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WORKING METHOD AND MACHINE FOR THE MANUFACTURE OF STICKING PAPER STRIPS PROVIDED WITH LOOP HANDLES FOR CARRYING PURPOSES

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Fig. 1

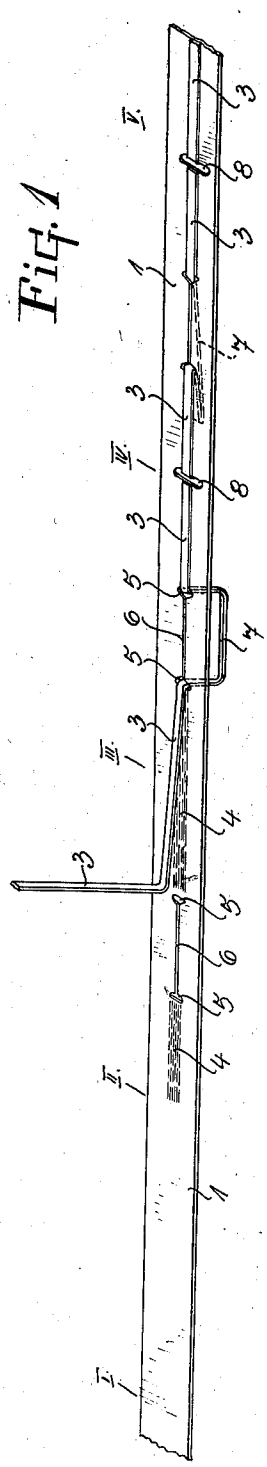
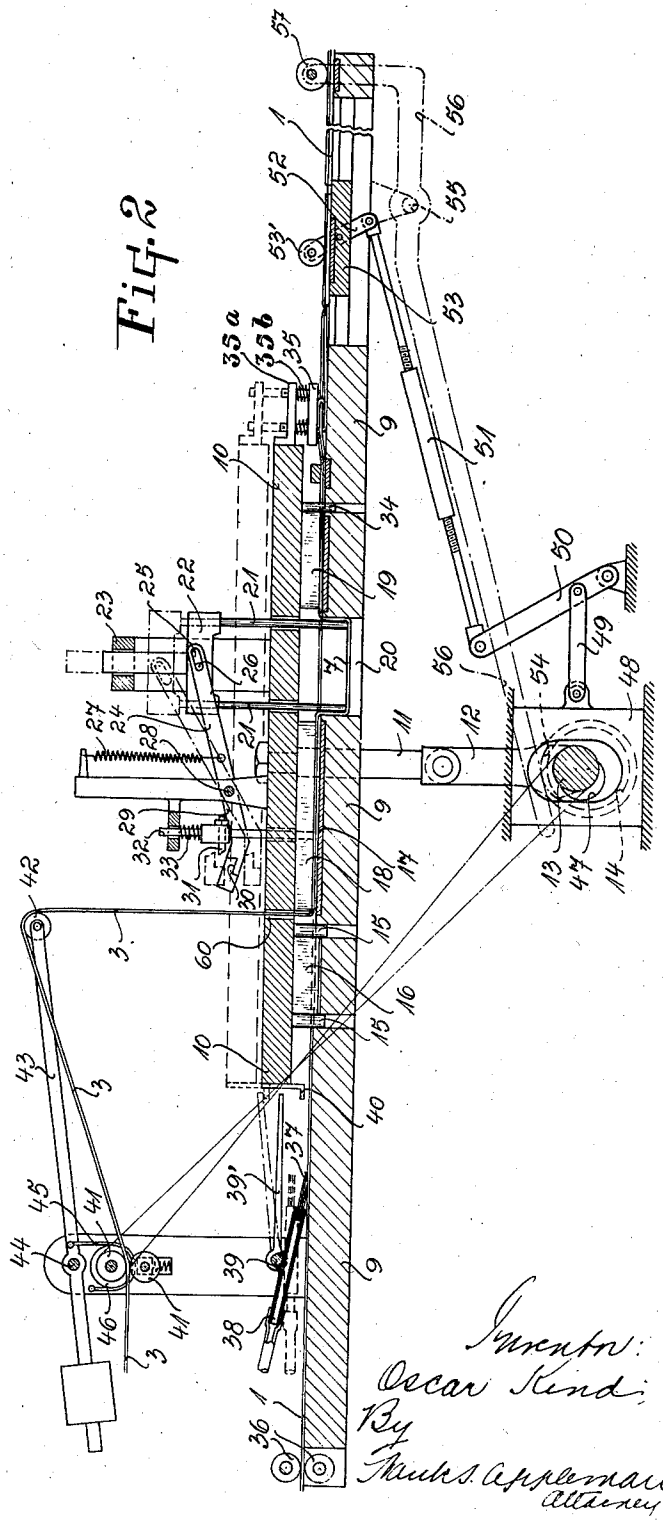


Fig. 2



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WORKING METHOD AND MACHINE FOR THE MANUFACTURE OF STICKING PAPER STRIPS PROVIDED WITH LOOP HANDLES FOR CARRYING PURPOSES

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25 Claims. (Cl. 93—1)

The present invention relates to a method and machine for the mechanical production on a large scale of sectional gummed or adhesive paper strips, the sections of which are provided with loop handles and designed as carrier means to be secured on packages of more or less weight such as are carried by hand, the said carrying means also functioning to secure the paper wrapper of such packages.

Paper strip carriers of this type are manufactured, in contradistinction to the ones previously known and made singly by hand, in accordance with the present invention, by mechanical means in uninterrupted operation and succession in the form of strips of any desired length, and, similar to the common gummed paper strips, are made up in the form of rolls and are arranged ready for use in suitably constructed delivery housings, for the simultaneous withdrawing of the strips and the moistening of the gummed surfaces of the strips.

The working method, as well as the mechanical means which comprise in the main the nature of the present invention, provide for such a construction of the several mechanical parts cooperating in the production of the carrier strips, that the strip of which the handle is made consists of a more or less narrow, flexible, so-called bast strip which is attached along the approximate middle of the gum coated surface of a wider paper strip in such a way that a space is provided on the latter along which the first strip forms a loop substantially longer than said space, by passing the narrow strip from the gummed side of the wide strip through two holes provided for this purpose to and beyond the outer or ungummed surface of the wide paper strip.

In accordance with the operating method on which the present invention is based, such carrier means, attachable to a package by their gummed surfaces, are made by preparing and conveying a gummed paper strip of any length, together with a handle strip, with the ends arranged so that both strips may be uncoiled from supply rolls in such a manner that the handle strip is moved so much faster than the gummed paper strip that it provides the lengths necessary for the making of the loop handles. During the forward movement of the gummed paper strip, the gummed surface of the latter is moistened along the middle between holes punched in the paper strip for the passage of the handle strip through the gummed paper strip in a length equal to the length of the handle strip and thus made to stick connecting sections of the handle strips lying between the loop handles by pressure upon the moistened gummed portion.

The holes serving for insertion of the handle loops to the surface left free of gum of the gummed paper strip are preferably made, during the forward movement of the gummed paper strip effected for the purpose of uniting the same with the handle strip, by means of a punching action of such nature that each pair of holes is connected by a longitudinal slot. The passing of the loop strips through these pairs of holes, connected in the above mentioned manner, is effected by means of a thrust fork moved alternately forward and backward and arranged perpendicularly to the gummed paper strip so that said fork may serve, at the same time, for effecting a rapid movement of the supply roll for the handle strip in order to provide the required length of the handle strip used in the formation of the loop.

After the two strips have been connected into one gummed paper strip provided with loop handles, cross holes are punched between the individual sections provided with handles, preferably during the forward motion of said gummed paper strip, or in the intervals of this motion. By means of these holes, the handle strip is weakened to facilitate the ripping off of individual sections of the gummed strip for use.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawing forming part of this application, wherein like characters denote corresponding parts in the several views, and in which—

Fig. 1 of the drawing shows the operation of forming the strip and illustrates successive sections of the strips and the steps of uniting them and forming the loops.

Fig. 2 shows diagrammatically in longitudinal section the main parts of a machine for carrying out the method shown in Fig. 1.

The illustration of the operation according to Fig. 1 shows the paper strip I, the top surface of which represents the gummed surface in the above view. The part of the paper strip lying between the marks I and II has not as yet been operated on, the longitudinal distance between the above marks equalling the length of each stroke, by which the paper strip is advanced. Between the marks II and III the paper strip I

has been provided with two punched holes 5 between which the paper strip is cut as at 6. The spaces 4 of the gummed surface of the paper strip in the middle and next to these punched holes have been moistened. The handle strip 3 coming from above is conveyed to the moistened paper strip 1. Before it is attached to the surface, it runs over said surface at a little distance from the latter, enters a hole 5 on the section III—IV to pass through to the bottom side where it forms a loop 7, whereupon it returns through the second of the two holes to the top surface of the paper strip and is attached thereto by pressure.

The part of the handle strip lying along the gummed surface between the holes 5 is also pressed to the gummed surface 4 in the middle of the paper strip and thus made to stick, after the loop 7 is made. At the ends of two handle strip sections (at the mark IV) a cross-hole 8 is punched through both strips in such a way that the fixed handle strip 3 has been completely cut through and also the paper strip 1 for the greater part of its width. On the paper part lying between the section marks IV and V, the carrier device is shown completely formed; however, a fold may be made in loop 7, as shown in dotted lines between IV and V, for the sake of facilitating the coiling of the strip.

The machine for carrying out the manufacturing process consists of a table plate 9, on the upper surface of which a tool supporting device 10 is arranged and is movably connected with the table 9 by means of guides 11 passing through suitable openings in the plate 9. This tool support is connected with a pair of stroke eccentrics 14 arranged on the driving shaft 13 by means of two guide bolts 11 and connecting rod 12 in such a way that the device 10 is moved by this shaft.

The tool supporter 10 is fitted with a pair of dies 15 and a cutter 16 engaged with the respective counteracting cutters on the table 9. In addition to the foregoing, the tool supporter is provided with a pressure ledge 18 above an elastic pressure cushion 17 inserted in the table surface. A recess 20 is arranged in the table plate 9 between the beforementioned pressure ledge and another pressure ledge 19 of similar construction in such a way that the two teeth 21 of a thrust fork 22 can enter said recess.

The fork is supported by the guiding slide 23 and is held in a lifted position by a lever 24 to which it is connected, by means of pins 26 on the fork 22 engaged with slot-shaped holes 25 in the lever 24 by a tension spring 27 having its ends secured to the lever and to a suitable bracket. The lever 24 and its axis of rotation 28 are supported by the tool-supporter 10. Opposite this bearing a counteracting arm 29, as shown in the drawing, is formed on the lever at an angle thereto so that, at its end, a catch-nose 30 is formed. In the path of this catch-nose a catch 31 is provided carried by a perpendicular guide-bar 32, which by the action of the spring 33 is pressed downward in such a way that the lower end of the guide-bar 32 rests on the surface of the table 9. The catch 31 yields against the action of a spring (not shown), allowing same to pass underneath the nose and raising it by the upward movement of the catch 31 until the release position is attained.

Adjacent the pressure ledge 19 on the bottom surface of the tool-supporter 10 another die 34 is provided; a folding plate 35 being attached to the end of the supporter 10 by means of a bracket 35a and springs 35b.

A pair of rollers 36 arranged on the left side of the front edge of the working table 9 effects the guiding of the paper strip 1 when it enters the machine. Between said pair of rollers 36 and the front end of the tool-supporter 10 a moistening device is arranged consisting of a brush 37 and conveying means 38 for the liquid. This moistening appliance is supported to swing on a horizontal axle 39 and is provided with a lever-arm 39' ending in the path of a catch 40 attached to the tool-supporter 10.

On this side of the machine the conveying means for the bast strip 3 has been arranged. The conveying means consists in the main of a pair of conveyor rollers 41 driven by the shaft 13 through a friction coupling (not shown in the drawing), in such a way that the paper strip is passed through between said rollers. In a nearly perpendicular direction above the entering point 60 of the strip on the tool-supporter, said strip is conveyed over a guide roller 42, arranged at the end of the lever 43, the other end of which carries a weight. The end of the brake band 45 is attached to the lever arm at a point between its axis of rotation 44 and the roller 42 allowing cooperation with a brake disk 46 carried by the upper roller 41.

The arrangement necessary for the progress of the paper strip is driven by the shaft 13. The means provided for it is a driving mechanism consisting of a hub 47 and the crank loop 48, acting through the aid of the connecting rod 49, the lever 50, and a connecting rod 51, the length of which is preferably adjustable, upon the end of a lever jaw 52 pivoted to and moving the stroke slide 53 to and fro. Said lever jaw 52 is fitted preferably with a roughened roller clamp 53' which, as the jaw 52 moves in one direction, is pressed against an elastic support carried by the slide 53, and when the jaw 52 moves in the other direction, is kept in a raised position by the tilting of the jaw 52 to allow the unobstructed passage of the paper strip 1.

Another cam 54, also arranged on shaft 13, operates with the aid of the double armed lever 56 swinging around its bearing pivot 55, an auxiliary roller clamp 57 which holds the paper strip tightly during the back travel of the stroke slide 53.

The operation of the device is as follows: During the continuous rotation of shaft 13 in the right hand direction (after starting from the position shown in Fig. 2), the tool-supporter 10 is first moved into its raised position (shown in Fig. 2 by dotted lines) by the action of the eccentrics 14, the blades 12 and the rods 11. At this time, shortly after the punching tools 15, 16 and 34 have moved up with the supporter 10 from their counteracting cutter recesses, the feeding means for the paper strip starts, and by means of the linkage 49, 50, 51, motion is transmitted from the cam 47 and slide 48 to the paper strip in such a way that the roller clamp 53', arranged on the end of the lever 52 opposite the end connected to the rod 51, is pressed against its elastic support, so that the paper strip which lies between said slide 53 and the roller 53' is therefore carried along and moved forward to an extent equal to the movement of the slide 53.

During this forward stroke, the auxiliary clamp 57 has been held in open position by the action of the lever 56 as it is moved by the cam 54 also fixed on shaft 13. This clamp 57 grips the paper

strip immediately upon the termination of the forward stroke of slide 53 in order to retain the paper strip in its position during the time the slide 53 is making its return stroke.

The brush 37 of the moistening device lies on the paper strip surface at the beginning of the movement of the paper strip and moistens the middle part of the paper surface for a width corresponding with the width of the brush. In order to avoid the moistening of the paper part required for the punching of the holes 5 and of the slot 6, the brush is lifted by the catch 40 acting on the lever 39'. The time period necessary for such lifting can be exactly adapted to the length of the paper strip which is to remain dry by means provided for adjustability of the catch 40. After this lifting, the brush will again assume its moistening position on the moving paper as soon as the upper position of the tool-supporter 10 has been passed, thus allowing the moistening of the terminal part of each section of the carrier strip.

During the motion of the paper strip, the bast strip 3 has been carried along. The guide roller 42 is drawn downwards as the vertical part of the bast strip moves down, said motion causing the lever arm 43 to tilt in consequence of which the band brake 45, 46 is released. The belt driving the conveyor rollers 41 through the driving shaft 13 now starts the rotation of the rollers, thus feeding the bast strip 3 to a sufficient extent. As a result, the roller 42 will rise in consequence of the action of the counterweight applying the brake and stopping the feeding of the bast strip. With the further downward motion of the tool-supporter 10, the lower end of the guide-bar 32 of the catch will engage the table plate 9, thus pressing the catch 31 upward. The latter engages underneath the nose 30 and tilts the lever 24 which causes the thrust-fork-teeth 21 to move downward and engage at the lower ends with the bast strip 3, thus pushing it through the slot opening 6 to the other side of the paper strip to cause formation of the loop.

Since the nose 30 moves in an arc, the center of which is above the pivotal point of the catch 31, the nose will slide off the catch 31 in consequence of the tilting motion of the lever, and the thrust fork 22 will return to its raised position of rest by means of the action of spring 27.

At this moment, the tool-supporter has arrived close to the termination of its downward stroke. The punching tools 15, 16, 34 then effect the punching and the pressure pieces 18, 19, also the folding plate 35, will press against the strip. The pieces 18 and 19 effect the adhesion of the bast strip to the moistened paper strip, the plate 35 pinching the finished handle loop in a manner suitable for the convenient coiling of the strip.

This finishes one length of the strip and repetitions of these steps effect the formation of successive lengths.

It has been found that where the strip is cut in its longitudinal center line, the strip on each side of the slit is of approximate equal strength and that construction and the provision in the apparatus for producing the slitted strip has been found the preferred construction. However, a slight variance from the exact center is not to be regarded as a departure from the scope of the invention or the claims, even though they refer to the slit being in the longitudinal center.

I claim:

1. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, and means to cause adhesion of the handle strip between said slits to the gummed strip.

2. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, means to cause adhesion of the handle strip between said slits to the gummed strip, and other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever the handle strip and partially sever the gummed strip.

3. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, means to cause adhesion of the handle strip between said slits to the gummed strip, and clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder.

4. In a machine for uniting a gummed paper

strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, means to cause adhesion of the handle strip between said slits to the gummed strip, other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever the handle strip and partially sever the gummed strip, and clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder.

5. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, and pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits.

6. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, and means actuated by the reciprocation of the tool holder to disengage the moistening means from the gummed strip along the parts of the gummed strip to be punched.

7. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, and other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever the handle strip and partially sever the gummed strip.

8. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, and clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder.

9. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means

operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever the handle strip and partially sever the gummed strip, and clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder.

10. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, means actuated by the reciprocation of the tool holder to disengage the moistening means from the gummed strip along the parts of the gummed strip to be punched, and other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever the handle strip and partially sever the gummed strip.

11. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, means actuated by the reciprocation of the tool holder to disengage the moistening means from the gummed strip along the parts of the gummed strip to be punched, and clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder.

12. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, means actuated by the reciprocation of the tool holder to disengage the moistening means from the gummed strip along the parts of the gummed strip to be punched, other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever the handle strip and partially sever the gummed strip, and clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder.

13. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool

holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, means to cause adhesion of the handle strip between said slits to the gummed strip, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

14. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, means to cause adhesion of the handle strip between said slits to the gummed strip, other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever the handle strip and partially sever the gummed strip, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

15. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, means to cause adhesion of the handle strip between said slits to the gummed strip, clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

16. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, means to cause adhesion of the handle strip between said slits to the gummed strip, other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever the handle strip and partially sever the gummed strip, clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

17. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

18. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the

handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, means actuated by the reciprocation of the tool holder to disengage the moistening means from the gummed strip along the parts of the gummed strip to be punched, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

19. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever the handle strip and partially sever the gummed strip, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

20. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

21. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever the handle strip and partially sever the gummed strip, clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

22. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, means actuated by the reciprocation of the tool holder to disengage the moistening means from the gummed strip along the parts of the gummed strip to be punched, other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever

the handle strip and partially sever the gummed strip, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

23. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by the said tool holder and cooperating with the table to press the strips together between said slits, means actuated by the reciprocation of the tool holder to disengage the moistening means from the gummed strip along the parts of the gummed strip to be punched, clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

24. In a machine for uniting a gummed paper strip and a handle strip to form handles on the gummed paper strip, a table, a tool holder mounted above said table to reciprocate vertically to and from said table, a driving shaft, means operatively connecting said shaft and tool holder to reciprocate the latter, feeding means actuated by said shaft for imparting a step-by-step movement to a gummed paper strip extending along said table beneath the tool holder with its gummed side up, a feeding device for a handle strip operated in unison with said feeding means to feed a handle strip along the upper side of said gummed paper strip in successive slack portions, punching means carried by the tool holder to cut a longitudinal slit along the center line of the gummed strip as the paper rests beneath the tool holder, pusher means actuated by and supported on the tool holder and engaging the handle strip to force slack portions thereof through said slits, a moistening device supported by said table to engage the central part of the gummed strip prior to its passage beneath the tool holder, pressing means carried by said tool holder and cooperating with the table to press the strips together between said slits, means actuated by the reciprocation of the tool holder to disengage the moistening means from the gummed strip along the parts of the gummed strip to be punched, other punch means carried by the tool holder and punching the adherent portions of the handle strip and gummed strip between said slits to sever the handle strip and partially sever the gummed strip, clamping means actuated by said shaft and cooperating with the table to clamp the strips against movement during the descent of the tool holder, and loop pressing means carried by the tool holder and cooperating with the table to flatten the formed handle loops as the united strips issue from beneath the tool holder.

25. The method of applying handle sections to a paper strip having one side gummed and the other side ungummed which consists in advancing the paper strip and a handle strip in step by step movement consisting of alternate forward movements and rests through a series of stations including in succession a moistening station, a slitting station, a handle strip projecting station, a pressing station and a handle strip folding station, moistening spaced lengths of the gummed side of the gummed strip during its movement past the moistening station, slitting the gummed strip between the moistened lengths while the strip is at rest, feeding an excess length of the handle strip to the gummed strip adjacent the projecting station, forcing the excess of the handle strip through the slit from the gummed side of the gummed strip to its ungummed side at the projecting station, pressing the strips together at the pressing station, and pressing the projected excess of the handle strip into folded condition at the folding station.

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