

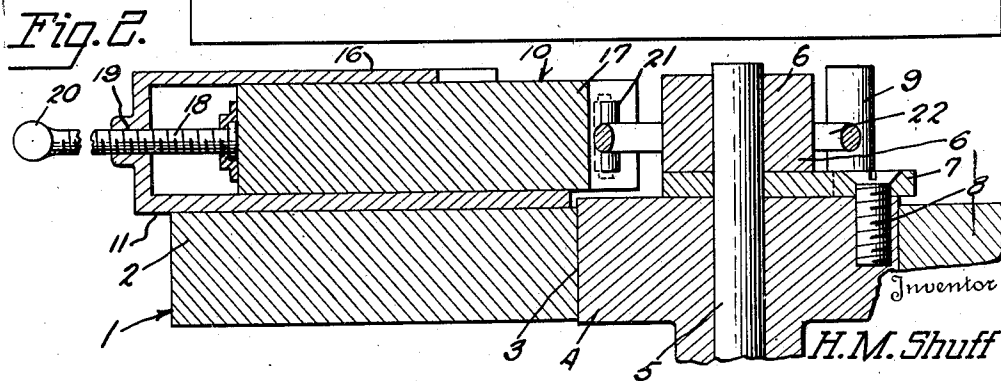
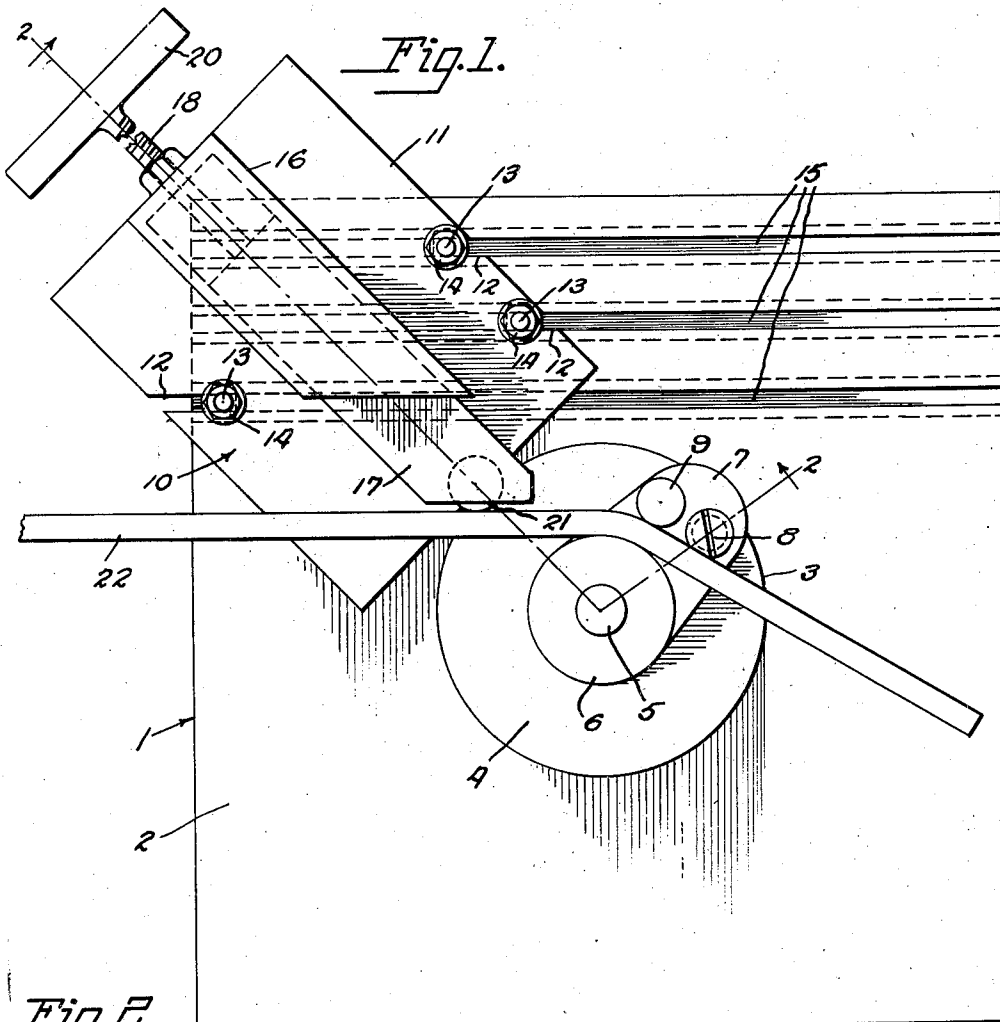
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BENDING MACHINE ABUTMENT GUIDE

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BENDING MACHINE ABUTMENT GUIDE

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1 Claim. (Cl. 153—40)

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This invention relates to bending machines, particularly to such machines for bending steel rods such as are used to reinforce concrete.

The primary object of the present invention is to provide a bending machine having improved means for adjusting the guide block which greatly simplifies adjustment for different size stock by maintaining the correct relative positions between the guide block and the rotating bending die at all points of adjustment. This permits the operation of the machine by unskilled help and greatly reduces the time necessary to make a changeover to bend stock of a different size. When once set the guide block will keep in position until again adjusted.

A further object of the invention is to provide self positioning bending dies and bending pins which are readily removable as a unit, so that when stock of a different size is to be bent the bending die and pin may be lifted off and another unit having the proper spacing slipped into place. A simple means positions and holds the unit upon the turntable.

Other objects of the invention will appear from the following description taken in conjunction with the drawing which accompanies and forms a part of this specification and throughout the several figures of which like reference characters are used to denote like parts.

In the drawings:

Figure 1 is a top plan view of a bending machine incorporating the principles of the present invention; and

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1.

Referring to the drawings in detail, the bending machine is generally indicated by the numeral 1, and comprises a work table 2 which is cut out to form a circular opening 3 located approximately centrally of the table. Seated in the opening 3 is a turntable 4 mounted upon a shaft 5 designed to be rotated by any conventional means (not shown).

The shaft 5 extends above the turntable 4 to receive a bending arm 7 and a circular forming die 6. The bending arm is provided with openings near its outer end, into one of which a screw 8 is placed and threaded into an opening in the turntable 4, so that the arm will be fixed relative to the turntable and rotate therewith. Into the other opening in the bending arm a bending pin 9 is positioned, the periphery of the bending pin being spaced from the periphery of the forming die 6 the diameter of the stock

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to be bent. It is contemplated that a number of bending arms will be provided with each machine, the bending pins being spaced at varying distances from the center of the opening in the arm which surrounds the central drive shaft. The proper arm for the particular job to be done is selected and positioned upon the turntable before the job is commenced. In operation, a rod is placed between the bending pin and the forming die and the turntable rotated. This causes the bending pin to move on an arc and bend the rod about the forming die.

To hold the rod against movement during the bending operation, an abutment 10 is provided, adjustable toward and away from the forming die radially to the axis of the shaft 5 and the forming die.

The abutment comprises a base plate 11 having a plurality of slots 12 extending angularly inward from opposite edges of the plate. The shanks of bolts 13 pass through these slots, and nuts 14 are tightened to hold the plate in position. The heads of the bolts are held in slots 15 which run parallel to one another completely across the table 2. The slots 12 in the plate 11 are so disposed that the plate will be held upon the table at an angle with the longitudinal center line of the plate radial to the forming die. Centrally located upon the plate is a guide 16 slidably receiving the abutment proper 17. A screw-threaded rod 18 is attached to the outer end of the abutment 17 and passes through a threaded opening in the guide housing 16. A handle 20 is provided whereby the rod may be turned and the abutment advanced toward, or backed away from the forming die. A roller 21 is carried at the forward end of the abutment 17 to contact the rod 22 to be bent to reduce friction between the abutment and the rod.

The angular relationship of the abutment to the forming die is of the utmost importance. When properly set even the most unskilled operator can properly adjust the abutment when the size of the stock to be bent is changed. The slots 12 are correctly cut into the plate 11 so that when the slots surround the bolts 13 the plate automatically assumes the proper angle. To obtain the proper position for the abutment, the plate is moved transversely of the table, the bolts sliding in the slotted guideways 15, until the extended longitudinal axis of the abutment coincides with a radius of the forming die. The nuts 14 are then tightened to clamp the plate in position. Once this adjustment is made the plate is fixed and need not be again moved. All adjust-

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ment is thereafter made simply by manipulating the screw 18. The angle of the plate and abutment is preferably 45° to a line drawn transversely across the work table parallel to the front and back edges, and when the abutment is properly adjusted the point of contact between the abutment and the stock to be bent will be half the diameter of the forming die plus the diameter of the stock in back of the axis of the forming die and a like distance to one side. As the abutment moves radially to the forming die, this ratio to the rear and to the side will be maintained in all positions of adjustment.

By having the abutment contact the stock off to one side of the forming die, the stock is held much more rigidly than if the contact were made at the bending point as has been formerly done in devices having simplified adjusting means.

Various changes from the precise embodiment disclosed will readily suggest themselves to those skilled in the art to which this invention appertains, all within the scope of the claim.

What I claim is:

A rod bending machine including a work table, a turntable within the work table, a bending die and a bending pin carried by and rotatable with said turntable, an abutment for abutting a side portion of a rod to be bent, a base plate having guiding means supported thereon for slidably mounting said abutment, opposite edge portions of said base plate having slots extending inwardly from the edges, said work table having on its surface a plurality of slots in spaced parallel relationship and parallel to the direction of initial movement of the rod to be bent, a plurality of bolts whose heads are slidable in said last men-

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tioned slots, said bolts having means for fastening said base plate in any selected position along the direction of said last mentioned slots, manually operated screw-threaded means for adjustably sliding said abutment along said guiding means toward or away from said bending die but confined along a radial line at an angle of the order of forty-five degrees with respect to a radius extending to the initial point of bending of the rod on said bending die so that the distance between such initial point of bending and the rod contacting point of said abutment will bear a substantially constant ratio to the diameter of rod for varying rod diameters.

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