May 6, 1958 M. B. HALL 2,833,489

BAND DISPENSER

Filed May 14, 1953 2 Sheets-Sheet 1

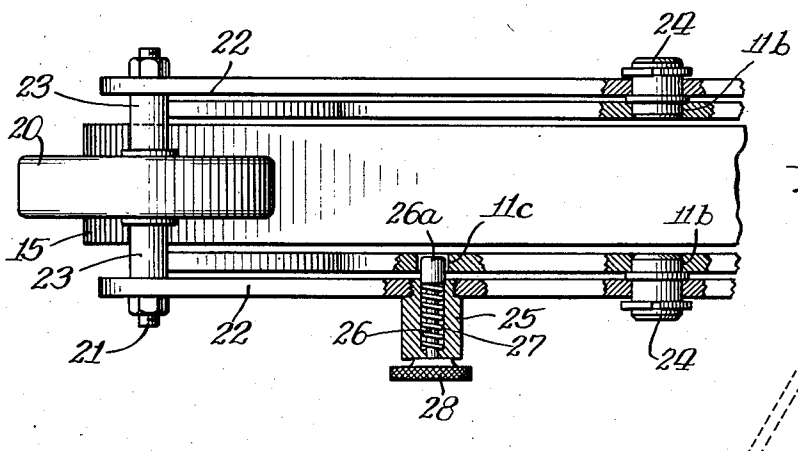
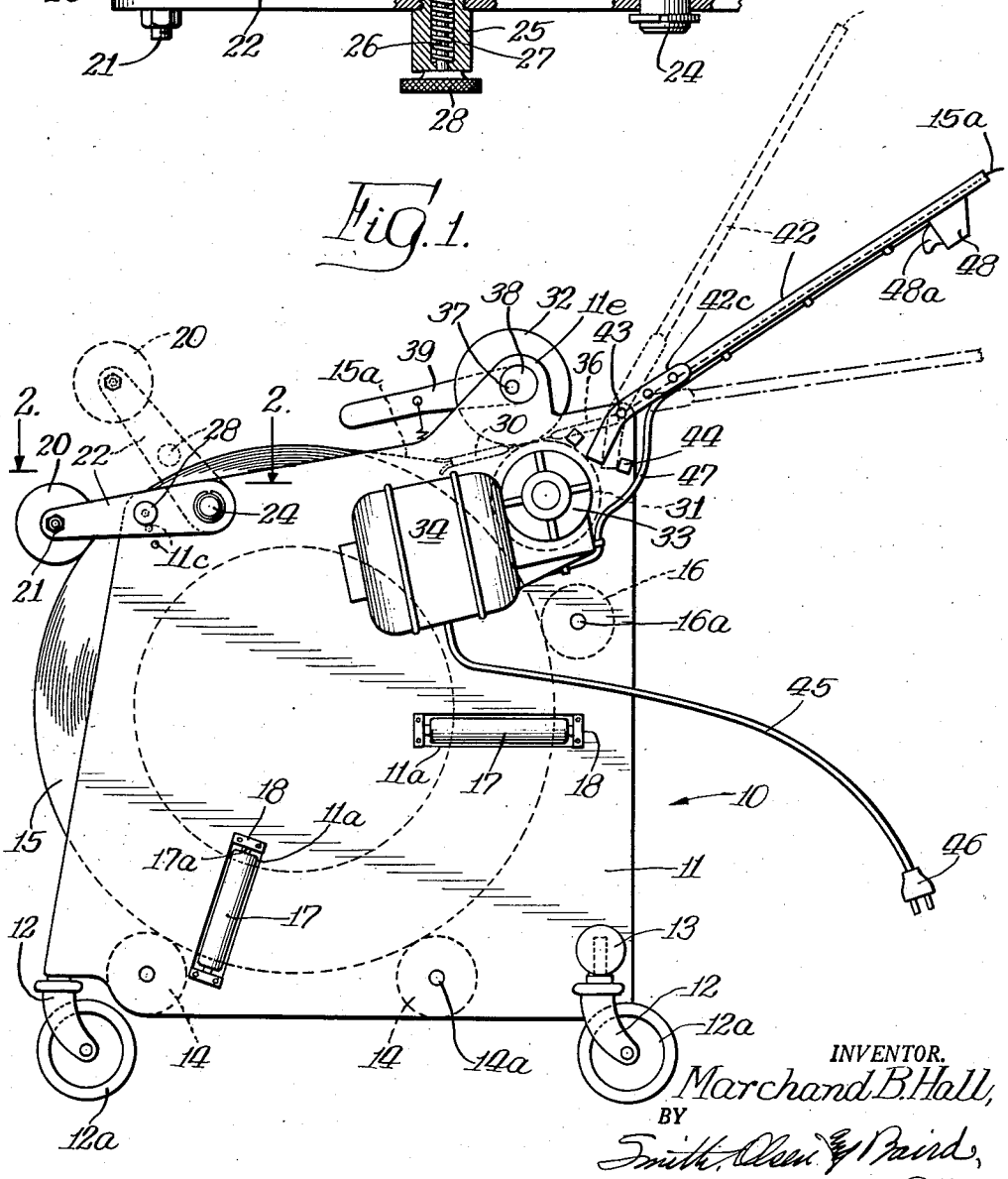


Fig. 2.

Fig. 1.



INVENTOR.
Marchand B. Hall,
BY
Smith, Olsen & Baird,
Atty's.

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Filed May 14, 1953 2 Sheets-Sheet 2

Fig. 3.

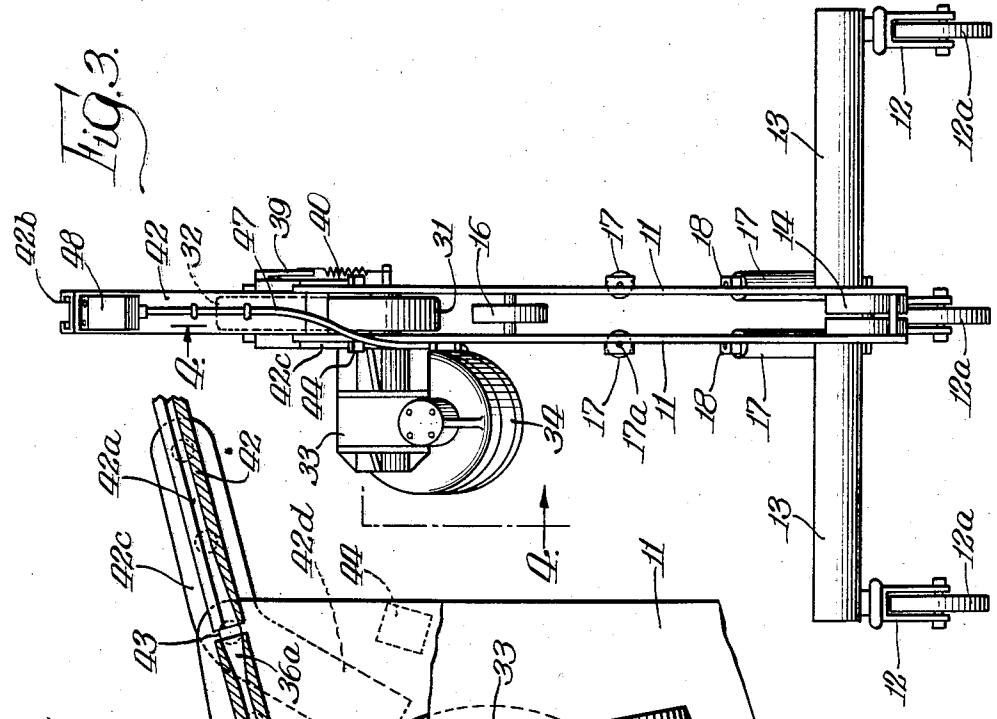

Fig. 4.

INVENTOR.
Marchand B. Hall,
BY
Smith, Olsen & Baird,
Attys.

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BAND DISPENSER

Marchand B. Hall, Chicago, Ill., assignor to Acme Steel Company, Chicago, Ill., a corporation of Illinois

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12 Claims. (Cl. 242—78.7)

This invention relates to improvements in a band dispenser and its purpose is to provide a novel form of apparatus for dispensing a metal band, such as flexible steel strapping, during the operation of applying it around a box, package or the like.

Flexible metal strapping, such as that employed in the binding of boxes and the like, is commonly supplied to the consumer in heavy coils made up of a considerable number of convolutions of helically wound layers and it is desirable to provide means for facilitating the withdrawal of the strapping from such a coil as it is being used in order to reduce the labor required of the operator and to expedite the binding operation.

The principal object of the present invention is to provide dispensing apparatus comprising means for permitting the strapping to be withdrawn at a variety of locations whereby the binding material may be readily applied to packages or the like of various shapes and sizes. Another object of the invention is to provide a band dispenser having power operated means for unwinding the binding material and delivering it to the place of use. A further object of the invention is to provide dispensing apparatus comprising an adjustable delivery arm over which the binding material is delivered to the desired location. Still another object of the invention is to provide a dispensing device having improved means for supporting the coil and permitting the rotation thereof as the binding material is withdrawn therefrom. Another object is to provide dispensing apparatus comprising power actuated feeding means for withdrawing binding material from a coil and moving it to a delivery arm which may be adjusted to a plurality of positions and which carries means for controlling the operation of said feeding means. Other objects relate to various features of construction and arrangement which will appear more fully hereinafter.

The nature of this invention will be understood from the following specification taken with the accompanying drawings in which one embodiment is illustrated. In the drawings,

Figure 1 shows a side elevation of the improved band dispenser;

Fig. 2 shows a partial horizontal section on the line 2—2 of Fig. 1;

Fig. 3 shows an end elevation of the band dispenser illustrated in Fig. 1, looking toward the left as viewed in Fig. 1; and

Fig. 4 shows an enlarged section taken on the line 4—4 of Fig. 3.

As illustrated in the drawings, the invention comprises a frame 10 having a pair of side plates 11 which are secured together and spaced apart. This frame is supported by three casters 12, each having a roller 12*a* adapted to rest upon the floor or other support. Two of the casters 12 are mounted at the ends of tubular extensions 13 of the frame which extend laterally from the forward lower corners of the side plates 11. The third caster is mounted between the side plates 11 at their rear

lower extremities so that the frame 10 has a three-point support on the three rollers 12*a* which are adapted to swing about the vertical axes of the casters. Mounted between the lower parts of the side plates 11 are two rollers 14 carried by pins 14*a* secured in the side plates and these rollers are adapted to support a coil 15 of the flexible binding material which is to be dispensed by the apparatus. Another roller 16 is mounted between the upper forward parts of the side plates 11 on a pin 16*a* and this roller is adapted to engage the forward peripheral surface of the coil 15 when this coil is inserted between the side plates 11 and supported by the rollers 14. Each side plate 11 is also provided with a pair of radial slots 11*a* in each of which there is mounted a cylindrical roller 17 carried by pivot pins 17*a* which are journaled in brackets 18 carried by the side plates at the ends of the slots. These rollers 17 are preferably located opposite each other in pairs in the two side plates 11 and they are spaced apart a distance slightly greater than the normal width of the coil 11 so that the coil may rotate freely between them on the rollers 14 but will be restrained by these rollers 17 from contacting the inner surfaces of the side plates. In this way, a coil 15 may be readily inserted between the side plates and mounted for rotation on the rollers 14 where it is supported by its external peripheral surface during the operation of rotating the coil and withdrawing the strip material therefrom.

There is also preferably provided a retaining roller 20 which is mounted to revolve on a pin or bolt 21 extending between two arms 22 from which it is spaced by sleeves 23. These arms are pivotally mounted in apertures 11*b* in the side plates 11 by means of pins 24, as shown particularly in Fig. 2, and the roller 20 is thus pivotally mounted so that it rests upon the surface of the coil 15 at the forward side of the apparatus, thereby retaining the coil in position on the rollers 14 as the coil revolves. The arms 22 are adapted to be adjustably secured in different positions in order to regulate the position of the roller 20 in accordance with the diameter of the coil 15 as the material wound in the coil is used and to accommodate different initial sizes of the coils of material which are employed in the apparatus. For this purpose, one of the arms 22 has secured therein a tubular barrel 25 in which there is mounted a plunger 26 having a head 26*a* adapted to engage any one of a series of apertures 11*c* which are formed in the adjacent side plate 11. A coil spring 27 is mounted in the barrel around the stem of the plunger 26 so that it normally holds the head 26*a* in engagement with the registering aperture 11*c*. The plunger 26 has a knurled handle 28 which may be engaged by the fingers of the operator for withdrawing the plunger against the compression of the spring 27 when it is desired to adjust the roller 20 to a new position or to swing in upwardly into the retractive position shown by dotted lines in Fig. 1.

The strip steel or other flexible binding material 15*a* which forms the coil 15 is adapted to be withdrawn from the coil through a tubular guide channel 30 having flared upper and lower walls 30*a* which are located adjacent to the peripheral surface of the largest coil which is capable of use in the apparatus. The binding material is adapted to be withdrawn from the coil through the guide channel 30 by means of a pair of feed rolls 31 and 32 which are mounted between the upper forward portions of the side plates 11. The lower roll 31 is mounted upon the inwardly projecting shaft of a speed reducer 33 which is fixed on one of the side plates 11 and this speed reducer is driven by an electric motor 34 which is attached to the speed reducer and to the adjacent side plate. When the motor 34 is operated to rotate the roll 31 in the direction of the arrow 35, the strip material 15*a* is with-

drawn from the coil and is moved between the rollers **31** and **32** into another tubular guide channel **36** mounted between the upper forward extremities of the side plates **11** as shown in Fig. 4.

The upper roll **32** operates as an idler roll and rests by gravity on the strip material **15***a* passing from the guide channel **30** to the guide channel **36**, being rotated by the movement of the strip material. The roller **32** is mounted on a shaft **37** which, in turn, is located eccentrically in bearing members **38** mounted to revolve in apertures **11***d* formed in the upward extensions **11***e* of the side frames. The eccentric bearing members **38** are adapted to be revolved in their bearings by a handle **39** which is normally held by a coil spring **40** in the position shown in Fig. 4 wherein the roller **32** will contact the upper surface of the strip material being withdrawn from the coil. When it is desired to thread a new section of the strip material through the guide channels and between the rolls **31** and **32**, the upper roll **32** may be elevated by rotating the handle **39** against the tension of the spring **40**.

The strip material **15***a* which is fed by the rolls **31** and **32** into the guide channel **36** passes out through the enlarged exit passage **36***a* of this guide channel and then into a guide channel **42***a* formed in a pivoted delivery arm **42**. This delivery arm preferably has the channel shaped cross section shown in Fig. 3 with overhanging side flanges **42***b* and it comprises a pair of angular plates **42***c* at its rear end which are pivoted by pins **43** in the upper forward corner portions of the side plates **11**. The delivery arm is thus mounted to pivot about a horizontal axis and the extent of this pivotal movement is limited by the engagement of the downwardly inclined portions **42***d* of the plates **42***c* with blocks **44** which are secured to the outer faces of the side plates **11**. The delivery arm **42** is thus capable of being swung in a vertical plane through a considerable amplitude so that the strip material **15***a* may be discharged from the outer end of the arm **42** in the position which is most convenient for applying the material **15***a* to the package or other object to be bound.

The electric motor **34** is adapted to be actuated by an electric circuit comprising a flexible cable **45** having a pair of electric conductors connected to a plug **46** through which a connection may be made with the ordinary electric circuit. The circuit of the motor **34** is controlled by connections which are made through another flexible cable **47** comprising a pair of conductors extending to a trigger-type switch **48** mounted on the under side of the outer end of the delivery arm **42**. The control switch having the finger operated trigger **48***a* is thus located in a convenient position so that the operator may control the feed of the binding material by the motor driven rolls **31** and **32** by the same hand which swings the delivery arm **42** about in order to bring the discharge end of this arm into the desired location with respect to the package or other object being bound.

Although one form of the invention has been shown and described by way of illustration, it will be understood that it may be constructed in various other embodiments which come within the scope of the appended claims.

I claim:

1. A dispenser of the type described, comprising a frame, a plurality of wheels mounted on said frame to support said frame for ready movement to a desired point of operation, means on said frame for supporting a coil of binding material, delivery means on said frame comprising a delivery arm through which said material may be moved to different locations, motor driven means on said frame for withdrawing material from said coil and moving it through said delivery means, and means positioned on said delivery arm for controlling the operation of said motor driven means.

2. A dispenser of the type described, comprising a frame, a plurality of wheels mounted on said frame to support said frame for ready movement to a desired point of operation means on said frame for supporting a coil of binding material, a pivoted rigid delivery arm of substantial length over which said material may be moved mounted on said frame, motor driven means mounted on said frame for withdrawing said material from said coil and moving it over said arm, and means mounted on said arm for controlling the operation of said motor driven means.

3. A dispenser of the type described, comprising means for supporting a coil of binding material, means including a motor driven roll for withdrawing material from said coil, a pivotally mounted delivery arm having a channel through which said material withdrawn from said coil is discharged, and a circuit for said motor having a control switch mounted on the discharge end of said arm.

4. A dispenser for delivering flat metal strapping comprising a pair of spaced vertical side plates, means for supporting a coil of said strapping between said side plates to permit the unwinding thereof, a pair of rolls arranged to engage opposite sides of a portion of said strapping withdrawn from said coil, a motor for driving one of said rolls to withdraw the strapping from said coil, a pair of tubular guides carried in fixed position by said side plates for guiding said strapping in advance of and following said rolls, and a rigid delivery guide pivoted on said side plates for receiving said strapping from one of said first-named guides and delivering it to different locations.

5. A dispenser of the type described, comprising a frame, a plurality of wheels mounted on said frame to support said frame for ready movement to a desired point of operation, rollers carried by said frame for engaging the peripheral surface and the lateral sides of a coil of binding material and thereby supporting said coil for rotation, means carried by said frame for withdrawing material from said coil, and a movable delivery device pivoted on said frame and arranged to receive said material from said last named means and to deliver it to different locations.

6. A dispenser for delivering flat metal strapping comprising a pair of spaced vertical side plates, means for supporting a coil of said strapping between said side plates to permit the unwinding thereof, a pair of rolls arranged to engage opposite sides of a portion of said strapping withdrawn from said coil, a motor for driving one of said rolls to withdraw the strapping from said coil, a pair of tubular guides carried in fixed position by said guide plates for guiding said strapping in advance of and following said rolls, a rigid delivery guide pivoted on said guide plates for receiving said strapping from one of said first named guides and delivering it to different locations, an electric circuit for actuating said motor, and a control switch connected in said circuit and mounted on the discharge end of said delivery guide for actuation by the hand of the operator which moves said delivery guide to different locations.

7. A portable dispenser for flexible steel strapping comprising a pair of upstanding spaced apart side plates interconnected to provide a frame, a plurality of wheels mounted on said frame to support the frame for easy portability, a pair of horizontally disposed support rollers mounted on said side plates adjacent the lower edge thereof to support a coil of steel strapping on the periphery thereof, means to pull strapping from the periphery of the coil to rotate the coil on said rollers and to dispense the strapping forwardly of said dispenser, a horizontally disposed abutment roller mounted on said side plates adjacent the forward edge thereof to contact and restrain the coil at a point above the center thereof, and a retaining roller mounted on said side plates adjacent the rear end thereof to contact the periphery of the coil above the center thereof positively to retain the coil on said dis-

penser in cooperation with said support rollers and said abutment roller during movement of said dispenser.

8. A portable dispenser as set forth in claim 7, wherein the retaining roller is adjustable with respect to the side plates to facilitate mounting of coils on the dispenser and to accommodate different sizes of coils.

9. A portable dispenser as set forth in claim 7, wherein the retaining roller is mounted on a pair of arms, said arms being pivoted on the side plates, and latch mechanism to lock said arms and said retaining roller in one of several adjusted positions to accommodate different sizes of coils.

10. A portable dispenser as set forth in claim 7, wherein three support wheels are provided, one of said wheels being swivelly mounted at the rear end of said plates, a pair of laterally disposed extensions mounted on said side plates adjacent the forward ends thereof and extending laterally outwardly therefrom, the other wheels being swivelly mounted on the ends of said extensions to provide lateral stability for the dispenser.

11. A portable dispenser as set forth in claim 7, wherein a plurality of side rollers are mounted on the side plates to engage and to guide the sides of the coil during rotation thereof on the dispenser.

12. A portable dispenser for flexible steel strapping comprising a pair of upstanding spaced apart side plates interconnected to provide a frame, a plurality of wheels mounted on said frame to support the frame for easy portability, a pair or horizontally disposed support rollers mounted on said side plates adjacent the lower edge thereof to support a coil of steel strapping on the periphery thereof, a delivery arm mounted on said side plates

adjacent the forward edges thereof, said delivery arm serving to guide strapping from the coil to different locations, motor driven means mounted on said side plates for withdrawing strapping from the coil and moving it through the delivery arm, a control member mounted on the outer end of said delivery arm to control the operation of said motor driven means, a horizontally disposed abutment roller mounted on said side plates adjacent the forward edge thereof to contact and restrain the coil at a point above the center thereof, and a retaining roller mounted on said side plates adjacent the rear end thereof to contact the periphery of the coil above the center thereof positively to retain the coil on said dispenser in cooperation with said support rollers and said abutment roller during movement of said dispenser.

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