J. POWERS.

HAND PERFORATING MACHINE.

APPLICATION FILED FEB. 12, 1914.

1,203,262.

Patented Oct. 31, 1916.

2 SHEETS—SHEET 1.

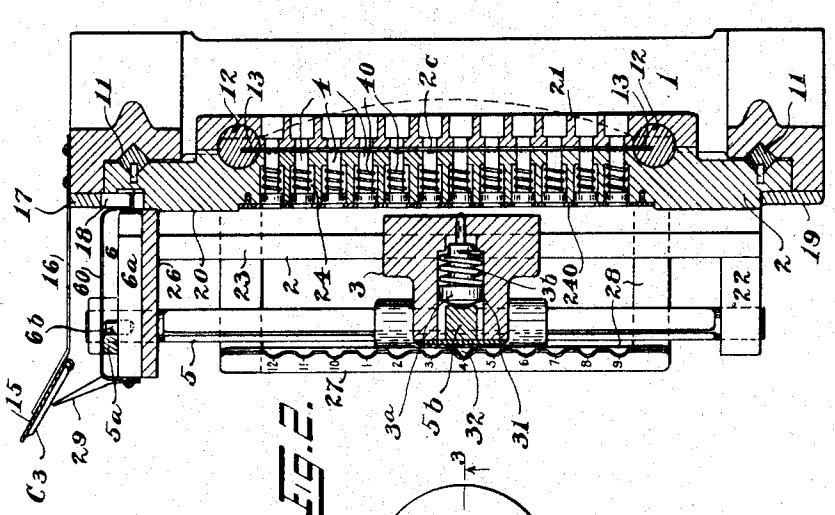


FIG. 2.

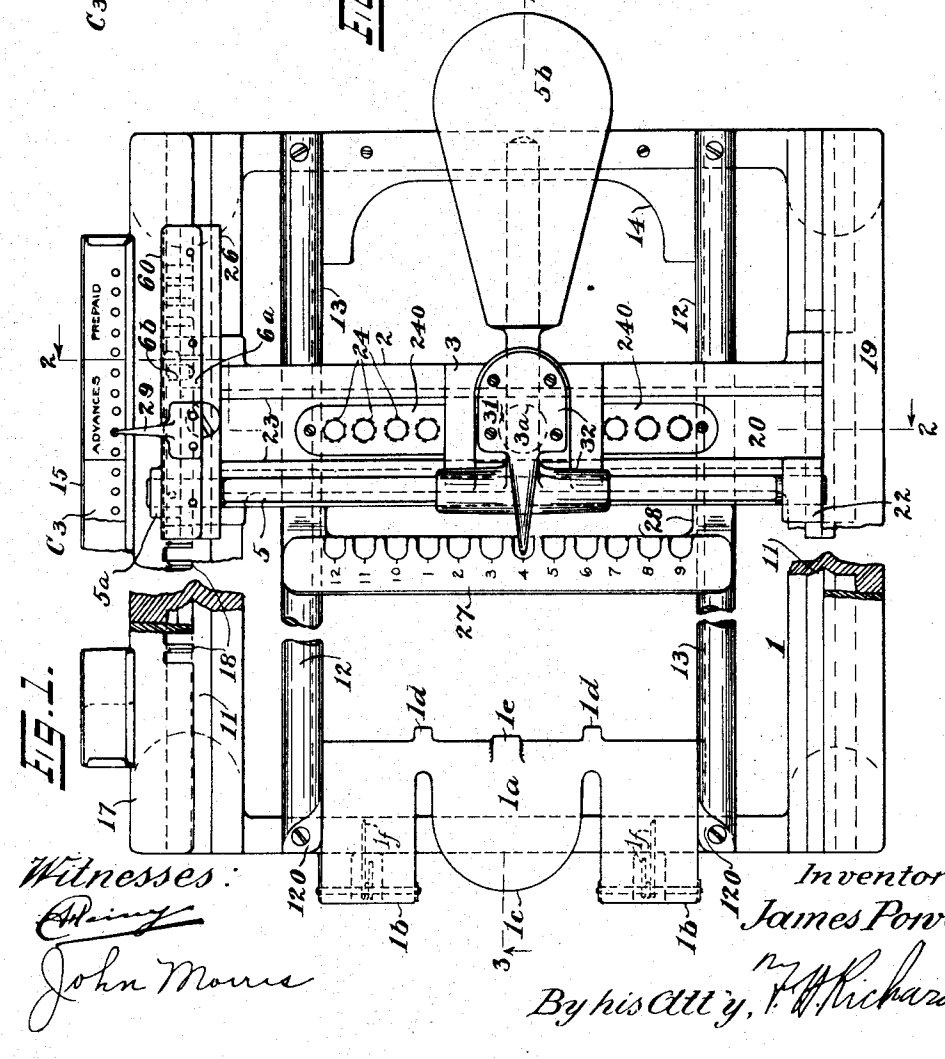



FIG. 1.

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Inventor:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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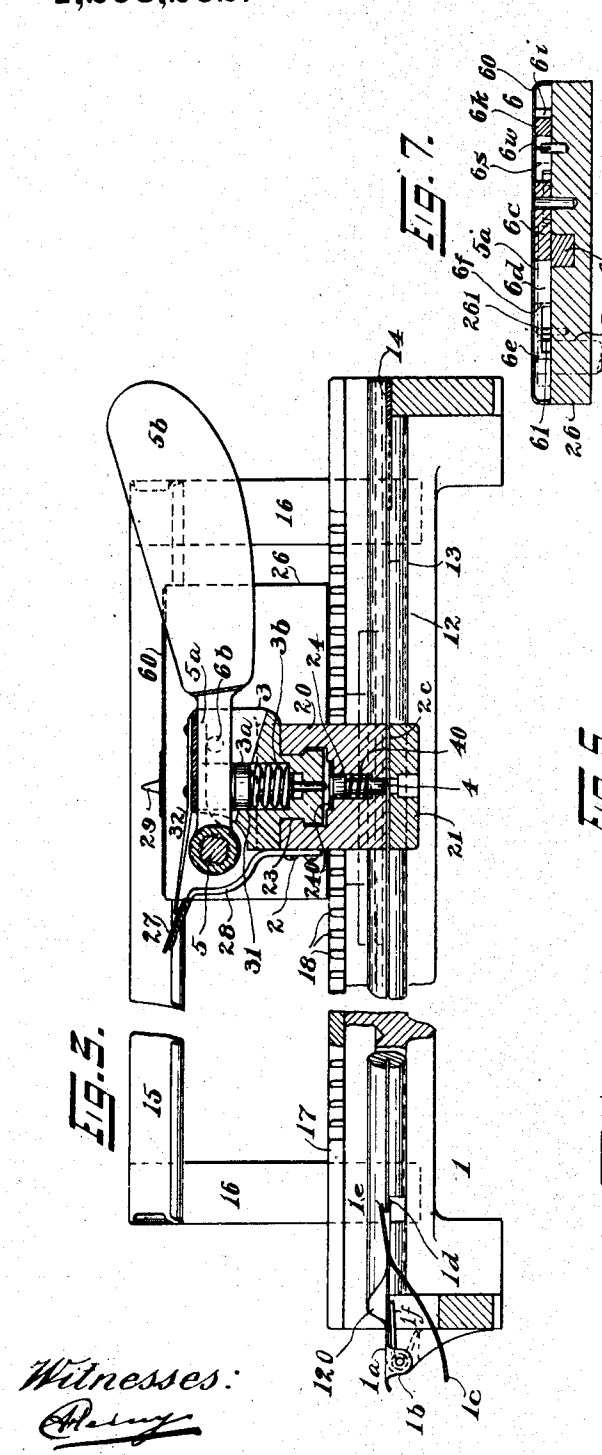


Fig. 3.

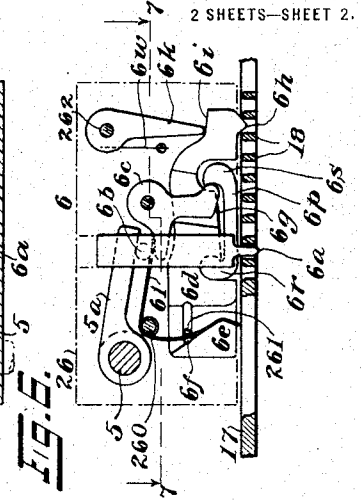


Fig. 6.

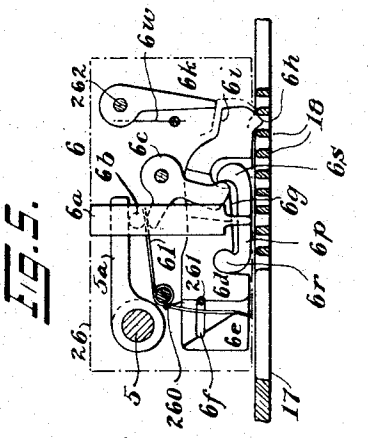


Fig. 5.

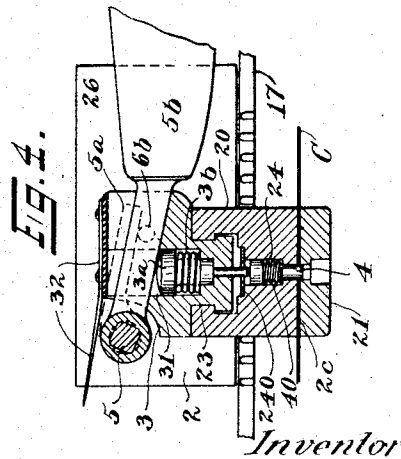


Fig. 4.

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# UNITED STATES PATENT OFFICE.

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

## HAND PERFORATING-MACHINE.

1,203,262. Specification of Letters Patent. Patented Oct. 31, 1916.

Application filed February 12, 1914. Serial No. 818,323.

*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 Hand Perforating-Machines, of which the following is a specification.

My invention constitutes an improved, hand-operated, selective, automatic feed, gang punch for quickly and accurately recording facts in record cards characterized by record points arranged in columns and rows, by punching one hole in the proper, selected row in each proper selected column to record a fact; or in each column in cards whose subsequent treatment so requires.

In general terms, it comprises a quadrangular, open base provided with longitudinal card-ways in which record cards are positioned by end stops for punching, and a column-scale holder adapted to hold scales out from record cards, ways for the punch-carriage, and a series of carriage-locating feed-conformations corresponding with card-point columns, illustrated as a rack; mounted on said ways a punch-carriage containing a gang of punches corresponding with the rows of card-points, provided with a pointer for reading the column scale and operably mounting a longitudinally-extending punch-lever transversely slidable on a rock shaft and operably connected therewith an automatic carriage-feed mechanism coacting with said rack to automatically advance the punch-carriage one column-space or rack-pitch every time the punch lever is depressed; and mounted on said punch-carriage a row-scale corresponding with the card-row and punch spacing, and a transversely slidable plunger-carrier engaged with, and positioned to row-scale readings by said punch-lever, by means of a slot in which it plays, and provided with a pointer for reading the row-scale and a spring-retracted plunger operable by depressing said punch lever, to advance the selected punch and thereby punch the corresponding card-point and record the desired fact.

In the drawings, Figure 1 is a plan; Fig. 2 a transverse section on the plane 2—2 of Fig. 1; Fig. 3 a longitudinal section on the line 3—3 of Fig. 1; Fig. 4 a like section of the carriage showing a punch extended; Fig. 5 a diagrammatic view of the automatic feed mechanism released; Fig. 6 a like view but engaged; and Fig. 7 a sectional plan at the plane 7—7 of Fig. 6.

I provide a quadrangular open base 1 having longitudinal members as follows: slideways 11 for the punch carriage 2; and, detachable, card supports 12, containing opposite card slots 13, in which the card is placed, and positioned for punching by a fixed end stop 14 and an opposite movable stop $1^a$; a scale-holder 15, elevated on posts 16; a rack 17 whose teeth 18 correspond with the columns of record points on the record cards; and a retaining strip 19, which extends over one margin of the punch carrier, to retain it on the ways, as the rack 17 does to the other side.

The transverse punch-carriage 2, longitudinally slidable and confined as aforesaid upon the ways 11, comprises a socket plate 20 provided with lower guides which engage the ways 11, and outer parallel surfaces which engage the rack 17 and strip 19, transverse inter-locking parallel guides 23 for the plunger carrier 3, and which terminates at one end in a pillow block 22 and at the other in a longitudinally-extending, oblong head 26 which mounts the automatic feed mechanism 6, said socket plate containing a series (illustrated as 12) of counterbored punch sockets 24, spaced to correspond with the card point rows, for punches 4, retracted by springs 40 and confined by a perforated plate 240, through whose perforations the punches are operable; a die plate 21 spaced from the socket plate 20 to form a card-way $2^c$ terminating in enlarged passages for the card supports 12, and drilled in register with the punches; a row-scale 27 with notched and marked index points corresponding with the punches and fast to a forked plate 28, secured to the socket plate 20 by its forks; and a pointer 29, for reading the column-scale.

Mounted in bearings in the pillow 22 and head 26, is a rock shaft 5 provided with an arm $5^a$ exterior to said head and formed with an intermediate polygonal portion which engages the socket of and angularly fixes its relation with a punch lever or handle $5^b$ transversely slidable thereupon. The plunger carrier 3 is a block formed with inter-locking guides by which it engages the carriage guides 23, a counterbored plunger-socket 31 containing a headed

plunger $3^a$ enveloped by a retracting spring $3^b$, and a longitudinal slot which the shank of the handle 5 transversely engages and in which it plays vertically and is confined by the plate of a pointer, 32, for setting the plunger $3^a$ to the row-scale 27.

The automatic feed mechanism 6 is contained in a hollow cheek plate 60 fast to the head 26. The automatic feed mechanism comprises essentially a stop $6^a$, a spring 61, a fulcrumed bell crank $6^c$, a sliding abutment or dog $6^d$, a pendulum stop $6^k$ and a link $6^p$. The stop $6^a$ has a pointed tooth adapted to engage the rack teeth 18 and is reciprocated in a slot in the head 26, being lowered by the downward movement of the rocker arm $5^a$ which engages the upper side of the projection $6^b$ on said stop $6^a$ and being raised by the upward movement of the spring 61 which engages the lower side of the projection $6^b$, said spring being fulcrumed on a pin 260 fast in said head. The fulcrumed bell crank $6^c$ has a horizontal arm engaging the lower side of said spring, the spring being disposed between said projection $6^b$ and such horizontal arm of the bell crank $6^c$. The sliding abutment or dog $6^d$ is slotted to accommodate portions of said bell crank and spring, has a cheek $6^e$ engaging the depending tip of said spring by which spring its slide is limited relative to said head, and has a slot $6^t$ engaged with a pin 261 in the head. The dog $6^d$ also has in its lower face an intermediate link slot $6^g$ communicating with the bell crank slot, at its near end, a lower blunt beveled tooth $6^h$ for engaging the rack teeth 18, and an upper retaining conformation $6^i$. The pendulum stop $6^k$ is pivoted on the head 26 by a pin 262, normally positioned by a spring $6^w$, and adapted to limit the lift while permitting free reciprocation of the dog $6^d$. The link $6^p$ which lies on its back on the rack 17 in the link slot $6^s$, engages an appropriate conformation of the dog $6^d$ by means of a bulbous head $6^r$ and engages the depending arm of the bell crank $6^c$ by its tongue $6^s$.

The movable card stop $1^a$ (Fig. 1) is E-shaped pivoted by its forks $1^b$ on the base 1, has a central thumb-piece $1^c$ and on its inner edge, outward, relatively-long flush tongues $1^d$ to support, and a short central, raised catch $1^e$, to hold down cards. The ends of the card supports 12 above the card slots 13, are beveled as shown at 120 to facilitate card entry.

The punch is operated as follows: The beveled ends 120 of the card supports 12 permit cards to be easily entered into the card slots 13, passed through the card-way $2^c$ in the carriage 2 and against the fixed stop 14 against which they are retained by the engagement of their far edge with the tongues $1^d$, $1^e$ of the movable stop $1^a$. A card margin, $C^3$ cut from a card like those to be punched is inserted in the scale-holder 15 and constitutes a temporary scale by which to locate the carriage 2 for punching like cards. Depressing the handle $5^b$ advances the plunger $3^a$ and the punch 4 with which it registers to punch the card; and releasing or lifting it (according as the spring $3^b$ be or be not strong enough to lift the handle) permits the retraction of the plunger and advanced punch, and also permits the feed-spring 61 to retract the stop $6^a$ and release the carriage from the rack 17, so that it can be slid by hand, the rounded tops of the rack teeth 18 (Fig. 3) permitting the dog tooth $6^h$ to chatter over them when the handle is held up, the dog then clearing the pendulum stop. The carriage 2 is adjusted approximately by the pointer 29 and column-scale $C^3$ to the card column to be first punched; the handle $5^b$ and carrier 3 are slid transversely approximately to the row in which the column is to be punched; the handle is depressed, which rocks the shaft 5, and its arm $5^a$, compresses the feed spring 61, depresses the stop $6^a$, enters its nose between rack teeth 18 and exactly positions the carriage; rocks the bell crank $6^c$, slides the dog $6^a$ one tooth-space (to the right, Figs. 5 and 6) to engage a pair of teeth 18 by its tooth $6^h$ and be held temporarily in such engagement by the pendulum $6^k$; while at the same time the plunger $3^a$ is depressed through a hole in the confining plate 240, and works a punch 4. When the handle $5^b$ and arm $5^a$ are raised the spring 61 raises the stop $6^a$ and releases the carriage 2 from the rack 17; but the pendulum stop $6^k$ retains the dog tooth $6^h$ in engagement with rack teeth 18 and holds the dog stationary to act as an abutment for the spring 61, which instantly recoils and advances the carriage 2 one column-space. If there be a perforation to make in such column—for either a "nought" or a fact-record—the handle and carrier are shifted in consonance therewith. It is not necessary to precisely position the carrier to the punches because the tip of the plunger $3^a$ is much smaller than the holes in the confining plate 240 and the punch-heads. When a row is to be continuously punched, as often occurs, especially in the "nought" row, the punch can be operated as rapidly as the operator can move his hand up and down, the carriage being fed automatically and no transverse adjustment of the handle is necessary. After a card has been punched, the thumb piece $1^c$ of the stop $1^a$ is pressed, which snaps the catch $1^e$ and releases the card, so that it can be removed. When cards of a different type are to be punched, the scale $C^3$ is changed.

Having thus described my invention, I claim:—

1. Selective hand punches comprising a base provided with slideways; slidable

thereon a carriage formed with a series of sockets transverse to its motion; a series of punches operable in said sockets; a carrier and operable therein a plunger slidable on said carriage to cause said plunger to be operably located relatively to any punch of said series; a lever pivotally connected to said carriage, a portion of said lever in engagement with said plunger so that the actuation of said lever will depress said plunger, and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

2. Selective hand punches comprising a base provided with slideways; slidable thereon a carriage formed with a series of sockets transverse to its motion; a series of punches operable in said sockets; a carrier and operable therein a plunger slidable on said carriage to cause said plunger to be operably located relatively to any punch of said series; automatic carriage-feed mechanism operably connected with said hand-operated member and upon release thereof adapted to feed said carriage; and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

3. Selective hand punches comprising a base provided with slideways; slidable thereon a carriage formed with a series of sockets transverse to its motion; a series of punches operable in said sockets; means located on said carriage for operating said punches; automatic carriage-feed mechanism operably connected with said hand-operated member and upon release thereof adapted to feed said carriage; and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

4. Selective hand punches comprising a base provided with slideways; slidable thereon a carriage formed with a series of sockets transverse to its motion; a series of punches operable in said sockets; a carrier and operable therein a plunger slidable on said carriage to cause said plunger to be operably located relatively to any punch of said series, and a hand-operated member operably related to and adapted to advance said plunger; automatic carriage-feed mechanism settable by the punching stroke of said hand operated member, and upon release thereof adapted to feed said carriage; and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

5. Selective hand punches comprising a base provided with slideways and parallel thereto a series of engaging conformations; slidable thereon a carriage formed with a series of sockets transverse to its motion; a series of punches operable in said sockets; a carrier and operable therein a plunger slidable on said carriage to cause said plunger to be operably located relatively to any punch of said series, and a hand operated member operatively related to and adapted to advance said plunger; automatic carriage feed mechanism comprising a carriage-positioning member and a feed-abutment member both adapted to engage said conformations and operably connected with said hand-operated member and by its punching stroke engage with said conformations, said positioning member to position said carriage and serve as abutment for the motion of said feed member and said feed member to serve as abutment for the motion of said carriage upon the release stroke of said hand-operated member; and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

6. Selective hand punches comprising a base provided with slideways, and parallel thereto a series of engaging conformations; slidable thereon a carriage formed with a series of sockets transverse to its motion; a series of punches operable in said sockets; a carrier and operable therein a plunger slidable on said carriage to cause said plunger to be operably located relatively to any punch of said series, and a hand operated member operably related to and adapted to advance said plunger; automatic carriage feed mechanism comprising a carriage-positioning member, a feed abutment and a feed spring, said positioning and abutment members adapted to engage said conformations and operably connected with said hand-operated members and by its punching stroke engaged with said conformations, said positioning member to position said carriage and serve as abutment for the motion of said feed member and said feed member to serve as abutment for the motion of said carriage upon the release stroke of said hand-operated member; and said spring adapted to be strained by the engaging motion of said abutment and, upon the release of said positioning member, to feed said carriage; and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

7. Selective hand punches comprising a base provided with slideways, and parallel thereto a series of engaging conformations; slidable thereon a carriage formed with a series of sockets transverse to its motion; a series of punches operable in said sockets; a carrier and operable therein a plunger slidable on said carriage to cause said plunger to be operably located relatively to any punch

of said series, and a hand operated member operably related to and adapted to advance said plunger; automatic carriage feed mechanism comprising a carriage-positioning member, a feed abutment and a feed spring, said positioning and abutment members adapted to engage said conformations and operably connected with said hand-operated member and by its punching stroke engaged with said conformations, said positioning member to position said carriage and serve as abutment for the motion of said feed member and said feed member to serve as abutment for the motion of said carriage upon the release stroke of said hand-operated member, and said spring adapted to be strained by the engaging motion of said abutment and, upon the release of said hand operated member, to retract said positioning member and feed said carriage.

8. Selective hand punches comprising a base provided with slideways, and parallel thereto a series of engaging conformations; slidable thereon a carriage formed with a series of sockets transverse to its motion; a series of punches operable in said sockets; a carrier and operable therein a plunger slidable on said carriage to cause said plunger to be operably located relatively to any punch of said series, and a hand-operated member operably related to and adapted to advance said plunger; automatic carriage feed apparatus comprising members operably connected with and settable by the punching motion of said hand operated member, as follows: a reciprocating stop, a feed-abutment dog, both settable as aforesaid to engage said conformations, and a lever connecting said hand-operated member and dog, said stop settable to position said carriage and said dog settable to serve as feed abutment for said carriage; and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

9. Selective hand punches comprising a base provided with slideways, and parallel thereto a series of engaging conformations; slidable thereon a carriage formed with a series of sockets transverse to its motion; a series of punches operable in said sockets; a carrier and operable therein a plunger slidable on said carriage to cause said plunger to be operably located relatively to any punch of said series, and a hand-operated member operably related to and adapted to advance said plunger; automatic carriage feed apparatus comprising members operably connected with and settable by the punching motion of said hand operated member, as follows: a feed spring settable as aforesaid to feed said carriage, a reciprocating stop, a feed-abutment dog both settable as aforesaid to engage said conformations and a lever connecting said hand-operated member and dog, said stop settable to position said carriage, said dog settable to serve as feed abutment for said carriage, and said spring adapted to feed said carriage upon the release of said hand-operated member; and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

10. Selective hand punches comprising a base provided with slideways; slidable thereon a carriage formed with a series of sockets transverse to its motion; a series of punches operable in said sockets; a perforated plate confining and giving access to said punches; a carrier and operable therein a plunger shiftable on said carriage to cause said plunger to be operably located relatively to any punch of said series; and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

11. Selective hand punches comprising a base provided with slideways; slidable thereon a carriage formed with a series of sockets transverse to its motion, a series of punches operable in said sockets; a perforated plate confining and giving access to said punches, a carrier and operable therein a plunger, formed with a head and a relatively small tip slidable on said carriage to cause said plunger to be operably located relatively to any punch of said series; and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

12. Selective hand punches comprising a base provided with slideways; slidable thereon a carriage formed with a series of sockets transverse to its motion; a series of punches operable in said sockets; a carrier and operable therein a plunger slidable on said carriage to cause said plunger to be operably located relatively to any punch in the series, and plunger-operating means comprising a rock shaft mounted on said carriage and a hand lever angularly fixed to but slidable on said rock shaft and operably connected with said carrier, and fixed to said shaft an arm adapted to operate a feed mechanism; and an automatic feed mechanism operatively connected with said plunger-operating means; and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

13. In selective hand punches comprising a base provided with slideways and parallel thereto a series of engaging conformations and slidable thereon a punch carriage op-

erably mounting punch mechanism including a hand rocked shaft, the combination therewith of automatic carriage-feed mechanism operably connected with said shaft and settable in engagement with said conformations by a punching stroke and operable to feed said carriage upon release thereof and comprising a spring-retracted reciprocating stop settable as aforesaid to position said carriage, a feed-abutment dog settable as aforesaid to serve as abutment for the motion of said carriage, a link-and-lever connection between said dog and shaft, and a feed-spring strained between said dog and carriage; said dog formed with a tooth adapted to engage said engaging conformations and engaged with said link by a socket and bulb connection.

14. In selective hand punches comprising a base provided with slideways and parallel thereto a series of engaging conformations and slidable thereon a punch carriage operably mounting punch mechanism including a hand rocked shaft, the combination therewith of automatic carriage-feed mechanism operably connected with said shaft and settable in engagement with said conformations by a punching stroke and operable to feed said carriage upon release thereof and comprising a spring-retracted reciprocating stop settable as aforesaid to position said carriage, a feed-abutment dog settable as aforesaid to serve as abutment for the motion of said carriage, a link-and-lever connection between said dog and shaft, a feed-spring strained between said dog and said carriage, and a spring-positioned latch adapted to permit said setting of said dog and thereafter retain it in engagement with said conformations until said carriage is moved, said dog formed with a tooth adapted to engage said engaging conformations and a conformed surface adapted to be engaged by said latch, and engaged with said link by a socket and bulb connection.

15. In selective hand punches for record cards comprising a base provided with card-supports and slideways parallel therewith, and slidable thereon a punch carriage operably mounting a punch mechanism, the combination therewith of a releasable card stop comprising a plate pivoted on said base, transverse to said supports and formed with separated, relatively staggered tongues adapted to engage and upon rocking of said stop, to release cards.

16. In selective hand punches for record cards comprising a base provided with card-supports and slideways parallel therewith, and slidable thereon a punch carriage operably mounting a punch mechanism, the combination therewith of a releasable card stop comprising a plate pivoted on said base transverse to said supports and formed with separated relatively staggered tongues adapted to engage and upon rocking of said stop, to release cards, and a spring adapted to position said stop.

17. A selective hand punch comprising a base, a carriage slidably mounted on said base, a series of punches operably mounted on said carriage, a carrier, a plunger in said carrier, the carrier being slidably mounted on said carriage to cause said plunger to be operably located relatively to any punch in said series, actuating means for operating said plunger, carriage feed mechanism operably connected with said actuating means, and a die plate provided with holes registering with said punches and spaced from the member supporting them to form a way for objects to be punched.

18. A selective hand punch comprising a base, a carriage slidably mounted on said base, a series of punches operably mounted on said carriage, a plunger slidably mounted on said carriage to be operably located relatively to any punch of said series, actuating means for operating said plunger, carriage feed mechanism operably connected with said actuating means so that the carriage will be actuated simultaneously with the operation of the punch, and a support in registration with said punches and spaced therefrom to form a way for objects to be punched.

19. A selective hand punch comprising a base, a carriage slidably mounted on said base, a series of punches operably mounted on said carriage, a plunger slidably mounted on said carriage to be operably located relatively to any punch of said series, actuating means for operating said plunger, carriage feed mechanism operably connected with said actuating means so that the carriage will be actuated simultaneously with the operation of the punch, and a support for objects to be punched disposed adjacent to the path of movement of said carriage and in operative relation to said punches.

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**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**