

UNITED STATES PATENT OFFICE

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PERFORATING DEVICE

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This invention relates to a perforating machine and more specifically to a mechanism for punching single and combinational holes in a record card.

6 An object of the invention is to provide a punching mechanism with a combination key board and in which the depression of one of a set of keys will effect the setting up and punching of an appropriate single perforation and in which the depression of another set of keys will effect the setting up and perforating of the proper combination of holes corresponding to the key depressed.

15 Another object of the invention is to provide a mechanism for punching combinational holes wherein by appropriate setting up of pins the code may be readily changed.

20 Still another object is to provide a single punch selector which is adapted for operation selectively by a plurality of keys.

25 Various other objects and advantages of my invention will be obvious from the following particular description of one form of mechanism embodying the invention or from an inspection of the accompanying drawings; and the invention also constitutes certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

30 In the accompanying drawings I have shown for the purpose of illustration one form of mechanism embodying the invention in which

35 Fig. 1 is a fragmentary front elevational view of the punching machine in section, taken approximately on line 1—1 of Fig. 2.

Fig. 2 is a part plan view of a portion of the punch mechanism.

40 Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

While in the description following I refer to the single perforation in a column as representing a numeral and a combinational perforation as representing a letter, it will be understood that the invention is not limited to this particular system but that a combinational perforation may be punched to represent a number and a single perforation to represent a letter or other character.

50 Referring to the drawings, the punching

mechanism includes a base or support 10 on which a record card is placed in readiness for a punching operation. The support or base has fixed therein at one end a series of die plates 11 arranged in a line transversely of the support. Cooperating with each die plate is one of a series of punches 12 adapted to perforate the record card placed on the base. The punches 12 are guided for vertical movement in a set of frame blocks 13 and 14 and are provided with coil springs 15 urging the punches to their upper or normal positions. Pivottally connected to the frame at 16 directly above the punches 12 are a plurality of punch actuating bars 17, each bar coacting with a corresponding punch to actuate the punch downwardly against the force of its spring to effect a perforating operation. Pivottally connected to the upper end of each punch actuating bar 17 is a hook or latch 18 normally in the position shown in Fig. 1 but adapted to move on its pivot to a position beneath a common operating bar 19 pivoted at 34 to the frame of the mechanism. Each hook or latch 18 abuts the vertically disposed end of a bar 20 having a plurality of beveled notches 21, one of which coacts with a corresponding numeral key 22. The numeral keys are moved in a vertical direction in a pair of guide plates 23 and 24 fixed to the frame of the machine. A spring 25 connected at one end to the numeral key and at its upper end to the plate 23 tends to move the key to its uppermost position. When one of the numeral keys 22 is depressed the inclined end of the stem of the key cams against the beveled side of one of the notches of the bar 20 and moves the bar towards the latch 18, the latter thus being swung about its pivot to a position beneath the common operating bar 19. The movement of the bar 20 towards the latch 18 closes a set of contacts (not shown) establishing a circuit to a magnet or motor which actuates the common operating bar 19 downwardly. The electrical means including the contacts, magnet or motor for actuating the bar 19 form no part of this invention and may be similar to that shown in Patent No. 1,134,018 issued March 30, 1915 to J. T. Schaaff. The

downward movement of the bar 19 carries with it the latch 18 thus pulling the punch actuating bar 17 corresponding to the key depressed downwardly to engage the head of its associated punch to actuate the punch through the die plate 11 to perforate the record card.

Reference will now be had to Figs. 1 and 3 wherein the manner in which combinational holes may be perforated is illustrated. Each bar 20 is provided at its right end as viewed in Fig. 1 with a series of longitudinally spaced slots 27 into which pins 28 may be removably inserted. A plurality of plates 30 pivoted to the frame of the machine at 29 extend transversely above the bars 20, each plate having fixed thereto an alphabet key 26. A coil spring 31 fixed at one end to the plate 30 and at its opposite end to a stud 32 holds the plate and alphabet key in their normal positions, the plate resting against the stop studs 33. Each plate 30 is designed to coact with the pins 28 in one of the lateral rows of slots 27 in the bars 20. Preparatory to punching combinational holes, the pins 28 are inserted in the slots on the bars 20 to represent the combination desired, it, of course, being understood that the pins when inserted are in the path of the plates 30. After the pins have been thus set up, depression of an alphabet key turns the plate 30 about its pivotal point causing the plate to abut the upwardly extending pins 28 thereby moving the bars into contact with their corresponding latches 18. The latches are further moved beneath the common operating bar 19 which then depresses the latches to cause the corresponding punches to perforate the record card as previously described.

With a construction of this nature it is obvious that any particular code may be punched by this machine by placing the pins 28 selectively in the notches 27 of the bars 20. When a pin 28 is in the notch of a bar the bar is actuated by the plate 30. When the pin is removed from the notch of a bar the latter is not actuated by the plate. After the bar 20 has been actuated and the key operating bar released, the bar is restored to initial position by a spring (not shown) connected thereto and to the frame in a manner well known in the punching art.

While I have shown and described and pointed out the fundamental novel features of the invention as applied to a single modification it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. I intend to be limited therefore only as indicated by the scope of the following claims:

1. A perforating device including a plurality of punches, slidable bars for effecting

actuation of said punches, keys for operating said bars, and means provided on said bars and adjustable thereon into cooperation with any one of the keys for adapting said bars for actuation singly or in different combinations upon the operation of any one of said keys.

2. A perforating device comprising a plurality of punches, a plurality of corresponding bars for effecting actuation of said punches, there being one bar to each punch, a plurality of members for operating said bars, and means adjustably cooperable interchangeably with any one of the members, said means being provided on said bars for selectively cooperating with said members to actuate any desired combination of said bars upon operation of any one of said members.

3. A perforating device comprising a plurality of punches, a plurality of bars for effecting actuation of said punches, a member on each of said bars, and keys cooperating with said members to actuate said bar, said members being adjustably, removably, insertibly, carried by the bars for cooperation with any one of the keys.

4. A perforating machine comprising punches, members for effecting operation of the punches, elements on said members, and selecting devices for the members adapted to engage a plurality of said elements to operate the corresponding members and punches, said elements being adjustably carried by the members for interchangeable cooperation with any desired one of the selecting devices.

5. A perforating machine comprising punches, elongated members for effecting actuation of the punches, elements adjustable longitudinally of said members, and control devices for engaging said elements to operate the corresponding members and punches, adjustment of the elements being adapted to place any one of the control devices in control of any of the elongated members.

In testimony whereof I hereto affix my signature.

BERNHARD KARL FRITZ EWALD.