

Dec. 22, 1931.

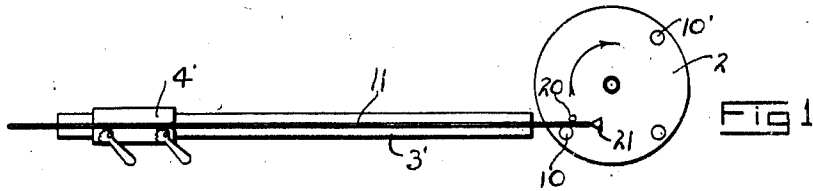
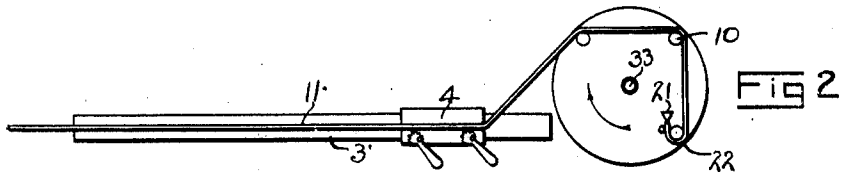
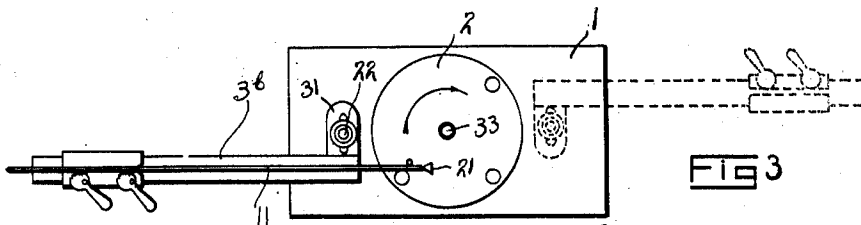
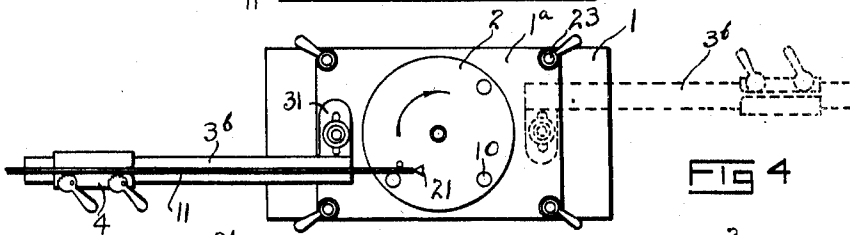
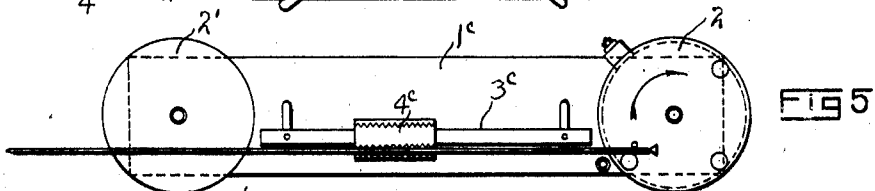
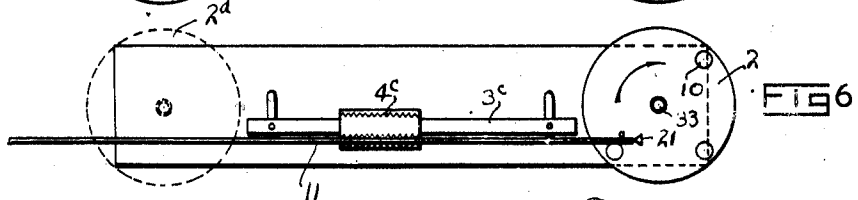
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1,837,196

BENDING MACHINE

Filed July 26, 1928

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

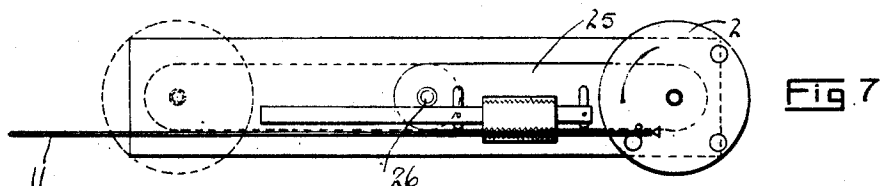


Fig 7

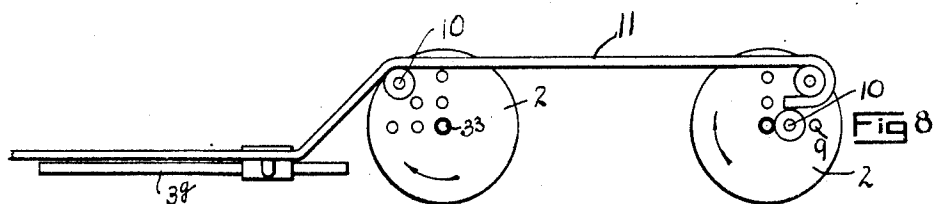


Fig 8

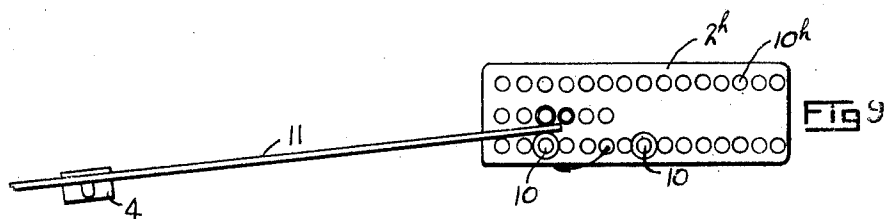


Fig 9

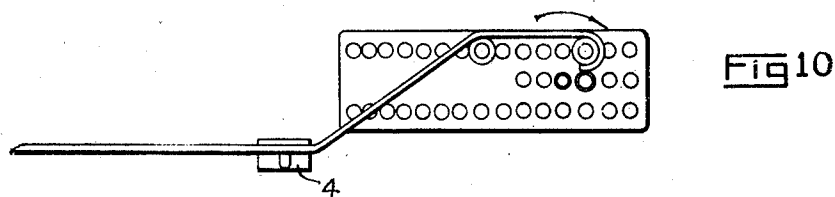


Fig 10

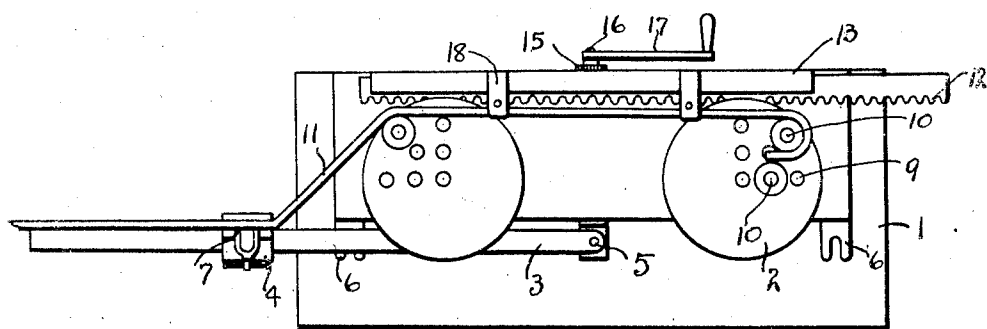


Fig 11

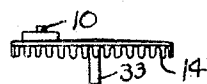


Fig 12

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UNITED STATES PATENT OFFICE

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BENDING MACHINE

Application filed July 26, 1928, Serial No. 295,462, and in Germany June 14, 1927.

Our invention relates to an improvement in machines for bending metallic rods or bars and the like.

It is an object of our invention to provide a machine by means of which rods used particularly in reinforcing concrete work and the like may be easily and quickly bent into the proper shape for use.

It is desired to provide a rotating plate whereby the rod may be gripped and brought into contact with pins upon said plate and means to guide said rod so that it may be bent.

It is also an object to provide a bending device of this kind wherein the work may be inserted from either of two opposite sides of the device.

The invention resides in combinations of rotatable plates and contact pins thereon whereby the desired shape may be imparted to the rod with a minimum of difficulty.

In the drawings Fig. 1 is a top plan view partly diagrammatic illustrating one form of our device. Fig. 2 is a similar view showing the manner in which the rod is operated upon by the device. Fig. 3 is a plan view illustrating a different type of guide member for the rod, adapted to be reversed in position. Fig. 4 is a similar construction wherein the table or support may be rotated to reverse the position of the work. Fig. 5 is a top plan view of a different embodiment of the device wherein two rotary plates are provided either one of which may be used. Fig. 6 is a similar construction in which the movement of the plate to different positions is provided for. Fig. 7 illustrates a still different embodiment of the invention. Fig. 8 is a plan view largely diagrammatic illustrating the use of two plates. Figs. 9 and 10 illustrate the use of a slightly different embodiment of the invention. Fig. 11 is a plan view of a device embodying the invention in which the operating mechanism is shown. Fig. 12 is a side illustration of one of the plates shown in Fig. 11.

In carrying out our invention we contemplate the mounting of a plate in a rotatable position upon a support or table 1, said plate 2 being provided with a central axis 33 engaging within the bearings in the table for

rotation. Either one or two plates may be employed as will be later described and, with reference particularly to Fig. 11, a guide bar 3 is fixed in connection with the support to slidably receive a clamping member 4. In the embodiment shown in Fig. 11, the bar 3 is pivoted at 5 centrally of the table and is adapted to swing to either side to act as a guide; and supports 6 are provided at either end of the table in which clamping means upon the bar may be received. The clamping member 4 which slides upon the bar may be of any desired form having a slot 7 therein to receive the rod and hold it relative to the said clamp.

Each of the plates 2 may be provided with a plurality of openings 9 to receive a contact pin 10. A plurality of these pins 10 may be employed and it is to be understood that they may be spaced relative to each other so that a rod 11 may be engaged between them as the plate is rotated.

These plates may be rotated by any desired means but we have shown a rack 12 slidable in a support 13 having teeth thereon to engage with teeth 14 upon the plates. The lower side of the rack is provided with gear teeth which engage with a gear 15 mounted upon a shaft 16 rotatable by means of a crank 17 or any other desired means. It will be obvious that when the gear 15 is rotated it will cause the rack 12 to be advanced in either direction so as to rotate the plates 2. Brackets 18 on the guide plates 13 may be provided to overhang the rod 11 and hold it in position while it is being bent.

In Fig. 1 the plate 2 has a contact pin 10 and a smaller pin 20 closely adjacent thereto to allow the rod to be engaged between them. A stop or detent 21 on the plate is provided to fix the position of the rod when it is to be rotated. The rod 11 is engaged by a sliding clamp 4 and is slidable along the guide bar 3. When a rod is engaged by the pins upon the plate and the plate rotated in the direction of the arrow there will first be formed on the end of the rod a hook 22, as shown in Fig. 2. The rod will then engage the contact pins 10 and 10' and as the rod is thus drawn toward the plate the clamping member 4 will slide

along the guide 3', thus forming the rod into the shape shown in Fig. 2 ready to be employed in reinforced concrete work. It is to be understood that different forms are desirable and as will be later shown, different positioning of the contact pins upon the plate provide for this change of form. It is desirable to form the bend in either a righthand or lefthand direction and in order that both forms may be made with but little change in the apparatus, in Fig. 3 we have shown how the guide member 3b may be secured at either end of a table 1 so as to guide the rod to the plate 2 from either side. To accomplish this, the guide member 3b is formed with a laterally extending arm 31 thereon, said arm having a slot to receive a clamping bolt 22. As will be seen from the dotted lines in Fig. 3, this guide may be removed and placed in a similar position at the opposite end of the table, as shown.

In Fig. 4 the same result is accomplished by placing the plate 2 upon a rotatable table 1a. The rotatable table is secured to the main table 1 by means of removable bolts 23 at each corner thereof. When these bolts are moved the table may be swung on a central axis bringing the guide arm into the dotted line position 3b as indicated. When in this position the rotatable table may be again clamped securely to the main table.

In Fig. 5 the arrangement there shown contemplates the use of two rotatable tables 2 and 2'. The guide arm 3c is rotated between the two plates on the table 1c and it is to be understood that either plate may be used as desired and in this manner either a righthand or lefthand form of rod may be produced. In Fig. 6 the dotted line position 2d indicates the use of one plate at either end of the table. The device is otherwise similar to the Figure 5 embodiment, it being contemplated, however, that the one plate 2 may be placed at either end of the table as indicated.

In Fig. 7 the same idea is accomplished by rotating plate 2 upon one end of an arm 25, which is pivoted at 26 centrally of the table. This arm may be swung to position the plate 2 at either end of the table, thus allowing the desired bend to be given to the rod.

Fig. 8 shows in a diagrammatic manner the use of two plates spaced apart with the guide member 3g placed at the left of the bending plates. With this arrangement the desired form of bending given to the rod may be varied as will be obvious. In this device the operation may be identical with that described in reference to Fig. 11 previously referred to.

In Figs. 9 and 10 the shape of the plates 2h is varied so as to produce an oblong plate which may have pin-receiving openings 10h at desired points throughout the length of the plate. By the use of this plate which is rotatable about its center as are the other plates, different shapes may be imparted to

the rods and in Fig. 9 the position of the rod at the beginning of the operation is shown. In Fig. 10 the plate has been rotated through approximately 180°, giving a desired shape to the rod 11.

The manner in which the rods are bent by the use of our apparatus will be clear from the description already given. By the use of this apparatus it is possible to adjust the position of the contact pins upon the plates and introduce the rod into correct position thereon and then bend it to the desired form in a short time and with a minimum of manipulation.

What we claim is new is:

1. A bending machine including a rotatable plate, means thereon to grip a rod when said plate is rotated, contact pins on said plate, a guide bar adjacent said plate, a rod clamp slidable on said bar, and means to rotate said plate, whereby said rod may be forced against said contact pins and bent.

2. A device such as set out in claim 1 in which a detent pin is provided upon said plate to fix the position of said rod.

3. A bending machine including a rotatable plate, contact pins on said plate adapted to engage a rod, means to guide said rod in a direct line to said plate, and means to rotate said plate whereby said pins may grip said rod and bend the same about said pins, said guiding means being reversible to feed the rod to said plate from either side.

4. A bending machine including a rotatable plate, contact pins on said plate adapted to engage a rod, means to guide said rods in a direct line to said plate, and means to rotate said plate whereby said pins may grip said rod and bend the same about said pins, including a support adapted to swing into a plurality of positions, said plates being mounted on said support.

In testimony whereof we hereunto affix our signatures, this 9th day of July, A. D., 1928.

CARL BERGES.

WILHELM BERGES.