J. POWERS.

KEYBOARD FOR PERFORATING MACHINES AND THE LIKE.

APPLICATION FILED MAR. 1, 1912.

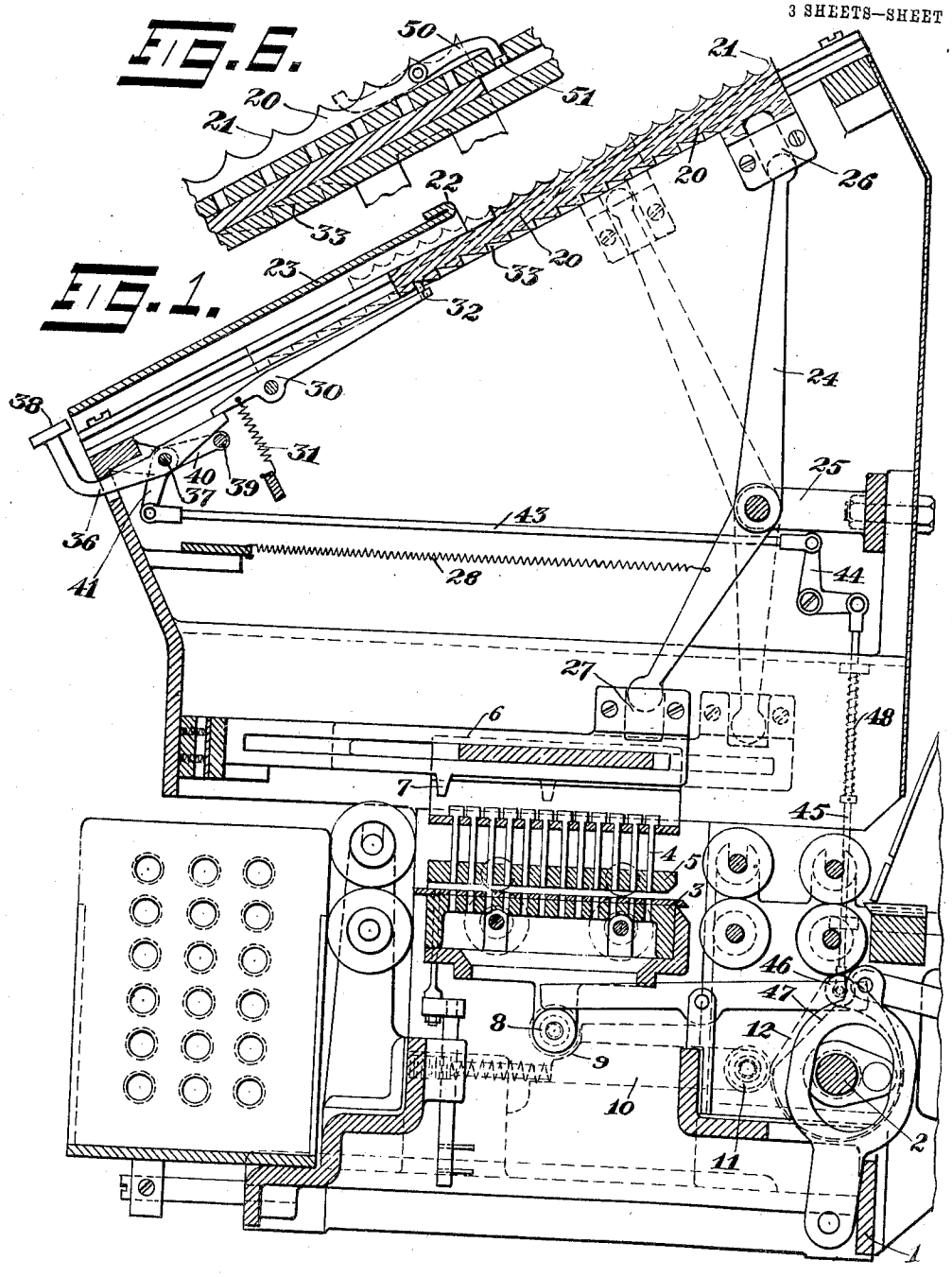
1,086,397.

Patented Feb. 10, 1914.

3 SHEETS—SHEET 1.

FIG. 6.

FIG. 1.



Witnesses:

Peter Henry.

H. D. Penney.

Inventor:

James Powers,

By his Attorney,

F. A. Richards.

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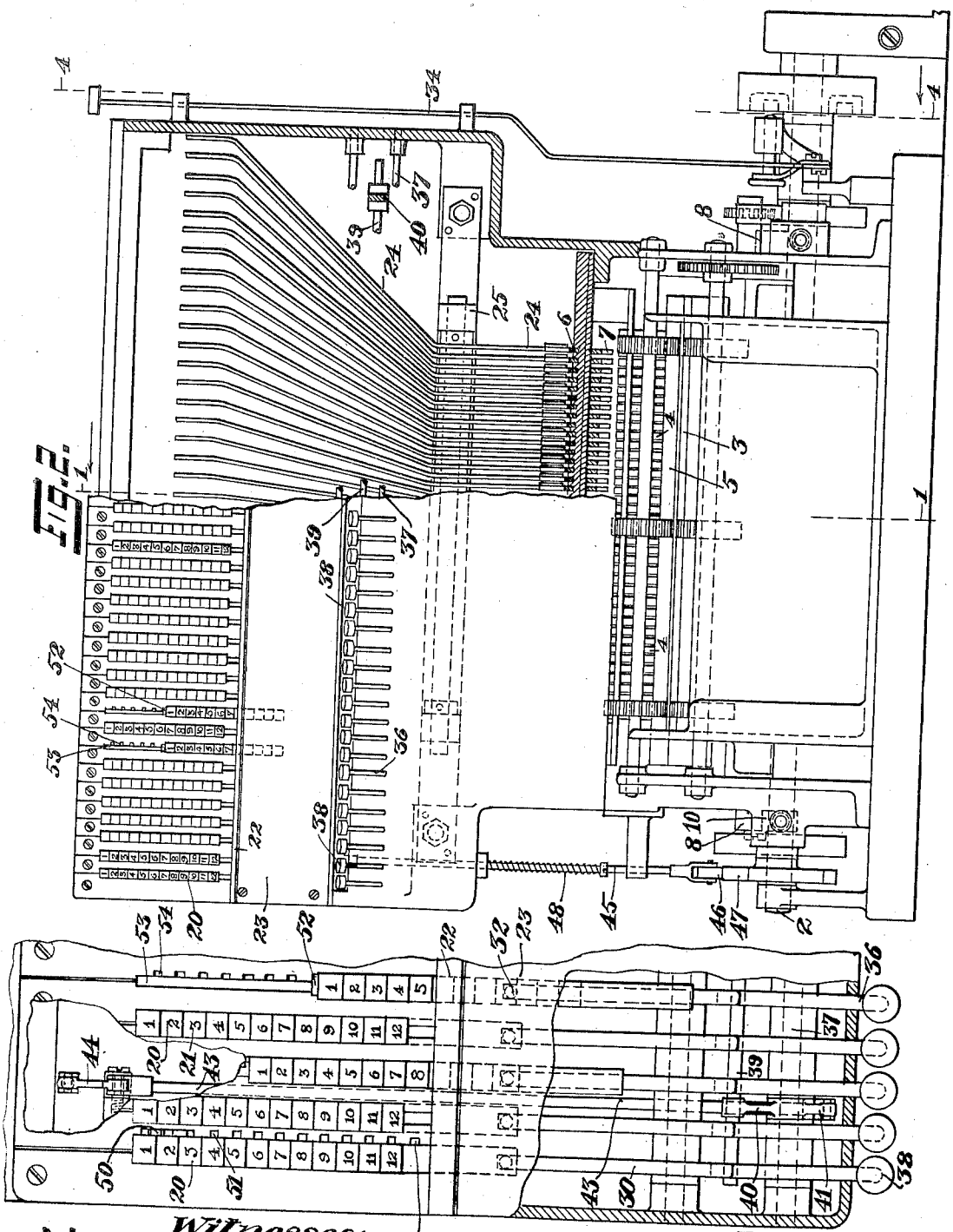

FIG. 2.

FIG. 3.

Witnesses:
Peter Henry.
H. D. Penney

Inventor:
James Powers.

By his Attorney.
W. H. Richards

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3 SHEETS—SHEET 3.

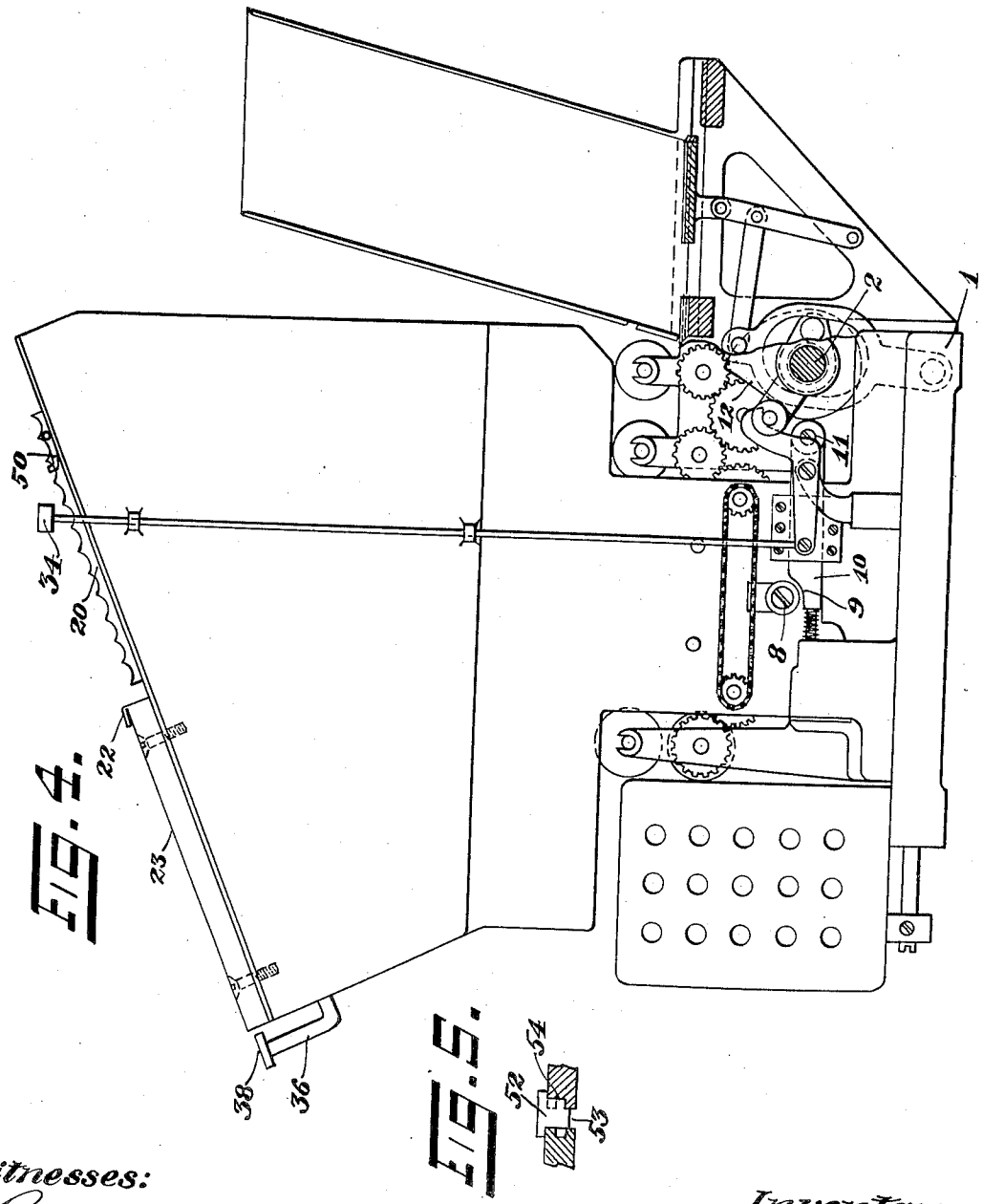

FIG. 4.

FIG. 5.

Witnesses:

Peter Henry.

H. D. Penner

Inventor:

James Powers.

By his Attorney,

F. A. Richards.

UNITED STATES PATENT OFFICE.

JAMES POWERS, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO POWERS ACCOUNTING MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

KEYBOARD FOR PERFORATING-MACHINES AND THE LIKE.

1,086,397. Specification of Letters Patent. Patented Feb. 10, 1914.

Application filed March 1, 1912. Serial No. 680,780.

To all whom it may concern:

Be it known that I, JAMES POWERS, a citizen of the United States, residing in New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Keyboards for Perforating-Machines and the like, of which the following is a specification.

My present invention pertains to improvements in perforating machines of the character set forth in United States patents granted to me, Nos. 992,245 and 992,246. In such patented structures there was a selector for each of the punches, but in the present invention there is a selector device for each of the rows of punches and such selector is shiftable to be brought to actuate any of the punches in such row.

The principal object of the invention is to provide a member that can be engaged at suitable indications or notches thereon corresponding to the punches of a row, there being one row for each of the members, and by placing the finger at the notch or indication and then advancing the slide until the finger is arrested by engagement with a stop-bar, the movement of the slide by the finger that is permitted until such arrest, will correspondingly move suitable setting mechanism whereby upon the subsequent operation of the punching mechanism the proper punch will be actuated according to the notch engaged by the finger.

A further object is to provide suitable retaining and positioning means for the slide; also suitable releasing and retracting means, both for the individual slides and means for releasing all of the slides that may have been advanced and arrested at the termination of a punching operation.

With these objects in view one embodiment of my invention is shown in the accompanying drawings, in which—

Figure 1 is a vertical section on the line 1—1 indicated in Fig. 2; Fig. 2 is a front elevation partly broken away to show interior construction; Fig. 3 is a partial plan view partly broken away; Fig. 4 is a section on the line 4—4 indicated in Fig. 2; Fig. 5 shows enlarged one of the slides with a locking member; and, Fig. 6 shows, in section, another locking member.

The present invention relates almost entirely to the selector mechanism, and the punching arrangement is substantially the same as that set forth in my said patents, and need only be described in a general way. In the lower part of the frame-work 1 is mounted a main driving shaft 2, carrying several cams for actuating the punching mechanism and also the card feeding mechanism. The punching mechanism is shown in the form of a carrier plate 3 having perforations therein coöperating with the punches 4 in a stationary punch plate 5; whereby upon elevation of the carrier 3 with a card thereon, the card would serve to lift the punch 4, but upon arresting any of these punches they will be caused to punch the card. Above the punches are arranged a number of slides 6 carrying projecting lugs 7 that are brought to register with the several punches as the slide is advanced by the selecting means, for the normal position of the lug is beyond all of the punches and when the card is elevated none of the punches will be obstructed to cause it to penetrate the card.

To elevate the carrier 3, a roller 8 thereon is engaged by the cam end 9 of a slide 10 suitably guided in the frame to have a roller 11 thereon engaged by a cam 12 on the shaft 2. Only one row of punches is shown but it is understood that there are a series of such rows that are identical in construction, and the movement of the carrier 3 will operate all of the punches that have been set in the several rows. But practically all of this mechanism is set forth in my said patents.

The subject-matter of the present invention relates to the selecting means, and at the upper portion of the frame are suitably guided a series of slides 20 having along their top edges suitable indications or notches 21, that are shown as numbered from 1 to 12, but obviously a greater or less number could be used. Just beyond the last of these indications in the normal position of the slide is arranged a stop-bar 22, that is shown as the one edge of a plate 23. Upon placing a suitable obstruction, such as the finger, in any one of these notches, and then causing the finger to advance the slide, this movement will be arrested when the finger strikes the bar 22, and the distance the slide will have moved will correspond to the notch on the slide; for the notch 12

the slide can manifestly move a short distance while if the finger is placed in the notch 1, the slide will advance a maximum distance. Each of these slides is connected with one of the said slide bars or actuators 6 and arranged whereby the movement of the slide according to any notch will advance the slide 6 to move the lug along over a corresponding number of notches, whereby the arrest of the slide will arrest the lug in actuating position for the corresponding punch. It will be observed that there are twelve notches in the slide bar and twelve punches that are controlled thereby.

Suitable means are also provided for holding the slide accurately positioned in any of the desired positions at which the finger engages the stop-bar, and for retracting the slide when the punching mechanism has operated. For each of the slides is a lever 24 pivoted on a bar 25 at the intermediate portion, one end of the lever working in a slot extension 26 of the slide and the other end working in a slot extension 27 of the slide members 6 or actuators, the arms of the lever being proportioned to give proper motion to the actuator bar from the slide 20. A spring 28 connected to the lever 24 serves to return it and the two slides to normal position when released. A pawl lever 30 is pivoted below each of the slides 20 and by a spring 31 connected therewith, causing the end 32 of the pawl to engage ratchet teeth 33 in the lower face of the slide 20, which teeth correspond precisely with the said notches in position. Thus when any of the slides are advanced until the finger engages the bar, the ratchet lever will be pressed into the corresponding notch, that will prevent retraction of the slide by the lever 24 and connected spring, but the bar will be retracted until the ratchet pin engages the side of the teeth to accurately position the lever, whereby the lug 7 will be in the proper registering position. The several rows of these slides 20, as shown in Figs. 2 and 3, can each be actuated to the desired notch. Thereupon the punch mechanism is set into operation from the main shaft by a suitable means, such as an operating key 34 that will serve to connect the main shaft with an operating shaft, shown in my aforesaid patents, and hence not necessary to set forth herein.

In order to return all of the slides to their normal position after the punch device has operated, means is provided for tripping all of the ratchet levers 30, and which is preferably automatic and effected at the final operation of the revolution of the main shaft 2. Means are also provided whereby each of the slides after being advanced to a certain registering position of the notches and locked by the pawl end 32, can be released without disturbing any of the other slides that might have been advanced. A series of levers 36 is pivoted on a cross shaft 37 suitably supported in the frame and each of the levers engages the heel of the lever 30, whereby depression of the finger plate 38 of the lever 36 will swing the lever 30 and release the slide 20; which latter will be returned through the lever 24 and spring 28.

Under the front portion of all of the levers 36 extends a universal bar 39 that is connected at both ends with arms 40 fast to shaft 37, an arm 41 on this shaft connects by link 43 with a rock arm 44, and from the latter a push rod 45 carrying a roller 46 is engaged by the latter on a cam 47, a spring 48 serving to hold the roller against the cam. At the latter part of the revolution of the shaft 2 the cam will cause the roller to elevate the push-rod and through said connections the universal bar 39 is swung upward to shift all of the levers 41 and 32, thereby releasing all of the slides 20 that might have been advanced, and which operation is automatically effected and requires no attention on the part of the operator.

From the above it will be manifest that to set any punch in any desired one of the rows, or all of them, it is only necessary to place the finger in the notch on the slide corresponding to the indication desired, and advance the slide until the finger strikes the obstruction, and then release the slide whereupon it will be accurately positioned by the ratchet-arm, and by such operation the stop-bar or slide for the corresponding punch will be actuated or set. After the desired number of such slides have been so manipulated, simply pressing the release key will cause the coöperation of the shaft and punch mechanism to cause holes to be punched in the card corresponding to the indications that have been brought to the stop-bar; and at the latter part of the operation of the punch mechanism, all of the slides will be released and automatically re-set. It is understood that suitable mechanism is also provided for feeding in the cards and also feeding them from the punch mechanism, which is also set forth in the said patents.

When it is desired to lock any of the slides so that it will not be released by the key 24 and universal bar, a latch 50, pivoted on the side of each of the slides 20, is swung from the normal position shown in broken lines in Fig. 6, to the full line position, and its end will enter one of a series of notches 51 in the plate below the slides, that correspond in position to the notches 21 in the slides, and will retain the slide in such position until the latch is swung back to idle position. Another means to lock the slides in any desired registering position, is to insert a block 52 at the end of the slide 20, and down into one of a series of notches 54

in the side of the slot 53 in which the slides 20 are mounted to slide.

Having thus described my invention, I claim:—

1. In a punching machine, the combination of a frame, a series of slides movable on the frame, and each having a series of notches along one face, a bar extending across the said faces of the slides to permit the said notches on the slides to be brought successively under the bar in close proximity thereto, an actuator connected with each slide that is brought to different positions successively corresponding with the said notches respectively, whereby the advance of one of the slides with an obstruction in any of the notches until the obstruction engages the stop, will cause the actuator connected with such slide to shift to a position corresponding with the notch in the slide brought adjacent the stop.

2. In a punching machine, the combination of a frame, a series of slides movable on the frame, and each having a series of notches along one face, a bar extending across the said faces of the slides to permit the said notches on the slides to be brought successively under the bar in close proximity thereto, an actuator connected with each slide that is brought to different positions successively corresponding with the said notches respectively, whereby the advance of one of the slides with an obstruction in any of the notches until the obstruction engages the stop, will cause the actuator connected with such slide to shift to a position corresponding with the notch in the slide brought adjacent the stop, each of the slides having ratchet teeth on one face corresponding in position to the respective notches of the slide, and a pawl for each of the slides engaging said notches successively as the slides advance, means for returning the slide when advanced, the slide being held by the pawl and ratchet against operation by the returning means.

3. In a punching machine, the combination of a frame, a series of slides movable on the frame, and each having a series of notches along one face, a bar extending across the said faces of the slides to permit the said notches on the slides to be brought successively under the bar in close proximity thereto, an actuator connected with each slide that is brought to different positions successively corresponding with the said notches respectively, whereby the advance of one of the slides with an obstruction in any of the notches until the obstruction engages the stop, will cause the actuator connected with such slide to shift to a position corresponding with the notch in the slide brought adjacent the stop, each of the slides having ratchet teeth on one face corresponding in position to the respective notches of the slide, a pawl for each of the slides engaging said notches successively as the slides advance, means for returning the slide when advanced, the slide being held by the pawl and ratchet against operation by the returning means, and a universal bar arranged to shift all of the pawls out of engaging position whereby each of the slides that have been advanced and retained by the pawl are released.

4. In a punching machine, the combination of a frame, a series of slides movable on the frame, and each having a series of notches along one face, a bar extending across the said faces of the slides to permit the said notches on the slides to be brought successively under the bar in close proximity thereto, an actuator connected with each slide that is brought to different positions successively corresponding with the said notches respectively, whereby the advance of one of the slides with an obstruction in any of the notches until the obstruction engages the stop, will cause the actuator connected with such slide to shift to a position corresponding with the notch in the slide brought adjacent the stop, each of the slides having ratchet teeth on one face corresponding in position to the respective notches of the slide, a pawl for each of the slides engaging said notches successively as the slides advance, means for returning the slide when advanced, the slide being held by the pawl and ratchet against operation by the returning means, a universal bar arranged to shift all of the pawls out of engaging position whereby each of the slides that have been advanced and retained by the pawl are released, means for operating the actuators, and means for operating the universal bar at the latter part of the movement of the actuators.

5. In a punching mechanism, the combination with the punching mechanism, of a set of selector devices each comprising a slide having a series of notches thereon, a stationary stop for each slide that is brought adjacent the notches successively as the slide is advanced, an actuator connected with each slide that is shifted by the slide and brought to register successively with a series of the punches corresponding with the notches respectively, as the slide brings the notches to register with the said stop, whereby the advance of the slide with an obstruction in any of the notches until the obstruction engages the stop, will shift the actuator to register with the punch corresponding to the notch adjacent the stop.

6. In a punching machine, the combination with the punching mechanism, of a set of selector devices each comprising a slide having a series of notches thereon, a stationary stop for each slide that is brought adjacent the notches successively as the slide is

advanced, an actuator connected with each slide that is shifted by the slide and brought to register successively with a series of the punches corresponding with the notches respectively, as the slide brings the notches to register with the said stop, whereby the advance of the slide with an obstruction in any of the notches until the obstruction engages the stop, will shift the actuator to register with the punch corresponding to the notch adjacent the stop, and means for bringing the slide to a fixed predetermined position as advanced to the said successive positions.

7. In a punching mechanism, the combination with the punching mechanism, of a set of selector devices each comprising a slide having a series of notches thereon, a stationary stop for each slide that is brought adjacent the notches successively as the slide is advanced, an actuator connected with each slide that is shifted by the slide and brought to register successively with a series of the punches corresponding with the notches respectively, as the slide brings the notches to register with the said stop, whereby the advance of the slide with an obstruction in any of the notches until the obstruction engages the stop, will shift the actuator to register with the punch corresponding to the notch adjacent the stop, a spring pawl adjacent each slide, and notches in the slide engaged by the pawl as the notches register with the stop.

8. In a punching mechanism, the combination with the punching mechanism, of a set of selector devices each comprising a slide having a series of notches thereon, a stationary stop for each slide that is brought adjacent the notches successively as the slide is advanced, an actuator connected with each slide that is shifted by the slide and brought to register successively with a series of the punches corresponding with the notches respectively, as the slide brings the notches to register with the said stop, whereby the advance of the slide with an obstruction in any of the notches until the obstruction engages the stop, will shift the actuator to register with the punch corresponding to the notch adjacent the stop, means for returning the slide to one limit of movement when advanced, and means for arresting the slide in any of said registering positions against said returning means.

9. In a punching mechanism, the combination with the punching mechanism, of a set of selector devices each comprising a slide having a series of notches thereon, a stationary stop for each slide that is brought adjacent the notches successively as the slide is advanced, an actuator connected with each slide that is shifted by the slide and brought to register successively with a series of the punches corresponding with the notches respectively, as the slide brings the notches to register with the said stop, whereby the advance of the slide with an obstruction in any of the notches until the obstruction engages the stop, will shift the actuator to register with the punch corresponding to the notch adjacent the stop, means for returning the slide to one limit of movement when advanced, means for arresting the slide in any of said registering positions against said returning means, and means for tripping each of the arresting means.

10. In a punching mechanism, the combination with the punching mechanism, of a set of selector devices each comprising a slide having a series of notches thereon, a stationary stop for each slide that is brought adjacent the notches successively as the slide is advanced, an actuator connected with each slide that is shifted by the slide and brought to register successively with a series of the punches corresponding with the notches respectively, as the slide brings the notches to register with the said stop, whereby the advance of the slide with an obstruction in any of the notches until the obstruction engages the stop, will shift the actuator to register with the punch corresponding to the notch adjacent the stop, means for returning the slide to one limit of movement when advanced, means for arresting the slide in any of said registering positions against said returning means, and means for tripping each of the arresting means, and a member arranged to trip all of the arresting means.

11. The combination, of a set of selector devices each comprising a slide having a series of notches thereon, a stationary stop for each slide that is brought adjacent the notches successively as the slide is advanced, an actuator connected with each slide that is shifted by the slide, and brought to different positions successively corresponding with the notches respectively, as the slide brings the notches to register with the said stop, whereby the advance of the slide with an obstruction in any of the notches until the obstruction engages the stop, will shift the actuator to the position corresponding to the notch adjacent the stop.

JAMES POWERS.

Witnesses:
JOHN MORRIS,
FRED J. DOLE.