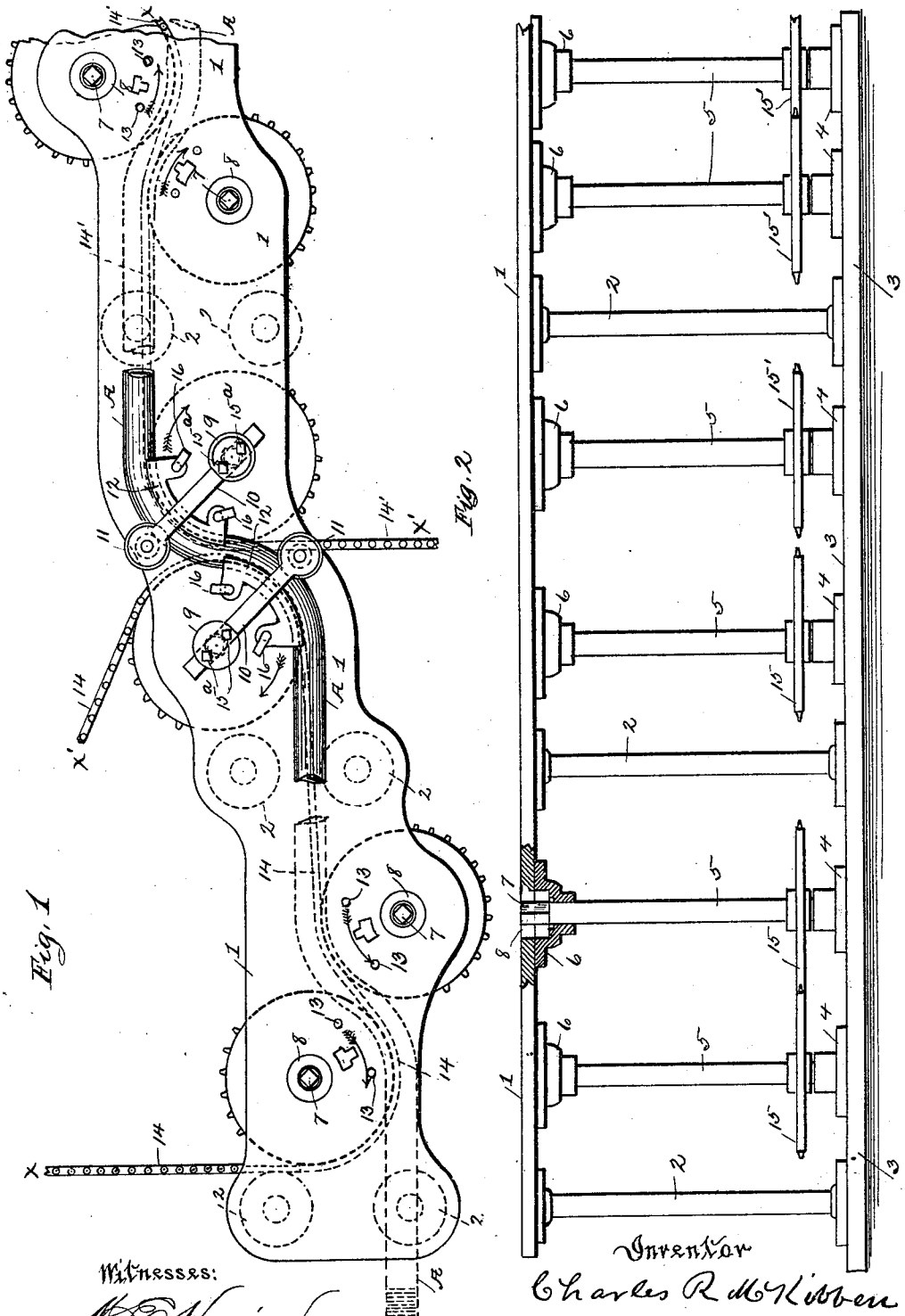
No. 681,334. Patented Aug. 27, 1901.

C. R. McKIBBEN.

PIPE BENDING MACHINE.

(Application filed Feb. 21, 1900.)

(No Model.)



Witnesses:

M. E. Harrison

John Crouch

Inventor

Charles R. McKibben

Per, O. D. Lewis

Att'y

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES R. McKIBBEN, OF PITTSBURG, PENNSYLVANIA.

PIPE-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 681,334, dated August 27, 1901.

Application filed February 21, 1900. Serial No. 6,015. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. McKIBBEN, a citizen of the United States of America, residing at 240 Atwood street, Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Pipe-Bending Machines; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved apparatus for bending pipes or bars of iron into special shapes; and it consists in the certain details of construction and combination of parts, as will be fully described hereinafter.

This invention relates more particularly to an improvement on pipe-bending apparatus similar to that filed by me in the United States Patent Office April 28, 1899, Serial No. 714,911, and allowed June 26, 1899, Patent No. 641,536.

In the accompanying drawings, Figure 1 is a plan view of my improved apparatus for bending special shapes of pipe or bars, which is constructed and arranged in accordance with my invention. Fig. 2 is a side elevation of the same.

To construct a pipe-bending machine in accordance with my invention, I form from cast metal a bed-plate 1 of a suitable size and form of construction and mount the same in a horizontal position upon legs 2, firmly attached to a ground-plate 3. This bed-plate 1 is formed with a number of circular openings 8, each of which is located at the radius of the bend of the pipe operated upon. Arranged beneath each of these openings 8 are bearings 6, which consist of annular castings attached to the bed-plate 1 and having central bearings for the reception of the power-shafts 5. The lower extremities of these power-shafts 5 are journaled in bearings 4, either formed integral with the foundation-plate 3 or attached thereto in a suitable manner. Each of these shafts 5 is formed at the top with a square integral pin 7 for engaging with the socket of a bending-lever 10, hereinafter described. These same shafts 5 are each fitted with a sprocket-wheel 15 and 15′, (arranged intermediate of the two bed-plates,) about which two sprocket-chains 14 and 14′ are placed to engage with and rotate the said wheels in the desired direction. The one extremity X of each chain 14 and 14′ is connected to the piston-rod of a steam-cylinder to furnish power and the other ends X′ to weights to recover and bring the parts back to their normal position. This last-described construction, relating to the cylinder and weights, is not shown in the drawings, as any other suitable power may be used to transmit motion to the sprockets and their chains.

Formed to engage separately with the pins 7 of the power-shafts 5 are two bending-levers 10, provided at their outer extremity with grooved wheels 11, journaled to the levers in a suitable manner, permitting the said wheels to rotate freely. The levers 10 are adjustable in sockets 9 to increase or diminish the length of the levers, which sockets engage with the pins 7 of the power-shafts 5. These levers 10 may be adjusted and held in any desired position by small removable pins 15ª, engaging with openings formed in the levers.

Suitable removable dies 12 are attached to the bed-plate 1 by means of pins 16, engaging in apertures 13 in the bed-plate 1, and are constructed in a form that will exactly correspond to the contour of the finished bar or pipe A, the first two bends of which are shown in full lines at Fig. 1 of the drawings and the other and succeeding bends in dotted lines, and for a detailed description of such dies see application filed by me the 24th day of February 1899, Serial No. 706,732, and allowed October 2, 1899, Patent No. 641,535.

In operation when it is desired to bend a pipe or bar the dies 12 are attached to the bed-plate 1 in a position to first operate to form the middle bends, as shown at Fig. 1 of the drawings, and the bending-levers 10, engaged with the pins 7, directly opposite to the said dies. The power is now applied to the chains 14 and 14′ to rotate the two shafts 5, to which the levers are connected. This operation will form a right and left bend in the pipe, as shown in the drawings. Two more dies are attached to the bed-plate at either side of the first two bends and the bending-levers 10 moved to the corresponding pins 7 and the same operation continued.

It will be seen that any number of bends

may be formed in pipe or bars (two at one time) by forming the dies and bed-plate to correspond to such bends.

By the use of a machine as above described the work of bending special shapes of pipe is greatly expedited, for the reason that two men may work at the one machine, placing the two sets of dies in position and moving the levers 10 to their several positions.

Having thus described my invention, I claim—

In a device of the character described, the combination with the bed-plate, the foundation-plate, and the shafts journaled in said plates, of the dies removably secured to the bed-plate, the sockets engaging the upper ends of the shafts, the bending-levers adjustably secured in said sockets, the bending-wheels journaled in the outer ends of said levers, the removable pins engaging said sockets and levers for securing the latter in the adjusted position, sprocket-wheels mounted on said shafts, and a pair of drive-chains for operating the shafts, one of said chains engaging the sprockets on one-half the shafts and the other chain engaging the sprockets of the remaining shafts whereby the pipe may be bent first at the two central shafts and operated upon toward each end, substantially as described and shown.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

CHARLES R. McKIBBEN.

Witnesses:
JOHN GROETZINGER,
H. E. DECKER.