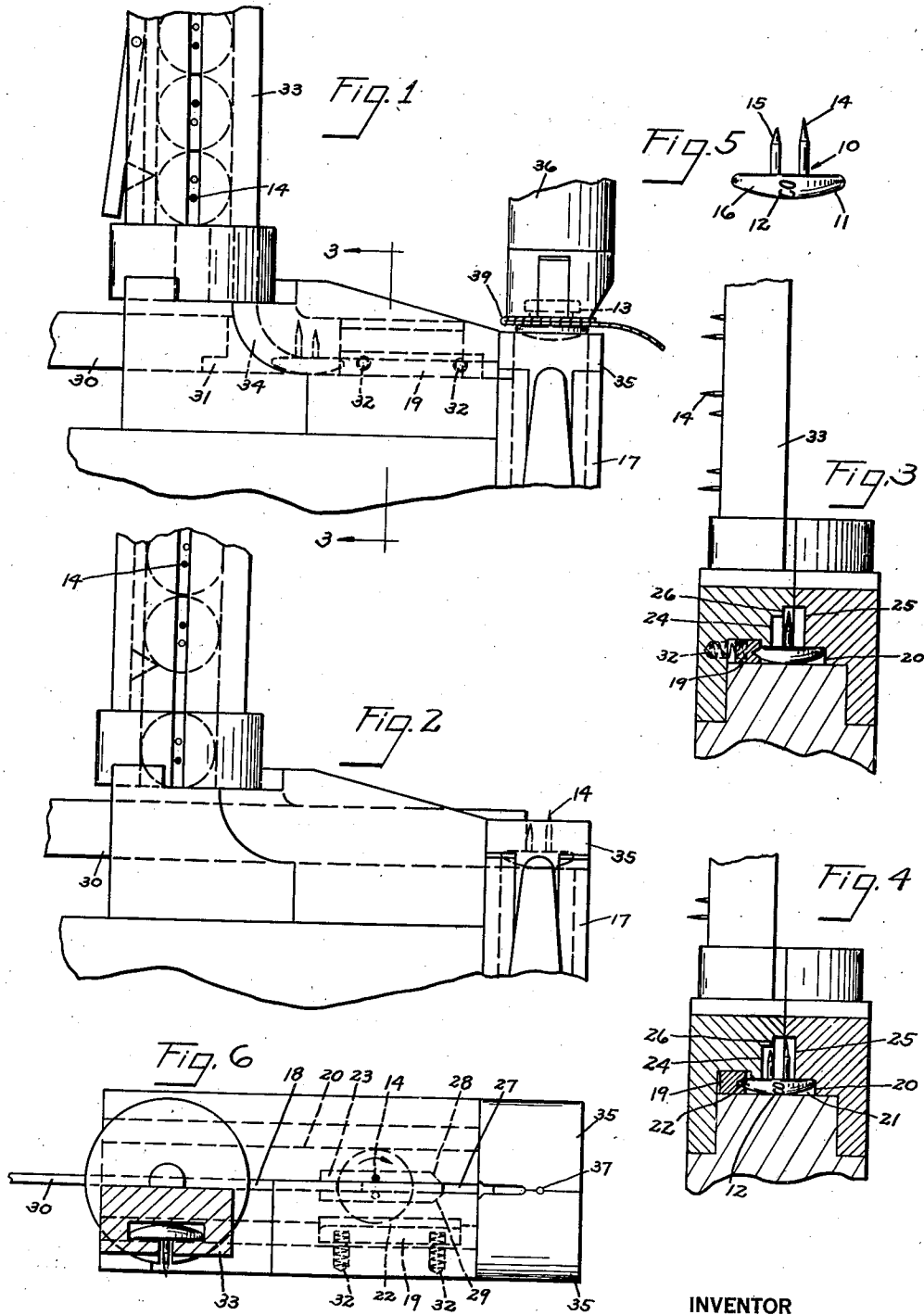


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ATTACHING APPARATUS
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ATTACHING APPARATUS

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This invention relates to the application of fastening elements to garments or the like, and among other objects aims to provide improved apparatus for attaching certain fastening elements in oriented position on the fabric.

The nature of the invention may be readily understood by reference to one form of apparatus embodying the invention and illustrated in the accompanying drawing.

10 In said drawing:

Fig. 1 is a side elevation of the apparatus showing the means for guiding a fastener to attaching position;

Fig. 2 is a similar view showing a fastener properly arranged and in attaching position;

Fig. 3 is a section through the orienting mechanism taken on plane 3—3 of Fig. 1;

Fig. 4 is a similar view showing a fastener in the course of orientation;

Fig. 5 is an elevation of a fastener; and

Fig. 6 is a plan view of the fastener guideway (shown in elevation in Fig. 1) and illustrating diagrammatically a fastener in the process of orientation.

The exposed parts of fastening elements on workmen's clothing or the like generally carry some design in the form of a trade-mark, slogan or decoration which should preferably be attached to the fabric with the design properly oriented. The invention is here shown embodied in apparatus for orienting a double prong fastener 10 whose top 11 lies on an exposed surface of the fabric and carries a design 12 in the form of a trade-mark. The fastener is in this instance employed to attach an element 13 of a snap fastener lying on the inner face of the fabric in registry with a mating fastener element on another portion of the garment. The prongs 14 and 15 of the fastener penetrate the fabric at spaced points (after which they are anchored in the snap fastener element) and, therefore, straddle a strip of cloth which prevents the fastener from being torn free of the fabric by the considerable pull which is frequently applied to separate snap fastener elements. As here shown, the prong 14 is slightly longer than prong 15.

The design on the head or top of the fastener is in this instance embossed on a decorative top cover comprising a thin sheet metal shell 16. The shell may advantageously be made of brass or plated to render it non-corrosible. It is attached by crimping its margin around the edge of the fastener head and on to the underside thereof. In this instance, the shell is assembled

on the fastener in such position that its design 12 occupies a predetermined relation to the fastener prongs. The application of the fastener prongs in a predetermined position on the garment fixes the fastener top and its design in desired position on the garment. In the present instance, the fastener is attached to the garment with the plane including its prongs in vertical position, the longer prong 14 being lowermost. In such case the design extends transversely of the plane including the prongs with its lower edge adjacent the longer prong, thereby bringing it into proper position on the garment when the prongs are positioned as aforesaid. If the fastener prongs occupy a different relation to the garment, then the relation of the design to the plane of the prongs should be correspondingly adjusted.

Prior to delivery of the fastener to the receiving device 17 in attaching position, it is caused to travel through a guideway 18 with one prong in advance of the other. In the guideway it is engaged by adjusting devices which orient it to bring its prongs into a predetermined position relative to that desired for attachment, in this instance, with the longer leg 14 foremost.

The adjusting devices are here shown in the form of means for applying differential friction to the fastener to rotate the fastener until the longer prong 14 is in leading position. The differential friction devices are embodied in a rail 19 resiliently pressing the fastener head against the opposite wall 20 of the passage 21 and having a longitudinal V-shaped groove 22 which exerts greater friction on the fastener head than does the opposite wall 20. Thus as the fastener is pushed toward attaching position, it tends to rotate in a clockwise direction (looking down on the fastener). To permit rotation at this stage of the fastener travel, the prong passageway is widened as at 23 (see Figs. 3, 4 and 6) to release the prongs from the alining restraint of the narrow passageway 18. The widened portion of the passageway includes a low section 24 of a height to admit the shorter fastener prong but too low to admit the longer prong. The balance 25 of the widened portion is of a height sufficient to allow the movement of the longer prong during rotation of the fastener. If the fastener enters the adjusting region with the shorter prong in advance of the longer prong, the latter is free to move in the space 25 under the rotative influence to which the fastener head is subjected, until it reaches a position in advance of the shorter prong at which time it engages the sur-

face 26 adjoining and above the low passage 24. Further rotation is thereby arrested and the fastener continues its travel in adjusted position with the longer prong leading.

In Fig. 6 a fastener is shown in the course of orientation wherein the longer prong 14 (distinguished by the heavy black dot) is being moved forward by rotation of the fastener until it occupies a position in advance of the shorter prong. When thus oriented, the prong passage is again narrowed as at 27 to hold the prongs one in advance of the other. Preferably the widened passage 23 is gradually narrowed by bevelled or cam surfaces 28 and 29 to guide the respective prongs into full alinement as they enter the narrow passageway 27. In the present instance, the fastener is advanced by reciprocating blade 30 (Fig. 1) recessed at 31 to receive the fastener head. The blade advances the fastener through the orienting mechanism and positions it in the fastener receiver 17 in attaching position.

If the fastener initially lie in the passage 18 with the longer prong in advance, it is already in properly adjusted position and the rotating device simply exerts friction on the button head without causing rotation thereof, since rotation would be prevented by engagement of the longer prong with the surface 26. The friction rail 19 is in this instance resiliently pressed against the fastener head by springs 32.

The orienting mechanism may, of course, be embodied in any form of attaching machine which supplies fasteners and successively advances the same to attaching position. It is obviously immaterial whether the fasteners advance to the orienting device with their prongs abreast or one in advance of the other. The orienting device is here shown embodied in attaching mechanism of the type illustrated in Clark Patent No. 1,798,970 wherein fasteners are delivered from a supply hopper into a raceway 33 with their prongs one in advance of the other. The relation of the shorter and longer prongs in the raceway is, however, a random one, as illustrated in Fig. 3. They may pass into the raceway either with the shorter or the longer prong in leading position. From the raceway they are released one by one into the curved passage 34 which enters the passage 18 at a point in advance of the retracted position of the fastener advancing blade 30. The mechanism by which the fasteners are placed in position to enter the orienting device forms no part of the present invention. Any appropriate mechanism may be employed.

The fastener receiving device 17 (which in the present instance is in the form of a pair of holding jaws 35) holds the properly oriented fastener in position to be engaged by a descending upper die 36 which upsets the fastener prongs inside the snap fastener element or other device to be attached. The holding jaws 35 are in this instance provided with a small notch 37 in which the leading or longer prong is placed, thereby registering the fastener in attaching position.

The portion of the garment to which the fastener is to be applied is inserted in the apparatus in a predetermined position. If such portion be the bib of an overall wherein the edge 29 constitutes the top edge of the bib, it is placed in the machine with the outer face down and the top edge 39 lying transversely of the plane of the fastener prongs and inwardly of the shorter prong 15. In this position the illustrative fastener is attached with the design in upright position and parallel to the top edge 39 of the

garment. If the upper horizontal portion of the garment be inserted in the machine in any other position relative to the fastener than that illustrated, the fastener shell must be assembled on the fastener in a correspondingly different relation to the plane of the fastener prongs in order to lie in proper position when attached to the garment.

Obviously the invention is not limited to the details of the illustrative apparatus since these may be variously modified. Moreover it is not indispensable that all features of the invention be used conjointly since various features may be used to advantage in different combinations and sub-combinations.

Having described my invention, I claim:

1. Apparatus of the character described comprising in combination means for supplying headed fasteners having double prongs one longer than the other and carrying a design on the head having a definite relation to the longer and shorter prongs, a fastener receiving device, means for guiding a fastener to said receiving device, said means including a passage adapted to receive the shorter prong but not the longer prong, means for rotating the fastener in said guiding means until said prongs occupy a predetermined position with reference to said receiving device.

2. Apparatus of the character described comprising in combination means for supplying headed fasteners having double prongs one longer than the other and carrying a design on the head having a definite relation to the longer and shorter prongs, a fastener receiving device, a passage for guiding a fastener with one prong in advance of the other to said receiving device, said passage having a widened portion to permit rotation of said fastener, said widened portion having a space adapted to receive the shorter prong but too low to receive the longer prong, and means adapted to rotate said fastener in said widened portion until the longer prong attempts to enter said space.

3. Apparatus of the character described comprising in combination means for supplying headed fasteners having double prongs one longer than the other and carrying a design on the head having a definite relation to the longer and shorter prongs, a fastener receiving device, a guideway for guiding a fastener with one prong in advance of the other, said guideway having a widened portion to permit rotation of the fastener, said widened portion having a low passage into which the shorter prong may pass and having a surface associated therewith to prevent entry of the longer prong, means adapted to rotate said fastener as it travels through said widened portion until further rotation is arrested by engagement of the longer prong with said surface.

4. Apparatus of the character described comprising in combination means for supplying headed fasteners having double prongs one longer than the other and carrying a design on the head having a definite relation to the longer and shorter prongs, a fastener receiving device, a guideway for guiding a fastener to said receiving device, means including devices in said guideway for exerting differential friction on the fastener head to cause it to rotate, and means in position to be cleared by the shorter prong but to be engaged by the longer prong for arresting rotation of said fastener when the prongs thereof are in predetermined relation to said receiving device.

5. Apparatus of the character described com-

prising in combination means for supplying headed fasteners having double prongs located in a plane diametrical to the fastener head, one prong being longer than the other and the fastener head carrying a design on the head having a definite relation to the longer and shorter prongs, a fastener receiving device, a guideway having a slot therein located centrally of the fastener head for guiding a fastener with one prong in advance of the other to said receiving device, means engaging said fastener to exert rotating forces thereon, and means for engaging only the longer prong of the fastener to arrest rotation of the latter when the prongs thereof are in predetermined relation to said receiving device.

6. Apparatus of the character described comprising in combination means for supplying headed fasteners having double prongs one longer than the other projecting from the fastener head, a fastener receiving device, means for guiding a fastener to said receiving device, said means including a passage adapted to receive the shorter prong but not the longer prong, means for rotating the fastener in said guiding means until said prongs occupy a predetermined position with reference to said receiving device.

7. An apparatus of the character described comprising in combination means for supplying headed fasteners having a design on the head thereof and a pair of dissimilar prongs projecting

therefrom and having a definite relation to the design on the head, a fastener receiving device, a passage for guiding a fastener to said receiving device, said passage having a narrow portion for receiving the prongs and a widened portion to permit rotation of said prongs about the axis of the head, said widened portion having means for arresting rotation of a fastener by being positioned and arranged to permit one of said dissimilar prongs to clear said means but excluding the other prong from clearing said means, means for rotating a fastener in said passage until its rotation is arrested as aforesaid, and means for advancing said fastener in the predetermined position in which its rotation was arrested to said fastener receiving device.

8. Apparatus of the character described comprising in combination means for supplying headed fasteners having dissimilar attaching prongs projecting therefrom, a fastener receiving device, a passage for conducting a fastener to said receiving device, said passage having means for rotating the fastener and means for arresting rotation of the fastener by engaging one of said dissimilar prongs but not the other, said means rotating a fastener until its rotation is arrested by engagement of the aforesaid dissimilar prong, and means for advancing said fastener in the predetermined position in which its rotation was arrested to said fastener receiving device.

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