

Oct. 4, 1932.

C. A. FLOOD

1,880,197

PIN STRIP

Filed Dec. 9, 1930

Fig. 1

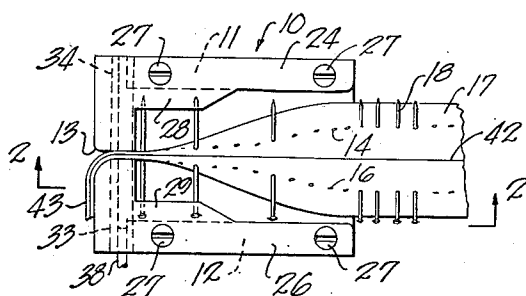


Fig. 3

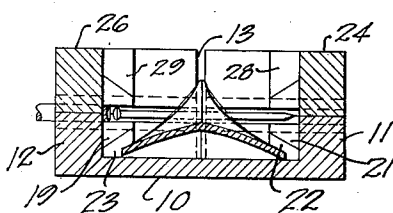


Fig. 2

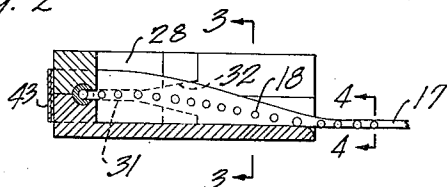


Fig. 4

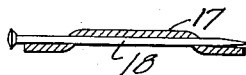


Fig. 6

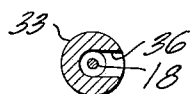


Fig. 5

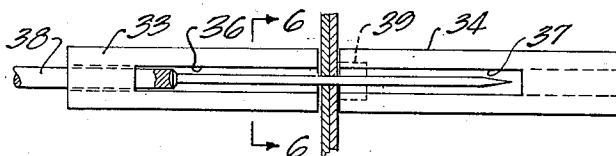


Fig. 8

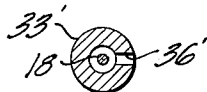


Fig. 7

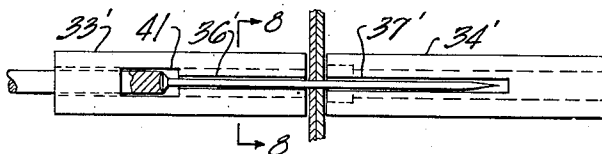
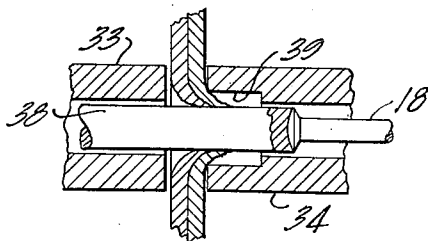


Fig. 9



INVENTOR
CARL A. FLOOD
by *Palmer, Cushman & Woodbury*
ATT'YS

UNITED STATES PATENT OFFICE

CARL A. FLOOD, OF FRAMINGHAM, MASSACHUSETTS, ASSIGNOR TO DENNISON MANUFACTURING COMPANY, OF FRAMINGHAM, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

PIN STRIP

Application filed December 9, 1930. Serial No. 501,053.

This invention relates to a pin strip having structural features adapting it for use with ticket-attaching apparatus.

While pin strips of the more generally used types, comprising a strip of material having a double row of pin-receiving perforations, are employed to some extent for feeding pins to ticket-attaching machines, it has been found that the construction and mode of operation of such apparatus can be materially improved by making a relatively slight modification in pin strips of existing types, thereby giving such modified strips a new function, which makes possible not only a new coactive relation between the strip and the ticket-attaching apparatus, so as greatly to simplify the procedure involved in removing a pin, but which also enables such apparatus to perform the work of attaching a ticket in a more satisfactory manner. For instance, it is customary to feed pins carried by a substantially flat strip to an apparatus which moves a pin axially to withdraw it from the strip, then moves the pin either above or below the strip to a position to clear the same, and finally drives or otherwise forces the pin from the latter position through a ticket disposed on material to which it is to be attached. Obviously, such a construction requires a rather complicated and elaborate arrangement of interfitting and moving parts.

Another form of apparatus provided for these purposes also is supplied with pins from a substantially flat strip, but with apparatus of this type each pin instead of being withdrawn is torn from the strip by being forced bodily in a direction transversely of its axis and approximately normal to the plane of the strip. This operation carries the pin to a position out of the path of the strip, from which position the pin may be driven through a ticket for attaching the same. Apparatus of the latter type requires two distinct movements to remove and to drive a pin; and its mode of operation is such as to permit fragments of the strip to remain on a pin after the ticket-attaching operation has been completed.

Accordingly a principal object of this in-

vention is to overcome undesirable features of apparatus of the class referred to by improving the construction of a pin strip so that it may cooperate in a more efficient manner with an apparatus which removes and drives a pin, preferably with a single motion.

In the drawing:

Fig. 1 is a top plan view of a portion of a ticket-attaching apparatus;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is an enlarged section along the line 3—3 of Fig. 2;

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

Fig. 5 is an enlarged detail view showing in elevation parts of the apparatus disclosed in Figs. 1 to 3;

Fig. 6 is a section on the line 6—6 of Fig. 5;

Fig. 7 is a view similar to Fig. 5, but showing a modified form of construction;

Fig. 8 is a section along the line 8—8 of Fig. 7; and

Fig. 9 is an enlarged sectional view illustrating the manner in which a pin may be removed from a pin strip.

Apparatus selected for illustration comprises a rectangular base 10 having a substantially flat upper surface and formed with substantially L-shaped raised portions 11 and 12 disposed in opposed relation, with their longer legs along the outer longitudinal edges of the base and their shorter legs extending inwardly along an end portion thereof, the adjacent ends of these shorter legs being rounded and spaced to form a substantially vertical outwardly flaring slot 13. Preferably the upper surfaces of these raised portions are disposed at a level spaced above the base at a distance at least approximately corresponding to that between each row 14, 16 of pin-receiving perforations in a pin strip 17 and the adjacent longitudinal edge of the latter. The adjacent side walls of the longer legs 11 and 12 of the raised portions are disposed in substantially parallel relation and spaced at a distance slightly greater than the length of pins 18 to be supplied to the apparatus. Also the longer legs of these raised portions are formed with widened sections which provide ways 19

and 21 extending longitudinally substantially in coplanar relation with each other from the shorter legs to points suitably spaced along the longer legs, and then inclining downwardly toward the base. The inclined portions of these ways are tapered or narrowed down, as indicated at 22 and 23, and merge into the side walls of the adjacent raised portions at points which may be spaced slightly above the upper surface of the base. Similar L-shaped members 24, 26 are mounted upon these raised portions in any approved manner, as by means of attaching screws 27, and are also formed with widened sections 28, 29 similar to the widened sections 19 and 21 of the raised portions, the adjacent surfaces of these widened sections being spaced to form a guiding channel 31 having an outwardly flaring entrance 32. The adjacent ends of these L-shaped members are also rounded and spaced to form a continuation of the slot 13.

Aligned cylindrical recesses formed partly in the shorter legs of the raised portions and partly in the superposed members extend transversely of the base from each side of the slot 13 and receive bushings 33, 34 (Fig. 5) having aligned longitudinal slots 36, 37 extending from the ends thereof adjacent the slot 13 to points substantially aligned with the side walls of the longer legs of the L-shaped members. A driver 38 is operable longitudinally in the aligned bores of these bushings. Preferably the bushing 34 is counterbored at 39 adjacent the slot 13. The material of the shorter legs of the raised portions and the L-shaped members is cut away to form a continuation of the guiding slot 31 so that pins may be guided from the slot 31 through the slots 36 and 37 into the bores of the bushings. For this reason the slots of the bushings shown in Fig. 5 are sufficiently wide to accommodate the head of pins to be received.

The modification shown in Figs. 7 and 8 is similar in all respects to that shown in Figs. 5 and 6, with the exception that the bushings 33' and 34' have relatively narrow slots 36' and 37' of a width to receive the shank of a pin and the slot 36' is enlarged, as indicated at 41, to receive the head of pins delivered to these bushings.

The apparatus thus far described is disclosed and claimed in my copending application Serial No. 565,466, filed September 28, 1931.

The pin strip 17 forming the subject matter of this case comprises a strip of material which may be supplied in roll form and, as previously pointed out, provided with laterally spaced longitudinal rows 14 and 16 of pin-receiving perforations. Preferably these rows are spaced inwardly at equal distances from the longitudinal edges of the strip and are also parallel to each other and to these edges. In order to adapt this strip for use

with apparatus of the class referred to it is provided with means tending to assist the strip in folding, for example, a weakened portion or crease 42 which extends longitudinally of the strip midway between the rows 14 and 16 of pin-receiving perforations.

In using this strip the free end 43 (Fig. 1) is folded along the crease 42 and inserted in the vertical slot 13 with the crease toward the upper end of this slot and the outer or lateral edges of the strip disposed in the bottom of the slot. The strip having pins 18 disposed in its pin-receiving perforations is then drawn through the slot or to the left, as viewed in Fig. 1, preferably by successive steps, each step movement being predetermined to bring a pin into the bore of the bushings 33 and 34. As the strip moves toward the slot 13 in this manner, its contour changes from a substantially flat strip, as shown in Fig. 4, to the section shown in Fig. 3, where the lateral edges of the strip have moved inwardly, thus bringing the pin-receiving perforations closer together and forming the fold as the strip approaches the slot 13. The inclined portions of the ways 19 and 21 receive the ends of a pin as it is carried forward by the strip and the lower surfaces of the widened sections 28 and 29 of the upper or L-shaped members cooperate to direct this pin into the guide passage 31, at the same time gradually raising the pin to the level of the slots 36 and 37 of the bushings 33 and 34, which, it will be remembered, are disposed at a level above the base corresponding to the distance between each row 14 or 16 of pin-receiving perforations and the adjacent lateral edge of the strip, so that the strip encounters little if any resistance to folding as it moves toward and through the slot 13. Each time a pin is lodged in the bore of the bushings 33 and 34 a driver 38 is advanced through these bushings from approximately the position shown in Fig. 5 to the position shown in Fig. 9, which movement is effective for forcing the head of a pin through the pin strip and into a ticket (not shown) for attaching the latter.

During the driving movement of the driver 38 it will be apparent from Fig. 9 that material of the strip is not sheared out by the head of the pin as the latter moves there-through, but that the counterbore 39 permits this material to be serrated or torn so as to remain on the strip and not to cling to the head of the pin. It will also be understood that after each driving movement the driver 38 is returned approximately to the position shown in Fig. 5 and another pin is delivered into the path of this driver in the manner just described. As the folded strip moves through the slot 13 it may be turned through an angle of approximately 90°, as illustrated in Fig. 1, and in so doing rides over the

rounded ends of the shorter legs of the raised portions and of the L-shaped members.

It will be seen that the improved pin strip provides for more positive feeding of pins because it carries each pin to the exact location for insertion without depending on gravity. The pins may also be forced through this improved strip without danger of bending. Where a pin is torn bodily from a strip or broken through the strip on one side of the pin, there is great danger of bending the pins, and this of course would result in trouble when inserting such pins in tickets during attachment thereof. Thus, while all other forms of pin strip feeds require that the pin be released from the paper strip (either by withdrawing or by breaking out the pin) before inserting in the ticket, this new type of strip permits a pin to be advanced directly from the strip into the ticket and in this way makes the operation more positive because the pin is held secure at all times.

Moreover, the present invention provides for forcing a pin through paper in the ideal way, that is, by having the pin disposed at right angles to the plane of the paper and arranging a support to extend as close to the pin all around as is possible without causing the driving plunger to shear the paper off. The improved strip also holds each pin in two places, thereby maintaining the pins in a plane parallel with the paper so that the strip may be rolled. The weakened portion or crease 42 makes it possible readily to fold the strip in the center, thus bringing the plane of the paper at right angles to the pins, and also bringing together the two holes or perforations which carry each pin.

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. A pin strip comprising a sheet of material having longitudinal rows of pin-receiving perforations and a weakened portion extending longitudinally between the rows of perforations to facilitate folding of the strip along a line extending longitudinally and spaced substantially midway between the rows of perforations.

2. A pin strip comprising a sheet of material having pin-receiving perforations disposed in longitudinal rows, and means providing a tendency for the sheet to fold along a line extending longitudinally and spaced substantially midway between the rows of pin-receiving perforations.

3. A pin strip comprising a sheet of material having substantially parallel lateral edges and pin-receiving perforations disposed in longitudinal rows substantially parallel to the lateral edges, and a substantially continuous crease approximately parallel

to the rows of pin-receiving perforations and spaced substantially midway therebetween so that the strip may fold readily along this crease to bring the pin-receiving perforations of the rows substantially into axial alignment.

Signed by me at Framingham, Mass., this fifth day of December, 1930.

CARL A. FLOOD.

75

80

85

90

95

100

105

110

115

120

125

130