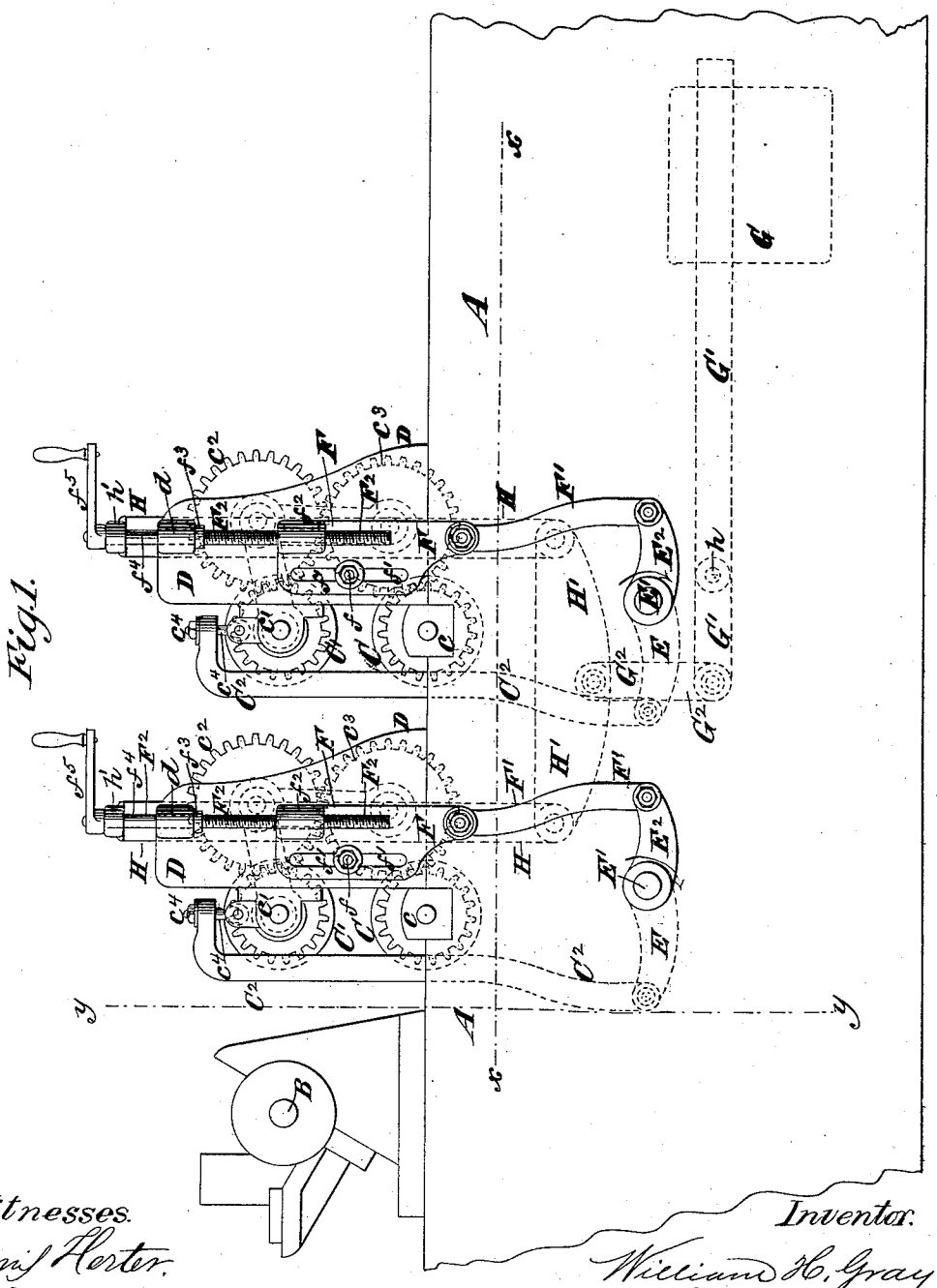
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W. H. GRAY.

WOOD PLANING MACHINE.

No. 358,972. Patented Mar. 8, 1887.

Fig. 1.



Witnesses.
Emil Harter.
C. L. Sundgren

Inventor.
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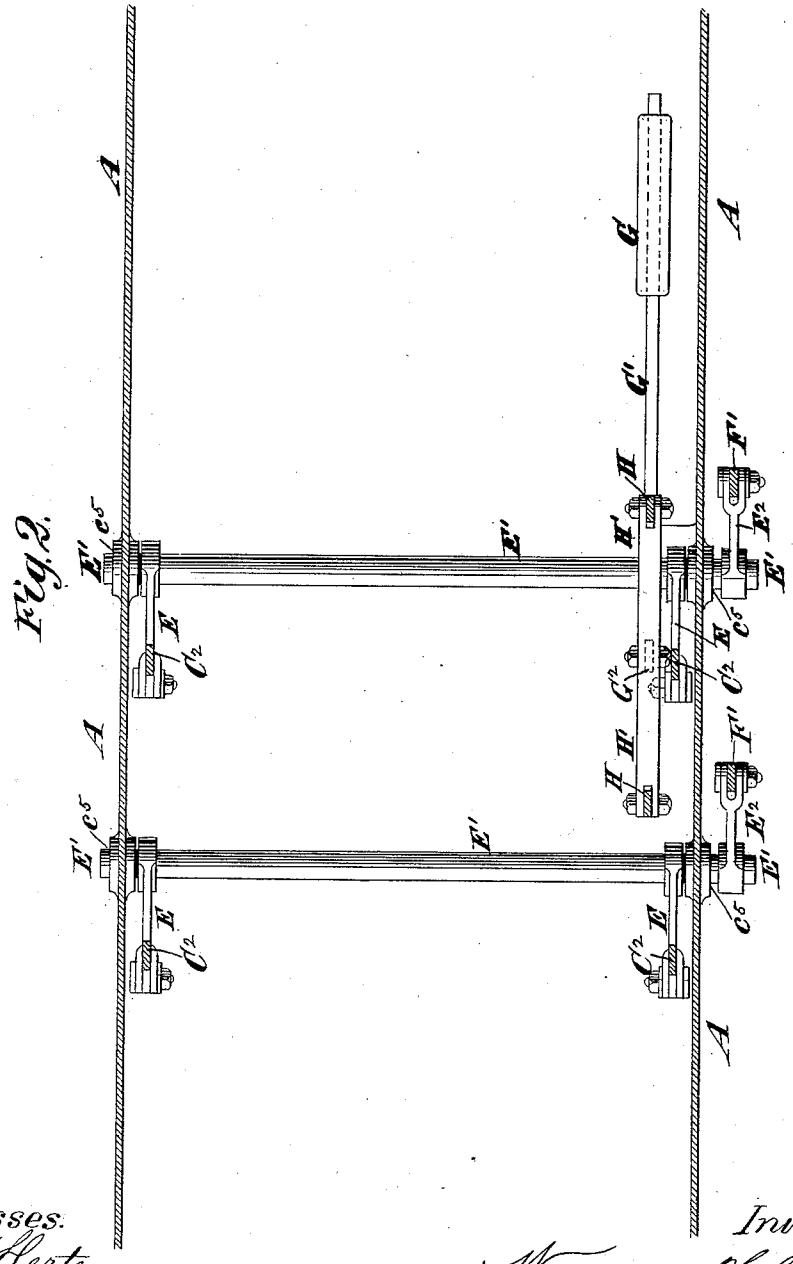
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Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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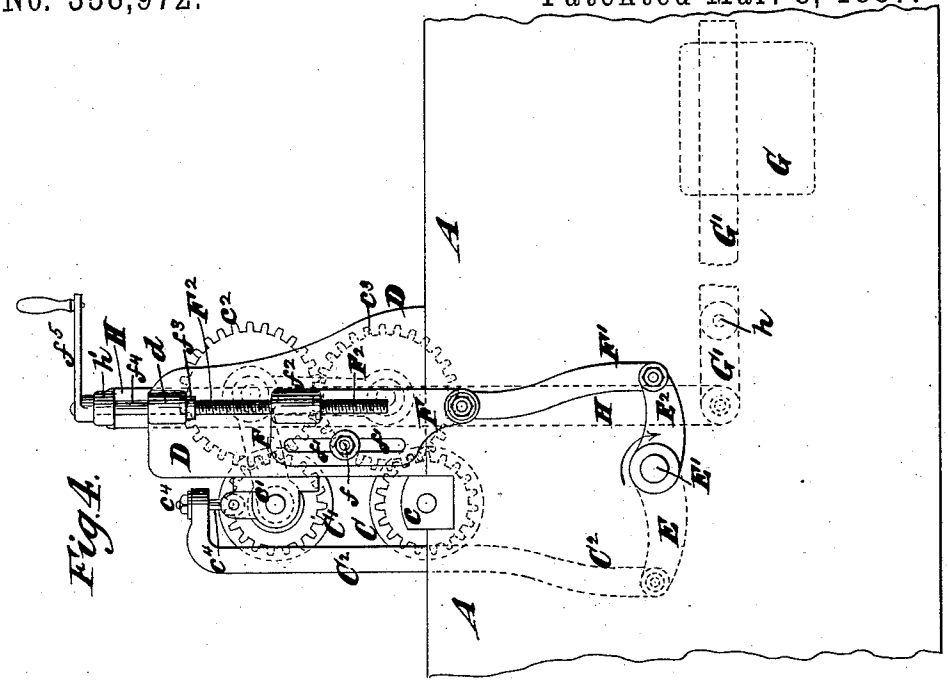


Fig. 4.

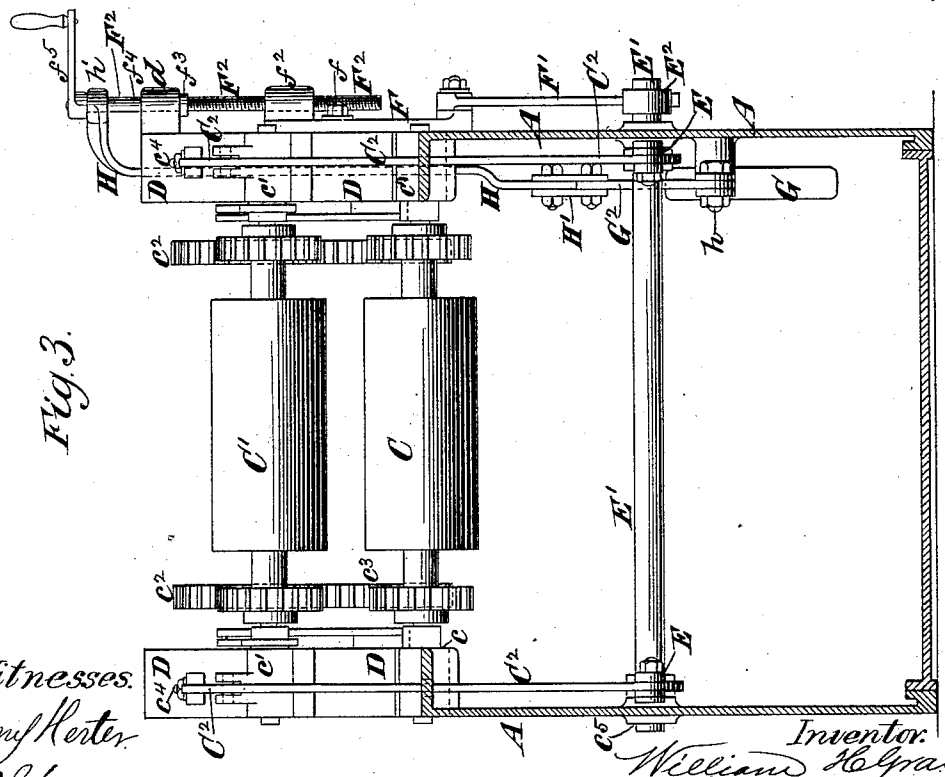


Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM H. GRAY, OF GREEN POINT, NEW YORK, ASSIGNOR TO THE GLEN COVE MACHINE COMPANY, (LIMITED,) OF SAME PLACE.

WOOD-PLANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 358,972, dated March 8, 1887.

Application filed October 27, 1886. Serial No. 217,300. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. GRAY, of Green Point, Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Wood-Planing Machines, of which the following is a specification.

In wood-planing machines the movable boxes for the upper feed roll or rolls have weights applied to them which offer a resistance to any rising movement of said boxes and cause the pressure of the roll upon the lumber. Means are also employed whereby the said roll-boxes may be raised and lowered to suit wide variations in the thickness of lumber.

In my United States Letters Patent dated April 13, 1886, the movable boxes of the upper feed-roll are connected by rods with arms extending from a rock-shaft, and said rock-shaft also has an arm to which are attached connections for raising and lowering the roll-boxes positively. In that patent the rock-shaft is mounted in bearings which provide for its rising-and-falling bodily movement, and weights are applied to the rock-shaft to resist its rising movement. The rock-shaft is held by the weights normally upon the bottoms of its slotted bearings, and through the connections described the boxes may be raised and lowered to suit the thickness of lumber to be planed. When lumber is introduced beneath the upper feed-roll, the rock-shaft will be raised from its bearings and the upper roll will be pressed upon the lumber with a force due to the weights.

According to my present invention I mount the rock-shaft in bearings in which it has only a turning movement, and I provide the rock-shaft with a third arm, to which is attached a system of connections, including an adjusting device for turning the rock-shaft to raise and lower the boxes; and I employ with said adjusting device a bearing or abutment which permits the automatic bodily movement of the said device in one direction as the boxes are raised by the lumber passing under the roll, but prevents the bodily movement of said adjusting device in the other direction. With such a combination of parts the weights are connected with the system of connections whereby the rock-shaft is turned, instead of being connected with the rock-shaft, as in my former patent. The system of connections whereby the rock-shaft is turned manually to raise the roll-boxes may advantageously consist of a slide connected by a rod with the third arm upon the rock-shaft, and this slide is shifted by a screw fitted to a bearing which forms a fixed abutment to prevent lengthwise movement of the screw in one direction, but permits the free lengthwise movement of the screw in the other direction. The screw may be provided with a collar which bears upon the under side of said bearing, and said screw may have connected with it a downwardly-extending rod to which a weight is connected in such manner as to produce an upward thrust upon the screw through said rod. Where two pairs of feed-rolls are employed, the two rock-shafts, each connected with the movable boxes of an upper roller, are turned to raise and lower the upper rolls by means of two separate systems of connections, which may each advantageously consist of a slide connected by a rod with the third arm of the rock-shaft, and a screw whereby the slide is moved and which is fitted to a bearing which permits its free lengthwise movement in a downward direction. With such a combination of parts the rods which extend downward from the two screws may be connected at their lower ends with a beam or bar, and this beam or bar is connected with a weighted lever in such manner as to produce an upward pressure upon the two rods, and through them upon the screws with which they are connected.

The invention consists in novel combinations of parts, which are hereinabove referred to, and which are hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of such portions of a wood-planer as are necessary to illustrate my invention, showing two pairs of feed-rolls and a single weight, whereby the upper rolls of both pairs are weighted. Fig. 2 is a horizontal section upon about the plane of the dotted line *x x*, Fig. 1. Fig. 3 is a transverse section upon about the plane indicated by the dotted line *y y*, Fig. 1, looking toward the right from the said

line; and Fig. 4 is a side elevation similar to Fig. 1, but showing a single pair of rolls, and a weighted lever for weighting the upper roll of the pair.

Similar letters of reference designate corresponding parts in all the figures.

Referring first to Figs. 1, 2, and 3, A designates the main side frames of the machine, and B the upper cutter-head spindle, to which my invention in no wise relates. In front of the cutter-head spindle B are two pairs of feed-rolls—C designating the lower roll, and C′ the upper roll, of each pair. The lower roll, C, of each pair is mounted in fixed boxes c, and the upper roll, C′, is mounted in movable boxes c', which are capable of a sliding movement upward and downward upon the roll-stands D, which are supported upon the main side frames, A. The lower and upper rolls, C C′, of each pair may be connected, by expansion-gears c^2 c^3, with each other in any well-known manner. The upper roll-boxes, c', of each upper feed-roll, C′, are connected by rods C^2 with arms E, which project in the same direction from a rock-shaft, E′, near opposite ends of said rock-shaft, and just within the side frames, A. The upper end of each rod C^2 may be connected with the box c' by means of an eyebolt, c^4, which is pivoted to the box and secured in the upper end of the rod.

The rock-shaft E′, which pertains to each pair of feed-rolls, is fitted to bearings C^5 in opposite side frames, A, or secured to said side frames, and these bearings are of simple cylindric form, and provide only for the turning movement of the rock-shafts E′, any bodily rising-and-falling movement of the rock-shafts being prevented by the bearings.

Each rock-shaft has secured upon it a third arm, E^2, which, as here shown, extend in the opposite direction to the arms E, and is arranged outside the side frame, A, and by means of a suitable system of connections attached or leading to the arm E^2 the rock-shaft E′ may be turned and the movable boxes c' of the upper roll raised or lowered, as desired. A separate system of connections is employed for adjusting the boxes of each upper roll, C′, and in this example of my invention each system of connections comprises a slide, F, which is connected by a rod, F′, with the third arm, E^2, of the rock-shaft, and which is placed against the flat outer side of the roll-stand D. The slide F may be guided in its upward and downward movements by a bolt and slot, f f', or by a guide of other suitable character, and the slide is moved by a screw, F^2, which, as here shown, is fitted to a nut, f^2, upon the slide, and is capable of turning in a bearing, d, which may be formed upon or secured to the upper portion of the roll-stand D. The screw F^2 is shown as provided with a collar, f^3, whereby any upward movement of the screw in the bearing d beyond the position shown in Fig. 1 is prevented; but above said bearing the screw has a long shank portion, f^4, which may slide downward within the bearing, as hereinafter described. Upon the upper end of the screw F^2 is a handle or crank, f^5, whereby it may be turned.

From the above description it will be obvious that by turning the screw in one direction the rock-shaft E′ will be turned in the direction indicated by the arrow in Fig. 1, and through the arms E and rods C^2 the movable boxes c' of the upper feed-roll will be raised, while by turning the screw F^2 in a reverse direction said boxes c' will be lowered. It will also be evident that when lumber is introduced beneath the roll C′ that roll will be raised, and through the arms E E^2 and the rock-shaft E′ the rod F′ and slide F and the screw F^2 will be lowered, the bearing d and the long shank f^4 of the screw permitting its downward movement through said bearing.

G designates a weight, which is adjustably secured upon a lever, G′, fulcrumed at h. In the present example of my invention the weight and lever G G′ are common to both sets of feed-rolls and are connected with the two systems of separate connections, whereby the upper boxes, c', of each pair of rolls may be independently adjusted. I have here represented rods H, which are connected one with each screw F^2, and which pass downward between the two sides or cheeks of the two roll-stands D upon the same side of the machine. Each rod H has its upper end portion bent or turned laterally, as shown in Fig. 3, and formed with a collar or bearing, h', receiving a screw, F^2, through it, and against which the hand-crank or handle f^5 upon the screw bears. The two rods H have connected with their lower ends a beam or bar, H′, and, as shown in Fig. 1, the rods H are connected with opposite ends of this beam or bar H′. The lever G′, I have shown as connected by a link, G^2, with the beam or bar between its ends; and it will be obvious that the lever G′ exerts an upward pressure, through the beam H′ and rods H, upon the two screws F^2 pertaining to the two pairs of feed-rolls. When lumber is introduced under the upper roll, C′, of the first pair of rolls, the point of connection of the rod H of the other pair with the beam or bar H′ constitutes a fulcrum upon which said beam or bar swings to permit the downward movement of the screw F^2 of said first pair. Consequently it will be seen that while the system of connections which leads to the arm E^2 of each rock-shaft will permit the turning of such rock-shaft in the direction of the arrow shown in Fig. 1 by the rising of the upper roll, C′, such turning of the rock-shaft, and the necessary downward movement of the screw F^2 to permit it, will be resisted by the weight G and the connections G′ G^2 H′ H. When but a single pair of feed-rolls, C C′, are employed, as shown in Fig. 4, the rock-shaft and the system of connections whereby it may be turned to raise and lower the boxes of the upper roll, C′, may be similar to those before described, and are so shown in Fig. 4. In this case, however, the rod H, which is connected with

the screw at its upper end, as before described, is at its lower end directly connected with the weighted lever G′, which is fulcrumed at *h*, and the weight G, acting through the lever G′ and rod H, produces an upward pressure upon the screw F^2, and offers a yielding resistance to the downward movement of said screw in the bearing *d*, which must be provided for to permit the rising movement of the upper roll-boxes, *c*′.

From the above description it will be seen that the screw F^2 constitutes an adjusting device connected with the third arm, E^2, on the rock-shaft, for turning said shaft to raise and lower the roll-boxes, and the bearing *d* constitutes an abutment which permits the bodily movement of the screw or adjusting device in one direction, in order to afford freedom for the raising of the roll-boxes by the lumber passing under the roll, but prevents bodily movement of the screw or adjusting device in the other direction, in order to enable the roll-boxes to be raised and lowered through the operation of the screw or adjusting device.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the upper roll-boxes, a single rock-shaft, and arms fitted to bearings which permit the turning movement only of the rock-shaft, rods connecting the roll-boxes on opposite sides of the machine with said arms, and a third arm upon the rock-shaft, of an adjusting device connected with said third arm, whereby the rock-shaft is turned in a direction to raise said roll-boxes on opposite sides of the machine, and a bearing or abutment which permits the automatic bodily movement of the said adjusting device in one direction as the roll-boxes are raised by the lumber passing under the roll, but prevents the bodily movement of said adjusting device in the other direction, substantially as herein described.

2. The combination, with the upper roll-boxes, a single rock-shaft extending transversely of the machine and provided with arms, bearings which permit the turning movement only of the rock-shaft, rods connecting the roll-boxes on opposite sides of the machine with said arms, and a third arm upon the rock-shaft, of a single system of connections attached to said third arm for turning the rock-shaft in the direction to raise said roll-boxes, and which comprises a screw and a fixed bearing wherein the screw may be turned, and which forms a fixed abutment to prevent lengthwise movement of the screw in one direction, and provides for the free lengthwise movement of the screw in the other direction to permit the raising of the roll and roll-boxes and the turning of the rock-shaft by the lumber passing under the upper roll, substantially as herein described.

3. The combination, with the upper roll-boxes, a rock-shaft and arms, rods connecting the roll-boxes with said arms, and a third arm upon the rock-shaft, of a slide connected by a rod with said third arm, a screw whereby the slide may be moved, and a bearing wherein the screw may turn, and which permits its free lengthwise movement in a direction to permit the raising of the roll and roll-boxes by the lumber, substantially as herein described.

4. The combination, with the upper roll-boxes, a rock-shaft and arms, rods connecting said roll-boxes with said arms, and a third arm on the rock-shaft, of a system of connections attached to said third arm for turning the rock-shaft in a direction to raise the roll-boxes, and which comprises a screw, a bearing wherein the screw may turn, and which provides for its free lengthwise movement to permit the raising of the roll and roll-boxes by the lumber, and a weight connected with the screw to resist such a sliding movement thereof, substantially as herein described.

5. The combination, with the upper roll-boxes, a rock-shaft and arms, rods connecting the roll-boxes with said arms, and a third arm extending from said rock-shaft in a reverse direction to the arms first named, of a system of connections attached to said third arm for turning the rock-shaft in a direction to raise the roll-boxes, and comprising a screw, F^2, a bearing, *d*, wherein the screw may turn and slide downward, a rod, H, extending downward approximately parallel with the screw, and weighted connections for producing an upward pressure through said rod H upon the screw, substantially as herein described.

6. The combination, with two pair of feed-rolls and movable boxes for the upper rolls of the two pair, of two rock-shafts provided with arms, and rods whereby the upper roll-boxes of each pair are connected with the arms of a rock-shaft, a third arm upon each rock-shaft, two separate systems of connections whereby the rock-shafts may be separately turned in a direction to raise the roll-boxes connected with them, and which provide for the further turning of the rock-shafts in the same direction to permit the raising of the upper rolls and roll-boxes by the lumber, and weighted levers common to both said systems of connections for resisting the turning of the rock-shafts by the rising movement of said boxes when lumber passes under the upper rolls, substantially as herein described.

7. The combination, with two pairs of feed-rolls and movable boxes for the upper rolls, of two rock-shafts having arms, and rods connecting the arms of each shaft with a pair of said boxes, a third arm upon each rock-shaft, two separate systems of connections leading to said third arm for turning said rock-shafts separately in a direction to raise said boxes, and each comprising a screw, and a bearing for the screw, which permits the lengthwise movement of the screw in one direction, and a weight common to both systems of connections and applied to resist the lengthwise movement of said two screws, substantially as herein described.

8. The combination, with the two pairs of

movable roll-boxes c', the two rock-shafts E', provided each with arms E, and each with a single arm, E^2, and rods C^2, connecting the roll-boxes and arms E, of slides F, and rods F', connecting them with the arms E^2, screws F^2, for adjusting said slides, bearings d for the screws, which permit their free downward movement, rods H, extending downward from the screws, and connected by a beam or bar, H', at their lower ends, and a weight and lever connected with said beam or bar for resisting downward movement of the screws, substantially as herein described.

WM. H. GRAY.

Witnesses:
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HENRY MCBRIDE.