

B. F. BERRY.
PAPER PERFORATING DEVICE.
APPLICATION FILED JAN. 9, 1911.

1,014,442.

Patented Jan. 9, 1912.

Fig. I.

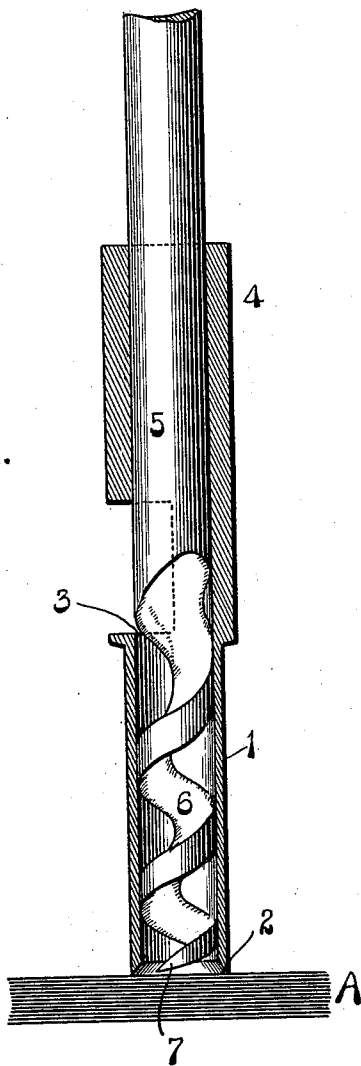
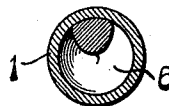


Fig. II.



Attest

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UNITED STATES PATENT OFFICE.

BENJAMIN F. BERRY, OF ST. LOUIS, MISSOURI.

PAPER-PERFORATING DEVICE.

1,014,442.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed January 9, 1911. Serial No. 601,536.

To all whom it may concern:

Be it known that I, BENJAMIN F. BERRY, a citizen of the United States of America, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Paper-Perforating Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a device for perforating sheets of paper, comprising a hollow cutter by which the paper is perforated and a spiral conveyer for conducting the disks of paper cut out through the hollow cutter as rapidly as they enter into the cutter and without any possibility of their becoming clogged in said cutter.

Figure I is in part a longitudinal section of my hollow cutter and in part an elevation of the spiral conveyer therein. Fig. II is a cross section through the hollow cutter and spiral conveyer.

In the accompanying drawings: 1 designates the hollow cutter of my perforator which is provided at its working end with a cutting edge 2 and intermediate of its ends with an escape opening 3 through which the cut out pieces of paper produced in the operation of the perforating device may be discharged after they have traversed the working portion of the cutter. The cutter is provided with a shank 4 to which any suitable means may be applied for the purpose of causing endwise movement of the cutter and also rotating it while it is performing the duty of making a perforation through a mass of sheets of paper such as those indicated at A, Fig. I. No invention *per se* is herein claimed for the hollow cutter of my perforating device.

5 designates a spiral conveyer operable in the hollow cutter 1 and adapted to be rotated by any suitable means. This spiral conveyer has its working end located above the cutting edge of the hollow cutter and is not intended to cut into the sheets of paper operated upon by the cutter, but only to pick up the pieces of paper cut out by the cutter and convey them through the hollow cutter to the discharge opening 3. The conveyer has a

spiral 6 that is of corkscrew shape and terminates at its extremity in a single beveled lip 7 offset from the axial line through the spiral conveyer so that it is located entirely away from the transverse center of the spiral in a manner to permit of the passage of the beveled lip beneath the cut out pieces of paper and the ascent of such pieces into the spiral of the conveyer.

With the object in view of facilitating the conveyance of the cut out pieces of paper through the hollow cutter of my perforating device by the spiral of my conveyer without liability of the pieces of paper becoming wedged in the spires of the conveyer, I make the spiral of my conveyer of peculiar form.

If the pitch of the spires, *i. e.*, the space within the spires, were uniform throughout the length of the spiral, one of two disadvantages would be present. A spiral having its spires near each other has greater value as a lifting device than one wherein the spires are more widely separated, but a spiral of the first mentioned type moves the material slowly and is liable to wedge or clog the material between the closely arranged spires. If the spaces within the spires were of uniform length and widely separated from each other, the value of the spiral as a lifting device would be diminished or destroyed. To overcome these disadvantages, the spaces within the spires of the upper portion of the spiral 6 are of greater length than the space within the terminal spire. The lower portion of the spiral, which lies near the cutting edge 2 of the hollow cutter is therefore shaped to provide the required amount of power to positively elevate the disks of paper punched out by the hollow cutter 1, and as these disks move upwardly they pass freely through the spaces within the upper spires and are finally discharged through the opening 3. The spires having the spaces of greater length also serve as a lifting medium, but, owing to the greater spaces therein, their efficiency as conveyer members is considerably less than that of the terminal spire. My spiral conveyer positively moves the disks of the paper from a point near the cutting edge 2 to the discharge opening 3,

and it is so formed as to practically eliminate all liability of the paper being wedged or clogged in the hollow cutter.

I claim:

- 5 A perforating device comprising a hollow cutter having a cutting edge and a discharge opening and a spiral conveyer within the hollow cutter having a beveled lip for en-

gaging the cut out pieces and an enlarged recess corresponding with the discharge opening of the hollow cutter. 10

BENJAMIN F. BERRY.

In the presence of—

H. G. COOK,
E. B. LINN.

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