

(No Model.)

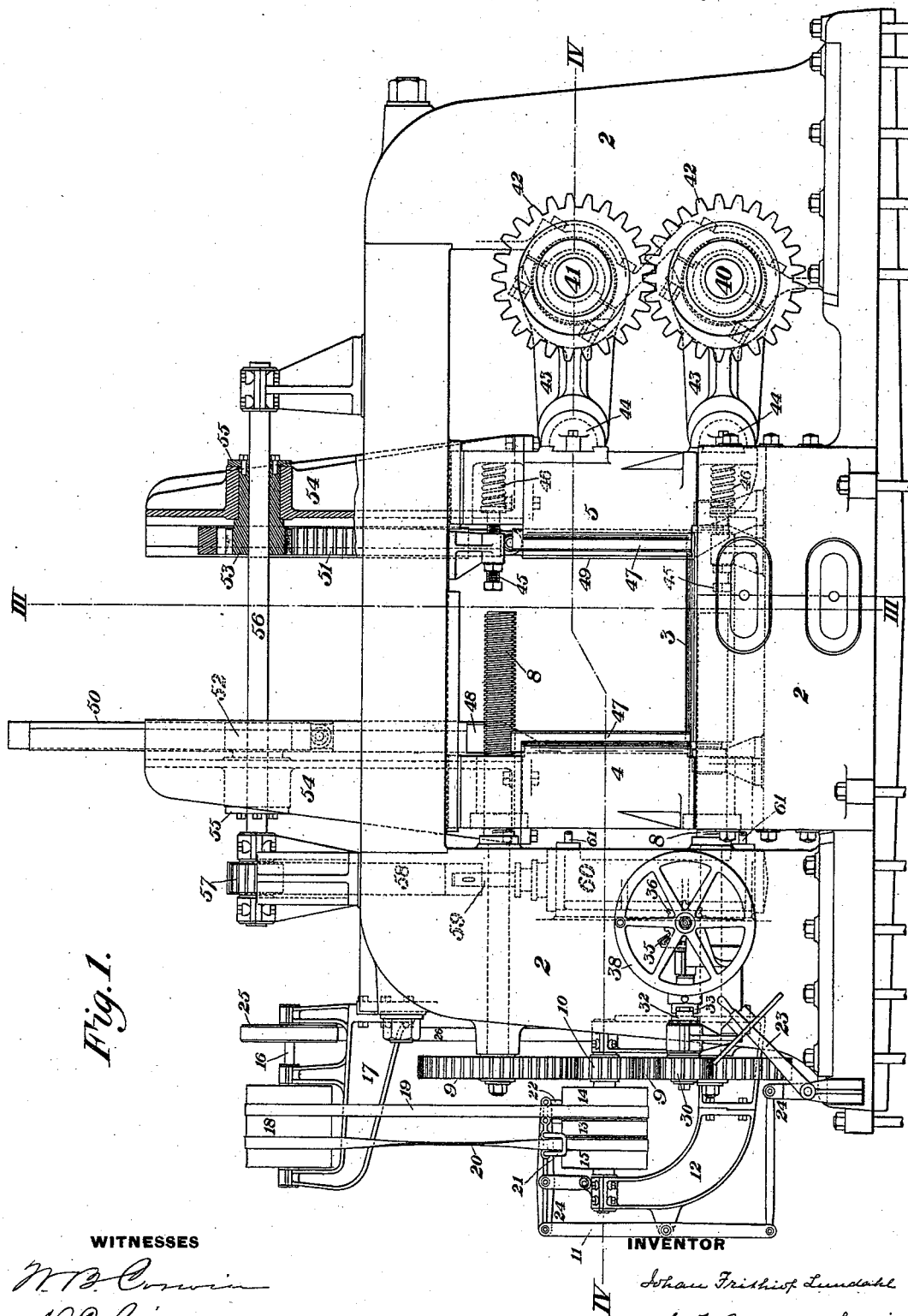
4 Sheets—Sheet 1.

J. F. LUNDAHL.

## APPARATUS FOR STRAIGHTENING BEAMS.

No. 523,770.

Patented July 31, 1894.



*Fig. 1.*

**WITNESSES**

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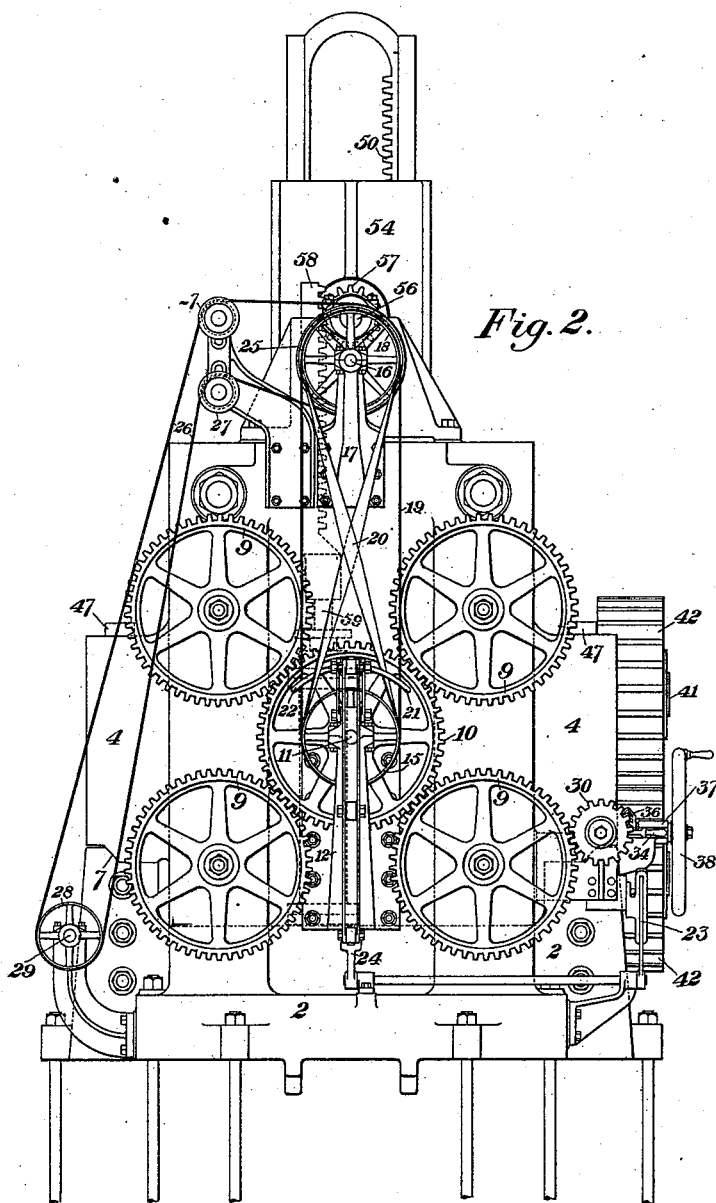
by N. B. Patterson & Sons

his attorneys

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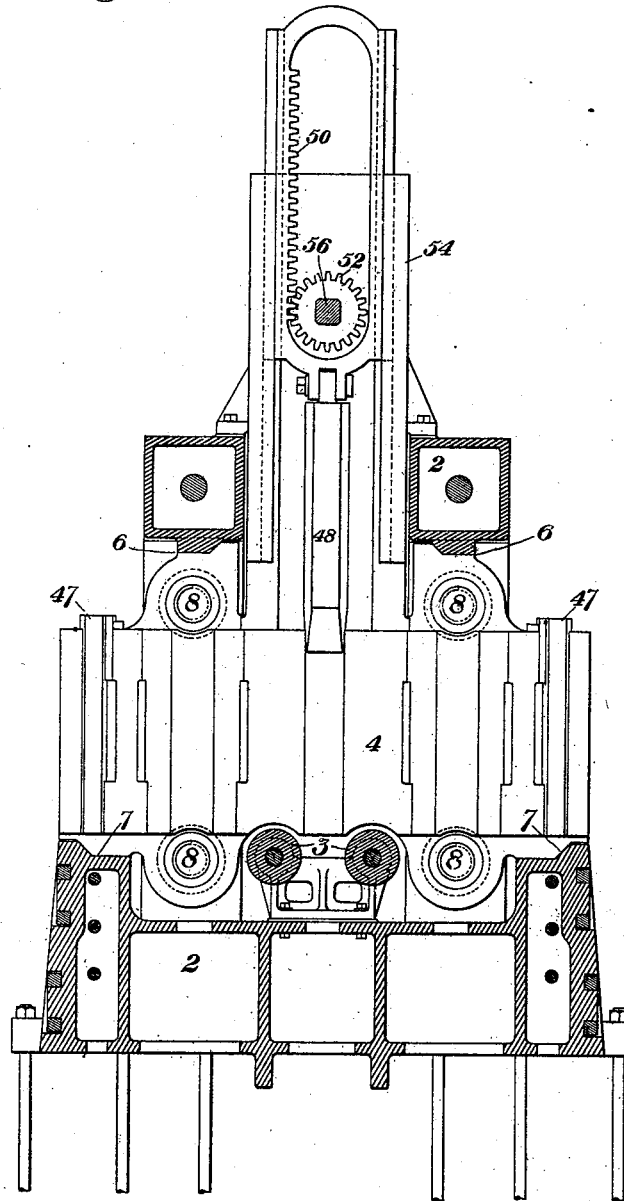
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*Fig. 3.*



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(No Model.)

4 Sheets—Sheet 4.

J. F. LUNDAHL.  
APPARATUS FOR STRAIGHTENING BEAMS.

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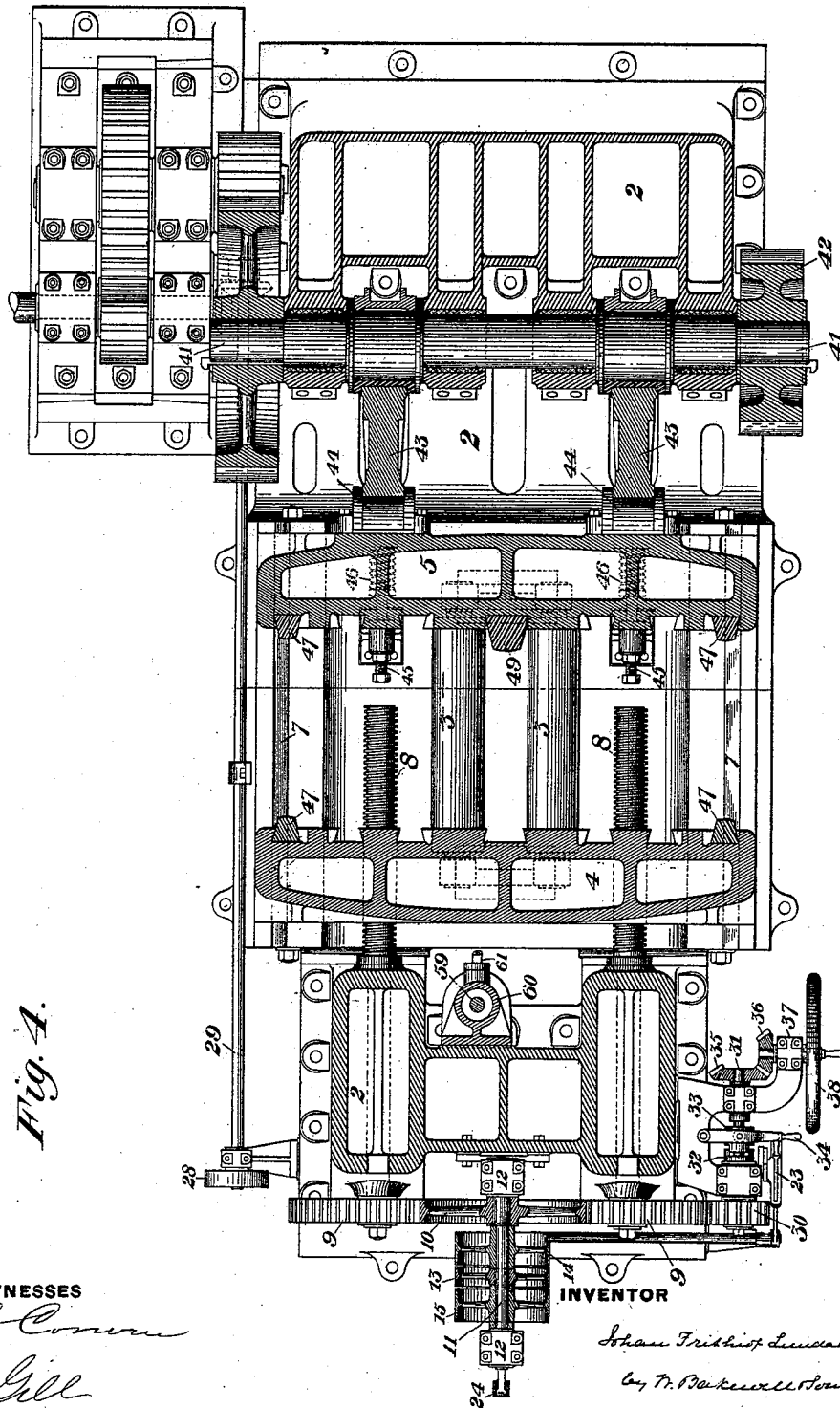


Fig. 4.

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# UNITED STATES PATENT OFFICE.

JOHAN FRITHIOF LUNDAHL, OF HOMESTEAD, PENNSYLVANIA.

## APPARATUS FOR STRAIGHTENING BEAMS.

SPECIFICATION forming part of Letters Patent No. 523,770, dated July 31, 1894.

Application filed March 11, 1893. Serial No. 465,606. (No model.)

### *To all whom it may concern:*

Be it known that I, JOHAN FRITHIOF LUNDAHL, of Homestead, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Straightening Beams, of which the following is a full, clear, and exact description.

The object of my invention is to provide apparatus by means of which the beams may be easily and rapidly straightened and without having to turn the beams in the press; and it consists in a straightening-press having a straightening-block in a reciprocating head on one side of the press, and a block in an adjustable head on the other side of the press which blocks are arranged so as to act alternately with each other.

I will now describe my invention so that others skilled in the art to which it appertains may manufacture and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation, partly in section. Fig. 2 is an end view. Fig. 3 is a vertical cross-section on the line III—III of Fig. 1; and Fig. 4 is a horizontal section on the line IV—IV of Fig. 1.

Like symbols of reference indicate like parts in each of the views.

In the drawings, 2 represents the bed of the press in which are journaled the carrying rolls 3, for supporting the beams during their movement through the press. At each end of the rolls 3 are the pressing heads 4 and 5, which fit in the upper and lower slide-ways 6 and 7 in the frame 2. The head 4, herein called the stationary head, is adjustable toward the reciprocating head 5, and it is adjusted by means of the four screws 8, which pass through threaded boxes in the heads and are provided at their ends outside of their journal bearings in the frame 2 with gear-wheels 9, all of which mesh with a central gear-wheel 10, which is keyed to the short shaft 11, which is journaled in bearings in the bracket 12. Keyed to the shaft 11 between the wheel 10 and the bracket 12, is the belt-wheel 13, on each side of which are the loose belt-wheels 14 and 15. Above the wheel 10, keyed to a shaft 16 which is journaled in a bracket 17, is the belt-wheel 18. A belt 19

extends from the belt-wheel 18 to the loose belt-wheel 14, and a crossed belt 20 extends from the belt-wheel 18 to the loose belt-wheel 15. By means of the belt shifting arms 21 and 22, either of the belts 19 and 20 may be shifted from its loose belt-wheel to the middle keyed belt-wheel 13 so as to drive the gear-wheel 10 in either direction. These belt-shifting arms 21 and 22 are operated by the hand-lever 23, which is connected with the belt-shifting arms by the levers 24. Power is applied to the shaft 16 by the belt-wheel 25, and the belt 26, which passes from the wheel 25 over the guide-wheels 27 to a belt-wheel 28 on the shaft 29, which is connected with power from the engine. By means of these devices, the belts 19 and 20 being shifted to the band wheel 13, the cog wheels 10 and 9 and the screws 8 may be caused to turn in either direction and move the stationary head 4 toward or away from the reciprocating head 5 in order to adjust the space between the two heads according to the size of the beam to be straightened.

During the straightening operation it is necessary to move the stationary head gradually a short distance toward the reciprocating head 5 as the beam becomes straight. For this purpose, a pinion 30, which meshes with one of the gear-wheels 9, is keyed to a sleeve on a shaft 31, which is journaled in bearings on the frame 2, and on the outer end of this sleeve is the clutch-head 32. Keyed to the shaft 31, so as to slide thereon, is the clutch 33, adapted to be thrown into engagement with the clutch-head 32 by the hand-lever 34. On the outer end of the shaft 31 and keyed thereto is the beveled wheel 35, which meshes with the bevel-wheel 36, which is keyed to a short shaft journaled in the bearing 37. On the outer end of this shaft is the hand-wheel 38. By throwing the clutch 33 into connection with the head 32, the shaft 31 is connected with the sleeve to which the pinion 30 is keyed, and then, by turning the hand-wheel 38, power is applied to the wheels 9 and the screws 8 so as to move the head 4 slowly and gradually toward or away from the head 5. The purpose of the clutch 33 is to permit the hand-wheel 38 to be disconnected from the pinion 30 when it is desired to move the head 4 rapidly by the belt-wheel 13.

At the rear of the reciprocating head 5, are the horizontal parallel eccentric shafts 40 and 41, which are journaled in suitable bearings and are connected with each other by the gear-wheels 42. Bearing against the eccentrics on these shafts are the thrust-blocks 43, which, at their other ends, bear against blocks 44 on the head 5. Fitting in threaded boxes in brackets secured to the frame 2 are tempering screws 45, between heads on the inner ends of which and bolts in the head 5, are the spiral springs 46, the purpose of which is to ease the movement imparted to the head by the thrust-block 43 and to press the thrust-block against the eccentric shafts. The shaft 41 is connected with the engine by suitable appliances so as to be driven by the same.

On the inner faces of the two heads 4 and 5 are the stationary blocks 47; situate near the ends of the heads and midway between them, one in each head, are the blocks 48 and 49, fitting in vertical slide-ways and arranged to slide up and down. Bolted to the top of the blocks 48 and 49 are the vertical racks 50 and 51, which mesh with pinions 52 and 53, which are loosely fitted on the horizontal squared shaft 56, and are secured in the frames 54 of the heads 4 and 5 by the plates 55. It will be noticed that the racks 50 and 51 are situate on opposite sides of the shaft 56 so as to be moved in opposite directions to each other by the pinions 52 and 53.

The shaft 56 is journaled in the bearings on the frame 2 and at one end is provided with a pinion 57, which meshes with a vertical rack 58 connected at its lower end with the hydraulic plunger 59 extending from the hydraulic cylinder 60, which is provided with water-connections 61. By reason of this arrangement when power is applied to the shaft 56 from the cylinder 60 by the rack 58 and pinion 57, the racks 50 and 51 will be moved vertically in opposite directions, and as the block 48 is carried up above the bearing-face of the head 5, the block 49 is lowered into its operative position in the bearing-face of the head 4.

The operation is as follows:—The space between the two heads 4 and 5 being adjusted by the hand-lever 23 according to the size of the beam to be straightened, the beam is placed on the supporting rollers 3 between the heads 4 and 5. Power being at all times applied to

the shaft 40, causes the head 5 to reciprocate and the block 49 to press the beam against the stationary end blocks 47 of the head 4, the space between the two heads being constantly adjusted by means of the hand-wheel 38. When it is desired to press on the opposite side of the beam, instead of having to turn the beam so as to bring this side in contact with the block 49, the block 48 is lowered by means of the hydraulic ram 60, which raises the block 49 out of the way, and the operation is continued, the block 48 acting with the stationary blocks 47 of the head 5.

The advantages of my improvement will be apparent to those skilled in the art. The operating heads may be adjusted with ease and accuracy and the beams may be straightened without the necessity of turning or adjusting them in the press.

I claim as my invention—

1. In a straightening press, the combination with a reciprocating head and an adjustable stationary head, each head having a movable pressing block and also anvils arranged to cooperate with the movable block of the other head, of mechanism for removing and replacing the movable blocks so that they shall act alternately on the metal; substantially as described.

2. In a straightening press, the combination of opposite pressing heads having movable blocks, said heads being arranged to move toward and away from each other, racks extending from the movable blocks, and pinions engaging with the racks and arranged to move away from and toward each other with the like movement of the heads; substantially as described.

3. In a straightening press, the combination of opposite pressing heads, movable blocks arranged in said heads, racks extending from the blocks, and pinions engaging with the racks, the racks being arranged on opposite sides of the pinions so that as one block is brought to an operative position the opposite block is removed therefrom; substantially as described.

In testimony whereof I have hereunto set my hand.

JOHAN FRITHIOF LUNDAHL.

Witnesses:

W. B. CORWIN,

JAMES K. BAKEWELL.