

No. 846,828.

PATENTED MAR. 12, 1907.

J. C. CROMWELL.

STRAIGHTENING PRESS.

APPLICATION FILED JULY 14, 1906.

3 SHEETS—SHEET 1.

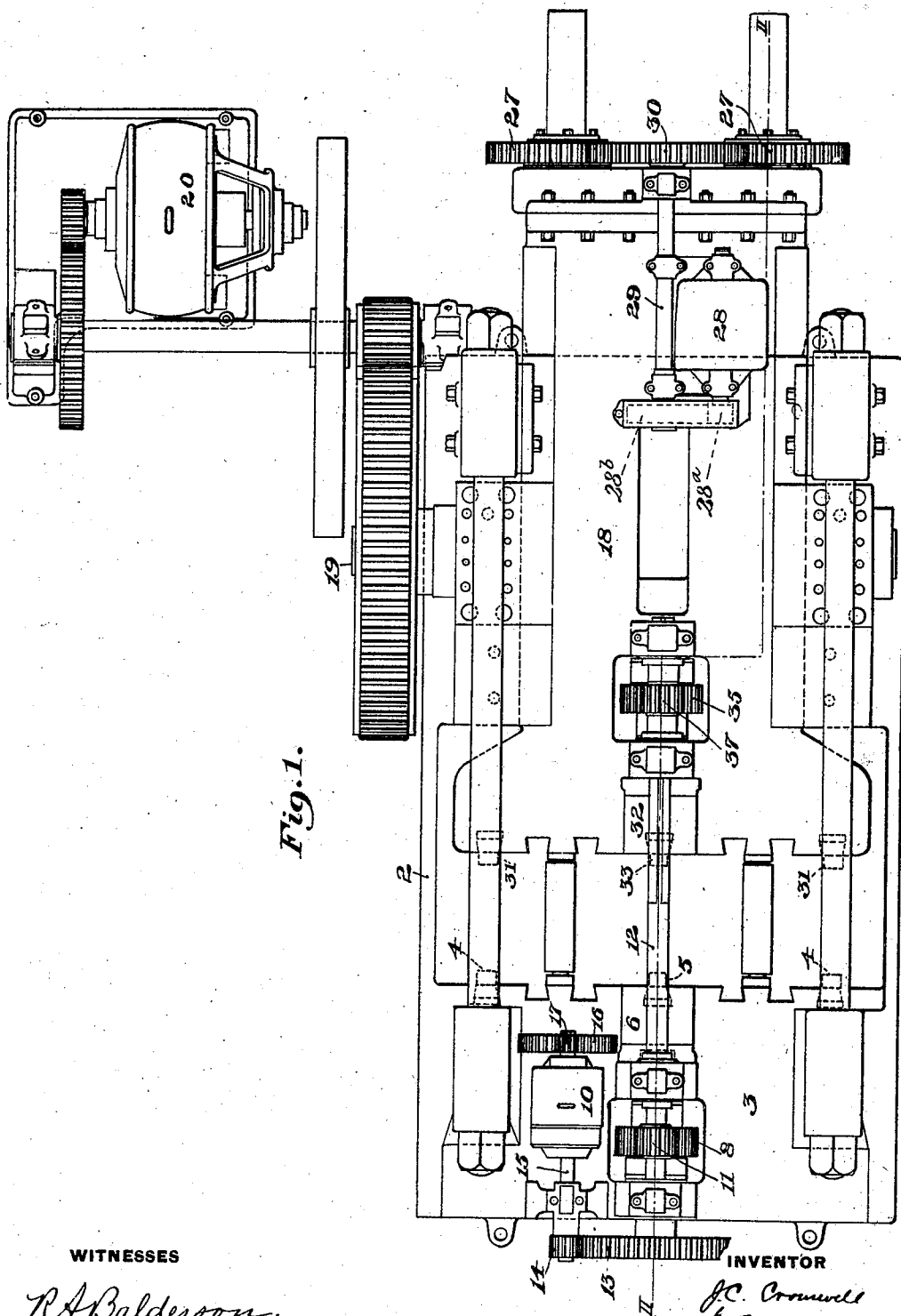


Fig. 1.

WITNESSES

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Warren W. Swartz

INVENTOR

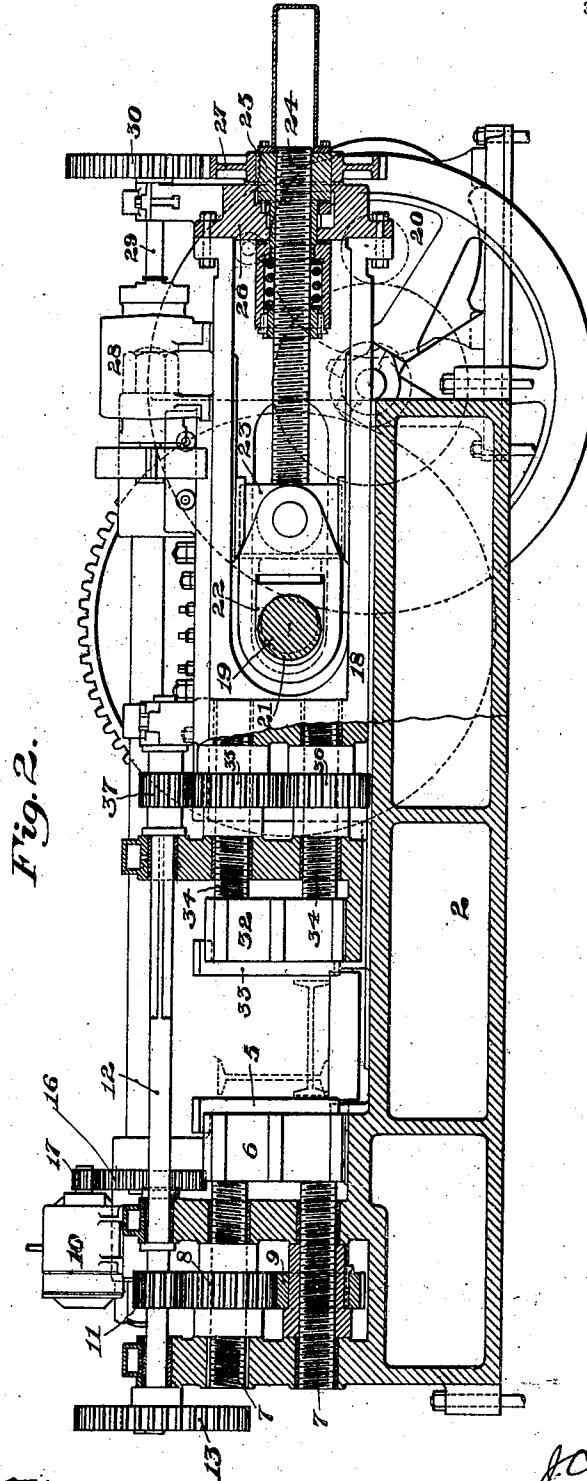
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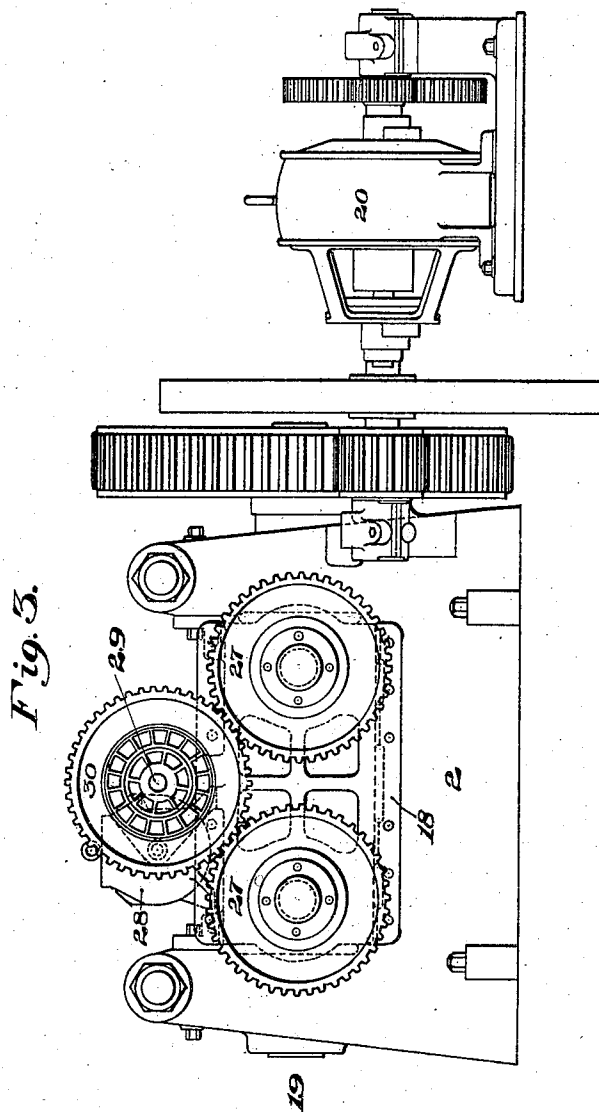
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3 SHEETS—SHEET 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN C. CROMWELL, OF CLEVELAND, OHIO, ASSIGNOR TO THE GARRETT-CROMWELL ENGINEERING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

STRAIGHTENING-PRESS.

No. 846,828.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed July 14, 1905. Serial No. 269,753.

To all whom it may concern:

Be it known that I, JOHN C. CROMWELL, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Straightening-Press, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of my improved beam-straightener. Fig. 2 is a section on line II II of Fig. 1, and Fig. 3 is an end elevation.

My invention relates to that class of straightening apparatus in which a stationary anvil is employed in connection with a reciprocating ram; and one object of the invention is to provide mechanism for adjusting the reciprocating ram during the operation of the machine.

A further object of the invention is to provide simple and improved mechanism for alternately placing movable blocks in the heads in and out of operative position, one head moving into the working position as the other head is moved out of position.

The invention further consists in the arrangement of the parts, as hereinafter more fully described and claimed.

In the drawings, 2 represents the cast-body forming the bed and frame of the machine, the stationary head being preferably cast integral therewith. This head 3 is provided on its inner face with the side stationary anvils or presser-blocks 4 4 and at its center with the vertically-movable pressing-block 5. The block 5 is removably secured within a sliding block 6, having rearwardly-extending cylindrical stems 7 7, which extend through bearings in the base-frame, their intermediate portions being screw-threaded and engaging screw-threaded holes within the hubs of the gear-wheels 8 and 9. The screw-threads are right-handed on one of the stems and left-handed on the other stem, and the gear-wheels engage each other, the upper wheel being actuated by slow-motion gearing from an electric motor 10. In the form shown this gearing consists of a pinion 11, secured to a shaft 12, having on its rear end a toothed wheel 13, engaging a pinion 14 on a counter-shaft 15. The shaft 15 is provided with a toothed wheel 16, driven by a pinion 17 on the shaft of the motor.

When the motor is energized, power will be transmitted to the toothed wheels which have the screw-threaded engagement with the stems 7, and as these gear-wheels turn in opposite directions they act as nuts to adjust the sliding block 6 back and forth. On the other portion of the bed-frame is the reciprocating ram, the frame 18 of which is reciprocated by a crank-shaft 19, which I have shown as actuated by slow-motion gearing connected to an electric motor 20. The bearings for this shaft are carried in the sides of the bed-frame, and its cranks 21 pass through yokes 22, pivoted to the heads 23 of a pair of screws 24. These screws extend through sleeve-nuts 25, which turn within bearings 26 in the reciprocating ram, each nut having a toothed wheel 27 secured thereto.

To each sleeve-nut is preferably secured a hollow front cap having at its front end a nut surrounding the screw and against which bears an internal coil-spring within the cap. The object of the coil-spring is to prevent backlash or loose motion between the nut and the screw, the spring serving to keep one side of the screw-thread in contact with one side of the threads of the nut at all times.

On the upper part of the ram-frame is supported an electric motor 28, having a pinion 28^a, engaging a toothed wheel 28^b on shaft 29, which is provided with a toothed wheel 30, intermeshing with the toothed wheels of the main screw-nuts. The threads of these main screws are both made right-handed, so that when the motor 28 is actuated the relation of the ram-frame to the crank-shaft will be gradually changed in either direction, depending upon the direction of rotation of the motor. During the reciprocation of the ram all of the parts, including the screws and the motor and connections thereto, will move with the ram.

The reciprocating ram is provided at its front end with removable anvils 31, near its ends and registering with the anvils 4, and with a central sliding block 32, having a removable presser-head 33. The sliding block 32 is provided with rearwardly-extending stems 34, which are provided with a right and left hand screw-threads engaging correspondingly-threaded holes in intermeshing toothed wheels 35 and 36, the upper of which is engaged by a pinion 37, which is splined to the extension of the shaft 12. The sliding

heads 6 and 32 are thus arranged so that when the motor 10 is actuated it will withdraw one sliding head as the other sliding head is moved forward into operative position. By changing the direction of rotation of the motor either head may be withdrawn, while at the same time the other is moved into place.

In the operation of the device the reciprocating ram is adjusted by means of the motor 28 to accord with the width of the beam to be straightened. This adjustment of the reciprocating ram does away with the necessity for any filler-piece or gag, which is ordinarily used. The ram is reciprocated in the usual manner, and to take the curve out of the beam, which curve may extend in either direction, the motor 10 may be actuated to shift the heads 6 and 32, and thus bring the proper head into operation, the other head being simultaneously withdrawn. The positions of the heads can be slowly adjusted during the operation of the machine in order to give the desired deflection to the beam. It will also be noted that the reciprocating ram can be adjusted to move it toward or from the stationary ram during the operation of the machine, though I prefer to adjust the central anvils or heads during the operation, since they are more easily moved, and consequently give a more delicate adjustment.

The advantages of my invention will be apparent to those skilled in the art. The reciprocating ram may be adjusted to suit different widths of beams, and it and the movable block may be shifted in position during the operation of the machine. The mechanism for retracting one presser-head and simultaneously move the other into position is simple and positive in its action. It will be noted that the adjusting movements of the heads 6 and 32 are in line with the path of movement of the reciprocating ram.

Many variations may be made in the form and arrangement of the parts without departing from my invention.

I claim—

1. A straightening-press having a stationary head, and a reciprocating ram, means for adjusting the ram relatively to the stationary head, a movable presser-block carried by the ram, and means for adjusting said block toward and away from the head; substantially as described.

2. A straightening-press having a stationary head, and a reciprocating ram, means for adjusting the ram relatively to the head, a movable presser-block carried by the head, a movable presser-block carried by the ram,

and a motive device and connections arranged to move one presser-block backwardly and the other forwardly, said movement being in the plane of the reciprocating ram; substantially as described.

3. A straightening-press having a stationary head, and a reciprocating ram, means for adjusting the ram relatively to the head, a movable presser-block carried by the head, a movable presser-block carried by the ram, and a motive device and connections to simultaneously move one presser-block backwardly and the other forwardly, said movement being in the plane of the reciprocating ram; substantially as described.

4. A straightening-press having a reciprocating ram, a crank-shaft for reciprocating the ram, a yoke engaged by the crank-shaft, and a motive device and gearing connected to said yoke and mounted on the ram, whereby the position of the stroke of the ram may be adjusted; substantially as described.

5. A straightening-press having a stationary head and a reciprocating ram, said head and ram each having side anvils and a central horizontally-movable presser-block, a shaft geared to both presser-blocks to actuate the same, and a motive device for actuating said shaft; substantially as described.

6. A straightening-press having a stationary head and a reciprocating ram, each having a presser-block movable toward and from each other, and a motor having screw-gearing connections arranged to simultaneously move one presser-block backwardly and the other forwardly; substantially as described.

7. A straightening-press having a stationary head and a reciprocating ram, each of said parts having a movable head, means for simultaneously moving one head backwardly and the other forwardly, and a motor having connections arranged to adjust the position of the reciprocating ram; substantially as described.

8. A straightening-press having a stationary head and a reciprocating ram, each having side anvils and a central movable presser-block, a motor on the stationary head, screw-gearing for adjusting each movable presser-block, and connections between the motor and the screw-gearings arranged to simultaneously retract one presser-head and move the other presser-head forward into operative position; substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN C. CROMWELL.

Witnesses:

H. D. SMITH,
HORACE W. LASH.