

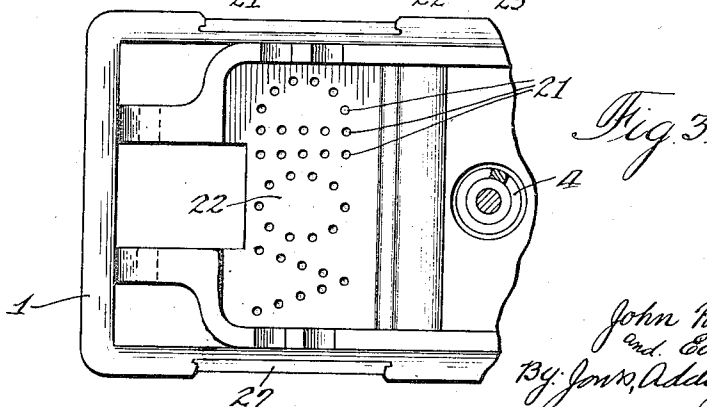
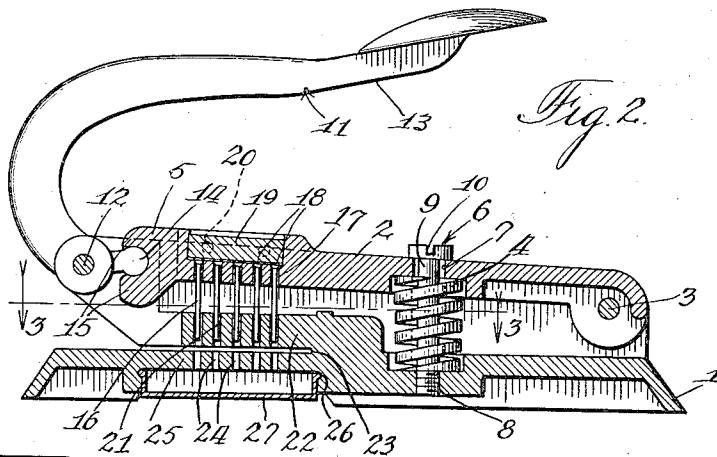
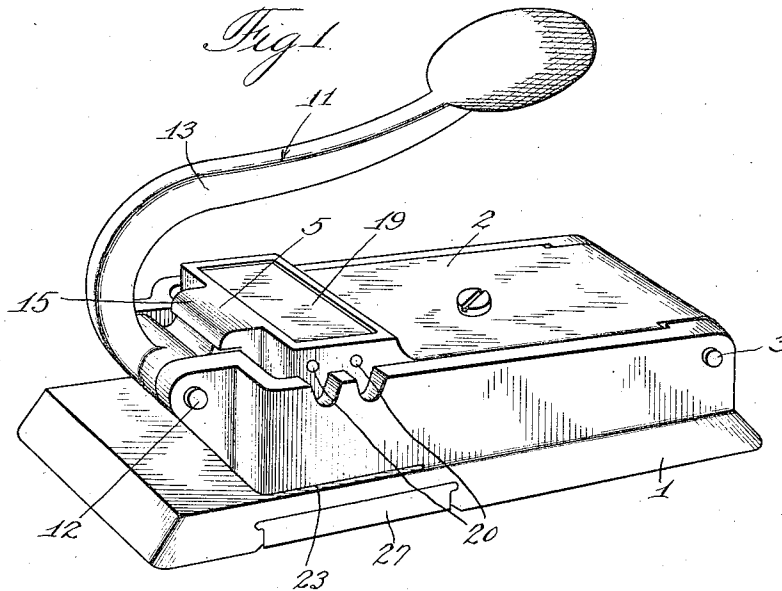
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PERFORATING MACHINE

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PERFORATING MACHINE

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3 Claims. (Cl. 164—91)

This invention relates to perforating machines. Among the objects of this invention are to provide a perforator which will be durable, efficient, simple, inexpensive, compact and easily repaired.

Numerous other objects will appear from the description and claims.

In the drawing, in which the invention is illustrated,

Figure 1 is a perspective view of the perforating machine;

Fig. 2 is a vertical, central, longitudinal section; and

Fig. 3 is a section on the line 3—3 of Fig. 2.

Referring to the drawing in detail, the construction shown comprises a base 1 to which a punch-holding-and-actuating member 2 is pivoted at 3.

A coil compression spring 4 acts to force the free end 5 of the punch-actuating member 2 upward and away from the base 1. A screw 6 passes down through the hole 7 in the punch-actuating member 2 along the axis of the coil compression spring 4 and is tightly threaded into the base 1 at 8. The hole 7 is larger than the shank 9 of the screw 6, so that the shank of the screw 6 does not interfere with the motion of the punch-actuating member. However, the head 10 of the screw 6 is larger than the hole 7 and engages the upper surface of the punch-actuating member 2 at a certain point in its upward motion. Since the screw 6 is fixed with respect to the base 1, this engagement limits the upward motion of the punch-actuating member.

The punch-holding member 2 is actuated by a lever 11 pivoted to the base 1 at 12. This lever 11 has two arms,—an upwardly and rearwardly extending arm 13 whereby the operator actuates the lever, and a short, rearwardly extending arm 14 having a rounded end which engages the jaw portions 15 of the punch-actuating member 2. Depressing arm 13 of lever 11 also depresses arm 14; the rounded end portion of arm 14 carries down with it the jaw portions 15 of the punch-actuating member 2, and also the whole free end of the punch-actuating member against the action of the spring 4.

The punches 16 fit loosely in holes 17 in the punch-actuating member 2. The heads 18 on the punches 16 prevent them from falling downwardly through the holes. The punch-retaining plate 19 bears on the heads 18 of the punches 16 and prevents them from being forced upwardly. The punch-retaining plate 19 is secured to the punch-actuating member 2 by means of pins 20. It will be seen that the construction employed in

attaching the punches 16 to the punch-actuating member 2, while it allows the punches a small amount of lateral and angular play, nevertheless insures that the punches will follow the vertical motion of the free end of the punch-actuating member 2.

The punches 16 pass down through holes 21 in the stripper and guide plate portion 22 of the base 1, being slidable therein. The punches 16 fit smoothly in the holes 21, so as to be guided by 10 them in following the vertical motion of the punch-actuating member 2. The looseness of the connection between the punches 16 and the punch-actuating member 2 enables the punches to move in a straight line, to which the guiding holes 15 21 confine them, while the free end 5 of the actuating member 2 describes an arc.

The length of the punches 16 is such that when the punch-actuating member 2 is in the highest position permitted by the screw 6, the 20 lower ends of the punches 16 are withdrawn into the holes 21 in the stripper plate 22. However, as the punches 16 are pushed downward through the holes 21 by the motion of the punch-actuating member 2, the lower ends of the punches emerge 25 from the holes 21, cross the slot 23 and enter the holes 24 in the die portion 25 of the base 1. As the punch holder again moves up, the punches will be withdrawn back into the holes 21 again.

The under side of the die portion 25 of the base 30 1 is provided with recesses 26 onto which can be snapped a sheet metal receiver 27. The purpose of the receiver is to collect the paper punchings.

In operation, a sheet of paper, which it is desired to perforate, will be slipped into slot 23 35 under the punches 16. The operator will depress the arm 13 of the lever 11, causing the free end of the punch-actuating member 2 to be depressed and to push down on punches 16. The punches 16 will move down, emerge from the holes 40 21 in the stripper plate 22, bear upon the surface of the paper, and, cooperating with the die portion 25 of the base 1, punch holes in the paper. The arrangement of the punches and their corresponding die holes will determine the 45 pattern of the holes punched in the paper. As the punches continue to move down, they will push before them, through the holes 24, the pieces of paper they have bitten out in this op- 50 eration. When the lever arm 13 is released, the punches will be withdrawn back into the holes 21 of the stripper plate 22. As the punches are withdrawn, the stripper plate 22 will strip the paper from the punches. The paper will then 55

be taken out of the slot, and the cycle may be repeated.

Further modifications will be apparent to those skilled in the art and it is desired, therefore, that the invention be limited only by the prior art and the scope of the appended claims.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A perforator comprising a base having a die plate portion having perforations for the punches, a stripper and guide plate portion having individual guide openings for the punches, said stripper plate being spaced from said die plate sufficiently to permit the insertion of the papers to be perforated, a punch-holding member overlying said base and pivoted directly thereto at the end opposite the stripper and die plate portions, said punch-holding member having a plurality of perforations therein, one for each of the punches in alignment with the openings in the stripper plate and die plate, a plurality of punches in said punch holder openings having headed upper ends and having such a length that a portion of the punches always remains in the guide openings in the stripper and guide plate portion, a punch-retaining plate overlying the upper headed ends of said punches and secured to said punch-holding member for holding the punches in position, said punches being insertable into said pivoted punch-holding member from the upper side thereof and said punch-retaining plate being superposed on said pivoted punch-holding member and being readily detachable therefrom, leaving the punch holding member in place, means for operating said punch holding member, the space above said punch retaining plate being open and unobstructed to permit the removal of the punches when the retaining plate is detached.

2. A perforator comprising a base having a die plate portion having perforations for the punches, a stripper and guide plate portion having individual guide openings for the punches, said stripper plate being spaced from said die plate sufficiently to permit the insertion of the papers to be perforated, a punch-holding member overlying said base and pivoted directly thereto at the end opposite the stripper and die plate portions, said punch-holding member having a plurality of perforations therein, one for each of the punches in alignment with the openings in the stripper plate and die plate, a plurality of punches in said punch holder openings having headed upper ends and having such a length that a portion of the punches always remains in the

guide openings in the stripper and guide plate portion, a punch-retaining plate overlying the upper headed ends of said punches and secured to said punch-holding member for holding the punches in position, means for operating said punch-holding member comprising a lever pivoted to said base in front of the end of said punch-holding member, and having a rearwardly extending arm engaging said punch-holding member for moving it up and down and an upwardly and rearwardly-extending operating arm overlying the punch-holding member, and means for returning said punch-holding member after its punching operation, said punches being insertable into said pivoted punch-holding member from the upper side thereof and said punch-retaining plate being superposed on said pivoted punch-holding member.

3. A perforator comprising a base having a die plate portion having perforations for the punches, a stripper and guide plate portion having guide openings for the punches, said stripper plate being spaced from said die plate sufficiently to permit the insertion of the papers to be perforated, a punch-holding member overlying said base and pivoted thereto at the end opposite the stripper and die plate portions, said punch-holding member having a plurality of perforations therein, one for each of the punches in alignment with the openings in the stripper plate and die plate, a plurality of punches in said punch holder openings having headed upper ends, a punch-retaining plate overlying the upper headed ends of said punches and secured to said punch-holding member for holding the punches in position, means for operating said punch-holding member comprising a lever pivoted to said base in front of the end of said punch-holding member, and having a rearwardly-extending arm engaging said punch-holding member for moving it up and down and an upwardly and rearwardly-extending operating arm overlying the punch-holding member, means for returning said punch-holding member after its punching operation comprising a coil compression spring extending between the base and punch-holding member and housed thereby, and means for limiting the upward movement of the punch-holding member comprising a headed member extending through said punch-holding member and coil compression spring and secured to said base.

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