Aug. 17, 1943. J. SHAULSON 2,327,291

BUCKLE AND TAPE ASSEMBLY MACHINE

Filed Dec. 26, 1940 3 Sheets-Sheet 1

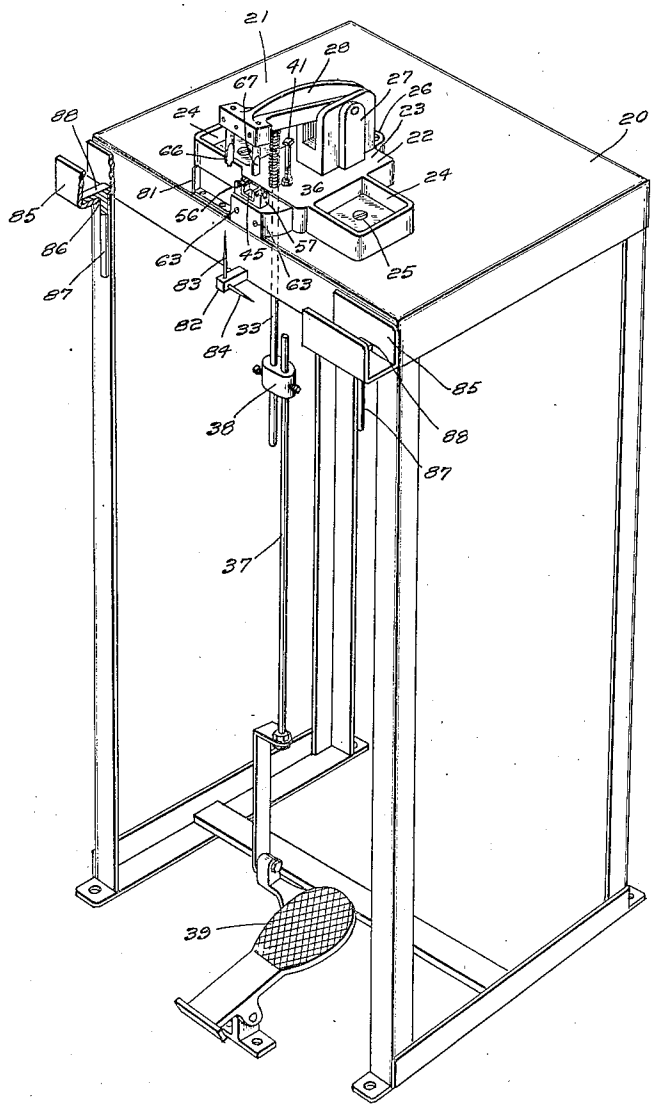


Fig. 1

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Fig. 2

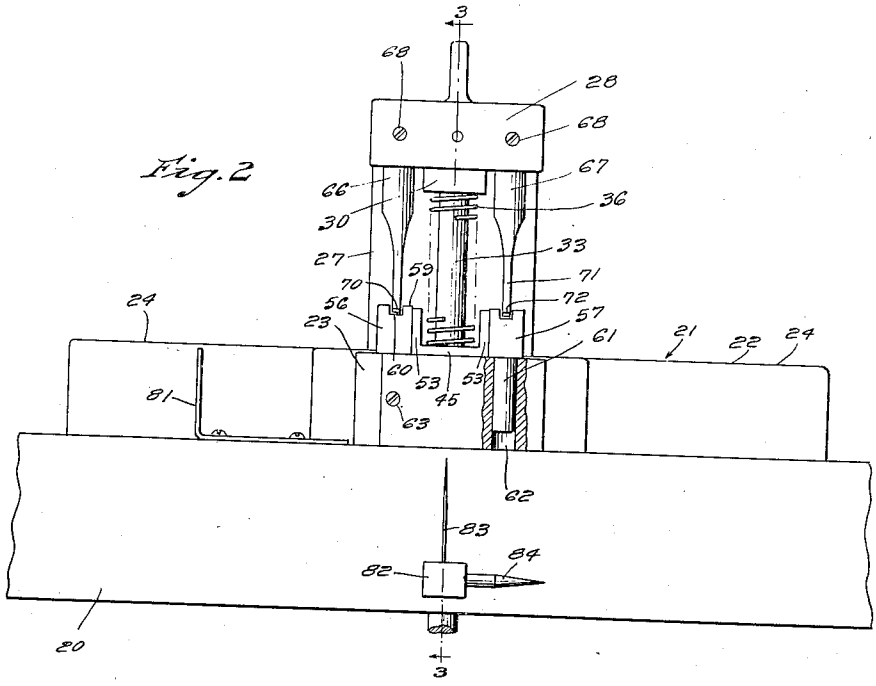
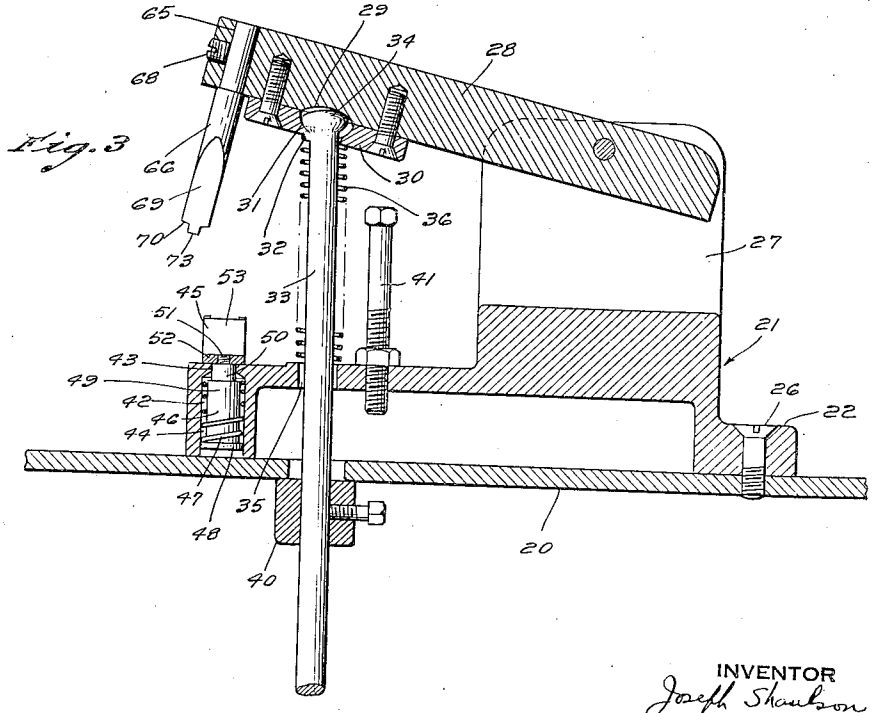


Fig. 3



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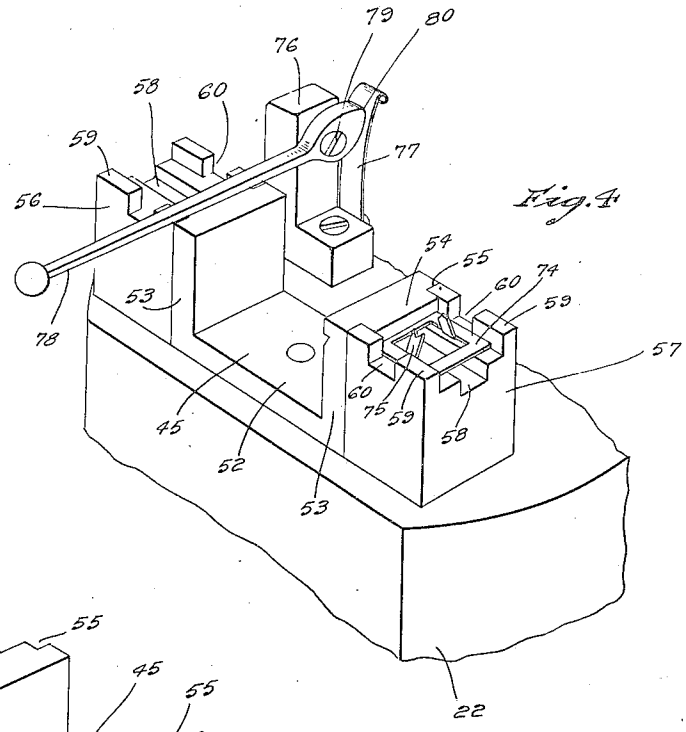


Fig. 4.

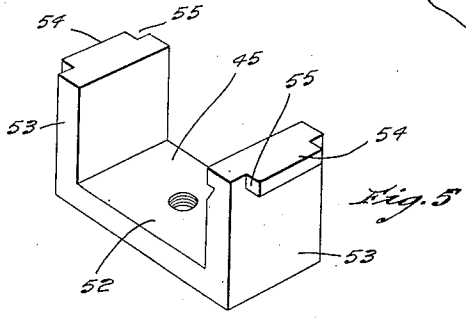


Fig. 5

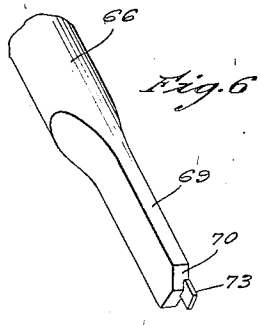


Fig. 6

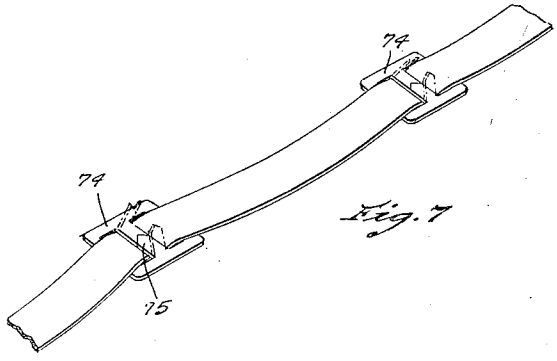


Fig. 7

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UNITED STATES PATENT OFFICE

2,327,291

BUCKLE AND TAPE ASSEMBLY MACHINE

Joseph Shaulson, Providence, R. I.

Application December 26, 1940, Serial No. 371,715

3 Claims. (Cl. 223—49)

My present invention relates to the machine art with particular reference to a novel machine for fastening buckles to ribbons, and particularly to tape.

The principal object of the present invention is to provide an apparatus for fastening buckles and links to tape without sewing, for rendering said tape or strap adjustable.

Another object of my invention is to provide an apparatus that will eliminate the necessity for threading the tape or ribbon through an adjusting link and buckle by hand.

A further object of my invention is to provide an apparatus for handling buckles of the type disclosed in my Patent No. 2,133,153, issued October 11, 1938, entitled Lingerie buckle.

Another object of my invention is to provide an apparatus for performing the aforementioned function, that is simple in construction, and is easily and economically manufactured and assembled.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more specifically defined in the claims appended thereto.

In the drawings:

Fig. 1 is a perspective view of the novel apparatus embodying my invention;

Fig. 2 is a front elevation thereof;

Fig. 3 is a section taken along line 3—3 on Fig. 2;

Fig. 4 is a perspective view of the buckle holding mechanism;

Fig. 5 is a perspective view of the U-shaped holding member;

Fig. 6 is a perspective view of the lower end of one of the punches; and

Fig. 7 is a perspective view of a buckle and tape assembly made on the present invention.

In my copending application, Serial No. 219,934, filed July 18, 1938, and entitled Apparatus for assembling buckles and tape, I describe an apparatus for automatically feeding the buckles to a buckle and tape assembly machine. The present invention comprises an improvement, the instant machine being preferred for small quantities in somewhat slower production inasmuch as the automatic feed is eliminated. Furthermore, the present machine is of light construction as compared to the aforementioned application.

Referring in detail to the drawings illustrating my invention, the numeral 20 generally designates a suitable table or stand on which the machine of the present invention can be mounted. The machine 21 is mounted at the front edge of the stand 20 and comprises a lower base portion 22 which is preferably of an integral construction made in a single casting. The base portion 22 comprises a main central portion 23 flanked on either side by integral trays 24. The machine may be bolted to the stand 20 through the trays 24, as by bolts 25, and at the rear portion thereof through the integral collar 26.

Integrally formed with the rear portion of the base 22 is a block or standard 27 in which is pivotally mounted a head 28. The under side of the head 28, adjacent the forward free end thereof, is provided with a dished or concave recess 29 which is covered by a plate 30 having a complementary dished-out portion 31 forming a seat, with an opening 32 extending therethrough.

The head 28 is movable vertically about its pivot by a rod 33 having a head 34 housed within the recesses 29 and 31 of the head and plate; the combination of the recesses 29 and 31 and the head 34 forming a ball and socket arrangement. The rod 33 extends downwardly through an opening 35 in the base and some distance below the flat table portion of the stand 20. Between the base 22 and the underside of the head 28, the rod 33 is surrounded by a coil spring 36 of sufficient tension to retain the head 28 in a raised position, preferably at an angle of more than 90 degrees with the block or standard 27.

The lower end of the rod 33 may be adjustably connected to a second rod 37 through an adjustable collar 38; the lower end of the rod 37 being pivotally connected to a suitable operating member such as a foot pedal 39. The portion of the rod 33 extending below the surface of the stand 20 may also be provided with a stop element 40 adjustably slidable along the rod 33 and adapted to engage the underside of the stand 20 and limit movement of the head 28 in its vertical direction. The base 22 is also provided with an adjustable stop screw 41 positioned behind the rod 33 and adapted to extend in the vertical path of the head 28 and limit the downward movement thereof.

The forward end of the central portion 23 of the base 22 is provided with a vertical opening 42 comprising an upper restricted portion 43 and a lower wider portion 44. A U-shaped holding member 45 is mounted in the opening 42 and is resiliently held in position by a pin 46 and coil spring 47. The pin 46 comprises a lower head 48 substantially equal to the diameter of the wide portion 44 of the opening 42. The

shank 49 of the pin is of smaller diameter, and the spring 47 is adapted to surround the shank 49 and abut the head 48. The shank 49 is surmounted by a narrow portion 50 and pin 51, the narrow portion 50 extending into the restricted portion 43 of the opening and the pin 51 extending upwardly and engaging the U-shaped member 45. In assembled position, the upper end of the spring 47 will abut the restricted portion 43 of the opening 42 so that vertical movement of the U-shaped member 45 is resisted by the spring 47 and stopped by the upper edge of the shank 49 engaging the restricted portion 43 of the opening 42. This gives the U-shaped member 45 a resilient, limited, vertical movement.

The U-shaped member 45 comprises a horizontal flat portion 52 having integral vertical end portions 53. The vertical end portions 53 are provided with outwardly extending flanges 54 at right angles to the upper edge thereof and having their corners cut away as at 55.

Mounted on either side of the U-shaped member 45 are a pair of metal blocks 56 and 57. The blocks 56 and 57 are preferably of rectangular construction and are substantially the same height as the end portions 53 of the member 45. The top of each block is provided with a horizontal groove 58 and integral vertical flanges 59 along the horizontal edges parallel with the front of the stand 20. The flanges 59 are cut out, as at 60, adjacent the center portions thereof, and slightly inwardly towards the U-shaped member 45. In assembled position, the horizontal flanges 54 on the U-shaped member 45 will extend over the edges of the blocks 56 and 57. Each of the blocks 56 and 57 is held in place by a depending shank 61 extending into opening 62 in the base, and by set screw 63. The flanges 59 may be undercut to more securely hold the buckle if desired.

The front end of the head 28 is provided with spaced openings 65 in which punches 66 and 67 are fixed in place, as by set screws 68. The punch 66 is preferably of circular cross section having its lower end cut away to form a blade 69 in a plane parallel to the side of the stand 20. The lower end of the punch 66 is slightly rounded or bevelled, as at 70, so that the center portion of the lower edge depends downwardly further than the forward and rear edges thereof. The punch 67 is made similarly to the punch 66 with a blade portion 71 terminating in the rounded end 72. However, the inner edge of the end 70 of the punch 66 is provided with an additional depending flange 73 for a purpose hereinafter to be described.

The spacing of the punches 66 and 67 is such that in their downward stroke the ends will swing into the openings 60 in the flanges 59 of the blocks 56 and 57.

As can be readily seen from the foregoing assembly, the head 28, carrying the punches 66 and 67, will be held in a raised position by the coil spring 36, the stop element 40 resisting further upward movement. Pressure on the pedal 39 will pull the rods 37 and 33 downwardly and cause the head 28 to move downwardly against the action of the spring 36 until the adjustable stop screw 41 is reached. The screw is preferably adjusted so that when the downward stroke of the head 28 is completed, the lower rounded end of the punches 66 and 67 are just clear of the upper surfaces of the blocks 56 and 57.

In assembling a tape or ribbon with a buckle of the type disclosed in my hereinabove mentioned patent, the buckle 74 is slid into the top of the block 56 with the central bar portion 75 open and in alignment with the sides of the stand 20. The buckle 74 is pushed inwardly between the flanges 59 until the inner edge of the buckle pushes under the flanges 54 on the U-shaped member 45 and is retained beneath it by the action of the spring 47. Similarly, another buckle is placed in the same manner and pushed between the upper edge of the block 57 and between the flanges 59 until the inner edge is caught under the flange 54 of the member 45.

One or more tape lengths may then be placed between the upturned prongs of the buckle either in the manner disclosed in my patent hereinabove referred to, or in the manner disclosed in my copending application Serial No. 219,934, filed July 18, 1938, entitled Apparatus for assembling buckles and tape, or in the manner disclosed in my copending application Serial No. 243,696, entitled Adjustable buckle mounting, filed December 3, 1938, or in any other desirable manner, and the pedal 39 is then pushed downwardly. The head 28 is now pulled down against the action of the spring 36 and the punches 66 and 67 engage the upturned prongs 75 of the buckle and push them into horizontal position. The rounded end of the punch 67 will force the prongs downwardly towards the groove 58 so that they will interlock and remain in substantially horizontal position. However, the depending flange 73 on the punch 66 will first engage the tape and then push the prongs 75 downwardly so that there will be no danger of the prongs 75 pinching the tape. This construction is necessary in a two-buckle adjustment where one buckle is an idler and the tape must slide freely therethrough.

Where multiple folds of the tape are required it may be necessary to hold the tape between the prongs 75 during the assembly operation. For this purpose I provide the construction shown in Fig. 4. An L-shaped block 76 is bolted to the base behind the block 56 and having a leaf spring 77 fixed to the short arm of the block and extending upwardly. A lever arm 78 is pivoted to the vertical arm of the block 76, as at 79, having an edged cam 80 surrounding the pivot and abutting the spring 77. In horizontal position the lever arm 78 is urged downwardly across the block 56 and holds the tape in place. When the assembly is completed, the lever 78 is flipped upwardly and the cam edge 80 and spring 77 will retain it in upright position out of the way until the next loading.

To assist the operator in correctly placing the tape in the buckle, I provide an L-shaped member 81 bolted to the stand 20 to the left of the machine, with the vertical arm of the L-shape spaced from the blocks 56 and 57 the required distance. With this construction, the operator merely places one end of a length of tape against the top of the L-shaped member 81 and lays the rest of it along the inserted buckles, giving the required spacing.

For further convenience, I provide a bar 82 bolted to the front of the stand 20 and holding a vertical needle 83 and a conical pointed member 84 at right angles. The needle 83 may be used for holding the finished buckle and tape assembly by placing the end of the tape over the needle, and the conical member 84 may be used to remove one end of the looped tape from the idler buckle by merely sliding the loop over the conical member 84 and pulling. For further convenience, both front corners of the stand 20 may

be provided with U-shaped member 85 with openings 86 therein. Loosely mounted in the openings 86 are rods 87 having weighted heads 88. The tape upon which the buckles are assembled may be divided into short and long pieces, and the short pieces may be laid across one U-shaped member and the long ones across the other U-shaped member with the weighted heads 88 holding the tape in place until the operator grasps the end of one tape and slides it out from under the weighted heads 88.

From the foregoing, it is obvious that the machine of the present invention is simple in construction and easy and economical to manufacture and assemble. The pressure required to push the prongs of the buckle together is very small and the speed in operation is manually controlled to such an extent that it is easier to provide variations in tape and buckle arrangement than in the automatic type of machine disclosed in my copending application hereinabove referred to. Furthermore, the blocks 56 and 57 may be removed and changed to accommodate different sizes and shapes of buckles and correspondingly the punches 66 and 67 may also be readily removed and exchanged, these parts being merely secured in place by readily accessible set screws. Other objects and advantageous features of the present invention will be obvious to a person skilled in the art.

While I have described a specific embodiment of my invention, it is obvious that changes in the size, shape and relative arrangement of the parts may be made therein without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. In an apparatus for assembling buckles and tape, a base, a pair of spaced nests on said base, means positioned between said nests for releasably retaining a buckle in operative position on each nest, a head pivoted to said base, a pair of spaced punches positioned in said head and reciprocable onto said nests, means for resiliently retaining said head in raised position, and means for reciprocating said head.

2. In an apparatus for assembling buckles and tape, a base, a pair of spaced nests on said base, a U-shaped, spring-pressed holding member positioned between said nests for releasably retaining a buckle in operative position on each nest, a head pivoted to said base, a pair of spaced punches positioned in said head and reciprocable onto said nests, means for resiliently retaining said head in raised position, and means for reciprocating said head.

3. In an apparatus for assembling buckles and tape, a base, a nest on said base comprising a rectangular block having a grooved channel in its upper surface, a spring-pressed holding member on said base having a portion extending into said channel and adapted to releasably retain a buckle in operative position in said nest, a head pivoted to said base, a punch positioned in said head and reciprocable onto said nest, a pedal operated rod for reciprocating said head, and a spring surrounding said rod and abutting said head and base for resiliently retaining said head in raised position.

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