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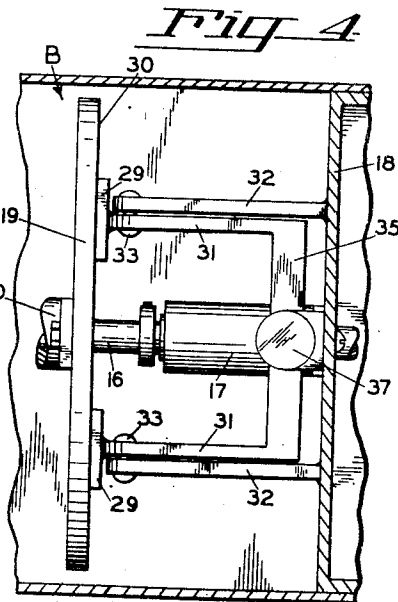
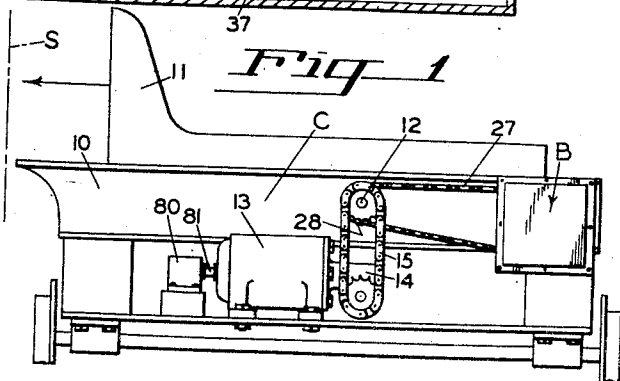
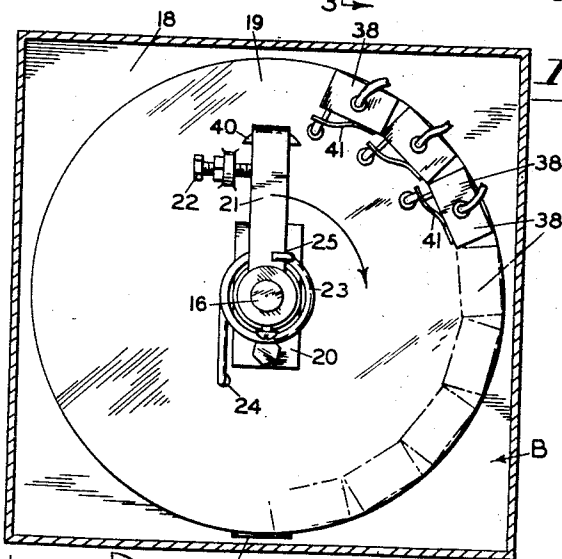
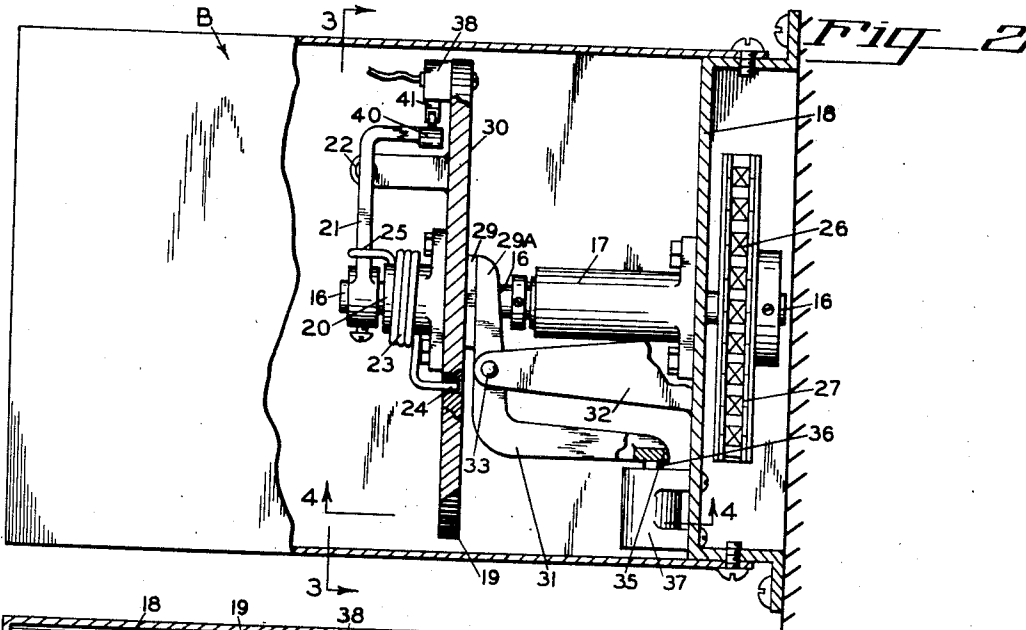
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2,807,293

PRESET FOR SAWMILL CARRIAGES

Filed July 5, 1956

2 Sheets-Sheet 1



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PRESET FOR SAWMILL CARRIAGES

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2 Sheets-Sheet 2

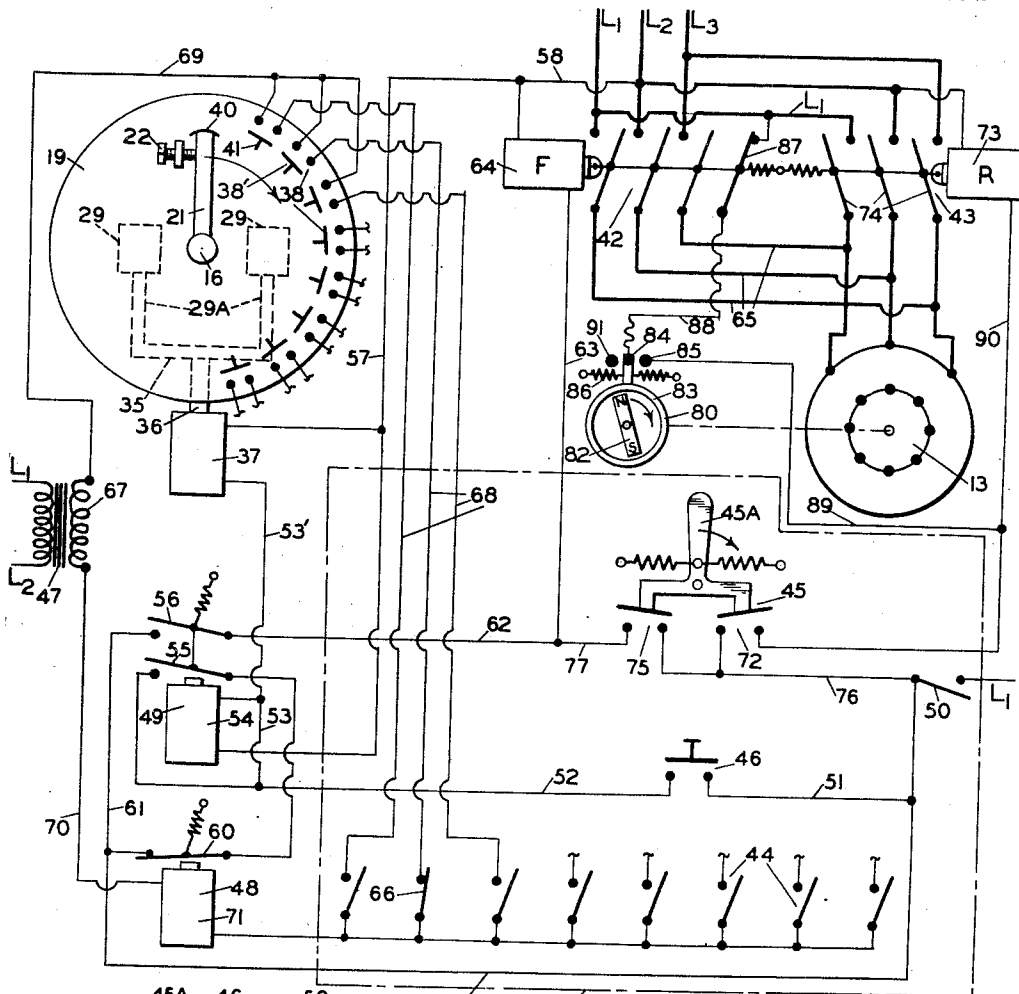


Fig. 5

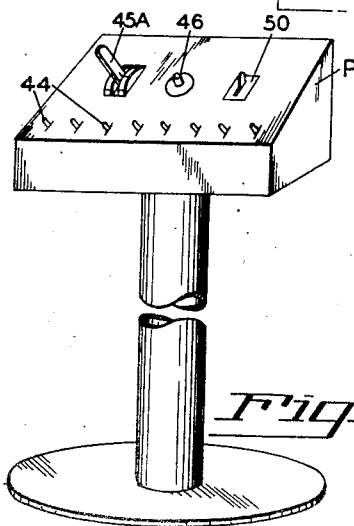


Fig. 6

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PRESET FOR SAWMILL CARRIAGES

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5 Claims. (Cl. 143—120)

The present invention relates to presets for sawmill carriages and more particularly to the mechanism for controlling the movement of the knees of the carriage towards the saw line.

The primary object of the invention is to provide a sawmill carriage preset structure having means of presetting the distance that the knees will move towards the saw line while moving the log for the next cut, without requiring the sawyer to move from his operating position in regards to the saw.

Another object of the invention is to provide a structure of the class described above in which the sawyer can operate a series of switches in a control stand adjacent his station which will predetermine the thickness of cant to be removed from the log.

A further object of the invention is the provision of means for retracting the knees of the carriage from the saw line any desired distance actuated by a control switch located in the control stand.

A still further object of the invention is to be able to move the log towards the saw line by a constant movement under the control of a manual switch when such movement is desired.

Other objects and advantages will become apparent in the following specification when considered in the light of the attached drawings in which:

Figure 1 is an end elevation of a sawmill carriage incorporating the invention.

Figure 2 is a side elevation of the control mechanism, with parts broken away for convenience of illustration.

Figure 3 is a vertical cross-section taken on line 3—3 of Figure 2, looking in the direction of the arrows.

Figure 4 is an inverted fragmentary horizontal cross-section taken on line 4—4 of Figure 2, looking in the direction of the arrows.

Figure 5 is a schematic diagram of the control mechanism, including the operating and control circuits.

Figure 6 is a perspective view of the control panel or station located adjacent the sawyer's operating position.

Referring now to the drawings in detail wherein like reference characters indicate like parts throughout the several figures, the reference character C indicates a conventional sawmill log carriage having conventional log supporting bunks 10 and movable knees 11, the knees 11 being moved along the bunks 10 by a conventional mechanism (not shown) operated by a set shaft 12. The set shaft 12 is driven by a motor 13 through a gear reduction box 14 and a chain 15. The saw line is indicated by the letter S.

The invention consists of controlling the operation of the motor 13 through a preset control mechanism located within a control box B, which is mounted to the carriage C by any suitable means. A control panel P is located adjacent the sawyer's operating position off the carriage C.

Referring to Figures 2, 3 and 4, there is found within the control box B a shaft 16. The shaft 16 is journaled within a bearing housing 17 by suitable bearings (not

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shown). The bearing housing 17 is mounted to an end 18 of the box B. Rotatably mounted on the shaft 16 is a disk 19 carried by a mounting hub 20. Detachably secured to the shaft 16 is a switch operating arm 21. The disk 19 is provided with an adjustable stop 22, which is adapted to bear against the side of the arm 21. The stop 22 and the arm 21 are biased together by a coil spring 23, having one of its ends secured at 24 to the disk 19 and its opposite end bearing against the arm 21 at 25. The operation of this mechanism will be later described.

The shaft 16 is revolved by a sprocket 26 driven by a chain 27 trained over a sprocket 28 keyed to the set shaft 12, and as the set shaft 12 is rotated in the operation of the knees 11, the chain 27 rotates the shaft 16 and arm 21. Brake shoes 29 are adapted to engage a face 30 of the disk 19 in the following manner.

The brake shoes 29 are mounted on spaced parallel arms 29A of a double bell crank 31. The arms 29A are pivotally mounted at 33 to spaced supporting brackets 32 carried by the end 18 of the box B. The arms 29A are connected together by a cross bar 35. The cross bar 35 is adapted to rest on a core 36 of a solenoid 37. When the solenoid 37 is energized the cross bar 35 moves upwardly pivoting the bell crank 31 so that the brake shoes 29 are brought in contact with the face 30 of the disk 19, preventing the same from turning, the purpose of which will be later described.

A series of limit switches 38 is fixedly secured to the face 30 of the disk 19, referring particularly to Figures 2 and 3. The limit switches 38 are normally opened and are adapted to be closed by a cam 40 forming part of the switch operating arm 21, as best illustrated in Figure 2. The cam 40 is adapted to successively contact switch actuating arms 41 in its rotation with the shaft 16. The switch actuating arms 41 are adapted to close each switch 38 on being contacted by the cam 40.

Referring particularly to Figure 5, the electric motor 13 receives its energy from a relay switch 42 and rotates the set shaft 12 moving the knees 11 of the carriage C towards the saw line S. The motor is operated in reverse direction by a relay switch 43.

In the operation of our new and improved set works, the following functions take place. The knees 11 of the carriage C can be moved towards the saw line S in predetermined steps of distances controlled by a group of selector switches 44 located within the control panel P. The switches 44 determine the thickness of cant to be removed from the log. The operation of the knees 11 can be continuous under control of a manually operated switch 45 also located within the control panel P. The switch 45 also controls by reverse action the reverse movement of the knees 11 away from the saw line. The forward movement of the knees 11 towards the saw line S is initially started by push button switch 46 when one of the selector switches 44 are being used to determine the presetting of the log.

The electrical supply lines L1, L2 and L3 supply electrical energy to the set works. A transformer 47 supplies electric energy to a normally closed relay 48, which is located in series with the selector switches 44 and the limit switches 38. The transformer 47, relay switch 48 and the limit switches 38 being located within the control box B of the carriage C, while the selector switches 44 are located within the control panel P, located at the sawyer's station.

A holding relay 49 is also located in the control box B and is adapted to operate the relay 42 and the brake solenoid 37 located in the control box B. The reversing switch 43 is also located in the control box B.

A master manually operated supply switch 50 delivers energy from L1 to the above described elements as fol-

lows. In order to feed the knees 11 of the carriage C and the log towards the saw line S at a predetermined distance the operator closes one of the selector switches 44, the push button switch 46 is then closed. This will deliver energy from L1 through the switch 50, conductor 51, switch 46, conductor 52, conductor 53 energizing the coil 54 of the relay 49, also the brake solenoid 37 through a conductor 53' leading to L2 through conductors 57 and 58. This will close the relay switch bars 55 and 56 delivering energy from line 59 through the normally closed relay switch bar 60, through the switch bar 55 of the relay 49 into the coil 54. This will hold the relay bars 55 and 56 closed until further action to be later described, even though the switch 46 will open when the operator releases the same.

When the switch bar 56 is closed, electric energy will flow from the conductor 59 through conductor 61, switch bar 56, conductor 62, conductor 63 into the relay coil 64 of the relay 42 back to L2 through the conductor 58. This will close the relay switch 42 delivery energy from L1, L2, and L3 through the switch 42 into the motor 13 through conductors 65 causing the motor 13 to run in a forward direction until the following action takes place.

Before the switch 46 was closed, the operating handle and contact bar 66 of one of the selector switches 44 was closed. When the motor 13 started, it revolves the shaft 16 of the preset mechanism in the direction of the arrow, Figure 3, moving the switch contact operating arm 21 therewith, but as stated above, the brake solenoid 37 was energized on the closing of the switch 46 and held energized by the switch bar 55 being closed by the energizing coil 54 applying the brake shoes 29 against the disk 30, holding the same stationary.

When the cam 40 reaches the operating arm 41 of the switch 38 associated with the contact bar 66, this switch 38 will close the electric circuit through the secondary coil 67, conductor 70, through the coil 71 of the relay 48, through the contact bar 66, one of the conductors 68, limit switch 38, conductor 69 back to the secondary coil 67 of the transformer 47. When the solenoid 71 of the relay 48 is energized it will open the switch bar 60 of the normally closed relay 48 breaking the holding circuit through the switch bar 55 of the holding relay 49 which in turn demagnetizes the coil 54 opening the switch bars 55 and 56. This also opens the circuit through the brake solenoid 37, releasing the brake shoes 29 from the face 30 of the disk 19, referring to Figure 3, this allows the coil spring 23 to cause the stop 22 of the disk 19 to catch up to the arm 21 ready for a new start on the next preset operation.

When the relay coil 54 of the holding relay 49 was demagnetized by the opening of the switch bar 60 of the relay 48, the switch bar 56 of the holding relay 49 was also allowed to open. This cuts off the electric supply from the conductors 59 and 61 through the conductors 62 and 63 demagnetizing the coil 64 of the relay 42, allowing the same to open disconnecting the power circuit through the motor 13, stopping the entire mechanism.

If it is desired to cut the same thickness of cant from the log, as described above, all that is necessary to do is to contact the switch button 46 and the above cycle will again be repeated, but if it is desired to cut a thicker cut of cant from the log, one of the switches 44 to the right of that first used will be closed, if a thinner cant is to be removed from the log, the selecting of the switches 44 would be to the left of that first used.

When it is desired to retract the knees 11 of the carriage C, the sawyer will operate the switch lever 45A of the switch 45 in the direction of the arrow. This will close the contacts 72, closing electric circuit through the coil 73 of the reversing relay 43, closing the switch bars 74 completing an electric circuit through the electric motor 13, reversing the direction of the set shaft 12 and receding the knees 11 of the carriage C.

The sawyer may also operate the knees 11 of the car-

riage C from the switch lever 45A by moving the same in the opposite direction of the arrow closing contacts 75, delivering energy from a conductor 76 into a conductor 77, conductor 63 to the coil 64 of the relay switch 42 causing the motor to travel in a forward direction but under manual control from the switch 45.

In the operation of the set works, it is very important that the motor 13 comes to an abrupt stop so that there will be no overrun of the movement of the knees 11 of the carriage C towards the saw line. This is accomplished by a plugging switch 80, referring to Figure 5. This plugging switch is driven from the shaft 81 of the motor 13, referring to Figure 1.

As the motor 13 rotates, it rotates a magnet 82 within a non-magnetic ring 83 of the plugging switch 80, tending to rotate the ring 83 in the direction of the arrow, thus pulling the contact arm 84 towards the contact 85 against the tension of the spring 86. Engagement of the contact arm 84 and contact 85 will close an electric circuit from the line L1 through the normally closed switch bar 87 of the relay 42, and through conductor 88, contact arm 84 into the contact 85, through conductor 89 and through conductor 90 into the coil 73 of the reversing switch 43 closing the reversing switch 43, directing a counter electro motor force into the motor 13 opposing its tendency to coast after the relay switch 42 has been opened.

When the revolutions of the motor 13 have reduced to a predetermined minimum, the plugging switch 80 will open the above described circuit allowing the reversing switch 43 to open. When the motor 13 is run in reverse for receding the knees 11 of the carriage C, the plugging switch 80 will have no effect as it will tend to rotate in the opposite direction of the arrow against the stop 91, which is an open circuit.

From the above description, it can be understood how the knees 11 of the carriage C can come to a rest at a preset position through this new and improved presetting device for sawmill carriages.

Having thus described the preferred embodiment of the invention, it should be understood that numerous structural modifications and adaptations may be resorted to without departing from the scope of the appended claims.

What is claimed is:

1. A preset for sawmill carriages of the type having laterally moveable knees actuated by an electric motor comprising, a control shaft, means extending between said control shaft and said electric motor for driving said control shaft upon energization of said motor, a disk journaled on said control shaft, a brake arm pivotally mounted adjacent said disk in confronting relation to one face of said disk, a brake shoe mounted on said brake arm in position to contact the face of said disk, means associated with said brake arm for moving said brake arm to brake applying position, a plurality of peripherally mounted switches on said disk, an actuating arm extending radially inwardly from each of said switches, a cam secured to said shaft and adapted to successively engage the actuating arm of each of said switches, an adjustable stop secured to said disk and adapted to engage said cam, means normally biasing said stop and said cam into engagement, a plurality of controlled switches associated respectively with each of said first mentioned switches, an actuating switch for controlling the supply of electric energy to said motor, and means for simultaneously actuating said means for pivoting said brake arm and said actuating switch for said motor.

2. A device as claimed in claim 1 wherein said simultaneously actuating means comprises a plurality of solenoid operated switches and a manually controlled master switch.

3. A device as claimed in claim 1 wherein the means connecting said control shaft to said electric motor includes a chain and sprocket transmission.

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4. A device as claimed in claim 1 wherein a housing is mounted on said carriage, and said control shaft, said disk, said brake arm, said actuating means for said brake arm and said cam are all positioned within said housing.

5. A device as claimed in claim 1 wherein said brake arm includes a pair of parallel bars and means connecting said bars extends integrally therebetween.

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