

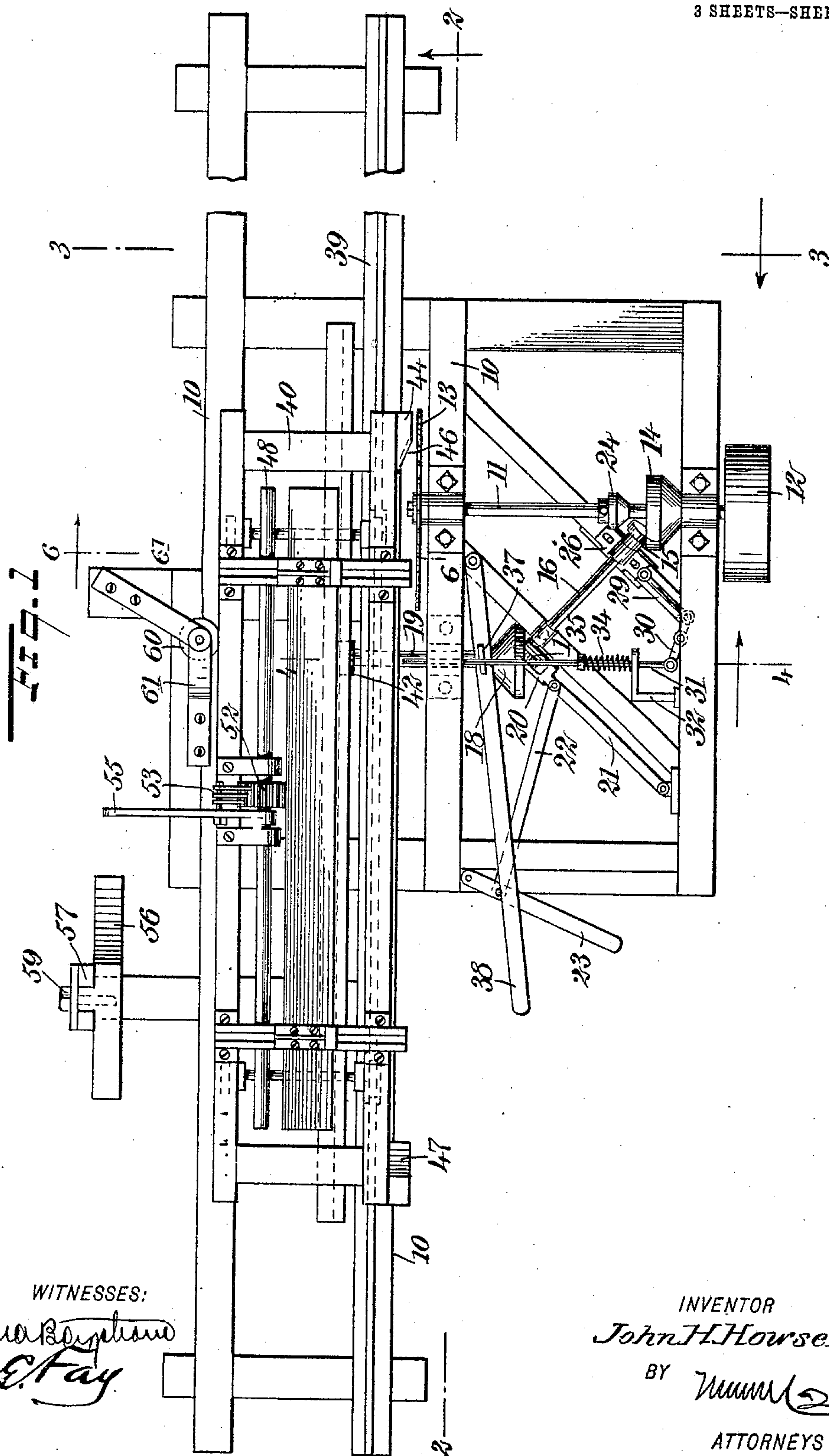
No. 835,356.

PATENTED NOV. 6, 1906.

J. H. HOWSER.
SAWMILL.

APPLICATION FILED NOV. 20, 1905.

3 SHEETS—SHEET 1.



WITNESSES:

John R. Bynum
A. E. Fay

INVENTOR

John H. Howser

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ATTORNEYS

No. 835,356.

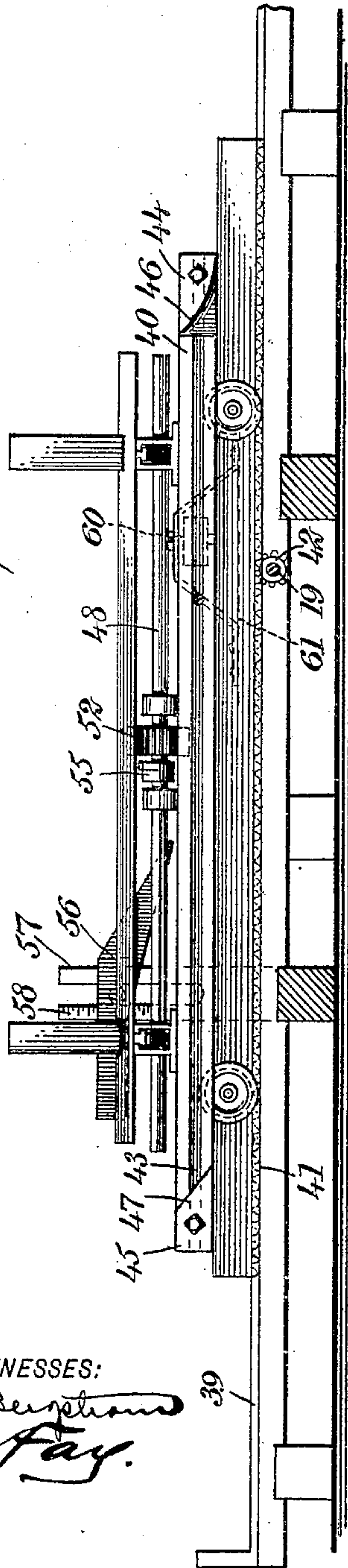
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3 SHEETS—SHEET 2.

Fig. 2



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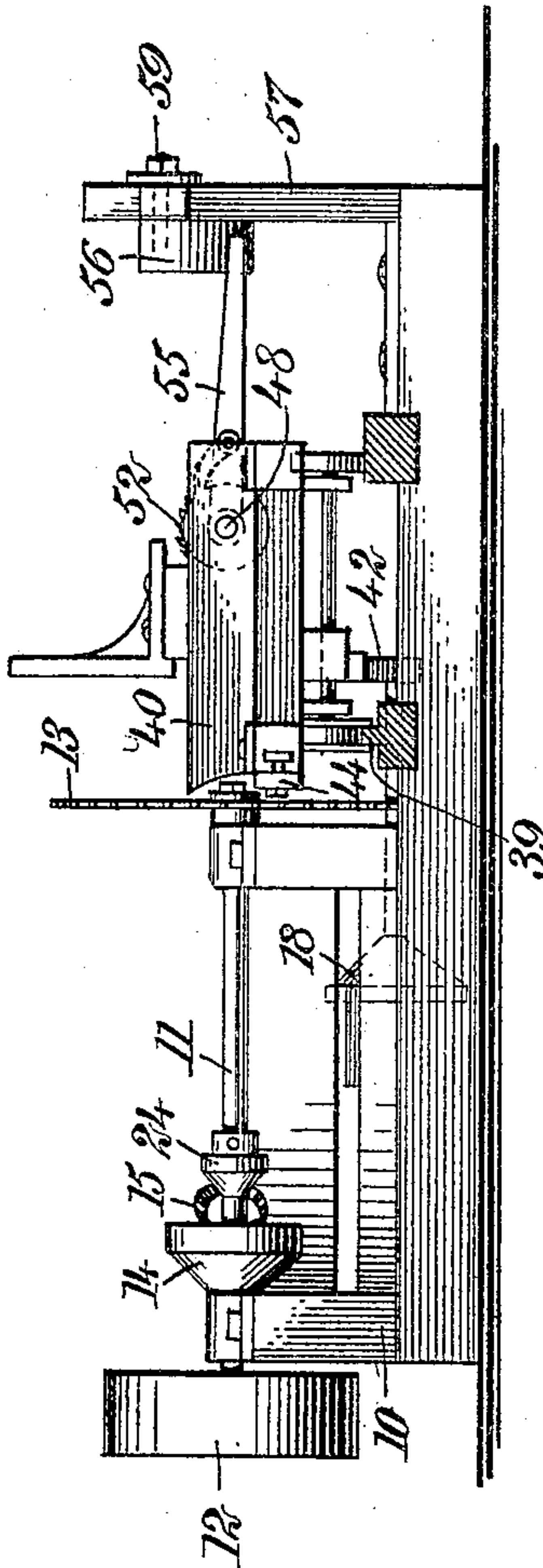


Fig. 3

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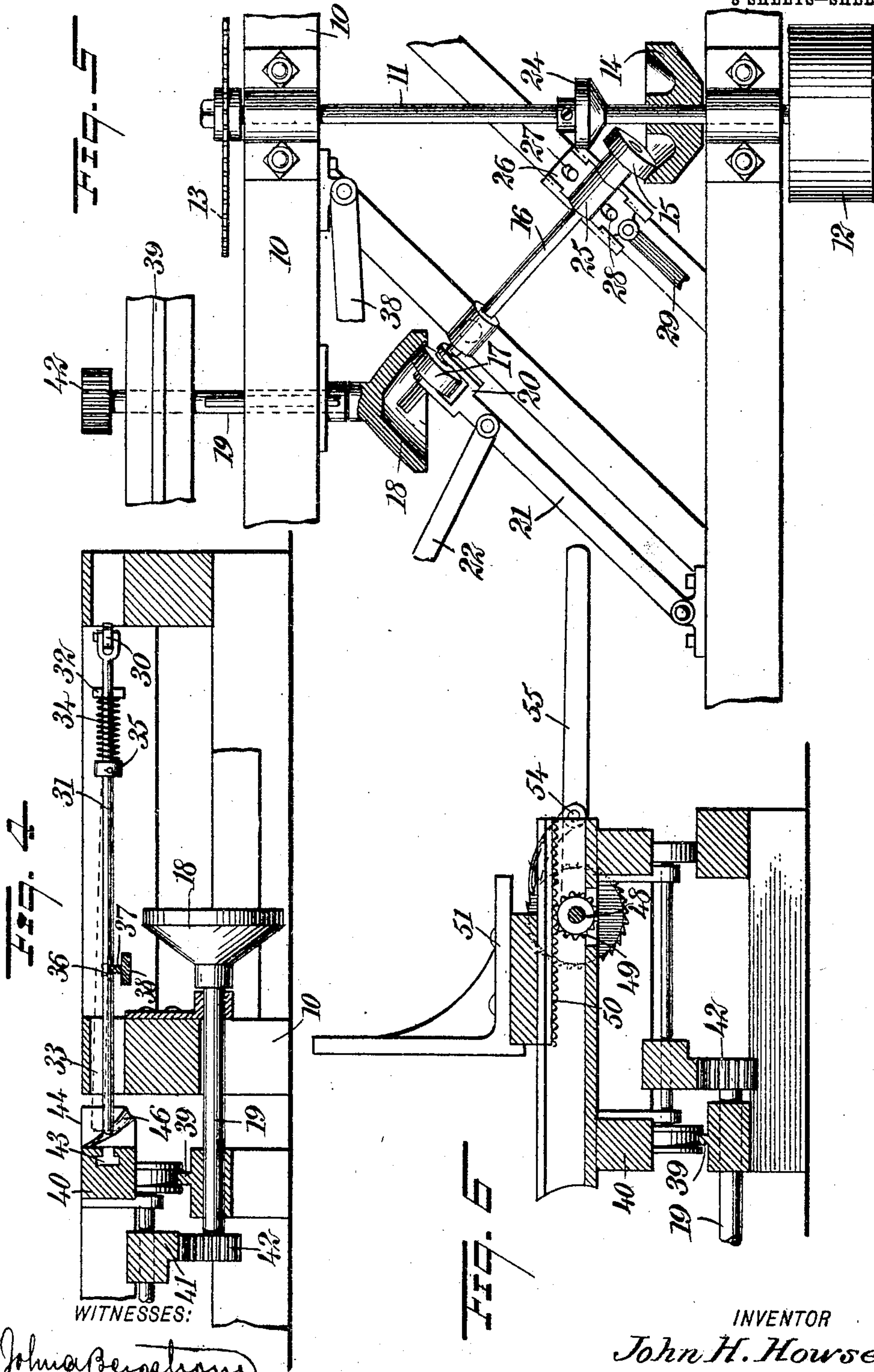
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3 SHEETS—SHEET 3.



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John H. Howser
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UNITED STATES PATENT OFFICE.

JOHN H. HOWSER, OF DAWSONVILLE, GEORGIA.

SAWMILL.

No. 835,356.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed November 20, 1905. Serial No. 288,191.

To all whom it may concern:

Be it known that I, JOHN H. HOWSER, a citizen of the United States, and a resident of Dawsonville, in the county of Dawson and State of Georgia, have invented a new and Improved Sawmill, of which the following is a full, clear, and exact description.

My invention relates to the operating mechanism of a reciprocating carriage such as is used ordinarily in sawmills. Many parts of the invention, however, are capable of use in other structures of a similar nature.

The principal objects of the invention are to provide for automatically reversing a reciprocating carriage at each end of its stroke, so connected with other operating parts that the reversing means will not interfere with the operation of a hand-operated means for stopping and reversing the carriage, and also permitting a saw when employed in a sawmill to rotate continuously and to be driven from the same source of power as the means for driving the carriage.

My invention further comprises means for shifting a log upon the carriage at the end of the stroke, so as to provide for automatically feeding the log laterally and cause the saw to take off boards of the same thickness at each reciprocation of the carriage, said means being adjustable for an obvious purpose.

Further objects of the invention relating mainly to improvements in details of the mechanism mentioned above will appear below.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan of a sawmill constructed in accordance with the principle of my invention. Fig. 2 is a sectional view of the same on the line 2 2 of Fig. 1. Fig. 3 is a sectional view on the line 3 3 of Fig. 1, showing most of the device in end elevation. Fig. 4 is a sectional view on the line 4 4 of Fig. 1 through a part of the operating and reversing gear. Fig. 5 is a plan of a portion of the same with parts appearing in section, and Fig. 6 is a sectional view on the line 6 6 of Fig. 1.

I have shown a frame 10, on which is journaled a main shaft 11, driven by a pulley 12 or in any other convenient manner and provided with a saw 13 or other tool for performing the desired operation. For the purpose of transmitting power from this shaft it is shown as being provided with a friction-wheel

14, having its operating-surface preferably upon the inside and conical in shape. With the surface of this engages a second friction-wheel 15, mounted on a shaft 16. On this shaft is keyed a friction-wheel 17, engaging in a cone or cup 18 for driving an operating-shaft 19. In order to provide for varying the speed of operation of the shaft 19, the wheel 17 is reciprocatingly mounted on the shaft 16, so that it can slide out again along the operating conical surface of the wheel 18. In order to provide the necessary adjustments, a fork 20 is provided straddling the wheel 17 and mounted on a pivoted arm 21, so as to move back and forth and manipulate the wheel 17. Connected with this arm is a link 22, which is operated by a hand-lever 23, pivoted on the frame 10.

For the purpose of reversing the operation of the shaft 19 I have shown a friction-cone 24 on the shaft 11 at a convenient distance from the cone 14, and a bearing 25 for the shaft 16 is mounted on a slide 26, which is provided with elongated slots 27, engaging pins 28 on the frame 10. Obviously the reciprocation of this slide will cause the wheel 15 to engage either the wheel 14 or the wheel 24, and the direction of rotation of the shafts 16 and 19 will be correspondingly reversed. The size of the cone 24 is such that the speed in the reverse direction is less than the direct speed. For manipulating the slide 26 I have shown a link 29, connected with a lever 30, which is operated by a reciprocating rod 31. This rod is guided in a frame 32 and by a vertical slot 33 in the frame 10 and projects beyond the outer surface of the latter. It is held in that position by a spring 34 engaging the frame 32 and the collar 35 on the rod. The rod is also provided with a notch or perforation 36, in which is adapted to engage a pin 37 on an operating-lever 38. This operating-lever is designed for manipulating the reversing mechanism by hand at any desired time. It is also intended to bear against the surface of the frame with sufficient force to be held by friction in any position in which it is placed, so that it will not of itself move by the operation of the machine. The rod 31 is vertically movable in the slot 33 a sufficient distance to cause the notch 36 to be disengaged from the pin 37. This is done in order that the reversing mechanism may be operated automatically. The manner in which this result is secured will now be described.

As is usually the case in sawmills using modern forms of carriages, I prefer to employ a track 39 for a reciprocating carriage 40. On this carriage is mounted a longitudinal rack 41, meshing with a gear or pinion 42 on the shaft 19. The manner in which the operation of the shaft will reciprocate the carriage is obvious. Upon the carriage, toward the operating mechanism, is a groove 43. Adjustable along this groove are a pair of blocks 44 and 45, having cam-surfaces 46 and 47, respectively. These blocks project toward the frame 10 a sufficient distance to engage the end of the rod 31 which projects beyond that frame. The movement of the carriage in a direction to the left of the form shown in Fig. 1 will cause the cam-surface 46 to engage the end of the rod 31. This cam-surface is of such a shape as to force the rod inwardly to throw the wheel 15 into engagement with the wheel 24 and at the same time force the rod down so that its notch will engage the pin 37 on the lever 38, which, if in the position for operating the carriage, will hold the rod 31 and prevent the spring 34 from moving it into its forward position. Consequently the carriage will be reversed and moved back until the cam-surface 47 engages the end of the rod. The effect of the operation of the cam-surface is to lift the rod in the slot, and consequently disengage the notch of the rod from the pin 37, and then the spring 34 is free to act to force the rod outwardly and remove the wheel 15 from the wheel 24 and engage it with the wheel 14, so as to move the carriage forward again.

It will be obvious that the operating-lever 38 and also the speed-changing lever 23 can be manipulated during any part of the above-described operation and that the reversing mechanism does not interfere with it. It will also be obvious that the blocks 44 and 45 can be adjusted to any desired positions along the carriage in accordance to the length of log which is being sawed.

Like all of the modern sawmill-carriages, this carriage is provided with a set-shaft 48, this set-shaft having pinions 49 engaging with racks 50 for operating the knees 51, which move the log toward the saw. On this set-shaft is a ratchet-wheel 52, with which engage pawls 53, mounted on a shaft 54. A lever 55 is also connected with this shaft, and in the path of this lever is mounted a cam 56, having an inclined surface to force the lever upwardly, and consequently turn the ratchet-wheel 52 and shaft 48 a certain amount near the end of each reciprocation of the carriage. It will be understood that the cam 56 can be located in any convenient position for performing the operation at the desired time, and in order that it may be adjusted and that the amount of feed can be regulated and readily ascertained I have shown it as mounted upon a bracket 57, which is provided with a scale

58, the cam being adjustable up and down this scale by loosening or tightening a screw or bolt 59. I have also shown a guide-wheel 60, mounted on brackets 61, for assisting in guiding the carriage along the track.

The operation of the device will be clearly understood from the above description and need not be specified in further detail. It will be seen that by constructing a mill in accordance with the principle illustrated above, whether in the form shown or not, an efficient reversing mechanism is provided which can be operated by hand or automatically, the said operations being independent of each other and not interfering with the operation of any of the parts of the machine; furthermore, that the feed-changing device is also independently operated and that a log can be set over toward the saw an equal distance at each stroke and a distance that can be measured and read upon the scale 58. The simplicity and effectiveness of the whole apparatus are obvious.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A sawmill having a carriage, means for moving the carriage, mechanism connected with part of the carriage-moving means to shift the position of the same to reverse the motion, the said mechanism including means for normally holding said part of the carriage-moving means in position to move the carriage in one direction, an adjustable device on the carriage for engaging and moving said mechanism to reverse the motion, a locking device for holding the said mechanism in the position to which it is moved, and an adjustable device on the carriage for releasing the locking device.

2. A sawmill having a carriage, means for reciprocating the carriage, mechanism connected with a shiftable part of the carriage-reciprocating means and normally holding said part in position to move the carriage in one direction, a block on the carriage for engaging and moving said mechanism to shift the said part of the carriage-reciprocating means to reverse the motion, a locking means for engaging said mechanism when moved from its normal position by said block, and a block on the carriage for releasing said mechanism from the locking means to permit said mechanism and the part of the reciprocating means moved thereby to return to normal position.

3. A sawmill having a carriage, means for reciprocating the carriage, a spring-controlled mechanism connected with part of the carriage-reciprocating means and normally holding said part in position to move the carriage in one direction, a block on the carriage for engaging said mechanism and moving the same against the tension of the spring to change the position of said part of

the carriage-reciprocating means and reverse the motion, locking means for holding said mechanism against the tension of its spring, and a block on the carriage for releasing the said mechanism from the locking means to permit the spring to return the parts to normal position.

4. In a sawmill, the combination of a driving-shaft, a second shaft, a carriage operable by said second shaft, means for transmitting motion from the driving-shaft to said second shaft in either direction, said means including a shiftable part, mechanism connected with said shiftable part for shifting the same, a spring normally pressing said mechanism in one direction, adjustable means on the carriage for engaging said mechanism and moving it against the tension of its spring, and a hand-operated device for controlling said mechanism and detachable therefrom, the said hand-operated device locking said mechanism in the position to which it is moved, the said mechanism when released from the hand-operated device, returning to normal position under the action of the spring.

5. In a mill the combination of a driving-shaft, a second shaft, a carriage operable by said second shaft, means for transmitting motion from the driving-shaft to the second shaft in either direction, the said means including a shiftable part, mechanism connected with said shiftable part for shifting the same to reverse the motion of said second shaft, means on the carriage for actuating said mechanism, a spring connected with said mechanism for normally holding the same in position to be acted on by said means on the carriage, a hand-lever for operating said mechanism, and detachable therefrom, the said lever when connected with the mechanism holding the same against the tension of the spring, and means on the carriage for releasing the mechanism from said lever to permit the spring to return the parts to normal position.

6. In a mill, the combination of a main shaft, a second shaft, a carriage driven from the second shaft, means for transmitting motion from the main shaft to the second shaft in either direction and including a shiftable part, mechanism connected with said shiftable part of the motion-transmitting means, and comprising a reciprocable rod having a notch, a lever having a pin adapted to engage said notch, means carried by the carriage and actuating the rod in one direction to move the same to shift the position of the shiftable part of the motion-transmitting means, means carried by the carriage for automatically disengaging the rod from the pin, and means for forcing the rod in the opposite direction.

7. In a sawmill, the combination of a main shaft for supporting a saw, a second

shaft having a gear connected therewith, a carriage having a rack engaging said gear, means for transmitting motion from the main shaft to said second shaft in either direction and including a shiftable part, mechanism connected with the said shiftable part to shift the same and comprising a lever connected by a link with said shiftable part, a rod mounted to reciprocate and connected at one end with the said lever, a spring for normally holding said rod in position to apply the power to turn the said second shaft in the forward direction, means on the carriage for engaging the other end of said rod and moving the rod against the tension of the spring to reverse the movement of said second shaft, and a hand-operated device for controlling said mechanism and detachable therefrom, the said hand-operated device locking said rod in the position to which it is moved, the said rod when released from the hand-operated device returning to normal position under the action of the spring.

8. In a mill, the combination of a main shaft, a second shaft having a gear thereon, a reversing mechanism for the second shaft comprising a rod having a notch, a hand-operated means for controlling the reversing mechanism comprising a lever having a pin adapted to engage said notch, a carriage operable by said gear, adjustable means on said carriage for engaging the rod and moving the notch thereof out of engagement with said pin, and means for automatically operating the reversing mechanism when the rod is disengaged from the pin.

9. In a mill, the combination of a main shaft, a second shaft having a gear thereon, a reversing mechanism for the second shaft comprising a rod having a notch, a hand-operated means for controlling the reversing mechanism comprising a lever having a pin adapted to engage said notch, a carriage operable by said gear, adjustable means on said carriage for engaging the rod and moving the notch thereof out of engagement with said pin, means for automatically operating the reversing mechanism when the rod is disengaged from the pin, and adjustable means on the carriage for engaging the rod and moving it into such position that the pin will enter the notch.

10. In a sawmill, the combination of a main shaft, a second shaft, a reversing device for the second shaft comprising a reciprocable rod having a notch, means for normally forcing the rod in a direction to apply the power, a hand-operated means for controlling the reversing device having a pin for engaging said notch and holding the rod in fixed position, a carriage operable by the second shaft, means on the carriage for engaging the rod and moving it to reverse the movement of the second shaft and to carry the rod to position for engagement by said pin, and means

on the carriage for engaging the rod and moving it to disengage the notch from the pin.

11. In a sawmill, the combination of a
5 main shaft, a second shaft, a carriage oper-
able by the second shaft, a reversing device
for the second shaft comprising a reciprocable
rod having a notch, means for normally forc-
ing the rod in a direction to apply the power
10 to move the carriage forward, a hand-oper-
ated means for controlling the reversing de-
vice having a pin for engaging said notch
means on the carriage for engaging the rod
and moving it to reverse the motion of the
15 second shaft, the said means moving the rod
into such position that the pin will engage
the notch and hold the rod in position to be
actuated by the said hand-operated means,
and means on the carriage for engaging the
20 rod and moving it to disengage the notch from
the pin.

12. In a mill, the combination of a revers-
ing device, comprising a reciprocable and
vertically-movable rod, a movable carriage,
25 means for normally forcing the rod toward
the carriage, adjustable means on the car-
riage for forcing the rod away from the car-
riage and downwardly, means for locking the
rod against movement toward the carriage
30 when the rod is forced away from the car-
riage and downwardly, and adjustable means
on the carriage for forcing the rod upwardly,
to unlock the rod.

13. In a mill, the combination of a revers-
35 ing device, comprising a reciprocable and
vertically-movable rod, a movable carriage,
means for normally forcing the rod toward
the carriage, adjustable means on the car-
riage for forcing the rod away from the car-
riage and downwardly, a locking device hav-
ing a pin for engaging a notch in the rod to
lock the rod against movement toward the
carriage, and adjustable means on the car-
riage for forcing the rod upwardly to disen-
40 gage the notch from the pin.

14. A sawmill having a carriage, means for
reciprocating the carriage, mechanism con-
nected with a shiftable part of the carriage
reciprocating means to shift the position of
50 the same to reverse the motion, the said
mechanism comprising a lever connected by
a link with said shiftable part, a rod mounted

to reciprocate and connected with the said
lever, a spring normally pressing the rod in
one direction, means on the carriage for en- 55
gaging the rod and moving it against the
tension of its spring, means for locking the
rod in the position to which it is moved, and
means on the carriage for releasing the rod
from the locking means. 60

15. A sawmill having a carriage, means for
reciprocating the carriage in either direction,
including a shiftable part, a rod connected
with the said shiftable part, the said rod be-
ing movable longitudinally and vertically, a 65
spring normally pressing the rod in direction
of the carriage, a cam carried by the carriage
and adapted to engage the end of the rod to
force the same longitudinally against the
tension of the spring and also downwardly, 70
means for holding the rod against the tension
of the spring, and a second cam for moving
the rod upwardly and disengaging it from the
holding means.

16. A sawmill comprising a frame, a main 75
shaft supported in the frame and carrying a
saw, a second shaft, a carriage operable by
said second shaft, means for transmitting
motion from the main shaft to said second
shaft in either direction and including a 80
shiftable part, a longitudinally-movable rod
connected at one end with said shiftable part,
the said rod extending at its free end through
a vertical slot in the frame and movable verti-
cally in said slot, a spring for normally forc- 85
ing the rod toward the carriage, means on the
carriage for forcing the rod inwardly away
from the carriage and against the tension of
the spring, and also forcing the rod down-
wardly, a hand-operated means for control- 90
ling the movement of the rod, the said means
engaging the rod when the latter is forced
inwardly and downwardly to hold the same
against the tension of the spring, and means
on the carriage for forcing the rod upwardly 95
to disengage the same.

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

JOHN H. HOWSER.

Witnesses:

JASPER N. NEWTON,
CHARLES I. ROBINSON.