Sept. 17, 1929. C. H. CAVILL 1,728,475

PUNCHING MACHINE

Filed Sept. 13, 1928

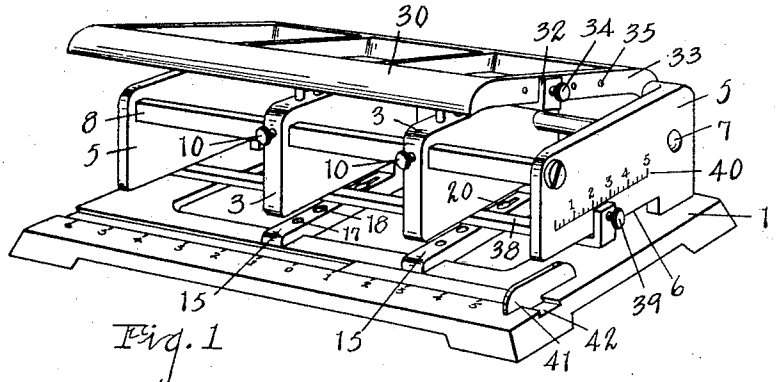


Fig. 1

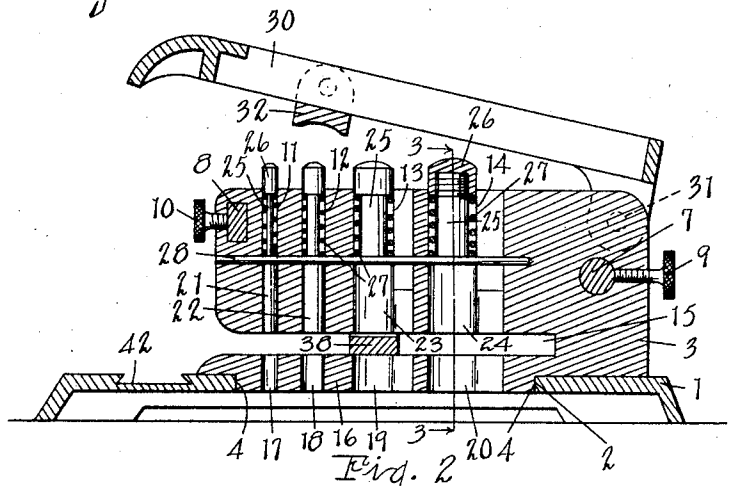


Fig. 2

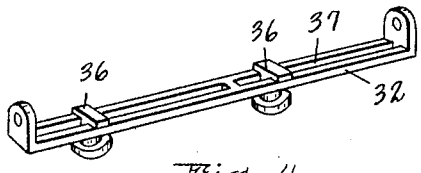


Fig. 4

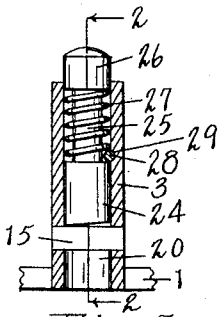


Fig. 5

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PUNCHING MACHINE

Application filed September 13, 1928. Serial No. 305,660.

The main objects of this invention are:

First, to provide an improved punch for paper and the like which is adapted for punching holes of several sizes and shapes, the machine being quickly adjusted for the particular work desired.

Second, to provide a punching machine having these advantages which may be adjusted by a comparatively unskilled person.

Further objects will appear from the detailed description to follow. The invention is defined in the claims.

A structure which embodies the features of my invention is clearly illustrated in the accompanying drawing, in which:

Fig. 1 is a front perspective view of my improved punching machine.

Fig. 2 is a detail view partially in vertical transverse section on line 2—2 of Fig. 3.

Fig. 3 is a detail view partially in vertical section on line 3—3 of Fig. 2.

Fig. 4 is a perspective view of the tappet bar removed from the machine.

The embodiment of my invention illustrated in the accompanying drawing comprises a base 1 having a longitudinal opening 2 adapted to receive the lower portions of the punch heads 3 which are slidably mounted on the base. These punch heads are shouldered at 4 to engage in this opening as shown in Fig. 2.

At the ends of the base I mount a pair of supports 5 which are undercut at 6 to provide a space between the forward portions of the supports and the base. Punch head supporting bars 7 and 8 are carried by these supports, the bars being arranged through openings in the punch heads so that the punch heads are slidable thereon. Set screws 9 and 10 are provided for securing the punch heads in their adjusted positions.

Each punch head is provided with a plurality of vertical bores or openings of the size and shape of the punch desired, four openings being provided in the head shown, as 11, 12, 13 and 14. The punch heads have work throats 15. The portions 16 of the punch heads below this throat constitute the die members and have openings 17, 18, 19 and 20 corresponding in cross dimensions and shape to the openings 11, 12, 13 and 14.

The punches 21, 22, 23 and 24 reciprocate in the openings 11, 12, 13 and 14, respectively. These punches have reduced shank portions 25 and heads 26 threaded upon the shank portions. Springs 27 are arranged in the punch bores to engage the heads 26, acting to return the punches. The punches are normally held by these springs against the stop pin 28 which is arranged transversely of the punches in a bore 29 formed in the punch head so that the single stop pin coacts all of the punches of a punch head.

The frame-like actuating lever 30 is pivoted at 31 on the supports 5 and carries a longitudinally slotted tappet bar 32 which is adjustably secured to the end members 22 of the lever by means of the screws 34, the end members having holes 35 therein to receive these screws.

The tappets 36 are adjustably supported in the slots 37 of the tappet bar so that they may be adjusted longitudinally thereof in accordance with the adjustment of the punch heads, the bar being adjusted so that the lever coacts with selected punches.

A gage or stop bar 38 is adjustably mounted on the supports by means of screws 39, and gage indicia 40 is provided to facilitate the adjustment. This stop bar is adjusted in the throats of the punch heads so as to stop the work in proper position for the particular set of punches it is desired to use. As shown in Fig. 2 the parts are adjusted for using the punches 22.

An edge gage 41 is slidably mounted in a dove tailed longitudinal groove 42 at the front of the base, gaging indicia being associated with this gage and the indicia being in two sets reading from the center.

It is quite common practice for customers to expect and request stationers to punch sheets with holes of desired size and in certain positions. This usually requires the setting up of a punching machine with suitable punch heads and requires considerable time and skill. My improved punching machine may be quickly adjusted for a considerable variety of work resulting in a great saving of time and eliminating the likelihood of errors.

I have illustrated and described my improvements in an embodiment which I have found very satisfactory. I have not attempted to illustrate or describe other embodiments or adaptations as I believe this disclosure will enable those skilled in the art to adapt my improvements as may be desired.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a punch, the combination with a base, support members mounted at the rear of said base to project forwardly in overhanging relation thereto, front and rear head supporting bars carried by said support members, punch heads slidably adjustable on said base and having openings to receive said bars, said heads being provided with set screws for adjustably securing them to said bars and each being provided with a plurality of punches arranged in alinement from front to rear and with work receiving throats common to all of the punches, a stop bar adjustable in said throats and adjustably secured to said supports, one of which is provided with gage indicia operatively associated with said stop bar, an actuating lever pivotally mounted on said supports, a longitudinally slotted tappet bar mounted on said lever to be adjusted to operative relation to selected punches, and tappets mounted in said slots for adjustment in accordance with the lateral adjustment of said punch heads.

2. In a punch, the combination with a base, support members mounted at the rear of said base to project forwardly in overhanging relation thereto, front and rear head supporting bars carried by said support members, punch heads slidably adjustable on said base and having openings to receive said bars, said heads being provided with set screws for adjustably securing them to said bars and each being provided with a plurality of punches arranged in alinement from front to rear and with work receiving throats common to all of the punches, an actuating lever pivotally mounted on said supports, a longitudinally slotted tappet bar mounted on said lever to be adjusted to operative relation to selected punches, and tappets mounted in said slots for adjustment in accordance with the lateral adjustment of said punch heads.

3. In a punch, the combination with a base, support members mounted at the rear of said base to project forwardly in overhanging relation thereto, front and rear head supporting bars carried by said support members, punch heads slidably adjustable on said base and having openings to receive said bars, said heads being provided with set screws for adjustably securing them to said bars and each being provided with a plurality of punches arranged in alinement from front to rear, and with work receiving throats common to all of the punches, a stop bar adjustable in said throats, and an actuating lever pivotally mounted on said supports and provided with adjustable punch engaging members.

4. In a punch, the combination with a base, support members mounted at the rear of said base to project forwardly in overhanging relation thereto, front and rear head supporting bars carried by said support members, punch heads slidably adjustable on said base and having openings to receive said bars, said heads being provided with set screws for adjustably securing them to said bars and each being provided with a plurality of punches arranged in alinement from front to rear, and an actuating lever pivotally mounted on said supports and provided with adjustable punch engaging members.

5. In a punch, the combination with a base, punch heads adjustably mounted on said base and each being provided with a plurality of punches arranged in alinement from front to rear and with work receiving throats common to all of the punches, a stop bar adjustable in said throats, an actuating lever pivotally mounted on said supports, a longitudinally slotted tappet bar mounted on said lever to be adjusted to operative relation to selected punches, and tappets mounted in said slots for adjustment in accordance with the lateral adjustment of said punch heads.

6. In a punch, the combination of a base, a plurality of punch heads mounted on said base for lateral adjustment thereon and each provided with a plurality of punches alined from front to rear, an actuating lever and punch engaging members mounted on said lever for adjustment into operative relation to selected punches, and a stop member common to all of the punch heads adjustably associated therewith.

7. In a punch, the combination of a base, a plurality of punch heads mounted on said base for lateral adjustment thereon and each provided with a plurality of punches alined from front to rear, an actuating lever and punch engaging members mounted on said lever for adjustment into operative relation to selected punches.

8. In a punch, the combination with a punch head provided with a plurality of alined punch bores and a retaining pin bore disposed transversely of said punch bores and opening to one side thereof, punches having

reduced shank portions providing shoulders and heads having threaded engagement with said shank portions, a retaining pin arranged in said retaining pin bore to coact with the shoulders on said punches, and coiled springs arranged in said punch bores in engagement with the heads thereof.

In witness whereof I have hereunto set my hand.

CLAUDE H. CAVILL.