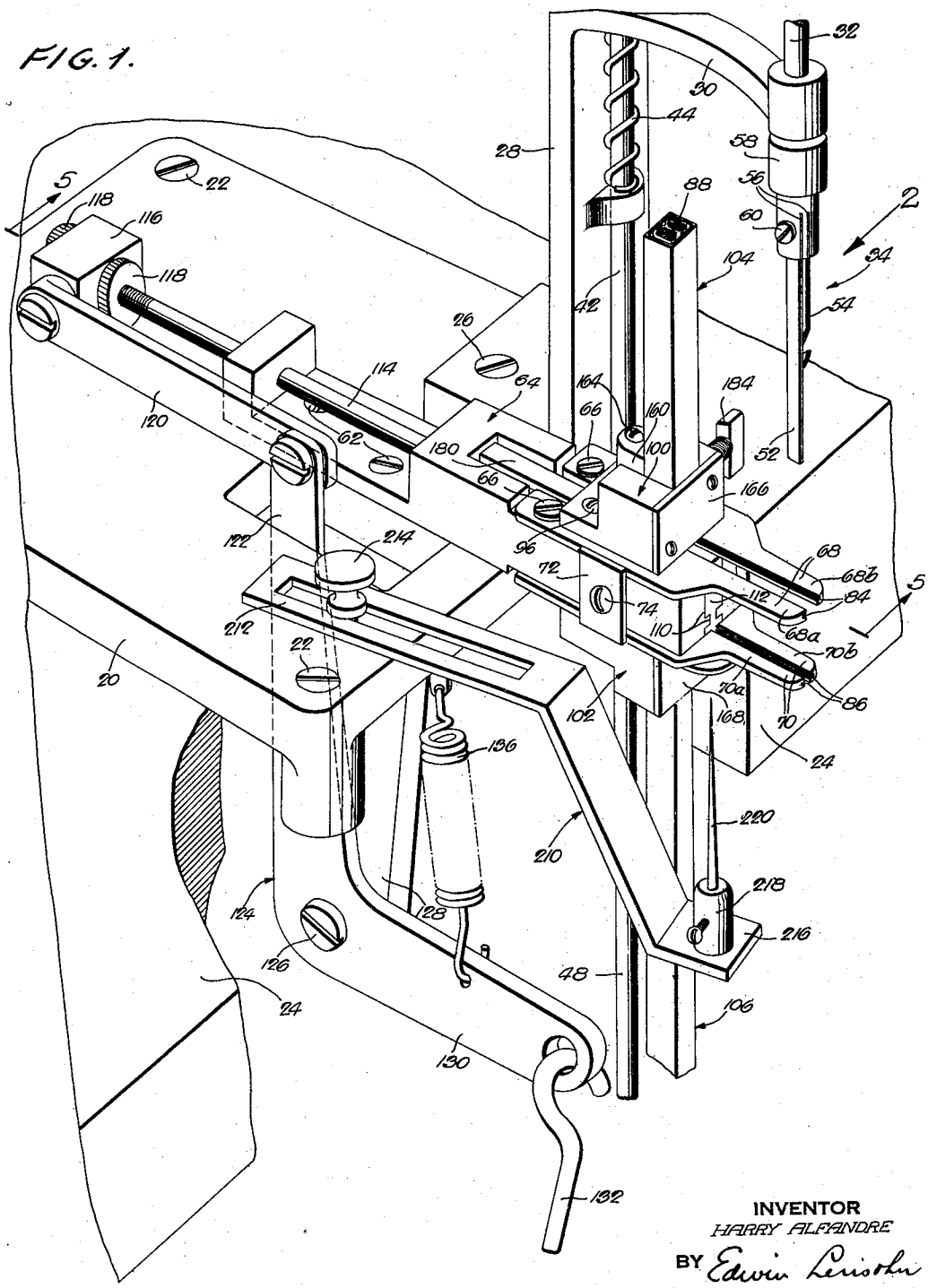
Oct. 17, 1950 H. ALFANDRE 2,526,187

STRAP ASSEMBLING APPARATUS

Filed Nov. 22, 1947 3 Sheets-Sheet 1

FIG. 1.



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STRAP ASSEMBLING APPARATUS

Filed Nov. 22, 1947 3 Sheets-Sheet 2

FIG. 2.

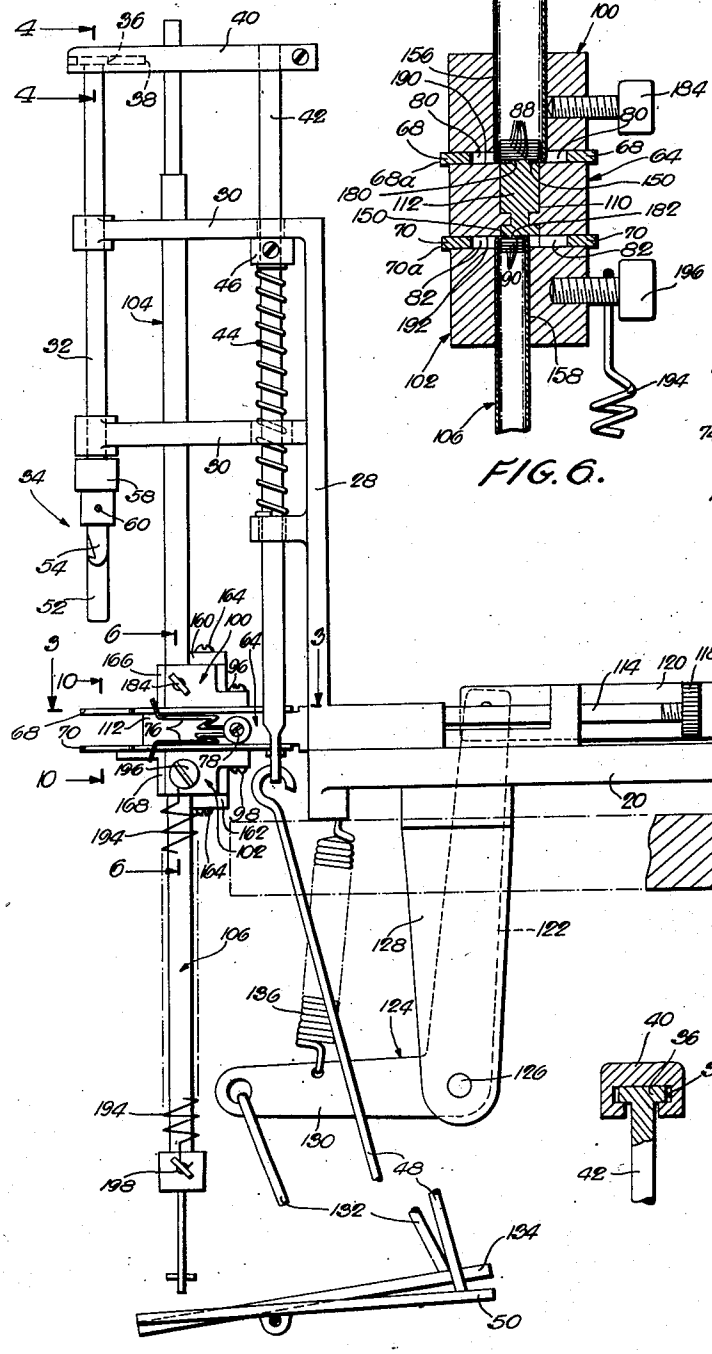


FIG. 6.

FIG. 3.

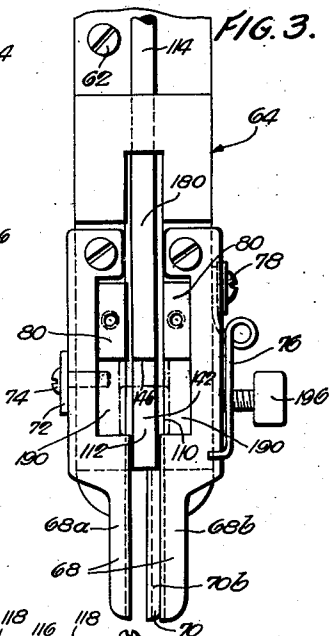


FIG. 4.

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STRAP ASSEMBLING APPARATUS

Filed Nov. 22, 1947 3 Sheets-Sheet 3

FIG. 8.

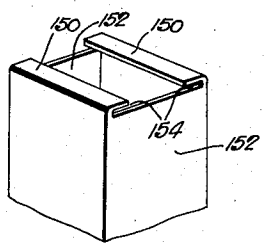


FIG. 5.

FIG. 11.

FIG. 12.

FIG. 13.

FIG. 14.

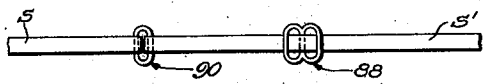


FIG. 7.

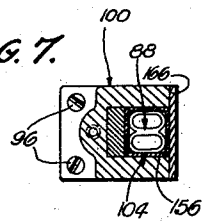
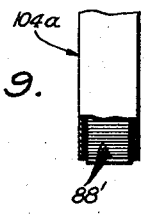


FIG. 9.



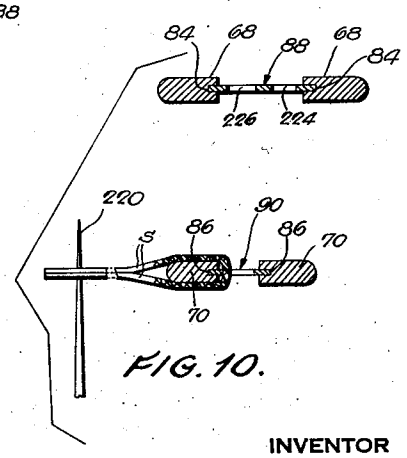


FIG. 10.

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STRAP ASSEMBLING APPARATUS

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Application November 22, 1947, Serial No. 787,549

4 Claims. (Cl. 223—49)

1

This invention relates to apparatus for assembling buckles and straps in the manufacture of adjustable straps, and especially of shoulder straps of the type used extensively in ladies' undergarments. More particularly, the present invention resides in improvement upon the apparatus shown and described in my prior Patent No. 2,091,176, dated August 24, 1937.

While different types and sizes of ladies' undergarments frequently require adjustable straps of varying dimensions, my referred prior apparatus is equipped for the assembly of adjustable straps of only one size, thus requiring as many apparati with numerous duplicate parts as there are straps and buckles of different sizes to be assembled.

Accordingly, it is an improvement object of the present invention to make simple provisions in my prior apparatus readily to adapt the same for the assembly of straps and buckles of different sizes, without involving a complicated interchange of numerous parts, or requiring a skilled mechanic.

It is another important object of the present invention to provide a quickly releasable mounting for a buckle-supply magazine which of its own accord locates the magazine in unfailingly accurate coordination with a buckle transfer track, thus dispensing with any human agency in the imperative accurate location of the magazine.

The above and other objects, features and advantages of the present invention will be more fully understood from the following description considered in connection with the accompanying illustrative drawings.

In the drawings:

Fig. 1 is a fragmentary perspective view of apparatus embodying the present invention;

Fig. 2 is a side elevation, partly in section, of the apparatus as viewed in the direction of the arrow 2 in Fig. 1;

Fig. 3 is an enlarged section taken substantially on the line 3—3 of Fig. 2;

Fig. 4 is an enlarged section taken on the line 4—4 of Fig. 2;

Fig. 5 is a longitudinal section through the apparatus, taken on the line 5—5 of Fig. 1;

Fig. 6 is an enlarged section taken on the line 6—6 of Fig. 2;

Fig. 7 is a section taken on the line 7—7 of Fig. 5;

Fig. 8 is a perspective view of the discharge end of a buckle-supply magazine employed in the apparatus;

Fig. 9 is a fragmentary side elevation, partly in section, of a buckle-supply magazine which may

2

replace a similar magazine of a different size in the apparatus;

Fig. 10 is an enlarged section taken on the line 10—10 of Fig. 2;

Figs. 11 and 12 are perspective views on an enlarged scale of buckles which may be assembled with straps in the present apparatus; and

Figs. 13 and 14 are edge and plan views, respectively, of an assembled strap in which the buckles shown in Figs. 11 and 12 are utilized.

Referring to the drawings, and more particularly to Figs. 1 and 2 thereof, the reference numeral 20 designates the bed plate of the instant apparatus which is suitably secured, as by screws 22, to a bench or work table 24. Suitably mounted at 26 on the bed plate 20 is an upright bracket 28, having laterally-extending arms 30 in which a bar 32 is vertically slidable. Bar 32 carries at its lower end a strap-threading device 34 to be described, and has a T-shaped upper end 36 which is inserted in a guide groove 38 in an arm 40 on a rod 42 (see also Fig. 4). Rod 42 is normally urged by a compression spring 44 into the topmost position shown in Fig. 2, in which an adjustable collar 46 thereon bears against one of the bracket arms 30. The lower end of rod 42 is connected by a link 48 with a foot pedal 50 which, when depressed by an operator, causes lowering of the rod 42 and corresponding lowering of the strap-threading device 34 into operative position.

The strap-threading device 34 comprises a blade 52 and a hook 54, both being removably clamped in slots 56, respectively, in a head 58 on the lower end of bar 32 (Fig. 1). More particularly, a clamping screw 60 passes through aligned apertures in the blade 52 and hook 54 and is threadedly received by the head 58.

Suitably mounted on the bed plate 20, as by screws 62, is a block 64 to the top and bottom of which are pivoted at 66 pairs of cooperating jaws 68 and 70, respectively. The jaws 68*a* and 70*a* on one side of the block 64 are held against outward pivotal movement thereon by a retainer plate 72 which is secured at 74 to the block 64 (Fig. 1). The opposite jaws 68*b* and 70*b* are normally urged into the closed position shown in Figs. 1 and 3 by the ends of a spring 76 which is suitably anchored at 78 on the block 64 (Figs. 2 and 3). Projecting from the top and bottom surfaces of the block 64 are spaced lugs 80 and 82, respectively, (Figs. 3 and 6) of which the lugs adjacent the jaws 68*a* and 70*a* are permanently engaged by the latter, and the opposite lugs are engaged by the jaws 68*b* and 70*b* when the latter are in the closed position shown in Figs. 1, 3 and 6. The

opposed edges of the jaws 68 and 70, respectively, are longitudinally grooved as at 84 and 86, respectively, (Figs. 1 and 10) to serve as tracks for the different types of buckles 88 and 90, respectively (Figs. 11 and 12), that are to be assembled with straps in the present apparatus.

Mounted by screws 96 and 98 on the top and bottom lugs 80 and 82, respectively, of block 64 are brackets 100 and 102, respectively, which overlie the adjacent jaws 68 and 70, respectively, in the manner shown in Fig. 6 and serve for the mounting of tubular magazines 104 and 106, respectively. The magazines 104 and 106 are preferably rectangular in cross section and hold supply stacks of buckles 88 and 90, respectively. Block 64 is provided over a substantial part of its longitudinal extent with a guide groove 110 (Figs. 1 and 6) in which is slidable a feed bar 112, having a rearwardly extending shank 114 on which a collar 116 is held in longitudinally adjusted position by means of nuts 118. The collar 116 is connected by a link 120 with an arm 122 of a bell crank lever 124 which is pivotally mounted at 126 on a bracket 128 that is suspended from the bed plate 20 (Fig. 2). The rear end of the shank 114 of the feed bar 112 extends with clearance through an aperture 115 in a bracket 117 on the bed plate 20 (Fig. 2), thus protecting the shank 114 against appreciable bending or even breakage if the same is accidentally hit against. The other arm 130 of the bell crank lever 124 is connected by a link 132 with a foot pedal 134. Bell crank lever 124 is normally urged by a spring 136 into the position shown in Figs. 1 and 2, in which the feed bar 112 assumes the retracted or inoperative position shown in Fig. 5. On depressing foot pedal 134, the feed bar 112 passes through its feed stroke in the direction of the arrow 140 in Fig. 5, in the course of which it transfers, in a manner hereinafter described, the foremost buckles from the magazines 104 and 106 in the tracks of the jaws 68 and 70, respectively, to an "assembly" station at which they are in operative alignment with the strap-threading device 34 vertically below the latter. The forward end of the feed bar 112 is at the top and bottom thereof undercut as at 142 and 144, respectively, to provide feed shoulders 146 and 148, respectively (Fig. 5).

The discharge end of each magazine may be constructed as shown in Fig. 8. Thus, two opposite side walls of either magazine may be provided at the discharge end with inwardly bent opposite ledges 150 which retain the stacked buckles in the magazine, and are spaced from the adjacent ends of the other side walls 152 of the magazine to provide a discharge gate 154 through which the foremost buckle may be removed edgewise.

The magazine-mounting brackets 100 and 102 are provided in the front with rectangular notches 156 and 158, respectively (Fig. 6), into which project, in the present illustrated example, inserts 160 and 162, respectively, that are removably mounted by screws 164 on the brackets 100 and 102, and provided for a purpose described hereinafter. The notches 156 and 158 in the brackets 100 and 102 are closed at the front by cover plates 166 and 168, respectively. The open spaces thus remaining in the notches 156 and 158 serve as sockets in which the magazines 104 and 106, respectively, fit. More particularly, the rectangular magazines 104 and 106 fit their respective sockets only if so disposed that their discharge gates 154 are in alignment with, and form continuations of, the tracks 84 and 86 of the jaws 68 and 70, respectively (Fig. 5). If so disposed, the foremost buckles in the magazines 104 and 106 are in the path of the shoulders 146 and 148, respectively, of the feed bar 112, and are transferred by these shoulders from their respective magazines in the tracks of the jaws 68 and 70, respectively, to the previously described assembly station. The magazines 104 and 106 are seated with their ledges 150 against the top and bottom surfaces 190 and 192, respectively, of the block 64 in the manner shown in Fig. 6, in order to be properly located in the brackets 100 and 102, respectively. The top and bottom surfaces of the feed bar 112 are machined away beyond and on both sides of the shoulders 146 and 148 so as to provide longitudinal ribs 180 and 182, respectively (Fig. 6), which may enter between the ledges 150 at the discharge ends of the mounted magazines 104 and 106, respectively. The upper magazine 104 may conveniently be secured in its socket by a clamping screw 184 (Fig. 6).

In my referred prior apparatus I have also used a clamping screw in the lower magazine bracket in order to hold the magazine 106 in its socket. This compelled an operator to hold the magazine 106 in accurately located position in its socket prior to and during the tightening of the clamping screw. However, I have found that an operator frequently failed to bring the ledges 150 at the discharge end of the lower magazine 106 into engagement with the adjacent bottom surface 192 of the block 64 while he tightened the clamping screw, with the result that the magazine was out of operative relation with the feed bar 112 and the latter either did not, or did only infrequently, transfer a buckle from the magazine into the track formed in the adjacent jaws 70. If, as usual, the clamping screw made its own center in the lower magazine 106 when the latter was incorrectly held in place in the bracket 102, any subsequent attempt to clamp the lower magazine in accurately located position was foredoomed to failure. To obviate this deficiency, and particularly to eliminate any human agency in the accurate location of the lower magazine 106, I now provide a tension spring 194 which normally urges the magazine 106 upwardly in its socket against the adjacent bottom surface 192 of the block 64. The spring 194 is suitably anchored with one end on a screw 198 on the bottom end of the magazine 106 (Fig. 2), and with its other end on a screw 196 which is threaded into the bracket 102 (Fig. 6). The lower magazine 106 thus always finds its own accurate level, i. e., in engagement with the bottom surface 192 of the block 64. In order to remove the lower magazine 106 from its socket, it is merely necessary to release the same from the spring 194.

In order to assure that the buckles 88 in the top magazine 104 advance toward the discharge end thereof every time a buckle is removed therefrom by the feed bar 112, the gravity of the stacked buckles is augmented by that of a bar 200 which fits into the upper end of the magazine and rests on the buckles therein in the fashion shown in Fig. 5. Bar 200 is preferably made of solid metal stock. Likewise, the stacked buckles 90 in the lower magazine 106 are urged upwardly toward the discharge end thereof by a spring-urged plunger 202 (Fig. 5).

While the mounted inserts 160 and 162 in the notches 156 and 158 of the brackets 100 and 102,

respectively, serve for the purpose of sizing these notches so that they may fittedly receive the magazine 104 and 106, respectively, as described, removal of these inserts 160 and 162 restores the notches 156 and 158, respectively, to their original sizes which are such as fittedly to receive magazines that are of greater width longitudinally of the feed bar 112 than the magazines 104 and 106, respectively. These larger magazines hold buckles which, except for greater width longitudinally of the feed bar 112, are identical with the buckles 88 and 90, respectively. Thus, the larger top magazine 104a (Fig. 10), which will fit in the notch 156 in the bracket 100 when the smaller magazine 104 and the insert 160 are removed therefrom, may hold buckles 88' which are of greater width than the buckles 88 (Fig. 7), but are otherwise like the latter. The larger, interchangeable lower magazine (not shown) may hold buckles which, except for greater width longitudinally of the feed bar 112, are identical with the buckles 90 in the lower magazine 106.

A holder 210 for adjustable straps is mounted on the bed plate 20 of the apparatus, and comprises a bracket having a slotted portion 212 for engagement with a screw 214 by which said bracket may be adjustably secured in position, and a downwardly turned portion 216 which carries a socket 218 for a needle 220 on which the ends of the assembled straps may be impaled.

In using the present apparatus for the purpose of assembling a pair of buckles with straps and forming an adjustable loop in one of the straps, and assuming that the smaller magazines 104 and 106 are placed in the apparatus as shown, a double-eyelet buckle 88 and a single-eyelet buckle 90 are transferred from the magazines 104 and 106, respectively, to the described assembly station in their respective jaws 68 and 70, respectively, by depressing the pedal 134 and accordingly advancing the feed bar 112, as above described. A strap section *s* is then placed over the lower jaws 70, and more particularly over the opening in the buckle 90 held thereby, whereupon the pedal 50 is depressed in order to cause blade 52 to engage the strap section *s* and force it through the opening in the buckle 90. The ends of the strap section *s*, which have in this manner been looped through the buckle 90, are then impaled on the needle 220 in the fashion shown in Fig. 10, so that the intermediate folded portion of the strap section *s* is held to one side of the opening in the buckle 90. The other strap section *s'* is then threaded through the opening 224 of the buckle 88. To accomplish this, the strap section *s'* is first positioned below the top jaw 68 so as to be threadable through the buckle opening 224 by the hook 54. Thus, by lowering the bar 32 on depression of the pedal 50, the hook 54 is projected through the eyelet opening 224 in the buckle 88, and by positioning the strap section *s'* so that the same is over the free end of the lowered hook, subsequent upward movement of the bar 32 on release of the pedal 50 causes the hook to move the strap section *s'* through the buckle opening 224. A suitable length of the strap section *s'* thus threaded through the opening 224 in the buckle 88 is positioned over the latter, after which the blade 52 is lowered into engagement with said overlying strap length and forces the latter through the other eyelet opening 226 in the buckle 88 and also through the eyelet opening in the lower

buckle 90. The portion of the strap section *s'* thus passed through the openings in both buckles 88 and 90 is again threaded through the buckle opening 224 in the same way as before by means of the hook 54, and is again disposed in overlying relation with respect to the other opening 226 in the buckle 88. Finally, the blade 52 is again lowered to engage and force the last mentioned overlying portion of the strap section *s'* through the opening 226 in the buckle 88, but not through the aligned opening in the lower buckle 90. In this manner, the two buckles 88 and 90 are assembled with the strap sections *s* and *s'* and an adjustable loop *l* is formed in the strap section *s'* which is looped through both buckles. The buckles thus assembled with the strap sections are then removed from the jaws 68 and 70 and may be left suspended on the needle 220. The adjustable strap thus assembled is illustrated in Figs. 13 and 14.

In order to assemble the wider buckles with wider strap sections, it is merely necessary to replace the magazines 104 and 106 in the apparatus with the wider magazines, as described, and to substitute a wider blade and a wider hook (neither shown) for the blade 52 and hook 54, respectively, in the head 58.

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

1. In apparatus of the character described having a track for a buckle, the combination of a mounting for interchangeable magazines which are of different widths but otherwise identical and adapted to hold buckles of different widths, respectively, said mounting comprising a socket and an insert removably mountable in said socket for decreasing the width thereof, whereby the socket of decreased width may fittedly receive the magazine of smaller width, and the socket may fittedly receive the magazine of greater width when said insert is removed from said socket.

2. In apparatus of the character described having a track for a buckle of a certain length, the combination of a mounting for interchangeable magazines which are of different widths but otherwise identical and adapted to hold buckles which are of different widths, respectively, but otherwise identical, said mounting comprising a socket and an insert removably mountable in said socket for decreasing the width thereof longitudinally of said track, whereby the socket of decreased and full width may fittedly receive the narrower and wider magazines, respectively, in buckle-discharge relation with said track when said insert is mounted in and removed from said socket, respectively.

3. The combination in apparatus as set forth in claim 2, in which said socket and insert are rectangular in cross-section and the latter fits in the former transversely of said track, whereby the socket of decreased and full width may fittedly receive the narrower and wider magazines of rectangular cross-section, respectively, in buckle-discharge relation with said track when said insert is mounted in and removed from said socket, respectively.

4. In apparatus of the character described, the combination with a substantially horizontal track in which a buckle is movable edgewise, a buckle-supply magazine having a lateral gate at one end for edgewise discharge of the foremost buckle therefrom, and a socket open at the bottom and closed at the top for removably mounting said magazine in depending relation with said track, said socket being so dimensioned that said one

magazine end fits therein and said discharge gate is in registry with said track when said one magazine end is seated against the top of said socket, of spring means urging said magazine with said one end thereof upwardly into seating engagement with the top of said socket, said spring means solely retaining said magazine in said socket.

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REFERENCES CITED

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Number	Name	Date
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