May 4, 1937. C. EHRET 2,079,437

MANUALLY OPERATED PUNCH

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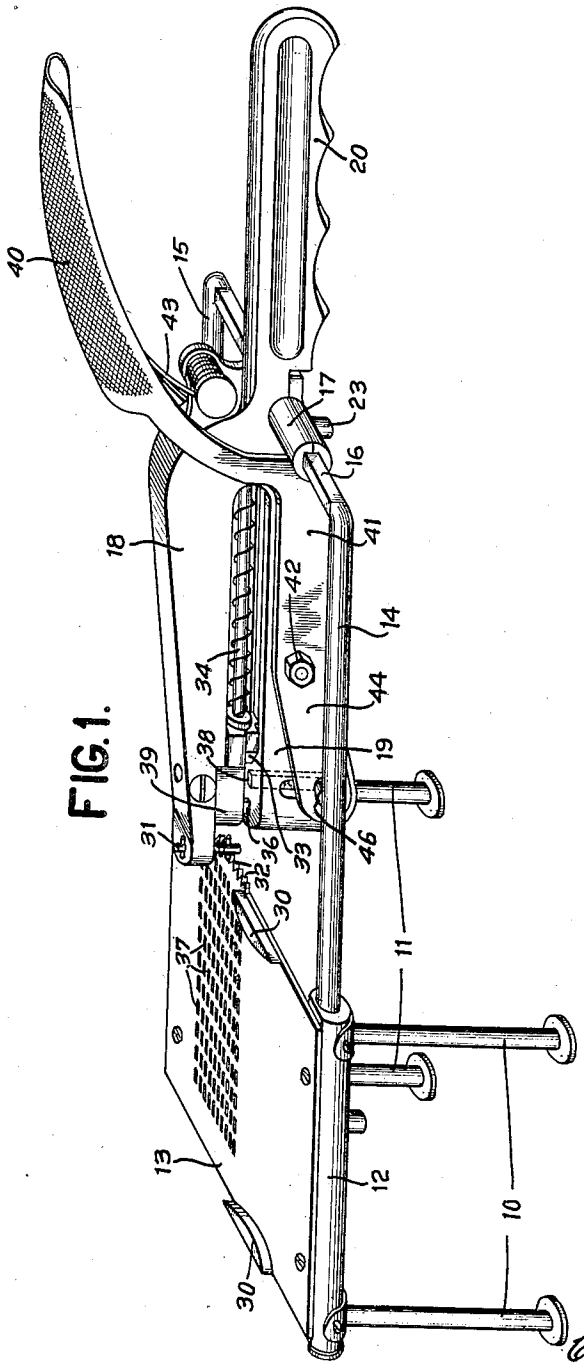

FIG. 1.

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FIG. 2.

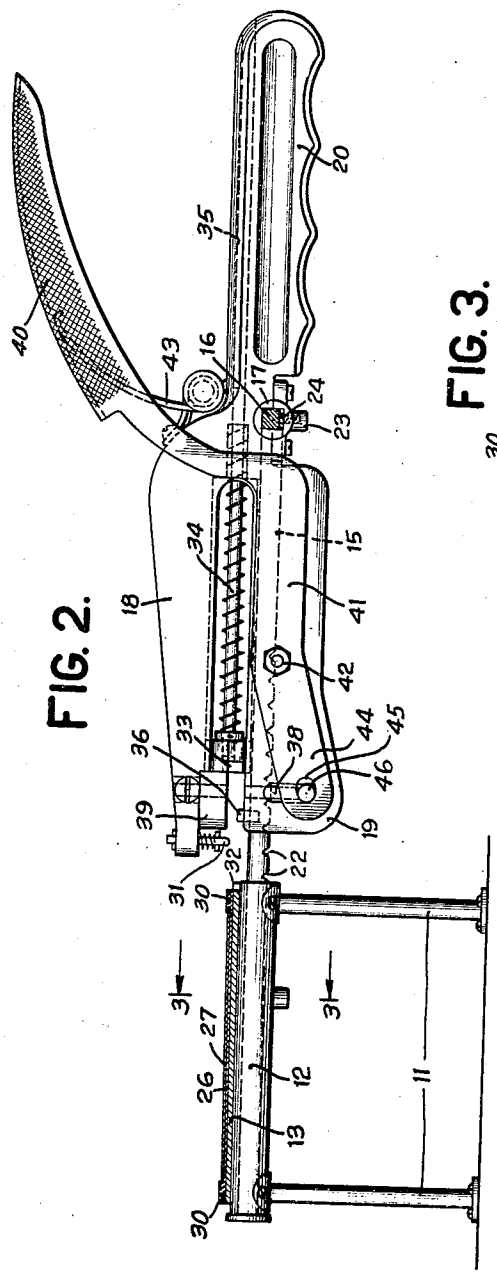

FIG. 3.

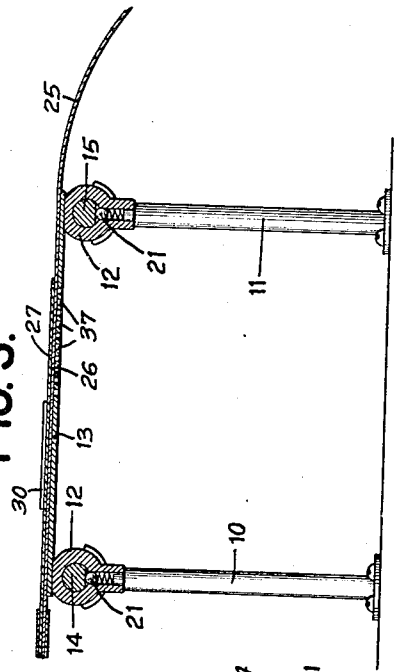

FIG. 4.

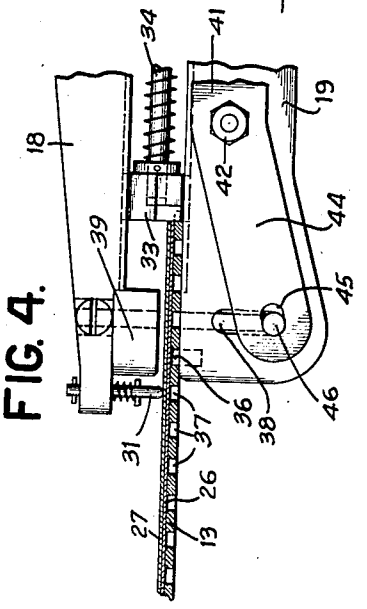

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FIG. 5.

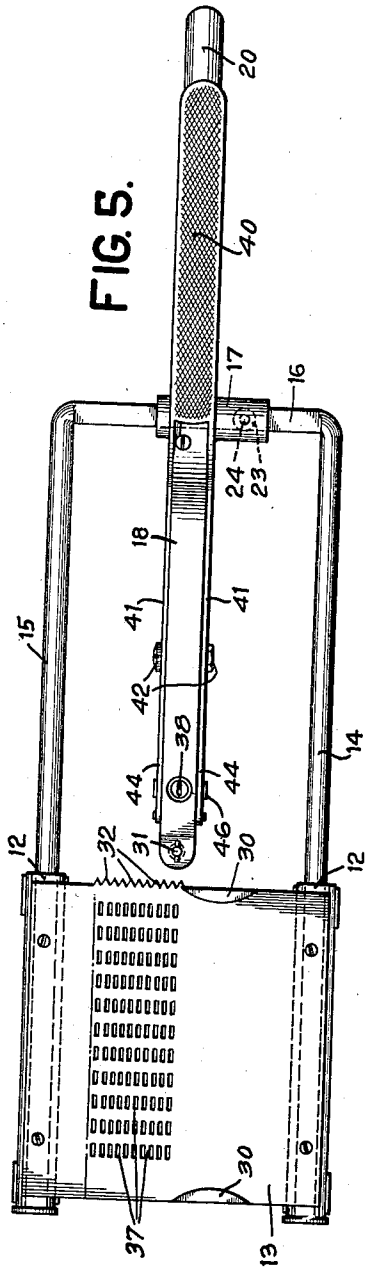
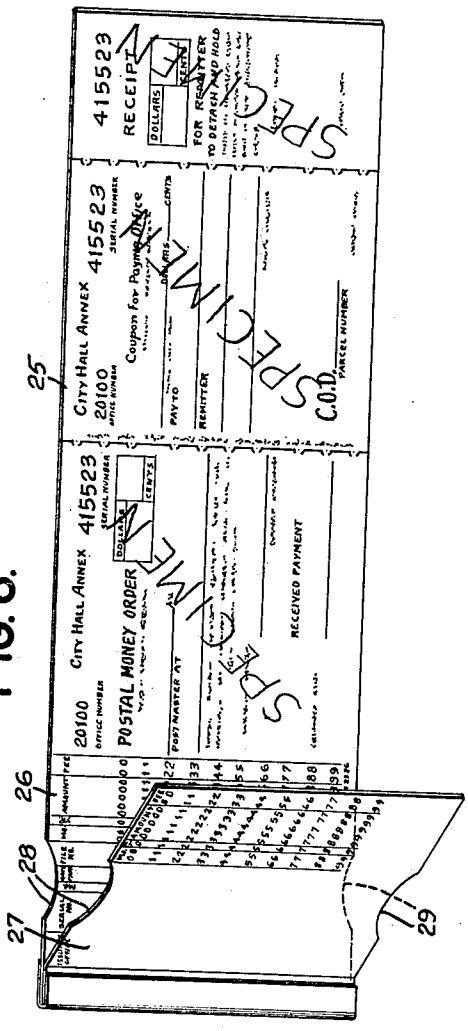


FIG. 6.



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UNITED STATES PATENT OFFICE

2,079,437

MANUALLY OPERATED PUNCH

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8 Claims. (Cl. 164—111)

This invention relates to card perforating machines adapted for use in the perforated-card tabulating system. In this system the principal machines are; the tabulating machine which senses the data contained on the card in the form of perforations and lists such data or accumulates the same or both and subsequently produces a total of the data accumulated; a sorting machine into which indiscriminately mixed cards are placed so that the machine sorts the cards into the desired groups; and a perforating machine by which the data is designated on the cards in the form of perforations. The cards are divided into fields or columns, each column containing several index points one or more of which points will be perforated to represent the desired data or other indication. The present invention relates to a machine for producing these perforations.

In the system used at present perforating machines for punching the cards are expensive to construct and maintain in service thus diminishing the fields of commercial use from which sales of such machines may be derived.

The main object of the present invention is to provide a perforating machine which is inexpensive to construct and yet answer all the prerequisites of a perforating machine in that it is capable of punching holes at exact predetermined positions of the card.

A still further object of the invention is to devise a perforating machine which is capable of perforating a composite form consisting of two tabulating card sections which are punched simultaneously.

Considering the details of the machine it is an object of the invention to construct a perforating machine consisting of a hand operated punch the punch pin of which may have a longitudinal and transverse movement and to provide means to insure positive and exact alignment of the punching pin in both positions of adjustment.

A still further object is to devise an improved arrangement of index point positions of overlapping tabulating card sections. The result of this improved arrangement is that one of said sections may be correlated with an indicator of the punch to visibly indicate the index point positions to be punched.

When the tabulating card sections have been perforated they are run through the sorting and tabulating machines of the system which automatically produce the desired report sheets in printed form.

Referring to the drawings:

Fig. 1 is a perspective view of the improved punching apparatus comprising the manually operated punch, the guiding means therefor and the support for the object to be punched.

Fig. 2 is a longitudinal sectional view.

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged view of the front end of the manually operated punch and shows its correlation with the object to be punched.

Fig. 5 is a plan view of the improved punching apparatus, and

Fig. 6 is a view of a composite form with attached stubs which are to be punched with similarly positioned holes.

Resting on a suitable base is a material support frame comprising in part two pairs of legs 10 and 11. Each pair carries a related guide member 12 attached to the related pair of legs by any suitable means. Attached to the guide members 12 and resting thereon is a stripper plate 13, said stripper plate spacing the pairs of legs 10 and 11 widely apart thus forming a rigid material support frame.

Each of the guide members 12 is apertured to receive related guide rods 14 and 15 which are interconnected by a pivot rod 16, substantially square in cross section.

The pivot rod 16 is slightly smaller in cross section than a square aperture in a collar 17 which passes through substantially the midportion of the manual punch. The latter comprises an upper jaw 18, an integral lower jaw 19 and an integral tail 20 which is scalloped so as to receive the fingers of the hand of the operator. Obviously by the loose connection between the collar 17 and the rod 16 the front end of the punch may possess a limited rocking movement about its pivotal point and also by the guide rods 14 and 15 the punch may be moved towards and away from the stripper plate 13.

If so desired, the punch may be aligned at predetermined longitudinal positions with respect to the die plate 13 by spring-pressed balls 21 (Fig. 3) engaging wedge-shaped notches 22 (Fig. 2) formed at the lower periphery of the guide rods 14 and 15.

To align the punch in its transverse movements, that is, along the rod 16 the collar 17 has attached thereto a cap 23 in which there is fitted a spring pressed aligning ball 24 engaging notches formed at the bottom edge of the pivot rod 16. Hence the manual punch may be posi-

tioned longitudinally and transversely and impositively held in the desired position of adjustment.

The present punching apparatus is particularly useful in punching tabulating card portions of money orders. In Fig. 6 reference numeral 25 designates a money order the portions of which are written out according to the order in the usual manner. The money order has a tabulating card section 26 which remains attached to one section of the money order, and overlapping the section 26 is a stub 27. The section 26 has ten columns of data to be designated by punching of holes and a similar number of columns are provided for the stub 27. The section 26 has other columns adapted to be punched but they are not involved in the present invention. When the stub 27 overlies the section 26 the composite form is placed on the material receiving support as shown in Fig. 3 with scalloped notches 28 and 29 thereof receving similar shaped projections 30 attached to the stripper plate 13. This will position the forms to be punched in proper relationship with respect to the stripper plate 13.

From Fig. 6 it will be evident that the horizontal column of index points of the same digit of the stub 27 do not overlie the corresponding horizontal column of index points of the section 26 but are displaced by two horizontal columns. The reason for this will now be made evident.

The upper jaw 18 carries a spring urged indicator 31 which is adapted to pass over any vertical column of index points 0–9 inclusive. If a "7" is to be punched the position of the punch for accomplishing this is shown in Fig. 4 in which the indicator 31 rests upon the "7" index point position of the stub 27 but the actual position for punching will be preferably two spaces to the right which is exactly at the "7" index point position of the section 26, which is proper for both the section 26 and the stub 27 for controlling tabulating and sorting machines of the system. This displacement of the index point positions on the stub 27 permits the index points thereon to be utilized for indicating which index point positions will be punched and therefore, indicate the proper longitudinal position of the punch.

Obviously the manual punch is first positioned for punching in the first vertical column of index points and then adjusted longitudinally to the desired index point position. The stripper plate 13 is provided with a series of wedge-shaped notches 32 which are adapted to be engaged by a member 33 having a wedge-shaped end and carried by spring pressed rod 34 fitting in a hole 35 in the tail 20 of the manual punch. This will firmly hold the punch in proper column position while it is being adjusted longitudinally. When the desired index point position is located the punch is rocked slightly to cause a square pin 36 carried by the lower jaw to be rocked into engagement with a certain hole 37 of the stripper plate 13. Thereupon a punch pin 38 may be projected by means now to be described upwardly to pass through a hole 37 of the stripper plate, through the material to be punched and into a hole of a punch die 39 carried by the upper jaw 18.

A punch operating lever 40 has bifurcations 41 pivoted at 42 to the lower jaw 19 and are operated against the action of a spring 43. Extensions 44 of the bifurcations 41 are each provided with a slot 45 receiving a lateral integral extension 46 of the punch pin 38. The spring 43, of course, returns the punch pin 38 to normal position free of the stripper plate 13. By slightly rocking the punch to disengage the aligner pin 36 from the stripper plate 13 the manual punch is now free for successive lateral and longitudinal adjustment. The manual punch can be shifted laterally without moving it entirely free of the stripper plate, the impositive engagement of the wedge-ended member 33 and notches 32 permitting this operation to facilitate punching operations.

Summarizing, the improved punch affords a means for positively aligning the punch in lateral and longitudinal positions of adjustment to punch a tabulating card at exact punching positions, clearly differentiating from ticket punches which can punch in any position of a predetermined area.

While there has been 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. It is the intention therefore to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In a punching machine of the class described, in combination, a material holding support having columns of holes, a pair of spaced members, a punch element carried by one of said members, and a die carried by the other member, guide means comprising a bar on which is slidably carried said members and also comprising integral parallel rods telescoping in said support to enable the spaced members to be moved bodily into and out of cooperation with said support and by sliding said members on the bar to embrace said support at different lateral positions with said punch element directly engaging with a predetermined hole of soid support, an integral extension of one of said members, and a lever for operating said punch element having a portion extending at an angle to said extension, the lever and extension being manually drawn together to operate said punch element and cause it to pass through a hole of said support, through the material, and into said die.

2. In a punching machine of the class described, in combination, a material holding support provided with columns of perforations and provided with a series of aligning notches, a manually operated punch comprising a pair of spaced members and a punching pin, said members embracing opposite sides of said support and one of said members carrying said punching pin, and resiliently operated aligning means carried by said punch and engaging said notches to align said punching pin with the columns of perforations of said material holding support.

3. In a punching machine of the class described, in combination, a material holding support adapted to carry a plurality of overlapping records each provided with rows of index point positions and the corresponding rows of said records being offset, and a punching device comprising a punching means and a punch position indicator offset with respect to the punching means, said indicator adapted to be positioned to cooperate with an index point position of one record to cause the punching means to punch said plurality of records at another position.

4. In a punching machine of the class described, in combination, a material holding sup-

port carrying a pair of projecting members engageable with similarly shaped notches of a record adapted to be punched, a movable punching device comprising spaced members embracing said support, and a punching means carried by said punching device.

5. In a punching machine, in combination, a pair of spaced members, a punch pin carried by one of said members and a die carried by the other member, a manually operated lever pivoted to one of said members and means operated thereby to effect the actuation of said punch pin, a material holding support on which material to be punched rests and provided with holes one of which is directly engaged by said punch pin when the punch pin is actuated, and guide means for said members carried by said support comprising parallel bars telescoping in said support to permit various positions of longitudinal adjustment of said members, and a bar integral with the parallel bars on which is slidably mounted said members for lateral adjustment to cause said punch pin to be directly engaged with a predetermined hole of the material holding support.

6. In a machine of the class described, in combination, a material holding support having rows of perforations, a pair of spaced members adapted to embrace said support, a punch carried by one of said members, a manually operated lever pivoted to one of said members and operating said punch to cause it to be projected through a perforation of said support, and an aligning pin carried by one of said members and engaging a perforation in the support.

7. The structure claimed in claim 6 and including in combination therewith, an indicator carried by one of said members and adapted to cooperate with index points of the material superimposed on said support.

8. In a punching machine of the class described, in combination, a material holding support supporting a card provided with index point positions, an adjustable punch device adapted to engage and punch said card at predetermined positions, manually operable punching means carried by said punch device, and an indicator carried by said punch offset from said punching means and cooperating with printed index points on the card whereby when the punching means is operated it will perforate the card at said predetermined positions of the card.

CLEMENT EHRET.