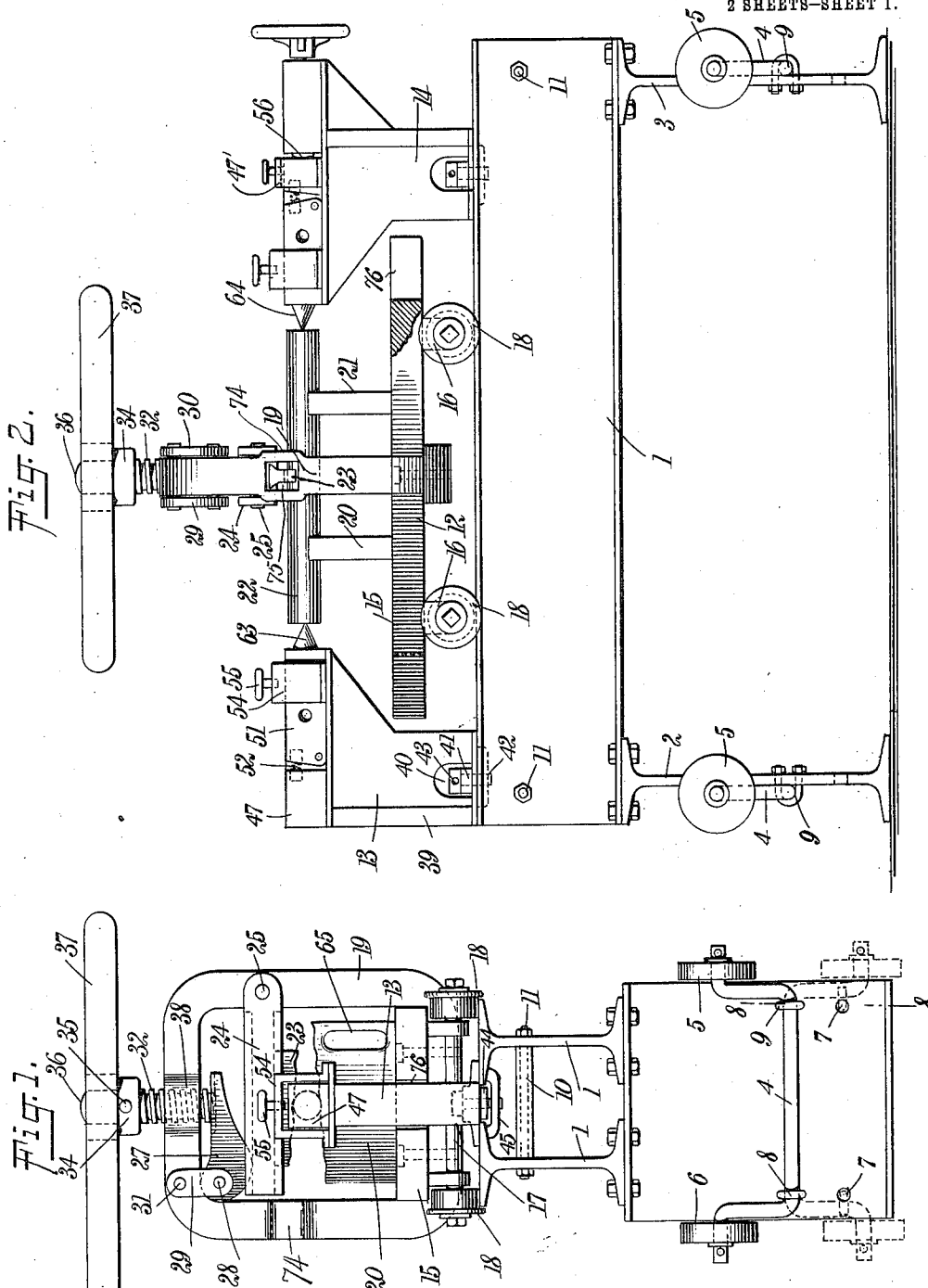


J. JOHNSON.
STRAIGHTENING PRESS.
APPLICATION FILED DEC. 13, 1911.

1,032,218.

Patented July 9, 1912.

2 SHEETS-SHEET 1.



WITNESSES
William P. Goebel.
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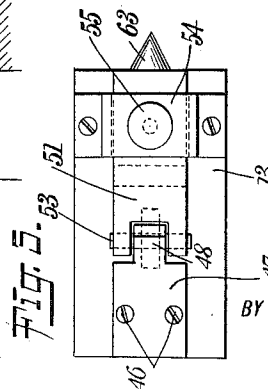
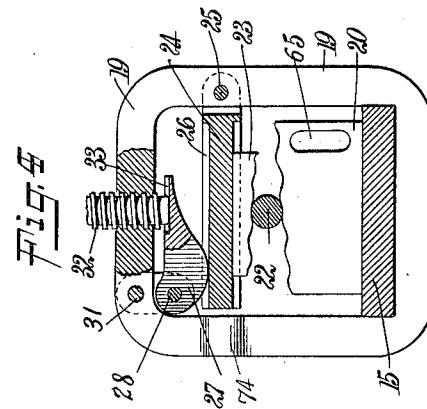
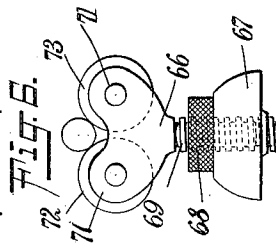
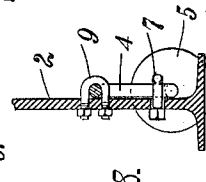
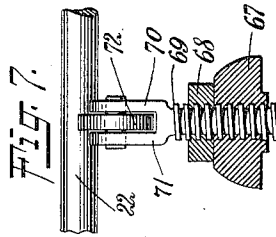
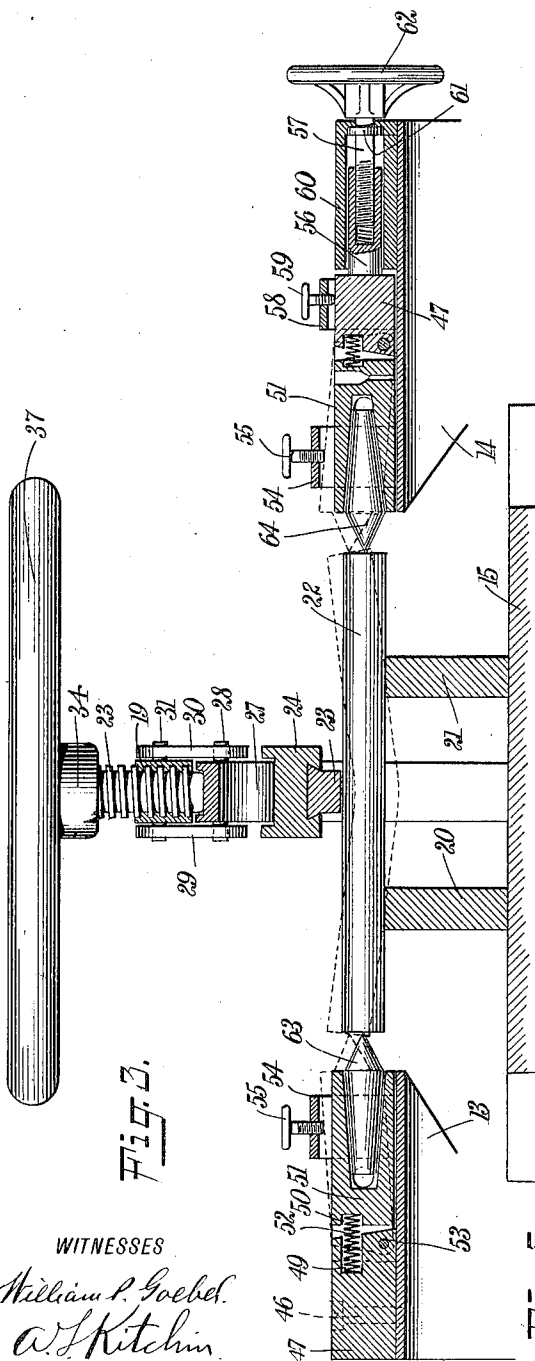
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2 SHEETS—SHEET 2.

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WITNESSES

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UNITED STATES PATENT OFFICE.

JUSTUS JOHNSON, OF BETHLEHEM, PENNSYLVANIA.

STRAIGHTENING-PRESS.

1,032,218.

Specification of Letters Patent.

Patented July 9, 1912.

Application filed December 13, 1911. Serial No. 665,424.

To all whom it may concern:

Be it known that I, JUSTUS JOHNSON, a citizen of the United States, and a resident of Bethlehem, in the county of Northampton and State of Pennsylvania, have invented a new and Improved Straightening-Press, of which the following is a full, clear, and exact description.

The object of the invention is to provide new and improved means for quickly and easily straightening bars, cranks, and the like, without removing the same from their centers.

A further object of the invention is the arrangement of an improved means for straightening cranks, bars, and the like, which utilizes the leverage action of a cam, and an even positive pressure caused by the action of a screw moving the cam.

A still further object in view is the provision of improved means for bending bars of any desired length, the means for accomplishing this being such as to accommodate bars of certain lengths without removing the bars from their supporting centers, and for accommodating bars of greater length than the device, by substituting auxiliary supports in place of the centers.

In constructing a straightening press according to the present invention, a support is provided which carries head and tail pieces for accommodating a bar, crank, or the like, which is designed to be bent or straightened. Arranged on the base between the supports is a movable truck carrying adjustable blocks designed to co-act with a pressure member, so that the blocks will support the bar while the pressure member is acting thereon.

A practical embodiment of the invention is represented in 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 an end view of an embodiment of the invention; Fig. 2 is a side view of the structure shown in Fig. 1; Fig. 3 is a fragmentary longitudinal sectional view through the structure on Fig. 2, the same being shown in a slightly enlarged scale; Fig. 4 is a side view of the ring structure, cam, and associated parts embodying certain features of the invention; Fig. 5 is an enlarged top plan view of the head piece; Fig. 6 is a side view of the auxiliary bar support showing a

bar in position; Fig. 7 is an edge view of the structure shown in Fig. 6; and Fig. 8 is a fragmentary sectional view of Fig. 1, approximately on the line 8—8, the wheel being shown in its lowered position.

In forming or constructing a press according to the present invention, the same is provided with a base 1 formed preferably of I-beams, though some other construction could be used. Connected with the base 1 in any suitable manner, as for instance, by bolts, are a pair of legs in the form of supporting I-beams 2 and 3. Pivotaly connected with the I-beam 2 is a substantially U-shaped bar 4 which carries rollers 5 and 6 that act as traction wheels when moved to the dotted position shown in Fig. 1, and the full position shown in Fig. 8. When moved to the dotted position shown in Fig. 1, the bar 4 is held in that position by hook-shaped bolts 7—7. The bar 4 is permanently pivotaly connected to the I-beam 2 by U-bolts 8 and 9 so that the wheels 5 and 6 may be swung to an upper or lower position, as desired. The I-beam 3 is provided with a similar arrangement of wheels and associated parts as just described with respect to the I-beam 2, so that no additional description thereof will be needed, the same reference numerals being used.

When using I-beams for the base 1, the same are spaced apart by tubes 10 near their upper edge and are held against spreading by bolts 11. The base 1 is arranged to support or carry a truck 12, a head stock or piece 13, and a tail stock or piece 14.

The truck 12 is formed preferably with a flat base plate 15, having a plurality of lugs 16 projecting therefrom, which accommodate axles 17 on which are mounted flange wheels 18. The axles 17 may be provided with nuts, cotter pins, or other devices for preventing the wheels 18 from becoming displaced. By this arrangement the truck 12 may be moved back and forth for the full length of the base 1, with the exception of the part of the base which is occupied by the head stock 13 and the tail stock 14. Bolted or otherwise rigidly secured to the base plate 15, is an endless bar or ring 19. Loosely mounted on the base plate 15 are also a pair of spaced supporting blocks 20 and 21 which are arranged to engage the bar or crank 22 which is to be straightened. The pressure block 23 is tapered on its lower

surface and also corrugated transversely so as to engage and hold round bars or axles without liability of slipping. This block is also formed with lateral enlargements for engagement with ways formed in a lever 24. The lever 24 is pivoted at 25 to the ring 19 and extends substantially the full width of the ring so that the pressure block 23 may be shifted to any desired position for accommodating various sized bars or axles. The upper edge of the lever 24 is formed with a groove 26 which is designed to accommodate a cam 27. The cam 27 is supported at one end by a pivotal pin 28 which passes through links 29 and 30. The links 29 and 30 are pivotally connected with the ring 19 by a pin 31. The links 29 and 30 are arranged near one of the upper corners of the ring 19 so that the rear end of the cam 27 may press against the corner of the ring in order to prevent lateral movement away from the power screw 32. The power screw 32 is threaded into the ring 19 and is arranged to project therethrough so that the lower end may fit into a groove 33, while the upper end is provided with an enlargement 34 having an aperture 35 formed therein. The enlargement 34 merges into a reduced portion 36 which is designed to receive a hand wheel 37 rigidly secured in position on the reduced portion by a key, or in any other desired manner. By this construction and arrangement the power screw 32 may be rotated either by the hand wheel 37, or by a rod or pin inserted into the opening 35, and then moved. If desired the ring 19 may be enlarged at 38 in order to strengthen the ring at this point.

The head stock 13 may be formed of any desired material, but preferably it is formed from an I-beam and has a reinforcing bar 39 connected thereto at one end for stiffening and bracing the same. This bar 39 may be welded or otherwise rigidly secured in place, as will be most convenient or desirable.

In order to hold the head piece 13 in position, the same is provided with an aperture 40 which accommodates the head 41 of a bolt 42. The head 41 is provided with an aperture 43 designed to accommodate a rod or pin for turning the bolt. The bottom of the head stock 13 is formed with a lug or extension 44, designed to fit between the I-beams of the base 1 for assisting in holding the same apart. The bolt 42 is designed to be threaded into a washer or anchor 45 which presses against the under surface of the flanges of the respective I-beams, as clearly shown in Fig. 1, and in this way when the bolt 42 is tightened, the head stock 13 is rigidly clamped in place. Rigidly clamped to the upper part of the head stock 13, preferably by screws 46, is a block 47 which is formed with a lug or ex-

tension 48, and with an aperture 49. The aperture 49 is arranged to register with the aperture 50 in the center pin holder 51 so as to receive and accommodate a spring 52. The spring 52 is intended to normally hold the center pin holder 51 in its lower position, as shown in Fig. 3, unless positively prevented. The center pin holder 51 is formed with a socket for accommodating the lug 48, and a pintle 53 is provided which extends through suitable apertures in the center pin holder 51 and in the lug 48. By this construction and arrangement the center pin holder 51 is prevented from longitudinal movement, but is permitted an up and down pivotal movement within certain limits, said limits being determined by the top of the head stock 13 and by a retaining and guiding bracket 54 which is preferably constructed U-shaped and is bolted or otherwise rigidly secured to the upper part of the head stock 13. The center pin holder 51 is formed with flat sides so as to engage the sides of the guiding bracket 54 and prevent any lateral movement of the holder. A set screw 55 is provided in the bracket 54 for limiting the upward movement of the holder 51, or for positively locking the holder in its lowered position.

The tail stock 14 is constructed similarly to the head piece 13, and is held in place in a similar manner and is provided with center pin receiving members in a similar manner and of similar construction to the head piece 13, so no additional description thereof will be necessary, the same reference numerals applying. However, the block 47' of the tail piece 14 is formed with a cylindrical projection 56, which is internally threaded, as shown in Fig. 3, for receiving a bolt 57. The block 47' is not rigidly clamped to the tail stock 14 as is the case with the block 47 arranged on the head piece 13, but is permitted to freely reciprocate back and forth, but is not permitted an up and down movement, as U-shaped bracket 58 will not permit any upward movement. The bracket 58 is bolted, or otherwise rigidly secured to the tail stock 14, and normally permits the block 47' to move longitudinally under the action of the bolt 57. If desired, set screw 59 may be tightened and the block 47' prevented any longitudinal movement. A tubular block 60 is rigidly secured to the tail piece 14 in any desired manner, as for instance, by bolts, and is formed with a bore for accommodating the tubular extension 56 of the block 47', and also for accommodating the bolt 57. The bolt 57 is provided with an enlargement 61 which presses against the inner end wall of the block 60 so that when the bolt 57 is rotated, the block 47' and the associated devices connected therewith will be positively moved. The outer end of the

bolt 57 is provided with a hand wheel 62 which is held in place in any desired manner, as for instance, by a nut threaded on to the bolt.

5 In operation, when it is desired to straighten or bend a crank, as for instance, the crank or bar 22 shown in Fig. 2, the same is mounted upon centers 63 and 64, and the main blocks 20 and 21 are placed
10 in position so as to engage the under surface of the block. The upper surfaces of the blocks 20 and 21 are provided with transverse grooves or corrugations for preventing slipping. Also each of the blocks 20 and 21
15 is provided with a hand opening or hole 65 for easily moving and adjusting the blocks. After each of the blocks 20 and 21 have been placed in position the pressure block 23 is moved until the same engages the bar 22
20 and then the hand wheel 37 is operated for turning the power screw 32. This will cause the depression of the cam 27 and a downward movement of the lever 24 and pressure block 23, which will result in the
25 bending or springing of the bar 22, as for instance, to the position shown in dotted lines in Fig. 3. When the bar is moved to the position shown in dotted lines in Fig. 3, the centers 63 and 64 will move upwardly
30 by reason of the fact that their respective holders are pivotally mounted. After the bar 22 has been straightened or bent at one point, and it is desired to operate at a different point, this can be easily done by
35 shifting the truck 12 and the various devices associated therewith, and the operation repeated.

In case it is desired to straighten or bend a bar or crank longer than the device, the
40 head stock 13 and tail stock 14 are removed and rests 66 are provided in their place. The rests 66 are each formed with a base 67, a nut 68, a screw 69 formed with bifurcated arms 70 and 71, and rollers 72 and 73. The
45 screw 69 is preferably made sufficiently long to continually project a short distance below the base 67 in order to project between the I-beams forming the base 1, and thus automatically center the supports.
50 After these supports have been placed in position, a bar or crank of any length may be placed thereon and then the truck 12 moved to the desired position and the machine operated as heretofore described.

55 From Fig. 2 it will be noted that the ring 19 is enlarged at 74 in order to accommodate an aperture 75 of sufficient size to permit the insertion and removal of the block 23. This aperture is necessary in order to
60 insert and remove the block 23 without removing the lever 24. It will also be noted from an examination of Fig. 2, that the base 15 is formed with slots 76-76 in order to permit the head and tail stocks 13 and 14
65 to be brought almost together.

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

1. In a bar straightening press a base, an adjustable work support arranged on said
70 base, a pressure member engaging the work on said work support, a cam for moving said pressure member, said cam being formed with an enlarged end and with the enlarged
75 end pivotally mounted so that said cam will engage said pressure member by a swinging movement, and a manually operated screw engaging the end of the cam opposite the
80 pivotal mounting thereof for operating the cam.

2. In a bar straightening press, a base, end supports arranged on said base adapted to be adjusted longitudinally thereof, a truck
85 mounted on said base between said end supports, vertically pivotally mounted centers mounted on said end supports, spaced intermediate supports arranged on said truck, a
90 ring rigidly secured to said truck and supported thereby, and a pressure mechanism connected with the ring for pressing toward said truck, whereby a bar mounted on said
95 pivotally mounted centers and on said intermediate supports may be bent by said pressure mechanism without bringing any strain on said base, the pivotal mounting of said
100 centers permitting said bar to bend downward centrally, and a corresponding upward movement of the ends of the bar.

3. In a bar straightening press a base, a pair of end members adjustable longitudinally and adapted to support a bar, a pair
105 of intermediate supports, a pressure member arranged to engage said bar between said intermediate supports, a cam pivotally mounted at one end adapted to engage said
110 pressure member for moving the same whereby said bar is bent, and manually operated means engaging the cam at its free end for actuating the same.

4. In a bar straightening press, a base, a
115 pair of pivotally mounted end supports for a bar adapted to move in a plane at right angles to said base, means for limiting the pivotal movement of said end supports, spaced adjustable bar supports arranged
120 intermediate the ends of said bar, and means for pressing against said bar and bending the same between said intermediate supports, the pivotal movement of said end supports accommodating said bending action.
125

5. In a bar straightening press a base, loosely pivotally mounted bar end supports arranged on said base, each of said end supports being adapted to move upwardly with
130 the ends of said bar when the same is being bent, means for limiting the upward movement of said end supports, a pair of spaced supporting blocks arranged intermediate the ends of said bar, a pressure block arranged to act between said supporting blocks and
135

in an opposite direction to the supporting blocks, and means for moving said pressure block for bending said bar downward centrally whereby the outer ends of said bar will be bent upwardly, the pivoting of said end supports permitting a free upward movement of said bar within predetermined limits.

6. In a bar straightening press, a base, end supports for a bar arranged to move freely pivotally in an upward direction and also adjustable longitudinally of the base, spaced supporting blocks arranged beneath said bar intermediate its length, a pressure block arranged intermediate said first-mentioned blocks and acting in an opposite direction, and means for moving said pressure block whereby said bar will be bent downward between said first-mentioned blocks and caused to have its ends moved upward.

7. In a bar straightening press, a base, a

longitudinally movable truck arranged on said base, means rigidly connected with said truck for pressing a bar toward said truck, said means comprising an encircling ring, a manually operated screw, a cam pivoted at one end positioned so that one end will be in the path of movement of said screw, an arm pivoted at one end and adapted to be actuated by said cam, a pressure block adjustably connected with said arm for engaging said bar, and spaced supports mounted on said truck co-acting with said pressure block.

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

JUSTUS JOHNSON.

Witnesses:

CHAS. KOCHER,
I. T. HARTZOG.