

Aug. 4, 1953

O. V. DUTRO ET AL
PUNCH PRESS FOR NOTCHING

2,647,579

Filed Aug. 22, 1950

6 Sheets-Sheet 1

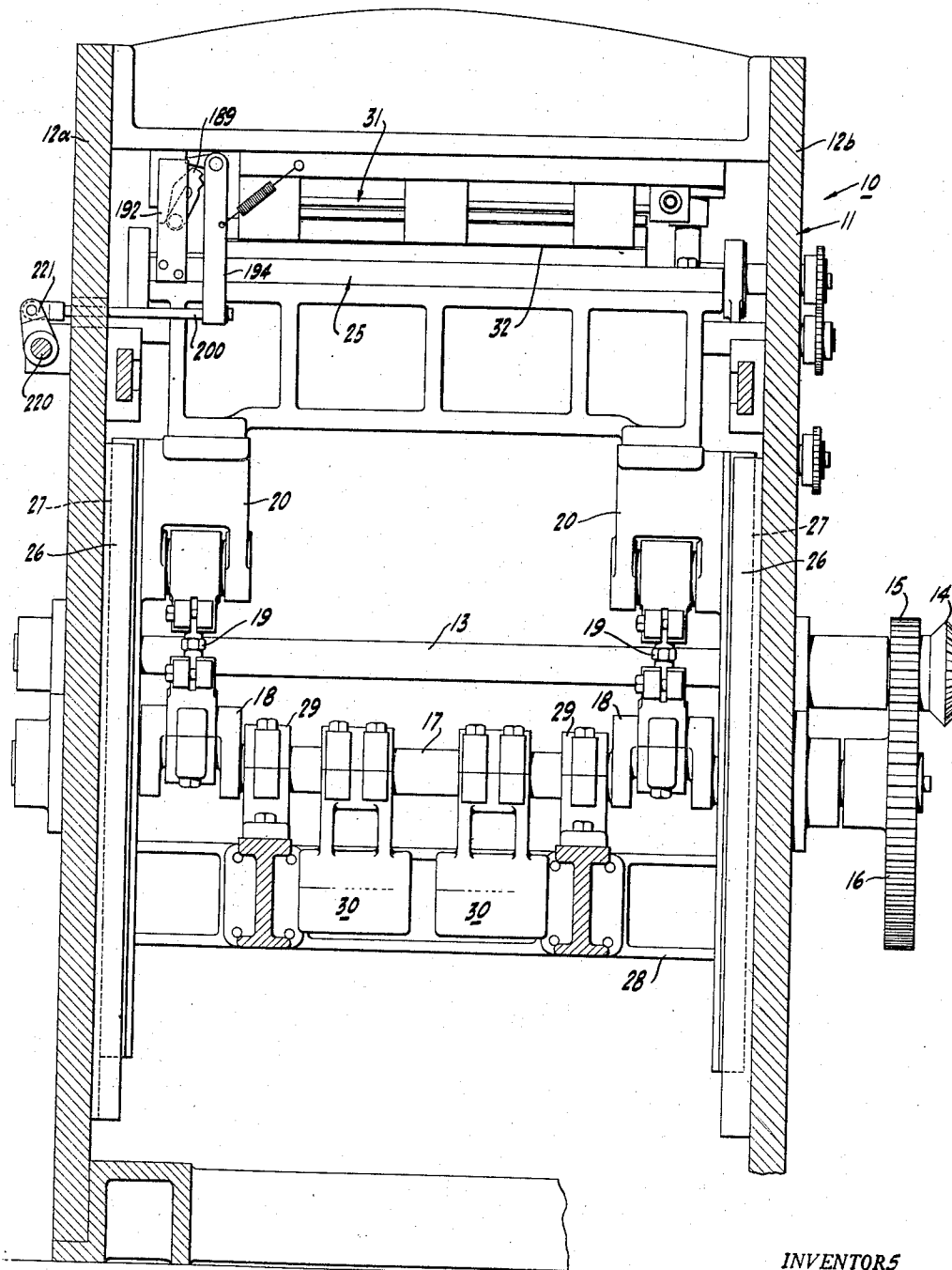


FIG. 1

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6 Sheets-Sheet 2

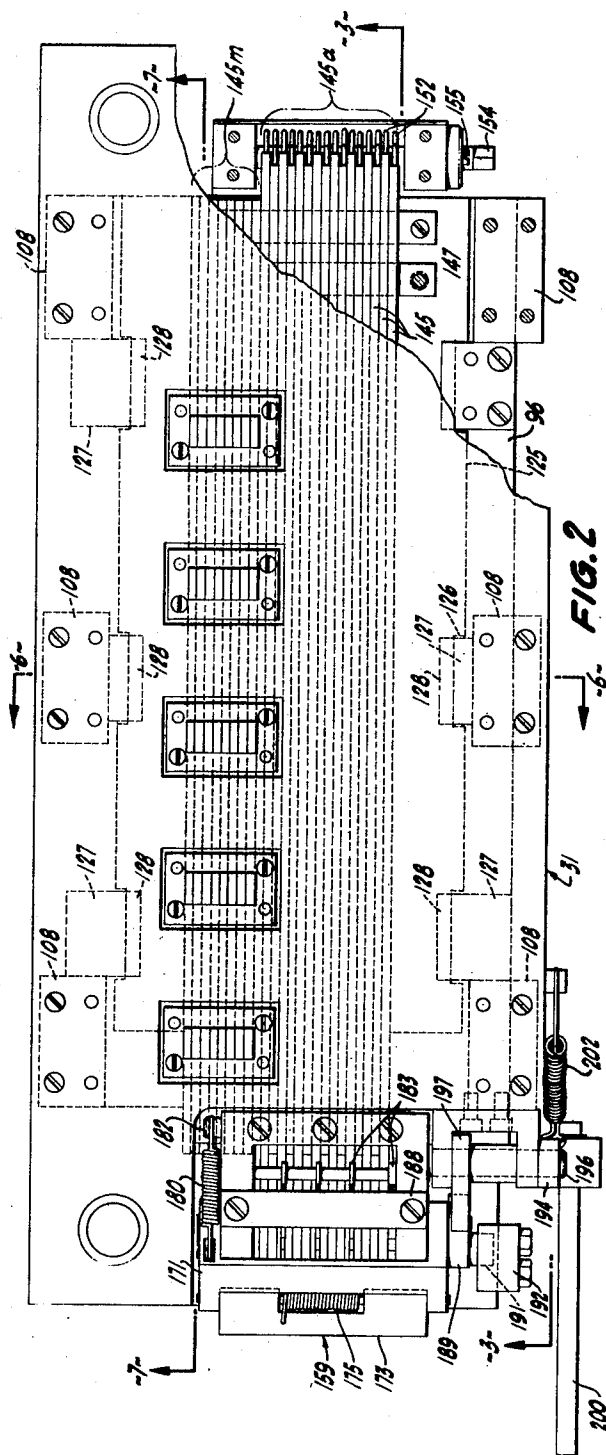


FIG. 2

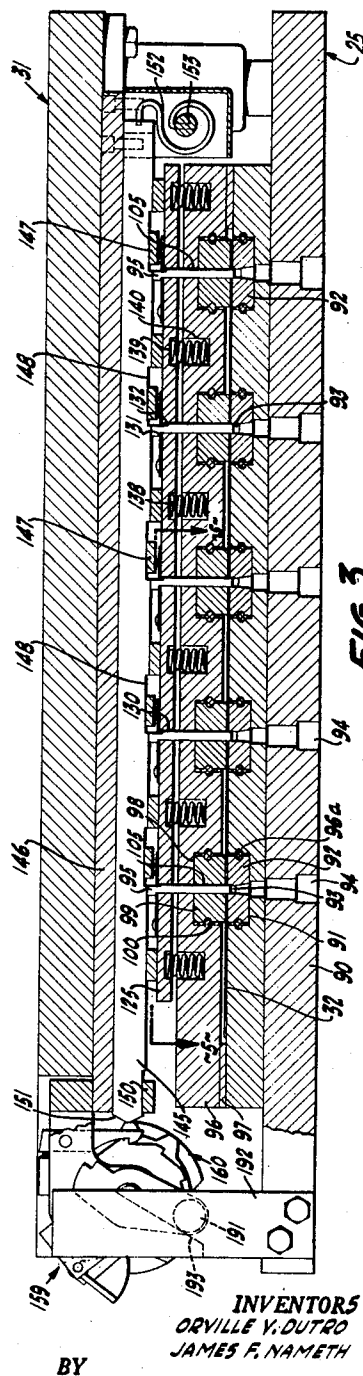


FIG. 3

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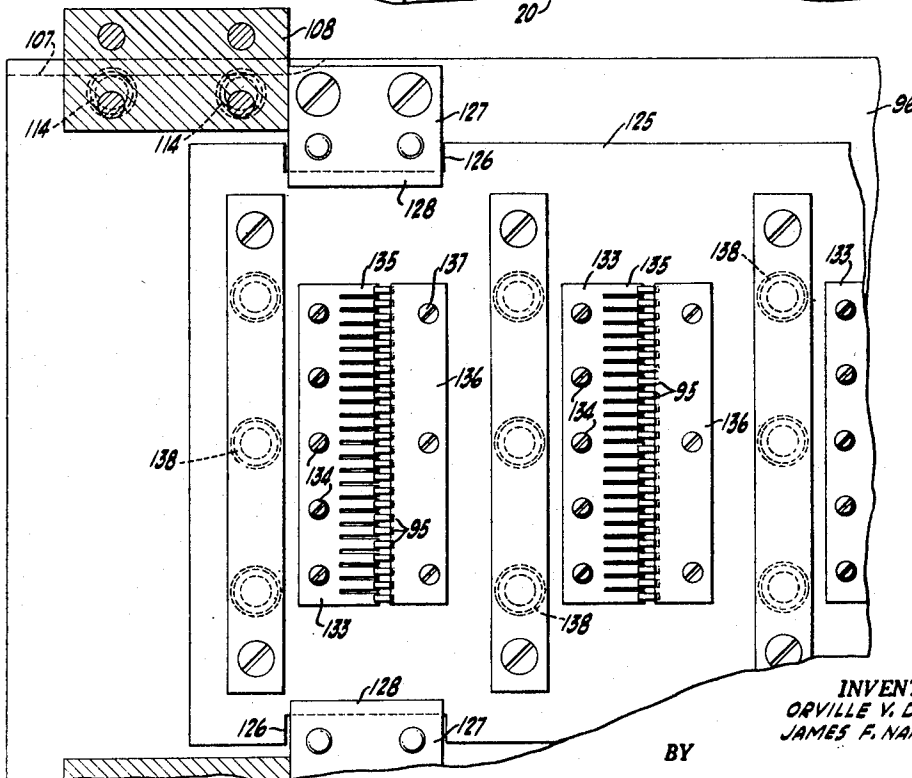
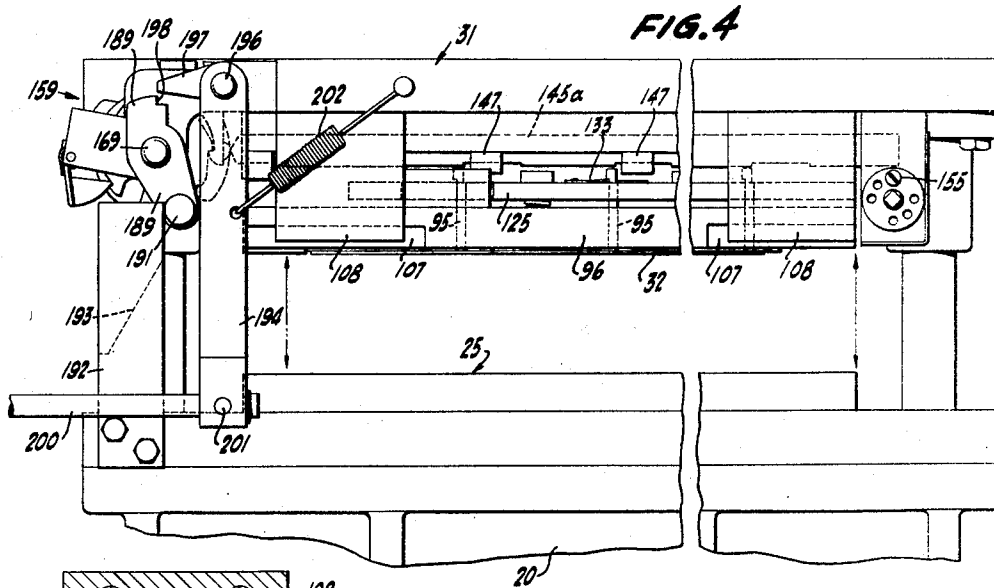
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6 Sheets-Sheet 3



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PUNCH PRESS FOR NOTCHING

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6 Sheets-Sheet 4

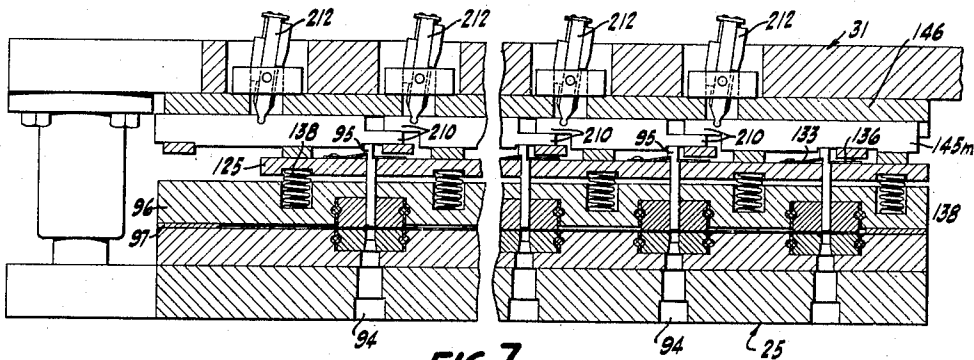


FIG. 7

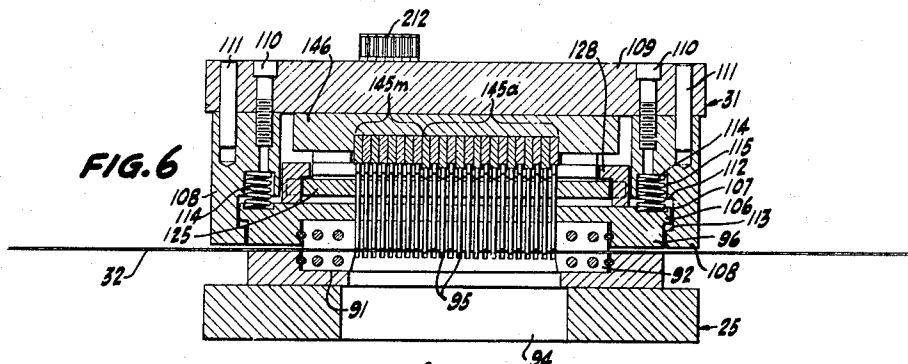


FIG. 6

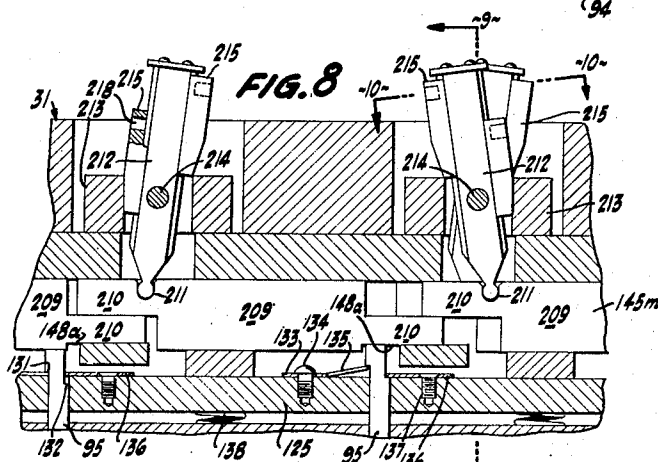


FIG. 8

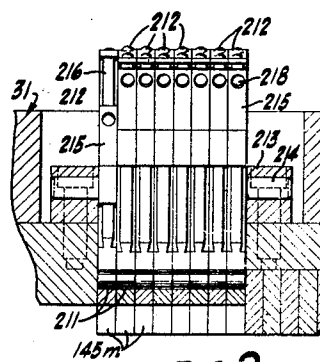


FIG. 9

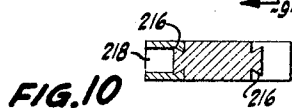


FIG. 10

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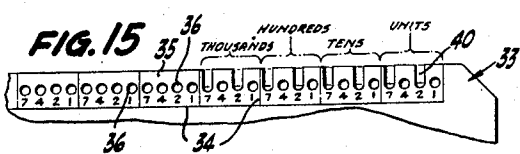
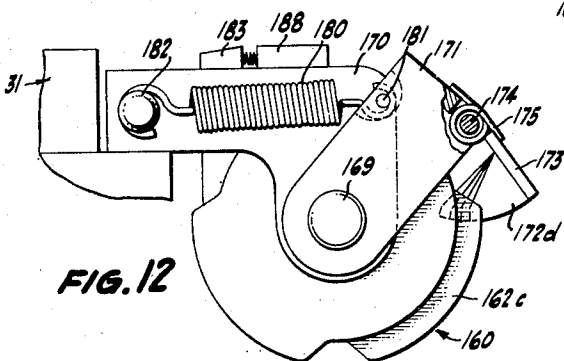
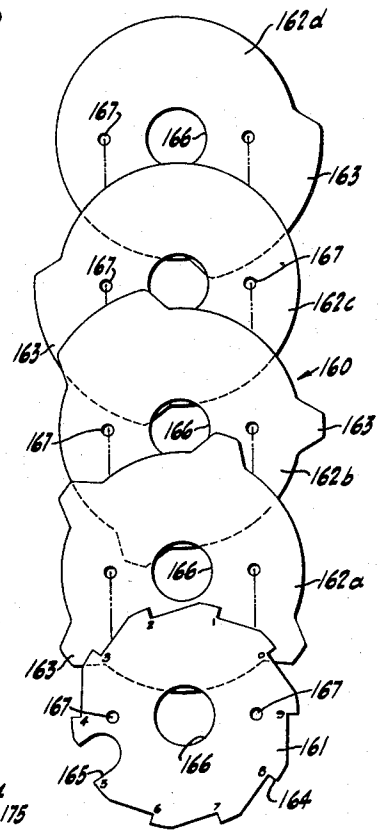
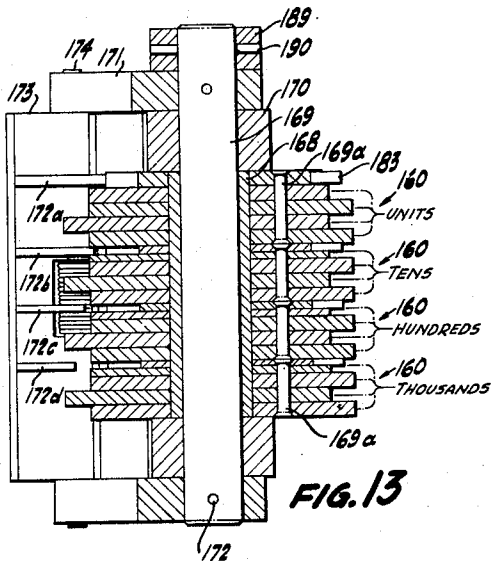
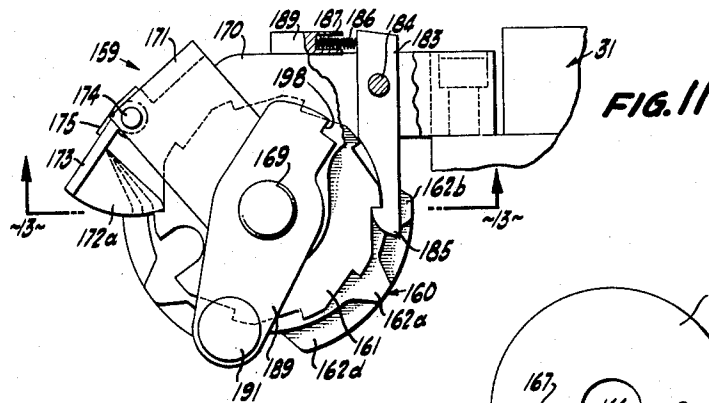
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Filed Aug. 22, 1950

6 Sheets-Sheet 5



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PUNCH PRESS FOR NOTCHING

2,647,579

Filed Aug. 22, 1950

6 Sheets-Sheet 6

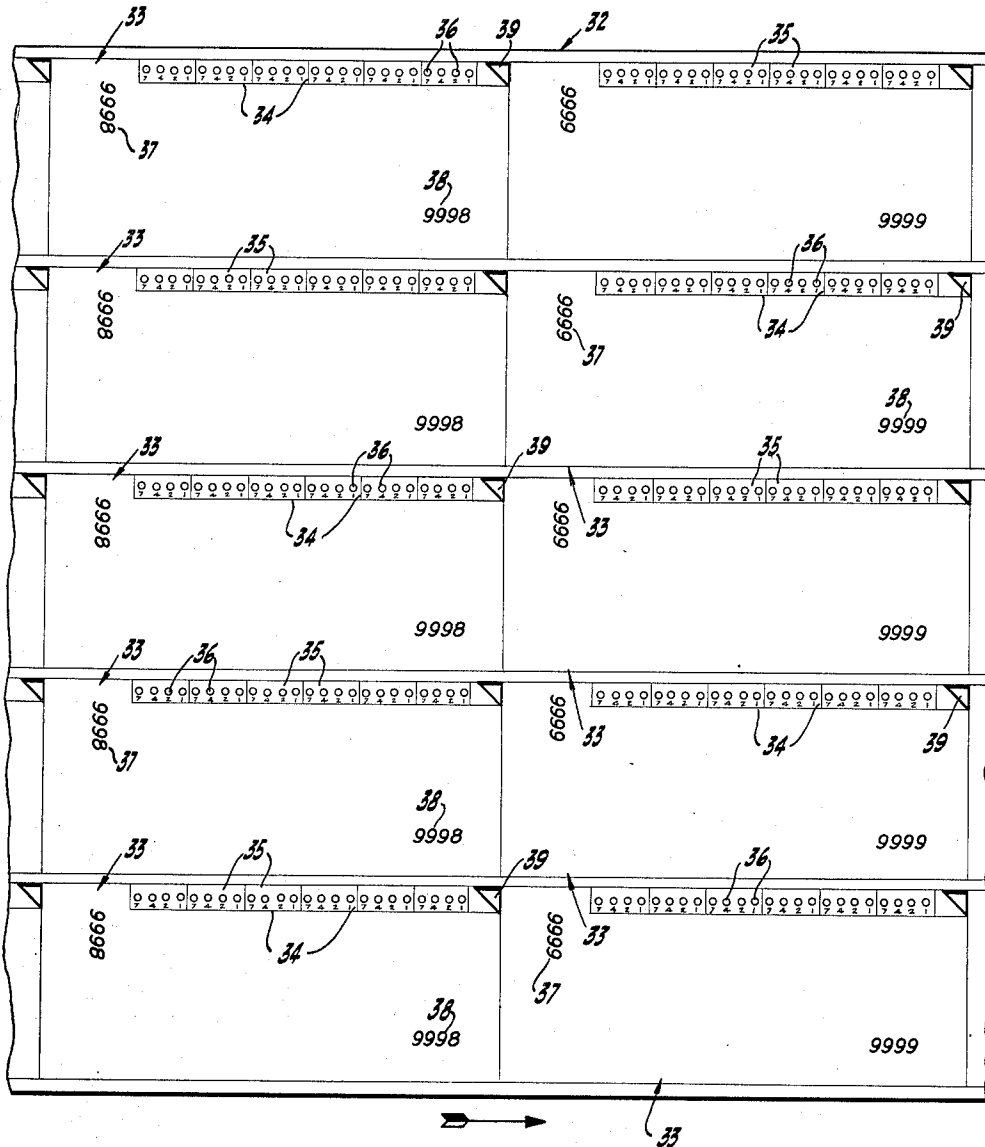


FIG. 16

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UNITED STATES PATENT OFFICE

2,647,579

PUNCH PRESS FOR NOTCHING

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Application August 22, 1950, Serial No. 180,833

10 Claims. (Cl. 164—112)

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This invention relates to a punch press for notching or slotting marginally perforated record cards and the like. More particularly it relates to a press adapted to receive a continuous, printed web having record cards such as the well-known "Keysort" cards inprinted thereon and to notch or slot each card to code it with a serial number or other desired information.

In record and statistical cards such as the well-known "Keysort" cards, each card is provided with perforations along one or more of its edges. These perforations are divided into fields corresponding to units, tens, hundreds, etc., and they may be arranged in a single row or in a double row. By appropriately notching and/or slotting the perforations the cards are coded and may thereafter be classified and sorted on accounting machines in accordance with the information coded therein by the notching and slotting.

It is advantageous in many instances to provide a batch or lot of cards, each of which has imprinted thereon a serial number and is also notched and/or slotted to correspond to the printed number. Thus, in filling an order for, say 50,000 cards, it may be desirable to number these cards serially from 0 to 49,999 and to accomplish this numbering by both printing and notching.

In the copending application of Orville V. Dutro, Lyle V. Dutro and James F. Nameth, assigned to an assignee, which is the same as in the instant case and entitled Press, Serial No. 180,832, filed August 22, 1950, there is described a machine capable of accomplishing a plurality of operations on a continuously moving although halted for the punching operation, web having cards of the character referred to printed thereon. Thus, the machine of said copending application receives the web from a printing press, imprints each card with an individual, identifying serial number (both in a transverse direction and in a longitudinal direction), punches marginal perforations in the cards, notches and/or slots the cards to code each card with its printed serial number, and slits and trims and cross-cuts the web to produce individual cards of precise dimensions each having marginal perforations and each printed and notched and/or slotted with an individual, identifying serial number.

The present invention is directed to that portion of the machine of said copending application which accomplishes the serial notching and/or slotting, and it has for one of its objects

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the provision of a punching assembly capable of performing the aforesaid notching and/or slotting function on a halted web in timed relationship to other units of the complete machine.

It is a further object of the present invention to provide a punch press capable of operation in the manner and for the purpose above described and also having general utility for selective punching operations, the said punch press being capable of automatically notching and/or slotting a halted web to code useful information therein.

It is a still further object of the present invention to provide a punch press of the general character described which is capable of notching and/or slotting a continuous web as it is halted in the press to notch and/or slot information, in a code, therein so as to produce, as the end product, cards or the like which, when severed from the web, constitute a lot or batch each having some unique information coded therein, such as an individual, identifying serial number.

It is yet another object of the invention to provide a punch press of the general character described having an automatically operable portion capable of notching and/or slotting cards individually and uniquely through a predetermined range, and which also has another portion which can be set or controlled manually to extend greatly the range of automatic coding.

These and other objects of the invention will be apparent from the ensuing description and the appended claims.

One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings in which:

Figure 1 is a view showing the side plates of the punch press in vertical section and the operating elements in end elevation and looking toward the oncoming web as it leaves the punch press.

Figure 2 is a top plan view, partly broken away, of the punch press, the view being taken transversely to the longitudinal center line of the machine.

Figure 3 is a section taken along the line 3—3 of Figure 2.

Figure 4 is a partial view in end elevation of the punch press showing several notching punches in operative position.

Figure 5 is a fragmentary view taken along the line 5—5 of Figure 3, being a top plan view of the stripper plate.

Figure 6 is a section taken along the line 6—6

of Figure 2, showing a single row of notching punches.

Figure 7 is a section taken along the line 7—7 of Figure 2, showing several of the manually operated notching punches and the hand set means employed to operate them.

Figure 8 is a fragmentary view similar to that of Figure 7 but on a larger scale, showing certain details of the hand set means.

Figure 9 is a section taken along the line 9—9 of Figure 8, showing a row of hand set levers in end elevation.

Figure 10 is a section taken along the line 10—10 of Figure 8.

Figure 11 is an end view of the automatic slide positioning mechanism employed to operate the automatic notching punches.

Figure 12 is a view similar to that of Figure 11 but taken from the opposite end of the slide positioning mechanism.

Figure 13 is a section taken along the line 13—13 of Figure 11.

Figure 14 is an exploded view of the cams and ratchets of the automatic slide positioning mechanism.

Figure 15 is a fragmentary view of a card notched by means of the notching assembly.

Figure 16 is a fragmentary view of the web as supplied to the notching assembly.

Referring now to the drawings and more particularly to Figure 1, the machine as a whole is designated as 10 and it comprises a frame 11 including side plates 12a and 12b. A drive shaft 13 is provided, being journaled in the side plates 12a and 12b and having a bevel gear 14 fixed to one end to be driven by a mating bevel gear and drive shaft (not shown). For example, the punch press drive shaft may be driven by or from a printing press (not shown) for printing the web which is fed to the punch press 13. A pinion 15 fixed to the drive shaft 13 drives a gear 16 fixed to one end of a crankshaft 17 journaled in the side plates 12a and 12b. The crankshaft 17 is connected by crank means 18, adjustable rods 19 and rams 20 to a female die assembly 25, which is guided for vertical reciprocal movement by guide members 26 fixed to the frame of the machine and mating guide members 27 fixed to the rams 20. I-beams 28 fixed to the frame of the machine and bearings 29 provide additional support for the crankshaft 17, which is subject to rapid impacts of great force. Counterweights 30 are also provided, as illustrated.

The reciprocable female die assembly 25 cooperates with a stationary male die assembly 31 to punch and thereby notch a web 32 which is seen leaving the punch press in Figure 1. This web as supplied to the punch press of the present invention is shown in Figure 16. As there shown it is printed with any desired number of rows of cards 33 each having longitudinal and transverse lines 34 along one or more edges to provide fields 35. Each field 35 is printed with code numbers "1," "2," "4" and "7" and is punched to provide a perforation 36 in registry with each code number. An individual, identifying serial number is printed on each card, transversely at 37 and longitudinally at 38. A triangular die cut is formed at 39 to form a beveled corner on the finished card. Of course, other useful information, guide lines, etc. may be printed on the cards, and the marginal perforations 36 may be arranged along more than one edge and may be arranged in inner and outer rows instead of a single row.

As is well known, the extreme right-hand field 35 corresponds to "units," the next field proceeding to the left to "tens," the next to "hundreds," etc. As is also known, and as illustrated in Figure 15, the numerals "1," "2," "4" and "7" are indicated by forming notches 40 at the correspondingly numbered perforations 36, "zero" is indicated by no notch and other numbers are indicated by appropriate combinations of the basic numbers; e. g., "7" and "2" notched in the units field indicates "9" and, in the tens field, indicates "90."

It is intended that the punch press 13 notch the cards 33 on the web 32, to code each card with an individual, identifying serial number corresponding to the printed serial numbers 37, 38.

The female die assembly 25 and the male die assembly 31 are shown in cross section and transversely to the longitudinal center line of the machine in Figure 3 and the male die assembly is shown in top plan view 2. Referring now to these figures, the female die assembly 25 comprises a die block or base 90 formed with a plurality of recesses 91 within which die inserts 92 are disposed. Each die insert 92 is formed with an accurately machined die opening 93 which widens out at its lower end, as illustrated, and opens into a stepped, progressively widening opening 94 formed in the die block 90, for the purpose of allowing cuttings punched from the web to drop freely from the die assembly. Each die opening 93 is precisely and accurately registered with a punch 95 by means of a packing 96a. As illustrated in Figure 3 there are five rows of die openings 93 and a corresponding number of rows of punches 95 arranged transversely of the machine, thus providing means for notching a web having five rows of cards. Also, there are as many die openings 93 and punches 95 in each row, as there are perforations 36 in a card 33; i. e., there are a punch and die opening for each perforation. Obviously, of course, the number of die openings 93 and punches 95 may be greater or less according to the nature of the web and of the cards printed thereon.

The male die assembly 31 comprises a male die block or punch carrier 96 which is spaced a slight distance above the female die block 90 when the latter is in its up or closed position, by means of spacers 97 fixed to the female die block 90. Also the male die block 96 is formed with recesses 98 corresponding in number and position to the recesses 91 in the female die block, and in each of the recesses 98 there is seated an insert 99 which is accurately positioned by means of a packing 100. Each insert 99 is formed with a passage 105 to slidably receive a punch 95.

Referring now more particularly to Figure 6, the male die block or punch carrier 96 is formed with shoulders 106 which are received within a recess 107 formed in a guide block 108 which is fixed to a top plate 109 by means of screws 110 and is accurately located by means of dowel pins 111. The top plate 109 is fixed to the frame of the machine. The recess 107 provides shoulders 112 and 113 which serve to limit the travel of the punch carrier 96, and the latter is urged downwardly by means of expansion springs 114 which are seated in recesses 115 formed in the guide block 108 and which bear at their lower ends against the punch carrier 96. Disposed above the punch carrier 96 is a stripper plate 125 which is notched at its edges at 126 to receive guide members 127 (see Figure 5) which are fixed to the punch carrier 96 and are provided at their

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upper ends with inwardly extending portions 129 to limit upward movement of the stripper plate. The stripper plate 125 is formed with a plurality of passages 130, one for each of the punches 95, and, as is shown in Figure 3, each of the punches is formed with shoulders 131 and 132. A leaf spring 133 (see also Fig. 5) is fixed to the stripper plate by means of screws 134 and it is slotted to provide an individual finger or spring member 135 for each of the punches 95, each such finger bearing against the shoulder 131 of its punch and urging it upwardly. Upward movement of the punch is limited, however, by abutment of the other shoulder 132 with a stop plate 136 fixed to the stripper plate by means of screws 137.

As also shown in Figure 3, the stripper plate 125 is seated on expansion springs 138 which are seated in recesses 139 and 140 formed in the stripper plate 135 and in the punch carrier 95, respectively.

For the purpose of actuating the punches 95, a plurality of slide bars 145 are provided. As shown in Figure 2, there are sixteen slide bars bracketed and indicated as "a," and eight slide bars bracketed and indicated as "m." The slide bars 145a are automatically operated and the slide bars 145m are manually operated, in the manner and for the purpose explained hereinafter.

The slide bars 145a are slidably supported for axial movement transversely of the machine by means of a slide support block 146 and slide support bars or straps 147 which are fixed at their ends to the slide support block. The bars 147 extend underneath and are received in notches 148 formed in the slide bars 145a. At its left-hand end, as viewed in Figure 3, each slide bar 145a is slidably received within a passage formed in an end guide block 150 and at its extreme left-hand end it is rounded as indicated at 151. At its opposite or right-hand end, there is provided a torsion spring 152, one end of which is fixed to a rotatable shaft 153 while the other end bears against the adjacent end of the slide bar. As shown in Fig. 2, one end of the shaft 153 is squared at 154 to receive a wrench for the purpose of rotating the shaft and adjusting the tension of the springs 152. When suitable adjustment has been made, the shaft 153 is clamped in adjusted position by means of a set screw 155.

It will be apparent that, if a given slide bar 145a is in its extreme right-hand position as shown in Figure 3, the bottom edge of the bar will abut the punches 95 and will hold them in operative positions. However, if a slide bar is in its extreme left-hand position so that the upper end of its punches are received within the recesses 148 the spring members 135 acting on the shoulders 131 will urge the punches upwardly so as to clear the lower end of the passages 135 formed in the male die inserts 99. The matrix dies being in their downmost position, the springs 114 of Fig. 6 will force the punch carrier down until shoulders 106 engage shoulders 113, thereby leaving space in which bars 145 may freely slide.

As stated, the sixteen slide bars designated in Figure 2 as 145a are automatically operable, while those designated as 145m are manually operable. For the purpose of automatically operating the automatic slide bars 145a there is provided a cam assembly 159. This assembly is shown in top plan view in Figure 2 and in end view in Figs. 3 and 4, and it is shown in detail and on a larger scale in Figures 11 to 14 inclusive. Referring

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more particularly to Figures 13 and 14, four cam-and-ratchet sets 160 are provided for operating the automatically shiftable slide bars 145a. One cam-and-ratchet set is illustrated in exploded view in Figure 14. As there shown, a ratchet 161 and cams 162a, 162b, 162c and 162d are provided. The cams are formed with lobes 163 and the ratchet with teeth 164 and with a U-shaped recess 165. The ratchet and the cams are formed with axial holes 166 and with smaller holes 167 on opposite sides of the axial holes, the holes 167 being in alignment with one another. All of the ratchets 161 and cams 162a, 162b, 162c and 162d are mounted on a bushing 168 which is rotatable on a shaft 169 and the four cams and the ratchet of each set are fixed together so as to be relatively non-rotatable and so that the lobes 163 of the different cams are in predetermined angular positions relatively to one another. This is achieved by means of pins 169a passing through the holes 167. The heads of these pins are machined so that adjacent cam-and-ratchet sets are free to rotate relatively to one another.

The shaft 169 is carried by a U-shaped bracket 170 which is fixed to the frame of the machine. A pawl carrier 171 of generally U-shaped configuration is pinned at 172 to the shaft 169 and it carries a plurality of pawls 172a, 172b, 172c and 172d corresponding to and in registry with the ratchets 161, there being one pawl for each ratchet. The pawls 172a, etc., are fixed at their upper end to one end of an arm 173, the other end of which is fixed to a shaft 174 which is rotatably mounted on the pawl carrier 171 and is urged in a clockwise direction as viewed in Figure 12, or toward the cams 162a etc. by means of a torsion spring 175. The pawl carrier 171 is urged in a counter-clockwise direction as viewed in Figure 12, by means of a tension spring 180 pinned at 181 to the pawl carrier and at 182 to the cam assembly support bracket 170. A latching pawl 183 is provided for each ratchet 161 and it is pivotally supported at 184 on the pawl assembly support bracket 170. Each latching pawl has a nose 185 engageable with the teeth of its ratchet 161, and at the upper end of each pawl 185 an expansion spring 186 is provided to urge the pawl in a clockwise direction as viewed in Figure 11, each spring 186 bearing at one end against the upper end of its latch pawl 183 and being seated at its other end in a recess 187 formed in a bar 188 fixed to the cam assembly support bracket 170.

There is also provided an actuator lever 189 which is pinned at 190 to one end of the shaft 169. At its lower end the lever 189 carries a cam follower 191. To operate the actuator lever 189 and hence the cam assembly, there is provided an upright post 192 which is fixed to the female die assembly and has formed thereon a cam surface 193 engageable with the cam follower 191. (See Figs. 3 and 4.) As is also shown in Figure 4, there is provided a kick-out lever 194 fulcrumed at its upper end on a shaft 196 to the other end of which is fixed a lever or pawl 197 engageable with a notch 198 formed in the actuator lever 189. The kick-out lever 194 is operated by means of reciprocable shaft 200 pivotally connected thereto at 201 and it is urged in a counterclockwise direction as viewed in Figs. 2 and 4 by a spring 202. The shaft 200 is operated in a manner and for a purpose explained hereinafter.

The automatic portion of the notching assembly thus described operates as follows:

As explained above, the crankshaft 17 causes reciprocation of the female die assembly 25. The male die assembly 31, as a whole, remains stationary. The position of each of the automatic punches 95 is determined by the position of its slide bar 145a. Thus, referring to Figure 3, if the slide bar 145a for a given row of punches 95 is located so that its recesses 148 lie above the punches, the spring members 135 will urge those punches upwardly to seat their top portions in the recesses 148. It will be apparent that the lower ends of these actuated punches will then lie wholly within the guide blocks 99 and will be inactive. On the other hand, if as shown in Figure 3, a given slide bar 145a is located so that its lowermost edge overlies the punches, then these punches will of necessity be urged downwardly against the force of the spring members 135 and their lower ends will protrude through the lower ends of the passages 155. These punches will, therefore, be in active position for cooperation with the female die 25. As the latter ascends, a notch will be punched in the web corresponding to each of the punches 95 which is held in active position by a slide bar 145a. It will also be apparent that when the female die block 90 ascends it will compress both sets of expansion springs 114 (see Figure 6) and 133 (see Figure 3). As the die block 90 descends, thus releasing pressure on these springs, they will, of course, expand. The punch carrier 96 will, therefore, travel downwardly until its shoulder 106 limits on the shoulder 113 of guide block 103 and will carry the web with it. The springs 133 will spread the stripper plate 125 and the punch carrier 96 apart, thus effectively stripping the punches 95 from the web so that it is instantly free to travel forwardly.

The automatic slide bars 145a are operated by the cam assembly 159 which in turn is operated by reciprocation of the female die assembly 25. When the female die assembly 25 is in the down position, as shown in Fig. 4, the upper, vertical portion of cam surface 193 on post 192 is in contact with the cam follower 190 thus holding the actuator pawl 189 in the position shown against the tension of spring 180 (see Fig. 12). When the female die assembly ascends, the cam surface 193 rides up the follower 191, thus allowing the actuator pawl 189 to rock clockwise under the urging of spring 180. One of the pawls 172a, 172b, etc. is in engagement with a tooth of its ratchet 161 and therefore imparts an increment of movement to that ratchet. The cam assembly is, of course, recocked when the female die assembly descends again.

It will be seen that the pawls 172a, 172b, etc. are of different lengths. The longest pawl 172a actuates that ratchet 161 and set of cams 162a, 162b, etc., which is designated as "thousands" in Fig. 13. As long as this pawl remains in engagement with a tooth 164 of its ratchet 161, the remaining pawls 172b, 172c, etc. will be held out of engagement with their ratchets. When, however, the pawl 172a has completed a full cycle and has dropped into the U-shaped recess 165 of its ratchet, the next longest or "hundreds" pawl 172b will engage its ratchet 161. A whole cycle for the cam assembly 159 as a whole is completed when each of the pawls 172a, 172b, etc. has in its turn completed its own cycle.

The lobes 163 on each set of cams 161 are so spaced as to actuate their slide bars 145a in the proper combinations and sequences, to punch out notches corresponding to "9," "8," "7," "6,"

"5," "4," "3," "2" and "1" and to leave one card unnotched to denote "0." It will, therefore, be apparent that as the web 11 proceeds through the notching station C, it will be notched to number the cards from "9999" to "0000." Since there are five rows of cards and since each row is similarly notched, a complete cycle or run of the notching assembly will punch fifty thousand cards numbering them in sets of "9999" to "0000."

To achieve consecutive numbering of all fifty thousand cards produced in a run, the manually operable slide bars 145m are employed. The construction and operation of these bars will now be described.

Referring now to Figs. 6 to 10, it will be seen that the manual slide bars 145m are sectional in construction, the several sections being indicated as 209 and they are slidably connected by overlapping tongues 210. Each of the sections 209 is formed with a notch 211 to receive the end of a lever 212, there being five sets of levers for the five rows of cards across the web (see Fig. 2) and eight levers in each set which are arranged in side-by-side relationship as is best shown in Fig. 9. Each set of levers 212 is encompassed by a frame 213 and the levers are mounted on a shaft 214 which is rotatable in the ends of the frame 213. The sections 209 are shifted by the operation of the levers 212 and each lever, after having been adjusted to the desired position, i. e., to the right or left, is clamped in the selected position by means of one of a pair of wedges 215 which are disposed on opposite sides of the lever. A slidable connection is provided between the wedges 215 and levers 212 by means of a dove-tailed joint 216 (see Fig. 10) and each of the wedges 215 is formed with a hole 218 for engaging a tool which is employed for the purpose of manipulating the wedges.

It will be seen that each of the slide bar sections 209 is formed along its under surface with a recess 148a similar to the recesses 148 of the automatic slide bars 145a, and that by shifting a lever 212 to the left as viewed in Figure 8, the recess 148a of the corresponding section 209 will receive the corresponding punch 95 and will thereby inactivate that punch. By shifting the lever 212 to the right, the punch 95 is depressed and thereby activated.

In operation and assuming that it is desired to consecutively notch a run of fifty thousand cards, one of the sets of levers 212 will be manipulated to activate the "4" punch, thereby punching out notches in one row of cards corresponding to the number "4"; the next set of levers will be manipulated to activate the "2" and "1" punches, thereby punching out notches in the adjoining row of cards corresponding to the number "3." Similarly, the two adjoining sets of levers 212 will be adjusted to punch out notches in the corresponding rows of cards corresponding to "2" and "1." The last set of levers 212 will be adjusted to inactivate all the punches, thereby indicating "0" on the last row of cards.

It will thus be apparent that a full cycle of the cam assembly 159 and their slide bars 145a and punches 95 will produce fifty thousand cards which will be notched to number them consecutively from "49999" to "00000."

The web, after leaving the punch press 10, will of course pass through a suitable shear assembly for shearing the web longitudinally and transversely to sever individual cards 33 of precise dimensions. A suitable shearing assembly is that

described and claimed in Orville V. Dutro, Lyle V. Dutro and James F. Nameeth copending application entitled Press, Serial No. 180,832, filed August 22, 1950. It will also be understood, of course, that the punch press 10 will be driven in timed relationship to the printing press and numbering and perforating assemblies employed to print, number and perforate the web supplied to the punch press 10. It will also be apparent that a time delay or kick-out mechanism will be advantageously employed to interrupt the progression of the automatic punches 145a whenever the numbering assembly is stopped so that these automatic punches and the numbering assembly remain in time. A suitable kick-out mechanism is described and claimed in our copending application above referred to, entitled Press, Serial No. 180,832, filed August 22, 1950. A portion of this mechanism is shown in Figures 1, 2 and 4 herein and will now be described briefly.

A shaft 220 is provided which is rotated by the aforesaid kick-out mechanism whenever the numbering assembly is inactivated, and in properly timed relationship thereto so as to interrupt progression of the punches 145a when the last cards having printed numbers 37 and 38 have been notched. The shaft 220 is connected by a lever 221 to the rod 200 as shown in Fig. 1 and operates the kickout lever 194. The shaft 196 and pawl 197 are engageable with the notch 193 in the actuator pawl 189. When the shaft 220 is rotated clockwise, as viewed in Fig. 1, it will be apparent that the pawl 197 will engage the notch 193 and hold the actuator lever 189 in the position shown in Fig. 4, thereby preventing further progression of the cams 162a, etc.

The shaft 220 is rotated by a numbering mechanism (not shown) which prints the numbers 37 and 38 on the cards as the web progresses through the machine. Since the cards are notched with a number corresponding code to the printed number, the notching mechanism must be kept in timed relation with the printing. Therefore, if the numbering stops at a particular card, the notching must also stop at the same card.

It will further be apparent that shuttle means are advantageously provided for the purpose of holding the web 32 stationary during the punching operation. Any suitable shuttle means, preferably that described and claimed in our copending application entitled Shuttle Mechanism, Serial No. 180,831, filed August 22, 1950, may be employed for this purpose.

It will thus be apparent that a punch press is provided which is capable of accurately notching and/or slotting a halted web to selectively and serially notch and/or slot coded information into the web. The punch press has a wide range of operation, and it includes an automatic portion which automatically and progressively number cards on a web and another portion which is controlled by manual means to increase the range of operation.

While we have shown the preferred form of our invention, it is to be understood that various changes may be made in its construction by those skilled in the art without departing from the spirit of the invention as defined in the appended claims.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A punch press of the character described comprising a stationary male die assembly including a plurality of reciprocable punches, means

yieldably urging the punches to inactive positions, slide means slidable to selectively urge the punches to active positions, a reciprocable female die assembly having die openings in registry with the punches, means for reciprocating the female die assembly to punch a web disposed between said assemblies, rotatable ratchet controlled cam means capable of unidirectional rotation to operate the slide means and thereby selectively operate the punches, and other cam means actuated by reciprocation of the female die assembly for rotating said rotatable cam means in increments.

2. Notching and coding apparatus of the character described for notching marginally perforated cards to code each card with an individual, identifying number, said apparatus comprising cooperable male and female die assemblies, said male die assembly including a plurality of reciprocable punches, means urging the punches to inactive positions and slide bars slidable to cause the punches to be urged to active positions; said female die assembly having die openings in registry with said punches and being reciprocable to advance and retract the die openings to and from the punches; cam means for selectively operating the slide bars in such sequence as to code the cards in consecutive numerical order; and cam operating means automatically operable to actuate said cam means in response to reciprocation of the female die assembly.

3. A punching machine of the character described for punching a web of paper, said machine comprising cooperable male and female die assemblies, said female die assembly being reciprocable and having a plurality of die openings, said male die assembly having a plurality of punches mounted in registry with said die openings and yieldably urged to inactive positions, a guide block for the punches and resilient means urging the guide block toward the female die assembly to strip the web of paper from the punches, a plurality of slide bars slidable to selectively activate the punches, rotatable cam means for actuating said slide bars, and cam means operable by reciprocation of said female die assembly for operating said rotatable cam means.

4. A punching machine of the character described for punching a web of paper, said machine comprising cooperable male and female die assemblies, said female die assembly being reciprocable and having a plurality of die openings, said male die assembly having a plurality of punches reciprocably mounted therein in registry with said die openings, yieldable means urging said punches to inactive positions, a guide block for the punches, resilient means urging the guide block toward the female die assembly to strip the web of paper from the punches, a plurality of slide bars slidable to selectively activate said punches, rotatable cam means for selectively operating said slide bars, and cam means operable by reciprocation of said female die assembly for selectively actuating said slide bars.

5. A punch press comprising cooperable male and female die assemblies, said female die assembly being formed with a plurality of die openings and being reciprocably mounted, said male die assembly including a plurality of reciprocable punches in registry with said die openings, said punches being operable to punch marginally perforated cards to slot or notch the same to code numbers therein, and cam actuated means for op-

erating said punches to selectively activate and de-activate the same to accomplish the numbering in sequence to code each card with an individual identifying number, said cam means including a plurality of reciprocable punch operating members and a cam for each punch member, said cams being mounted on a common shaft, ratchet means permitting unidirectional, stepwise rotation of the cams, and means responsive to reciprocation of the female die for imparting such stepwise movements to the cams.

6. A punch press comprising cooperable male and female die assemblies, said female die assembly being formed with a plurality of die openings and being reciprocably mounted and said male die assembly being provided with reciprocable punches in registry with said die openings, said punches being so arranged as to punch slots or notches in and from the perforations of marginally perforated cards of the type having fields corresponding to units, tens, etc., and to thereby code numbers within the range of said fields, and means for operating said punches comprising a set of cams for each field to be punched, each set of cams being operable to actuate the punches corresponding to a given field, and cam operating means operable by operation of the female die assembly for actuating the punches in sequence to number cards sequentially.

7. Coding apparatus of the character described adapted to notch or slot cards having marginal perforations arranged in a plurality of fields corresponding to units, tens, etc., said apparatus comprising punch means automatically operable to notch a plurality of fields from the perforations therein toward the adjacent card edge, means automatically operable to selectively activate and inactivate a portion of the punch means corresponding to several of the fields so as to notch and thereby number the cards in sequence throughout the range of said fields, and manually operable means for selectively activating and inactivating the remainder of the punches corresponding to a higher range of fields, said manually operable means including sectional overlapping slide bars overlying rows of punches and being individually settable in operative or inoperative positions.

8. Coding apparatus of the character described adapted to notch or slot cards having marginal perforations arranged in a plurality of fields corresponding to units, tens, etc., said apparatus comprising punch means including a plurality of punches for punching a lower range of fields from the perforations therein toward the adjacent card edge, slide means for activating and inactivating said punches, cam means operable automatically in timed relationship to operation of the punch means to selectively activate and inactivate said slide means to punch and thereby number the cards in sequence throughout said lower range of

fields, other punches for punching a higher range of fields and manually operable means for selectively activating and inactivating said other punches to punch a higher range of fields and thereby extend the range of numbering, said manually operable means including sectional overlapping slide bars overlying rows of punches and being individually settable in operative or inoperative positions.

9. A punch press of the character described, comprising a male die assembly including a plurality of reciprocable punches, means yieldably urging the punches to inactive positions, slide means slidable to selectively urge the punches to active positions, a reciprocable female die assembly having die openings in registry with the punches, means for reciprocating the female die assembly to punch a web disposed between said assemblies, rotatable ratchet-controlled cam means capable of unidirectional rotation to operate the slide means and thereby selectively operate the punches, and means operable by reciprocation of the female die assembly for incrementally rotating said rotatable cam means.

10. A punch press of the character described, comprising a male die assembly including a plurality of reciprocable punches, means for selectively activating the punches including a plurality of slidable elements movable to operative positions to activate the punches or to inoperative positions to inactivate the punches, a reciprocable female die assembly having die openings in register with the punches, means for reciprocating the female die assembly to punch a web disposed between said assemblies, rotatable ratchet-controlled means capable of unidirectional rotation to operate the slidable elements and thereby selectively condition the punches for operation, and means operable by reciprocation of the female die for incrementally rotating said rotatable cam means.

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