July 5, 1949. W. H. WHITE 2,475,465

OPEN END DRUM CURLING ATTACHMENT FOR DOUBLE SEAMERS

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Fig. 2.

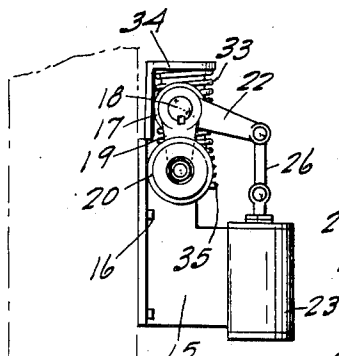
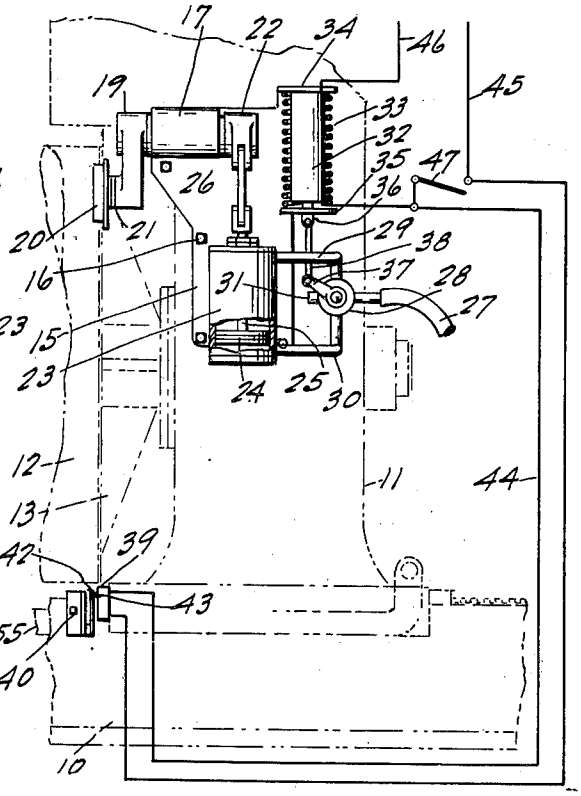


Fig. 1.



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OPEN END DRUM CURLING ATTACHMENT FOR DOUBLE SEAMERS

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4 Claims. (Cl. 113—7)

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This invention relates to a modification of the curling attachment described and claimed in my Patent 2,413,594, December 31, 1946 which covered an attachment which is operated through the medium of one of the seaming roll slides but which is thereby limited to double seamers which are equipped with slides, while the instant invention covers an attachment which can be modified in design while maintained the same principle of operation, for use with almost any type of double seamer and thus has that advantage over the one disclosed in the patent before-mentioned. It also dispenses with the changes required in the seamer.

Conventional double seamers are usually arranged only for flanging and seaming operations and to change over for an end-curling job requires considerable labor and time; first, for setting up the machine for the curling operation, and then changing back for conventional seaming.

Where great quantities of the same article are to be similarly operated upon, this is not of any great consequence. However on large drums the number to be operated upon is often relatively small, so that the change-over adds materially to the cost and causes a relatively great deal of delay.

By having an attachment which can be placed into operation with nothing more being required than that of adjusting the slides or roll carriers out of cooperative relation, the labor, expense and delay is reduced to an absolute minimum, and such is the purpose of this invention.

The objects and advantages of the invention are as follows:

First, to provide an attachment for double seamers which can be put into operation quickly and at a minimum of labor, expense and time delay, and which will effectively curl or false-wire the end of an open drum.

Second, to provide an attachment as outlined which is adaptable to substantially all types of double seamers, without changes in their structures or operating parts.

Third, to provide an attachment as outlined which does not interfere with normal operation of any other parts of a double seamer, and which can be made operative or inoperative at will.

Fourth, to provide an attachment as outlined which is automatically controlled by or with movement of the chuck to and from drum-cooperative position, and which can be manually controlled at will.

Fifth, to provide an attachment as outlined which can be provided as an integral part of a double seamer.

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In describing the invention reference will be made to the accompanying drawings in which:

Fig. 1 is a side elevation of the invention applied to a movable standard of one type of conventional double seamer shown fragmentarily.

Fig. 2 is a front elevation of Fig. 1.

The type of double seamer illustrated includes a bed 10 on which a standard 11 is slidable to and from the work 12 which is centered on a chuck 13, and which work is rotated during a seaming or flanging operation. This standard also carries roll holders for flanging and similar operations but which are not shown as they are well known in the art and have no bearing in connection with this invention.

The invention in no way interferes with any of these appurtenances and consists of a bracket 15 which for permanent installations is formed as a part of the standard, and as illustrated is separately formed and attached to the standard as indicated at 16. A bearing 17 is formed integral with this bracket and has a shaft 18 rotatable therein, and this shaft carries a roller arm 19 on one end and which supports the curling roll 20 and which is axially adjustable as by washers 21 when such adjustment is required, and a second or operating arm 22 is fixed on the other end of the shaft.

Also mounted upon or integral with this bracket is a cylinder 23 in which a piston 24 operates with the piston rod 25 having connection with the operating arm 22 through a connecting rod 26. A flexible fluid conduit 27 has selective communication with the respective ends of the cylinder through a four-way valve 28 as indicated at 29 and 30 and includes an exhaust 31.

The valve is illustrated as being operable by means of a solenoid 32 in conjunction with a compression spring 33 with the spring encircling the solenoid and operating between the head 34 of the solenoid and a head 35 integral with the end portion of the core of the solenoid, and with the core 36 linked to the valve lever 37 by a connection 38.

This solenoid is controlled by a switch which in turn is controlled by the movable standard 11, and is illustrated as consisting of a "Microswitch" 39 mounted on the forward end of the base of the standard, and a circuit closer consisting of a bracket 40 which is adjustable along the slideway as by a set-screw 41 and which circuit closer includes a leaf spring 42 to prevent undue pressure on the switch button 43, and this switch is connected to one terminal of the solenoid through a conductor 44 and to one side 45

of a power line with the other side of the power line connected to the other terminal through a conductor 46, and also includes a manually controllable switch 47 for manual control of the invention at will, such as when only a few drums are to be curled or false-wired and not being sufficient to be worth the bother of adjusting the circuit closer.

When a change-over is to be made from double seaming to curling of open end drums, the conventional slides or roll carriers which are not needed are merely adjusted out of cooperative relation and the circuit closer 40 is adjusted to just close the switch 39 when the standard is in its farthest forward position. The machine is then set in operation, first moving the standard back, through the medium of the conn rod 55 or other suitable means, the drum 12 is placed in position, the standard moves forward and as the switch button contacts the spring 42, the circuit is completed through the solenoid 32, drawing in the core 36 against the action of the spring 33 and moving the valve to pass fluid to the upper end of the cylinder and exhaust from the lower, forcing the piston down to the position shown and forcing the curling roll 20 into cooperation with the flanged end of the drum, previously flanged by conventional means.

When the curling operation is completed, the machine is manually reversed, moving the standard back, breaking the circuit to the solenoid, and the spring 33 forces the valve lever to its other position, admitting fluid to the lower end of the cylinder and exhausting from the upper end, and moving the curling roll out of the way to clear the removal and introduction of the drums.

Other means, such as that disclosed in the previously mentioned patent may be used for control of this invention, and which was purely mechanical, though this electrical method is preferable because of relative simplicity in adjustment and operation and the minimizing of parts.

I claim:

1. An attachment for double seamers for curling or false wiring open end drums and having a frame and a standard movable in a direction parallel to the axis of the drum, comprising; a support for the curling roll and mountable on said standard and having a curling roller movable into and out of cooperative relation to the end of the drum, said support comprising a bracket having an arm pivotally supported on one end with the curling roller mounted thereon; power means for moving said arm and comprising a cylinder and a piston therefor, and a supply of fluid under pressure; a four-way valve for controlling delivery and discharge of fluid to and from the respective ends of the cylinder, and means actuable through movement of said movable standard for controlling said valve for selectively moving said arm with its curling roller into and out of cooperative relation to the end of the drum with respective advancing and retractive movements of the movable standard; said arm being mounted for oscillation in a plane perpendicular to the axis of a drum as mounted in the double seamer; said means actuable including a switch mountable on said movable standard, and switch closing means adjustable on the member on which the movable standard is movable for closing the switch at the terminal of advance movement of the movable standard and releasing said switch to open with initial retractive movement of the movable standard; and electro-magnetic means controlled by said switch and associated with said valve for actuating said valve.

2. An attachment for a double seamer for curling open end drums and having a frame including a base and a standard movable on said base in a direction parallel to the axis of the drum, comprising; a bracket for mounting on said standard and having a lever pivotally mounted thereon and including a curling roll supporting arm and an operating arm, and means for mounting a curling roll on the end of said curling roll supporting arm; power means and an operative connection between said power means and said operating arm; and control means responsive to terminal advance and initial retractive movements of said standard for controlling said power means for respectively advancing said curling roll supporting arm to operative position and for retracting the curling roll supporting arm out of obstructional relation to the drum space of the machine; said curling roll supporting arm being mounted for oscillation in a plane perpendicular to the axis of a drum as mounted in the double seamer; said power means comprising fluid operable means and a supply of fluid and valve control means therefor, and a solenoid for controlling said valve, and a supply of current for said solenoid; said control means including a switch for controlling said current.

3. An attachment for a double seamer for curling open end drums and having a frame including a base and a standard movable on said base in a direction parallel to the axis of the drum, comprising; a bracket for mounting on said standard and having a lever pivotally mounted thereon and including a curling roll supporting arm and an operating arm, and means for mounting a curling roll on the end of said curling roll supporting arm; power means and an operative connection between said power means and said operating arm; and control means responsive to terminal advance and initial retractive movements of said standard for controlling said power means for respectively advancing said curling roll supporting arm to operative position and for retracting the curling roll supporting arm out of obstructional relation to the drum space of the machine; said curling roll supporting arm being mounted for oscillation in a plane perpendicular to the axis of a drum as mounted in the double seamer; said power means including a cylinder and piston with the piston having the operative connection to said operating arm; a supply of fluid having connections with said cylinder and including a valve for controlling delivery and discharge of fluid to the respective ends of the cylinder, and a solenoid having an operative connection with said valve for operating said valve in one direction, and a spring for operating the valve in the other direction; said control means including a switch for controlling operation of said solenoid.

4. An attachment for a seamer having a frame and a standard, comprising; a bracket mountable on said standard; and a bell-crank lever pivotally supported by said bracket; means for mounting a curling roll on one arm of said bell-crank lever; a cylinder mounted on said bracket and having a piston rod connected to the other arm of said bell-crank lever; a supply of fluid under pressure; and a four-way valve for controlling delivery and discharge of said fluid to and from the respective ends of said cylinder, and control means for said four-way valve for advancing and retracting said one arm for curling the end of a drum and moving the curling roll out of coopera-

tion with the drum carried by said seamer; said one arm being mounted for oscillation in a plane perpendicular to the axis of the drum as mounted in the seamer; said standard being movable on said frame in a direction parallel to the axis of the drum, and means for moving said standard; said control means for said four-way valve comprising a solenoid having its core connected to said valve for operating said valve in one direction, and a spring for operating said valve in the other direction, and an electric circuit and control means therefor for said solenoid; said control means for said circuit comprising a switch mounted on said standard and a circuit closer adjustably mounted on said frame in cooperative relation to said switch, with said circuit closer in adjusted position closing said switch to operate said valve in said one direction when said standard reaches its forward limit of movement for placing the curling roll in operation for curling the end of the drum and releasing the switch to open to break circuit to said solenoid with initial retractive movement of said standard, with said spring operating said valve in said other direction for retracting the curling roller.

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