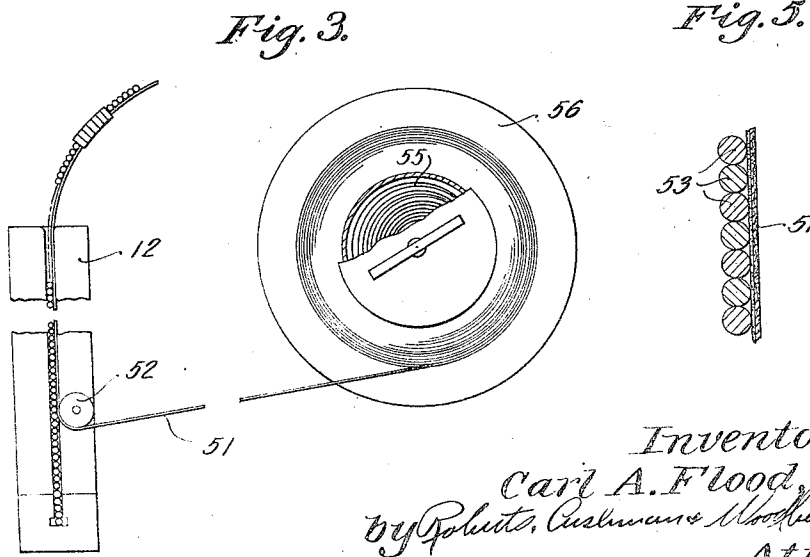
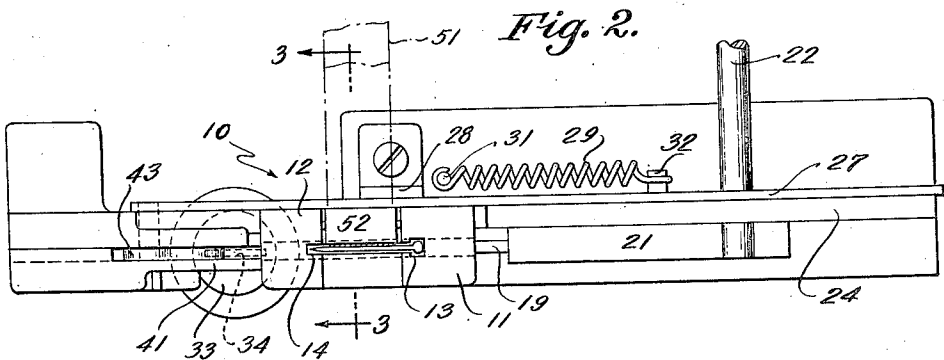
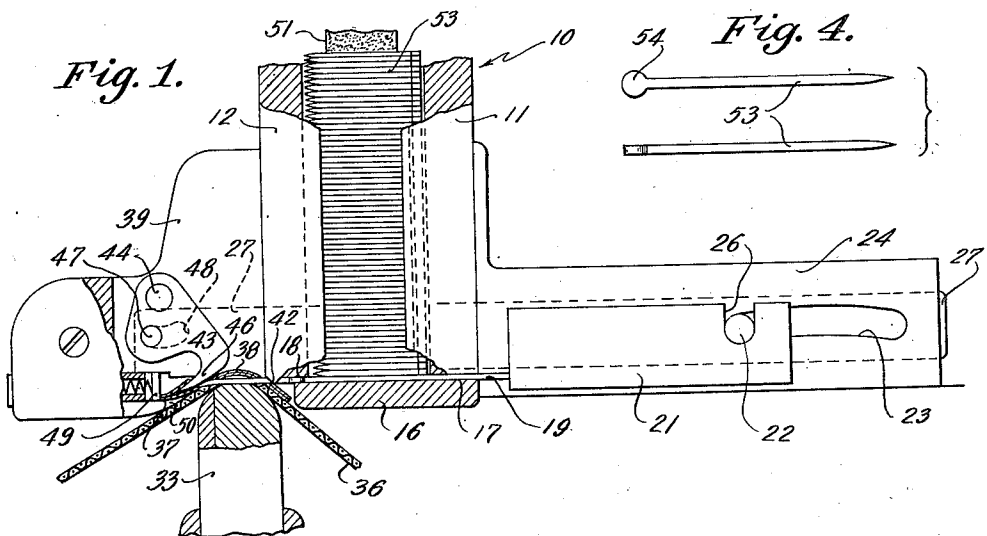


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TRANSFERRING PINS
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TRANSFERRING PINS

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This invention relates to attaching tickets, marking tags, or the like to material such as fabric, and to supplying pins or other fastening elements to mechanism for transferring such elements from the supplying means to and into fastening position in superposed plies, as through a ticket and a piece of fabric.

Fastening elements such as the pins which are used in machines of this general class are commonly supplied in the usual pin strips, comprising a paper strip or tape having longitudinal rows of similarly spaced perforations, the pins being disposed transversely of the strip through these perforations. These strips are fed into the machines where the pins are removed from the strip and delivered to an attaching mechanism by which they are inserted or driven through a ticket for securing the latter to the material. The mechanical operation of removing each pin from such a strip and arranging it in position to be inserted through a ticket, is usually performed in a manner to require at least a plurality of movements of the pin in different directions, and frequently the mechanism provided for this purpose is quite complicated.

Objects of the present invention are to provide for simplifying the operation of transferring a pin or other fastening element from a carrier or supply strip into position to be inserted or driven into fastening position in a ticket or the like; to reduce the number of mechanical movements and/or of moving parts required for this operation; and also to provide apparatus for these purposes having an improved construction and relative arrangement of parts.

In the drawing,

Fig. 1 is an elevational view with some parts omitted and other parts broken away illustrating mechanism for transferring a pin from a pin strip to and into fastening position in a ticket for securing the latter to a piece of fabric;

Fig. 2 is a plan view of the mechanism illustrated in Fig. 1;

Fig. 3 is a section on the line 3—3 of Fig. 2, and also illustrating the winding spool or reel for the pin strip;

Fig. 4 is a combined plan and side elevational view of a pin; and

Fig. 5 is a longitudinal section through a portion of a pin strip.

The features of this invention are illustrated as embodied in a pin ticket machine of the general type disclosed in my copending application Serial No. 565,466, filed September 28, 1931, to which reference may be had for a more complete

understanding of the principles and mode of operation of that machine, but it will be evident that the embodiment selected for illustration herein is also well adapted for use with various machines or devices which are well known in the art.

The illustrated embodiment comprises a descending chute or guideway 10 formed of spaced vertical guide members 11 and 12 having opposed parallel grooves 13 and 14 (Fig. 2), the groove 14 being adapted to receive the point end of a pin while the other groove 13 preferably is enlarged as by being undercut to receive the head end of a pin. This guideway is closed at its lower end by a transversely extending member 16 which provides a base for supporting a stack or vertical row of pins in the guideway. At each side of this guideway, preferably just above the pin supporting surface of its base member 16, are aligned apertures 17 and 18.

The pin driving or inserting mechanism comprises a pin driver rod 19 carried by a reciprocable pin driver block or head 21 which is adapted to receive reciprocating motion from an oscillating pin 22 operating through an arcuate slot 23 in a frame member 24, or any other approved mechanism may be provided for this purpose. The pin 22 seats in a vertical slot 26 in the block 21, as shown. These parts are so arranged that the pin driver rod 19 may reciprocate through the aperture 17 along the supporting surface of the base member for engaging a pin resting thereon so as to force this pin from the guideway through the aperture 18 and through a ticket. It will be apparent that the pin driver mechanism has a stroke of sufficient length to perform this operation and then to withdraw the pin driver rod from the pin supporting surface of the member 16 of the guideway.

The oscillating pin 22 also operates in a longitudinal slot (not shown) in a slide bar 27, this slot being of such a length as to permit the pin 22 to travel freely for the major portion of its stroke, but yet short enough to cause the pin 22 to engage the end of the slot just as this pin is approaching the end of its return stroke. This provides for an intermittent reciprocatory motion of the slide bar 27. This bar is guided during this movement by the frame 24 and a guide bracket 28 (Fig. 2). A contractile spring 29 is connected to a fixed post 31 and to a pin 32 on the slide bar 27 so as normally to urge the slide bar to the left, as viewed in Figs. 1 and 2.

The ticket attaching mechanism comprises a vertically movable anvil 33 having a transverse

groove 34 (Fig. 2) in its upper surface to receive and guide the body or shank of a pin during attachment. This anvil is adapted to be moved upwardly substantially to the position shown in Fig. 1 to engage and hold a piece of fabric 36 and a ticket 37 firmly against the upwardly concave edge 38 of a rear frame member 39 and a similar edge of a front member 41 (shown only in Fig. 2), thereby bowing or bending the ticket to a shape to receive an attaching pin. It will be understood that when the anvil is in the position shown in Fig. 1, the pin receiving groove 34 therein is aligned with the aperture 18 in the guide member 12. Preferably this guide member is formed to provide a downwardly extending beak or point 42 which is provided with a groove (not shown) in its lower surface to form a continuation of the pin guiding channel provided by the aperture 18. This beak is adapted to engage the ticket and to assist in holding the latter in the desired position during attachment.

This ticket attaching mechanism may also include a member 43 which is disposed between the front and rear frame members 41 and 39 and is mounted to pivot on a pin 44. This member is provided with a spear-like point 46 adapted to enter between the plies of a ticket for spreading or separating such plies to receive and enclose the point of a pin. The under surface of the point 46 also assists in guiding the point of the pin between the plies. The member 43 is connected to the slide bar 27 by means of a pin 47 which operates in a slot 48 in the rear frame member 39. A spring pressed guide 49 may also be arranged yieldably to engage the longitudinal edge of a ticket for assisting in holding the latter in position for attachment.

In accordance with this invention fastening elements, here shown by way of example as pins for attaching the tickets, may be supplied continuously from a carrier or pin strip 51 by leading the strip toward the guideway 10 to a position to bring the ends of the pins carried thereby substantially into the opposed grooves 13 and 14. The strip may then be led downwardly along the grooves for a suitable distance and then led away from the guideway. Once the pins enter the grooves 13 and 14 they are restrained and effectively held from moving away from the guideway with the strip 51. It will be seen that as this strip is carried away the pins will be effectively separated therefrom and the free and unattached pins are therefore successively discharged or deposited one upon another in an approximately horizontal position forming a vertical row or stack of such pins in the guideway. Preferably the strip 51 is led away from the guideway around a suitable guide such as a roller 52 which may be mounted on the upright guide members 11 and 12. It will be evident that other suitable guides or devices may be provided for directing the strip through the desired course to and from the guideway as will be understood by those skilled in the art when informed by this specification. While the strip carried from the guideway may be disposed of in any suitable manner, it is preferred to provide a winding spool or reel 56 for taking up this strip, and it is contemplated that this take-up spool may be operated with a step advance motion in properly timed relation in any approved manner to supply an additional pin substantially as the pin driver rod 19 is withdrawn to position for driving a pin. While the reel may be actuated in any suitable manner, as by a spring 55, as shown in Fig. 3, it is preferably operated

by ratchet mechanism actuated by the slide bar 27 in substantially the same manner that the pin strip feeding mechanism is operated in my co-pending application previously identified herein.

Pins 53 of the type illustrated in Fig. 4 are particularly adapted for use with this apparatus. These pins comprise the usual shank or body portion and pointed end, but have a head in the form of a relatively small, approximately circular disk 54 having substantially the same thickness as the diameter of the body or shank, thereby enabling such pins to lie flatwise against each other in substantially parallel relation. The disk heads 54 may be readily formed by flattening the heads of pins of the common and well known form. These pins are disposed wholly on one side of the strip 51 and transversely thereof and are arranged substantially against each other with their head and pointed ends projecting freely beyond the longitudinal edges of the strip. The pins are releasably secured to the strip along their intermediate or shank portions by means of suitable adhesive material. Preferably the pins engage the adhesive substantially in line contact, as illustrated in Fig. 5. A broad band or contact between the pin and a tacky or hard drying adhesive film or coating would tend to cause tearing of the pin strip or to remove an objectionable amount of adhesive material upon removal of the pins in the manner described herein.

While any suitable water soluble gum or a normally moist or tacky cement (such as used, for example, on ordinary surgeon's tape) may be employed with reasonable success as the adhesive film or coating, I preferably use a plastic, non-drying adhesive (commonly termed "self-sticking" or "pressure sensitive") upon which the smooth or polished surface of the pins will adhere without the necessity of moistening the coating and without taking up an excessive amount of the adhesive upon removal of the pins. Such a plastic adhesive may consist of a well masticated rubber compound suitably plasticized by resin or other softening agents well known to the art and applied to the sheet 51 in solution with a volatile solvent or by other known methods.

When applied under slight pressure to this deformable, non-stiffening adhesive coating, the pins are retained by a suction effect between their smooth surface and the yielding surface of the plastic adhesive. Hence it is not essential to limit the contact to an extremely thin band or line; for the adhesive has greater internal cohesion than adhesion to the polished surface of the pins and consequently is not carried away by the pins when the latter are separated from the strip by axial movement thereof.

In the operation of this apparatus the ticket to be attached is advanced to a position substantially above the anvil 33. The material to be ticketed is passed between the anvil and the ticket and the pin driver head 21 through its connection with the pin 22 is caused to begin its advance stroke from right to left, as viewed in Figs. 1 and 2. This advancing movement of the pin 22 permits the slide bar to advance under the influence of the spring 29 so that the lever 43 is moved downwardly, and this causes the spear-like point 46 to enter between and separate the plies of the ticket 37, while the latter is substantially flat so as to provide an opening or recess to receive and enclose the point of the pin. The anvil 33 then moves upwardly and bows or crimps the fabric material 36 and the ticket

37, forcing the latter against the concave edges 38 of the members 39 and 41 substantially in the manner illustrated in Fig. 1. The pin driver rod during its advance stroke passes from the aperture 17 along the pin supporting surface of the base member 16 and engages the head end of the lowermost pin and forces this pin through the aperture 18, through the ticket and the material, along the groove 34 in the anvil, and again through the material and into the body of the ticket. As the point of the pin is advanced to pierce the ticket the second time, the lower grooved edge of the spear-like point 46 guides the point of the pin into the opening formed by the point 46. While the point of the pin is being inserted in this way, the ticket is supported on its lower side by the cusp-like member 50. As the pin driver head 21 and the pin driver rod 19 are withdrawn on the return stroke to their extreme right-hand position, the slide bar is actuated to raise the member 43 out of the ticket.

From the foregoing it will be evident that the pin strip 51 constitutes a movable or traveling member or pin carrier which is adapted to convey pins substantially continually from a source of supply, as from a reel or other magazine, and that the pins so delivered are received by the guiding means 10 and directed along a path determined by the grooves 13 and 14, to the attaching means. While in the illustrated embodiment the pin strip has been shown as the movable member, it will be understood that the operation of detaching the pins from the strip may also be performed by effecting relative movement between the guiding means and the strip to cause the pins to enter the guiding means and subsequently separating these members, or in other instances the strip 51 may remain substantially stationary and the guiding means may constitute the movable member. It will also be seen that the opposed grooves 13 and 14 maintain the pins properly aligned in superposed or side by side relation in a substantially vertical row. As the strip 51 is carried away from this guiding means about the roller 52, the pins become free and unattached. The operation of the pin driver rod 19 serves to remove a pin from the lower end of this row and as the pin driver rod is withdrawn from beneath the lowermost pin of this row the strip 51 is advanced to bring another pin against the surface 17, and this movement of the strip 51 about the roller 52 serves to detach another pin from the strip and this pin then constitutes the uppermost of the row of free and unattached pins until the operation is repeated by operating the pin driver to remove another pin from the lower end of the row.

The term "fastening element" as used herein is intended to include fasteners which are similar to the illustrated type of pin having a flattened head as well as other forms of pins, as for example a pin consisting of the ordinary shank and pointed end but having no head, or a pin having its head formed in other ways, as by bending the shank to provide a head portion. Other forms of attaching elements which are somewhat similar to a pin, but not ordinarily described as such, are also intended to be included in the term "fastening elements". For instance, straight or bent pieces of wire with or without point or head, but which may be used in an attaching machine to form a clip or staple, may be fed or delivered to attaching mechanism in substantially the same manner.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. In an apparatus of the class described, the combination of a carrier, a series of fastening elements disposed on said carrier, guiding means for receiving and directing the fastening elements along a predetermined path, means for effecting relative movement between the carrier and the guiding means to cause the fastening elements to enter the guiding means, and means effective during this relative movement and while the fastening elements are in the guiding means for detaching fastening elements from the carrier as the fastening elements advance relative to the guiding means.

2. In an apparatus of the class described, the combination of guiding means for conducting pins in a direction transversely of their length to an attaching means, a traveling member extending through said guiding means for depositing pins therein transversely of the length thereof so that pins in said guiding means are similarly disposed in approximately parallel positions with adjacent pins substantially against each other for progressive movement to the attaching means.

3. In an apparatus of the class described, the combination of means for maintaining a plurality of free and unattached fastening elements in a row with adjacent elements of the row disposed substantially against each other, a driving element for removing the endmost fastening element from one end of the row, and means for depositing another free and unattached fastening element against the endmost fastening element at the other end of the row substantially as a fastening element is removed by said driving element.

4. In an apparatus of the class described, the combination of means for maintaining a plurality of free and unattached fastening elements in a row with adjacent fastening elements of the row disposed substantially against each other, a member operable transversely of the row for removing a fastening element therefrom, and a traveling member extending to and along the row for bringing additional free and unattached fastening elements substantially into the row to replenish the stock of fastening elements in said row.

5. In an apparatus of the class described, the combination of means for maintaining a plurality of free and unattached fastening elements in a row with adjacent fastening elements of the row disposed substantially against each other, means for removing fastening elements from the row for attaching tickets, a traveling member having fastening elements thereon for delivery to said row, and means for transferring fastening elements from said traveling member to said row of fastening elements.

6. In an apparatus of the class described, the combination of means for maintaining a plurality of free and unattached fastening elements in a row with adjacent fastening elements of the row disposed substantially against each other, means for successively removing the endmost fastening element from one end of said row for attaching a ticket, a movable member having fastening elements thereon for delivery to said row, and means for successively transferring fas-

tening elements from said movable member to the other end of said row and substantially against the endmost fastening element thereof.

7. In an apparatus of the class described, the combination of means for maintaining a plurality of free and unattached fastening elements in a row with adjacent fastening elements of the row disposed substantially against each other, means for removing fastening elements from the row for attaching tickets, a strip having fastening elements thereon for delivery to said row, means for conducting the strip toward said row, and means for successively separating fastening elements from the strip and depositing them substantially against the endmost fastening elements of said row.
8. Pinning apparatus of the type in which the pins are supplied from a strip, comprising a member for driving pins into tickets, of a guideway for conducting the pins to a position to be operated on by said member, said guideway comprising spaced guides having opposed grooves for receiving the head end and point end of a pin, and a roller disposed transversely of said guideway for guiding the pin strip away from said opposed grooves, the opposed open sides of said grooves being spaced apart a distance greater than the width of the strip.
9. In an apparatus of the type employing a carrier having a series of fastening elements disposed thereon, guiding means for receiving and directing the fastening elements along a predetermined path toward a position where the foremost element is moved from the series, and means for separating said elements from said carrier after entering said guiding means and before reaching said position.
10. In an apparatus of the type employing a carrier having a series of fastening elements disposed thereon, guiding means for receiving and directing the fastening elements along a predetermined path toward a position where the foremost element is moved from the series, means

at said position for moving the foremost element from the series, and means for separating the carrier from the series.

11. In an apparatus of the type employing a flexible carrier strip having a series of fastening elements adhesively secured thereto, guiding means for receiving the fastening means at one location and directing them along a predetermined path to another location, and means for peeling said strip from the elements after the latter have entered said guiding means.

12. In an apparatus of the type employing a flexible carrier strip having a series of fastening elements adhesively secured thereto, guiding means for receiving the fastening means at one location and directing them along a predetermined path to another location, means for applying the fasteners individually after they reach the latter location, and means for peeling said strip from the series before they reach said latter location.

13. In an apparatus of the type employing a flexible carrier strip having adhesively secured to one side thereof a series of parallel juxtaposed pins, guiding means for receiving the pins at one location and guiding them along a predetermined path to another location, means for applying the pins individually after they reach the latter location, and means for peeling said strip from said series while the pins are in said guiding means.

14. In an apparatus of the type employing a flexible carrier strip having adhesively secured to one side thereof a series of parallel juxtaposed pins, guiding means for receiving the pins at one location and guiding them along a predetermined path to another location, means for applying the pins individually lengthwise thereof after they reach the latter location, and means for peeling said strip from said series intermediate said positions.

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