T. KARDONG.

BAR BENDER.

APPLICATION FILED JUNE 25, 1920.

1,425,261. Patented Aug. 8, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

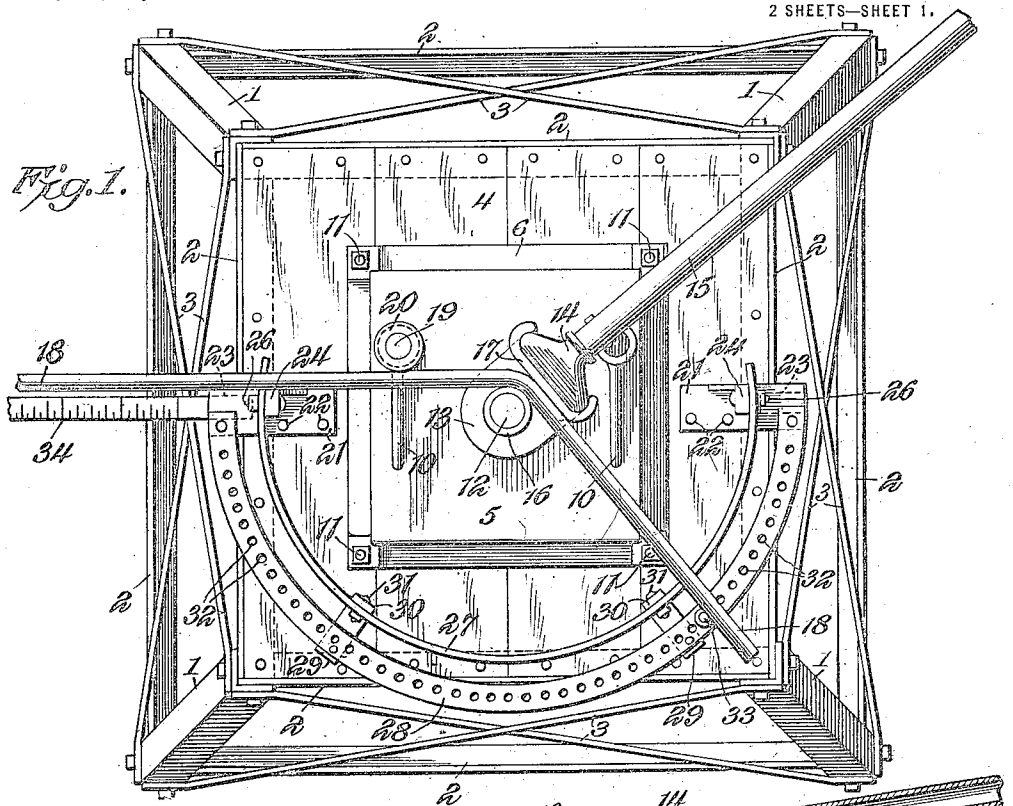
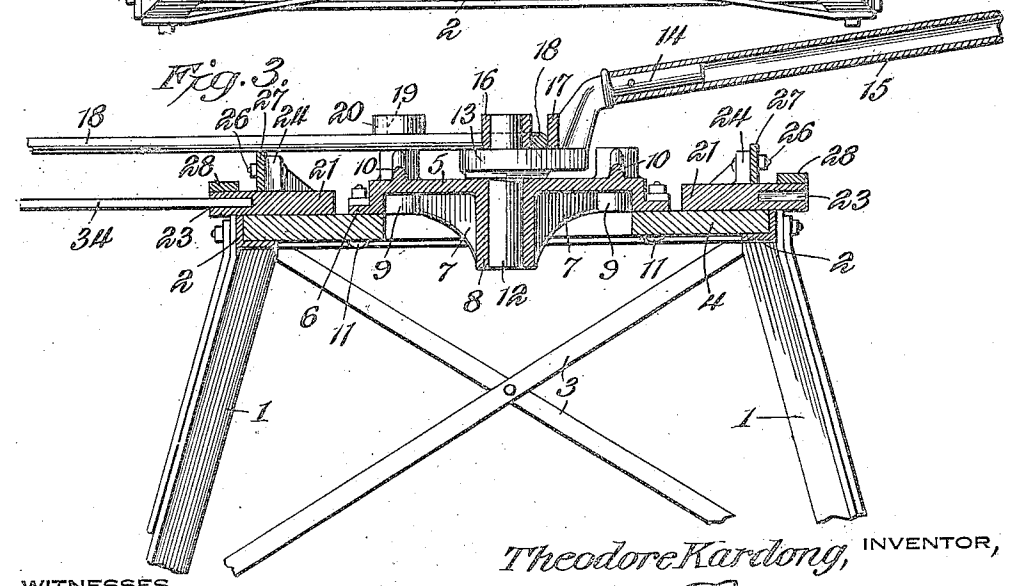


Fig. 3.



WITNESSES

Howard D. Orr.

F. T. Chapman

Theodore Kardong, INVENTOR,

BY E. G. Siggers.

ATTORNEY

T. KARDONG.

BAR BENDER.

APPLICATION FILED JUNE 25, 1920.

1,425,261. Patented Aug. 8, 1922.

2 SHEETS—SHEET 2.

Fig. 2.

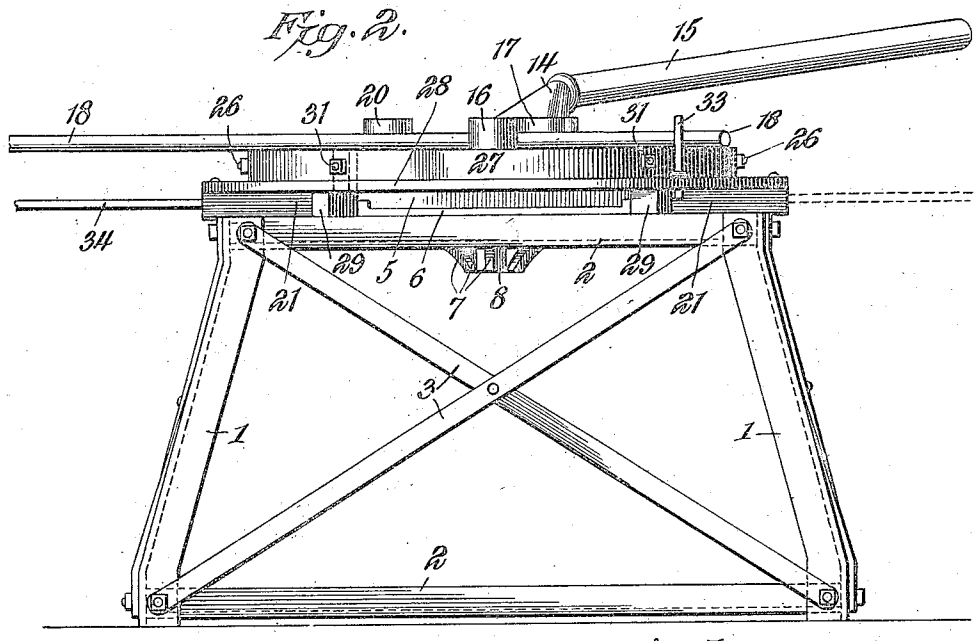


Fig. 4.

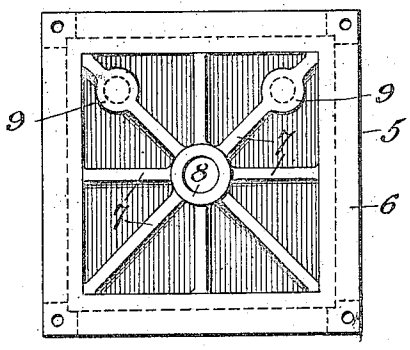


Fig. 5.

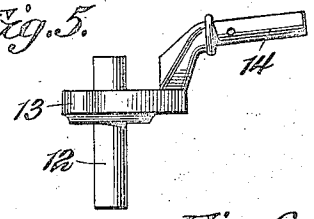


Fig. 6.

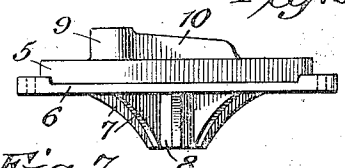


Fig. 7.

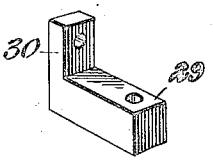
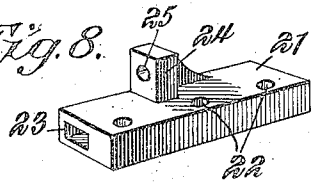


Fig. 8.



WITNESSES

Howard D. Orr.

F. T. Chapman.

Theodore Kardong, INVENTOR

BY E. L. Siggers

ATTORNEY

UNITED STATES PATENT OFFICE.

THEODORE KARDONG, OF MINNEAPOLIS, MINNESOTA.

BAR BENDER.

1,425,261. Specification of Letters Patent. Patented Aug. 8, 1922.

Application filed June 25, 1920. Serial No. 391,649.

To all whom it may concern:

Be it known that I, THEODORE KARDONG, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Bar Bender, of which the following is a specification.

This invention has reference to bar benders, particularly metal bars designed for reinforced concrete work although not necessarily confined thereto.

One of the objects of the invention is to provide a bending machine which may be set up in a shop or other suitable location whereby metal of considerable thickness, say up to 1½" in diameter, may be bent into various shapes by hand to be imbedded in concrete work to strengthen the latter.

In accordance with the invention there is provided a frame work or bench of appropriate height and of a structure resistant to relatively heavy strains, upon which there is located a swiveled or pivoted bending head or knuckle capable of movement to bend the bar right or left to any angle up to 180 degrees. The bending head is pivoted to turn about an upright axis. These features are valuable in that the bends are either right or left, thereby saving reversing the bars. The machine is capable of receiving an extension handle for heavy bars, the extension handle being connected to the bending head or knuckle.

Because of the movement of the bending head about an upright axis it is possible to place a resistant roller on either side of the bending member for right and left hand bending. The resistant roller is carried by a stub shaft and a socket to receive the latter is provided on each side of the bending member, into which socket the stub shaft is placed, one socket being utilized for bending in one direction and the other for bending in the other direction.

The invention provides a horizontal support or track for the bar to rest upon and provision is made for the support of a measuring stick in order to locate on the bar the point of bending. The carriers for the bar rests are utilized to carry the measuring stick.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing in the drawings, but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

Referring to the drawings:

Fig. 1 is a plan view of the machine showing a bent bar located thereon.

Fig. 2 is an elevation of the machine of Fig. 1.

Fig. 3 is a vertical axial section of the machine shown in Fig. 1.

Fig. 4 is a bottom plan view of the bending table casting.

Fig. 5 is an elevation of the bending head and its supporting spindle.

Fig. 6 is a side elevation of the table shown in Fig. 4.

Fig. 7 is a perspective view of one of the supporting blocks for the gauge strip and the bar rests.

Fig. 8 is a perspective view of one of the terminal blocks or castings for carrying the gauge strip and bar rests.

Referring to the drawings there is shown a main frame composed of legs 1, top and bottom connecting bars 2 and cross braces 3 which may be made of angle and strip metal properly riveted and bolted together, the legs 1 and bars 2 being conveniently made of angle metal. Upon the top of the frame there is located a platform 4 which may be conveniently made of wood although not necessarily confined to such particular material.

Secured on top of the platform 4 is a casting 5 constituting a table having a marginal strengthening rim 6 and radial strengthening flanges 7, of greater depth at the center of the table than at the margins thereof and rising toward and merging at their outer ends into the bottom of the table. At the central portion of the table the flanges 7 join a sleeve 8, and, at appropriate distances from the sleeve 8, certain of the flanges are formed with sockets 9 which,

may rise above the top of the table. For strengthening purposes the sockets 9, where rising above the top of the table, are provided with flanges 10 merging into the upper surface of the table. Bolts 11 or other suitable fastening devices secure the table to the platform 4.

Adapted to the sleeve 8 is a stout fulcrum pin 12 carrying a bending head 13 from which there projects an arm 14 carrying a hollow handle extension 15. Provision may be made for using handles 15 of different lengths or for extending the length of the handle 15 for heavy work, the handle 15 serving as the long arm of a lever of which the head 13 constitutes the short arm, and provision is also made for the application of a collar 16 to the upper end of the pin 12, while a wear or bending plate or shoe 17 applied to the arm 14, which at its junction with the head 13, is laterally broadened, constitutes a bearing member for holding a bar or rod 18, to be bent, in engagement with the collar 16 during the bending operation.

There is also provided a pin 19 adapted to either socket 9 and of a length to rise above the upper end of the socket, there receiving a roller 20 and constituting a resistance roller holding the bar 18 from following the movement of the bending head while the latter is being actuated to bend the bar about the collar 16.

On diametrically opposite sides of the platform there are secured blocks 21, one of which is shown separately in Fig. 8. Each block is provided with perforations 22 for the passage of securing means whereby the block is fastened to the platform 4 and each block, which is shown as of oblong shape, has an entering socket 23 at one end, and a short post 24 about midway of its length. Each post 24 has a perforation 25 therethrough for the passage of a bolt 26, or other suitable means for securing a corresponding end of bar rest 27, at a suitable height to support the bar 18 at the end remote from that being bent. The bar rest 27 is indicated in the form of a substantially semi-circular flat strip set on edge. Outside of and substantially concentric with the bar rest is a similarly curved gauge strip 28 fast at the ends to the blocks 21. At intermediate points in the length of the bar rest 27 and gauge 28 are other supporting blocks 29, each with an end post 30 formed thereon. The blocks 29 underride the gauge 28 with the bar rest 27 against the posts 30 to which they are secured by bolts 31 or in other suitable manner, the gauge 28 being supported by and made fast to the blocks 29 or in any appropriate way. The gauge 28 is provided with a series of perforations 32 any one of which is adapted to receive a stop pin 33 of such length as to be in the path of the end of the bar 18 when bent.

The socket 23 in each block 21 is designed to receive a measuring stick 34 with suitable graduations thereon to guide an operator in properly placing the bar 18 before beginning the bending operation.

If it be considered that the bar 18 has not been bent at all, the bending head or knuckle 13 is suitably located to permit the bar to engage against the roller 20 and to also pass between the shoe 17 and the collar 16. Now, on moving the handle 15 in the proper direction, which would be clock-wise in Fig. 1, the rod 18 is held against the roller 20 while the shoe 17 causes the bending of the corresponding portion of the rod 18 about the collar 16, the bending continuing until the pin 33 is reached, the location of the pin 33 determining the angle of the completed bend and the length of the bent end of the arm being determined by the original location of the rod as determined by the measuring rod or scale 34.

For bending the rod in the opposite direction it is only necessary to shift the roller 20 to the other pin 19, for two pins 19 and two measuring sticks 34, on opposite sides of the machine, are made a part of the permanent equipment. On swinging the head 13 in the opposite direction from that first considered the opposite bend is produced. In this case the rod 18 bears against the roller 20 in its changed position and the shoe 17 bears appropriately upon the rod causing the bend to occur as desired. In such case the pin 33 is shifted to another perforation 32 in accordance with the changed condition.

The machine is therefore adapted to the performance of bendings in different directions, with a minimum of change and consequently with expedition. Such arrangement is advantageous as a time and labor saver, especially where large numbers of bars are to be bent.

What is claimed is:

1. In a bending machine, a table, a bending head rotatably mounted on the table, comprising a vertical fulcrum pin and a bending shoe spaced from the pin adapted to engage and bend rods inserted in the space between the pin and shoe, a pair of vertical sockets in the table on opposite sides of said bending head, and a roller having a pin insertable in either of said sockets and adapted to form an abutment for bending rods in either a clockwise or counterclockwise direction.

2. In a bending machine, a plate, a fulcrum pin having a flat-faced shoe spaced apart and rotatable on the plate and adapted to receive rods inserted therebetween, spaced upstanding sockets integral with the plate arranged on opposite sides of said shoe, and an abutment roller selectively engageable with either of said sockets, adapt-

ed to hold rods against movement for bending them in either a clockwise or counter-clockwise direction.

3. In a rod bender, a bed plate, a bending head rotatably mounted in the center of the plate, said head comprising a vertical fulcrum pin having a collar, and a bending shoe firmly connected to the pin and spaced from the collar to receive the rod to be bent between the collar and shoe, a pair of upstanding roller receiving sockets on opposite sides of, and in alignment with, the idle position of the bending shoe, and a roller adapted for selectively engaging either of the sockets and to cooperate with the bending head to form either right or left hand bends at will.

4. In a bending machine, an oblong table, an oscillatable bending head on the table comprising a central vertical pin, and a shoe rotatable with and spaced from the pin, a measuring device adapted to be secured to either of two opposite sides of the table and extending radially from the axis of the bending head, a pair of sockets on opposite sides of the idle position of the bending shoe, and a roller adapted to be mounted in either of said sockets.

5. In a bending machine, a table, bending means rotatably mounted in the center of said table, a pair of blocks on opposite sides of the table having sockets extending radially from the axis of rotation of said head, a measuring device adapted to be removably mounted in either of the sockets, a bar rest secured to each of said blocks, and a roller removably mounted on the table and adapted to hold rods during the bending operation.

6. In a rod bender, a table, a rotatable bending head mounted on the table means for manually operating the head, an abutment roller removably mounted on the table, a pair of blocks secured to the table on diametrically opposite sides of the axis of the bending head, a semi-circular bar rest, and an arcuate gage each secured to said blocks and to the table, each of the blocks having a socket adapted to receive a rod measuring stick.

7. In a bending machine, a table, a bed plate on the table, bending means rotatably mounted on the plate, an abutment roller adapted to be rotatably mounted on the plate on opposite sides of the bending means, a pair of blocks secured to the table on diametrically opposite sides of the axis of the bending means, an arcuate bar rest, and a semi-circular perforated gage both arranged concentrically with the axis of the bending means and secured to said blocks, and stop means insertable in the perforations of said gage bar to determine the angle of the bends to be made.

8. In a bending machine, a table, a bed plate mounted on the table, a bending head rotatably mounted in a socket in said plate, a pair of roller receiving sockets integral with the plate on opoiste sides of the bending head, a rod measuring gage removably mounted on the table and adapted to be selectively secured on diametrically oposite sides of the axis of the bending head, and a bar rest secured to the top of the table.

9. In a bending machine, a support, bending means thereon, blocks at diametrically opposite points on the support, each block having a socket, said socket being adapted to receive a measuring means, and a bar rest and gauge connected at their ends to said blocks.

10. In a bending machine, a frame, a platform thereon, bending means on said platform, a bar rest arranged concentric with the axis of said bending means, and blocks for supporting the ends of said bar rest, said blocks each having a socket for the reception of a measuring means which extends outwardly in a radial direction.

11. A bar bending machine comprising a suitable frame, a table mounted on the frame provided with an upright pivot and rising therefrom, a bar bending head mounted on the pivot in juxtaposition thereto, a resistance member associated with the head and having seats on the table on opposite sides of the pivot pin, a bar rest substantially concentric with the pivot pin, a gauge also substantially concentric with the pivot pin, and blocks adjacent to the table for supporting the bar rest and the gauge.

12. A bar bending machine comprising a suitable frame, a table mounted on the frame and provided with an upright pivot and rising therefrom, a bar bending head mounted on the pivot in juxtaposition thereto, a resistance member associated with the head and having seats on the table on opposite sides of the pivot pin, a bar rest substantially concentric to the pivot pin, a gauge also substantially concentric with the pivot pin, and blocks adjacent to the table for supporting the bar rest and the gauge, the bar rest comprising a strip set on edge and the gauge being provided with a series of perforations to receive a stop pin for predetermining the extent of bending of the bar.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

THEODORE KARDONG.