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PATENTED NOV. 22, 1904.

P. B. CLARKE.

CLUTCH OPERATING MECHANISM FOR CUT-OFFS.

APPLICATION FILED JAN. 26, 1901. RENEWED FEB. 9, 1904.

NO MODEL.

4 SHEETS—SHEET 1.

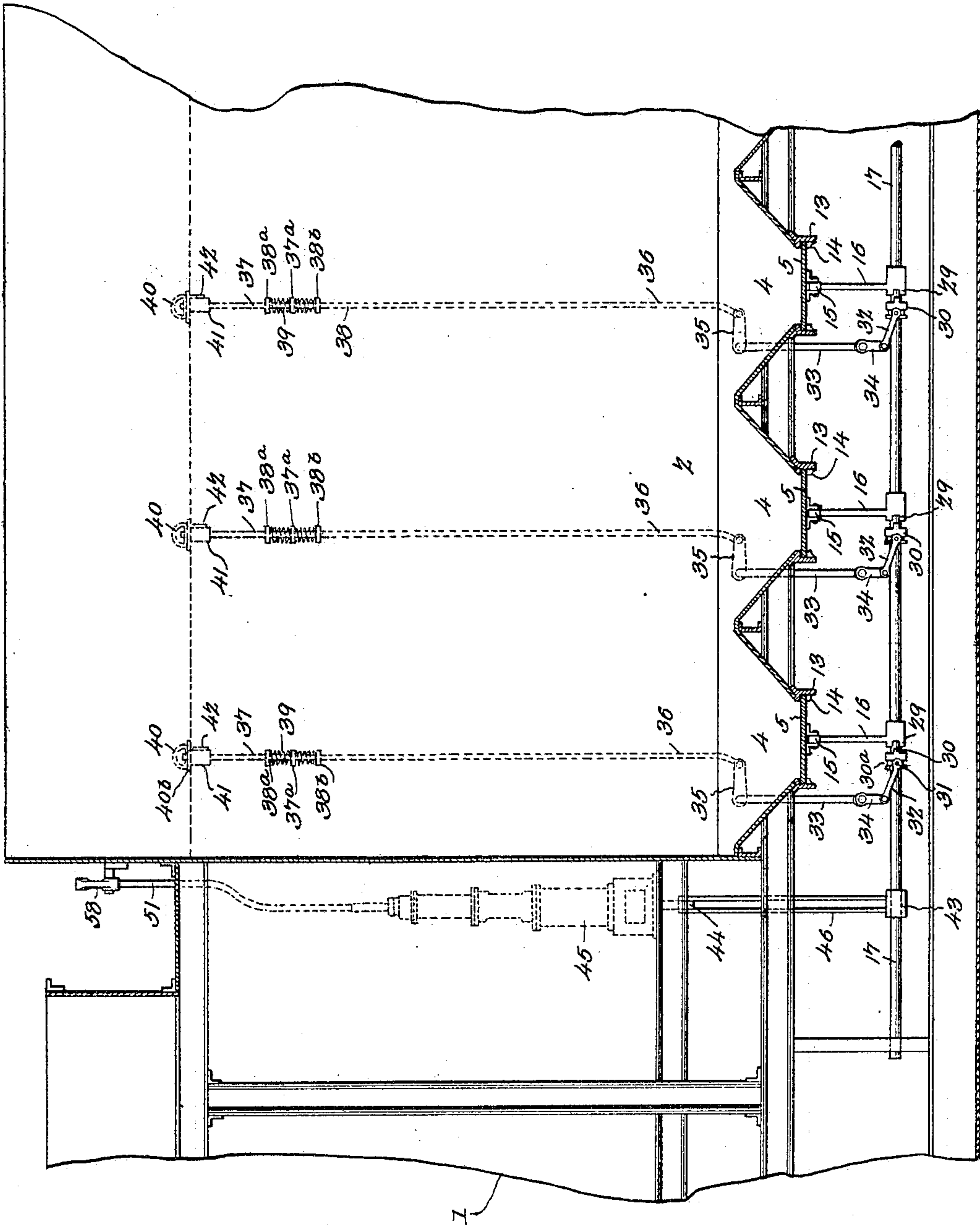


Fig. 1.

Witnesses

E. C. Stewart
J. H. Riley

P. B. CLARKE Inventor

By

C. A. Snow & Co.
Attorneys

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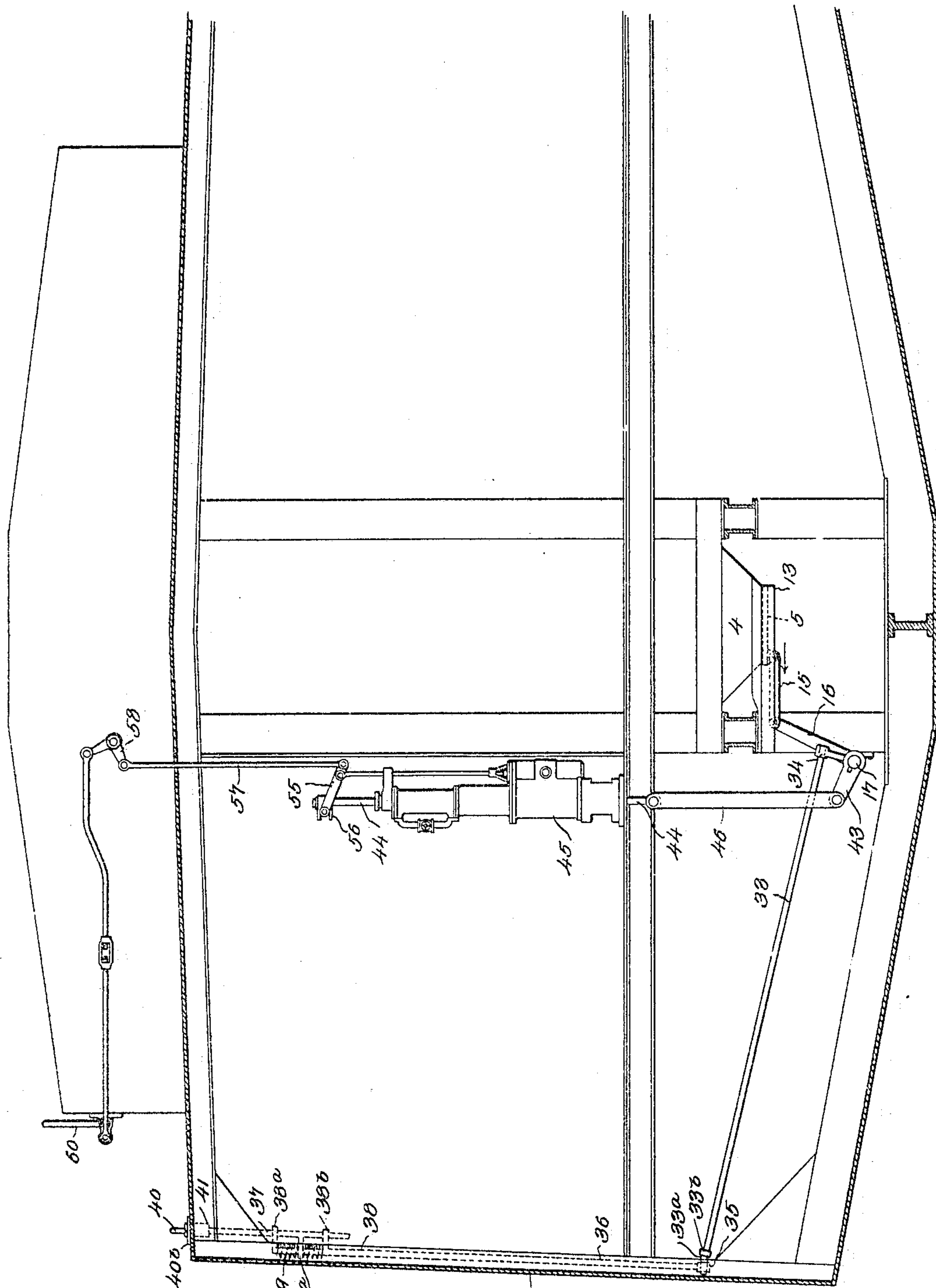
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4 SHEETS—SHEET 2.



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J. J. Riley

Fig. 2.

P. B. CLARKE Inventor

By *C. A. Snow & Co.*
Attorneys

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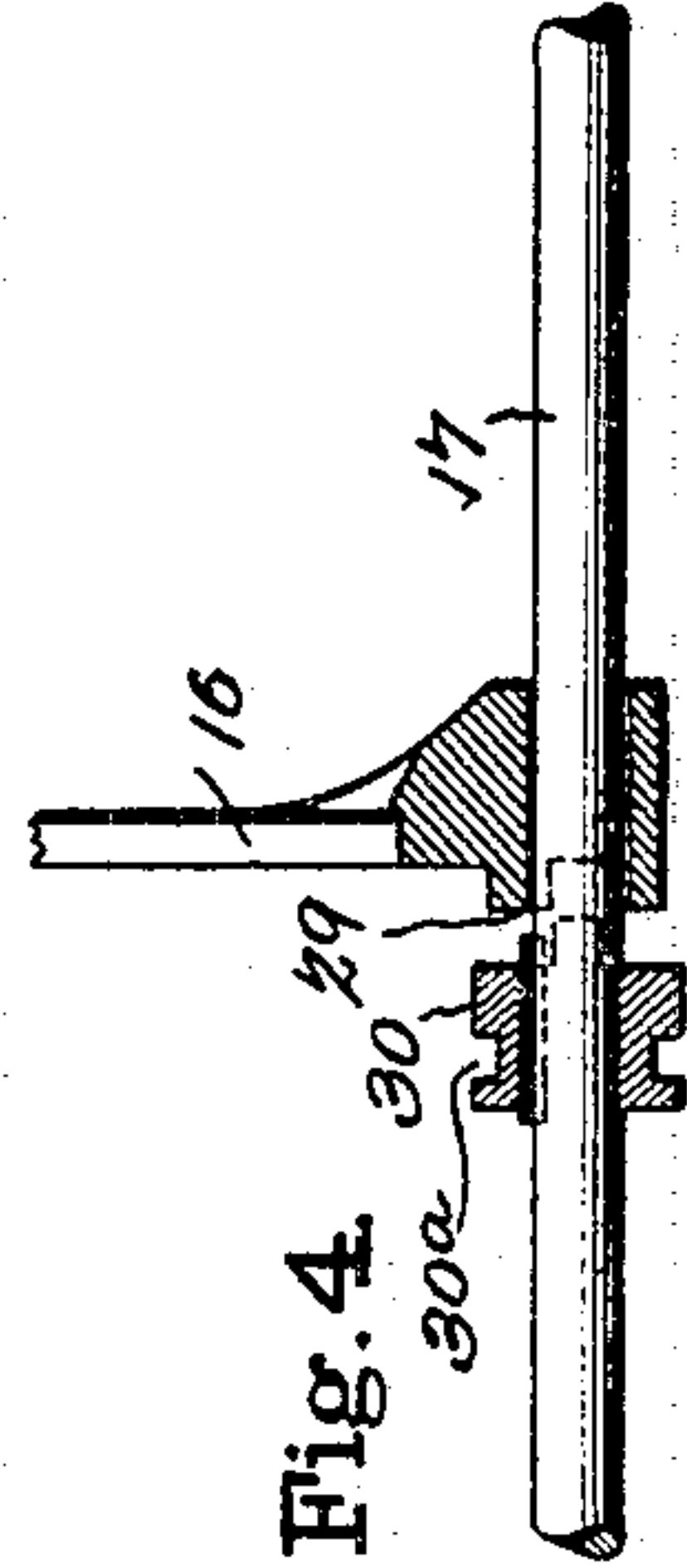
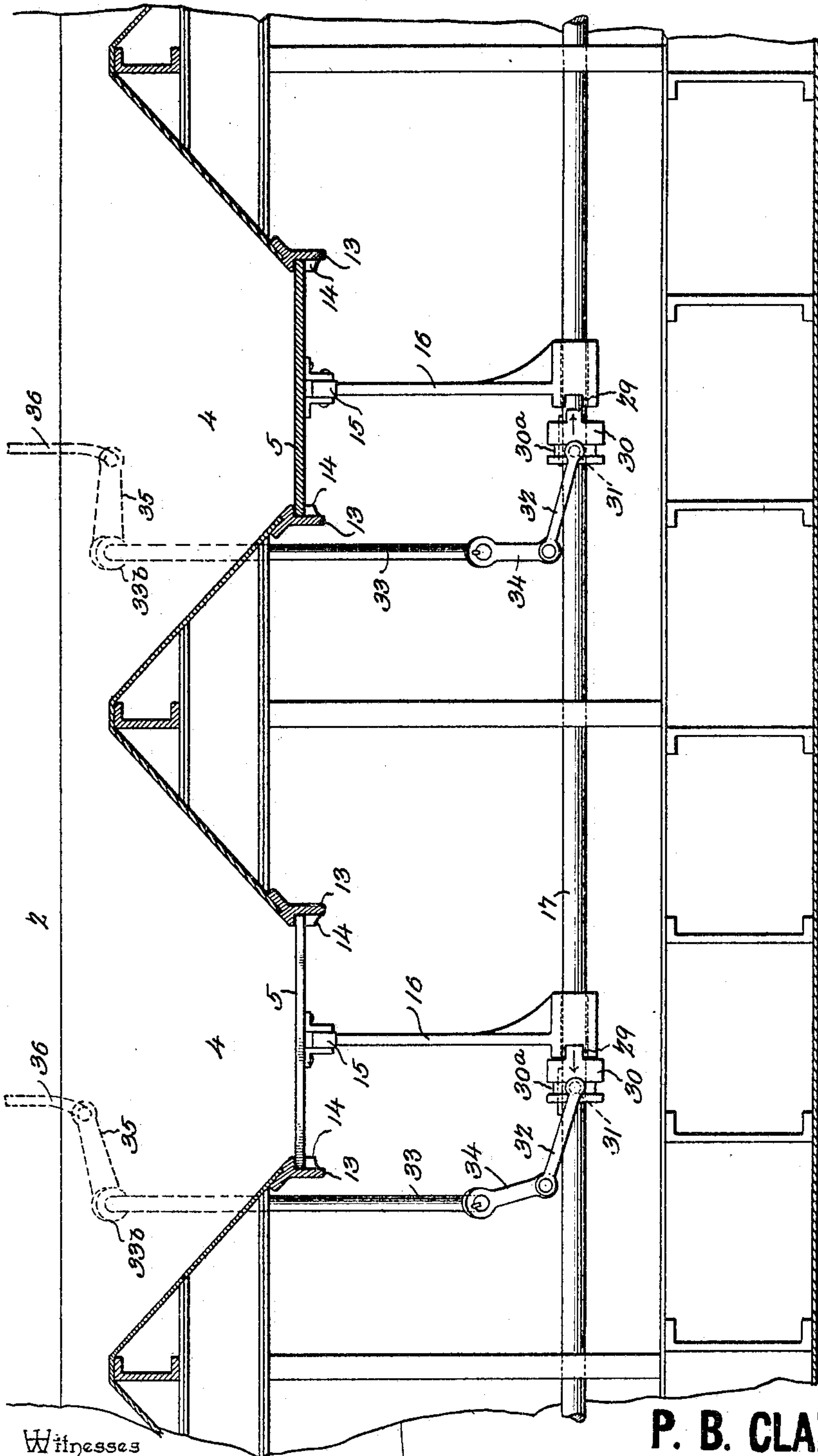
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4 SHEETS—SHEET 3.



Witnesses

E. F. Stewart
J. J. Riley

Fig. 3.

By

P. B. CLARKE Inventor

C. A. Snow & Co.
Attorneys

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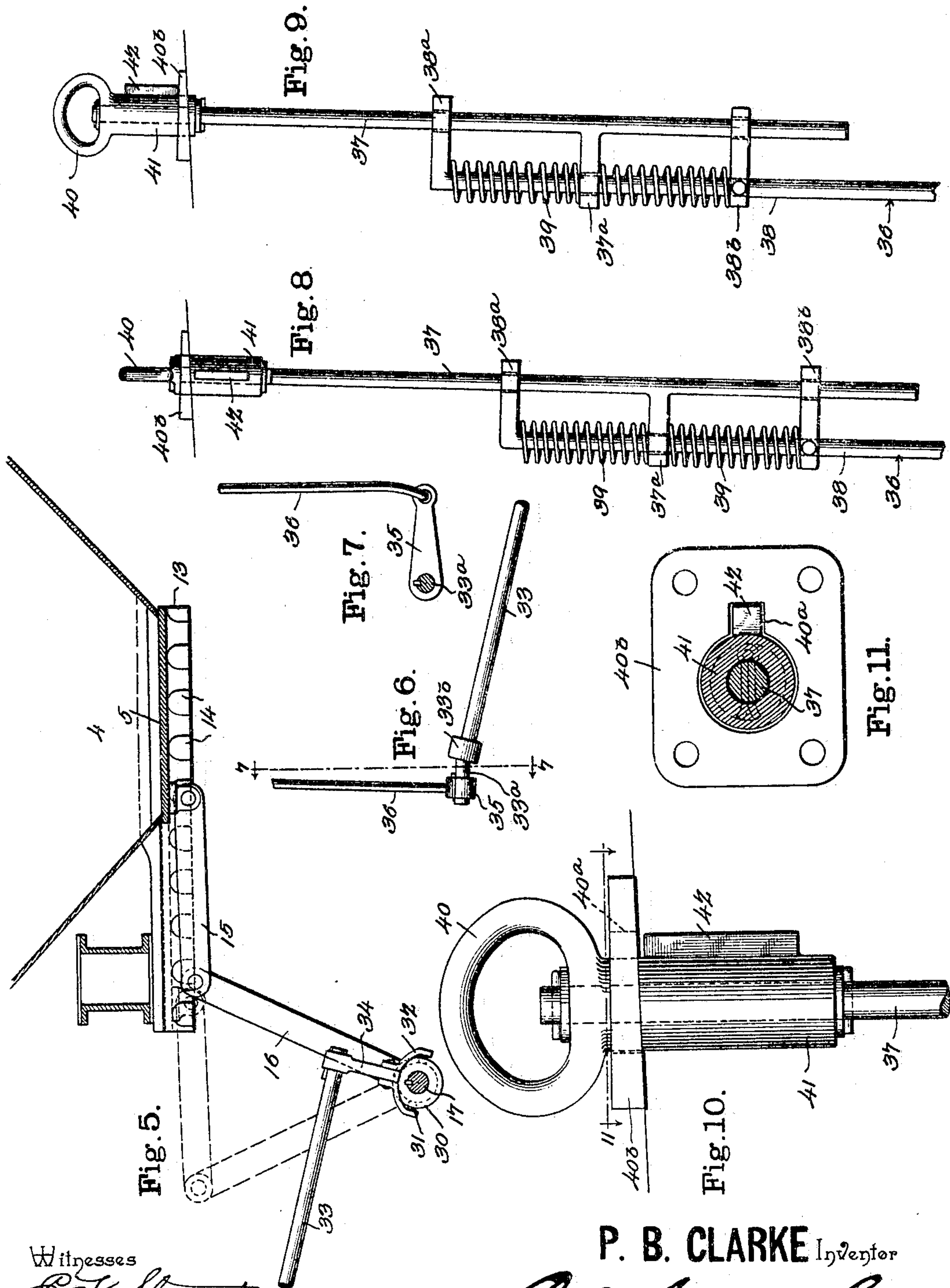
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4 SHEETS—SHEET 4.



Witnesses

E. F. Stewart
J. H. Riley

P. B. CLARKE Inventor

By *C. A. Snow & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

PEETE B. CLARKE, OF NEW YORK, N. Y.

CLUTCH-OPERATING MECHANISM FOR CUT-OFFS.

SPECIFICATION forming part of Letters Patent No. 775,345, dated November 22, 1904.

Application filed January 26, 1901. Renewed February 9, 1904. Serial No. 192,845. (No model.)

To all whom it may concern:

Be it known that I, PEETE B. CLARKE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Clutch-Operating Mechanism for Cut-Offs, of which the following is a specification.

The invention relates to improvements in clutch-operating mechanism for cut-offs.

The object of the present invention is to provide operating mechanism designed to be used in connection with a series of cut-offs and adapted to operate clutches for connecting the cut-offs with mechanism for opening and closing them and capable of enabling one or more of the cut-offs to be operated independently of the others.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a vertical sectional view of a portion of a barge provided with a series of cut-offs and having clutch-operating mechanism constructed in accordance with this invention. Fig. 2 is a transverse sectional view illustrating the construction for rotating the longitudinal rock-shaft and showing the arrangement of the clutch-operating mechanism. Fig. 3 is an enlarged longitudinal sectional view of a portion of the barge, illustrating the construction of the clutches. Fig. 4 is a detail sectional view of one of the clutches. Fig. 5 is an enlarged detail view of one of the cut-offs, illustrating the manner of connecting the same with the longitudinal rock-shaft and showing the inner arm of one of the transversely-disposed rock-shafts. Fig. 6 is a detail view of the outer end of the transverse rock-shaft. Fig. 7 is a detail sectional view on the line 7 7 of Fig. 6. Figs. 8 and 9 are detail views of the operating-rod. Fig. 10 is an enlarged detail view of the swiveled grip or handle. Fig. 11 is a horizontal sectional view on the line 11 11 of Fig. 10.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a barge designed to be provided with a longitudinal series of bins or compartments 2, and each bin or compartment 2 is designed to be provided at its bottom with a series of depending hoppers 4, having sliding doors or cut-offs 5, adapted to be opened to permit coal to be discharged from the bin or compartment into buckets of an endless conveyer. (Not shown.) The sliding door 5 is mounted in suitable ways, preferably consisting of opposite horizontal bars 13, provided at intervals with bosses or enlargements 14, rounded at their upper edges to reduce the friction to a minimum and also to prevent material from accumulating on them. Each door is provided at one side with a pair of depending ears arranged at opposite sides of the inner end of a link 15 and pivoted to the same, and the said link 15 extends outward to an arm 16, loosely mounted on a longitudinal rock-shaft 17 and adapted to be coupled thereto and uncoupled therefrom, whereby the sliding doors or cut-offs are adapted to be operated independently of one another, so that one or more of them may be opened and closed when the shaft 17 is rocked.

Each of the arms 16 of the rock-shaft 17 is provided with a clutch-face 29, adapted to interlock with a corresponding clutch-face of a sliding clutch-section 30, whereby the arm 17 is coupled to the longitudinal rock-shaft. The rock-shaft 17, which is located at one side of the barge, extends longitudinally thereof, and the clutch-sections 30, which are keyed or otherwise secured to the rock-shaft and which rotate with the same, are adapted to slide on the said shaft 17 to interlock with the arms 16 and to release the latter. Each clutch-section 30 is provided with an annular groove 30^a, which is engaged by lugs or projections 31 of the sides of a yoke 32, which is pivoted to an inner arm 34 of a transversely-disposed rock-shaft 33. Each rock-shaft 33 is arranged at an inclination and is journaled in suitable bearings, its inner arm 34 being located above the rock-shaft 17. The rock-shaft is provided at its outer end with a section 33^a, disposed horizontally, or approximately so, and connected by a suitable joint 33^b with the body

portion of the rock-shaft 33. The joint forms a flexible connection between the rock-shaft 33 and the outer section thereof and causes the rock-shaft 33 to be rotated when the section 33^a is rocked. The rock-shaft 33 is provided at its outer end with an arm 35, mounted on the section 33^a and connected with the lower end of an operating-rod 36. The operating-rod 36, which extends to the deck and which is adapted to permit the couplings or clutches to be controlled from that point, is composed of yielding-ly-connected upper and lower sections 37 and 38, having overlapped adjacent ends.

The lower section 38 of the operating-rod is provided with arms 38^a and 38^b, located, respectively, at the upper end of the section and at a point a short distance below the same and provided with suitable openings for the reception of the lower portion of the upper section 37, which is provided with an arm 37^a, located at a point between the arms 38^a and 38^b and provided with an opening for the reception of the lower section 38. The arms of the upper and lower sections are disposed approximately horizontally and have coiled springs 39 interposed between them. The coiled springs 39, which are disposed on the upper portion of the lower section 38, are located above and below the arm 37^a of the upper section 37, and they are adapted to be compressed to permit the upper section 37 to move a limited distance independently of the lower section, and they are capable of causing the lower section to move upward after the upper section has been set, as hereinafter explained, and when the said lower section is free to move in such direction.

The upper section 37 is provided with a swiveled handle or grip 40, having a tubular shank 41 secured to the said upper section 37 in any suitable manner and arranged in a keyhole slot or opening 40^a of a plate 40^b. The tubular shank, which is adapted to rotate independently of the upper section 37, is provided with a lug or flange 42, extending longitudinally of it and adapted to be arranged beyond the contracted portion of the keyhole-slot when the operating-rod is raised, whereby the latter is maintained in an elevated position. When the operating-rod is drawn upward, the swiveled handle or grip is rotated to carry the lug or flange 42 away from the contracted portion of the keyhole-slot, and the said lug or flange is thereby engaged with the upper face of the plate 40^b, as clearly illustrated in Fig. 9 of the accompanying drawings. The vertical movement of the operating-rod partially rotates the transverse rock-shaft, and the inner arm thereof is swung in the direction of the adjacent arm 16, and the clutch-section is coupled with the hub of the arm. The clutch-section 30 is provided with lugs or projections to engage corresponding recesses of the clutch-face of the arm, and if

the recesses of the arm should be out of alignment with the lugs or projections of the clutch-section the coiled springs will permit the upper section of the operating-rod to be raised and locked in an elevated position, and they will also operate the transverse rock-shaft and actuate the sliding clutch-section to carry the projections thereof into the recesses of the clutch-face of the arm 16 as soon as the said recesses are brought in alignment with the projections by the rotation of the longitudinal rock-shaft.

The arm 16 of the longitudinal rock-shaft inclines upward and inward toward the sliding door or cut-off when the latter is closed, and it inclines in the opposite direction when the door is open. The rear end of the longitudinal rock-shaft is provided with an arm 43, extending downward and outward when the door is open and connected with a vertically-movable piston 44 of a vertical steam-cylinder 45 by vertical links 46. When the piston is moved downward, the longitudinal rock-shaft is rotated to swing the arm 16 outward, and those arms 16 which are coupled to the longitudinal rock-shaft will be oscillated and the sliding doors or cut-offs with which they are connected will be opened. The steam-cylinder 45 is provided at one side with a steam-chest having a suitable slide-valve which is connected by a vertically-movable rod with a lever 55. The upper end of the piston is provided with a horizontal guide 56, receiving a pivot or pin of the adjacent end of the lever 55, which has its other end connected by a rod 57 with one arm of a bell-crank lever 58. The rod 57 is disposed vertically, and the other arm of the bell-crank lever 58 is connected by a horizontal rod with an operating-lever 60, mounted on the exterior of the barge, at one side thereof, and arranged within convenient reach. The operating-lever 60 is adapted to be swung upward and downward to reciprocate the slide-valve for controlling the admission of steam to the vertical cylinder. The lever 55, which is connected with the piston of the steam-cylinder, is adapted to be operated by the same to carry the slide-valve to an intermediate position for shutting off the steam from the steam-cylinder at the end of each stroke of the piston; but as this structure does not form a part of the present invention detailed description and illustration thereof are deemed unnecessary.

It will be seen that the clutch-operating mechanism is exceedingly simple and inexpensive in construction, that the upper sections of the operating-rods are adapted to be readily raised and lowered to slide the clutch-sections 30 into and out of engagement with the arms that are connected with the cut-offs, so that one or more of the latter may be opened or closed when the longitudinal rock-shaft is rotated, and that the yielding connection between the upper and lower sections of the op-

erating-rods will permit the upper sections to be set for operating the clutches when the projections of the sliding clutch-sections are out of alinement with the recesses of the clutch-faces of the arms.

What I claim is—

1. The combination with a series of cut-offs, a longitudinal rock-shaft, and arms mounted on the rock-shaft and connected with the cut-offs, of sliding clutch-sections mounted on the longitudinal rock-shaft and arranged to engage the said arms, the transverse rock-shafts connected with and adapted to actuate the sliding clutch-sections, and the operating-rods with the transverse rock-shafts and adapted to actuate the same and composed of yieldingly-connected upper and lower sections, the upper sections being provided with means for holding the operating-rods in an elevated position, substantially as described.

2. The combination with a series of cut-offs, a longitudinal rock-shaft, and arms mounted on the rock-shaft and arranged to operate the cut-offs to open and close the same, of sliding clutch-sections mounted on the longitudinal rock-shaft and arranged to engage the said arms, the transverse rock-shafts connected with and adapted to actuate the sliding clutch-sections, the operating-rods extending upward from and connected with the transverse rock-shafts, and swiveled handles or grips secured to the operating-rods and provided with means for holding the rods in an elevated position, substantially as described.

3. The combination with a series of cut-offs, a longitudinal rock-shaft, and arms mounted on the rock-shaft and connected with the cut-offs, of sliding clutch-sections mounted on the longitudinal rock-shaft and arranged to engage the said arms, the transverse rock-shafts connected with and adapted to actuate the sliding clutch-sections, operating-rods connected with the transverse rock-shafts, plates provided with keyhole-slots, and swiveled handles or grips connected with the rods and having shanks arranged in the said slots and provided with lugs for engaging the plates, whereby the rods are maintained in an elevated position, substantially as described.

4. The combination with a movable clutch-section, of a rock-shaft connected with and adapted to actuate the sliding clutch-section, an operating-rod connected with the rock-

shaft and composed of upper and lower sections provided with arms forming guides, a coiled spring interposed between the arms, and a locking device connected with the upper section and adapted to hold the operating-rod in an elevated position, substantially as described.

5. The combination with a movable clutch-section, of an operating-rod composed of upper and lower sections, the lower section being provided with arms having openings to receive the upper section, and the latter being provided with an arm located between the said arms and having an opening to receive the lower section, coiled springs disposed on one of the sections and interposed between the arms, and means for connecting the lower section of the operating-rod with the movable clutch-section, substantially as described.

6. The combination with a movable clutch-section, of a vertically-movable operating-rod composed of upper and lower sections, the lower section having arms receiving the upper section and the latter being provided with an arm located between the said arms and receiving the lower section, coiled springs disposed on the lower section of the operating-rod and interposed between the said arms, means for connecting the lower section of the operating-rod with the clutch-section, and a handle or grip connected with the upper section of the operating-rod and provided with means for holding the said operating-rod in an elevated position, substantially as described.

7. The combination with a movable clutch-section, of an operating-rod composed of sections yieldingly connected together, one of the sections of the operating-rod being connected with the said clutch-section, a swiveled handle or grip secured to the other section of the operating-rod and provided with a lug, and a slotted plate receiving the rod and arranged to be engaged by the lug, substantially as and for the purpose described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

PEETE B. CLARKE.

Witnesses:

JOHN FRENCH,
CHARLES ENGEL.