

C. DOM.
PUNCH.

APPLICATION FILED MAR. 23, 1914.

Patented Sept. 7, 1915.

1,152,886.

Fig. 5.

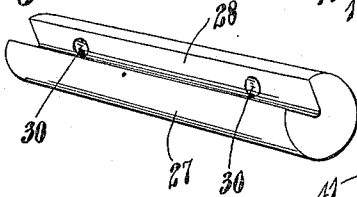


Fig. 1.

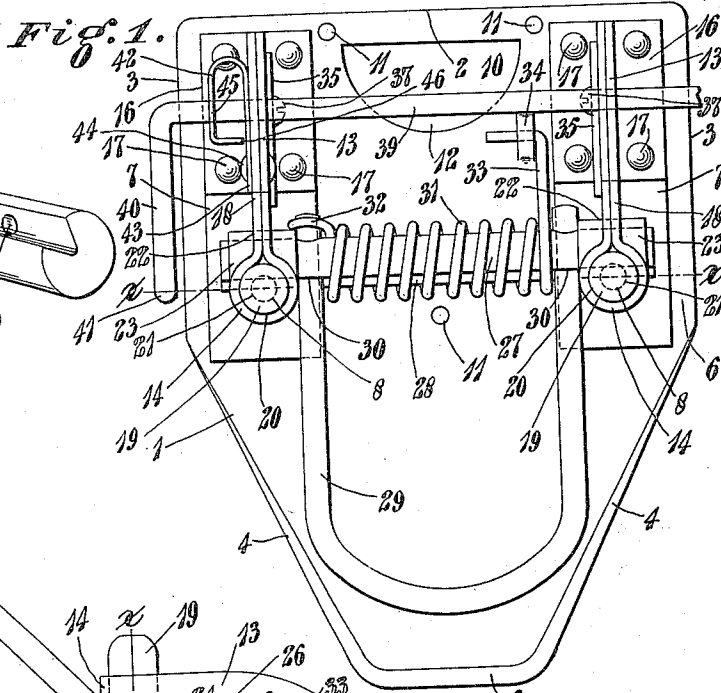


Fig. 2.

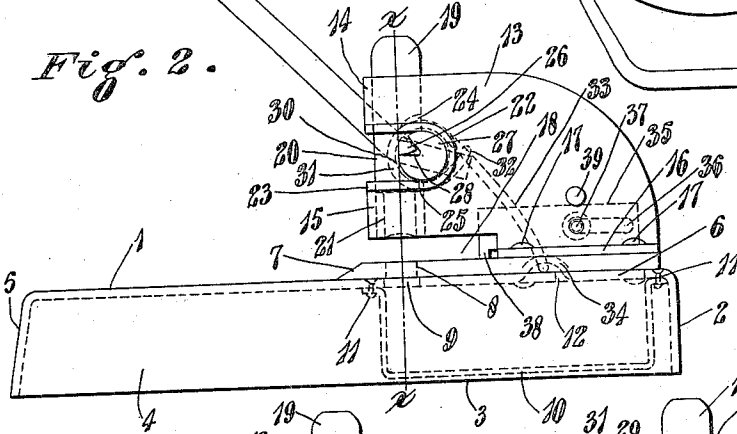


Fig. 4.

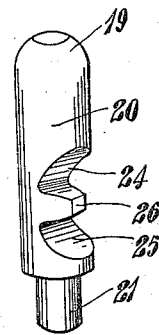
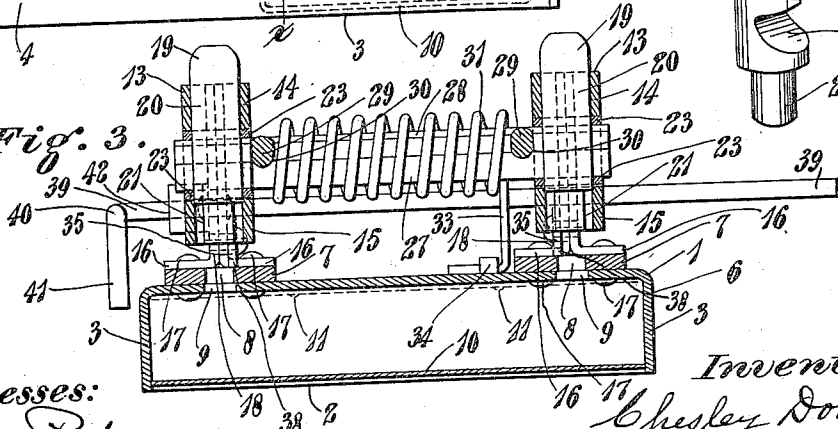


Fig. 3.



Witnesses:
Clarence Perdue
Catherine Doran.

Inventor
Chesley Dom
By James A. Ramsey
Attorney

UNITED STATES PATENT OFFICE.

CHESLEY DOM, OF CINCINNATI, OHIO, ASSIGNOR TO THE GLOBE-WERNICKE COMPANY,
OF CINCINNATI, OHIO.

PUNCH.

1,152,886.

Specification of Letters Patent.

Patented Sept. 7, 1915.

Application filed March 23, 1914. Serial No. 826,633.

To all whom it may concern:

Be it known that I, CHESLEY DOM, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Punches, of which the following is a specification.

My invention relates to punches, and its object is to provide simple and substantial apparatus for punching paper sheets, especially for office use.

My invention consists in the parts and in the details of construction and arrangement of parts as will hereinafter be more fully described and claimed.

In the drawing: Figure 1 is a plan view of a device embodying my invention; Fig. 2 is a side elevation of the same; Fig. 3 is a vertical section on the line $x-x$ of Fig. 1 or Fig. 2; Fig. 4 is a detail perspective view of one of the punches; and Fig. 5 is a detail perspective view of the shaft.

As a matter of economy I prefer to construct most of the parts of my improved punch of sheet metal. Thus, the base 1 may be formed up from a single sheet so that it has a flat top forming a suitable bed for the sheets to be punched. Preferably, this base 1 is formed with a rear straight vertical side 2 and lateral straight vertical sides 3 continuing forward from which are converging inwardly inclined sides 4 which are joined by the front side 5. The base thus has a wide rear part 6; and near respective sides 3 thereof are die-blocks 7 extending parallel with the sides. Each die-block has a die-opening 8 and the base plate 1 has an opening 9 registering with the die-opening 8, through which the punchings may pass. On the under side of this plate 1, a pan 10 is secured by rivets 11, said pan being merely in the form of an open ended channel and its open ends being closed by the sides 3 of the base when the pan is held in place. This pan catches the punchings as they fall through the openings 9 in the base plate and the punchings may be removed through an outlet 12 cut through the base plate near the rear thereof between the die-blocks.

Associated with each die-block is a punch head 13, preferably formed from a single piece of sheet metal having symmetrical halves brought together from forward upper and lower loops 14 and 15, respectively,

which are formed separate by cutting away or slotting the material of the punch head 13 in the middle of the blank. These loops 14 and 15 are in vertical alinement, and the punch head 13 is mounted on the die-block 7 with said loops in vertical alinement with the die-opening 8 in the die-block. The attachment of the punch head 13 to the die-block is made by providing the brought-together parts of the punch head with lower lateral flanges 16 which rest on the upper side of the die-block 7 at its rear, with rivets 17 passing through these flanges 16, through the die-blocks 7 and through the base 1, thus holding all rigidly together. This rear part of the punch head 13 that has the flanges 16 is extended lower than the forward part having the loops 14 and 15, so that a throat 18 is left.

Sliding up and down in the loops 14 and 15 is the punch 19, comprising a main part 20 that fits the loops snugly, and a reduced part or bit 21 that accurately enters the die-opening 8 in the die-block 7 when the punch is brought down.

The opening or slot that is left between the upper and lower loops 14 and 15 is made with a semi-circular rear end 22, and a U-shaped bushing-clip 23 is secured in this opening resting on its side with the bottom received in the semi-circular rear end of the slot and with the lower and upper sides provided with openings alined with the loops 14 and 15, so that the punch 19 slides up and down through these openings and the bushing-clip is maintained in its proper position by the punch.

The main part 20 of the punch has upper and lower notches 24 and 25 in its side, the upper side of the upper notch and the lower side of the lower notch being concave to conform to the arc of a circle and the adjacent sides of the notches being the proper distance apart and of the proper shape to form a tooth 26 between the two notches, which, preferably, is of the form of an ordinary gear tooth.

Extending longitudinally of the device and having journal bearings in the bushing-clip 23 is the shaft 27, with a longitudinal slot or keyway 28 having its sides preferably of the shape of adjacent sides of gear teeth, so that the tooth 26 is received in this slot and meshes with its sides when the shaft is in position. A handle 29 is pro-

vided, preferably being a single rod bent into U-shape with ends inserted through openings 30 in the shaft 27 up close to the inner ends of the bushing-clips 23, so that these parts of the handle 29 thus limit the end play of the shaft. Preferably, these parts of the handle extend some distance through the shaft 27, and a helical spring 31 surrounds the shaft between the punch heads 10 with one end 32 hooking over the projecting end of the handle 29, while the other end 33 of said spring is extended backward and downward and hooked through a loop 34 made by forming two slits in the base plate 1 and raising the material between the slits. This spring, thus arranged, causes the shaft 27 to rotate upward and raise the punches 19 when pressure on the handle 29 is removed.

20 The provision of the punch with the single tooth 26 and the shaft with the single slot or keyway 28 for the tooth to mesh in greatly facilitates the assemblage of the device and furthermore the single large tooth is amply strong to withstand all pressures and strains that may be imposed upon the parts. Additional security is afforded due to the manner in which the edges of the keyway 28 cooperate with the tooth; for when the punch 30 is cutting through the sheets this edge of the slot is bearing upon the tooth very close to the base of the tooth, where there is very little leverage tending to break the tooth. The shaft 27 may be rolled or drawn with its slot or keyway 28 therein, and may thus be produced very economically.

40 The depth gage comprises plates 35, one of which is placed on edge alongside each punch head 13 with its lower edge bearing on one of the feet 16 thereof and having a longitudinal slot 36 near its rear end through which a screw 37 passes into the punch head to clamp the plate 35 in adjusted position. This plate 35 has a downward projection 38 at its front edge, bearing on the upper surface of the die-block 7 so that the plate 35 presents a continuous vertical edge forwardly for engagement of the rear edges of the sheets that are to be punched.

50 The side gage consists of a bar 39 extending through both punch heads 13 just above the plate 35, and having at one end a forward projection 40 with a downward projection 41 to engage with the side edges of the sheets that are to be punched. This bar 39 may be slid lengthwise, and is held in adjusted position by a clip 42 made of a strip having a fixed part 43 secured to one of the punch heads by a rivet 44 and extending back and having a movable part 45 bent outward and forward, with openings through the two parts, through which openings the bar 39 extends. When the forwardly projected member is allowed to spring outward it grips the bar 39 but when pressed inward

it releases the bar. A transverse extension 46 is provided on the end of the movable part to engage inward against the other part of the clip and limit the compression of the clip.

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

1. In a device of the character described, a punch, a shaft extending at an angle thereto, and means for operative engagement between the shaft and the punch, a punch head having an upper loop and a lower loop within which the punch is guided, and having a slot between the loops adjacent to the punch, and a bearing for said shaft.

2. In a device of the character described, a punch, a shaft extending at an angle thereto, and means for operative engagement between the shaft and the punch, a punch head having an upper loop and a lower loop within which the punch is guided, and having a slot between the loops adjacent to the punch, and a bushing-clip having upper and lower members and a rear part joining the members, and the upper and lower members of the bushing-clip having openings alined with the loops, said punch sliding through these openings and holding the bushing-clip in position in the punch head, and the bushing-clip receiving and forming a bearing for said shaft.

3. In a device of the character described, a punch having adjacent notches in its side, whereby a single tooth is formed by the material of the punch between the notches, a shaft having a longitudinal slot and lying within said notches with the tooth received in the slot, a punch head having an upper loop and a lower loop within which the punch is guided, and having a slot between the loops adjacent to the punch, and a bushing-clip having upper and lower members and a rounded rear part joining the members, and the upper and lower members of the bushing-clip having openings alined with the loops, said punch sliding through these openings and holding the bushing-clip in position in the punch head, and the bushing-clip receiving and forming a bearing for said shaft.

4. In a device of the character described, a punch having an upper notch and a lower notch in its side, the upper side of the upper notch and the lower side of the lower notch being concave, but the other sides of the notches being so shaped that a single tooth is formed by the material of the punch left between the notches, a shaft having a longitudinal slot and extending into the notches in the punch with the tooth received in the slot, and the concave sides of the notch being arcs of radius substantially equal to that of the shaft, whereby they form upper and lower stops, respectively, against the shaft,

for the punch when said punch is depressed or raised by rotation of the shaft with the tooth engaging in the slot, a punch head having an upper loop and a lower loop with-
 5 in which the punch is guided and having a slot between the loops adjacent to the punch, and a bushing-clip having upper and lower members and a rounded rear part joining the members, and the upper and lower mem-
 10 bers of the bushing-clip having openings alined with the loops, said punch sliding through these openings and holding the bushing-clip in position in the punch head, and the bushing-clip receiving and forming
 15 a bearing for said shaft.

5. In a device of the character described, a punch, a shaft, and means for engagement between the shaft and punch, and a punch head formed of a single plate having sym-
 20 metrical halves brought together from forward loops formed separate by a slot in the middle of the plate, and the brought-to-
 25 gether parts of the plate having outwardly extended feet, said loops forming the guide for the punch and the slot between the loops
 30 receiving the shaft for coöperation with the punch, a die-block having a die-opening in alinement with said loops, and means rigidly securing the feet of said punch head to said die-block.

6. In a device of the character described, a punch, a shaft, and means for engagement between the shaft and punch, and a punch head formed of a single plate having sym-
 35 metrical halves brought together from forward loops formed separate by a slot in the middle of the plate, and the brought-together parts of the plate having outwardly extended feet, said loops forming the guide for the
 40 punch and the slot between the loops receiving the shaft for coöperation with the punch, a die-block having a die-opening in alinement with said loops, means rigidly securing the feet of said punch head to said die-block,
 45 and a bushing clip having upper and lower members joined rearwardly by a rounded part, said bushing clip being held in the slot between the loops, and the upper and lower
 50 members of the bushing clip having openings alined with said loops, through which openings the punch slides and whereby the punch maintains the bushing clip in the punch head, said bushing clip with its rounded rear part forming the bearing for
 55 the shaft whereby it may coöperate with the punch.

7. In a device of the character described, a punch, a shaft, and means for engagement between the shaft and punch, a punch head formed of a single plate having symmetrical
 60 halves brought together from forward loops formed separate by a slot in the middle of the plate and the brought-together parts of the plate having outwardly extended feet, said loops forming the guide for the punch

and the slot between the loops receiving the shaft for coöperation with the punch, a die-
 block having a die-opening in alinement with said loops, means rigidly securing the
 70 feet of said punch head to said die-block, and a bushing clip having upper and lower members joined rearwardly by a rounded part, said bushing clip being held in the slot between the loops, the upper and lower mem-
 75 bers of the bushing clip having openings alined with said loops, through which open- ings the punch slides and whereby the punch maintains the bushing clip in the punch head, said bushing clip with its rounded rear
 80 part forming the bearing for the shaft whereby it may coöperate with the punch, and a handle having a member extended through the shaft against one side of the bushing clip and thereby limiting end play
 85 of the shaft.

8. In a device of the character described, a punch, a shaft, and means for engagement between the shaft and punch, a punch head formed of a single plate having symmetrical
 90 halves brought together from forward loops formed separate by a slot in the middle of the plate and the brought-together parts of the plate having outwardly extended feet, said loops forming the guide for the punch
 95 and the slot between the loops receiving the shaft for coöperation with the punch, a die-block having a die-opening in alinement with said loops, means rigidly securing the feet of said punch head to said die-block,
 100 and a bushing clip having upper and lower members joined rearwardly by a rounded part, said bushing clip being held in the slot between the loops, the upper and lower mem-
 105 bers of the bushing clip having openings alined with said loops, through which open- ings the punch slides and whereby the punch maintains the bushing clip in the punch head, said bushing clip with its rounded rear
 110 part forming the bearing for the shaft whereby it may coöperate with the punch, a handle having a member extended through the shaft against one side of the bushing clip and thereby limiting end play of the shaft, and a helical spring around the shaft
 115 with an end engaging with the member of the handle where it extends through the shaft, and means for holding the other end of the spring fixed with relation to the punch head.

9. In a device of the character described, a base with downwardly extended sides, and
 120 punching means supported on top of the base, said base having an opening through which punchings from the punching means descend, and a pan of channel-shaped for-
 125 mation extending across under the base, said sides on said base closing the ends of the pan, said opening in the base communicating with the interior of said pan, and said base
 130 having another opening communicating with

the interior of the pan, through which the punchings may be removed from the pan.

10. In a device of the character described, a punch having adjacent notches in its side, whereby a single tooth is formed by the material of the punch between the notches, a shaft having a longitudinal slot and lying within said notches with the tooth received in the slot, a punch head having an upper loop and a lower loop within which the punch is guided, and having a slot between the loops adjacent to the punch, and a bearing for said shaft.

11. In a device of the character described, a punch having adjacent notches in its side, whereby a single tooth is formed by the material of the punch between the notches, a shaft having a longitudinal slot and lying

within said notches with the tooth received in the slot, a punch head having an upper loop and a lower loop within which the punch is guided, and having a slot between the loops adjacent to the punch, and a bushing-clip having upper and lower members and a rear part joining the members, and the upper and lower members of the bushing-clip having openings alined with the loops, said punch sliding through these openings and holding the bushing-clip in position in the punch head, and the bushing-clip receiving and forming a bearing for said shaft.

CHESLEY DOM.

Witnesses:

JAMES N. RAMSEY,
CLARENCE PERDEW.

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