

Oct. 22, 1968

J. E. MINICK

3,406,600

METHOD OF REMOVING MATERIAL FROM THE INSIDE OF A COIL

Filed April 27, 1966

FIG. 1.

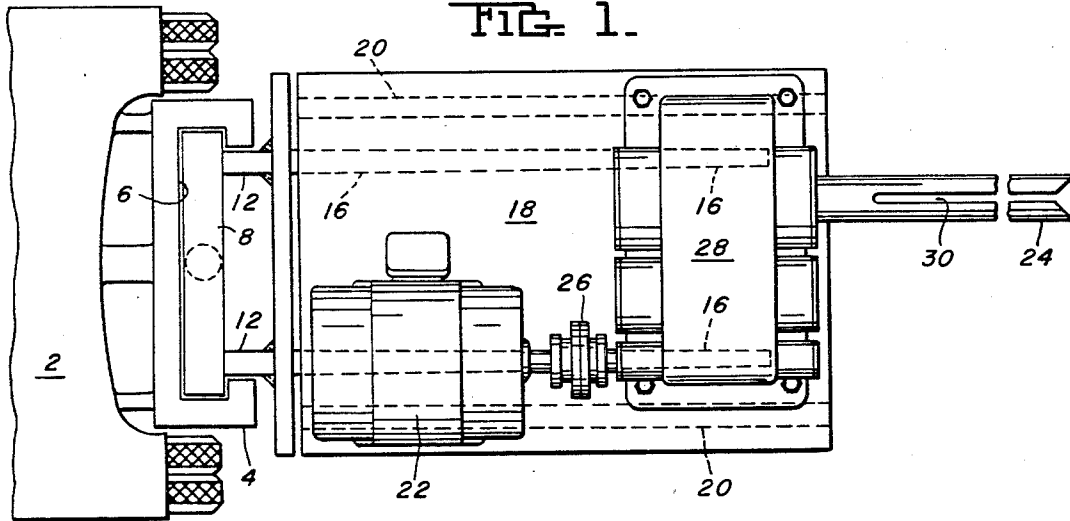


FIG. 2.

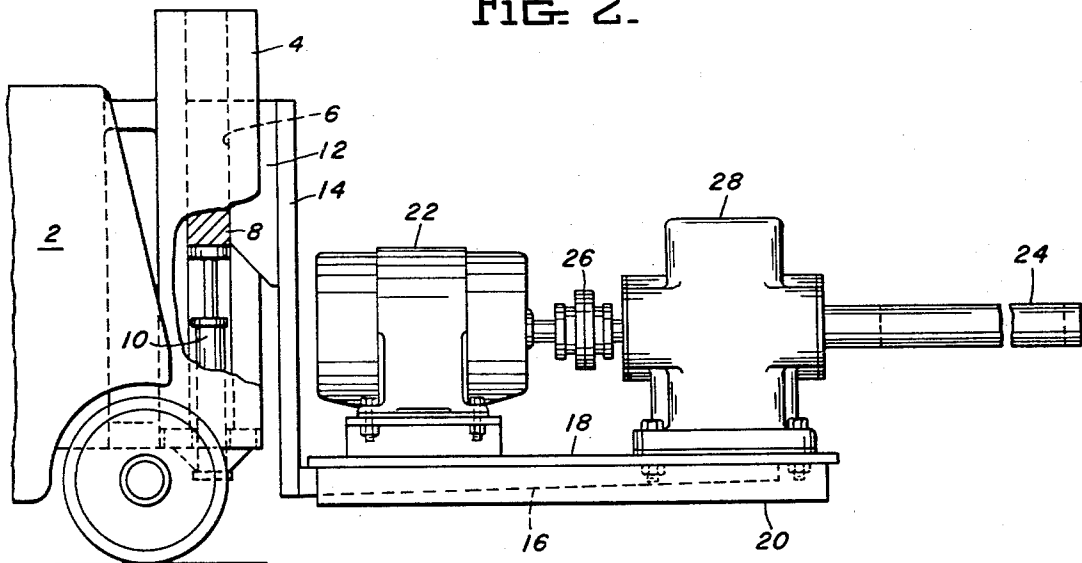


FIG. 3.

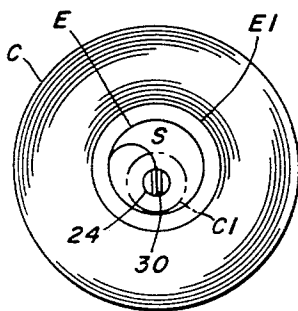


FIG. 4.

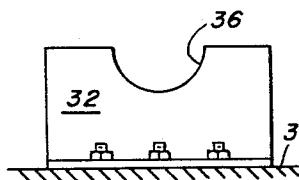
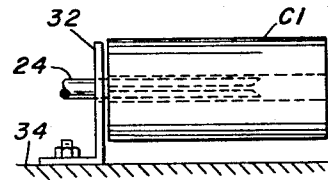


FIG. 5.



INVENTOR.
JAMES E. MINICK
By *Donald G. Dalton*
Attorney

1

3,406,600

METHOD OF REMOVING MATERIAL FROM THE INSIDE OF A COIL

James E. Minick, Pittsburgh, Pa., assignor to United States Steel Corporation, a corporation of Delaware
Filed Apr. 27, 1966, Ser. No. 545,723
4 Claims. (Cl. 83—13)

This invention relates to a method of removing material from the inside of a coil and more particularly to removing material from a coil of steel strip to increase the inside diameter of the coil. In strip finishing operations, the coiler and uncoiler heads for the various units may vary in diameter. In some instances the inside diameter of the coil is so small to be placed on the head of an uncoiler. At present, in order to make the inside diameter larger, the coil is unwound and recoiled on a coiler having the correct diameter head or the strip is withdrawn manually from the inside of the coil and the excessive strip removed. Both of these methods are expensive and time consuming.

It is therefore an object of my invention to provide a method of removing material from the inside of a coil of strip which is inexpensive, safe and does not require a great deal of time.

This and other objects will be more apparent after referring to the following specification and attached drawings, in which:

FIGURE 1 is a top plan view of the apparatus of my invention;

FIGURE 2 is a side elevation of the machine of FIGURE 1;

FIGURE 3 is a view showing one step of the method;

FIGURE 4 is an end elevation of apparatus used in the practice of my invention; and

FIGURE 5 is a view showing the final step in the method of my invention.

Referring more particularly to FIGURES 1 and 2 of the drawings, reference numeral 2 indicates a truck such as a fork tractor having a main mast 4 at its forward end. The mast 4 has a vertical T-shaped groove 6 therein for receiving a support 8 which is movable vertically by means of hydraulic motor 10. The support 8 has two forwardly extending spaced arms 12 which has a vertical plate 14 secured to their forward end with horizontal lines 16 on its lower end. The parts so far described are conventional.

I provide a platform 18 which preferably has two spaced legs 20 so that the lines 16 can be inserted below the platform 18. This permits the truck 2 to be readily used for other purposes. An electric motor 22 is mounted on the platform 18 and is preferably provided with electricity from the power supply of the truck. The motor 22 drives a rotatable shaft 24 through coupling 26 and speed reducer 28. The shaft 24 has a longitudinal slot 30 therethrough which extends from a point adjacent the inner end to the outboard end thereof.

In carrying out my method, truck 2 is moved to a position adjacent a coil C of strip S, the coil C having an axial eye E therethrough. The coil C is positioned in such a manner that it cannot move and the shaft 24 is inserted into the eye E. The inner end of the strip S is then inserted into the slot 30 and the shaft 24 is rotated by the motor 22. It will be noted that the diameter of

2

the eye E is substantially greater than the diameter of the shaft 24 so that the strip S can be readily inserted into the slot 30. Of course, the end of the strip S could be fastened to the shaft 24 by other means. Assuming that the diameter of the eye E is 16 in. and that it is desired to increase the diameter to 20 in., rotation of the shaft 24 continues until the desired eye diameter E1 is obtained and a small coil of strip C1 is coiled on shaft 24. Shaft 24 is then moved axially with respect to the coil C, with additional strip telescoping from the coil C. The strip is then sheared across its width to separate the coil C1 from the main coil C. The end of the prime strip S is then re-inserted into the coil eye. If necessary, a binder strap or wire may be applied to the coil C1 to hold its convolutions in place.

The coil C1 is then removed from the shaft 24. For this purpose it is preferable to provide a vertical plate 32 secured to the floor 34 and provided with a cut-out portion 36 at its upper end. The truck 2 positions the coil C1 and shaft 24 as shown in FIGURE 5 with the shaft 24 extending through the cut-out 36 and the coil C1 bearing against the plate 32. Movement of the truck 2 away from the plate 32 causes the coil C1 to be stripped from the shaft 24.

While one embodiment of my invention has been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. The method of removing material from the inner end of a coil of strip having a central eye therein; which method comprises inserting a shaft having a diameter less than that of said eye axially into said central eye, fastening the inner end of said strip to said shaft, then causing relative rotation between said shaft and said coil to wind the inner end of said strip on said shaft, discontinuing rotation after the desired amount of strip has been wound on said shaft to form a small coil, removing said shaft from said eye with the small coil thereon, severing said strip on said shaft from the main coil of strip, and stripping the strip from said shaft.

2. The method of claim 1 in which said shaft has a longitudinal slot therein for receiving the inner end of said strip, and the strip is stripped from said shaft by holding the small coil from longitudinal movement and withdrawing the shaft axially.

3. The method of claim 1 in which said shaft is removed axially from said eye prior to severing the strip.

4. The method of claim 3 in which said shaft has a longitudinal slot therein for receiving the inner end of said strip, and the strip is stripped from said shaft by holding the small coil from longitudinal movement and withdrawing the shaft axially.

References Cited

UNITED STATES PATENTS

1,703,481	2/1929	Dixon	83—13 X
3,089,230	5/1963	Chapman et al.	29—427 X
3,110,099	11/1963	Murphy	29—426
3,168,847	2/1965	Roberts	83—13
3,296,690	1/1967	Barron	29—426
3,341,139	9/1967	La Tour	242—55

CHARLIE T. MOON, Primary Examiner.