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H. D. MIELKE

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PAPER DRILL

Filed Sept. 3, 1929

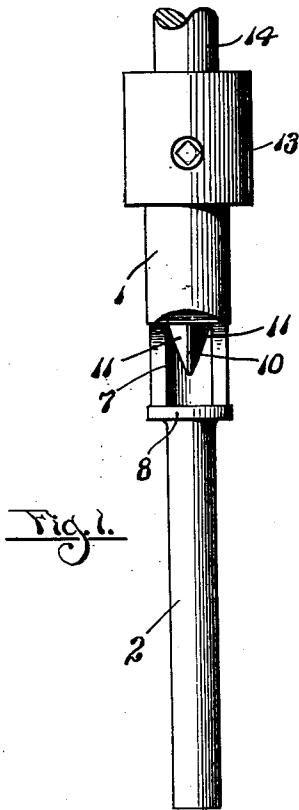


Fig. 1.

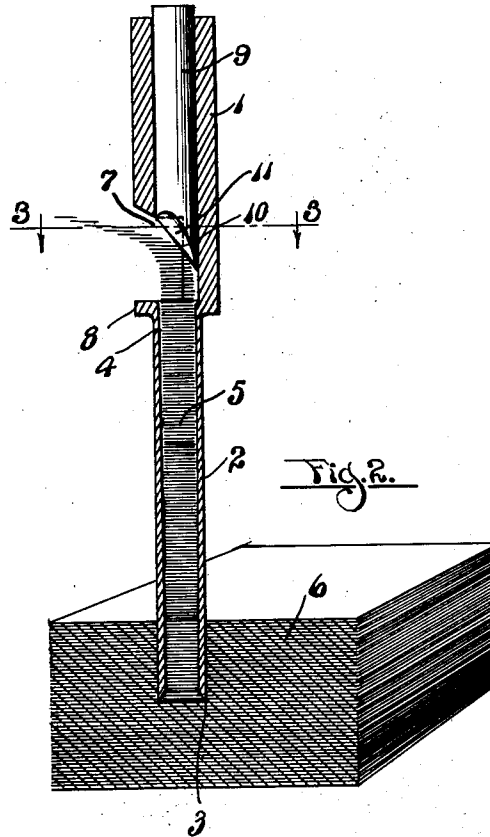


Fig. 2.

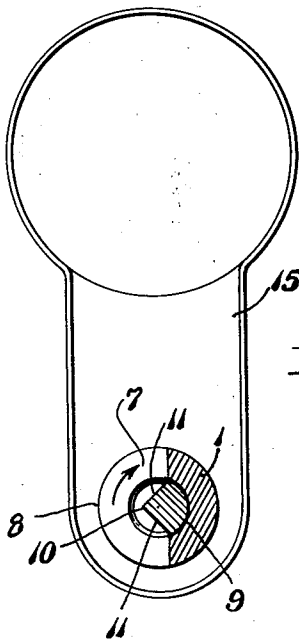


Fig. 3.

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PAPER DRILL

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This invention relates to a paper drill designed for the purpose of drilling a hole through a plurality of superimposed sheets of paper. Such drilling of holes is very desirable, particularly where a large number of sheets of paper are to be properly located with respect to each other and bound together and the holes through the sheets of paper should be in substantially exact alignment for the passage of posts used in paper binders between covers and over which the sheets of paper are placed.

The drilling of the holes through the sheets of paper is accomplished by cutting disks consecutively through the sheets of paper from the uppermost to the lowermost sheet. The drill is of a hollow type and the disks of paper cut from the sheets pass upwardly through the hollow drill. With my invention it is designed that the disks cut from the paper may be directed and thrown outwardly away from the drill when it is rotating through a novel construction which permits and facilitates such action.

The invention consists of novel details of construction and arrangements of parts for attaining the ends stated, as will be apparent on an understanding of the invention had from the following description, taken in connection with the accompanying drawings, in which,

Fig. 1 is a front elevation of the drill made in accordance with my invention and showing the same attached to any suitable drill spindle.

Fig. 2 is a longitudinal vertical section through the drill and,

Fig. 3 is a horizontal section taken substantially on the plane of line 3—3 of Fig. 2.

Like reference characters refer to like parts in the different figures of the drawings.

In the construction of the drill a cylindrical shank 1 is provided from which, at its lower end, the drill proper 2 extends. The shank and the drill are made integral with each other from a single piece of metal. Both the shank and drill are bored lengthwise thereof and at the lower end of the drill it is brought to a cutting edge as indicated at 3, while the opening 4 through the drill 2, adjacent its upper portion, tapers outwardly and is somewhat larger than at the lower end, whereby the disks 5 when cut from the sheets of paper 6 located one over the other in a solid block may pass upwardly through the drill 2 and do not bind and resist upward movement.

The shank 1, in a side thereof a short distance above the upper end of the hollow drill 2, has a recess of the form indicated at 7 cut therein. This recess at its upper side inclines downwardly and inwardly and its lower side is located a short distance above a horizontal ledge 8 as shown. A rod 9 is inserted with a press fit into the longitudinal opening through the shank 1. At its lower end it is cut at an angle making the edge 10 which is inclined both to the horizontal and vertical, as shown, while at each side of the edge 10 portions are cut away, as indicated at 11, to bring the lower end of rod 9 to a point and provide the two angular faces 11 disposed substantially at right angles to each other.

The drill as thus made is adapted to be suitably connected to any drill spindle of a drill press, the upper end of the shank 1 being received within the chuck 13 carried at the lower end of the drill spindle 14. The block of sheets of paper 6 may be placed on any suitable support, indicated at 15 in Fig. 3, below the lower end of the drill and then the drill rotated and moved downwardly or the table carrying the block of paper moved upwardly with pressure sufficient that the drill will pass through and cut the disks 5 from the consecutive sheets of paper in the block. The disks pass upwardly through the drill 2, having freedom of movement as they approach the upper end thereof and when they reach the lower end portion of the rod 9 with its angular faces 11 the disks are directed outwardly; and with the rotation of the drill are thrown outwardly by centrifugal force, keeping the drill clear of disks of paper which might clog the drill and prevent its effective operation. The construction described while of a simple character and one which is readily and easily made is very effective and has

proven particularly useful for the purposes for which it is designed.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. A drill comprising a shank and a drill integral with and extending downwardly from the lower end of the shank, said drill and shank having axially alined longitudinal openings therethrough, said shank having a recess through one side thereof a short distance above the upper end of the drill communicating with the opening through said shank and drill, and a rod secured in the opening in said shank having the lower end thereof cut in a plane located at an acute angle to the axis of the rod to form a deflecting edge inclined upwardly and outwardly toward the open side of said recess, and said rod at its lower end at each side of said deflecting edge having parts cut away on downwardly and inwardly inclined planes meeting substantially at the lowermost point of said rod.

2. A drill comprising a shank and a drill integral therewith extending downwardly from the lower end of the shank, said drill and shank having longitudinally alined openings therethrough with a common longitudinal axis, said shank, a short distance above the upper end of the drill, having a recess cut in one side thereof, the recess having a horizontal lower side, an upwardly and outwardly inclined upper side and vertical inner sides at each side of the opening in said shank, a rod formed at its lower end with an upwardly and outwardly inclined deflecting edge extending into said recess and located at an angle to the vertical and extending from the inner side of said recess upwardly and outwardly toward the open side of the recess, said rod also having deflecting surfaces at its lower end positioned at an angle to each other at each side of said inclined deflecting edge.

In testimony whereof I affix my signature.

HERMAN D. MIELKE.

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