April 13, 1926. 1,580,361

F. H. ANSON

MACHINE FOR APPLYING HEADS TO THE ENDS OF ROLLS

Filed Dec. 26, 1925 2 Sheets-Sheet 1

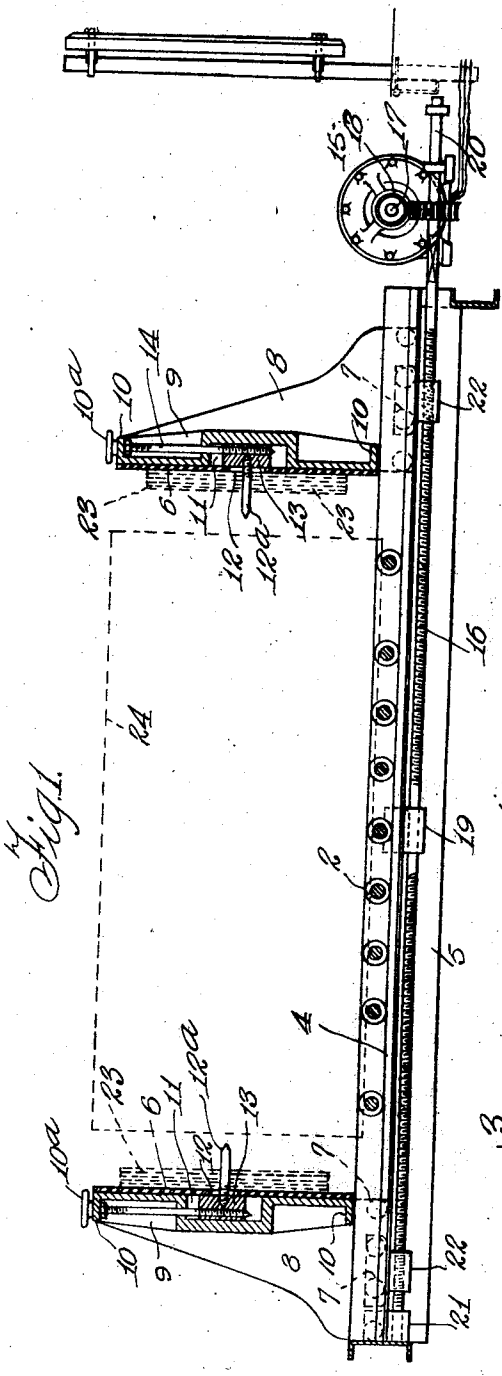


Fig. 1.

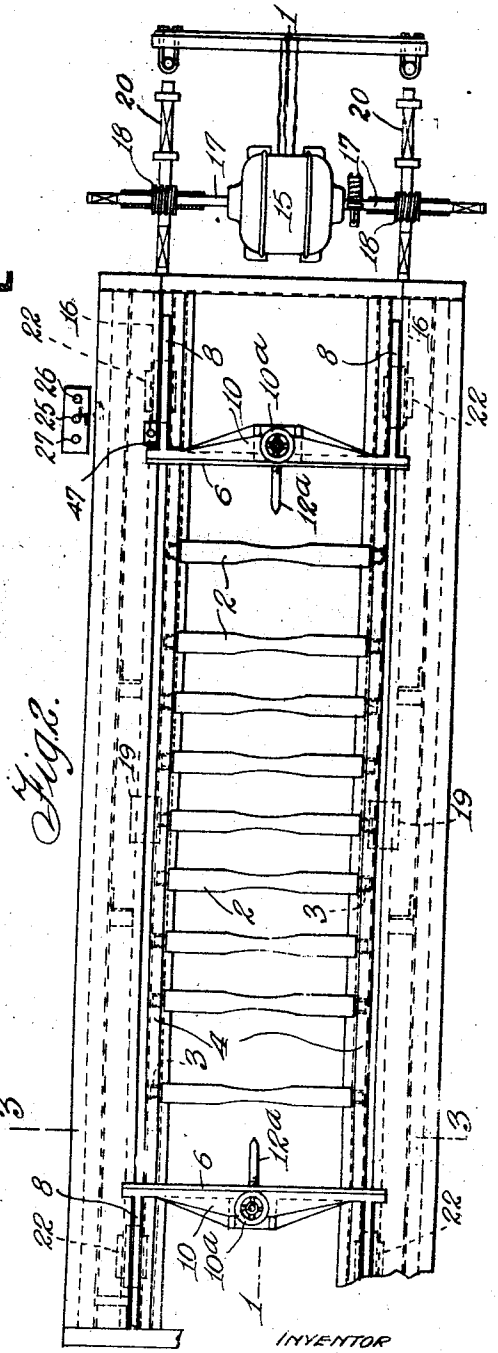


Fig. 2.

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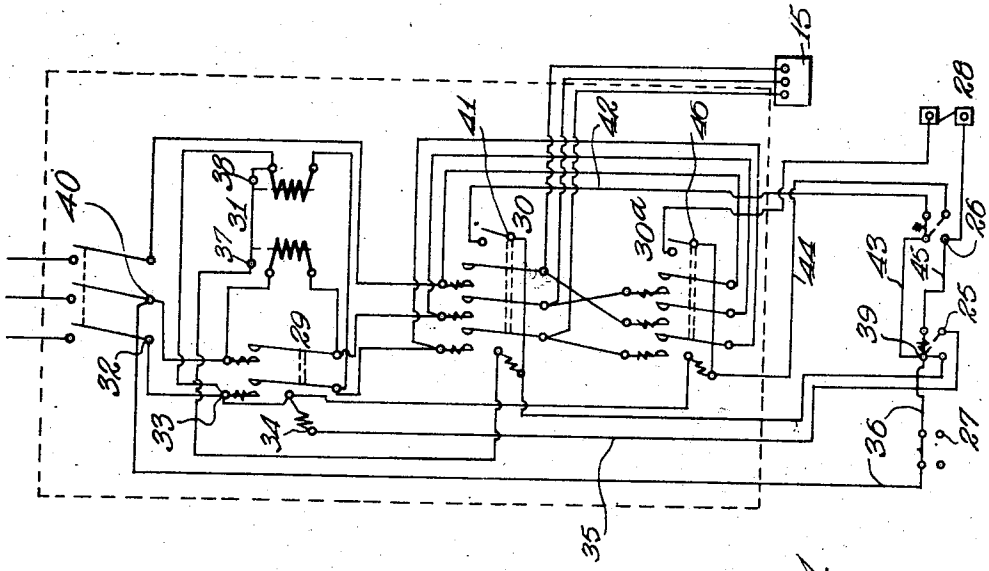


Fig. 4.

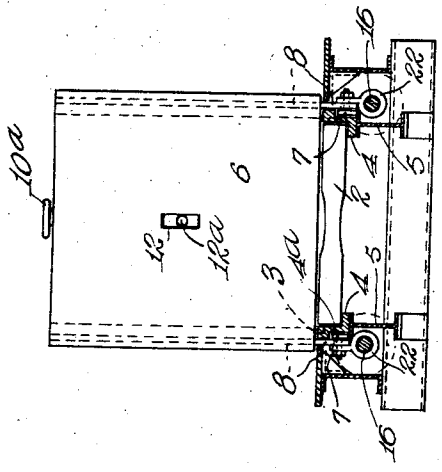


Fig. 3.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR APPLYING HEADS TO THE ENDS OF ROLLS.

Application filed December 26, 1925. Serial No. 77,892.

To all whom it may concern:

Be it known that I, FRANK HENRY ANSON, a citizen of the United States of America, and resident of Iroquois Falls, Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Machines for Applying Heads to the Ends of Rolls, and do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to the mechanical application of paper discs or heads to the ends of rolls of paper and appertains particularly to a machine for automatically applying heads to rolls of paper irrespective of the length of said rolls.

The type of machine to which my invention applies consists, generally speaking, of a platform or bed for the accommodation of the paper roll and brackets at either end of the roll for carrying the paper heads to be applied to the latter, these brackets being relatively movable to press the roll between them and apply the heads and subsequently release the roll to permit its removal with the heads applied.

In so far as I am aware machines of the above mentioned type have been confined to manually operated headers of limited capacity with respect of the length of rolls to be accommodated with the result the use of the machine has been limited and its operation necessitated practically constant attention upon the part of the operative in ensuring that the necessary steps be taken for the application of the heads and release of the roll at the proper periods.

An object of my invention is to avoid shis deficiency by the provision of a machine capable of accommodating lengths of roll throughout the whole range usually encountered and to provide for power operated brackets preferably under automatic control whereby, subsequent to the application of the heads to the roll, and at a predetermined pressure such brackets are relieved of pressure and subsequently released to permit of its removal, thus simplifying the operation and, in addition to making the machine more universal in its utility, simplifying its operation with resultant increase in capacity.

Heretofore the supporting bed of the platform upon which the paper roll was supported has been made stationary with the result that should the roll move longitudinally under the pressure of the movable brackets, the roll itself or its outside wrapper would scrape along the platform and be torn, especially in the case of large rolls which are of considerable weight and a further object therefore of this invention is to avoid the possibility of such damage by the provision of an antifriction bed or supporting portion which will facilitate movement of the roll and thus prevent scraping of the latter.

A still further object of the invention consists in the provision of adjustable supports for the heads carried by the applying brackets so that said heads can be adjusted in proper alignment with the roll irrespective of the diameter of the latter, this feature, in conjunction with the construction providing for the accommodation of a wide range of roll lengths, providing for a more thoroughly flexible and universally adaptable machine than has appeared heretofore.

The above with further objects and advantages will be hereinafter more fully described and particularly pointed out in the appended claims.

For full comprehension, however, of my invention reference should be had to the accompanying drawings forming a part of this specification, in which the same reference characters indicate like parts and wherein:

Fig. 1 is a longitudinal section of my improved roll press and head applying machine, the section being taken on line 1—1 Fig. 2.

Fig. 2 is a plan view of the machine;

Fig. 3 is a cross-section on line 3—3 Fig. 3; and

Fig. 4 is a wiring diagram of the motor control.

Referring now to the drawings, the bed of the platform for supporting the rolls to be headed, consists of a series of rollers 2, horizontally disposed in parallel relation and supported at their opposite ends by trunnions 3 bearing in Z-bars 4 extending longitudinally of the machine and supported by co-extending I-beams 5 suitably mounted upon the foundation of the machine. These rollers are individually rotatable and constitute antifriction elements of the platform upon which the paper rolls which are to be headed are placed, the rolls extending

transversely of the rollers and the centre portions of the latter being concaved or reduced to provide a depression for the reception of rolls to prevent accidental movement off the platform.

Upright brackets are supported upon the platform, one at either end, and are relatively movable, in the preferred construction each bracket being supported to move over the platform longitudinally thereof. For this purpose each bracket carries wheels 7 which ride upon the top of the I-beams at each side of the platform, the Z-beams 4 being recessed at 4^a for the compact accommodation of such wheels.

Each of the brackets preferably consists of a flat plate 6 arranged transversely across the platform perpendicularly thereto, the outer side of the plate being provided with braces 8 at either side and extending downwardly on the outer sides of the Z-beams, the wheels 7 being mounted upon the lower ends of these braces. The plate 6 of each bracket is backed by a casting 9 presenting top and bottom flanges 10 and a central enlargement recessed at 11 at the front and communicating with a vertical slot 12 in plate 6. Each recess 11 accommodates a block 13 mounted therein for vertical movement, such movement being imparted thereto by a vertical shaft 14 in screw-threaded engagement with the block and extending upwardly therefrom loosely through the enlargement and in screw threaded engagement with top flange 10 above which the shaft is fitted with a hand wheel 10^a. Each block carries a pin 12^a which extends horizontally outwardly therefrom through slot 12 in the plate 6 and by rotating the shaft through the medium of hand wheel 10^a the block 13 is caused to move up, or down and through it the level of the pin is raised or lowered with respect to the platform. The pins 12^a are utilized to support a supply of heads or paper discs ready for application to the paper roll and to enter the axial hole of the roll when the brackets are moved inwardly to apply the heads and the adjustment just described enables the pins to be accurately moved vertically into exact horizontal alignment with a roll irrespective of the diameter of the latter, the slot 12 and recess 11 being designed for the accommodation of the different diameters of rolls likely to be encountered.

Power apparatus is provided for moving the brackets longitudinally over the platform and while any suitable apparatus may be employed, one arrangement which is especially suitable for the purpose will now be described.

This power drive consists of an electric motor 15 operatively connected to spindle bolts 16 by means of which the brackets are moved. As shown in the drawing the motor is supported transversely at one end of the platform, the opposite ends of the motor shaft 17 having worms 18 mounted thereon and meshing with worm gears carried by spindle bolts 16, one of which latter is arranged on the outside of each I-beam 5. These spindle bolts extend throughout the length of the platform and are each rotatably supported at the center by a bearing 19 at the motor end by bearings 20, and at the opposite end by a bearing 21. The spindle bolts are respectively formed with right and left hand threads on opposite sides of the central bearings and are in engagement with nuts 22 carried by each of the brackets so that when driven by the motor these spindles cause the brackets to move inwardly towards each other or outwardly away from each other over the platform in accordance with the direction of rotation of the motor.

In the operation of the machine with the brackets spaced apart as illustrated and the pins supporting a supply of heads 23, the outermost heads are coated with adhesive material and a roll indicated at 24 is moved upon the platform between the brackets, the pins being then adjusted into alignment with the axial line of the roll. The motor is then started in the forward direction to move the brackets inwardly towards the roll thus pressing the outermost heads against the ends of the roll to which the heads adhere. If the pressure upon the roll at this time causes it to move longitudinally such movement is accommodated by the rollers 2 and tearing of the roll or of its wrapper is prevented. When sufficient pressure has been applied the motor is automatically stopped and then driven in reverse direction to withdraw the brackets thus freeing the roll and permitting it to be removed from the platform.

The operation of motor 15 is controlled by a conveniently located floor switch operating as shown by diagram in Fig. 4 wherein 25 is a push button switch for forward operation of the motor, 26 a push button switch for reverse operation of the motor, 27 a push button switch for stopping the motor, 28 a limit switch, 29 a double pole relay, 30, 30^a a reversing panel consisting of two 2 pole contactors and 31 a gravity reset current operated relay with adjustable calibration. When starting switch 25 is closed a circuit is made from contact 32 of line switch to contact 33 through operating coil of double pole relay 29 and coil 34 to the starting switch by wire 35 and back to contact 40 of line switch through wire 36. This circuit closes contacts of relay 29, short circuiting the operating coils of current operated relay 31 so that the latter will not operate on the start and keeping contacts 37 and 38 closed. The motor circuit follows from

lead 32 to contact 33 and back to contact 38 on the current operated relay 31 through contact 37 to and through the operating coil of pole contactor 30 to contact 39 of forward starting switch 25 and back to contact 40 of line switch by wire 36, thus pulling in all 3 contacts of contactor 30 and starting motor in forward direction.

Switch 25 is held closed until motor gains speed, the heavy starting current at this time being short circuited and not passing through the coils of current operated relay 31, the contacts 37 and 38 of the latter remaining closed. When the motor has gained speed the current drops down to normal. The switch 25 is then released by the operator and allows the relay 29 to open up its main contacts forcing the current in two legs of the motor circuit to pass through the coils of relay 31. At this time contactor 30 does not drop out since the auxiliary contact 41 on contactor 30 still maintains a circuit through the operating coil by way of auxiliary contact 41, wire 42, reverse switch 26, wires 43 and 36 to contact 40.

The forwardly operating motor moves the brackets against the roll and the pressure increases and with it the pressure of the current increases until the latter reaches a predetermined pressure at which the current operated relay 31 has been adjusted and at this time the contacts 37 and 38 are caused to open thus breaking the circuit through the operating coil of contactor 30, opening the contacts thereof and automatically stopping the motor. When the motor stops all relays are restored to normal condition.

To withdraw the brackets from the roll the switch 26 is closed to reverse the operation of the motor, the closing of the reverse switch creating the circuit from line switch contact 32 to contact 33 of relay 29 through the operating coil of relay 30^a and wire 44 to reverse switch 26 and back by wire 45 through switches 25 and 27 and wire 36 to line switch 40. The reverse operations requires only a momentary pressure of the reverse switch as when the contactor 30^a pulls up, the auxiliary contact 46 closes the circuit through the holding coil as above described through the limit switch 28, reverse switch 26, forward starting switch 25 and stop switch 27 to the line switch at 40. This holds the contactor 30^a in operative condition until the motor has traveled in the reverse direction a distance limited by the opening of the limit switch by the engagement therewith of a stop carried by the bracket, this stop engaging the button on the limit switch at 47, causing the contacts 37, 38 to open thus breaking the circuit through the operating coil of contactor 30^a, opening contacts thereof and automatically stopping the motor. The motor being stopped relays are restored to natural conditions.

It will be obvious that the stop switch can be operated to stop the motor while operating in either direction.

From the above it will be seen that I have provided a machine for applying heads to rolls, which is capable of accommodating rolls varying both in length and diameter and of operating upon same without likelihood of damage thereto and a machine in which the rolls can be handled in a quick and efficient manner. Furthermore the operation of a machine constructed according to the above simplifies the operation to be performed and the automatic stopping of the power driven brackets at a certain predetermined pressure precludes the possibility of breakage of the machine due to the application of excessive pressure.

What I claim is as follows:

1. In a machine for applying heads to the ends of rolls, the combination with a platform presenting an antifriction bed for supporting a roll, of brackets at either end of said platform and between which there is a relative movement, such brackets carrying the heads to be applied and means for relative movement of the brackets to press the heads upon the ends of the roll and subsequently release the roll for removal.

2. In a machine for applying heads to the ends of rolls, the combination with a platform for supporting a roll, of brackets at either end of said platform and between which there is relative movement, vertically adjustable supports upon said brackets for carrying the heads to be applied and means for effecting relative movement of the brackets to press the heads upon the ends of the roll and subsequently release the roll for removal.

3. In a machine for applying heads to the ends of rolls, the combination with a platform for supporting a roll, of means located above the platform for carrying the heads to be applied, such means being adjustable vertically with respect to the platform for the accommodation of rolls of varying diameter and a device for effecting movement of the head carrying means longitudinally over the platform to press a head upon the end of the roll and subsequently release the roll for removal.

4. In a machine for applying heads to the ends of rolls, the combination with a platform for supporting a roll, such platform presenting antifriction elements to facilitate movement of the roll longitudinally of the platform, of head carrying means above the platform at either end thereof and means for effecting relative movement between the head carrying means to press the heads upon the ends of the roll and subsequently release the roll for removal.

5. In a machine for applying heads to the ends of rolls, the combination with a platform for supporting a roll, of means located above the platform at either end of the latter for carrying the heads to be applied and including a vertically slidable support and an adjusting device securing the support in different vertical positions; and means for effecting relative movement between the head carrying means for pressing the heads upon the ends of the roll and subsequently releasing the roll for removal.

6. In a machine for applying heads to the ends of rolls, the combination with a support for a roll, of means located above the platform at either end thereof for carrying the heads to be applied and a device for effecting relative movement between the head carrying means longitudinally of the platform to press the heads upon the ends of the roll and subsequently release the roll for removal, such head carrying means including a vertically slidable block, a pin projecting from the block and adapted to receive the heads, and a rotatable screw shaft in screw-threaded engagement with the block for moving the latter vertically.

7. In a machine for applying heads to the ends of rolls, the combination with a support for a roll, of a bracket extending across the platform perpendicularly thereto at both ends of the platform and presenting a vertical slot therein, a block slidably supported upon each bracket to move vertically, a pin projecting from said block through the slot in the bracket and adapted to hold the heads to be applied, a vertical shaft in screw-threaded engagement with the block and with the bracket whereby the block is moved to adjust the position of the pin vertically, and a device for effecting relative movement between the brackets longitudinally of the support to press the heads upon the ends of the roll and subsequently release the roll for removal.

8. In a machine for applying heads to the ends of rolls, the combination with a platform to support a roll, of means at either end of the platform for supporting the heads to be applied and means for effecting relative movement between the head supporting means to press the heads upon the ends of the roll and subsequently release the roll for removal, such platform comprising a series of transversely disposed rotatably mounted rollers.

9. In a machine for applying heads to the ends of rolls, the combination with a platform to support a roll, of means at either end of the platform for supporting the heads to be applied and means for effecting relative movement between the head supporting means to press the heads upon the ends of the roll and subsequently release the roll for removal, such platform comprising a series of transversely disposed rotatively mounted rollers having their central portions concaved to present a depression for the reception of the roll supported by the rollers.

10. In a machine for applying heads to the ends of rolls, the combination with an elongated horizontal platform adapted to receive a roll side wise thereof and to support such roll with its axis extending longitudinally of the platform, of brackets at either end of the platform for carrying the heads to be applied and power means for effecting relative movement between the brackets longitudinally of the platform to press the heads upon the ends of the roll and subsequently release the roll for removal.

11. In a machine for applying heads to the ends of rolls the combination with a platform for the support of a roll, of brackets at either end of the platform for carrying the heads to be applied and power means for effecting relative movement between the brackets longitudinally of the platform to press the heads upon the ends of the roll and subsequently releasing the roll for removal, such power means including an automatically acting device for discontinuing the operation thereof upon the attainment of a predetermined pressure upon the roll.

12. In a machine for applying heads to the ends of rolls, the combination with a platform for the support of a roll, of brackets at either end of the platform for carrying the heads to be applied and power means for effecting relative movement between the bracket longitudinally of the platform to press the heads upon the ends of the roll and subsequently release the roll for removal, such power means including an electric motor and a motor control including a forward driving circuit for operating the motor to press brackets against the ends of the roll, a stop switch automatically operative upon the attainment of a predetermined pressure upon the roll during the forward operation of the motor and a reverse driving circuit for operating the motor to relieve the roll from pressure.

13. In a machine for applying heads to the ends of rolls, the combination with a platform for the support of a roll, of brackets at either end of the platform for carrying the heads to be applied and power means for moving the brackets longitudinally of the platform to press the heads upon the ends of the roll and subsequently release the roll for removal, such power means including a spindle having a right hand thread at one end and a left hand thread at its opposite end, nuts upon the brackets, the nut of one bracket engaging the right hand threads of the spindle bolt and the nut of the other bracket engaging the left hand

threads of the bolt, a motor geared to said spindle bolt and means for controlling the motor for forward and reverse operation.

14. In a machine for applying heads to the ends of rolls, the combination with a platform for the support of a roll, of brackets at either end of the platform for carrying the heads to be applied and power means for effecting relative movement between the brackets longitudinally of the platform to press the heads upon the ends of the roll and subsequently release the roll for removal, such power means including an electric motor and controlling means for the motor having a forward driving circuit, a forward starting switch, a stop switch automatically operative upon the attainment of a predetermined pressure upon the roll during the forward operation of the motor, a reverse driving circuit for operating the motor to release the roll from the pressure of the brackets and an automatically operating stop switch for opening the reverse driving circuit at a predetermined time.

In testimony whereof, I have signed my name to this specification.

FRANK HENRY ANSON.