

No. 671,140.

Patented Apr. 2, 1901.

J. C. MELBY.

SET WORK MECHANISM FOR SAWMILL CARRIAGES.

(Application filed Apr. 2, 1900.)

(No Model.)

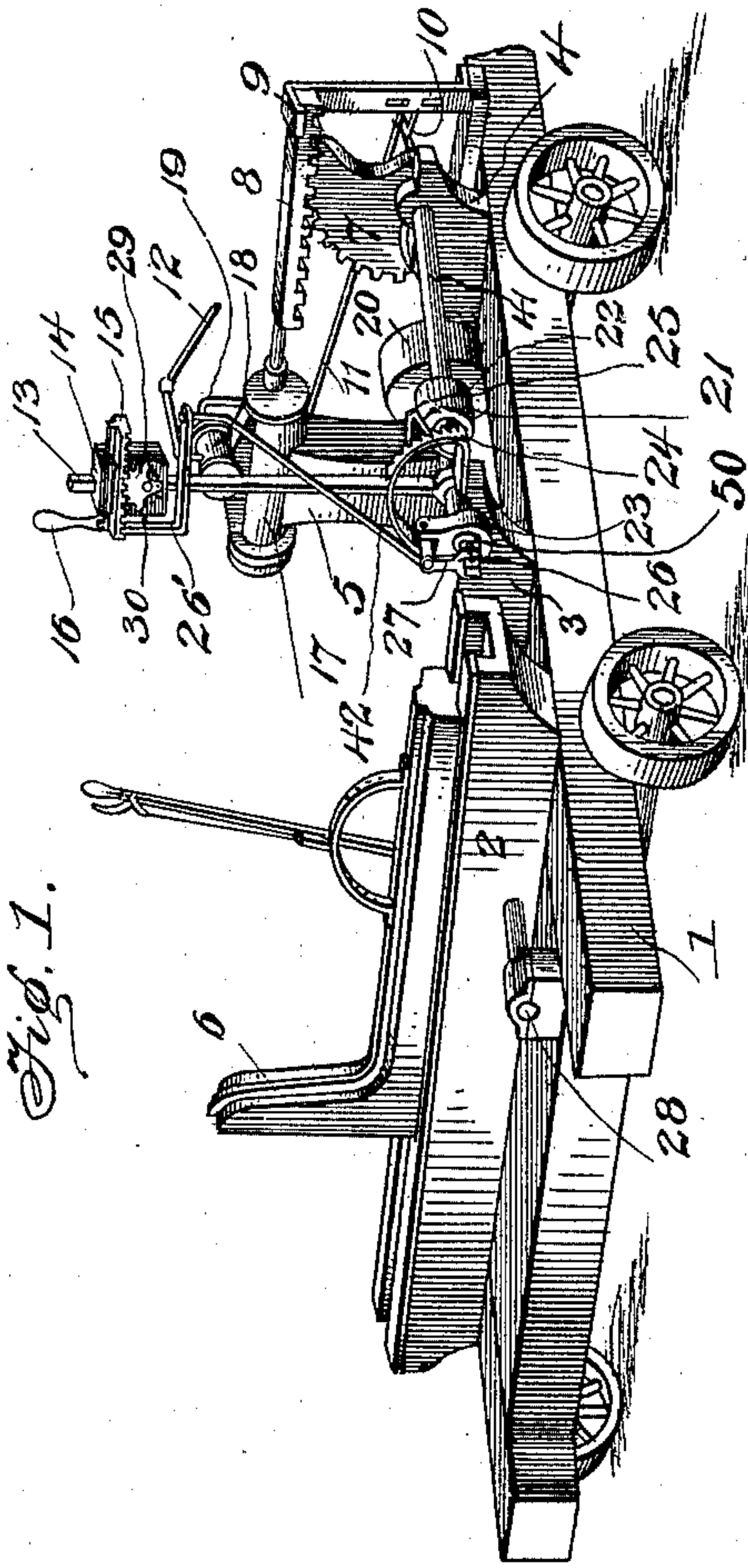


Fig. 1.

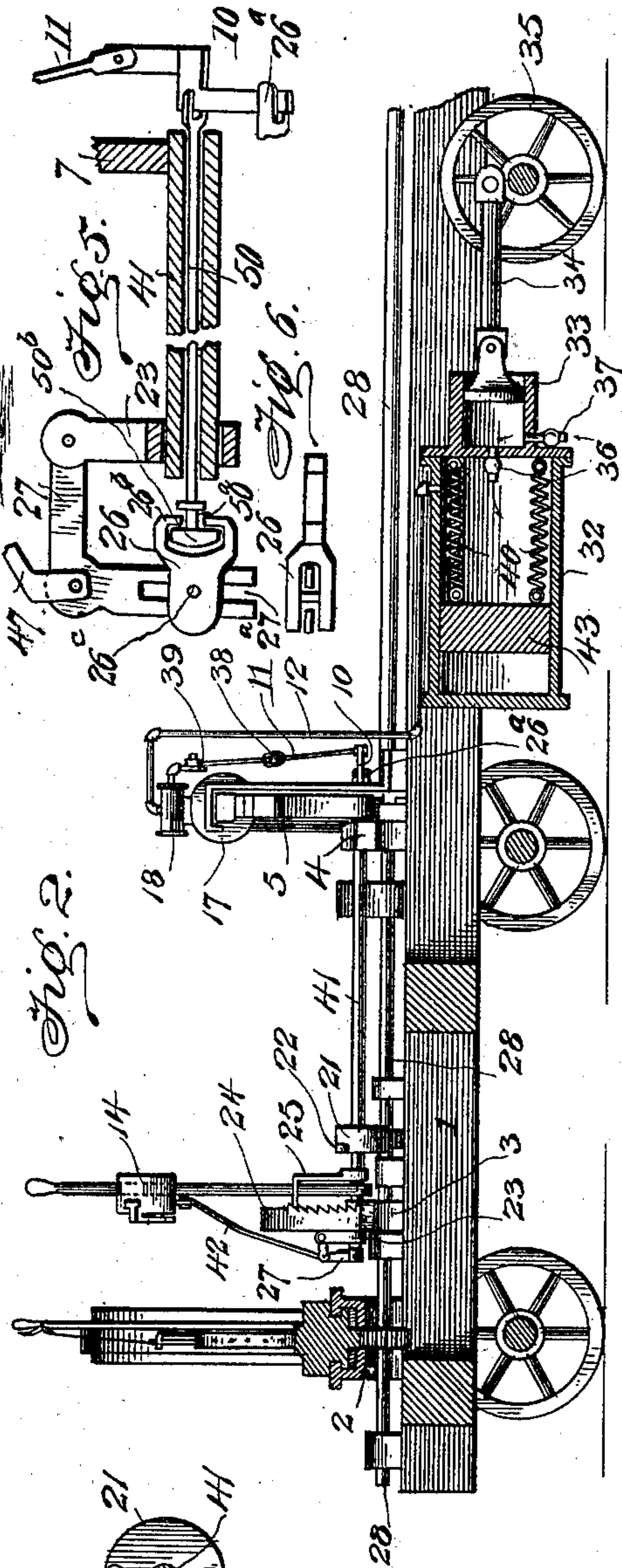


Fig. 2.

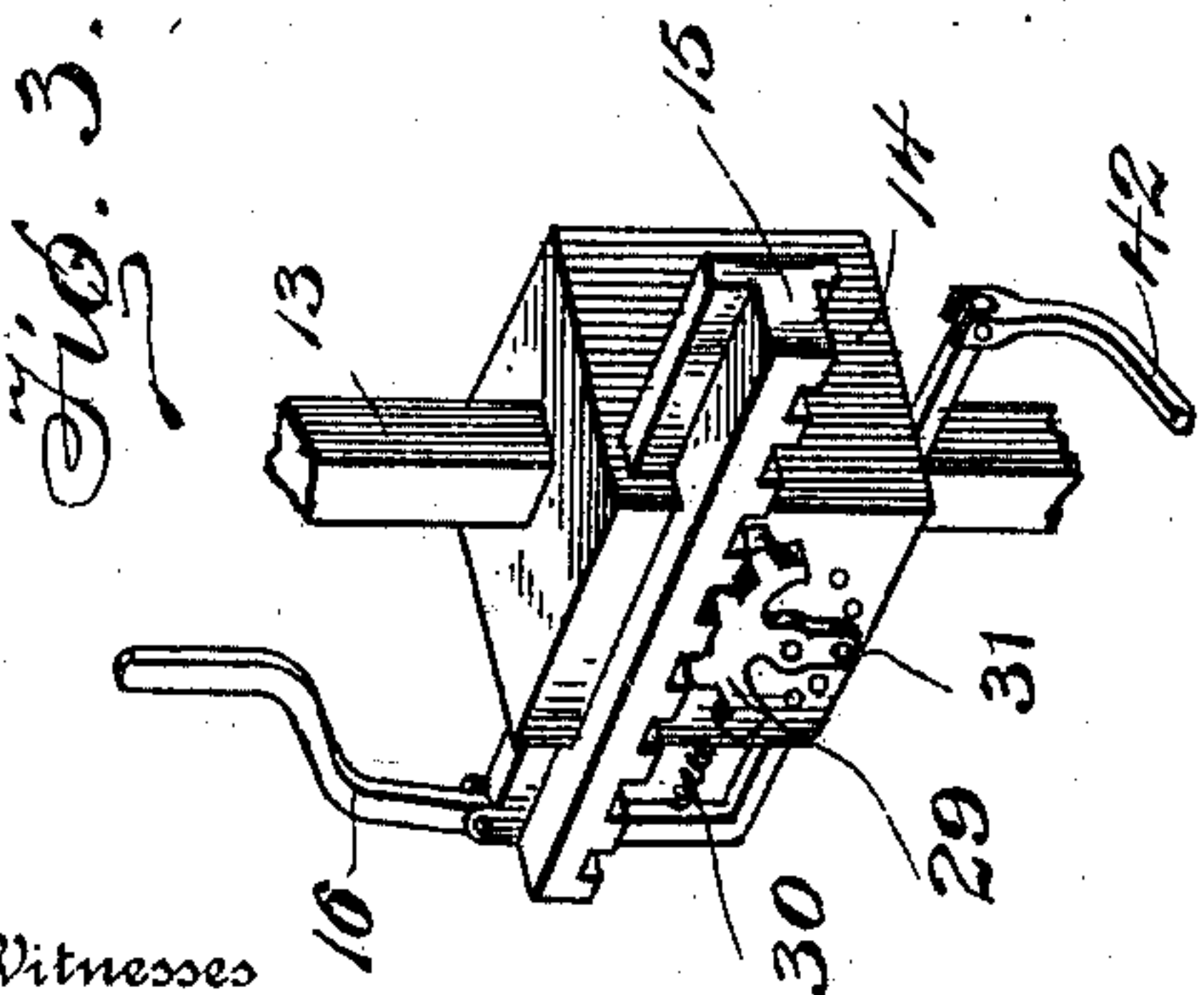


Fig. 3.

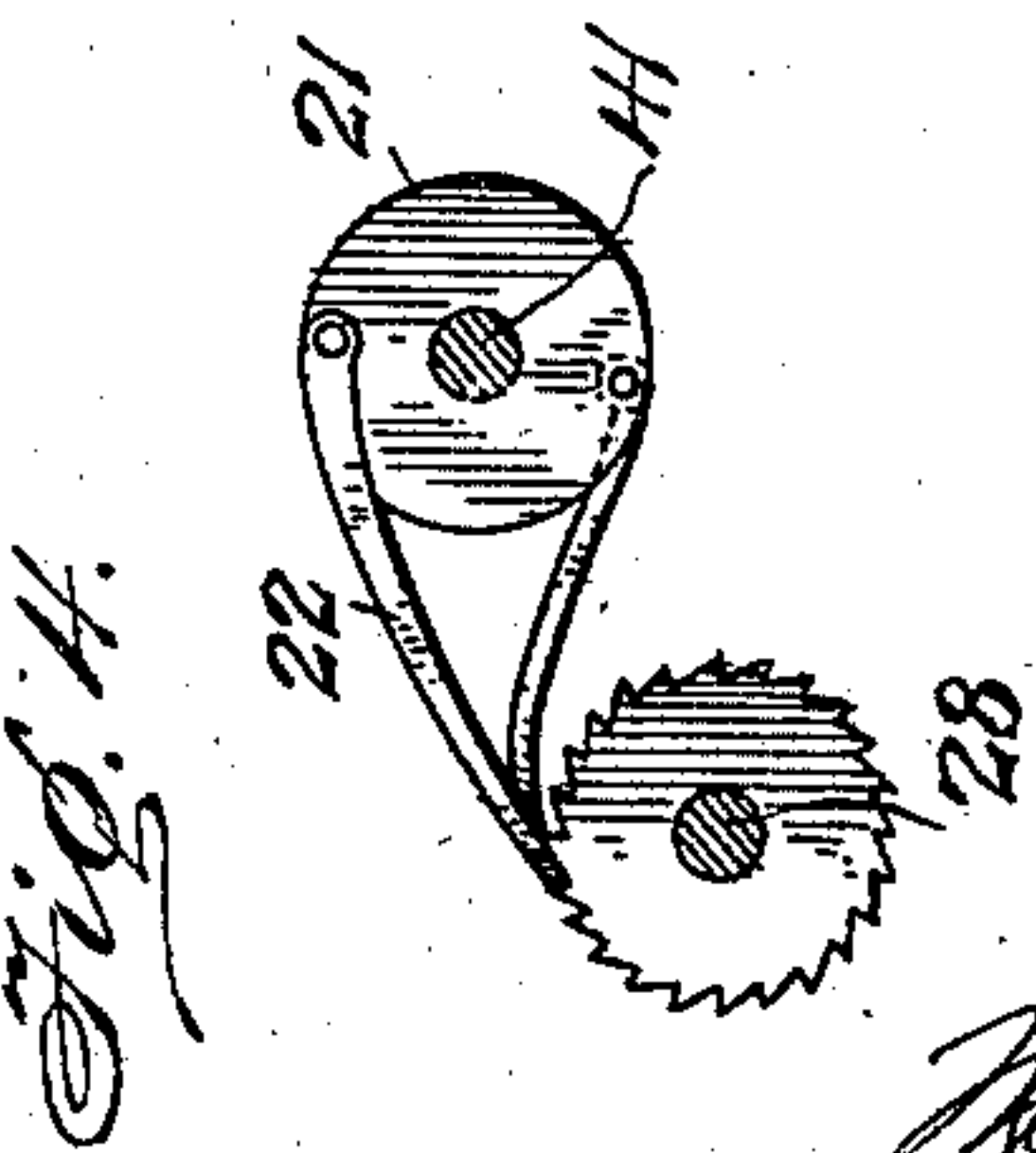


Fig. 4.

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# UNITED STATES PATENT OFFICE.

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## SET-WORK MECHANISM FOR SAWMILL-CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 671,140, dated April 2, 1901.

Application filed April 2, 1900. Serial No. 11,161. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. MELBY, a citizen of the United States, residing at Redcliff, in the county of Bayfield and State of Wisconsin, have invented certain new and useful Improvements in Set-Work Mechanism for Sawmill-Carriages, of which the following is a specification.

My invention relates to improvements in set mechanism for sawmill-carriages.

It consists in means mounted upon a sawmill-carriage for accumulating and storing pressure and means for applying said pressure to said operating mechanism, comprising shafting and gearing connecting the parts and means for controlling the application of the pressure as may be found desirable.

It also consists in certain other constructions, combinations, and arrangements of parts, as will be hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 represents a perspective view of a portion of a sawmill-carriage having my improved set mechanism applied thereto. Fig. 2 represents a vertical longitudinal section through a portion of said carriage, parts of the set mechanism being shown in elevation. Fig. 3 represents a perspective view of a portion of the set-lever, showing adjusting mechanism applied thereto. Fig. 4 represents a detail sectional view illustrating the ratchet mechanism for communicating motion to the knee-actuating shaft. Fig. 5 is an enlarged detail sectional view through the hollow shaft, showing the draw-rod passing through the same and the connecting-levers at each end thereof. Fig. 6 is a detail view of the swiveled clevis employed at one end of the draw-rod which passes through said hollow shaft.

My invention is designed to so arrange a set mechanism upon a carriage that the operation of setting up the knee after each cut of the sawmill can be done with a reduced amount of labor and expense. The knees 6 of the sawmill-carriage are curved and slide upon block-heads 2, secured to the carriage 1 in the usual manner. The knees 6 are also provided with racks which engage actuating-pinions secured to a longitudinal shaft 28, mounted upon the carriage 1. These parts are preferably constructed in any well-known

and usual manner. Arranged upon the carriage 1 and to one side of and parallel with the shaft 28 is a counter-shaft 41, finding bearings upon suitable standards 3 and 4, mounted upon the sawmill-carriage. The shaft 41 is preferably hollow for the purpose of receiving certain operating parts for connecting up the mechanism of the set device. One end of the shaft 41 carries a rack or toothed segment 7, which is adapted to be engaged and operated by a straight rack-bar 8. The rack-bar 8 is secured to the end of a piston-rod which enters the cylinder 17, being connected to a suitable head therein. Pressure is applied to the cylinder 17 for reciprocating the rack-bar 8, the admission of said pressure being regulated by means of a valve mounted in a suitable valve-chamber, as 18. The valve is provided with an operating-arm, as 39, which is connected by means of a draw-bar 11 with a bell-crank lever 10, the bell-crank lever 10 being mounted between lugs 26<sup>a</sup>, formed upon the guide-bar or standard 9, mounted upon the carriage 1. The guide-bar 9 is so shaped at its upper end as to inclose a portion of the rack 8 and guide it in its movement as well as hold it in contact with the segment 7. The bell-crank lever 10 is pivoted at one end to the said standard, while its angular portion or apex is pivoted to the end of a draw-bar 50, which passes through the hollow shaft 41. The other end of the draw-bar projects beyond the end of the hollow shaft 41 and carries a swiveled clevis 26, to which one end of a bell-crank lever 27 is pivoted. The clevis 26 is formed with jaws 26<sup>b</sup>, engaging an annular groove 50<sup>a</sup>, formed on a head 50<sup>b</sup> on the end of the draw-rod 50. The clevis 26 is also formed with a bifurcated portion to receive the end of the bell-crank lever 27 and carries a pin 26<sup>c</sup>, adapted to engage a slot 27<sup>a</sup> in said bell-crank lever 27. The other end of said bell-crank lever 27 is pivoted to a clevis 23, mounted upon the hollow shaft 41. To the angular portion of the bell-crank lever 27 is pivoted one end of a draw-bar 42, which extends therefrom upwardly to the end of an operating-lever 16. The lever 16 is angular in shape and is pivoted intermediate its length to a rack 15, which is movably mounted upon the block 14, attached to a set-lever 13. The rack-bar 15 moves in grooves formed in



the block 14 and is provided with a series of teeth which are adapted to mesh with a toothed segment 29, pivoted to one side of the block 14. The segment 29 may be set  
 5 at different points to hold the rack-bar 15 in different adjusted positions by means of a pin 31, which may be passed through an opening in the said segment and engage any one of a series of openings in the block 14. The upper  
 10 end of the lever 16 is provided with a handle, which may be grasped by the operator of the set mechanism and drawn toward the set-lever 13. A spring 30 connects the lower portion of the lever 16 with the block 14, so as to  
 15 normally hold the handle end of said lever away from the set-lever 13. The adjustment of the rack-bar 15 regulates the amount of movement imparted through the draw-bars 42, 50, and 11 to the valve-arm 39, and there-  
 20 by controls the amount of pressure introduced into the ends of the cylinder 17. The set-lever 13 is mounted upon the hollow shaft 41, being either rigidly secured thereto or loosely journaled thereon, as may be found desirable.  
 25 An angular arm 25 is also pivoted upon the hollow shaft 41 and is beveled at its free end so as to engage the teeth of a curved rack bar or segment 24, secured to the said hollow shaft 41, the angular bar 25 when engaging  
 30 one of the teeth of the rack 24 being in position to limit the forward movement of the set-lever 13.

In order to supply pressure for operating the piston in the cylinder 17, I mount an accumu-  
 35 lating-cylinder 32 upon the carriage 1, the same being connected with the valve-chamber 18 by means of a pipe, as 12, one end of the cylinder 32 being closed by means of the cap-plate carrying a cylinder 33 upon its outer  
 40 face. Moving in the cylinder 33 is a piston-head, which is connected by means of a suitable pitman 34 with a wheel 35. The wheel 35 is one of the supporting-wheels of the carriage, so that by moving the carriage back  
 45 and forth the wheel 35 will impart a reciprocating motion to the piston in the cylinder 33. The cylinder 33 is provided with an inlet-passage controlled by a check-valve 37, so that air may enter the cylinder, but cannot  
 50 pass out again through the valve 37. Another passage leads through the cylinder 33 into the cylinder 32 and is guarded by a check-valve 36, so that the air drawn into the cylinder 33 can be forced into the cylinder 32,  
 55 but cannot return into the said cylinder 33. Mounted in the cylinder 32 is a movable head 43, which is attached to the cylinder-head which carries the cylinder 33 by means of springs 40. The springs 40 always tend to  
 60 draw the said movable head 43 toward the cylinder 33, and therefore exert a constant pressure upon the contents of the said cylinder 32. This is useful when the carriage is not running and pressure is not being introduced  
 65 by the reciprocating piston, as it always maintains a proper pressure in the pipe 12, which may be utilized in the cylinder 17. When

the carriage is moved back and forth in sawing lumber of any kind, the revolution of the wheel 35 will accumulate and store pressure  
 70 in the cylinder 32, which is always ready for use in operating the set mechanism.

The movement of the shaft 41 is communicated to the shaft 28 by means of pawls 22  
 75 22, which are pivotally secured to a disk or wheel 21, mounted upon the said shaft 41. The said pawls 22 engage a ratchet-wheel mounted upon the shaft 28, as illustrated in Fig. 4 of the drawings.

When the carriage is in use and a cut has  
 80 been made upon the material carried thereby, the operator grasps the set-lever 13 and the handle of the lever 16, drawing the same toward the set-lever and pulling the set-lever forward until it is arrested in its course by  
 85 means of the angular stop-bar 25. This will communicate movement through the draw-bar 42, bell-crank 27, draw-bar 50, bell-crank 10, and draw-bar 11 to the valve-operating arm 39, and will admit pressure to the inner  
 90 end of the cylinder 17, so as to force the rack-bar 8 outwardly. The shaft 41 will thus be rotated through the agency of the rack 7 and will by means of the pawls 22 set the knee 6 forward the desired distance. When the set-lever  
 95 13 is pushed backward again to its upright position, the valve-arm 39 will be correspondingly moved and pressure will be admitted to the other end of the cylinder 17 for moving the rack 8 inwardly. This will likewise commu-  
 100 nicate motion to the shaft 28 by means of the pawls 22 and set the knee 6 again. The spring 30, interposed between the block 14 and the lever 16, is so adjusted that when the operator releases the lever 16 the said spring will  
 105 cause the valve-arm 39 to be moved to an intermediate position and cut off pressure from either end of the cylinder 17. Thus the set mechanism is automatically stopped. The  
 110 shaft 28 may be made of any suitable length, and preferably extends from one end of the carriage 1 to the other and is connected with all the knees employed upon the carriage, so that they will be all set simultaneously.

It will be evident that the set mechanism  
 115 will operate with very little difficulty and attention, it being only necessary to move the set-lever when it is desired to operate the set-works. The movement of the carriage 1 will take care of the pressure necessary for oper-  
 120 ating the device, keeping the cylinder 32 supplied with sufficient pressure for the purpose.

Having thus described the invention, what is claimed, and desired to be secured by Let-  
 125 ters Patent, is—

1. A set mechanism for sawmill-carriages comprising a shaft mounted on the said carriage and connected with the knees of the carriage, a counter-shaft mounted upon the carriage, means for communicating motion from  
 130 the counter-shaft to the knee-setting shaft, a segment secured to the counter-shaft, a rack for operating the same, a piston for reciprocating the rack mounted in a suitable cylin-



der, means for controlling the admission of pressure to the ends of said cylinder comprising draw-bars, bell-crank levers connecting the same, a set-lever mounted upon the counter-shaft, and means carried by said set-lever for operating said draw-bars and bell-cranks, whereby the mechanism is under control of the person operating the carriage.

2. A set mechanism for sawmill-carriages comprising a knee-operating shaft, a counter-shaft mounted upon the carriage and adapted to communicate motion to the said shaft, the said counter-shaft being hollow, a cylinder for rotating the hollow shaft, a valve for controlling the admission of pressure to the cylinder, a set-lever mounted upon the said hollow counter-shaft, an adjustable lever carried by the set-lever, a draw-bar connecting the same with the bell-crank pivoted to the hollow shaft, a draw-bar connecting the said bell-crank with another bell-crank at the other end of said hollow shaft, the said draw-bar passing through the shaft, a draw-bar connecting the second bell-crank with the arm of said valve, the construction being such that by operating the adjustable lever on the set-lever, the valve will be moved so as to cause the cylinder to produce the rotation of the hollow counter-shaft for moving the knee-setting shaft, substantially as described.

3. A set mechanism for sawmill-carriages, comprising a knee-setting shaft, a hollow counter-shaft for operating the same, a set-lever mounted thereon, a toothed segment secured to the said shaft, an angular limiting-bar pivoted upon the counter-shaft and adapted to engage the toothed segment for limiting the movement of the set-lever, a cylinder for reciprocating a piston carrying a rack-bar, a segment upon the hollow shaft adapted to engage the rack-bar, and means connecting the set-lever with the valve of the said cylinder for controlling the admission of power thereto comprising a draw-bar passing through said hollow shaft, and intermediate connecting means.

4. A set-works for sawmill-carriages, comprising a knee-setting shaft, a hollow shaft for operating the same, a power-cylinder for rotating said hollow shaft, a set-lever mounted on the said shaft and carrying an enlargement or block, a rack adjustably mounted in the said enlargement, a segment for adjust-

ably holding the rack in its different positions, a valve-operating lever carried by the said rack, draw-bars and bell-crank levers connecting the said valve-controlling lever with the arm of a valve mechanism mounted on the power-cylinder, one of said draw-bars passing through said hollow shaft, and means for automatically holding the valve-lever in a neutral position, whereby pressure will be cut off from the power-cylinder, the structure being such that by grasping the set-lever and the handle of the valve-operating lever pressure may be admitted to one end or the other of the said cylinder for actuating the set mechanism, and when the levers are released the pressure will be automatically cut off from the power-cylinder, substantially as described.

5. A set mechanism for sawmill-carriages, comprising knee-setting shafting, a power-cylinder for operating the same, a pressure-accumulating cylinder mounted upon the carriage and connected with the power-cylinder, one head of the accumulating-cylinder carrying a cylinder extension, a reciprocating piston mounted therein, a pitman connecting the same with one of the wheels of the carriage, valves controlling the admission of air to the extension-cylinder and from thence into the accumulating-cylinder, and means in the accumulating-cylinder for exerting pressure upon the air accumulated therein.

6. A set mechanism for sawmill-carriages, comprising suitable shafting for setting forward the knees of the carriage, a power-cylinder for actuating the same, an accumulating-cylinder mounted upon the carriage and connected by suitable piping with the power-cylinder, a cylinder mounted upon one of the heads of the accumulating-cylinder and having a reciprocating piston moving therein, means for reciprocating the said piston, check-valves for controlling the movement of air stored in the said accumulating-cylinder, a movable head mounted in the accumulating-cylinder, and springs for causing the said head to exert a constant pressure upon the contents of the said accumulating-cylinder, substantially as described.

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