April 3, 1928. 1,664,738

I. A. DELINE

EXPANSIBLE BOX BAND HOLDER FOR STRIPPING MACHINES

Filed Feb. 24, 1927 2 Sheets-Sheet 1

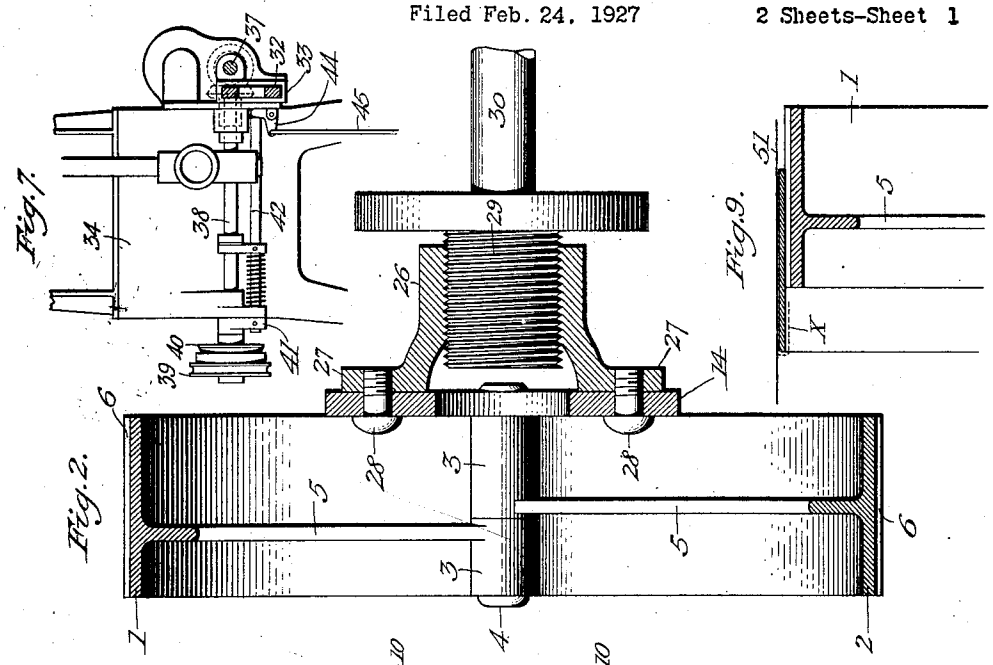


Fig. 7.

Fig. 9.

Fig. 2.

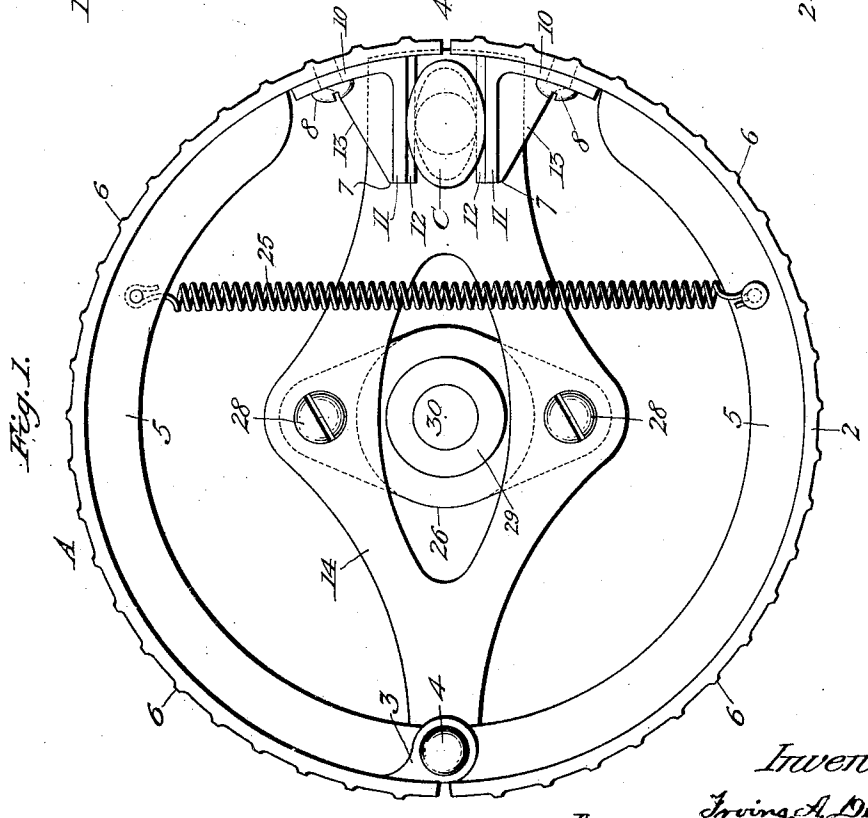


Fig. 1.

Inventor
Irving A. Deline
By H. S. Bailey. Attorney

April 3, 1928. 1,664,738

I. A. DELINE

EXPANSIBLE BOX BAND HOLDER FOR STRIPPING MACHINES

Filed Feb. 24, 1927 2 Sheets-Sheet 2

Fig. 3.

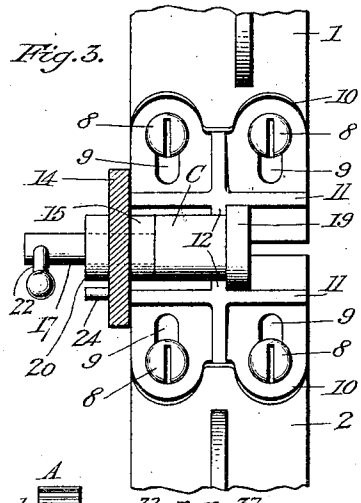


Fig. 4.

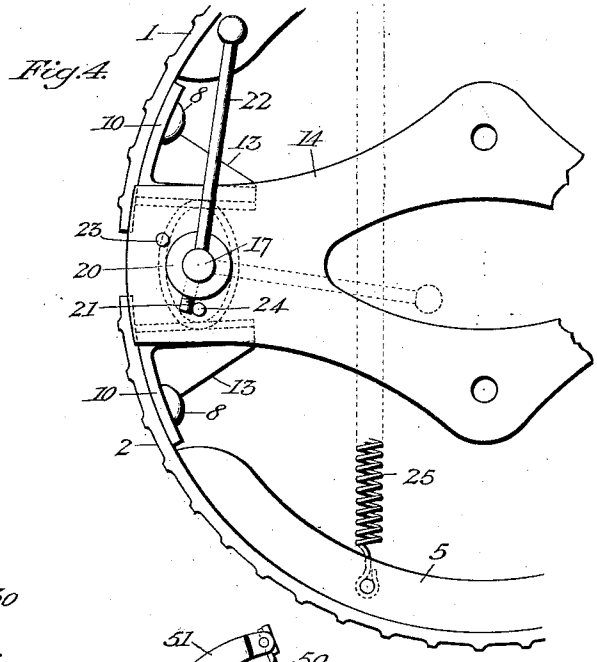


Fig. 8.

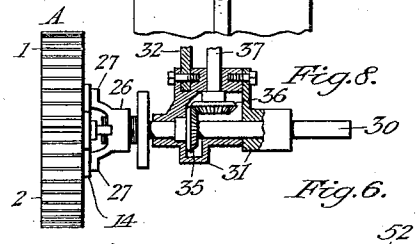


Fig. 6.

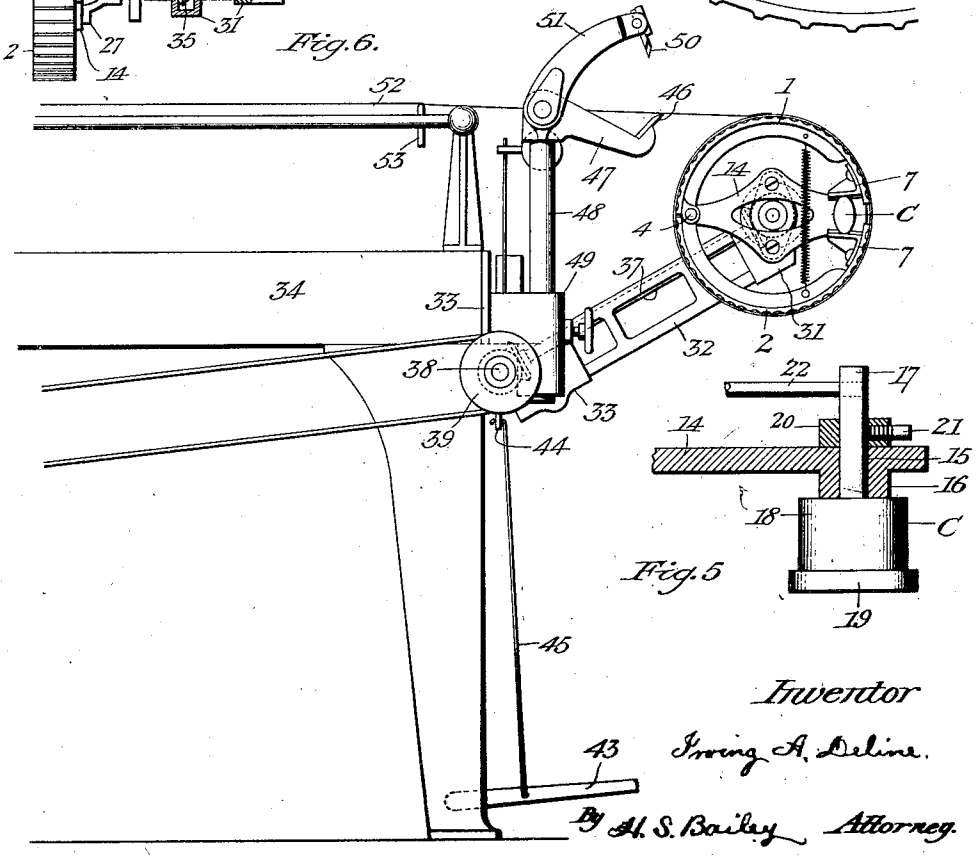


Fig. 5

Inventor

Irving A. Deline.

By H. S. Bailey Attorney.

Patented Apr. 3, 1928. 1,664,738

UNITED STATES PATENT OFFICE.

IRVING A. DELINE, OF DENVER, COLORADO.

EXPANSIBLE BOX-BAND HOLDER FOR STRIPPING MACHINES.

Application filed February 24, 1927. Serial No. 170,574.

My invention relates to improvements in expansible box band holders for stripping machines.

The main object of the invention is to provide a box-band holder which is adapted to be expanded in order to grip a box band placed thereon and prevent slipping of the same on the holder when the holder is turned to enable a strip to be secured upon said band.

Further, to provide a circular box band holder for stripping machines, comprising semicircular members having a hinge connection and which are normally held in closed relation by a spring, means being provided for spreading the parts thereby to grip a box band placed thereon and prevent slipping of the band on the holder when applying a strip to the band, said holder being adapted to be secured upon a power driven shaft on said stripping machine.

These objects are accomplished by the mechanism illustrated in the accompanying drawings in which;—

Fig. 1, is a front view of the improved holder.

Fig. 2, is a central vertical sectional view of the same, showing the manner of its connection with a rotatable shaft which is mounted on the stripping machine.

Fig. 3, is a side view of a portion of the holder, showing the cam for spreading the holder and the abutments which are engaged by the cam.

Fig. 4, is a rear view of a portion of the holder showing the cam operating means and the stops for limiting the movement of the cam.

Fig. 5, is a sectional view through the end of the arm which supports the spreader, the spreader being shown in full lines.

Fig. 6, is a side view of the front portion of a stripping machine, showing the improved holder mounted thereon.

Fig. 7, is a front end view of a portion of the machine.

Fig. 8, is a detail sectional view showing the supporting shaft for the holder, and gearing connected therewith, and

Fig. 9, is a detail sectional view showing a fragment of the holder and a box band thereon and a strip connected thereto.

In the manufacture of certain characters of pasteboard boxes, the tops and bottoms of the boxes are secured to the band portions by strips which are adhesively secured to the bands and which are wider than the bands so as to extend beyond the edge of the same. The band is placed around a form of the desired shape, the top is laid upon the form to be flush with the upper edge of the band, and the extended portion of the strip is folded over upon the top and adhered thereto, thus uniting the top and band. The present invention embodies the manner of supporting and holding a box band during the process of securing a strip thereto, the band holder being secured upon a clutch controlled power driven shaft which is mounted on the stripping machine, the holder being in position to receive a strip supplied from said machine and which is coated with glue on one side.

Referring to the accompanying drawings: The improved box band holder A is in the form of a ring like device which is made up of half round sections 1 and 2 which are formed on one side with registering hinge knuckles 3 which are connected by a hinge pin 4, the holders being of varying diameters to suit box-bands of varying sizes, and about an inch and a half wide. The inner faces of the sections 1 and 2 are formed with integral strengthening ribs 5, and the outside surfaces of the sections are formed with spaced, transverse narrow ridges 6 which project a slight distance from the surface of the sections. Upon the inner face of each section and on the opposite side thereof from the hinge, is secured an angle plate 7, by screws 8 which pass through slots 9 in the member 10 of the angle plate and into the section. The members 11 of these angle plates are normally parallel and separated by a space of about three quarters of an inch, and each of these members has formed on its inner side, a central longitudinal rib 12 of slight depth. The angle plates 7 are the same width as the ring sections and an integral bracing web 13 connects the two members of each plate.

A flat arm 14 extends across the rear side of the holder and is secured at one end to the hinge pin 4. The opposite end of this arm is formed with an aperture 15 which also extends through a boss 16 formed on the arm and through this aperture passes the stem or shank 17 of a cam or spreader C. This spreader comprises a body portion 18 which is elliptical in transverse section and which lies between the ribs 12 on the members 11 of the angle plates 7; and a flange

19 which is also elliptical and which engages the forward sides of the said ribs 12, as clearly shown in Figures 1 and 3.

The end of the body portion 18 of the spreader bears against the boss 16 and a collar 20 is secured upon the stem of the spreader and against the arm 14 by a set screw 21 and thus holds the spreader against endwise movement. A hand lever 22 is secured in the outer end of the spreader stem, and stop pins 23 and 24 project from the arm 14, which engage the set screw 21, and define the opening and closing movements of the spreader, as will be understood by reference to Fig. 4.

When the spreader is in the position shown in Fig. 1, the band holder is closed, and when the spreader is in the position shown in Fig. 4, the band holder is opened or expanded so as to fit tightly within and thus grip a box band placed thereon. A coil spring 25 is connected at one end to the rib 5 of section 1 and at its opposite end to the rib of section 2 and this spring is under pulling tension so that the sections are spread or expanded against the action of the spring and drawn toward each other by the action of the spring. The end of the arm 14 which supports the spreader is held to the band holder by the engagement of the flange 19 of the spreader with the ribs 12 on the angle plates 7, and this engagement not only relieves the strain on the hinge connection but prevents any uneven movement of one section with respect to the other section in either expanding or contracting the holder.

A fitting, comprising an internally threaded hub 26, having laterally extending apertured ears 27 on one end, is secured to the arm 14, by screws 28 which extend through the arm and through the said ears, the axis of the hub 26 coinciding with the axis of the holder. The hub 26 receives a threaded plug 29 which is rigidly mounted on the end of a power driven shaft 30 which supports and rotates the band hold and this shaft forms a part of a stripping machine in common use and which therefore forms no part of the present invention, enough only of this machine being shown in Figures 6, 7 and 8 to illustrate the manner in which the expansible holder is supported in the operation of applying a strip to a box band, it being understood that the improved holder is used only in connection with the bands of round boxes and boxes having a curved outline, such as the heart shaped box, other forms being used for the bands of rectangular boxes and others not having curved outlines; such forms being connected to the shaft 30, in the same manner as the present expansible holder or as shown in Fig. 2.

A brief description of the stripping machine will suffice. The shaft 30, is supported in a bracket 31, on the outer end of an arm 32 mounted in a support 33 on the end of a table 34. The shaft 30, carries a bevel gear 35, which meshes with a similar gear 36, on the outer end of a shaft 37 supported on the arm 32. This shaft carries a bevel gear in mesh with a similar gear on a shaft 38 mounted on the end of the table.

The shaft 38 carries a power driven pulley 39 which is loosely mounted thereon, and is connected to the shaft to turn the same, when required, by a clutch 40, slidably mounted on the shaft and operated by a pusher 41 on the end of a rod 42 which is slid by means of a foot lever 43, bell crank 44, and connection 45 between foot-lever and bell crank.

A stationary knife 46 is supported on a bracket 47 on the upper end of a standard 48, mounted in a bracket 49 on the end of the table 34. A knife 50, is supported on a bracket 51, pivotally connected to the bracket 47, and operated by mechanism (not shown) to be swung upward and then allowed to drop by gravity so that its knife 50 will coact with the stationary knife 46, to sever a strip passing between them, with a shearing cut. The strip 52 passes over a glue distributor, (not shown) on the rear end of the table, and thence over suitable supports, as 53, and then between the cutting knives, and a portion of the strip is passed around the box band, and severed from the main part of the strip, upon each rotation of the band, as will now appear.

In practice, the band to be stripped is placed around the holder so as to extend beyond the front edge thereof, as shown in Fig. 9, and the hand lever 22 is swung upward so as to turn the spreader from the position shown in Fig. 1, where its long diameter is on a horizontal line, to the position shown in Fig. 4, when its long diameter is on a vertical line, thereby spreading sections 1 and 2 of the holder so that they fit tightly within the band and thus grip it; the angle plates being so adjusted, that the cam or spreader when in a vertical position will spread the sections just far enough to grip and hold the band, and not far enough to cause them to part or break the band at the point where its two ends are "taped" or connected. In this position of the spreader, the set screw 21, engages the stop pin 24 and prevents further movement of the spreader as will be understood by reference to Fig. 4.

The strip 52, which is glued on its under side, is about an inch wider than the band, so that it will extend a half inch beyond each edge of the band. The attendant then attaches the free end of the strip to the band, as shown in Fig. 6, and depresses the foot-lever 43 by which the clutch 40 is coupled to the pulley 39, and the shafts 38, 37 and 30

are rotated, as above described and when the holder has made a complete rotation thereby causing the strip to adhere to the band, the knife 50 drops automatically and severs the strip and the loose end of the strip encircling the band is pressed against the band by the attendant, this loose end being long enough to overlap the other end. The attendant then depresses the foot lever to again rotate the holder, and as it rotates, the outer projecting edge portion of the strip is tucked or folded in, manually against the inner face of the band, as shown by the dotted line X, Fig. 9, and the stripping operation is completed. The hand lever 22 is then turned to the position shown in dotted lines Fig. 4, which permits the spring 25 to retract the sections of the holder and release the band, which is then removed and is ready to receive the top or bottom, as the case may be.

The ribs or projections 6 on the surface of the holder, not only act more effectively to prevent slipping of the band on the holder, but they also prevent accidental contact of the glued strip with the surface of the holder; as it is apparent that if the surface of the holder were perfectly smooth, contact of the glued strip therewith would result in the strip adhering tightly to said surface, thereby causing annoyance and loss of time.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In mechanism of the character described, a ring-like holder comprising two half round sections having a hinge connection, projections on the free ends of said sections which are parallel and spaced from each other, a rotary spreader supported between said projections and a coil spring connecting the sections to resist the spreading movement.

2. In mechanism of the character described, a ring-like holder comprising two half round sections having a hinge connection, projections on the free ends of said sections which are parallel and spaced from each other, an arm on one side of the holder and connected at one end to the hinge, a spreader pivotally mounted in the opposite end of the arm and extending between said projections and a coil spring connecting the sections to resist the spreading movement.

3. In mechanism of the character described, a ring-like holder comprising two half round sections having hinge knuckles connected by a hinge pin, an arm on one side of the holder secured at one end to said hinge pin, spaced parallel projections on the free ends of said sections, an elliptical spreader between said projections and pivotally mounted in the free end of said arm, a rotatable support connected to said arm and a coil spring connecting the two sections to resist the spreading movement.

4. In mechanism of the character described, a ring-like holder comprising two half round sections having a hinge connection and adapted to receive a box band, an arm connected at one end to said holder and extending across one side of the same, angle plates secured to the free ends of said sections, an elliptical cam positioned between said angle plates and pivotally mounted in the free end of said arm, a lever for turning said cam thereby to spread said sections to grip the box band, a coil spring connecting the sections to resist the spreading movement, and a rotatable support connected to said arm in line with the axis of the holder.

5. In mechanism of the character described, a ring-like holder comprising half round sections having a hinge connection, inwardly projecting plates on the free ends of said sections, an arm extending across one side of said holder and connected at one end thereto, a spreader pivotally mounted in the free end of said arm and extending between said plates, said spreader being elliptical in outline whereby when the spreader is turned to bring its long diameter at right angles to the faces of the plates, the sections of the holder are thereby spread, a coil spring connecting the sections to draw them together when the spreader is reversed, a flange on the outer end of said spreader which engages said plates, and a rotatable shaft connected to said arm in line with the axial center of the holder.

6. In mechanism of the character described, a ring-like holder comprising half round sections having a hinge connection, the outer surfaces of said holder being formed with spaced transverse projections, means for spreading said sections to grip a box band placed thereon, a spring connecting said sections to resist the spreading movement of the sections, a support secured to said holder and in line with the axis thereof, and means for rotating said support.

7. In mechanism of the character described, the combination with a shaft and means whereby the same may be rotated at will, of an arm connected to one end of said shaft, a ring like holder comprising half round sections having alined hinge knuckles, and a pin which passes through said knuckles and into one end portion of said arm, a cam rotatably mounted in the opposite end of said arm for spreading said sections and a spring connecting said sections to resist the spreading action, said shaft being in line with the axis of said holder.

In testimony whereof I affix my signature.

IRVING A. DELINE.