June 16, 1931. A. J. BULGER 1,810,342

MACHINE FOR CRIMPING PIPE SLEEVES

Filed July 24, 1930

Fig. 1.

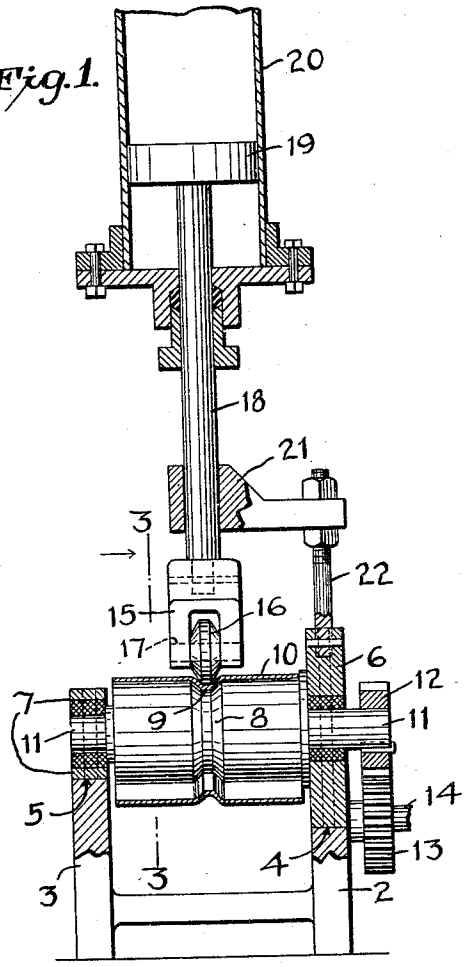


Fig. 2.

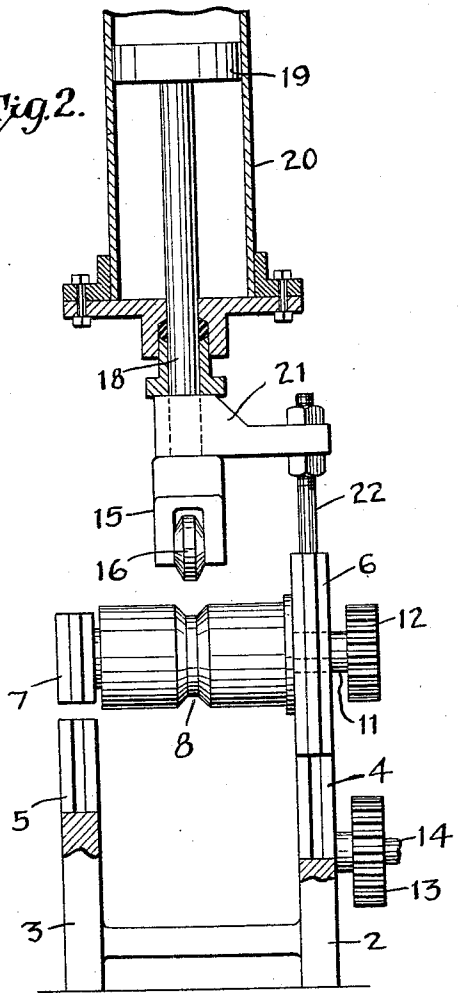
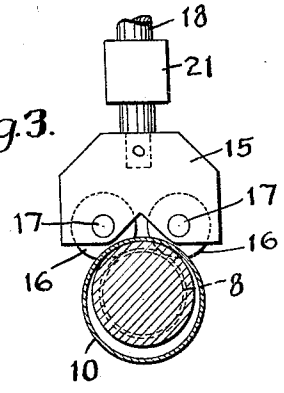


Fig. 3.



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UNITED STATES PATENT OFFICE

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MACHINE FOR CRIMPING PIPE SLEEVES

Application filed July 24, 1930. Serial No. 470,379.

This invention relates to an improved machine for forming a central internal crimp or bend in a short length of pipe, in the manufacture of couplings used principally for connecting sections of pipe piles. Rolling mills for rolling an internal grooved bend, which is subsequently closed by endwise pressure applied to the sleeve, are disclosed in the Pierce Patents 1,602,550 and 1,633,349.

The objects of the invention are to make possible far greater output, to reduce wear and replacements very materially, to insure the production of perfectly formed crimps in the sleeves, to facilitate the placement and removal of the sleeves over the mandrel roll, and to provide a machine of generally improved design.

In the machines which have been in use up to this time for grooving these sleeves, power was applied to a pair of rolls having beads intermediate their ends, and the grooved mandrel roll, which was located over these rolls and could be raised and depressed, was an idler roll. A primary feature of my machine is that the centrally grooved mandrel roll is the driven roll. The result of this is that line contact is obtained between the sleeve and the roll which turns it, whereas in the prior machines the beads rotated the sleeve through point contact. This change eliminates a large amount of slippage and wear, which formerly necessitated replacement of the beads every two or three days, and practically doubles the production obtainable with a machine. In the present machine the crimping elements are free to roll and are driven by the sleeve, so that the wear on these elements is reduced to the minimum, whereas between the sleeve and the driven mandrel roll within there is line contact, approaching surface contact, and slippage is very slight. It therefore takes much less time to complete the formation of the crimp in the sleeve, and the crimp is always properly formed and of the proper depth notwithstanding that the crimping rolls are infrequently replaced, the life of these elements being greatly increased. Such slippage as may occur between the sleeve and the mandrel roll is without serious consequence as far as wear is concerned because the wear is distributed over the cylindrical surface of this roll.

In my new machine the mandrel roll is preferably mounted in the frame below the crimping rolls, instead of above as formerly. The crimping rolls are mounted in a carriage which is pressed downward and can also be raised away from the mandrel roll, preferably by a double-acting fluid-pressure cylinder and piston. A further feature in this connection is the provision of a connection whereby the means for raising the crimping rolls also serves, after the proper separation of the rolls has been effected, to raise the mandrel roll so that the sleeve can be removed and a fresh one put on.

In the accompanying drawings, forming part hereof:

Fig. 1 is a view of the machine, principally in central vertical section, showing the crimping rolls pressed against a sleeve on the mandrel roll;

Fig. 2 is a similar view showing the vertically movable parts raised; and

Fig. 3 is a section taken on the line 3—3 of Fig. 1.

The frame of the machine has side members 2, 3 formed, respectively, with recesses 4, 5 in which bearings 6, 7 are supported and are guided for vertical movement, the recesses being open at the top. The recess 4 and the corresponding bearing 6 are longer than the recess 5 and the bearing 7, so that when these bearings are raised equally the bearing 6 will remain in engagement with its guide when the bearing 7 is free of the frame.

The mandrel roll has a central circular groove 8 in which to form the internal crimp 9 of the sleeve 10.

The shaft or journals 11 of the mandrel roll pass through the bearings 6, 7, and the end of the shaft or journal outside the bearing 6 is provided with a gear 12, which, when the bearings rest on the bottoms of the recesses 4, 5, is in mesh with another gear 13 on a shaft 14 journaled in the stationary frame. The driving power is transmitted to this shaft and thence to the mandrel roll.

Over the mandrel roll there is a vertically movable carriage 15 carrying a pair of narrow crimping rolls or discs 16 on axles 17. This carriage is fixed to the lower end of a piston-rod 18 which extends downward from a piston 19 in a double-acting hydraulic cylinder 20, by means of which the crimping rolls can be pressed downward against a sleeve on the mandrel roll, and can be raised away from the mandrel roll when the operation of forming the crimp has been finished.

A yoke 21 having an opening loosely encircling the piston-rod, so that the downward movement of the piston-rod and crimping-roll carriage does not apply downward pressure to the yoke, is raised by the carriage after a portion of its upward movement has taken place, and this lift is transmitted through a rod 22 to the bearing 6, to lift the mandrel roll sufficiently to carry the bearing 7 above the frame member 3. In this position, the crimped sleeve is removed and an uncrimped sleeve is slipped over the mandrel roll. The bearing 7 is preferably made small enough so that it does not have to be removed from the shaft or journal of the mandrel roll when this is done.

While the preferred embodiment of the invention has been described with particularity, it will be understood that changes in form, arrangement, and detail are permissible.

I claim:

1. A machine for crimping pipe sleeves, comprising a frame, a mandrel roll having a groove intermediate its ends, said roll being mounted in the frame so that it can be raised to permit placement and removal of the sleeves over it, means for driving the mandrel roll, crimping rolls and a crimping roll carriage over the mandrel roll, means for pressing said crimping roll carriage downward and for raising it, and a connection whereby this means also serves to raise the mandrel roll.

2. A machine for crimping pipe sleeves, comprising a frame, a mandrel roll having a groove intermediate its ends, said roll being mounted in the frame so that it can be raised to permit placement and removal of the sleeves over it, means for driving the mandrel roll, crimping rolls and a crimping roll carriage over the mandrel roll, a double-acting fluid-pressure cylinder and piston with a piston-rod connected to said carriage for pressing the same downward and for raising it, and a yoke loose on said piston-rod for transmitting lift to the mandrel roll.

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