June 26, 1945. M. KATZ 2,379,087

BAG HANDLE ATTACHING MACHINE

Filed Nov. 3, 1941 2 Sheets-Sheet 1

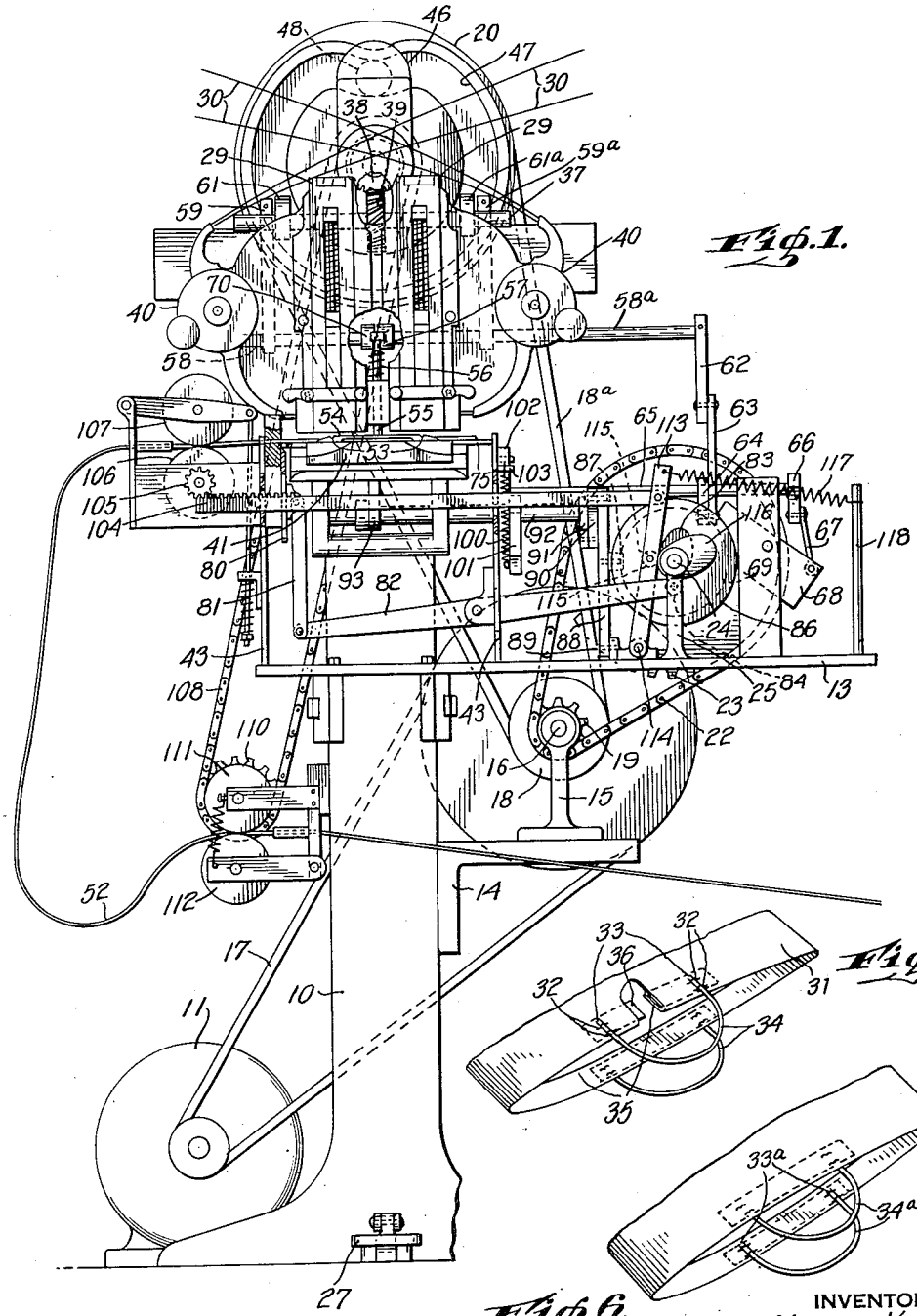


Fig. 1.

Fig. 5.

Fig. 6.

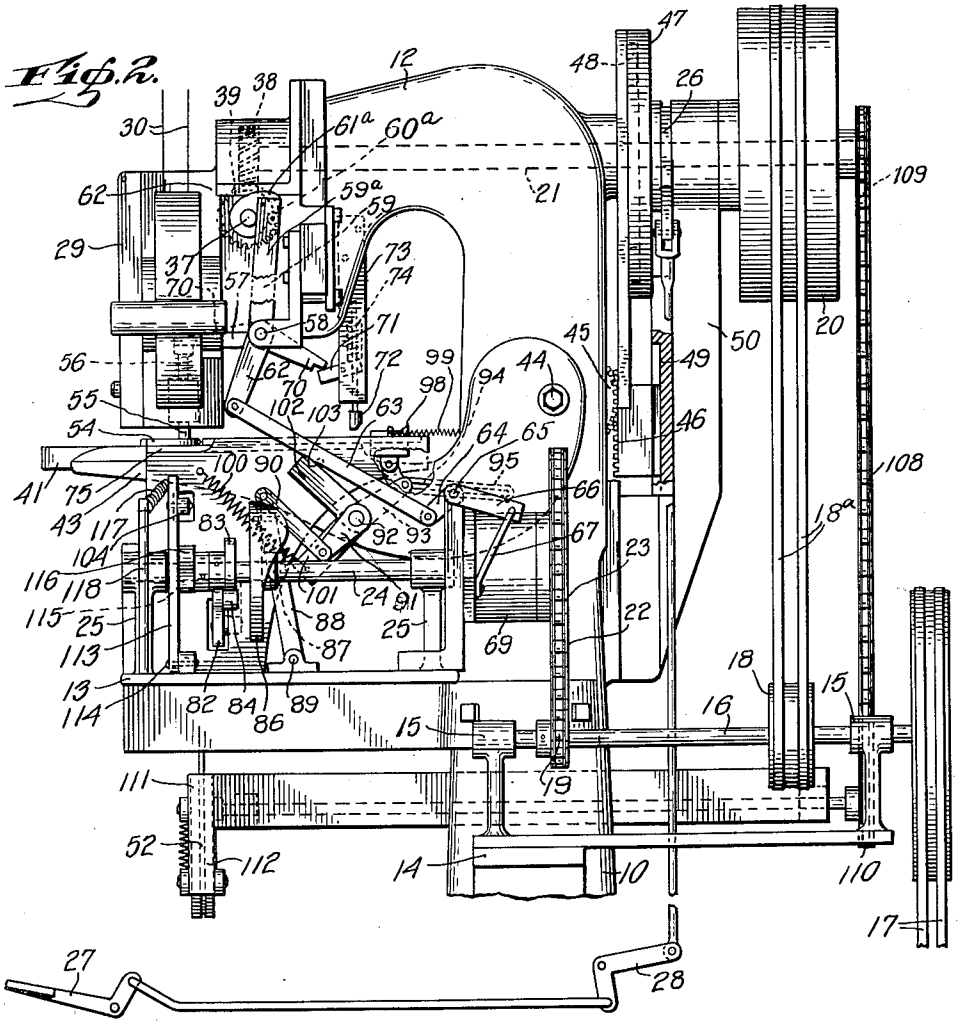
INVENTOR
MORRIS KATZ
BY
ATTORNEY

June 26, 1945. M. KATZ 2,379,087

BAG HANDLE ATTACHING MACHINE

Filed Nov. 3, 1941 2 Sheets-Sheet 2

Fig. 2.



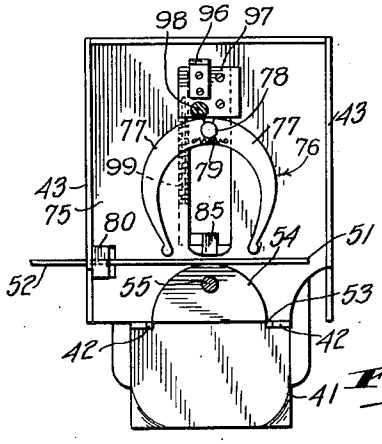


Fig. 3.

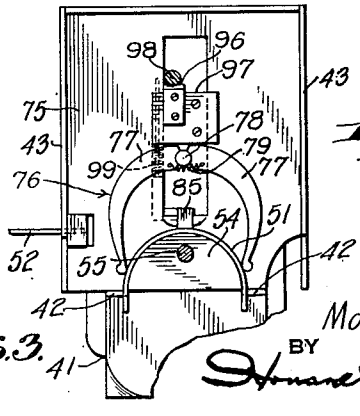


Fig. 4.

INVENTOR
MORRIS KATZ
BY
Howard C. Thompson
ATTORNEY

Patented June 26, 1945 2,379,087

UNITED STATES PATENT OFFICE

2,379,087

BAG HANDLE ATTACHING MACHINE

Morris Katz, Bronx, N. Y.

Application November 3, 1941, Serial No. 417,625

7 Claims. (Cl. 93—1)

This invention relates to machines for forming and attaching handles to paper shopping bags, and the object of the invention is to provide a machine of this class having means for intermittently feeding an endless handle forming cord or strand into the machine, means for cutting predetermined lengths of the strand to form handle forming portions, a further object being to provide means engaging these handle forming portions to shape the same into U-shaped handles having projecting or supporting ends arranged beneath duel stapling means, further in providing means for actuating the stapling mechanism to simultaneously secure each end of the handle forming member to the upper edge portion of a paper bag or other support by a pair of closely arranged staples; a further object being to provide a machine of the character described, wherein the feeding, cutting, and shaping of the handle forming member is performed immediately after the treadle operation of the machine in applying the staples to a preformed handle, and with these and other objects in view, the invention consists in a machine of the class and for the purpose specified, which is simple in construction, efficient in use and which is constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:

Fig. 1 is a front view of a machine made according to my invention with parts of the construction broken away.

Fig. 2 is a side view of the upper end portion of the machine.

Fig. 3 is a sectional plane view of the table portion of the machine illustrating the handle gripping and forming mechanism.

Fig. 4 is a view similar to Fig. 3 showing the parts in a different position.

Fig. 5 is a perspective view of the open end of a shopping bag showing handles applied thereto by the machine with part of the construction broken away.

Fig. 6 is a view similar to Fig. 5 showing another adaptation of the invention.

In the application of handle members to shopping bags, it has been the conventional practice to cut twisted paper cords or other handle forming strands, some of which have included a reinforcing wire core, into lengths suitable to form handle members and these cord or strand lengths have been applied to the bags by hand and then secured in position by gluing, stapling or similar means. This method of procedure has been costly from the standpoint of the hand labor involved and excessive handling of the merchandise end and has further limited the production possibilities of bags of the kind under consideration. It has been the aim to endeavor to produce these shopping bags at the lowest possible cost in that the bags, for the most part, have been given away to customers and at best, have sold at a very reasonable retail price. To over-come the present objectionable methods of procedure in constructing bags of the kind under consideration, I have devised a machine wherein handle forming strands are automatically cut to the desired length and then shaped to form curved handles supported in this shaped position beneath two pair of stapling plungers, and in simultaneously applying two staples on each end of the handle member and through the bag to secure the handle member in position on the edge of the bag in one operation. It will thus be apparent that the production of bags of this kind can be materially increased comparatively with the hand attachment of the handles and the individual stapling of each handle end. Furthermore, greater accuracies are provided in that positioning of the handle members on the bag is more definitely controlled, than in the hand method of attachment.

In the accompanying drawings, 10 represents a standard or base of the machine on which is supported a drive motor 11. The top of the standard has a forwardly directed gooseneck extension 12 below which is a forwardly and laterally directed supporting plate 13. Supported at one side of the standard 10 is a bracket 14 upon which is arranged spaced bearings 15 for supporting a drive shaft 16, driven from the motor 11 through a belt drive as indicated at 17. On the shaft 16 is arranged a drive pulley 18 and a drive sproket 19. Around the pulley 18 passes a belt or a pair of belts 18a which also pass around a pulley 20 on a supplemental drive shaft 21 mounted in the upper gooseneck end 12 of the frame. A chain 22 passes around the sproket 19 and around another sproket 23 on a cam shaft 24 which is arranged in suitable bearings 25 on the plate 13.

On the shaft 21 is a one revolution clutch 26 moved into operative position upon the depression of a foot treadle 27 coupled with the clutch through link and lever mechanism as indicated at 28. The operation of this clutch puts the ma-

chine into one complete cycle of operation to first actuate two duel stapling units 29 arranged side by side in spaced relationship to each other, each unit operating to feed a pair of wires 30 to a position forming desired staple lengths, trimming off these lengths, shaping the same and then passing them through the workpiece, for example a paper bag 31, note Fig. 5 of the drawings, to form two staples 32 securing the ends 33 of a handle member 34 to the upper edge of the bag including an inturned flange 35 thereon, as well as, to a reinforcing cardboard strip 36 arranged in the fold of the flange and cemented or otherwise positioned therein.

Stapling machines or units are well known in the art, and for this reason specific showing or description thereof is deemed to be unnecessary, especially in that these stapling units are driven in any suitable manner from a transverse shaft 37 driven from the shaft 21 through gears 38 and 39.

At each side of the units 29 is arranged wire guide devices 40 through which the pairs of wires are passed to direct the same into proper position with respect to the staplers 29. It is preferred that the wires are fed from suitable spools, not shown, and crossed at the top of the machine in going to the respective guides 40 as indicated in Fig. 1 of the drawings.

The stapling units 29 are disposed over a forwardly projecting workpiece supporting table 41, which is shaped to receive the central portion of one side of the bag 31, the folded edge of the bag being brought against stops 42 to limit inward movement of the bag; and other suitable means will be provided to centralize the bag on the table in order to properly position the handle on the bag. This may be done by simply providing marks on the surface of the bag to register with the ends 33 of the handle 34. The table 41 is positioned between side plates 43 protruding upwardly from the plate 13 and is arranged upon and pivoted to the standard 14 as seen at 44, so as to provide slight vertical movement of the table in the operation of feeding the bag beneath the stapling units 29. The pivot 44 is in the form of a shaft on which is disposed a gear 45 and the gear 45 is operated through the medium of a rack 46 in imparting the slight reciprocating movement to the table 41, the rack 46 being actuated by a cam 47 on the shaft 21. The rack has a roller 48 operating in the groove of the cam 47, as will clearly appear upon a consideration of Fig. 1 of the drawings. The rack 46 is guided in its vertical movement by operating in an elongated slot 49 in the forward surface of a bearing 50 extending upwardly at the back of the standard 10 to form a support for the shaft 21.

In order to understand the operation of the machine, it is well to mention at the present time, that at the completion of one cycle of operation of the machine, the predetermined workpiece length 51 is cut from an endless supply 52 of a twisted paper cord or the like used in forming the handles 34. This workpiece is fed into the position supported in the loop or U-shaped form with the ends 33 projecting forwardly and held in substantial parallel relationship to each other, as shown in Fig. 4. Notches 53 formed in the stops 42 support the ends in this position, then upon the insertion of the edge of the bag into the machine over the table 41, the depression of the treadle 27 first performs the stapling operation, and thereafter the other operations of the machine automatically take place. One of the first of these operations is to raise a semi-circular mold disc 54, which shapes the rounded contour of the resulting handle, in order to allow the workmen to withdraw the bag from the machine. The disc 54 has an upwardly extending center rod 55, on which there is arranged a spring 56 normally supporting the disc in depressed position. Engaging the upper head end of the rod 55 is a lever 57 secured to one transverse shaft 58, on which shaft is arranged a link 59, which extends upwardly and carries a small roller 60 operating upon the surface of a cam 61. The cam 61 is secured to the shaft 37 and in proper timed relationship the cam will actuate the link 59 to in turn raise the lever 57 to move the disc 54 upwarly, and then to immediately release the disc allowing the same to be moved by the spring 56 into its normal position.

On another independent shaft 58a arranged in axial alinement with the shaft 58, is another link 59a similar to the link 59 and operating upon a cam 61a also disposed on the shaft 37. Also on the shaft 58a is a downwardly extending lever 62, to which is pivoted a long link 63, the other end of the link 63 being pivoted to a lever 64 secured to a rod 65. Also secured to this rod is another lever 66 having a link 67 coupled with a control element 68 controlling the operation of a one revolution clutch 69, which controls the drive of the shaft 24 through the chain and sproket construction described.

Also on the shaft 58 is arranged an arm 70 cooperating with a trip lever 71 for raising a stop lug or pawl 72 to release a workpiece feed and shaping member later described. The pawl 72 is arranged on a rod movable vertically in a suitable guide 73, a spring 74 being employed to support the pawl normally in operative position. However, immediately after the stapling operation, the pawl is raised into inoperative position for the purposes stated.

Arranged at the upper ends of the side plates 43 of the frame is a horizontal supporting plate 75 upon which is slidably mounted a workpiece pick-up and forming device 76 comprising a substantially horseshoe shaped unit formed from two similar curved arms 77 pivoted as seen at 78 with a spring 79 normally supporting the arms in the position shown in Fig. 3, while permitting spreading of the arms to a predetermined degree. The workpiece length 51 of the cord or strand is fed in front of the device 76 in the manner shown in Fig. 3 and then is severed from the endless strand 52 by a cutter 80. The cutter 80 is pivotally supported on an upstanding link 81 pivoted to one end of a long lever 82, the other end of the lever being actuated by a cam 83 operatively engaging a roller 84 at the end of said lever. Before the workpiece length 51 is cut, however, by the tool 81, it is first gripped between the curved surface of the disc 54 and a forwardly movable gripper 85. This gripper is actuated by a cam 86 on the shaft 24 engaging a roller 87 on a lever 88 pivoted as seen at 89, the other end of the lever being coupled to a link 90, which in turn is pivoted to a lever 91, at one end of a shaft or rod 92. This shaft extends into the central portion of the machine and has an upwardly extending lever 93, the free end of which has a pin operating in an elongated slot 94 of a long link 95 pivoted to the gripper plunger 85. The free end of the plunger 85 has an upstanding flange 96 adapted to engage the plunger portion 97 of the device 76 so that immediately after the workpiece has been gripped, the device 76 is

moved forwardly to feed the workpiece 51 around the disc 54 and support the same in this position as seen on Fig. 4 of the drawings. In this forward movement of the plunger 97 a projecting catch 98 thereon passes beneath the pawl 72, automatically raising the pawl and then allowing it to drop in back of the catch, to support the device 76 in the position shown in Fig. 4 until such time as the treadle is again depressed starting another cycle of operation of the machine. Immediately after the stapling has been performed the pawl 72 will be tripped and a spring 99 coupled with the plunger 97 will automatically return the same to retracted position allowing the new workpiece length 51 to be fed into position to repeat the next successive operation. It will be understood that the elongated slot 94 of the pivoted link 95 provides for the normal return of the links and levers, while maintaining the device 76 in operative position and these are automatically returned by a spring 100 coupled with a lever 101 on the shaft or rod 92. In other words, engagement with the cam 86 or substantially so, it being preferred to employ a projecting arm 102 on the rod 92 to engage a stop pin 103 in limiting the return movement of the parts as will be apparent.

Immediately after the device 76 has returned to its normal position, the cord or strand 52 or a predetermined length thereof is fed into the machine by the transverse movement of a rack 104 which rotates a gear 105 on the shaft of a feed roller 106, a spring actuated roller 107 being disposed over the roller 106 to maintain positive feed of the strand 52. Before proceeding with the drive of the rack, it is well to mention that a constant feed of the strand 52 is provided in drawing the strand from a supply reel, not shown, and this is accomplished by a drive chain 108 passing around a sproket 109 on the shaft 21 and around a sproket 110 on a shaft to which a feed roller 111 is secured a spring pressed roller 112 is also used in conjunction with the rolls 111 to insure feed of the strand 52. This constant feed of the strand forms the loop therein illustrated in Fig. 1 sufficient to provide at all times free, quick feeding of the desired length of the strand into the machine in the intermittent actuation of the handle feed roller 106.

The rack 104 is actuated through a lever 113 pivoted as seen at 114 and having a roller 115 operating upon a cam 116 on the shaft 24. The rack is supported and guided in its movement by the end plates 43 and has its end pivoted to the lever 113 as will be apparent. A spring 117 is coupled with the lever 113 and with a supporting rod 118 and serves to maintain the roller 115 in constant engagement with the surface of the cam 116.

The operation of the machine will be readily understood from the foregoing when taken in connection with the following brief description.

In the first place it will be assumed that the machine has been previously operated and at the completion of this operation the workpiece strand 51 is left supported in the position shown in Fig. 4, with its ends projecting forwardly and arranged in parallel relation to each other and the table 41 is in a slightly depressed or lowered position, allowing free entrance of the edge of a paper bag into position beneath the stapling devices 29 and also beneath the said ends of the strand workpiece 51. The treadle 27 is then depressed putting the machine in operation. The stapling devices 29 will first be actuated to simultaneously secure two staples around each end 33 of the resulting handle 34, note Fig. 5, after which the bag is immediately withdrawn from the machine, the disc 54 having been instantaneously raised to permit this withdrawal, it also being understood that the table 41 has been previously raised into normal position during the stapling operation. Immediately upon the withdrawal of the bag and handle member thereon, the forming and holding element 76 is released, as is also the gripper 85. They are automatically moved into normal position, thereupon a new workpiece 51 is fed into position between the gripper 85 and the disc 54, which has now been lowered to its normal position. The gripper 85 is then moved into position to engage the workpiece. The cutter 80 is then operated to sever the workpiece length 51 from the stock 52, thereupon the element or device 76 is moved forwardly to pass the workpiece 51 around the curved surface of the disc 54 and to support the same on this surface with the free ends of the workpiece protruding in the manner illustrated in Fig. 4 and then the machine remains momentarily at rest.

During the cycle of operation of the machine, the bag is inverted and the other opposed edge is brought into position upon the table 41, the treadle 27 again depressed and the cycle operation repeated to attach the other handle member, and these operations may be repeated in forming both handle members on a successive series of bags. If desired, the operation of attaching both handles may be performed by first attaching one handle to one side only in a series of bags and then to attach the other handle of the other side of the bags in another series of operations.

It is also possible to attach the handles by disposing the ends 33 upon inner surfaces rather than outer surfaces of the bags as indicated in Fig. 6 of the drawings in which view the handle members are designated by the reference 34*a* and the attached ends by the reference 33*a*. In both instances, staples pass through not only the bag including the flange, but also through the reinforcing strip employed, and these are especially desirable in the stronger construction of the bag. Where this strength is not required, however, the reinforcement may be modified or even dispensed with. As a matter of fact, it is really immaterial what particular type and kind of product or workpiece is employed for the attachment of the handle members. It will be understood these handle members may have their ends simultaneously attached to any type and kind of workpiece. For example, the handle members may simply be attached to strips or bands similar to the reinforcing strips 36 in forming handle structures which could be coupled with any type or kind of container to form a carrying means for such container.

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

1. In a machine for forming and attaching handles to predetermined supports, a strand feeding, gripping, shearing and holding mechanism, comprising a feed roller for intermittently feeding a predetermined length of a strand into the machine, a curved surface disc disposed at one side of the strand fed into the machine, a gripper at the other side of the strand, means moving the gripper in the direction of said disc to support the central portion of said strand

centrally of the curved surface of said disc, means severing the gripped strand to form a handling forming length thereof having end portions, spaced equally from said gripper, means comprising yielding curved fingers for feeding said end portions of the strand onto the curved surface of said disc, a common pivotal mounting for said fingers, means engaging the last named means to retain the strand upon said surface of the disc with the free ends of the strand protruding from the disc, and means whereby a handle supporting member may be positioned in alinement with said protruding ends preparatory to securing the ends to said member.

2. In a machine of the class described, a one revolution clutch, means automatically actuating the clutch to rotate a cam shaft, one revolution in each cycle of operation of the machine, a cord feed unit, means actuated by one cam on said shaft for operating said feed unit to feed a predetermined length of the cord into the machine, a cutter shearing the cord to form said length, another cam on said shaft for actuating the cutter, a combination gripper and cord shaping and holding device, means comprising another cam on said shaft for actuating said device, a spring actuated catch cooperating with said device to support the same in cord holding position, and means for automatically releasing said catch.

3. In a machine of the class described, a one revolution clutch, means automatically actuating the clutch to rotate a cam shaft, one revolution in each cycle of operation of the machine, a cord feed unit, means actuated by one cam on said shaft for operating said feed unit to feed a predetermined length of the cord into the machine, a cutter shearing the cord to form said length, another cam on said shaft for actuating the cutter, a combination gripper and cord shaping and holding device, means comprising another cam on said shaft for actuating said device, a member upon which the cord is supported by said device, means for automatically moving said member out of engagement with said cord, a workpiece supporting table, and means for moving said table toward and from said member.

4. In a cord handle forming machine, a curved segment forming a mount around which a cord is adapted to be passed in shaping the cord to handle form, means feeding a straight length of cord into alinement with said segment, means cutting the cord to form a handle length, means gripping the handle length of the cord centrally upon said segment, yieldable means movable upon the segment to shape the ends of the cord length around the segment and to support the cord thereon with ends of the cord protruding beyond said segment and said last named means comprising a pair of members having common pivotal means.

5. In a cord handle forming machine, a curved segment forming a mount around which a cord is adapted to be passed in shaping the cord to handle form, means feeding straight length of cord into alinement with said segment, means cutting the cord to form a handle length, means gripping the handle length of the cord centrally upon said segment, yieldable means movable upon the segment and to support the cord thereon with ends of the cord protruding beyond said segment said last named means comprising a pair of members having common pivotal means, means supporting said members in holding position, means releasing the last named means, and means simultaneously moving the segment out of engagement with said cord.

6. In a machine employing a pair of duel stapling devices for applying two pair of staples upon spaced sections of a workpiece, means for forming a U-shaped strand-like handle having free spaced end portions adapted to be arranged upon the spaced sections of the workpiece in stapling said ends to the workpiece by the pairs of staples, said means comprising strand, feeding, cutting, gripping, shaping and supporting mechanisms all actuated automatically upon the completion of the application of the staples to a preformed handle in a single cycle of operation of the machine, the shaping and supporting mechanisms comprising a curved segment upon which the strand is shaped, a U-shaped member moving the strand upon and supporting the same on said segment, said member comprising independent yieldably supported curved arms, a common pivot for said arms, and means automatically moving said segment and member out of engagement with said U-shaped strand immediately after the stapling operation.

7. In a machine employing a pair of duel stapling devices for applying two pair of staples upon spaced sections of a workpiece, means for forming a U-shaped strand-like handle having free spaced end portions adapted to be arranged upon the spaced sections of the workpiece in stapling said ends to the workpiece by the pairs of staples, said means comprising strand, feeding, cutting, gripping, shaping and supporting mechanisms all actuated automatically upon the completion of the application of the staples to a preformed handle in a single cycle of operation of the machine, the shaping and supporting mechanism comprising a curved segment upon which the strand is shaped a U-shaped member moving the strand upon and supporting the same on said segment, said member comprising independent yieldably supported curved arms, means automatically moving said segment and member out of engagement with said U-shaped strand immediately after the stapling operation, a table supporting the workpiece, and means for automatically moving said table toward and from said segment.

MORRIS KATZ.