Nov. 20, 1928. 1,692,764

E. H. SALT

PUNCH

Filed Dec. 13, 1926 2 Sheets-Sheet 1

Fig. 1.

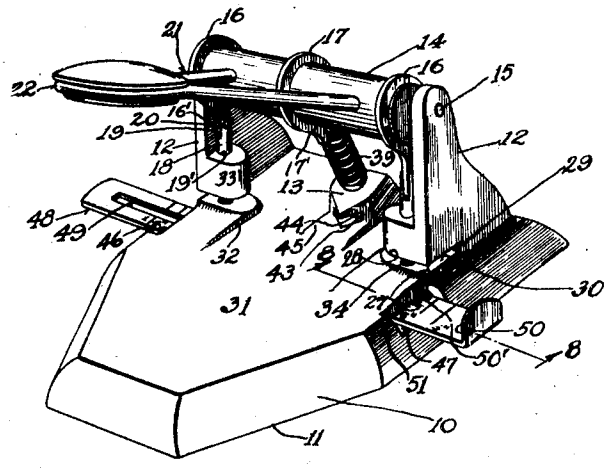
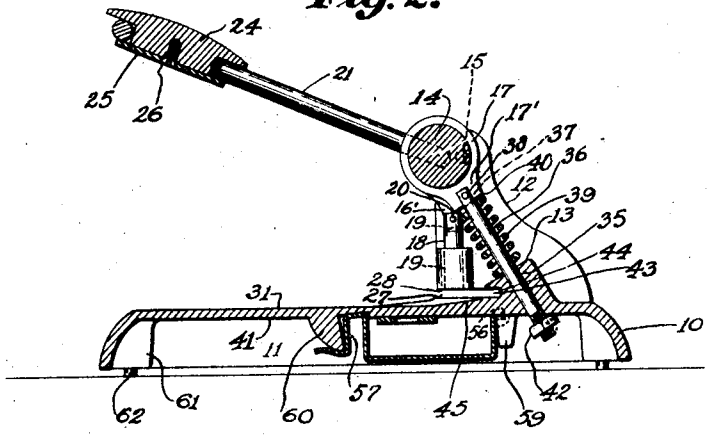


Fig. 2.



Inventor
Elmer H. Salt
by
Barton A. Beam, Jr.
Atty.

Nov. 20, 1928. 1,692,764

E. H. SALT

PUNCH

Filed Dec. 13, 1926 2 Sheets-Sheet 2

Fig. 3.

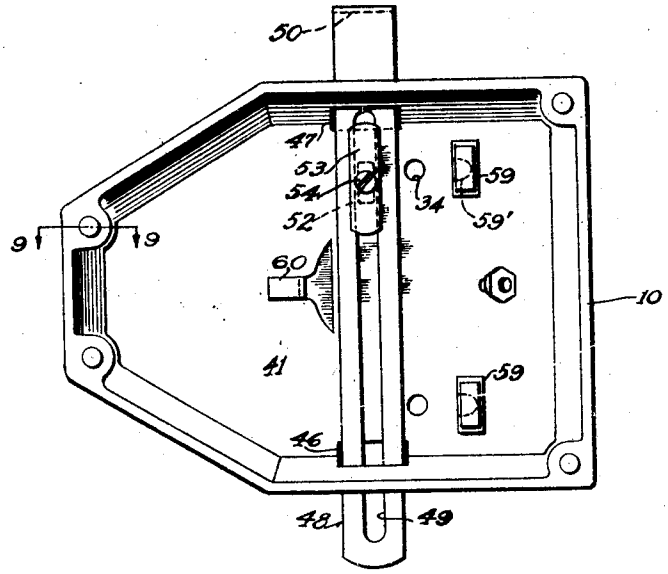


Fig. 4.

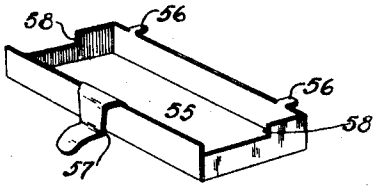


Fig. 5.

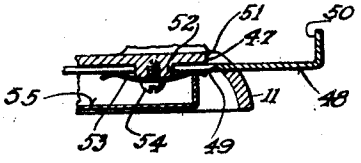


Fig. 6.

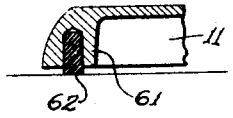
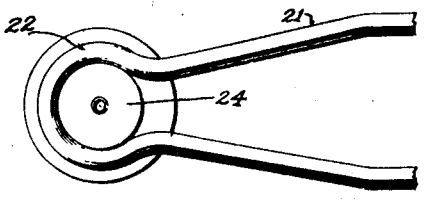


Fig. 7.



Inventor
Elmer H. Salt

by Barton A. Bean Jr.

Atty.

Patented Nov. 20, 1928. 1,692,764

UNITED STATES PATENT OFFICE.

ELMER H. SALT, OF NORWOOD, OHIO, ASSIGNOR TO THE GLOBE-WERNICKE COMPANY, OF CINCINNATI, OHIO.

PUNCH.

Application filed December 13, 1926. Serial No 154,424.

This invention relates to improvements in punching devices for perforating a thin sheet or sheets, and more particularly to the punching of holes of fixed center distance in documents or papers.

One object of the invention is to provide a gage bar to quickly and easily centralize the above mentioned holes in documents or papers of various widths without unnecessary calculating.

The invention has for another object to provide an improved operating handle and a novel mechanism for returning the operating handle to the normal position.

The invention has for a further object to provide an improved mounting for the slug container.

Another object of the invention is to simplify the construction by combining various units which were heretofore separate and individual parts into one casting thereby reducing the cost of manufacture. These and other novel features of the invention are hereinafter fully described and claimed.

In the accompanying drawings which illustrate the invention,

Fig. 1 is a perspective view of the assembled machine,

Fig. 2 is a longitudinal vertical section of the same,

Fig. 3 is a bottom view of the assembled machine with the punch slug container removed,

Fig. 4 is a perspective view of the punch slug container,

Fig. 5 is a partial transverse vertical section on the line 8—8 of Fig. 1,

Fig. 6 is a partial longitudinal vertical section on the line 9—9 of Fig. 3.

Fig. 7 is a bottom view of the operating handle with the retaining washer removed.

Similar numerals refer to similar parts throughout the several views.

In the embodiment of the invention illustrated in the drawings, the machine frame 10, which is composed of a base portion 11, bearing standards 12 and spring seat 13, is preferably a single casting.

The shaft 14, consisting of a cylinder with an uninterrupted periphery, is horizontally and eccentrically mounted on the bearing standards 12 by bearing pins 15. Slidably or loosely mounted on said shaft are punch straps 16 and spring strap 17. Punches 18 are provided with slots 19 which receive extremities 16′ of said punch straps and toggle pins 20 are inserted through corresponding holes in punches 18 and strap extremities 16′ to provide an axis or pivot for the toggle action. Said punches are slidably mounted and vertically guided by guide holes 19′ in bearing lugs 33.

Mounted radially on said shaft are the arms 21 of an operating handle which is preferably constructed of a length of stiff wire bent substantially into U-form, the base of the U-shaped handle forming a loop 22 which tightly encircles the shank of an operating button 24, said operating button being retained in said loop by a retaining washer 25 which is connected to said operating button by a screw 26.

The lower portions of said bearing standards contain machined horizontal slots 27, said slots being in the same plane.

The top walls 28 of said slots act as punch strippers and the rear walls 29 form back gages or stops for the sheets to the perforated. For machine convenience it is necessary that die surface 30 be slightly raised from top 31 of base portion 11. To facilitate the easy entry of a sheet or sheets in said slots, gradually inclined pads or approaches 32 are provided which lead up to said die surface. Die holes 34 extend through the base at right angles to said die surface and register with guide holes 19′.

Spring seat 13 is provided with a hole or bearing 35, the axis of which is inclined relatively to said base and is transversely radial of the shaft 14 when the operating handle is in its lowered position. Plunger rod 36 is slidably mounted in said bearing and contains slot 37 at its upper end which receives the extremity 17′ of spring strap 17 and a toggle pin 38 is inserted through corresponding holes in said rod and spring strap to provide a pivot or axis for the toggle action. Spring 39 is mounted about rod 36 under compression and at its extremities bears or finds support on

spring seat 13 and shoulders 40 on said spring strap respectively. The plunger rod is threaded at its lower extremity which protrudes beyond the under wall 41 of said base sufficiently to allow nut 42 to be fastened thereon. This combination allows said nut to act as an adjustable stop for plunger rod 36 which through the spring strap and eccentric shaft limits the upward movement of said operating handle. The spring seat contains a machined horizontal slot 43 in the same horizontal plane as slots 27 and the rear wall 44, in the same transverse vertical plane as rear walls 29, acts as a back gage for the sheet or sheets to be perforated. An approaching pad 45 is also provided to the slot 43.

It will be noted that arms 21 of the handle are mounted in such radial relation to bearing pins 15 (as shown in Fig. 2) so that when the said handle is in the normal or upward position determined by the position of nut 42, the punches 18 will be up, and when the said handle is depressed the said punches will act in a downward direction; also the angularity of said plunger rod will be such that said spring strap through the action of said spring will exert a tangential load on said eccentric shaft at the bottom of its operating arc. The sides of said base portion contain slots 46 and 47 which are in the same plane horizontally and vertically and through which a gage 48 is slidable and operable.

The gage preferably consists of a thin rectangular bar containing a guide slot 49 and having one end bent upwardly to form a gage stop 50, the gage being so graduated, preferably in inches and fractions thereof, that when a graduation 50′ coincides with wall 51, formed by slot 47, the reading of such graduation will indicate the full width of the sheet. To facilitate this result the interval of the graduations will actually be exactly half of the indicated distance. The slot portion 49 of the gage fits slidably on a guide lug 52 which is preferably integral with said base. A flat spring 53 is fastened tightly to the guide lug by screw 54, the protruding end of the flat spring engaging upon said gage and thereby acting as a friction lock or brake for the gage to maintain it in the desired adjusted position. A punch slug container or catch pan 55 is provided. This is preferably a coverless box-like stamping, the top of the rear wall of which preferably has two ears 56. The top of the front wall is preferably provided with a spring clip 57. The container is mounted on the under wall 41 so that the ears fit in corresponding bosses 59 which contain recesses 59′ to receive said lugs, and the spring clip 57 will fit with a resilient reaction against boss 60. The side walls of the container have slots 58 to give clearance for said gage and allow a tight mounting of said container against said under wall.

As shown, the base portion may be provided with bosses 61 drilled to receive feet 62 of rubber or other resilient material, said feet protruding downwardly beyond said bosses, so as not to mar a table or desk on which the punch is used.

I claim:

1. In a perforator, an open punch slug container having on one of its open edges spaced horizontal ears and on the opposite edge a spring clip, and a hollow base having on its under side and integral with said base spaced bosses which contain recesses for receiving the ears of said container, and another boss having a surface to receive and retain the spring clip of said container.

2. In a perforator, a longitudinally slotted gage bar, a hollow base having on its under side a boss for operating in the gage bar slot for slidably guiding said gage bar, and a friction device for restraining free action of said gage bar, said device consisting of a flat spring fastened to said boss, the extremities of said spring overhanging said boss and exerting a contant pressure on said gage bar.

3. In a perforator, a base, an eccentric shaft journaled thereon and having an arcuate operating stroke and a like return stroke, and a resilient return device compressible by said eccentric shaft on the operating stroke of the latter, said device being mounted angularly on said base so as to exert a tangential pressure on said eccentric shaft when the latter is at the bottom of its operating stroke.

4. In a perforator, a base, an eccentric shaft journaled thereon and having an arcuate operating stroke and a like return stroke, and a return device for said shaft consisting of an eccentric strap on the shaft, a guided plunger on the base connected to the strap to form a toggle, and a resilient unit guided by said plunger and acting against said strap, said return device being mounted angularly so as to exert a tangential pressure on said eccentric shaft when the latter is at the bottom of its operating stroke.

5. In a perforator, a base with spaced standards thereon, a rock shaft eccentrically journaled on the standards, means for rocking said shaft in one direction, punches guided by the standard, eccentric straps on said shaft operatively connected to said punches, said base having an inclined bearing rearwardly of the punches, a rod slidable in said base bearing, another strap on the shaft connected to said rod between said punch eccentric straps, said rod being held against outward displacement from said base bearing, and a spring encircling said rod and exerting opposing forces against the base and said rod strap for urging the shaft to rock in the other direction.

6. In a perforator, a base; a rock shaft eccentrically mounted and having an arcuate stroke; a rod for adjusting said stroke connected to said shaft by an eccentric strap

and slidably mounted in said base, said rod having an adjustable stop acting against said base.

7. In a perforator, a base with spaced standards thereon, a rock shaft eccentrically journaled on the standards, means for rocking said shaft in one direction, punches guided by the standard, eccentric straps on said shaft operatively connected to said punches, said base having an inclined bearing rearwardly of the punches, a rod slidable in said base bearing, means connecting the rod at one end to the shaft, means holding the opposite end of the rod against displacement from the base bearing, and a spring encircling the rod and acting to rock the shaft in the opposite direction.

8. In a perforator, a frame, a shaft eccentrically journalled in said frame, a handle secured to said shaft for rocking the shaft, punch units operatively connected to said shaft, a strap loosely mounted at an intermediate point of said shaft, and a compression spring disposed between the strap and the base of the frame, said compression spring mounted in unchangeable direction so that its line of action is offset from the axis of the eccentric shaft bearings, whereby upon a handle release the shaft is swung on its eccentric mounting and returned to normal position.

9. In a perforator, a base having spaced standards extending upwardly therefrom, a shaft eccentrically journalled in the standards, a handle secured to said shaft for rocking the shaft, punch units operatively connected to said shaft, a compression spring mounted between the shaft and base, a rod slidably mounted in the base and connected to the shaft for movement in a line offset from the axis of the eccentric shaft, said spring encompassing said rod and thereby maintained in unchangeable direction relative to the shaft regardless of the operative position of the shaft, providing a thrust against the shaft offset from the eccentric journals of the shaft, and a shoulder on said slideable rod engageable with the base for limiting the return movement of the shaft, whereby upon a handle release the shaft is swung on its eccentric mounting and returned to normal position.

ELMER H. SALT.