April 19, 1927. 1,625,240

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SAWMILL DOG ACTUATING MECHANISM

Filed Jan. 21, 1926 2 Sheets-Sheet 1

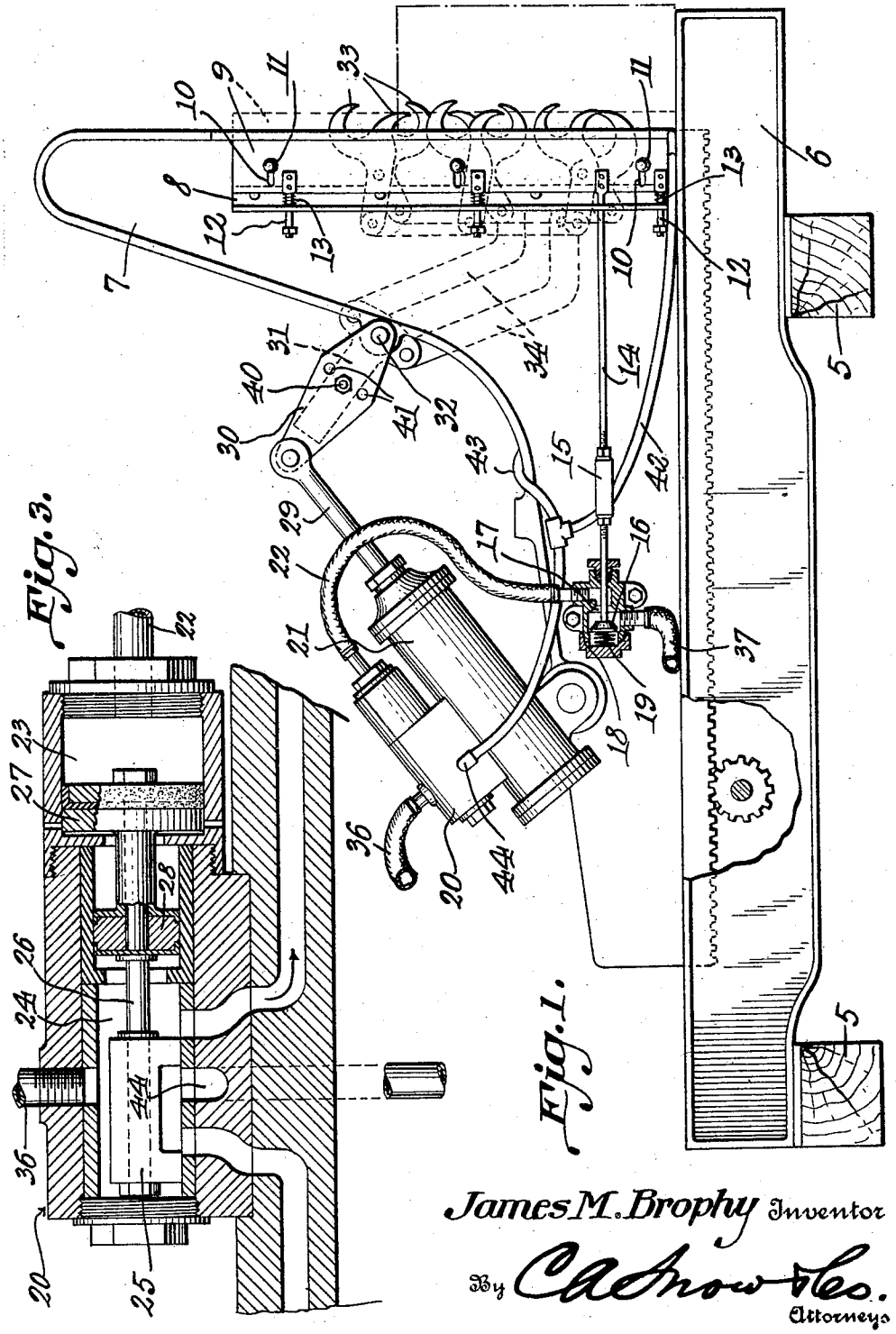


Fig. 3.

Fig. 1.

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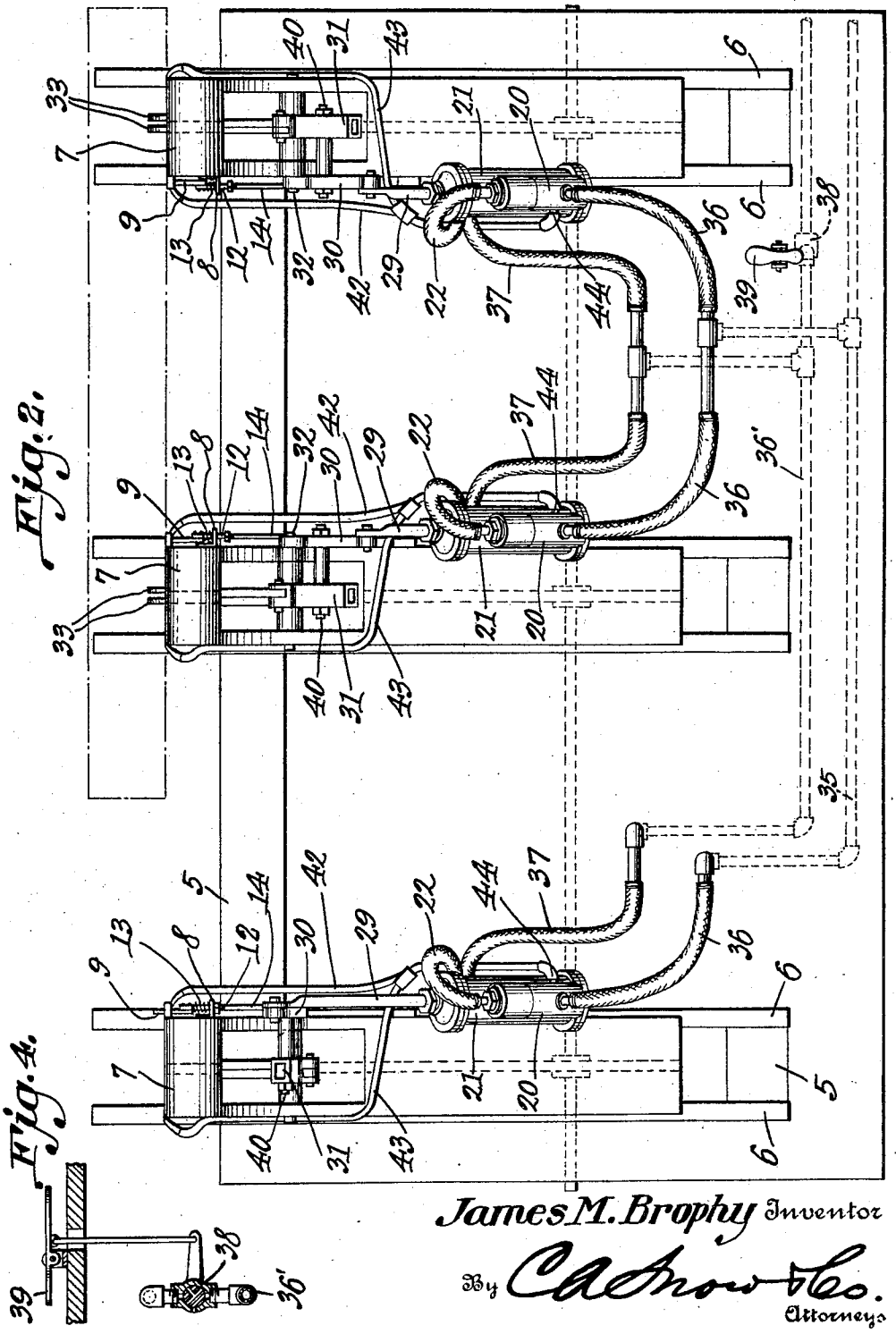


Fig. 2.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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SAWMILL-DOG-ACTUATING MECHANISM.

Application filed January 21, 1926. Serial No. 82,819.

This invention relates to saw mill carriages, and aims to provide novel means for automatically selecting and operating the dogs of a saw mill carriage, thereby relieving the operator of all responsibility in connection with the selecting of the dogs.

An important object of the invention is the provision of a fluid pressure control means, means being provided for actuating the fluid pressure control means by the movement of the log to its proper position on the knee blocks and knees of the carriage.

A further object of the invention is to provide a device of this character which may be readily and easily installed on saw mill carriages now in general use, eliminating the necessity of making alterations in the usual construction to position the device.

A still further object of the invention is the provision of a novel form of connecting means whereby the stroke of the dog actuating mechanism may be varied to meet various requirements of usage.

Another object of the invention is the provision of a controlling valve which will be normally held in a position to hold the dogs actuated thereby, in their retracted positions.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

Referring to the drawings:

Figure 1 is a side elevational view of a knee equipped with a dog operating mechanism constructed in accordance with the invention.

Figure 2 is a plan view of a saw mill carriage illustrating a log as having actuated the dog controlling mechanism.

Figure 3 is an enlarged sectional view through the control valve.

Figure 4 is a sectional view through a three-way valve to be controlled by the operator.

Referring to the drawings in detail, the carriage of the device is of the usual and well known construction and embodies bolsters 5, knee blocks 6 and knees 7, which knees are mounted for movement longitudinally of the knee block 6 by means of the rack and pinion shown in Figure 1.

The device forming the essence of the invention includes a supporting bar 8 which may be secured to a knee in any well known manner, the bar being of the angle type for purposes to be hereinafter more fully described.

Movably mounted on each knee is an actuating plate 9 which is formed with elongated openings 10 for the reception of the pins 11 that are secured to the knee, which pins secure the plate in position against vertical movement but permit of movement of the plate horizontally.

The angle portion of the bar is formed with spaced openings for the reception of the rods 12 that are secured to the plate 9, there being provided coiled springs 13 disposed between the plate and angle portion of the bar to normally urge the plate outwardly to a position as shown in dotted lines in Figure 1.

Connected with the plate is a rod 14 which is supplied with a turn buckle 15 to permit the stroke of the rod to be adjusted to meet various requirements and as shown, a valve indicated at 16 is carried at the inner end of the rod and is adapted to cooperate with the seat 17 in controlling the passage of fluid through the valve housing indicated at 18. A coiled spring 19 acts against the valve 16 to normally urge the valve to its seat for preventing the passage of fluid to the controlling valve to be hereinafter more fully described.

The controlling valve which is indicated generally by the reference character 20 is mounted on the dogging cylinder 21 which dogging cylinder is pivotally mounted on the knee as shown by Figure 1 of the drawings and has communication with the valve housing 18 at one end of the valve housing 20, through the medium of the hose 22 with the result that when the valve 16 has been moved to a position as shown by Figure 1, air will be admitted to one end of the valve 20.

The valve 20 is of a novel construction and includes a relatively large chamber 23 at one of its ends and a main valve chamber 24 in which the slide valve 25 operates, the valve 25 being mounted on the valve rod 26 at one of its ends, while the opposite end of the valve rod supports the piston 27 operat-

ing in the valve chamber 23 and the piston 28 spaced from the piston 27 and operating in the main portion of the valve. As shown, the piston 27 is of a much greater diameter than the diameter of the piston 28 to the end that when fluid pressure is admitted to the chamber 23, a great volume of fluid will be directed to the piston 27 owing to the diameter of the piston and chamber 23 than is normally directed to the piston 28 with the result that the fluid pressure within the portion 24 of the valve housing is overcome and the valve 25 is moved to a position as illustrated by Figure 3.

When the air pressure in the chamber 23 is released, it will be seen that the fluid pressure in the portion 24 will act against the piston 28 to return the piston 27 and valve 25 to their initial positions.

The valve 25 is of the slide type and is designed to, when moved to a position as shown by Figure 3, admit fluid to the right-hand end of the dogging cylinder 21, moving the piston contained therein to the lower end thereof.

The piston while not shown is carried at the inner end of the piston rod 29 in the well known manner, which rod 29 connects with the segment 30 which is bolted to the usual dogging lever socket shown at 31, and which is pivotally connected to the knee at 32 with the result that as the rod 29 is operated, the dogging lever socket is moved to operate the dogs 33 through the lever mechanism shown at 34, to cause them to be retracted or extended.

As illustrated by Figure 2, the main fluid supply pipe is indicated by the reference character 35 which pipe is in communication with the valve housing 20 through the hose 36, to the end that the piston 28 is normally held under the pressure of the fluid within the main supply tank not shown.

The pipe 36′ which also communicates with the main source of fluid pressure supply, communicates with the valve housing 18 through the hose 37, the passage of fluid through the pipe 36′ being controlled by means of the three-way valve 38 positioned within the pipe line and which valve may be controlled by means of the pedal 39 positioned adjacent to the operator's seat for convenient manipulation.

It might be further stated that the bolt for connecting the segment 30 to the dogging lever socket and which is indicated at 40, may be positioned in either of the openings 41 of the segment 30 to regulate the stroke of the dog operating mechanism.

The pipes 42 and 43 are in communication with the exhaust port of the valve 20, at 44, and have their free ends directed towards each other and arranged adjacent to the forward edge of the knee associated therewith, so that as the fluid exhausts from the valve 20, it will be carried to the forward portion of the knee to clear the knee block of any sawdust or any other foreign matter that may rest thereon and which might tend to prevent the log under operation being held squarely to the saw.

While I have shown and described the invention as applied to a single knee, it is to be understood that the several knees of a saw mill carriage are to be supplied with automatic controlling devices as shown and described, and in connection with the operation of the device, reference will be had to Figure 2 which illustrates a log as positioned on certain knee blocks of a saw mill carriage, while one knee block is clear, which condition exists while sawing relatively short logs.

From this figure it will be obvious that as the log is moved into engagement with the knees of the carriage, the plates 9 supported by the knees engaged by the log are forced rearwardly to a position as shown by Figure 1 of the drawings, whereupon valve member 16 is opened, establishing communication between the hose 37 and hose 22. The operator will now manipulate the pedal 39, moving the three-way valve 38 to admit fluid to the hose 37 and hose 22, whereupon fluid enters the valve chamber 23 forcing the piston 27, rod 26 and valve member 25 to a position as shown by Figure 3, with the result that fluid passes through the uncovered passageway to the right-hand end of the cylinder 21, in the direction of the arrow as shown in Figure 3.

As air enters the cylinder 21, the piston is forced rearwardly, moving the rod 29 and segment 30 to operate the dogs 33. When it is desired to release the dogs, the operator moves the valve 38 to release the fluid pressure in the chamber 23, whereupon the normal fluid pressure or supply which is constantly in valve chamber 24, will operate on the piston 28 to return the valve member 25 to its normal position with the result that fluid pressure within the cylinder 21 will be released and exhausted through the port 44 and pipes 42 and 43.

Thus it will be obvious that due to this construction, it is unnecessary for an attendant to watch the knees of a saw mill carriage and operate certain mechanism to dog a log which is positioned on the carriage, the operation of the dogging mechanism being automatic and the selection of the dogs to be operated, is made automatically and instantaneously with the passage of the log to its proper position on the carriage.

I claim:—

1. In combination with a saw mill carriage and the dogs thereof, means for ac-

tuating the dogs, said actuating means being controlled by the movement of a log onto the saw mill carriage.

2. In combination with a saw mill carriage and dogs carried by the knees thereof, means for actuating the dogs, and means actuated by the movement of a log into engagement with the knees for bringing certain dog actuating means into operation.

3. In combination with a saw mill carriage and the dogs carried by the knees thereof, pneumatically controlled means for actuating the dogs, and means controlled by the movement of a log against the knees of the saw mill carriage for actuating certain pneumatic dog actuating means.

4. A saw mill carriage including a plurality of knees, dogs carried by the knees, fluid pressure actuating means for actuating the dogs, valves for controlling the passage of fluid to the fluid pressure actuating means, and means controlled by the passage of a log onto the carriage to engage the knees for operating the valves to actuate the dogs carried by the knees engaged by the log.

5. In combination with a saw mill carriage and the dogs mounted on the knees thereof, means for actuating the dogs, and work controlled means for causing the operation of certain dog actuating means.

6. A saw mill carriage including a plurality of knees, dogs mounted adjacent to the knees, fluid pressure actuating means for actuating the dogs, valves for controlling the passage of fluid to the dog actuating means, and means actuated by the movement of a log moved onto the knees for operating the fluid controlling means.

7. A saw mill carriage including a plurality of knees, dogs mounted on the knees, fluid pressure control means for actuating the dogs, means controlled by the movement of a log against the knees for bringing certain fluid pressure control means into operation to operate certain dogs.

8. A saw mill carriage including a plurality of knees, dogs mounted on the knees, means for operating the dogs, means responsive to the movement of the log onto the carriage for permitting the dog actuating means to be operated.

9. A saw mill carriage including a plurality of knees, dogs mounted on the knees, independent means for actuating the dogs of each knee, and means lying in the path of travel of a log passing onto the carriage, and engaged by the log for controlling the dog actuating means.

10. A saw mill carriage including a plurality of knees, dogs on the knees, fluid pressure means including a cylinder for operating the dogs of each knee, controlling valves mounted on the cylinders for controlling the passage of fluid to the cylinders, selecting valves for controlling the passage of fluid to certain controlling valves, and means operated by the movement of a log onto the carriage for operating certain selecting valves.

11. A saw mill carriage including a plurality of knees, dogs carried by the knees, fluid pressure controlled means for actuating the dogs, a vertical plate carried by each knee, valves for controlling the passage of fluid to the fluid pressure controlled means, and rods connecting the plates with the last mentioned valves for operating the last mention valves when the plates move inwardly under the action of a log positioned on the carriage.

12. A saw mill carriage including knees, dogs carried by the knees, fluid pressure operating means for operating the dogs, pipe lines for directing fluid to the fluid pressure operating means, controlling valves adapted to be automatically opened when a timber moves thereagainst for opening certain pipe lines, and a control valve common to all the pipe lines for controlling the passage of fluid through the pipe lines.

13. A saw mill carriage including knees, fluid pressure dog operating means carried by the knees, a movable member positioned adjacent to each knee and adapted to be moved inwardly by the action of a log bearing against the knees, valves for controlling the passage of fluid to the fluid pressure dog operating means, and means for connecting the movable members and valves to operate the valves upon movement of the movable members.

14. A saw mill carriage including knees, dogs carried by the knees, a fluid pressure operating means for operating the dogs and carried by each knee, a valve associated with each fluid pressure operating means for controlling the passage of fluid thereto, a controlling valve common to all the fluid pressure operating means for controlling the passage of fluid thereto, and means controlled by the action of a timber moved to engage the knees for opening certain valves to allow fluid to pass into the fluid pressure operating means associated therewith.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

JAMES M. BROPHY.