

1,305,557.

W. W. LASKER.
PERFORATING MACHINE.
APPLICATION FILED APR. 3, 1918.

Patented June 3, 1919.
5 SHEETS—SHEET 1.

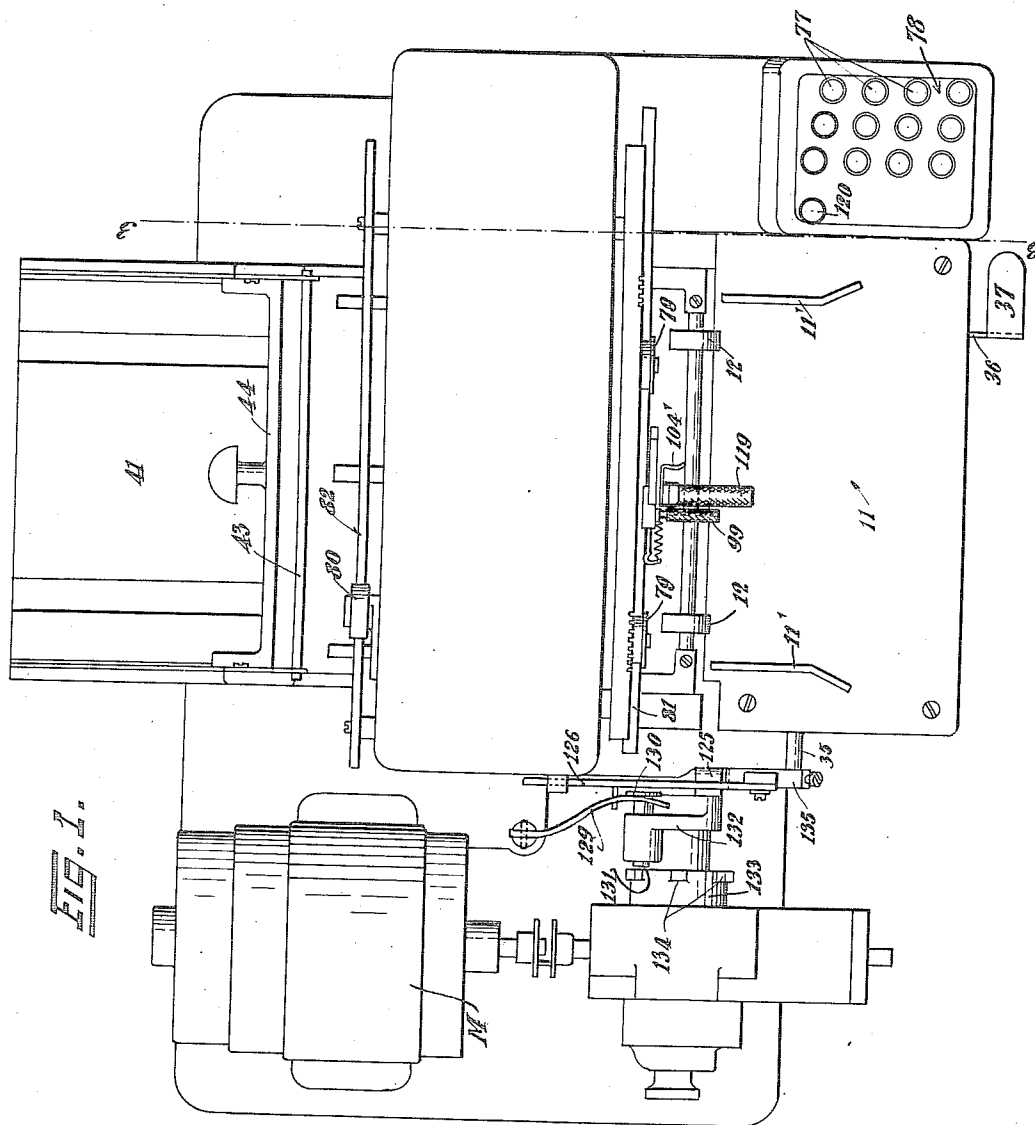


FIG. 1.

Witnesses;
Chas. Whitman.
H. D. Penney

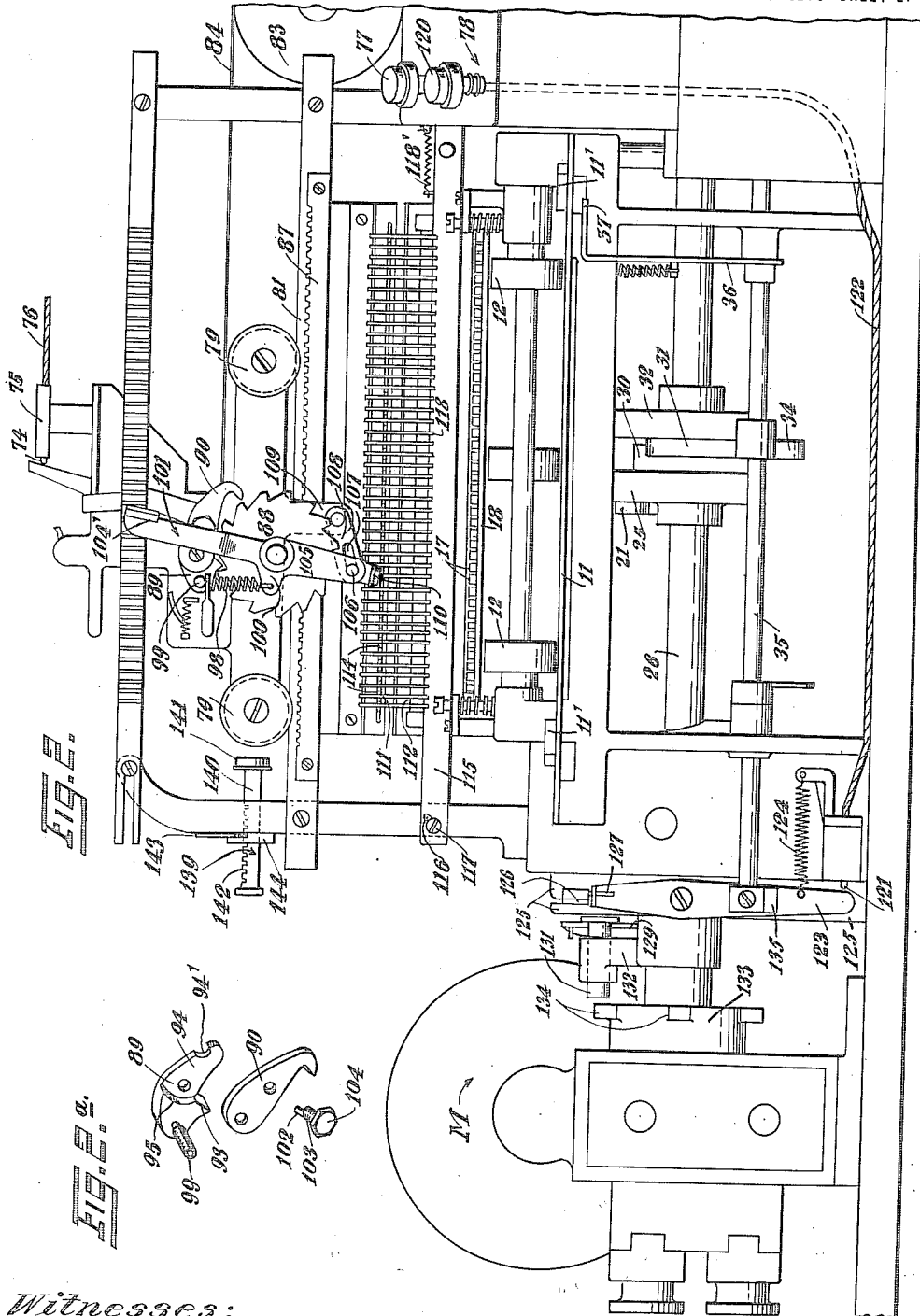
Inventor:
William W. Lasker,
By his Atty, *F. H. Richard.*

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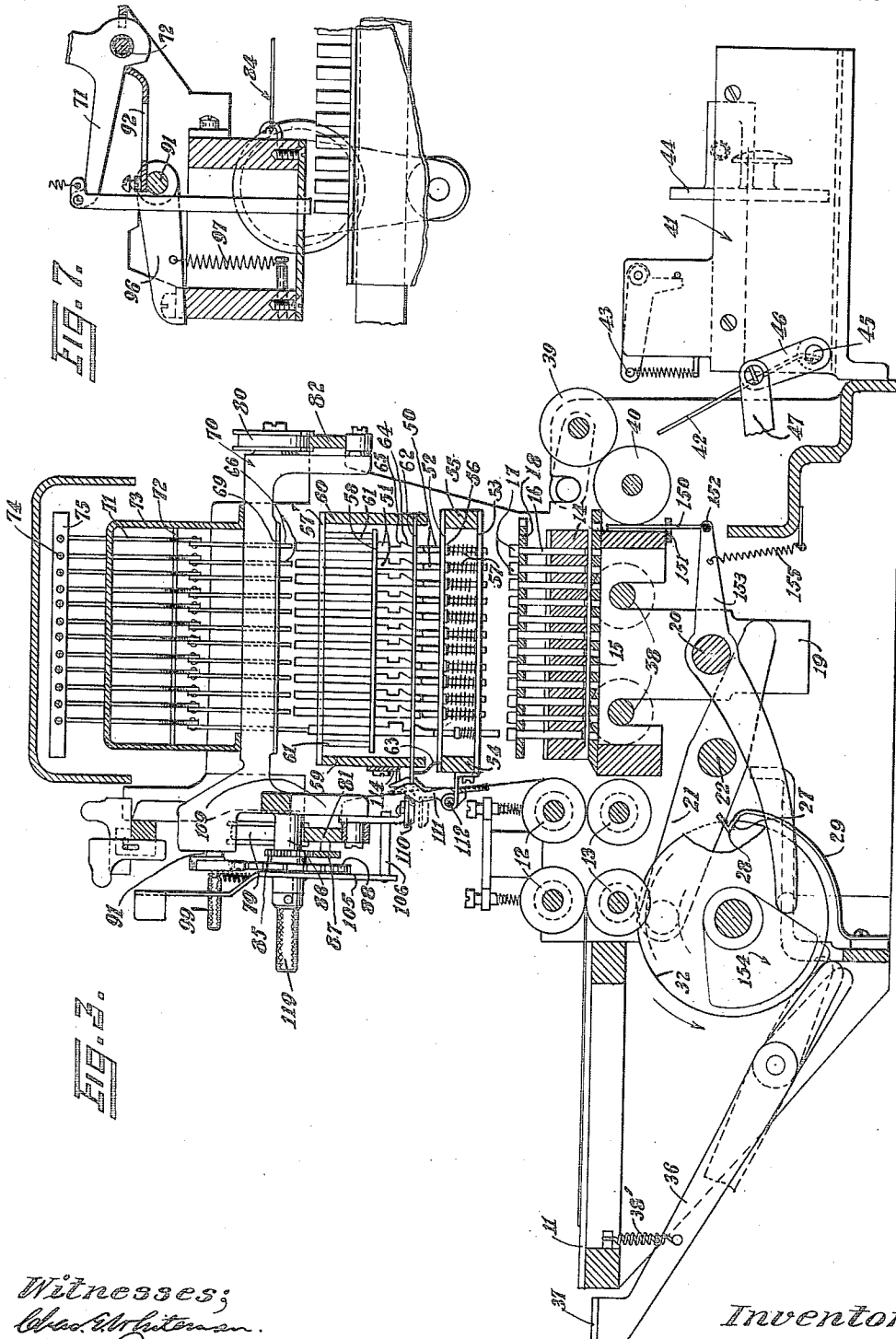
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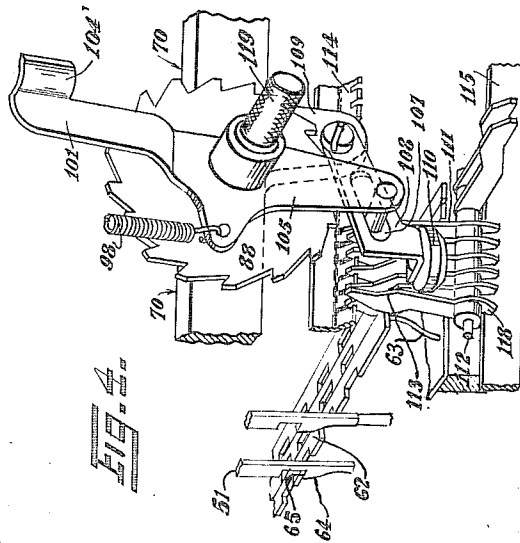
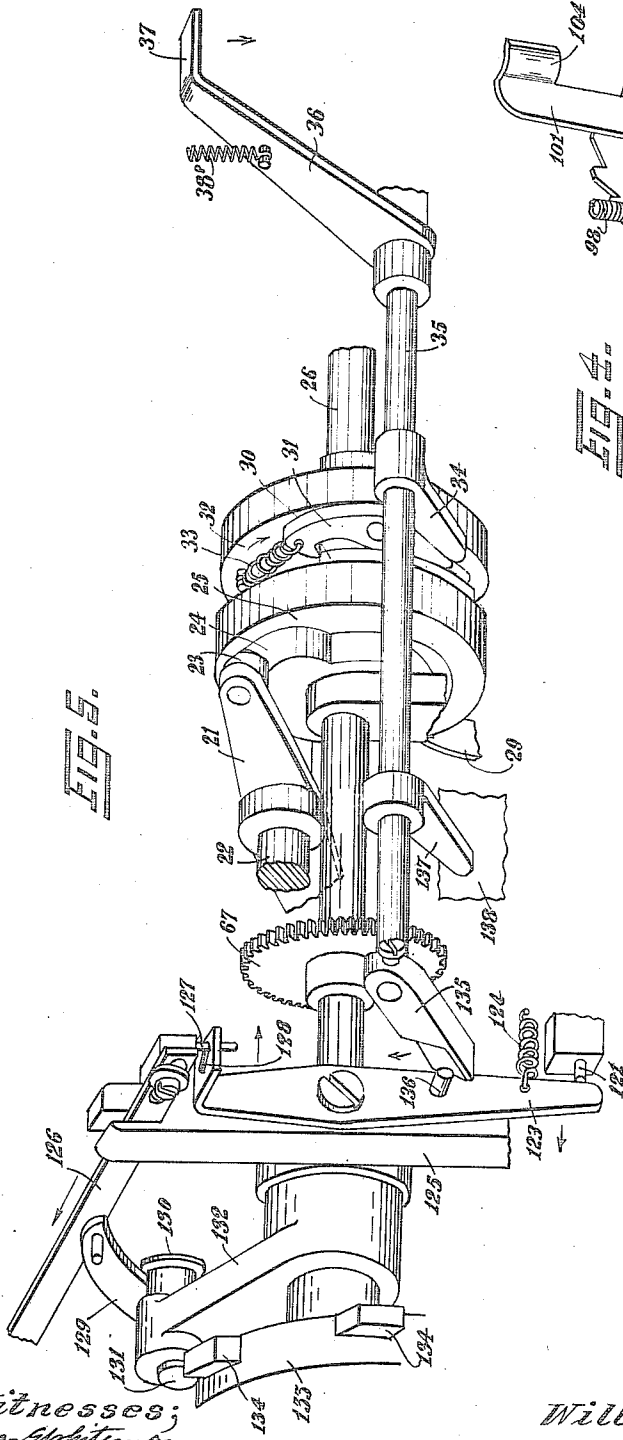
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5 SHEETS--SHEET 4.



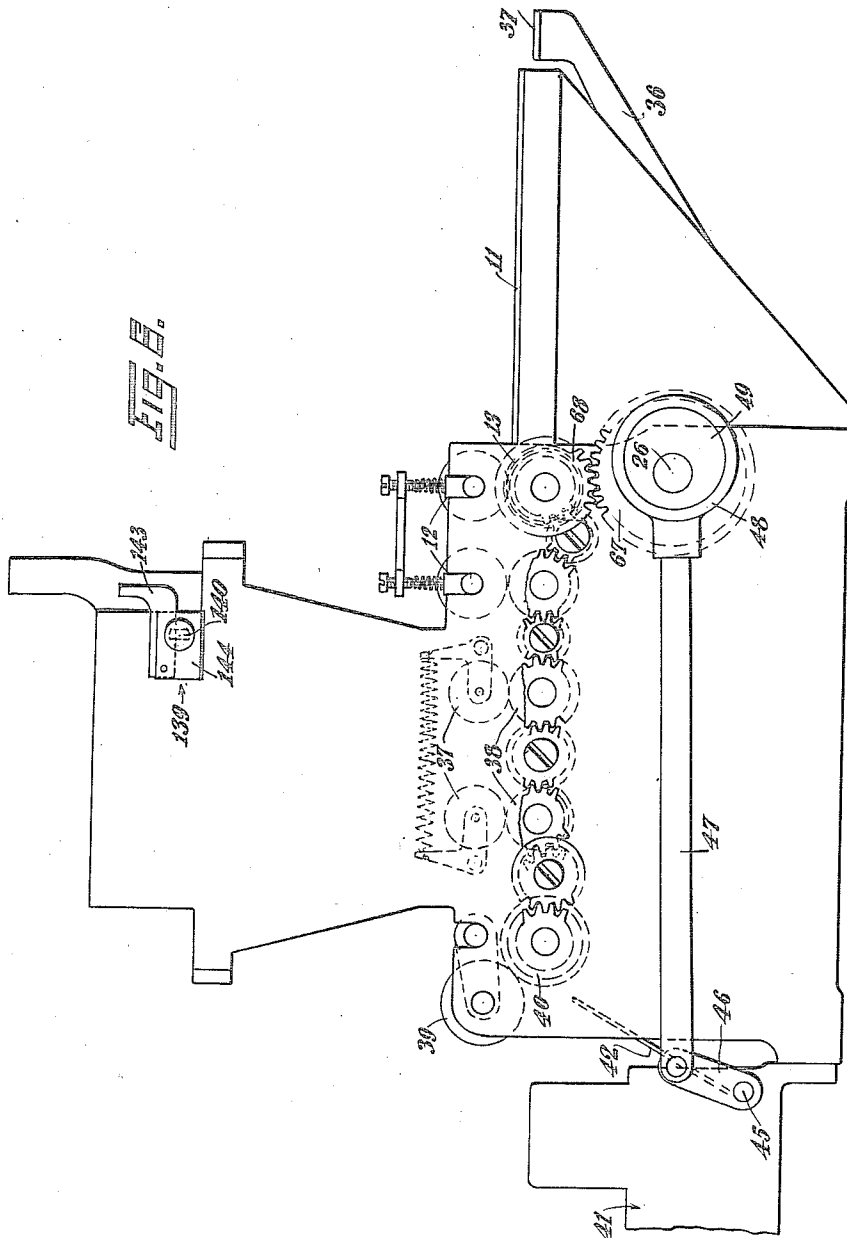
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5 SHEETS—SHEET 5.



Witnesses,
Wm. Whitman
H. D. Purney

Inventor;
William W. Lasker,
By his atty, *J. H. Richard*

UNITED STATES PATENT OFFICE.

WILLIAM W. LASKER, OF BROOKLYN, NEW YORK, ASSIGNOR TO POWERS ACCOUNTING MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

PERFORATING-MACHINE.

1,305,557.

Specification of Letters Patent.

Patented June 3, 1919.

Application filed April 3, 1918. Serial No. 226,501.

To all whom it may concern:

Be it known that I, WILLIAM W. LASKER, a citizen of the United States, residing in borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Perforating-Machines, of which the following is a specification.

This invention relates to accounting machines in general and more particularly to machines for perforating record cards or strips for use in accounting machines.

Among the main objects of the present invention, it is aimed to provide a perforating machine in which the perforating means are first set to reproduce a record, then a card fed to position, then the perforating means actuated to perforate the card to reproduce the record in perforations on said card, then the card discharged, and finally the machine restored for the next succeeding card.

A further object of the invention is to provide a perforating machine as aforesaid, in which after the perforating means have been set for perforation, the same may be retained inoperative so that a card may be passed through the machine without being perforated.

A still further object of the invention is to provide a perforating machine having a carriage on which a single row of setting pins are caused to travel over a plurality of rows of settable pins actuatable by said setting pins to in turn cooperate with punches for perforating a card, in which the carriage may be returned to initial position, either simultaneously with the restoration of the settable pins or independently.

Still another object of the invention is the provision of means for restoring the several rows of perforating means or punches which may be independently anchored out of operation.

The invention further contemplates certain features of arrangement and construction of the several working parts conducive to high efficiency.

These and other features, capabilities, and advantages of the invention will appear from the subjoined detail description of one specific embodiment thereof illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the machine made according to the present invention;

Fig. 2 is an end elevation of the same;

Fig. 2^a is a detached perspective part of the escapement mechanism;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is a fragmental perspective of the means for restoring the punches to normal position;

Fig. 5 is a fragmental perspective of the means for anchoring the restoring means out of operation while the card is passed through the machine without being perforated;

Fig. 6 is a fragmental reduced side elevation of the machine; and

Fig. 7 is a fragmental detail of part of the carriage.

In the embodiment shown there is provided a platform 11 from which a card, being guided by the side rails 11', is fed to the rolls 12 and 13 and by them fed between the guide plate 14 and die plate 15, which are provided with a plurality of registering perforations in which the punches 16 cooperate, until the card is stopped by the stops 150 which are actuated to extend any time to receive the card when it is received by the plates 14 and 15. The stops 150 are guided in the brackets 151 and pivotally connected to the rod 152 journaled in one end of the lever 153 which is fulcrumed on the bar 20 and has its other end strained against the cam bump 154 formed on the cam 32, the lever being strained against the bump 154 by the spring 155. The guide plate 14 and die plate 15 are operatively connected to reciprocate vertically, the punches 16 having heads 17 at their upper ends which rest on the plate 18 when the guide plate 14 and die plate 15 are in descended position, the plate 18 being disposed above and stationary relative to the guide plate 14.

Down from the die plate 15 extend the standards 19 to which is connected the horizontal bar 20 to cooperate with one end of the lever 21 mounted on the fulcrum 22 and having its other end provided with a roll 23 traveling in the cam groove 24 of the cam 25 loosely mounted on the driving shaft 26. The cam 25 has a notch 27 in its periphery to receive the nose 28 of the spring 29, which spring operates to resiliently retain the cam 25 against rotation with the driving shaft 26.

On one side of the cam 25 there is formed an abutment 30 for engagement by the pawl

31 which is pivoted to the cam or disk 32 fixed on the shaft 26, the pawl 31 having its abutment engaging end resiliently depressed by the spring 33. The other end of the pawl 31 is disposed in the path of movement of the lever 34 fixed on the rock shaft 35 disposed parallel to the shaft 26 and having secured thereto an actuating lever 36 provided with a finger piece 37 preferably disposed adjacent to the edge of the platform 11. The lever 36 in the present instance is provided with a spring 38' which normally maintains the lever 36 in raised position and with it the lever 34 in inactive position.

The action of the foregoing is substantially as follows: When the shaft 26 is driven, the disk 32 rotating in the direction indicated by the arrow in Fig. 5, and the pawl 31 is not rocked by the lever 34, the abutment engaging end of the pawl 31 will engage the abutment 30 and rotate the cam 25 with it, thereby rocking the lever 21, to actuate the standards 19 and therewith the plates 14 and 15 in an upward direction. If, on the other hand, the lever 36 is depressed when the shaft 26 is driven, the lever 34 will rock the pawl 31 out of engagement with the abutment 30 thereby to permit the actuation of the shaft 26 without reciprocating the plates 14 and 15.

From the plates 14 and 15, the card is fed by the rolls 37 and 38 to the rolls 39 and 40 and by them fed into the receptacle 41, the rolls 39 and 40 directing the card onto the packing member 42 which is rocked with each cycle of the shaft 26, immediately after each card is fed thereon, to press the received card under and beyond the resilient downwardly retained rod 43 to provide a receiving space for the next succeeding card when the packing member 42 returns to normal position. As the cards are pressed beyond the rod 43, the packing member 42 will further operate to pack the cards against the retreating member 44, thereby to anchor the cards in a compact pile between the rod 43 and retreating member 44.

The packing member 42 is mounted on the shaft 45 which is connected by the lever 46 with one end of the link 47, the other end of which is provided with an eccentric strap 48 to encircle the eccentric 49 fixed on the shaft 26.

The rolls 13, 38, and 40 are all interconnected by gears with the main driving gear 67 fixed on the main shaft 26, the gear 67 in the present instance being in mesh with the gear 68 connected to one of the rolls 13 which roll as aforesaid is connected with the rolls 38 and 40 by gears, as shown in Fig. 6.

Above the punches 16 are disposed the punch settable means consisting essentially of lower spring-pressed pins 50 and upper locking plate controlled pins 51. The lower spring pressed pins 50 correspond in number

to the punches 16 and register therewith, being slidably mounted in the plates 52 and 53 spaced from one another by the side bars 54 and 55. On each of the pins 50 is formed a collar 56 to abut against the upper plate 52 and on each of the pins 50 is mounted a spring 57 tensed between the collar 56 and the lower plate 53, thereby normally retaining the pins 50 in raised position. The lower ends of the pins 50 are adapted to cooperate with the punches 16, while the upper ends of the pins 50 are adapted to cooperate with the pins 51.

The pins 51 are preferably flat pieces slidably mounted on the plates 57' and 58, the plate 57' being mounted on the side rails 59 and 60, while the plate 58 is secured to the plate 57' by the studs 61. The pins 51, pins 50, and punches 16 are arranged in rows, each consisting of a complete series of the available data to be selected for a particular column. Each row of pins 51 have their lower ends slidably mounted in a locking plate or bar 62 common to such row. These bars 62 are horizontally slidable in the lower ends of the side rails 59 and 60, and in the present instance, are spring-pressed in a direction from the side rail 60 to the side rail 59 by the springs 63. The pins 51 are provided with cam surfaces 64, on one side thereof, in the present instance the side facing the side rail 60 to cooperate with the locking bar 62, the cam surfaces 64 being such that when a pin 51 of a particular row is depressed, it will rock the locking bar 62 cooperating therewith in a direction toward the side rail 60 against the tension of its spring 63. Above the cam surfaces 64 are formed shoulders 65 to engage the bar 62 when a pin is depressed and thus lock the depressed pin 51 in its depressed position. The lower ends of the pins 51 cooperate with the pins 50 as aforesaid, while the upper ends of the pins 51 cooperate with the setting pins 66.

The pins 66 are slidably mounted in the plate 69 of the carriage 70, there being but a single row of setting pins 66 corresponding to one of the rows of pins 51. The setting pins 66 are pivotally connected to the bell-crank levers 71 pivotally mounted at their elbows on the shaft 72, journaled in the frame 73, the upper ends of the levers 71 extending through the upper portion of the frame 73 and into cooperative relation with the flexible rods 74, terminating at one end adjacent to the levers 71 at one side of the support 75 and extending through the flexible conduits 76 into cooperative relation with the keys 77 of the key-board 78.

The carriage 70 is provided with the rollers 79 on one side and the roller 80 on the other side, to ride on the rails 81 and 82 respectively being drawn in a forward direction by a spring disposed in the hous-

ing 83 to which the carriage is connected by the tape 84. For conveniently limiting the return movement of the carriage 70 and at the same time preserving the same against shock, the buffer member 139 is provided which comprises essentially a bar 140 having a suitable shock absorbing cushion 141 at its carriage engaging end, a plurality of notches 142 along one edge thereof to co-operate with the pivotally mounted bar 143 to adjust the extent of said bar 140 and thereby adjust the limit of return movement of the carriage 70. The bar 140 as shown in Figs. 2 and 6, extends through the bracket 144 and is anchored therein by the pivotally mounted bar 143. The carriage 70 is anchored in position at successive stations by escapement mechanism which has a gear 85 mounted on the shaft 86 and in mesh with the rack 87. On the shaft 86 is fixed the ratchet wheel 88 which co-operates with the pawls 89 and 90 to intermittently anchor the gear 85 against rotation, the rack and carriage being so arranged at its positions of rest to locate its row of setting pins 66 in registration with the several rows of pins 51.

The pawl 89 is loosely mounted on the shaft 91 while the pawl 90 is fixed on the shaft 91, which has a plate 92 fixed thereon and in engagement with the levers 71 so that whenever a lever 71 is rocked, it will in turn rock the pawls 89 and 90 to permit the escapement of the ratchet wheel 88 a tooth-space, and therewith the travel of the carriage 70 a tooth-space.

The pawl 89 is in engagement with the ratchet wheel 88 while the carriage 70 is at rest, while the pawl 90 will only engage the ratchet wheel 88 when the pawl 89 is rocked out of engagement with the ratchet wheel 88. The pawl 89 in the present instance is provided with a tooth 93, which tooth end is substantially twice the thickness of the pawl 90, and has an extension 94 recessed on one side to accommodate the pawl 90, the recessed portion having a concave shoulder 95 to receive the rounded end of the pawl 90 and permit its rotation relative to the pawl 89. The pawl 89 in the present instance is loosely mounted on the shaft 91 to permit its movement relative to the pawl 90 and shaft 91 which is provided in order to permit the advance of the carriage a plurality of spaces without interruption. The pawl 90 is normally retained from engagement with the ratchet wheel 88 by the shaft 91 and lever 96 which is connected by the spring 97 to resiliently retain the shaft 91 in a position where its plate 92 is pressed against the levers 71. The pawl 89 is normally retained in engagement with the ratchet wheel 88 by the spring 98 which connects the pin 99 on the pawl 89 with the

projection 100 on the lever 101 which is loosely mounted on the shaft 86. Whenever the pawl 90 is rocked by the shaft 91, to engage the ratchet wheel 88, it will raise the pawl 89 out of engagement with such ratchet wheel by means of the pin 102 formed eccentrically of the cam 103 which extends through the pawl 90 while the pin 102 co-operates with the recess 94' of the extension 94 to depress the pawl 89. The cam 103 has a head 104 for engagement by the operator to permit adjusting the positions of the pawl 89 relative to the pawl 90 by the position of the pin 102.

The lever 101 is provided for initiating the restoration of the locking plate 62, such lever 101 having an upper finger engaging arm 104' and a lower arm 105 provided with a pin 106 to engage the slot 107 in the roller carrying link 108 which is connected to the extension 109 formed on the carriage 70. The link 108 has slidably mounted thereon a roller 110, which is adapted to coöperate with the levers 111 pivotally mounted on the shaft 112 at their lower ends while their upper ends are adapted to engage the plates 62, a lever 111 for each plate 62. The levers 111 have cam surfaces 113 as clearly shown in Fig. 4 so that when the roller 110 is in its raised position it will pass over the levers 111 without rocking them and in turn, when depressed, rock the levers 111 to actuate the plates 62. For purposes of alinement, the extreme upper ends of the levers 111 are located in the notches formed in the guide plate 114.

For anchoring the levers 111 out of operative position, the reciprocating plate 115 is provided which, as shown in Fig. 2, has inclined slots 116 at its ends to receive the screws 117, the slots inclining in the same direction relative to one another, and a spring 118 for normally straining the plate in its raised position with the screws 117 located at the lower ends of the slots 116. In this raised position, the plate 115 will be disposed in the path of movement of the tail pieces 118 of the levers 111. Thus when it is desired to anchor any of the levers 111 out of operative position it will only be necessary to depress the plate 115 to free the tail pieces 118 when such levers 111 as are to be anchored out of operative position will be swung over away from the plates 62 with their tail pieces 118 disposed inside of the plate 115, and the plate 115 then released to permit the same to rise up again and be disposed inside of the tail pieces 118 of those levers 111 which are to be retained in operative position. It will be seen from Fig. 4, that the levers 111 depend only upon gravity to rest against the plates 62, the plate 115 merely serving as an anchor to prevent such levers 111 to be rocked out of operative po-

sition and in turn that the levers 111 which have been rocked out of operative position as aforesaid after depressing the plate 115 will depend entirely upon gravity to remain in such inoperative position while the plate 115 merely serves as an anchor to prevent them from being accidentally rocked into operative position.

From the foregoing it will be seen that after a card has been perforated and the carriage is at its extreme end, it will only be necessary for the operator to engage the lever arm 104' to withdraw the carriage and at the same time the pressure exercised upon such lever arm 104' in the withdrawal aforesaid, will rock the lever 101 to bring its roller 110 into engagement with the cam surfaces 113 of the levers 111 and simultaneously with the return of the carriage 70, the roller 110 will travel along the levers 111 to successively rock them over against the plate 62 to free the pins 51 which by means of the spring pressed pins 50 will be immediately snapped into elevated position and the plates 62 returned to normal position after the roller has passed over them or released their adjacent lever 111. For the purpose of advancing the carriage one or more spaces, especially a plurality of spaces, without actuating a setting pin 66, it will only be necessary for the operator to engage the pin 99 which is enlarged for such purpose and raise the pawl 89 out of engagement with the ratchet wheel 88. To facilitate such operation, the enlarged finger piece or pin 119 is formed as an extension of the shaft 86 which may serve as a support for the operator's hand when manipulating the pin 99. This pin 119 may also be used as a point for engagement by the operator independent of the lever 101 when it is desired to return the carriage 70 without restoring the pins 51.

When the carriage 70 has gone its full distance and the complete data of a particular record has been reproduced by the pins 51, a card to be perforated is placed by the operator on the platform 11 and fed between the rails 11' to the rolls 12 and 13, then the key 120 depressed which actuates a flexible rod 121 disposed in the flexible conduit 122 to in turn engage the lower arm of the lever 123 which lower arm is normally maintained in engagement with the rod 121 by the spring 124. The lever 123 is fulcrumed to the bearing standard 125 in the upper end of which is slidably mounted the reciprocating rod 126 which has a pin 127 at one end thereof riding in the cam slot 128 formed in the upper arm of the lever 123. Thus, whenever the lever 123 is actuated by the rod 121 it will in turn actuate the reciprocating rod 126. The rod 126 has the finger 129 formed thereon which is adapted to cooperate with

the head 130 of the clutch pin 131 formed in the bracket 132 fixed to the main driving shaft 26. Loosely mounted on the shaft 26 and adjacent to and in cooperative relation with the clutch pin 131 is provided a clutch member 133 connected to be rotated by any suitable source of power such as the motor M. The clutch member 133 is provided with lugs 134 on its periphery to engage the clutch pin 131 when the same has been released by the finger 129. Thus, after the pins 51 have been set for perforation, it will only be necessary to depress the key 120 when the finger 127 will be withdrawn from engagement with the head 130 thereby permitting the pin 131 to extend into the path of movement of the lugs 134 and such lugs 134 engaging the pin 131 will rotate the bracket 132 to in turn actuate the shaft 26, whereupon the gear 67 fixed on said shaft will actuate the feed rolls 13, 38, and 40 to feed the card through the machine, and the disk 32 through the instrumentality of the pawl 31 will engage the abutment 30 to actuate the cam 25 to in turn, at the proper time, actuate the lever 21 to perform the perforation of the card. As the bracket 132 in the course of its cycle, returns to the finger 129, the key 120 having in the meantime been released, such finger 129 will be in position to withdraw the pin 131 out of engagement with the clutch member 133, whereupon the feed rolls and pin box comprising plates 14 and 15 will again come to rest.

For the purpose of feeding a card through the machine without perforating the same, which may be desired in order to insert a space card or total card in a group of cards, after a data has been reproduced by the pins 51, means are provided for actuating the feed rolls 13, 38, and 40 without actuating the perforating means. In this case instead of depressing the key 120, the finger piece 37 is depressed, which actuates the rock shaft 35. The rock shaft, as already explained, has formed thereon a lever 34 which will rock the pawl 31 out of the path of movement of the abutment 30. Simultaneously with this actuation of the pawl 31, the clutch pin 130 will be released which is done by means of the cam lever 135 which is fixed on the rock shaft 35 and has a cam surface to cooperate with the pin 136 on the lever 123 to actuate such lever 123 to thereby reciprocate the rod 126 to in turn release the clutch pin 131. For convenience of limiting the movement of the rock shaft 35, the stop lever 137 is provided which is adapted to abut the frame portion 138 of the machine as illustrated in Fig. 5. Upon the release of the lever 36, the machine will also return to rest in the same manner as aforesaid.

It is obvious that various changes and

modifications may be made to the details of construction without departing from the general spirit of the invention.

I claim:

1. In a perforating machine, the combination with settable pins for reproducing a record, punches, a driven shaft, means for actuating said punches to cooperate with said settable pins to perforate a record card, means for feeding a card into cooperation with said punches, means for operatively connecting said punch actuating means with said driven shaft, means for operatively connecting said feeding means with said driven shaft, and means for connecting the driven shaft for actuation thereby to actuate said feeding means while retaining said punch actuating means out of operation.

2. In a perforating machine, the combination with means for perforating a card, means for feeding a card to said perforating means, a driven shaft, means for operatively connecting said perforating means with said driven shaft, means for operatively connecting said feeding means with said driven shaft, and means for connecting said driven shaft for actuation to actuate said feeding means while retaining said perforating means out of operation.

3. In a perforating machine, the combination with means for perforating a card, means for feeding a card to said perforating means, a driven shaft, means for operatively connecting said perforating means with said driven shaft, means for operatively connecting said feeding means with said driven shaft, means for operatively connecting said driven shaft for actuation thereby to actuate said perforating means and feeding means, and means for operatively connecting said driven shaft for actuation thereby to actuate said feeding means while retaining said perforating means out of operation.

4. In a perforating machine, the combination with means for perforating a card, of means for feeding a card to said perforating means, a driven shaft, means for operatively connecting said perforating means with said driven shaft, means for operatively connecting said feeding means with said driven shaft, means for operatively connecting said driven shaft for actuation to actuate said perforating means and feeding means, and means for operatively connecting said driven shaft for actuation and simultaneously retaining the operative connection between said perforating means and said driven shaft out of operation.

5. In a perforating machine, the combination with means for perforating a card, of means for feeding a card to said perforating means, a driven shaft, means for operatively connecting said perforating means with said driven shaft, means for operatively connecting said feeding means with said driven

shaft, means for connecting said driven shaft for actuation, means for actuating said connecting means of said driven shaft into operative relation with said driven shaft for actuation, and means for simultaneously actuating the connecting means of said driven shaft into operative relation with said driven shaft and actuating the operative connection of said perforating means with said driven shaft out of operation.

6. In a perforating machine, the combination with means for perforating a card, means for feeding a card to said perforating means, a driven shaft, means for operatively connecting said feeding means with said driven shaft, a cam loosely mounted on said driven shaft and operatively connected to said perforating means, means for normally connecting said cam to rotate with said shaft, means for connecting said driven shaft for actuation, means for actuating the connecting means of said driven shaft into operative relation with said driven shaft for actuation, and means for simultaneously actuating the connecting means of said driven shaft into operative relation with said driven shaft and actuating the connecting means between said cam and said shaft out of operation.

7. In a perforating machine, the combination with means for perforating a card, a driven shaft, a cam loosely mounted on said shaft and operatively connected to said perforating means, means for normally connecting said cam to rotate with said shaft, means for connecting said shaft for actuation, and means for simultaneously actuating the connecting means of said driven shaft into operative relation with said shaft for actuation and actuating the connecting means between said cam and said shaft out of operation.

8. In a perforating machine, the combination with means for perforating a card, of a driven shaft, driving means, a cam loosely mounted on said shaft and operatively connected to said perforating means, means for normally connecting said cam to rotate with said shaft, means for connecting said shaft with said driving means, and means for simultaneously actuating the connecting means of said shaft into operative relation with said driving means and actuating the connecting means between said cam and said shaft out of operation.

9. In a perforating machine, the combination with means for perforating a card, of a driven shaft, driving means, a cam loosely mounted on said shaft and operatively connected to said perforating means, means for normally connecting said cam to rotate with said shaft, means for connecting said driven shaft with said driving means, means for actuating the connecting means of said shaft into operative relation with said driv-

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ing means, and means for anchoring the connecting means between said cam and said shaft out of operation.

10. In a perforating machine, the combination with means for perforating a card, of a driven shaft, driving means, a cam loosely mounted on said shaft and operatively connected to said perforating means, means for normally connecting said cam to rotate with said shaft, means for connecting said driven shaft with said driving means, means for actuating the connecting means of said shaft into operative relation with said driving means, and means for simultaneously actuating the connecting means of said shaft into operative relation with said driving means and actuating the connecting means between said cam and the said shaft out of operation.

11. In a perforating machine, the combination with means for perforating a card, of a driven shaft, driving means, means for feeding a card to and from said perforating means, means for operatively connecting said feeding means with said driven shaft, a cam loosely mounted on said shaft and operatively connected to said perforating means, a disk fixed to said shaft, an abutment on said cam, a pawl resiliently strained to engage said abutment to permit the rotation of said cam with said disk, means for connecting said driven shaft with said driving means, means for simultaneously actuating the connecting means of said shaft into operative relation with said driving means and rocking said pawl out of engagement with said abutment to permit the rotation of said shaft without the rotation of said cam.

12. In a perforating machine, the combination with means for perforating a card, of a driven shaft, driving means, a cam loosely mounted on said shaft and operatively connected to said perforating means, a disk fixed to said shaft, an abutment on said cam, a pawl resiliently strained to engage said abutment to permit the rotation of said cam with said disk, means for connecting said driven shaft with said driving means, means for simultaneously actuating the connecting means of said shaft into operative relation with said driving means and rocking said pawl out of engagement with said abutment to permit the rotation of said shaft without the rotation of said cam.

13. In a perforating machine, the combination with means for perforating a card, of a driven shaft, driving means, means for feeding a card to and from said perforating means, means for operatively connecting said feeding means with said driven shaft, a cam loosely mounted on said shaft and operatively connected to said perforating means, a disk fixed to said shaft, an abutment on said cam, a pawl resiliently strained

to engage said abutment to permit the rotation of said cam with said disk, means for connecting said driven shaft with said driving means having an initial lever, a rock shaft, an actuating lever on said rock shaft for rocking said rock shaft, and levers on said rock shaft one to rock said initial lever to initiate the connection between said driven shaft and said driving means, and the other to rock said pawl out of engagement with said abutment to permit the rotation of said shaft without the rotation of said cam.

14. In a perforating machine, the combination with means for perforating a card, of a driven shaft, driving means, means for feeding a card to and from said perforating means, means for operatively connecting said feeding means with said driven shaft, a cam loosely mounted on said shaft and operatively connected to said perforating means, a disk fixed to said shaft, an abutment on said cam, a pawl resiliently strained to engage said abutment to permit the rotation of said cam with said disk, means for connecting said driven shaft with said driving means having an initial lever, a rock shaft, an actuating lever on said rock shaft for rocking said rock shaft, levers on said rock shaft one to rock said initial lever to initiate the connection between said driven shaft and said driving means, and the other to rock said pawl out of engagement with said abutment to permit the rotation of said shaft without the rotation of said cam, and means for exclusively actuating said initial lever whereupon the driven shaft will be actuated and simultaneously therewith both the feeding and perforating means actuated.

15. In a perforating machine, the combination with means for perforating a card, means for feeding a card to and from said perforating means, means for restoring said perforating means for a new setting, means for retaining said perforating means against restoration for perforating a plurality of cards with the same setting, and means for anchoring said perforating means against actuation while a total card or space card is fed through the machine by said feeding means.

16. In a perforating machine, the combination with settable pins for reproducing a record, punches, means for feeding a card into cooperation with said settable pins and punches, means for actuating said punches to cooperate with said settable pins to perforate a card fed thereto, means for restoring said settable pins for a new setting, means for retaining said settable pins against restoration for perforating a plurality of cards with the same setting, and means for anchoring said punch actuating means against actuation while a total card or space card is fed through the machine by said feeding means.

17. In a perforating machine, the combination with settable pins for reproducing a record, punches, means for feeding a card into coöperation with said settable pins and punches, means for actuating said punches to coöperate with said settable pins to perforate the card fed thereto, means for setting said settable pins, plates for locking the settable pins in the position set by said setting pins, levers for actuating said plates to release said settable pins, and means for actuating said levers to in turn actuate said locking plates.

18. In a perforating machine, the combination with rows of settable pins for reproducing a record, punches for coöperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively coöperating with said settable pins to set the same, and means on said carriage actuatable to restore said settable pins when said carriage is returned to initial position.

19. In a perforating machine, the combination with rows of settable pins for reproducing a record, punches for coöperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively coöperating with said settable pins to set the same, means for anchoring said settable pins in set position, and means on said carriage actuatable to restore said settable pins when said carriage is returned to initial position.

20. In a perforating machine, the combination with rows of settable pins for reproducing a record, of punches for coöperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively coöperating with said settable pins to set the same, plates for resiliently anchoring said settable pins in set position, and means on said carriage actuatable to restore said settable pins when said carriage is returned to initial position.

21. In a perforating machine, the combination with rows of settable pins for reproducing a record, of punches for coöperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively coöperating with said settable pins to set the same, plates for anchoring said settable pins in set position, levers adjacent to said plates, and an actuating lever on said carriage actuatable when said carriage is returned to initial position to rock the levers adjacent said plates to actuate said plates thereby to in turn restore said settable pins.

22. In a perforating machine, the combination with rows of settable pins for repro-

ducing a record, of punches for coöperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively coöperating with said settable pins to set the same, plates for anchoring said settable pins in set position, levers adjacent to said plates, cam surfaces on said levers, and a lever on said carriage actuatable when said carriage is returned to initial position to coöperate with said cam surfaces to rock the levers adjacent said plates to actuate said plates to in turn restore said settable pins.

23. In a perforating machine, the combination with rows of settable pins for reproducing a record, of punches for coöperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively coöperating with said settable pins to set the same, plates for anchoring said settable pins in set position, levers adjacent to said plates, cam surfaces on said levers, an actuatable lever fulcrumed on said carriage, the upper end of which may be actuated when the carriage is being returned to an initial position, and a roll on the lower end of said actuating lever coöperating with said cam surfaces when said actuating lever is actuating, thereby to rock the levers adjacent said plates on the return movement of the carriage to actuate said plates to in turn restore said settable pins.

24. In a perforating machine, the combination with rows of settable pins for reproducing a record, of punches for coöperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively coöperating with said settable pins to set the same, plates for anchoring said settable pins in set position, levers adjacent to said plates, an actuating lever on said carriage actuatable when said carriage is returned to initial position to rock the levers adjacent said plates to actuate said plates thereby to in turn restore said settable pins, and means for anchoring one or more of the levers adjacent said plates out of the path of movement of said actuating lever to anchor certain of said settable pins against restoration.

25. In a perforating machine, the combination with rows of settable pins for reproducing a record, of punches for coöperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively coöperating with said settable pins to set the same, plates for anchoring said settable pins in set position, levers adjacent to said plates, an actuating lever on said carriage actuatable when said carriage is returned to initial position to

rock the levers adjacent said plates to actuate said plates thereby to in turn restore said settable pins, tail pieces on the levers adjacent said plates, and a resiliently strained plate for coöperating with said tail pieces to anchor said levers either in or out of the path of movement of said actuating lever.

26. In a perforating machine, the combination with rows of settable pins for reproducing a record, of punches for coöperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively coöperating with said settable pins to set the same, plates for anchoring said settable pins in set position, levers adjacent to said plates, cam surfaces on said levers, an actuatable lever fulcrumed on said carriage, the upper end of which may be actuated when the carriage is being returned to an initial position, and a roll on the lower end of said actuating lever coöperating with said cam surfaces when said actuating lever is actuated, thereby to rock the levers adjacent said plates on the return movement of the carriage to actuate said plates to in turn restore said settable pins, said roll passing through a different path of movement with the return of the carriage when said actuating lever is not actuated so that the carriage may be returned without restoring the settable pins.

27. In a perforating machine, the combination with a pin box reciprocally mounted to perforate a card, means for feeding a card to and from said pin box, and means for actuating said feeding means while retaining said pin box inoperative.

28. In a perforating machine, the combination with means for perforating a card, of a driven shaft, driving means, means for feeding a card to and from said perforating means, means for operatively connecting said feeding means with said driven shaft, a cam loosely mounted on said shaft and operatively connected to said perforating means, a disk fixed to said shaft, an abutment on said cam, a pawl resiliently strained to engage said abutment to permit the rotation of said cam with said disk, means for connecting said driven shaft with said driving means having an initial lever, a rock shaft, an actuating lever on said rock shaft for rocking said rock shaft, levers on said rock shaft one to rock said initial lever to initiate the connection between said driven shaft and said driving means, and the other to rock said pawl out of engagement with said abutment to permit the rotation of said shaft without the rotation of said cam, a key, and a flexible rod operable by said key to actuate said initial lever thereby to exclusively actuate said initial lever whereby the driven shaft will be actuated and simul-

taneously therewith both the feeding and perforating means actuated.

29. In a perforating machine, the combination with means for perforating a card, of a driven shaft, driving means, means for feeding a card to and from said perforating means, means for operatively connecting said feeding means with said driven shaft, a cam loosely mounted on said shaft and operatively connected to said perforating means, a disk fixed to said shaft, an abutment on said cam, a pawl resiliently strained to engage said abutment to permit the rotation of said cam with said disk, means for connecting said driven shaft with said driving means having an initial lever, a key, and a flexible rod operable by said key to actuate said initial lever thereby to exclusively actuate said initial lever whereupon the driven shaft will be actuated and simultaneously both the perforating and feeding means actuated.

30. In a perforating machine, the combination with rows of settable pins for reproducing a record, punches for coöperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively coöperating with said settable pins to set the same, means for anchoring said settable pins in set position, and means on said carriage actuatable to restore said settable pins when said carriage is returned to initial position, said carriage being returnable without actuating said restoring means, thereby to retain said settable pins in their set position.

31. In a perforating machine, the combination with rows of settable pins for reproducing a record, of punches for coöperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively coöperating with said settable pins to set the same, plates for anchoring said settable pins in set positions, levers adjacent to said plates, and an actuating lever on said carriage actuatable when said carriage is returned to initial position to rock the levers adjacent said plates to actuate said plates thereby to in turn restore said settable pins, said carriage being returnable without actuating said actuating lever, thereby to retain said settable pins in their set position.

32. In a perforating machine, the combination with means for perforating a card, a receptacle for perforated cards, means for feeding a card to and from said perforating means to said receptacle, a packing member in said receptacle to pack the cards in a compact pile, a driven shaft, means for actuating said feeding means and perforating means operatively connected to said driven

shaft to be actuated thereby, an eccentric on said driven shaft, an eccentric strap on said eccentric, and a link connecting said packing member with said eccentric strap.

5 33. In a perforating machine, the combination with rows of settable pins for reproducing a record, punches for cooperating with said settable pins to perforate a card, a carriage traveling across said settable
10 pins, a row of setting pins mounted on said carriage for successively cooperating with said settable pins to set the same, means on said carriage actuable to restore said settable pins when said carriage is returned to
15 initial position, a buffer to define the return limit of movement of said carriage, said buffer comprising a notched bar, a cushion on the end of said bar to absorb the shock, and a lever for cooperating with the notches
20 on said bar to adjust the extent of said bar for defining the limit of return movement of said carriage.

34. In a perforating machine, the combination with rows of settable pins for
25 producing a record, of punches for cooperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively cooperating with
30 said settable pins to set the same, means for anchoring said settable pins in set position, means on said carriage actuable when said carriage is returned to initial position to actuate said anchoring means and thereby
35 to in turn restore said settable pins, escapement means on said carriage to afford a step-by-step movement of said carriage to permit the successive cooperation of said setting pins with said several rows of settable
40 pins, a pin being formed on said anchoring means, and a second pin formed on said escapement means to be actuated by the operator when the carriage is to be released for freely traveling over several
45 spaces at a time without interruption, the first pin forming a support for the operator's finger when cooperating with the said second pin.

35. In a perforating machine, the combination with rows of settable pins for
50 reproducing a record, of punches for cooperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively cooperating with said settable pins to set the same, escapement means on said carriage to afford
55 a step-by-step movement of said carriage to permit the successive cooperation of said setting pins with said several rows of settable pins, means for operatively connecting said escapement means with said setting pins whereby said carriage is actuated a step-space whenever a setting pin is actuated,

said escapement means comprising a ratchet
65 wheel cooperating pawl fixed to be actuated whenever a setting pin is actuated, and a second ratchet wheel cooperating pawl loosely mounted to be actuated by said first pawl.

36. In a perforating machine, the combination with rows of settable pins for reproducing a record, of punches for cooperating with said settable pins to perforate a card, a carriage traveling across said settable pins,
70 a row of setting pins mounted on said carriage for successively cooperating with said settable pins to set the same, means for advancing said carriage, a rack, a gear on said carriage cooperating with said rack, a
75 ratchet wheel on said carriage fixed to rotate with said gear, a shaft, a pawl cooperating with said ratchet wheel fixed on said shaft and operatively connected to be actuated whenever a setting pin is actuated, a
80 second pawl loosely mounted on said shaft, said pawls in normal operation alternately cooperating to permit said ratchet wheel to travel a tooth-space at a time to which end an extension is formed on said second pawl,
85 and a pin formed on said fixed pawl to engage the upper edge of said extension.

37. In a perforating machine, the combination with rows of settable pins for reproducing a record, of punches for cooperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively cooperating with said settable pins to set the same, means
90 for advancing said carriage, a rack, a gear on said carriage cooperating with said rack, a ratchet wheel on said carriage fixed to rotate with said gear, a shaft, a pawl cooperating with said ratchet wheel fixed on said shaft when operatively connected to be actuated whenever a setting pin is actuated, a second pawl loosely mounted on said shaft, an extension on said second pawl having a recess in its upper edge, and a pin formed on
100 said fixed pawl to cooperate with said recess to raise said second pawl out of engagement with said ratchet wheel whenever said first pawl is actuated into engagement therewith.

38. In a perforating machine, the combination with rows of settable pins for reproducing a record, of punches for cooperating with said settable pins to perforate a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively cooperating with said settable pins to set the same, means
110 for advancing said carriage, a rack, a gear on said carriage cooperating with said rack, a ratchet wheel on said carriage fixed to rotate with said gear, a shaft, a pawl cooperating with said ratchet wheel fixed on said

shaft and operatively connected to be actuated whenever a setting pin is actuated, a second pawl loosely mounted on said shaft, an extension on said second pawl, a pin for
5 engaging said second pawl to actuate said second pawl simultaneously with said first pawl, and a cam rotatably mounted in said first pawl on which said pin is eccentrically
10 mounted whereby the pin may be set to adjust the relative engagement of the pawls with said ratchet wheel.

39. In a perforating machine, the combination with rows of settable pins for reproducing a record, of punches for cooperating with said settable pins to perforate
15 a card, a carriage traveling across said settable pins, a row of setting pins mounted on said carriage for successively cooperating with said settable pins to set the same, means
20 for advancing said carriage, a rack, a gear on said carriage cooperating with said rack, a ratchet wheel on said carriage fixed to rotate with said gear, a shaft, a pawl cooperating with said ratchet wheel fixed on

said shaft and operatively connected to be actuated whenever a setting pin is actuated, a second pawl loosely mounted on said shaft, an extension on said second pawl recessed on
25 one side, and a concave shoulder formed by said recessed extension with said second pawl, the first pawl seating in said recessed
30 side combining with the extension to equal the thickness of said second pawl, and operatively connected to said second pawl to actuate the same.

40. In a perforating machine, the combination with means for perforating a card, means for feeding a card to said perforating means, means for actuating said perforating means, and means for anchoring
35 the actuating means for said perforating means against operation while permitting the actuation of said actuating means.

WILLIAM W. LASKER.

Witnesses:

H. M. KILPATRICK.

W. D. PENNEY.