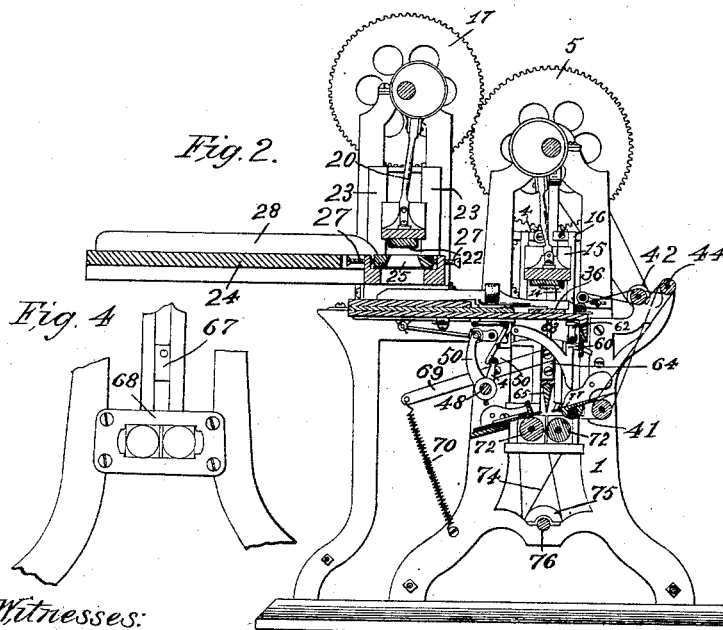
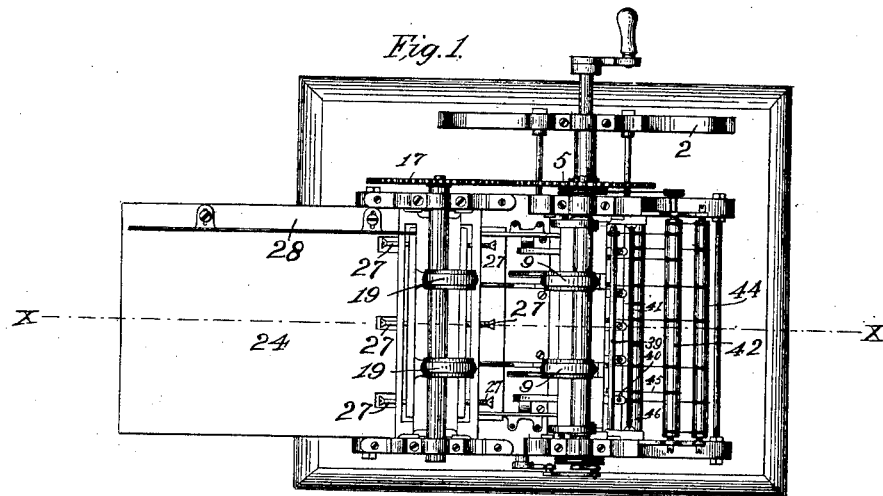


T. Mc SPEDON.

Making Paper Collars.

No. 45,621.

Patented Dec. 27, 1864.



Witnesses:
A. L. Lums
Amos Little

Inventor:
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Fig. 6.

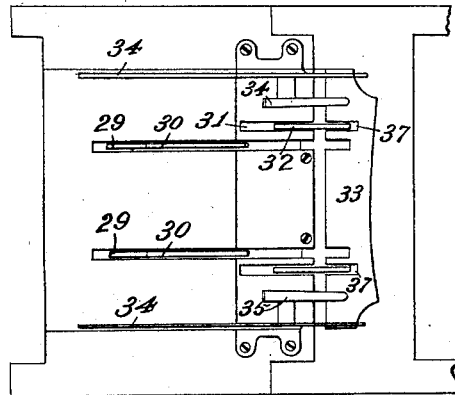


Fig. 5.

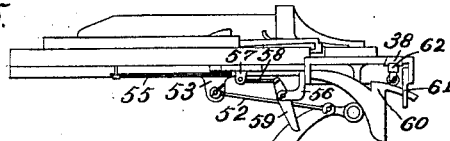
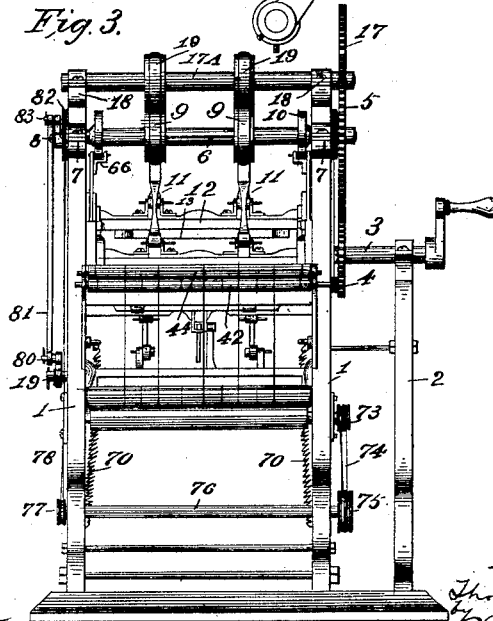


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

THOMAS McSPEDON, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR MAKING PAPER COLLARS.

Specification forming part of Letters Patent No. 45,621, dated December 27, 1864.

To all whom it may concern:

Be it known that I, THOMAS McSPEDON, of the city, county, and State of New York, have invented, made, and applied to use a new and improved machine for the manufacture of Paper collars, or collars made from paper combined with some fibrous or textile material; and I do declare the following to be a full, clear, and correct description of the same, reference being had to the accompanying drawings, making part of this specification, and to the figures of reference marked thereon, in which—

Figure 1 is a plan view of my improved machine, through the line *x x*; Fig. 2, a sectional view of the same; Fig. 3, a front view of my improved machine; Fig. 4, a detached view of part of frame 1; and the knife-frame; Fig. 5, a detached view of the pushers and carriers; Fig. 6, a top view of the table 26.

In the drawings like parts of the invention are designated by the same figures of reference.

The nature of my invention consists (a) in the use or employment of the pushers 32, in combination with a collar-making machine, as described; (b) in the use or employment of the friction-roller 39 and the cords 40, in combination with the pushers 32, cords or tapes 41, and folding-knife, operating substantially as described; (c) in the use or employment of the stops 38, in combination with the embossing-die, for the purpose hereinafter set forth; (d) in combining with the male and female dies for cutting out or forming the collar the embossing-die, when the same shall be arranged and operated substantially as shown; (e) in the combination of the folding-knife with the embossing-die and male and female dies, when the same shall be combined and operated as herein shown; (f) the means of conveying the collar from the embossing-die to the folding-knife, as hereinafter fully described; (g) in so constructing a machine for the manufacture of paper collars, or collars made from paper combined with some fibrous or textile material, that the various operations of cutting or forming the collar, embossing and providing the same with button-holes, and, finally, folding the same shall be accomplished continuously and by one and the same machine.

To enable those skilled in the arts to make and use my invention, I will proceed to speak of its construction and operation.

1 is a frame for supporting the operative parts of my improved machine, and 2 is a second frame for supporting, in connection with frame 1, the driving-shaft 3.

3 shows the driving-shaft of the machine, supported by the frames 1 and 2, and having upon one end the pinion 4, gearing into the cog-wheel 5 upon the shaft 6.

6 is a shaft held in the boxes of, and having upon one end, the cog-wheel 5, and upon its opposite end the grooved pulley 8.

9 are eccentrics hung upon the shaft 6, and 10 are surface-cams upon the same shaft. To these eccentrics 9 are attached the connections 11, bolted to the cross-head 12, in which cross-head is inserted and held the die 13, for embossing the collar, as also the punches 14, for cutting or forming the button-holes in the same. The side pieces, 15, of this cross-head fit snugly and move freely up and down upon the side rails 16 when the machine is in operation.

17 is a cog-wheel gearing into the cog-wheel 5, which cog-wheel 17 is keyed upon one end of the shaft 17^A held in the boxes 18.

19 are eccentrics hung upon the shaft 17^A, to which eccentrics 19 are attached the connections 20, bolted or connected to the cross-head 21, in which cross-head 21 is inserted and held the male die 22, which male die 22 cuts out or forms the collar from the sheet or roll of paper fed and properly presented to the same. This cross head 21 moves freely up and down upon the side rails 23 when the machine is in operation.

24 shows the feed-table, upon which the sheet of paper rests as it is fed into the male die 22. Directly on a line with the feed-table 24, and forming a continuation of the same, is the female die 25, inserted in an opening in the frame 1, and regulated and held in position by means of the set-screws 27, bearing upon the back and front of the female die 25. This female die 25 forms, as it were, a bed, upon which the paper rests, while the male die 22 cuts out or forms the collar, and through which female die 25 the collar, when cut out or formed, drops upon the table 26, directly underneath.

28 shows a side gage or guide attached to the feed-table 24, to guide the paper placed upon the same.

The table 26 is provided with the slots or

ways 29, in which slots or ways the carriers 30 travel to and fro when the machine is in operation, for the purpose of carrying the cut or formed collar from the female die to the embossing-die, and of returning from the embossing-die to the female die, to receive the succeeding collar.

31 shows openings in the table 26, in which openings the pushers 32 travel for the purpose of pushing the collar (after it has been embossed and the button holes formed in the same) from and off of the bottom die, 33, directly beneath the friction-roller 39.

34 shows side guides attached to the table 26, upon its sides, for the purpose of guiding the collar in its transit from the female die 25 to the embossing-die 13.

35 shows springs attached to the side guides 34, for the purpose of keeping the collar flat and smooth as it passes beneath them upon the carriers 30, before presentation to the embossing-die 13.

33 shows the bottom die, provided with the openings 36, into which opening the punches for cutting or forming the button-holes enter, and upon which bottom die, 33, the collar rests while being embossed and having the button-holes cut it. This bottom die is also provided with the slots 37, in which slots 37 the pushers 32 travel, for the purpose hereinafter shown.

38 are stops rising through the table 26, directly in front of the bottom die, 33, for the purpose of stopping the collar as it is delivered upon the bottom die, 33, by the carriers 30, and which stops 38 keep the collar in position upon the bottom die, 33, while it is being embossed and the button-holes are being cut in the same, thus regularity and trueness as regard all the collars in respect to the embossing and formation of the button-holes.

39 is a friction-roller, beneath which the collar (after being embossed and provided with the button-holes) passes, and which thus assists the pushers 32 in relieving the collar from the embossing-die.

40 shows pulleys attached to the end of the table 26.

42 is a serrated or grooved roller. Over this serrated or grooved roller 42 and the pulleys 40 pass a series of cords, 41, which assist in relieving the collar from the embossing-die, and also in conveying the same to the folding-knife 65.

44 shows grooved rollers, over which grooved rollers pass the cords 45.

46 shows grooved rollers over which pass the cords 47.

48 shows a rock-shaft, held or supported in the frame 1, directly beneath the feed-table 26. This rock-shaft 48 is provided with the arms 49, held to the same by means of a set screw, thus rendering them adjustable, and having attached to them at one end the friction-rollers 50. In the center of this rock-shaft 48 is pivoted the arm 51.

52 is a link connecting the arm 51 and the slide 53, moving in the dovetailed pieces at-

tached to the under side of the feed-table 26.

55 shows the cross-piece of the slide 53, to which cross-piece the carriers 30 are bolted.

56 are ear-pieces, held to the under side of the table 26. In these ear-pieces play the arms 57.

58 are links connecting the arms 57 to the slides 59, to which slides are attached the pushers 32.

60 shows a vibrating cam-piece pinned at one end to the under-side of the table 26. 61 shows the guide for the same.

62 shows a cross-piece resting on the cam-shaped piece 60, and to this cross-piece the stops 38 are attached.

63 shows connecting-rods attached to the knife-frame 64, which hold the knife 65. These connecting-rods 63 have at their upper ends the friction-rollers 66, operated by the surface-cams 10.

67 are stops upon the sides of the knife-frame 64, which stops bring up against the cross-pieces 68 of the frame 1, for the purpose of governing the throw of the knife 65.

69 shows levers pivoted at about one-third their length to the frame 1, which levers 69 are attached at one end to the connecting-rods 63 and at their other end to the spiral springs 70.

70 shows spiral springs attached to the levers 69 and the frame 1.

71 is the folding-table, slotted to allow the folding-knife to pass down through the same in folding the collar.

72 shows rollers placed beneath the folding-table 71, and between which rollers the folding-knife passes. These rollers 72 have upon one end the grooved pulleys 73, over which pulleys 73 pass the belts 74. These belts 74 also pass over the pulley 75 upon the shaft 76. Upon the opposite end of the shaft 76 is placed the pulley 77, over which pulley 77 and the grooved pulley 8 passes the belt 78.

The rock-shaft 48 has upon one end the arm 79, upon which is the crank-pin 80, upon which crank-pin 80 is one end of the connection 81.

The shaft 6 has upon one end the arm 82, provided with the crank-pin 83, upon which crank-pin 83 is the other end of the connection 81.

The carriers 30 are constructed of any suitable metal, and are made of thin strips, being set with their edges upward, the forward ends toward the operator being rounded in the arc of a circle to the bottom of the strips, the circle occupying about one-fourth of the length of the strips. Directly in front of this arc of a circle a step is cut away, the depth of the step running the remaining length of the strip. This is to receive the collar as it falls from the female die.

The pushers 32 are simply strips of metal inclining gradually from their front to their back ends.

Operation: We will suppose the paper out of which the collar is to be formed to have been fed along upon the feed-table, and that a por-

tion of the same is resting upon the female die. Motion being imparted to the driving-shaft sets all the operative parts of the machine in motion. The pinion upon the driving-shaft communicates motion through the cog wheels to the shaft 17^A, to which shaft is attached the eccentrics 19, operating the cross-head 21. As this cross-head, in which is the male die, is depressed, the male die cuts or forms the collar out of the paper placed upon the female die, the collar thus formed corresponding in shape and size to the die employed. The collar thus formed drops through the female die directly upon the carriers 30, operated by the rock-shaft 48. This rock-shaft 48 derives its motion from the driving-shaft 3 through the connection 81. As the rock-shaft rocks forward, the arm 51, pinned or keyed upon the same and connected to the slide 53 by means of the link 52, is thrown forward, carrying with it the slide 53, to which are attached the carriers 30, moving in the slots 29 in the table 26. The collar is thus carried by the carriers from the female die to the bottom die, 33, being kept in position in its transit by the side guides 34, and smooth and flat by the springs 35. During the forward movement of the rock-shaft 48, and before the delivery by the carriers 30 of the collar to the bottom die, 33, the friction-roller 82 upon one end of the arm 51 impinges upon and vibrates the cam-shaped pieces 60, by which vibration the cross-piece 62, resting upon the same, and having attached to it the stops 38, is raised, thus causing the stops 38 to rise through the table 26 directly in front of the bottom die, 33, simultaneously with, or a few seconds before, the delivery of the collar by the carriers 30 upon the same. The collar is stopped by these stops 38, and while resting upon the bottom die, 33, the second operation—namely, that of embossing and providing it with button holes—is performed. The embossing-die, with the punches forming the button-holes, is held in the cross-head 12, which cross-head 12 is depressed by the eccentric 9, attached to the shaft 6, communicating with the driving-shaft 3 by means of the cog-wheel 5, gearing into the pinion 4. Directly before and during this operation the carriers 30, operated by the rock-shaft 48, through the connection 81, are carried back from the bottom die to their position beneath the female die. During this movement of the carriers 30 from the female die to the bottom die and back again to the female die the male die, held in the cross-head 21, operated by the eccentrics 19 upon the shaft 17^A, has receded from the female die a sufficient distance to allow the paper to form a second collar to be placed upon the female die. The operation of embossing the collar and cutting the button-holes in the same having been performed, the cross-head 12, in which is held the embossing-die and the punches for forming the button-holes, operated by the eccentrics 9 upon the shaft 6, recedes a sufficient distance to allow the collar to be relieved from the bottom die.

As the rock-shaft 48, through the connection 81, rocks back, the friction roller 82 upon the arm 51 is relieved from contact with the vibrating cam-shaped piece 60, causing the same to drop. As previously stated, the cross-head or cross-piece 62, supporting the stop 38, rests upon the cam-shaped piece 60, and, as the same drops, the stops 38 fall or recede through the table 26. While the rock-shaft 48 has been performing its return movement, the friction-rollers 50 upon the arms 49 bear or impinge upon the arms 57, playing in the ear-pieces 56, throwing back the lower portions of the same. The forward or upper ends of these arms are thrown forward by this operation, and carry with them the slides 59, to which are attached the pushers 32. These pushers 32 travel in the slots 37 in the bottom die, 33, and push the collar off of the bottom die, 33, and beneath the friction-roller 39, by which roller 39 it is carried to the tapes or cords 41, which carry it to the folding knife, as hereinafter described; or it may, when desired, be carried by the cords or tapes to a box or proper receptacle where it is deposited.

When it is desired to manufacture what is known as the "turn-over collar," the third operation—namely, that of folding—is performed. The collar, having been relieved from the bottom die, 33, is carried upon the cords or tapes 41 to the cords or tapes 45, and by these to the cords 47, and by these to the folding-table 71, where it is presented to the folding-knife 65. This folding-knife 65 is held and carried in the knife-frame 64, to which are attached the connections 63, provided with the friction-rollers 66. As the surface-cams 10 upon the shaft 6 impinge upon these friction-rollers 66, the knife-frame 64 is thrown down, carrying with it the folding-knife 65. As the knife 65 descends, it passes through the slotted portion of the same, upon which table rests the collar, (previously carried there, as described,) and folds the collar, carrying the same with it to the friction-rollers 72, between which friction-rollers the collar passes and is delivered from the machine. As the knife is thrown down, the levers 69, pivoted as shown, and attached to the knife-frame, have their forward ends depressed, and their back ends, to which are attached the spiral springs 70, elevated, and as the surface-cams 10 upon the shaft 6 are relieved from contact with the friction-rollers, the springs contract, thus causing the knife to be thrown back to its original position. The stops 67, when the knife has reached its lowest point of depression, bring up against the cross-pieces 68 of the frame 1.

The friction-rollers for relieving the collars are driven by means of the belts 74, passed over the pulleys upon the friction-rollers, and over the pulley 75 upon the shaft 76.

The operation of embossing the collar is intended to give to the collar the appearance presented by stitching upon the ordinary linen collar.

The present invention consists in combin-

ing, in one and the same machine, for the manufacture of paper-collars, proper mechanism for cutting out the collar, the same consisting of a male and female die; mechanism for embossing the collar and providing it with button-holes, the same consisting of an embossing-die provided with punches, by which the button-holes are formed, and a folding-knife, by means of which, when desired, the collar is folded. The paper or material of which the collar is to be formed is fed into the machine, and is first presented to the cutting-dies, where the operation of cutting out or forming the collar is performed. The collar is next carried to the embossing-die, where it is embossed in imitation of the ordinary stitching, and has the button-holes cut in it. The collar may then be delivered from the machine; or, if it be desired to fold it, it may be conveyed by means of a series of tapes or cords to the folding-knife, by which the operation of folding is performed.

For this machine simplicity of construction is claimed, as well as increased economy in the manufacture of paper-collars.

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

1. The pushers 32, constructed and operating as described, in combination with a collar-making machine, as described.

2. The friction-roller 39 and the cords 40, in combination with the pushers 32, as arranged with the cords or tapes 41 and the folding-knife, all operating substantially as described.

3. The arrangement of the stops 38 and the embossing-die 13, as shown and described.

4. Combining with the embossing-die the punches for cutting or forming the button-holes in the collar, when both shall be held in the cross-head 12 and operated by the connections 11 and eccentrics 9.

5. The male and female dies, for cutting out or forming the collar, and the embossing-die, when the same shall be arranged and operated substantially as shown.

6. Combining the folding-knife, for folding the collar, with the male and female dies and the embossing-die, when the same shall be combined and operated as herein fully described.

7. The friction-roller 39, cords 40, cords 41, cords 47 and 45, and grooved rollers 44 and 46, which convey the collar from the embossing-die to the folding-knife, as described.

8. So constructing a machine for the manufacture of paper collars, or collars made from paper combined with some fibrous or textile material, that the various operations of cutting or forming the collar, embossing and providing the same with the button-holes, and finally folding the same, shall be accomplished continuously and by one and the same machine, substantially as shown.

9. In combination with the carriers 30, constructed and operating as described, the side guides 34, for the purpose specified.

THOMAS McSPEDON.

In presence of—

WM. ROBINS,

J. A. HENDRICK.