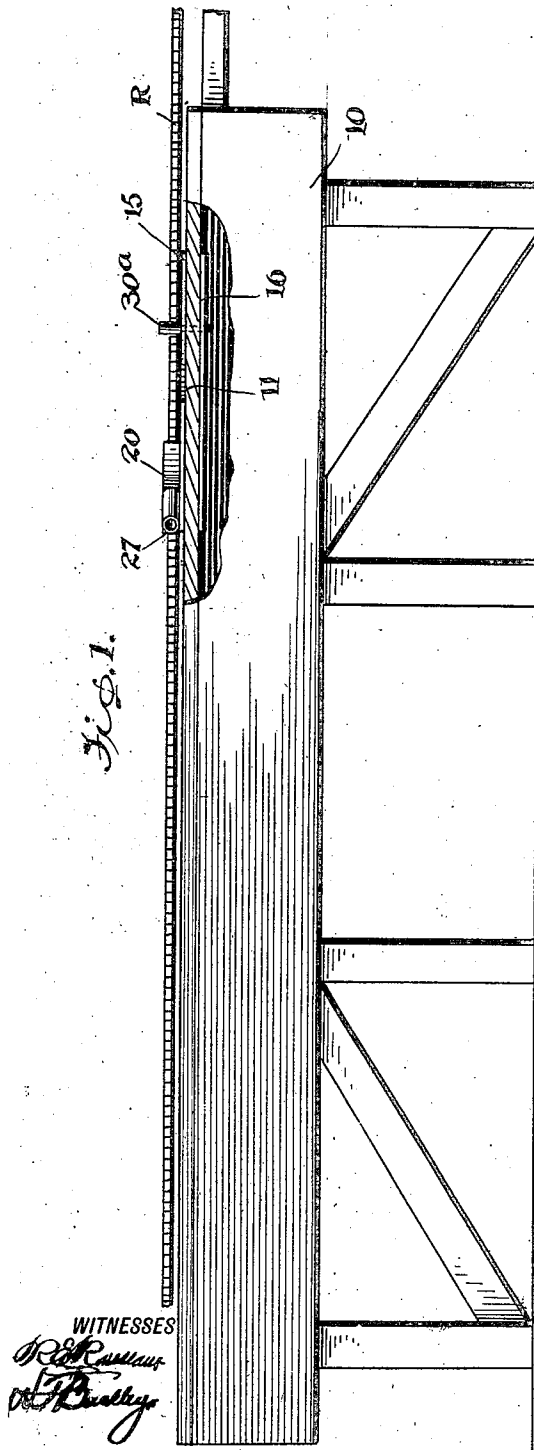
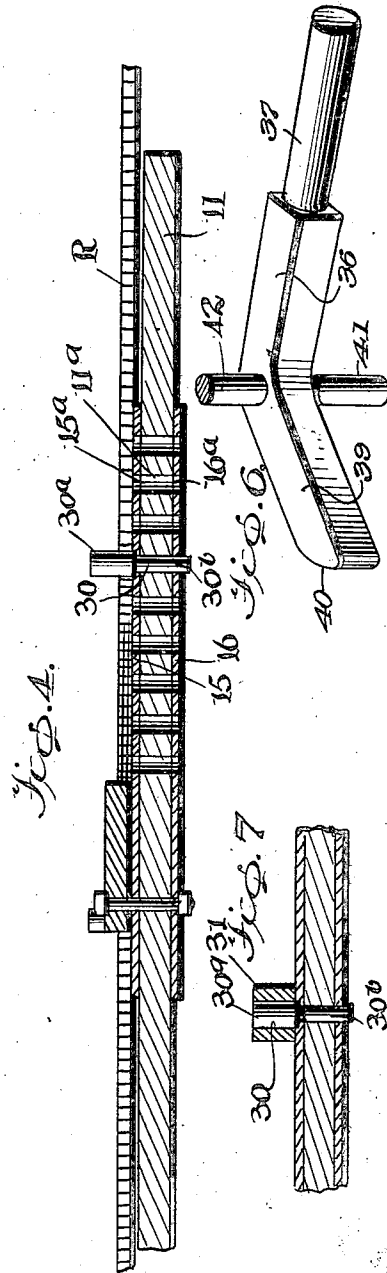


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APPLICATION FILED MAY 20, 1921.

1,435,112.

Patented Nov. 7, 1922.
3 SHEETS—SHEET 1.

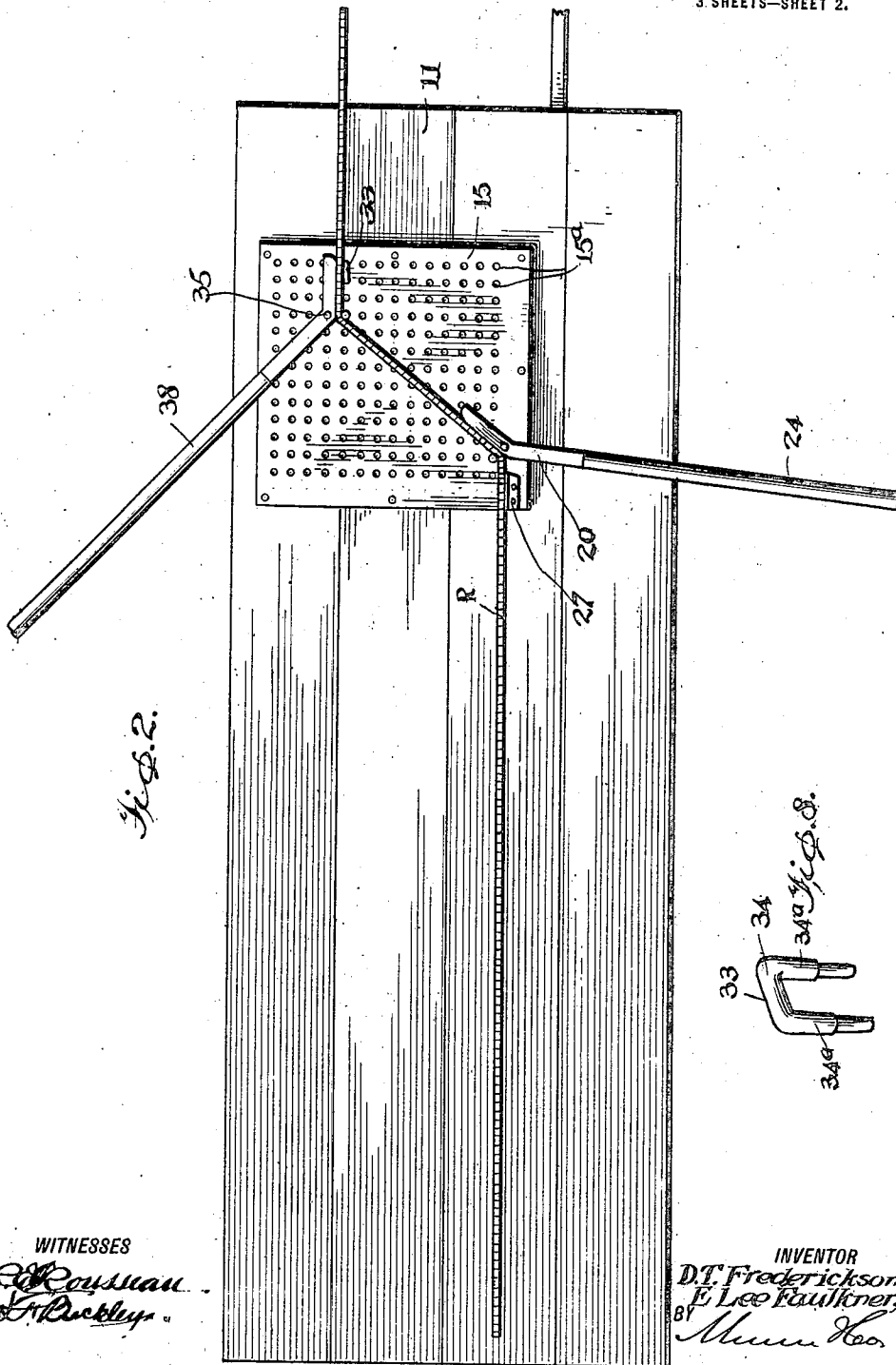


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UNITED STATES PATENT OFFICE.

DAVID T. FREDERICKSON AND EARNEST LEE FAULKNER, OF GUTHRIE, OKLAHOMA.

METAL-BENDING MACHINE.

Application filed May 20, 1921. Serial No. 471,088.

To all whom it may concern:

Be it known that we, DAVID T. FREDERICKSON and EARNEST LEE FAULKNER, citizens of the United States, and residents of Guthrie, Oklahoma, have invented certain new and useful Improvements in Metal-Bending Machines, of which the following is a specification.

The present invention relates in general to metal bending machines, and more particularly to a metal bar or rod bending machine.

The object of the invention is to provide a metal bending machine of this character which is especially adapted for bending or shaping reinforcement rods or bars used in concrete structures, which possesses a high degree of universality in that it is adaptable to work upon various size rods or bars to form them into any desired shape or design, which is of simple and durable construction, reliable in operation and easy and inexpensive to manufacture, and which may be operated without necessitating the exercise of a high degree of skill or care on the part of the operator.

Other objects and advantages of the invention reside in certain novel features of construction, combination and arrangement of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings forming part of this specification, and in which:

Figure 1 is a side elevational view of a machine embodying the invention, parts being broken away and shown in section for the sake of illustration;

Figure 2 is a plan view thereof;

Figure 3 is an enlarged detail view in plan, illustrating the operation of the invention;

Figure 4 is a detail view in transverse vertical section;

Figure 5 is a detail view in transverse section of the stationary abutment;

Figure 6 is a detail perspective view of the movable bending die;

Figure 7 is a detail view in section of an adjustable die pin and its sleeve, and

Figure 8 is a detail perspective view of the adjustable abutment.

Referring to the drawings wherein for the sake of illustration is shown the preferred embodiment of the invention, the numeral 10 designates the work bench or the like

having a table 11 of wood or other suitable material and which constitutes the bed of the machine.

A pair of templet plates, designated at 15 and 16, are carried by the table, the templet plate 15 being carried by the top of the table and the templet plate 16 being carried by the underside thereof and alined with the top plate. Fastening means, such as screws or rivets 17, extend through the table and the plates and secure them in position, the screws or rivets being countersunk in the top templet. The upper and lower templet plates and the table are provided with series of alined openings or sockets designated at 15^a, 16^a and 11^a, respectively. The sockets are preferably arranged in rows and are provided in suitable number to give the machine the requisite capacity to carry out the desired operations.

A bending die, designated generally at 20 is fulcrumed on a stud or pivot bolt 21. The bending die includes a lever arm 22 reduced as at 23, to accommodate an operating handle 24 whereby a powerful leverage may be obtained. On the other side of the fulcrum from the lever arm 22 an offset wiper 25 extends and has its outer end curved at 26. The bending die 20 constitutes the relatively stationary die of the machine in that its axis is usually fixed. An angle plate 27 is arranged on the templet plate 15 adjacent the bending die and has its vertical leg 27^a alined therewith and its horizontal leg 27^b secured by rivets 28 to the templet plate 15. The angle plate 27 constitutes a stationary abutment and lies not only adjacent the bending die but also adjacent one corner of the templet plate 15.

A plurality of pins designated at 30, are provided and include heads 31^a and shanks 30^b. The shanks of the pins are adapted to be received in the sockets 15^a and the heads thereof upstand from the top templet 15 and are engageable with the rods being bent. A sleeve 31, which varies in size to suit the condition may be arranged on the head 30^a. One of such pins, either with or without the sleeve, is arranged in one of the sockets juxtaposed to the bending die 20 and coacts therewith in the bending action as will be hereinafter more fully described. An adjustable abutment 33 is also provided and includes a body portion 34 and legs 34^a adapted to be received in any of the adjacent sockets. The

abutment limits or gages the bending of the rod.

Other of such pins are arranged in the desired socket and coact with a second bending die 35. This second bending die includes a lever arm 36 having a reduced portion 37 adapted to have connection with the operating handle 38, an angularly disposed or offset bending die wiper 39 having its outer end rounded as at 40, and oppositely extending trunnions 41 and 42 adapted to constitute fulcrums for this bending die. It is obvious that by turning this bending die on one side or on the other and entering trunnion 41 or trunnion 42 as the case may be into one of the sockets the direction in which it exerts a bending action is reversed. In the bending action one of the pins 30 is arranged in juxtaposition to the bending die 35 and coacts therewith in a manner to be hereinafter more fully described.

In operation the bar or rod R to be bent or shaped is entered into the machine so that a portion of it lies flush against the vertical leg 27^a of the stationary abutment 27 and the point at which a bend is desired is alined with the bending die 20, as clearly shown in Figure 2. A pin 30 is then introduced into the socket juxtaposed to the bending die. The adjustable abutment 33 is then positioned on the templet to gage or limit the bend. The operator then grasps the operating handle 24 and turns the bending die 20 on its fulcrum during the bending. The wiper 25 or bending die proper exerts a wiping pressure on the rod and bends it around the adjacent pin 30, rotary motion or translation of the rod being prevented by the action of the stationary abutment 27. When the rod engages the adjustable abutment 33 the operator ceases to turn and the bending action simultaneously ceases. After the first bend has been completed another pin 30 is inserted in the socket adjacent or immediate to the second point of bend and the movable die member 35 has its trunnion entered into the socket juxtaposed to the pin 30 in a manner to effect bending in the desired direction. The operator then grasps the operating handle 38 and turns the die member 35 on its fulcrum. The wiper 39 of this die member engages the rod and with a wiping pressure bends it around the pin 30 until the rod engages the adjustable abutment 33. As indicated in Figure 2 the degree of bend, or the point of bend, may be varied at will and is only limited by the number of sockets provided in the templet. The dotted line positions of the bar R in Figure 2 illustrate three additional varieties of bend, the operation to effect which is precisely the same as hereinabove described, except that different sockets are selected for the pin 30, the adjustable abutment and the trunnion of the adjustable bending die. It is to be under-

stood that in lieu of the adjustable abutment 33 one of the pins 30 may be utilized if desired.

We claim:

1. In a metal bending machine, a table, a pair of templet plates carried on the opposite sides of the table and secured thereto, said templet plates and said table being provided with series of alined openings defining sockets, a relatively stationary bending die fulcrumed to said table, a pin received in one of said sockets and coacting with said bending die, a stationary abutment arranged adjacent said bending die, an adjustable bending die having oppositely disposed trunnions adapted for engagement with the sockets of the templet, a pin received in a socket of the templet and coacting with said adjustable bending die and an adjustable abutment including a body portion and legs adapted to be received in said sockets.

2. In a metal bending machine, a templet having sockets therein, a relatively stationary bending die, a pin adapted to be received in one of said sockets and coacting with the bending die, a stationary abutment arranged adjacent said bending die, an adjustable bending die having oppositely disposed trunnions adapted for engagement with the sockets of the templet, a pin received in one of the sockets and coacting with the adjustable bending die, and an adjustable abutment adapted to be received in the sockets of the templet.

3. In a metal bending machine, a templet having sockets therein, a relatively stationary bending die, a pin adapted to be received in one of said sockets and coacting with the bending die, a stationary abutment arranged adjacent said bending die, an adjustable bending die having oppositely disposed trunnions adapted for engagement with the sockets of the templet, and a pin received in one of the sockets and coacting with the adjustable bending die.

4. In a metal bending machine, a templet plate having sockets therein, a relatively stationary bending die, an adjustable bending die having a trunnion adapted to be selectively engaged with the sockets of the templet plate, and a pin cooperable with the adjustable bending die and also selectively engageable with the sockets of the templet plate.

5. In a metal bending machine, a templet having sockets and an adjustable and reversible bending die having oppositely disposed trunnions engageable with the sockets of the templet, and a pin cooperable with the bending die and also selectively engageable with the sockets of the templet.

6. In a metal bending machine, a table, a pair of templet plates carried on the opposite sides of the table and secured thereto, said templet plates and said table being pro-

vided with series of alined openings defining sockets, a relatively stationary bending die fulcrumed to said table and having a lever arm and an offset wiper, a pin received
5 in a socket juxtaposed to said bending die and coacting therewith, a stationary abutment arranged adjacent said bending die and coacting therewith and comprising an angle plate secured to said table, and an adjustable abutment including a body portion, and legs 10 adapted to be secured in said sockets.

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