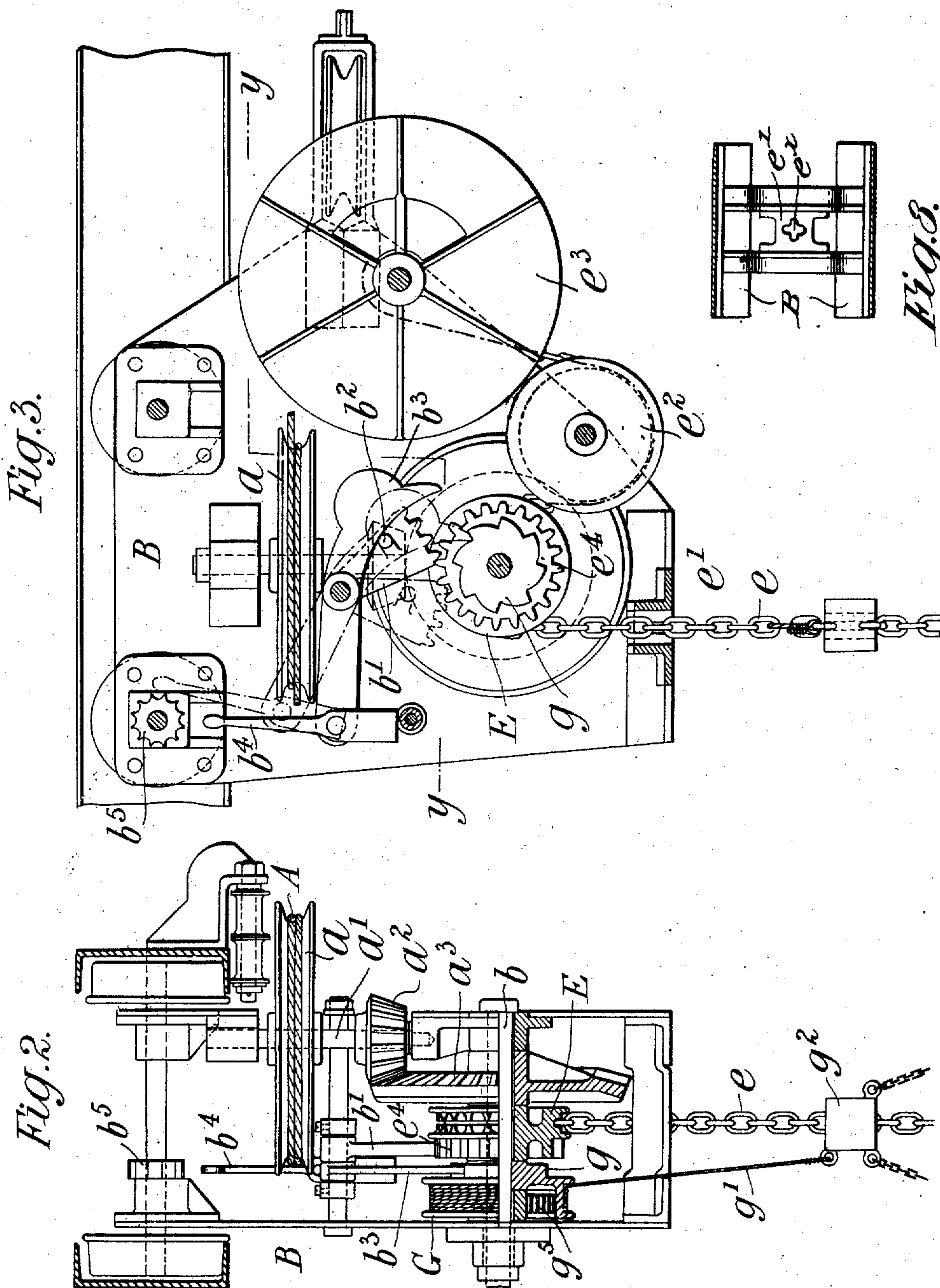
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Fig. 7.

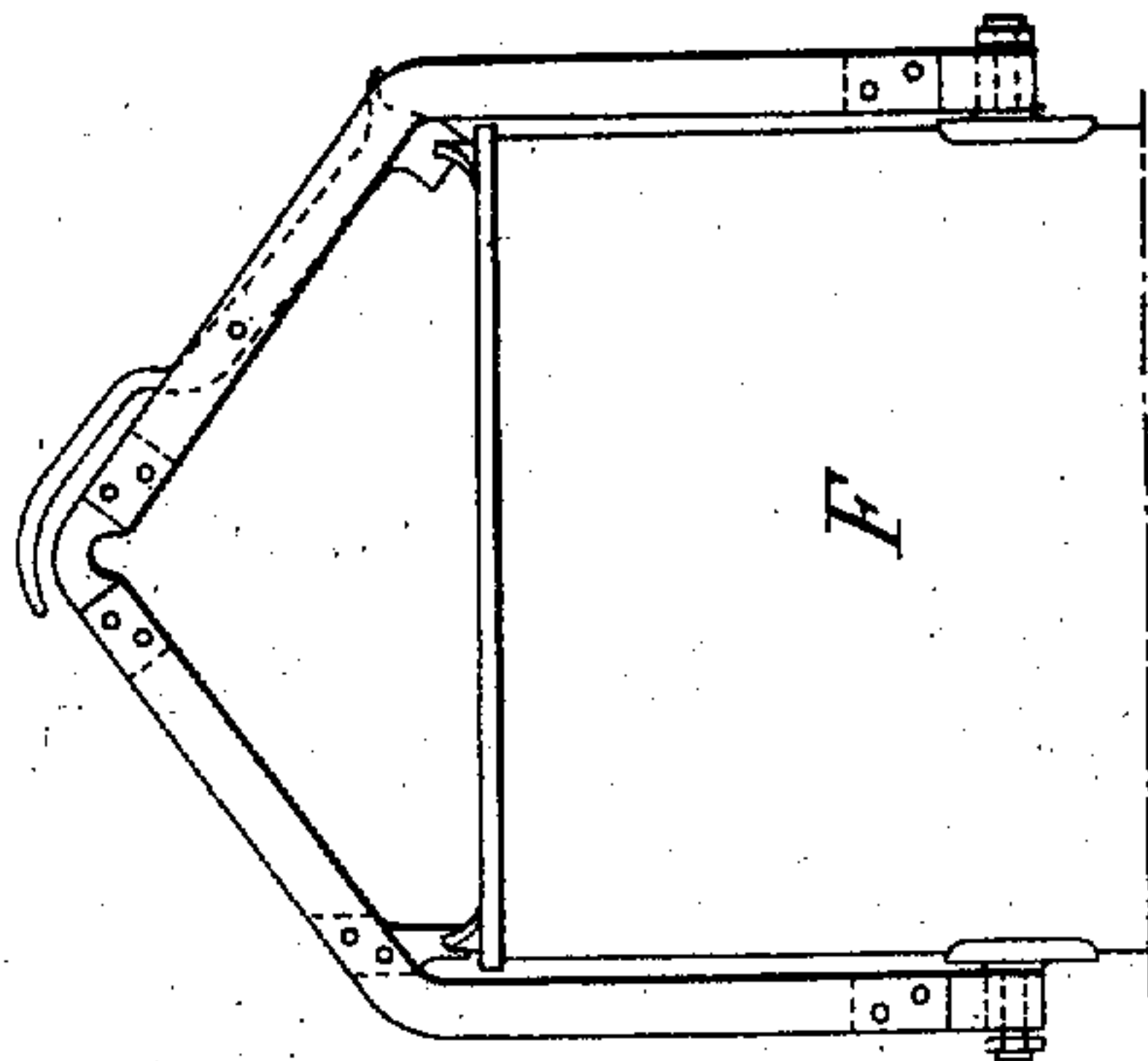
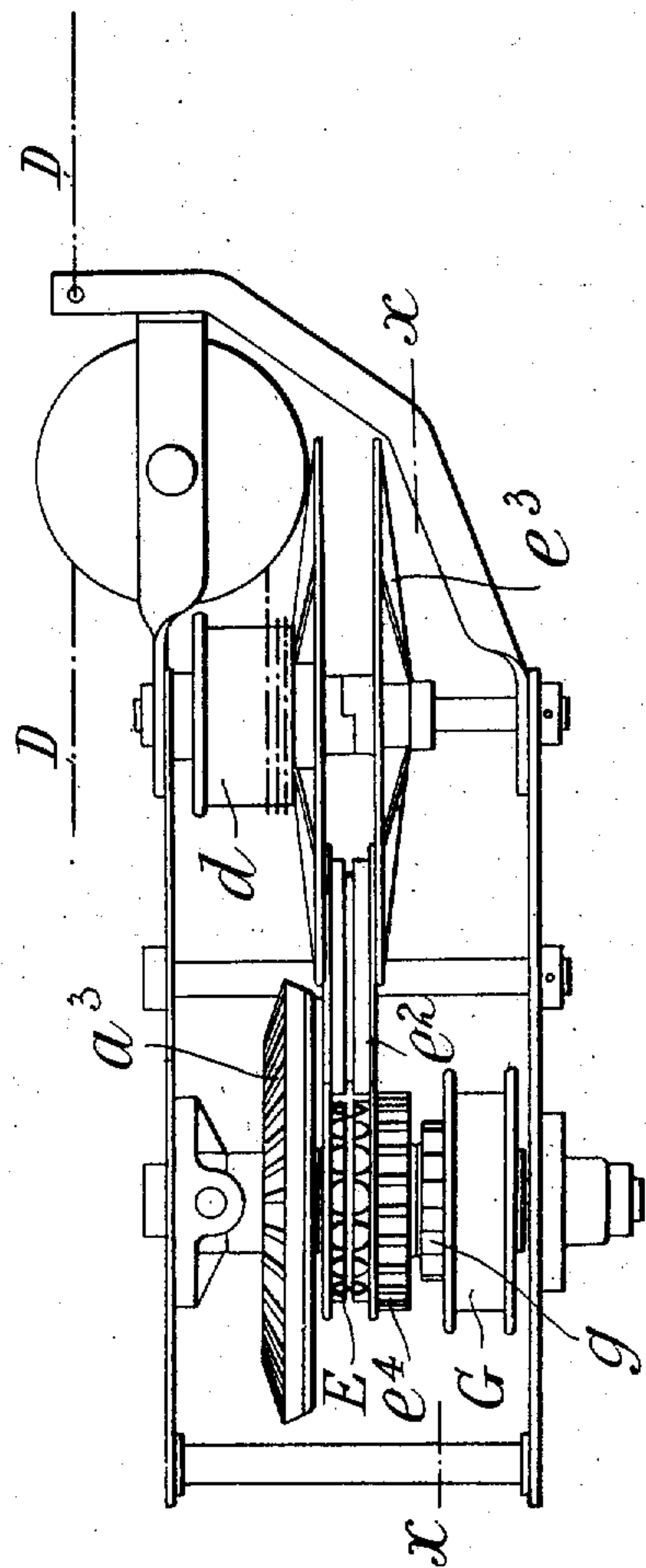


Fig. 4.



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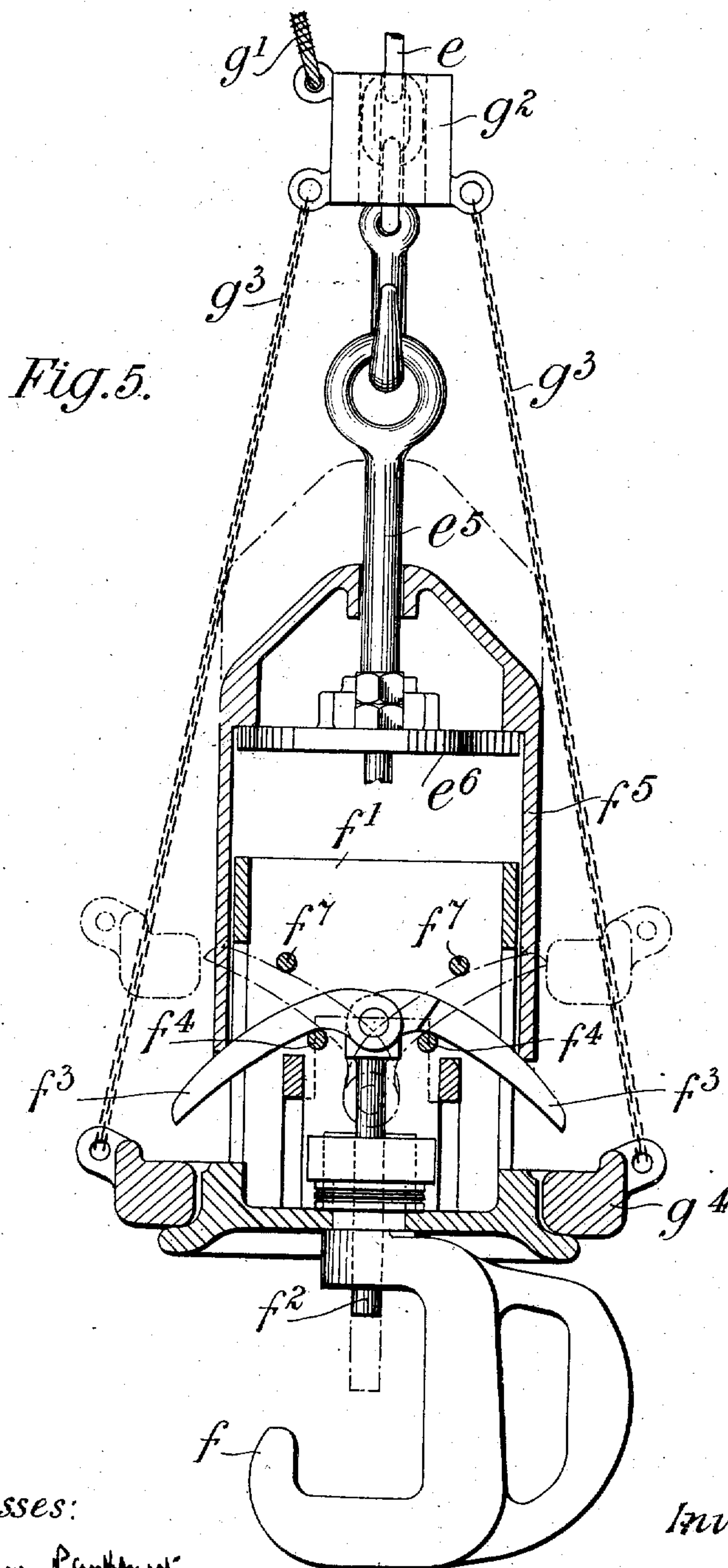
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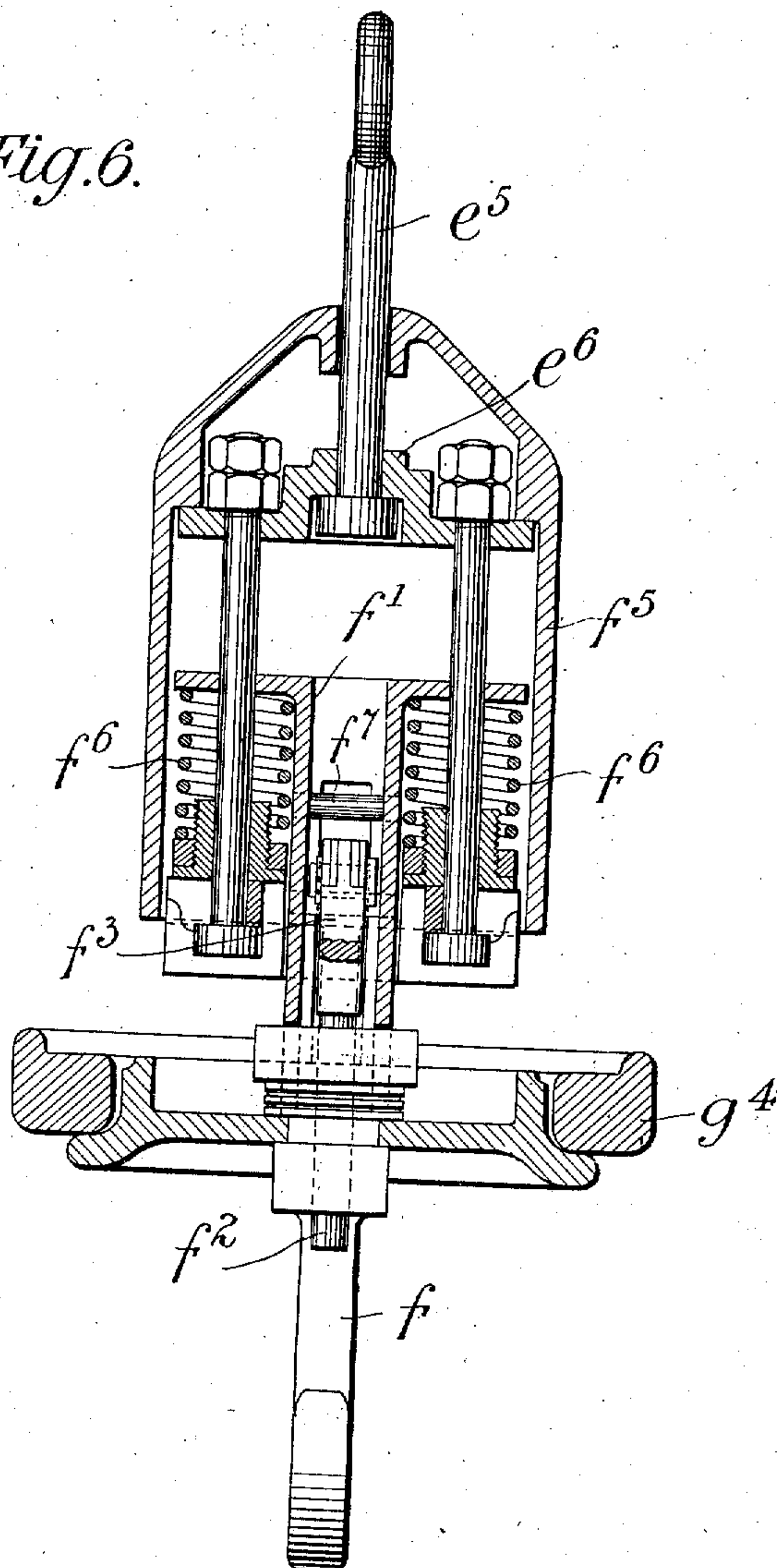
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5 SHEETS—SHEET 5.

Fig. 6.



Witnesses:

*Henry Parkhurst
Gilbert Mitchell*

Inventor:

Hubert Alfred Lucas Barry

UNITED STATES PATENT OFFICE.

HERBERT ALFRED LUCAS BARRY, OF WESTMINSTER, LONDON, ENGLAND.

MEANS FOR DUMPING OR DISCHARGING MATERIALS FROM BUCKETS.

No. 891,656.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed October 12, 1907. Serial No. 397,230.

To all whom it may concern:

Be it known that I, HERBERT ALFRED LUCAS BARRY, of 15 Great George street, in the city of Westminster, London, England, a subject of the King of Great Britain and Ireland, have invented certain new and useful Improved Means Applicable for Use in Dumping or Discharging Materials from Buckets, of which the following is a specification.

This invention relates to means applicable for use in dumping or discharging materials from grab or other buckets, and consists in certain improvements in apparatus of the kind described in the specification to Letters Patent granted to me under date the 24th June 1902 No. 702912 (Re-issue No. 12267).

The objects of my present improvements are to maintain the ropes for raising and lowering the load and for traveling the carriage at such a tension as to prevent the ropes becoming slack on the winch-drums; to provide means for varying the speed between the lifting and the traveling of the load; to enable a single chain for raising the grab or other bucket to be employed; and lastly to maintain the chain under tension and to provide against its becoming twisted.

In the accompanying drawings, Figure 1 illustrates, in side elevation, a transporter embodying my present improvements. Fig. 2 is an end elevation. Fig. 3 a vertical section on the line $x-x$ in Fig. 4 and Fig. 4 a longitudinal section on the line $y-y$ in Fig. 3. Fig. 5 illustrates, in vertical section, the means for discharging the bucket, while Fig. 6 is a similar view taken at right angles to Fig. 5. Fig. 7 is a view of the bucket corresponding with, but on a smaller scale than, Fig. 6. Fig. 8 is a plan view of the die through which the lift chain passes.

According to my improved method of construction, I employ an endless rope A which passes round a pulley a mounted on a shaft a' arranged vertically in the traveling carriage B. This rope, which may be termed the driving-rope, is actuated by the winch C which drives the rope D for operating the carriage, and rotates the vertical shaft a' , which in turn drives, by means of suitable gearing $a^2 a^3$, a horizontally disposed main-shaft b . The driving-rope A is maintained under tension by means of a weighted pulley a^4 arranged as shown in Fig. 1. Upon the main-shaft b is keyed a wheel E over which the chain e for lifting the bucket F passes;

and adjacent to this wheel is mounted to rotate freely a spring controlled drum G, the purpose of which is hereinafter referred to. One end of the lift-chain e passes down through a suitably formed die e' , and is connected to the hook f for the bucket; while the opposite end of the chain, after passing over the chain-wheel E and beneath an idle pulley e^2 , is connected to a gathering spool e^3 . This spool is furnished with a drum d on which is wound one end of the rope D for moving the carriage; this rope being maintained in tension by means of a weight d' arranged, as shown in Fig. 1, in such a manner that, while the bucket is being raised, the weight d' will be lowered and the slack of the chain e wound upon the spool e^3 . When the bucket is lowered, the weight d' will be raised and the chain e paid out against the action of the weight and kept taut. To prevent the lift-chain e twisting while being raised or lowered, the die e' is formed with a cross-shaped aperture e^x which engages the links of the chain e .

The chain-wheel E is formed or provided with teeth e^4 which engage with a toothed quadrant b' pivotally mounted upon the frame of the carriage B and furnished with a lateral projection b^2 adapted to engage one arm of a weighted lever b^3 . This lever-arm engages with a ratchet g formed or provided on the spring-drum G; while upon the extremity of the other arm of the said lever is mounted a pawl b^4 adapted to engage a toothed wheel b^5 mounted upon one of the axles of the carriage B. The lower extremity of the lift-chain e is attached to a rod e^5 whereon is mounted a cross-head e^6 ; and connected to this cross-head is a spring-supported slide f' to which the hook f for the bucket F is attached. Passing up through the shank of the hook is a plunger f^2 , upon the head of which are pivotally mounted two arms $f^3 f^3$ supported upon stops $f^4 f^4$ formed upon the slide f' . Supported upon the cross-head e^6 is a casing f^5 , which passes over the slide f' and normally incloses the plunger-arms $f^3 f^3$ with their outer extremities towards each other; their pivoted ends holding the plunger in its elevated position. From the spring-drum G a rope g' passes down to a collar g^2 , fitted to the lifting rope e and furnished with chains g^3 which carry a ring g^4 through which the slide f' and casing f^5 pass during the raising and lowering of the load, for the purpose hereinafter described.

The operation of raising, lowering and dis-

charging the bucket is as follows:—The driving rope A being set in motion by the winch C, the vertical shaft a' is rotated, this in turn rotating the horizontal shaft b and with it the chain wheel E whereby the lift-chain e is raised. Before the weight of the fully loaded bucket is taken by the chain e , the cross-head e^6 will have been raised in relation to the hook f , and the slide f' pertaining to the latter drawn away from the cross-head against the action of the springs $f^6 f^6$; the several parts assuming the positions shown in Figs. 5 and 6. The cross-head e^6 will also have lifted the casing off the slide, thus freeing the plunger-arms $f^3 f^3$, the latter thereupon assuming an approximately horizontal position and forcing down the plunger f^2 .

Figs. 5 and 6 illustrate the hook and its appurtenances in the position they assume when the loaded bucket is suspended from the hook; but during the ascent of the bucket, the suspended ring g^4 will be in advance of the hook and its appurtenances, as shown in Fig. 1. The loaded bucket is now raised together with the ring g^4 , the rope g' pertaining to the latter being wound upon the drum G, which is connected to the shaft b by the spring g^5 .

When the collar g^2 has reached the carriage B the ascent of the ring g^4 is arrested although the load continues to rise; thereupon the continued rotation of the horizontal shaft b operates to coil the spring g^5 in the drum G about which the rope g' , whereby the ring g^4 is suspended, has been wound. The casing f^5 and the hook-slide f rise through the ring g^4 until the plunger-arms f^3 assume the position shown in Figs. 5 and 6, that is to say, with the arms f^3 above the ring g^4 . The carriage is now moved, by means of the rope D driven by the winch C, along its track to the desired position for dumping, the driving rope A being also operated by the winch to permit of the carriage traveling. During the ascent of the load and the travel of the carriage, the weighted lever b^3 having been actuated by the toothed quadrant b' will be in the position shown in Fig. 3 and held out of engagement with its ratchet g . The hook f and its appurtenances being in the condition shown in Figs. 5 and 6 with the ring g^4 beneath the plunger arm f^3 the bucket is lowered, whereupon the quadrant b' will assume the position shown in dotted lines in Fig. 3, and permit the weighted end of the lever b^3 to fall and its opposite end to rise until the upper extremity of the pawl b^4 engages with the toothed wheel b^5 thus holding the weighted lever b^3 out of engagement with the ratchet g . The ring g^4 having descended to the required elevation, a slight backward movement is imparted by means of a lever c on the winch C to the carriage B with the effect that the pawl b^4 is brought into the position shown

in dotted lines in Fig. 3, whereupon the weighted lever falls into engagement with its ratchet g , stops the rotation of the drum G and arrests the descent of the ring g^4 although the load continues to descend. The hook-slide f' will now pass through the ring, and during its passage the ring will engage the extremities of the plunger-arms and vibrate the latter against two further stops $f^7 f^7$ with the effect that the plunger f^2 will be forced down upon the trigger of the bucket, thus discharging the load. The ring, having been released from the hook-slide, is drawn up under the influence of the spring-drum; and, the loaded bucket having been discharged, the hook springs are released, whereupon the casing is forced down over the slide, and the plunger arms housed within the casing.

What I claim as my invention and desire to secure by Letters Patent, is:—

1. In apparatus for use in raising, lowering, transporting and discharging materials, the combination of a carriage, gearing in said carriage for raising and lowering the load, two endless ropes for respectively manipulating said carriage and said gearing, and weighted pulleys suspended from said ropes whereby the latter are maintained taut during the manipulation of the carriage and the load.

2. In apparatus for raising, lowering, transporting and discharging materials, wherein two ropes for manipulating the carriage and the load respectively are employed, the combination, with said ropes and carriage, of raising and lowering mechanism mounted in said carriage, speed gear for driving said mechanism, and a pulley, driven by the load rope, for actuating the speed gear; this gear being so arranged that the speed at which the load is raised and lowered may be varied in relation to the speed of travel of the carriage.

3. In apparatus for raising, lowering, transporting and discharging materials, the combination, with a carriage furnished with raising and lowering mechanism, of a lift-chain, one extremity of which is connected to the bucket or grab, while the opposite extremity thereof is attached to a drum connected to the carriage rope, the latter serving, during the raising of the load, to rotate said drum and to take up the slack of the lift-chain, substantially as herein described.

4. In apparatus for raising, lowering, transporting and discharging materials, of the type wherein two ropes for manipulating the carriage and the load respectively are employed, providing the carriage with a die through which the lift-chain passes to the hoisting gear and whereby twisting of said chain is prevented.

5. In apparatus for raising, lowering and discharging materials, the herein described

means for discharging the load, comprising a slide supported upon springs suspended from the lower extremity of the lift-chain, a hook attached to said slide, a plunger passing
 5 through the shank of said hook, arms pivotally mounted upon the head of said plunger, a cap or cover adapted to pass over said slide and plunger arms, and a ring arranged concentrically with said lift-chain and suspended from a spring-drum, the ring serving,
 10 during the lowering of the load, to operate the plunger arms and force down the plunger to release the trigger from the bucket, substantially as set forth.

15 6. For use in apparatus for raising, lowering and discharging materials, a hook attached to a slide connected by springs to a cross head adapted to be suspended from the lower extremity of the lift-chain, a plunger

passing through the shank of said hook, arms 20 pivotally mounted upon the head of said plunger, means for supporting said arms in said slide, and a cap or cover adapted to normally inclose said arms and slide.

7. In apparatus for raising, lowering, 25 transporting and discharging materials, the combination, with the carriage B, shaft *b* and means for rotating said shaft, of a toothed wheel *e*⁴, toothed quadrant *b'*, lever *b*³, pawl *b*⁴, toothed wheel *b*⁵, spring-drum G, ratchet 30 *g*, cord *g'*, collar *g*² and ring *g*⁴.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT ALFRED LUCAS BARRY.

Witnesses:

HENRY PARKHURST,
 GILBERT MITCHELL.