Jan. 12, 1932. W. W. LASKER 1,840,515

PERFORATING MACHINE

Filed Feb. 28, 1929 2 Sheets-Sheet 1

Fig. 1

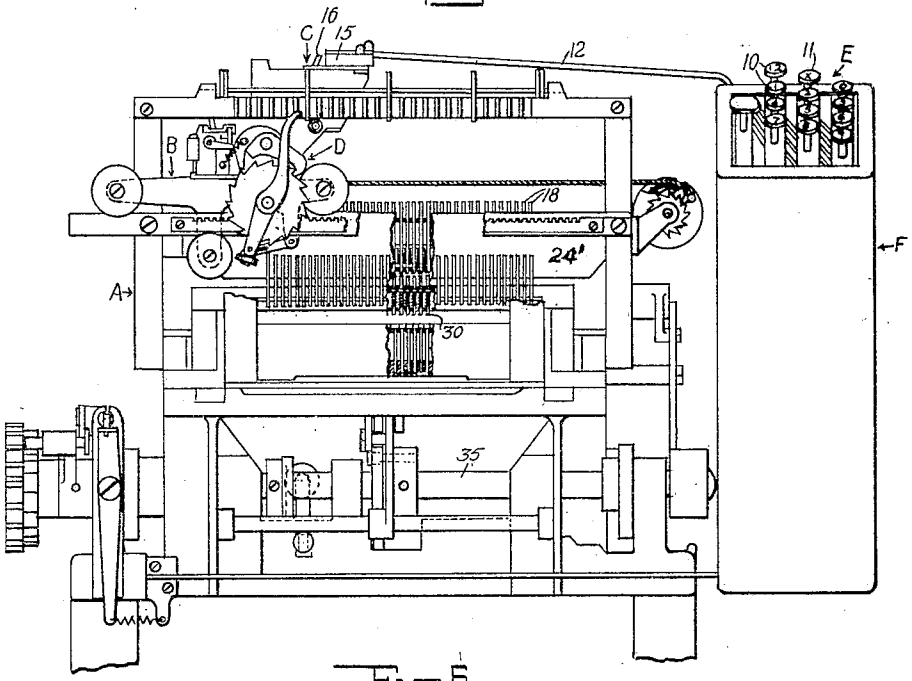
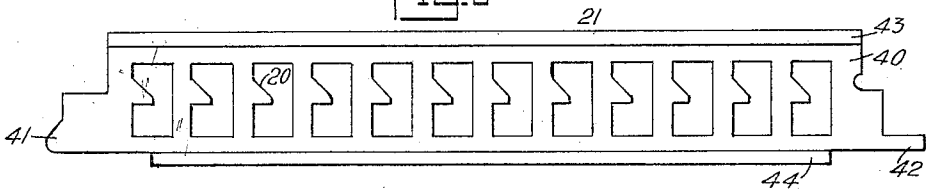


Fig. 6



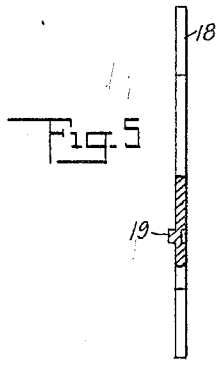


Fig. 5

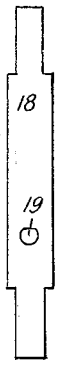


Fig. 4

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Filed Feb. 28, 1929 2 Sheets-Sheet 2

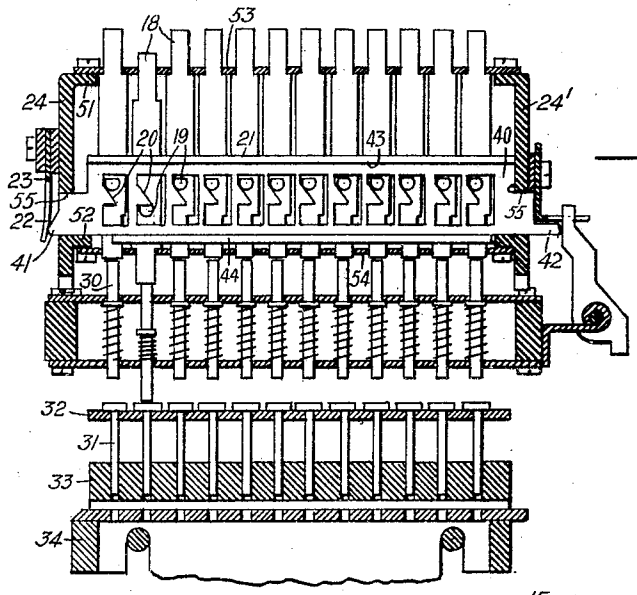


Fig. 2

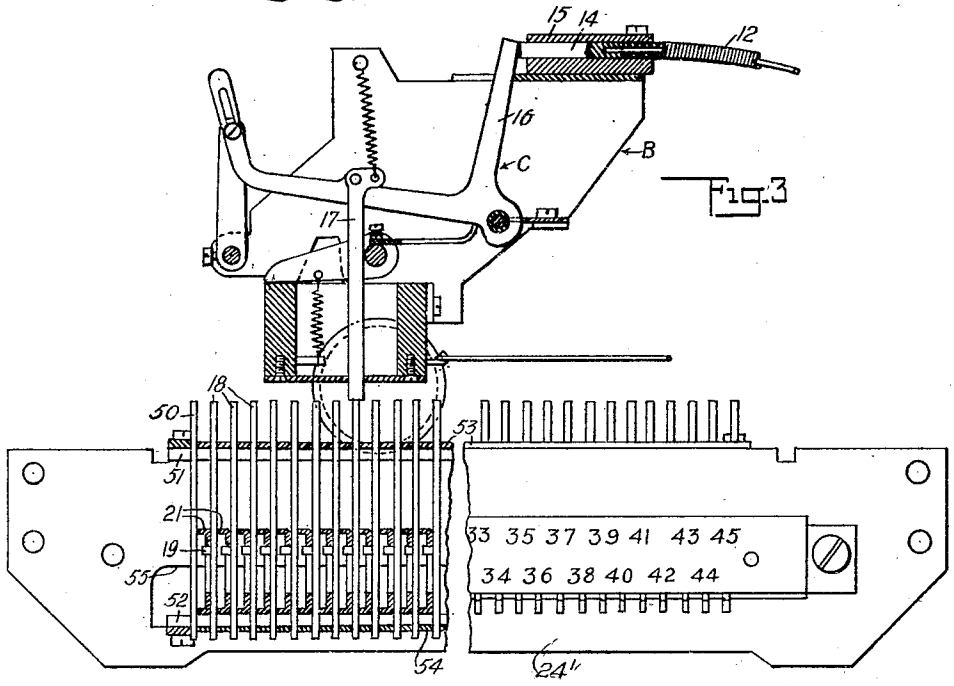


Fig. 3

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UNITED STATES PATENT OFFICE

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PERFORATING MACHINE

Application filed February 28, 1929. Serial No. 343,410.

This invention relates to improvements in card perforating machines of the type shown in Letters Patent of the United States No. 1,287,706, granted to W. W. Lasker, Dec. 17, 1918.

In certain classes of work it is necessary to punch two holes in the same column of the card as in the case where some of the letters of the alphabet are represented by combinations of holes in the same row or column, and in other classes of work it is necessary to punch a plurality of holes in the same column to designate different items of goods individually. In machines of the type shown in the patent, the complete set-up is made for the forty-five columns on the card and then the machine is operated to perforate the card according to this complete set-up by an operation referred to as gang-punching.

It is the object of this invention to provide a flexible holding detent which permits of setting up a plurality of set-bars in any or all columns and which is of sufficient strength to withstand the pressure exerted thereon by a plurality of punches as the perforating operation is effected.

With this and other incidental objects in view, one form of the invention has been shown in the accompanying drawings in which,

Fig. 1 represents a front elevation of the machine to which the invention has been applied.

Fig. 2 is a cross sectional view of the punch set-bar and punch mechanism, showing also the movable die plate on which the card is supported.

Fig. 3 is a front elevation of the setting-up mechanism and the punch set-bar mechanism, the latter being partly in section.

Fig. 4 shows one side of a set-bar.

Fig. 5 is an edge view of set-bar, and

Fig. 6 is a side view of the flexible detent for the set-bars.

The machine comprises broadly a frame A, carrying a movable carriage B, provided with punch set-bar operating mechanism C and an escapement D, said set-bar operating mechanism being connected by flexible connections to the keyboard E mounted in the housing F.

The keyboard comprises a plurality of numeral keys 10 and a space key 11, connected by flexible push cables 12 to pins 14 (Fig. 3), mounted slidably in recesses in the block 15 of the carriage B. By this arrangement pressure on the keys moves the pins 14 inwardly in any position of the carriage.

The inward movement of a pin 14 rocks a bell crank 16 which lowers a rod 17 pivoted to the bell crank. The rod depresses a set-bar 18 into the position occupied by the second set-bar from the left in Fig. 2. As the set-bar is lowered, its locking pin 19 engages a cam surface 20 on a flexible locking detent 21 and cams the detent to the left (Fig. 2) against a spring tooth 22 of a comb 23 secured to the rear member 24 of the set-bar frame. When the pin 19 passes from the cam surface, the spring tooth 22 pushes the detent 21 to the right into the position shown in Figure 2, in which position the element on which the cam surface 20 is formed engages over the pin 19 and holds the operated set-bar depressed.

It is clear from the construction shown in Figure 2, that by depressing several keys at one time, a plurality of these set-bars may be depressed and held depressed by the flexible locking detent 21, or that any set-up may be changed by depression of the correct set-bar upon which the incorrectly depressed set-bar may rise. While the drawing discloses an automatic erasing means and a carriage escapement mechanism, these mechanisms do not enter directly into the operation of the invention and are not described. A description of the paths herein shown but not described may be found in the patent referred to.

The set-bars 18 are mounted over upwardly spring pressed rods 30 which restore the set-bars when the flexible locking detents 21 are pushed to the left (Fig. 2) and which as shown in this figure act when lowered as stops for punches 31 supported at their upper ends in a fixed guide plate 32 and projecting at their lower ends into a movable plate 33 which together with a movable die

plate 34 constitutes a card registration passage into which the card is fed and in which it is supported in registration position by the usual means so that the index positions on the card will be in line with the punches. Upon operation of the main shaft 35 the die plate 34 and guide plate 33 will be raised and lowered by cams on the main shaft 35 as is well understood, and the card will be carried against the ends of the punches and will raise all the punches whose set-bars have not been depressed. The punches under depressed set-bars will be held against movement by the rods 30, which have been lowered by depressed set-bars, and will perforate the card.

As may now be understood, the flexible locking detents 21 receive the pressure from the punches as punching is effected. It has been found that the detents as heretofore constructed were not sufficiently strong to withstand the pressure exerted by a plurality of punches. To overcome this objection a flexible locking detent of the form and construction shown in Figs. 2 and 6 has been provided.

This detent 21 is preferably formed out of sheet steel and comprises a flat body portion 40, a spring engaging portion 41 at one end and a release operating engaging member 42 at its other end. These ends extend through slots in the rear wall 24 and the front wall 24′ of the set-bar housing which walls constitute a strong rigid bearing for the detents to resist pressure due to punching.

The upper and lower edges of the body portion of the detent are provided with flanges 43 and 44 to strengthen the construction. The body portion is stamped out to form the camming surfaces 20 and retaining hooks referred to. As is apparent, the construction of the detent is such as to make it capable of withstanding a tremendous pressure as the punching operation is performed.

The set-bars 18 are shouldered at their ends as usual and are provided with pins 19 pressed out of the metal, (Figs. 4 and 5), for purposes of strength.

As may be seen in Figure 3, the flanges on the detents 21 give the detents an effective thickness in the assembly of the distance between adjacent rows of set-bars and lie on the left side of the corresponding row of set-bars. The detents are therefore closely confined and braced against warping as they receive the pressure due to punching.

As may be seen in Figures 2 and 3, the rear and front walls 24 and 24′ of the set-bar housing are provided with flanges 51 and 52 to which the upper and lower set-bar guide plates 53 and 54 are secured. The detents 21 rest on and are guided on the upper surfaces of the lower flanges 52 and are held against upward movement by the edges 55 of the wall members which edges and flanges 52 define the openings in which the ends of the detents 21 operate.

The set-bars and detents may be assembled from right to left in Figure 3 by placing the right hand row of set-bars in position in the lower guide plate, then the cooperating detent, then the second row of set-bars and their cooperating detent, etc. and after the extreme left hand detent is in position several dummy set-bars 50 are placed in position to retain and brace this detent.

By means of the mechanism disclosed, a strong construction is provided which permits of punching several holes in each row and thereby adapting the general gang-punching mechanism to classes of work for which these machines were not heretofore available in an entirely satisfactory manner.

What I claim as new and desire to secure by Letters Patent, is:

1. In a machine of the class described, the combination with parallel rows of punch set-bars, of a locking detent for each row of set-bars lying between adjacent rows of set-bars and in abutting relation with the set-bars of its respective row of set-bars, upper and lower laterally extending flanges on said detent in abutting relation with the set-bars of an adjacent row of set-bars, and set-bar retaining hooks formed integrally with and lying in the plane of the body portion of the detent.

2. In a machine of the class described, the combination with parallel rows of punch set-bars, of a locking detent for each row of set-bars comprising a bar of thin sheet stock with laterally extending flanges lying between adjacent rows of set-bars, said detent bar and its flanges occupying the entire space between said rows of set-bars and adapted to prevent springing of the detent bar when subjected to the thrust of several punches.

3. In a machine of the class described, the combination with parallel rows of punch set-bars, of a locking detent for each row of set-bars, comprising a bar of sheet metal lying between adjacent rows of set-bars in abutting relation with the set-bars of its respective row and having a laterally extending flange in abutting relation with the set-bars of an adjacent row.

4. In a machine of the class described, the combination with parallel rows of punch set-bars, of a locking detent for each row of set-bars comprising a bar of thin sheet metal with laterally extending flanges along its upper and lower edges, lying between adjacent rows of set-bars, having its body portion in abutting relation with the set-bars with which it cooperates and its upper and lower laterally extending flanges in abutting relation with the set-bars of an adjacent row.

5. A locking detent for retaining set-bars depressed, punched and formed from sheet metal comprising upper and lower spaced

flange portions connected to and extending laterally from a body portion having cross members, detents upon the cross members, and end extensions formed integral with said body portion and extending in the plane thereof beyond said flange portions.

6. A locking detent for retaining set-bars depressed, formed from sheet metal and having a main body portion, comprising in the same plane upper and lower spaced portions connected by cross members having detents, and end extensions in the plane of and formed integral with said body portion, and lateral flanges formed on the upper and lower edges of said body portion, said flanges extending only over said cross members.

Signed at Brooklyn in the county of Kings and State of New York this 26 day of February A. D. 1929.

WILLIAM W. LASKER.