Feb. 27, 1945. J. G. LIPPINCOTT 2,370,319

PAPER PERFORATOR

Filed Nov. 7, 1944

Fig. 1.

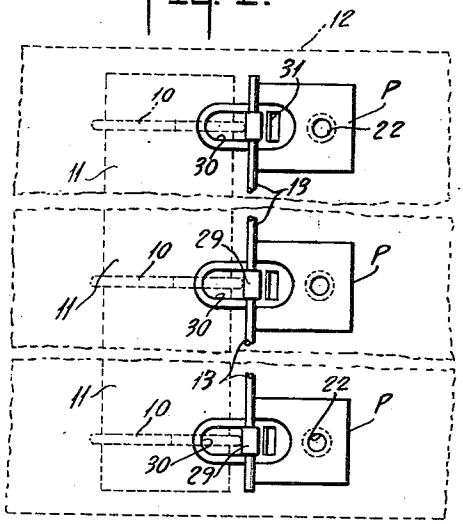


Fig. 2.

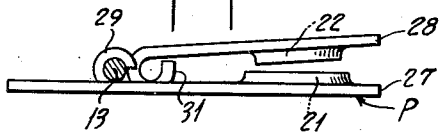


Fig. 3.

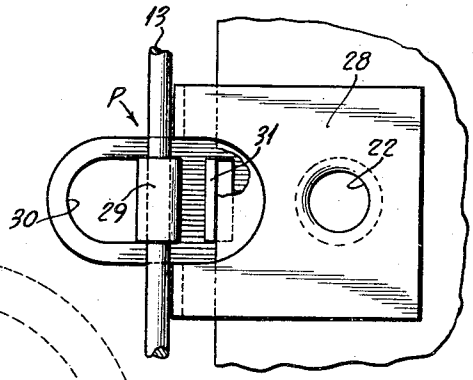


Fig. 4.

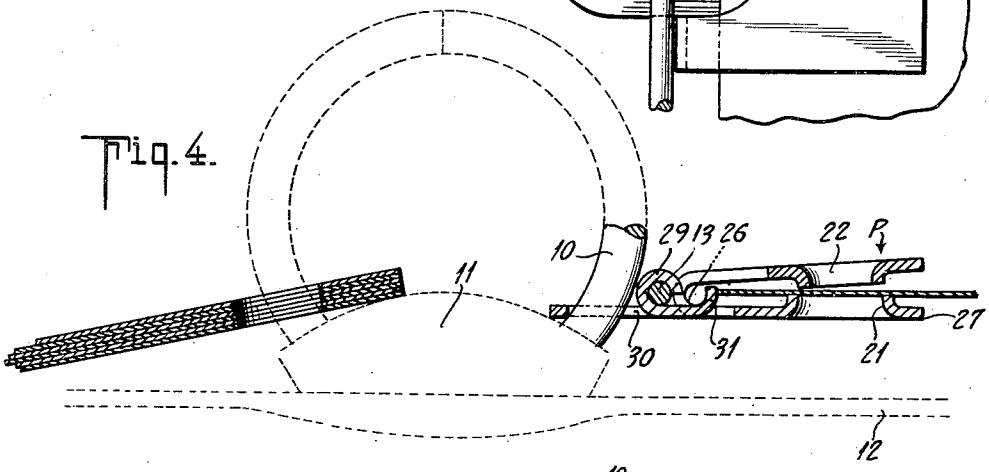


Fig. 5.

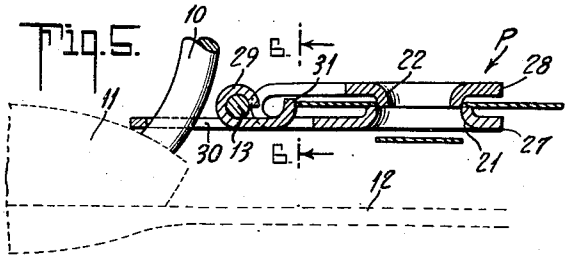


Fig. 6.

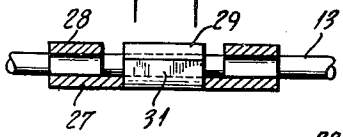
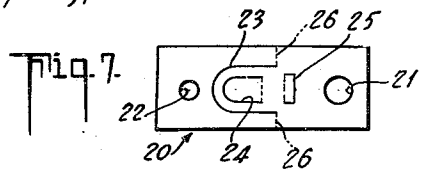


Fig. 7.



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PAPER PERFORATOR

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5 Claims. (Cl. 164—124)

The present invention relates to paper perforators, and is more particularly directed toward perforators suitable for use with ring binders to punch holes in sheets of paper whereby the sheets may have holes to fit the rings of the ring binder.

The present invention contemplates a device for this purpose adapted to be carried by the ring binder and having a number of perforators corresponding in number with the number of rings employed in the binder and spaced according to the spacing of the rings of the binder.

The present invention also contemplates that each perforating device will be embodied in a single piece of stiff, but resilient, sheet metal punched and folded to shape so that not only can it be held captive by the ring of the ring binder, but it can be secured to a rod which holds all the perforators in proper relative position. The perforating devices each have an upwardly drawn apertured die, a downwardly drawn mating punch and preferably a stop limiting the insertion of the paper.

The accompanying drawing shows, for purposes of illustrating the present invention, an embodiment in which the invention may take form, it being understood that the drawing is illustrative of the invention rather than limiting the same.

In this drawing:

Figure 1 is a top plan view showing the complete perforator carried on a ring binder;

Figure 2 is a side elevational view of one of the perforators showing it mounted on the rod;

Figure 3 is a top plan view of the structure of Figure 2 showing a sheet of paper inserted;

Figure 4 is a cross sectional view through a ring binder and showing the perforator in use;

Figure 5 is a fragmentary view similar to Figure 4 showing the punch and die of the perforator moved toward one another to punch a hole in the sheet;

Figure 6 is a sectional view on the line 6—6 of Figure 5; and

Figure 7 is a developed view showing the blank from which one of the perforators is made.

In the drawing the reference character 10 designates the rings, the reference character 11 the ring holder and the reference character 12 the cover of a conventional ring binder.

This binder is indicated as having three rings and each ring 10 is associated with a perforator designated generally by the letter P. These perforators are carried on a rod or wire 13, and, while the wire is tightly gripped by the perforators, the perforators are slidable along the wire, if necessary, to bring them to the proper position to have them fit the rings.

Each perforator is made out of a sheet metal blank such as illustrated at 20 in Figure 7. This blank is rectangular and is provided with a hole at 21, a hole at 22, and is slitted along the full lines indicated at 23, 24 and 25. The portion of the blank to the left of the dotted line 26—26 is bent over on to the part to the right of this line 26 to form the perforator shown more in detail in the other figures of the drawing.

The hole provided at 21 is drawn upwardly, as appears more clearly in Figures 4 and 5, to provide a round die of the proper size of the hole to be punched in the paper. The hole 22 is drawn in the same direction, but owing to the bending of the sheet the hole 22 now becomes a downwardly extending punch adapted to mate the die 21. The material between the slits 23 and 24 remains in the original plane of the right hand portion of the blank shown in Figure 7, while the material outside the cut 23 folds over on top, as will be obvious. The material which connected the left and right hand portions of the blank along the lines 26 now forms a closed end of the U which connects the upper and lower sides 27 and 28 of the perforator and acts as a resilient hinge when pressure is applied to the lower element 28 to press it down toward the lower element 27. The material inside the cut 24 is bent around the rod or wire 13 to form a knuckle 29, thereby leaving a hole 30 adapted to accommodate the ring 10 of the ring binder. The material inside the slits 25 of Figure 7 is bent up, as indicated at 31, to form a stop for the sheet of paper.

When the proper number of perforators P have been secured on the wire or rod and moved along it to be in the right position, the device may be readily received on the rings of the ring binder and remain with the ring binder, if desired. They are then readily available for use in punching holes in sheets of paper to fit the binder. All that is necessary is to insert the sheet of paper a sufficient amount to bring its edge against one or more of the stops 31, and then pressure may be applied by the thumb to force the punch down through the paper, the bottom of the device being pressed against the cover of the binder or the comparatively stiff protective sheet of hard board furnished with many binders. Owing to the stiffness of the wire all the perforators are disposed in a line and the centers of the holes are lineacentric.

Since it is obvious that the invention may be

embodied in other forms and constructions within the scope of the claims, I wish it to be understood that the particular form shown is but one of these forms, and various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. A device for use with ring binders comprising a stiff wire of a length greater than the spacing of the most distant rings, a plurality of sheet metal members slidable along the wire so as to space them the same as the rings, each member having a hole to one side of the wire and adapted to receive one of the rings so that the device can be carried with the ring binder, and a U-shaped paper perforator on the other side of the wire, the perforators being adapted to punch holes in a sheet of paper at spacings corresponding to the rings, one side of the U having a punch and the other side a cooperative die, the hole carrying end being an extension of the die portion of the perforator.

2. A captive perforator for use with ring binders to perforate a plurality of holes in a paper sheet to fit the binder, comprising a plurality of sheet metal members corresponding in number to the rings of the binder, a rod on which the said members are carried, each member having an eye to one side of the rod adapted to receive a ring of the binder and on the opposite side of the rod a die, a punch above the die and a stop struck up out of the sheet metal and limiting the distance a sheet of paper may be inserted between the punch and die, the punches and dies having like relations with the eyes so that the spacing of the holes punched is that of the rings.

3. A captive perforator for paper made from a single sheet of stiff, but resilient sheet metal, bent intermediate its ends to U-shaped form, with one side above the other, the lower side having an upwardly drawn apertured die, the upper side having a mating punch normally spaced above the die to admit a sheet of paper and pressable into the die to punch a hole in the paper, the perforator having an extension from the lower side beyond the closed end of the U, said extension having an opening formed by upwardly bending a prong cut out of the sheet, the upper side having an opening corresponding with the outer edge of the extension.

4. A paper perforator made of a single piece of stiff resilient sheet metal and having a lower flat portion with a wide end and a narrow end, the wide end having an upwardly drawn apertured die, and an upwardly bent stop, the narrow end having an upwardly bent prong formed to provide a hinge knuckle, and an upper flat portion connected to the bottom portion outside the width of the said narrow end by portions of the sheet bent through 180° and having a downwardly draw punch mating the die in the lower flat portion.

5. A device for punching paper for use with a ring or post binding device comprising a plurality of punches corresponding in number with the number of posts or rings in the binder, and a stiff wire to which the punches are slidably secured to maintain lineacentric relationship between the punches, each punch being formed of a sheet of resilient material bent to the shape of a U, one leg of the U being extruded in a manner to form a punch and the other leg being pierced at a point coincidental with the punch to form a die, each punch having a pierced tab cut out of the "punch" side of the U and in the plane of the "die" side of the U and adapted to loosely receive the rings or posts of the binding device, the material removed in piercing the tab being bent over the wire, other material from the "die" side of the U being bent toward the "punch" side to provide a stop against which the material to be pierced is brought to bear so that the hole when pierced has a predetermined relationship relative to the edge of the sheet.

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