(No Model.) 2 Sheets—Sheet 1.

E. B. STIMPSON, Jr.

ROTARY PERFORATING MACHINE.

No. 354,665. Patented Dec. 21, 1886.

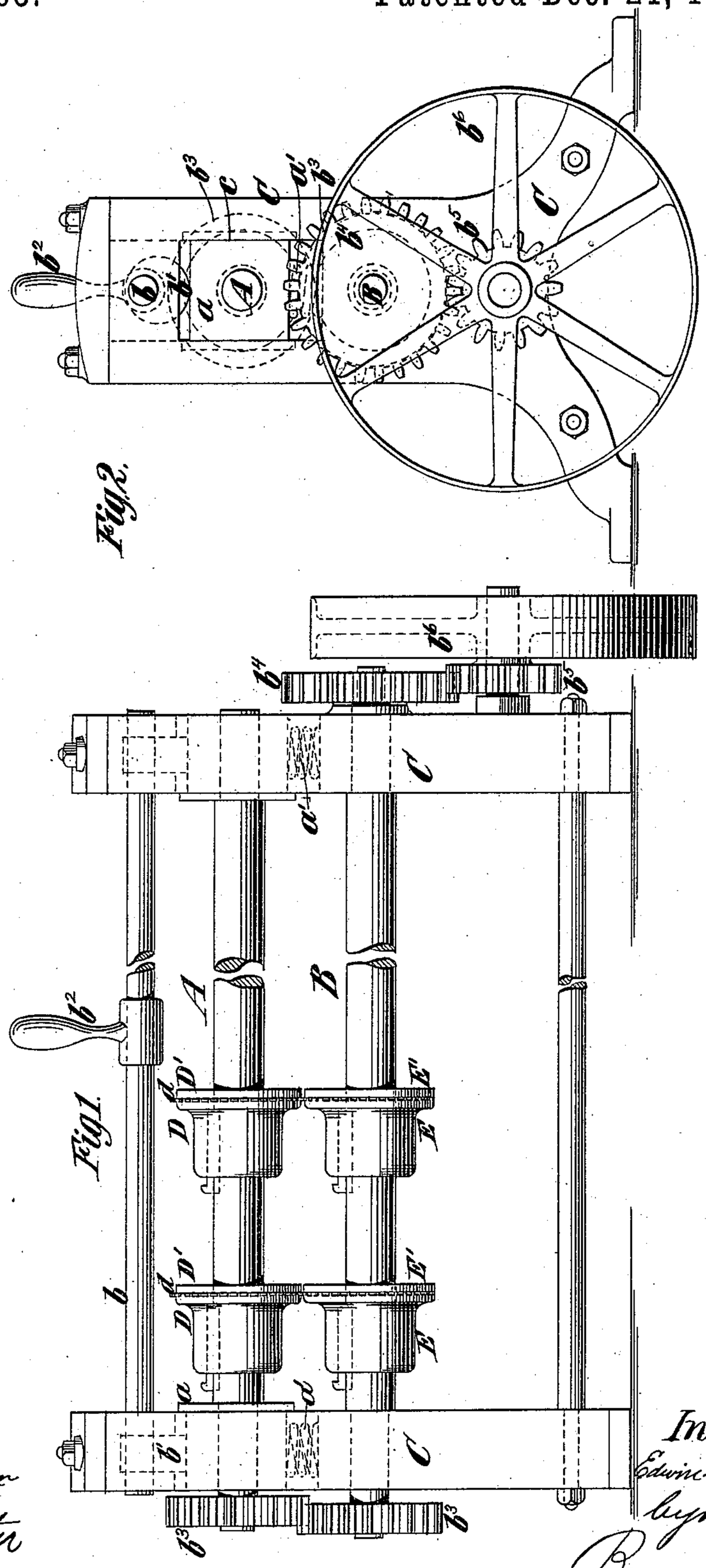

Fig. 2.

Fig. 1.

Witnesses.
Simon Lindeman
Emil Herter

Inventor.
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by his Attys
Brown & Hall

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

E. B. STIMPSON, Jr.

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Fig 3.

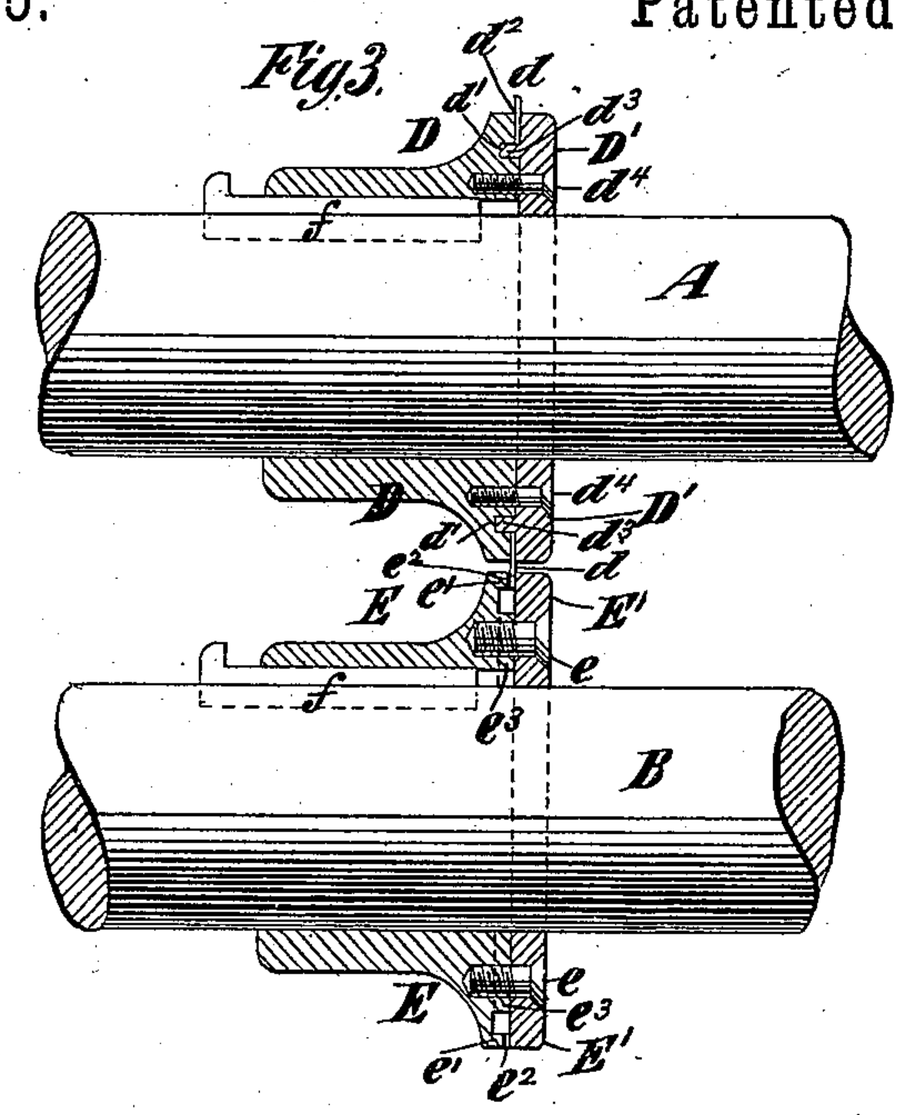


Fig 4.

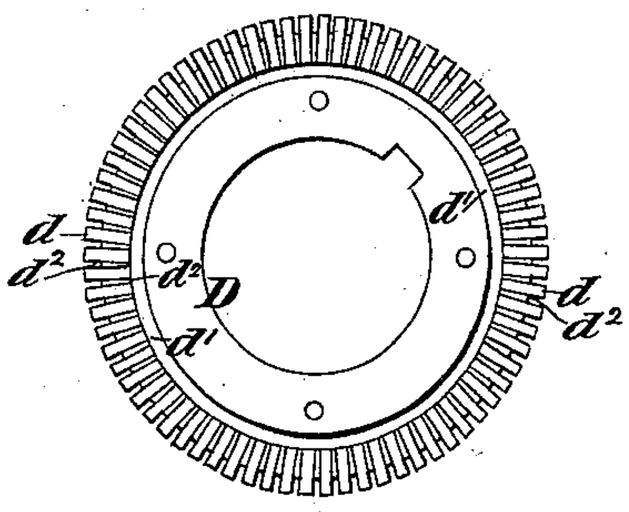


Fig 5.

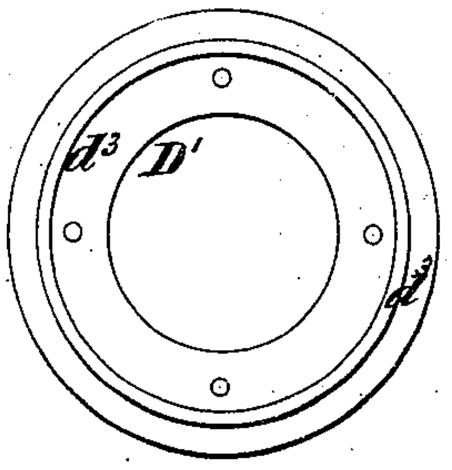


Fig 6.

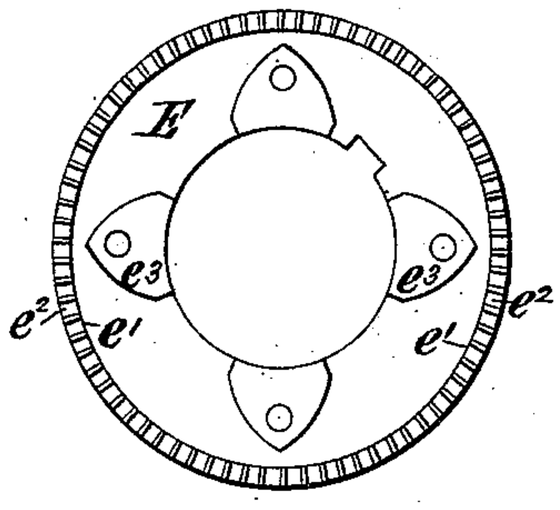
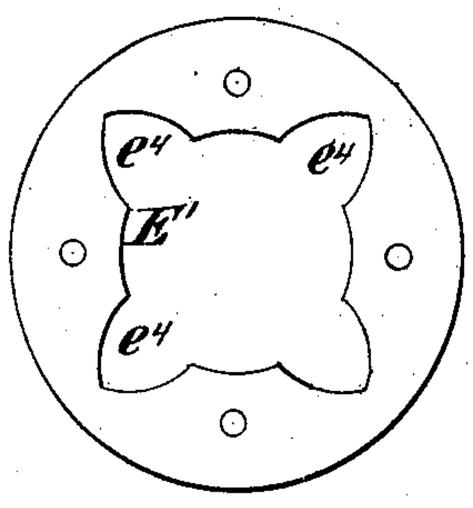


Fig 7.



Witnesses.
Miner Lindeman
Emil Herter.

Inventor:
Edwin B. Stimpson Jr
by his Attys
Brown & Hall

UNITED STATES PATENT OFFICE.

EDWIN B. STIMPSON, JR., OF BROOKLYN, NEW YORK.

ROTARY PERFORATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 354,665, dated December 21, 1886.

Application filed March 19, 1886. Serial No. 195,786. (No model.)

To all whom it may concern:

Be it known that I, EDWIN B. STIMPSON, Jr., of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Rotary Perforating-Machines, of which the following is a specification.

My invention is applicable to machines for perforating paper, leather, thin sheet metal, or other material, and which comprises a rotary die and a rotary punch holder or carrier, operating in connection therewith. Such machines may be advantageously used for perforating check-books or other papers.

My invention relates to machines in which are employed a rotary punch-holder and a rotary die, each composed of two disks or sections secured fast face to face upon a shaft, the punches being clamped and held between the disks or sections of the punch holder or carrier, and the die-openings, in connection with which the punches operate, being formed by radial grooves in the face of one of the die-sections.

The object of my invention is to provide for the inexpensive construction of the punch-holder and die, and also to provide a construction which will be particularly adapted for very small thin punches and correspondingly-small die-openings; also to provide a rotary die of the kind above described, which may be secured upon a solid shaft, and is provided with an internal cavity external to the shaft, and lateral openings leading therefrom for the passage of the scraps produced in punching.

In the accompanying drawings, Figure 1 is a front elevation of a machine embodying my invention. Fig. 2 is an end elevation thereof. Fig. 3 is an axial section through the punch-holder and the die, including portions of the shafts on which they are secured. Figs. 4 and 5 are respectively face views of the two disks or sections which constitute the punch holder or carrier; and Figs. 6 and 7 are face views, respectively, of the two sections or disks which compose the die. Figs. 1 and 2 are on a smaller scale than the remaining figures.

Similar letters of reference designate corresponding parts in all the figures.

My present invention relates solely to the construction of the punch-holder and die, and the other parts of the machine, in which the punch-holder and die are supported, and by which they are operated, may be of any suitable construction.

A B designate upper and lower shafts, upon which are arranged a rotary punch-holder and a rotary die. In machines for perforating check-books and similar purposes the two shafts will have a number of punch-holders and dies secured upon them at different points in their length, so as to form parallel lines of perforations. The moving parts of the machine are mounted in a suitable frame, which may consist of side frames or standards, C, connected by suitable stretchers, or to a suitable bed. The journals of the lower shaft, B, are fitted to bearings in the side frames, C, while the journals of the upper shaft, A, are fitted in boxes *a*, which are movable upward and downward in yokes or housings *c* on the side frames, C, and which are acted upon by springs *a'*, for elevating them so as to remove the shaft A and its punch-holder from operating relation to the shaft B and the die. Above the shaft A is a smaller shaft, *b*, having upon its ends cams *b'*, which act upon the boxes *a*, and also provided with an operating-handle, b^2, whereby the shaft and cams may be turned. When the shaft *b* is turned so as to bring the cams *b'* to the position shown in Fig. 2, the boxes *a* will be held down in their lowest position and the parts of the machine will be in suitable position for operation. When the shaft or rod *b* is turned so as to retract the cams from the boxes *a*, the springs *a'* will raise said boxes, and with them the shaft A and the punch-holder. The two shafts A B are here shown as geared together by pinions b^3, and the lower shaft, B, is provided with a wheel, b^4, with which engages a pinion, b^5, driven by a pulley, b^6.

I will now particularly describe the construction of the punch-holder and die.

d designates the series of punches, and the holder is composed of two principal parts or sections, D D'. This punch-holder is intended to carry punches of considerable width, but very little thickness, and for many kinds of work I find it advantageous to employ for the punches the ordinary spring-steel which is used for the bow-springs of eyeglasses. In the face of the section D, I have shown a cir-

cular groove, d', and the portion of the face which is outside or beyond said circular groove has formed in it radial grooves, d^2, which receive the punches d.

The part or section D′ of the punch-holder has upon its face a circular tongue or flange, d^3, which enters the circular groove d', and which forms a circular shoulder or abutment, against which the inner ends of the punches d bear. The two parts D D′ of the punch-holder may be held tightly together face to face, and clamping the punches between them by means of screws d^4, any number of which may be employed. The formation of the radial grooves d^2 in the section D provides for very readily securing in place a circular series of very thin and slender punches. In placing the punches in position the disk or section D′ is first brought to such position relatively to the section D that, while the punches may be slipped in readily between them, there will be enough frictional resistance to the movement to prevent such punches from falling out as the punch-holder is turned, and after the punches are all in place, with their inner ends pushed in against the shoulder formed by the tongue or flange d^3, the screws d^4 may be tightened to firmly clamp the sections D D′ together. If any one of the punches be broken at any time, it can be, at a trifling expense, removed and a new punch substituted.

The die here shown is composed, essentially, of two sections or disks, E E′, which are clamped together by screws e, and which have die-openings formed by radial grooves in the face of one of them—in this example in the part E. The section E has at the edge a flange, e', projecting from its face, and this flange has formed in it the radial grooves e^2, which, when the disk or section E′ is clamped against it, form the die-openings for the reception of the punches d. The portion of the face of the section E which is depressed below the flange e' forms, when the sections are secured together, an internal cavity, which is external to the shaft, and on the face of the section E are formed projections e^3, which are approximately flush with said flange, and against which the face of the section E′ bears. The section E′ has formed in it perforations or holes e^4, which, when the section is clamped to the section E, come between the projections e^3 thereon and form openings, through which the scrap or punchings may escape from the hollow die. The punch-holder and die may be secured to their shafts A B by any suitable means. I have here represented keys f for such purpose.

The construction of the die above described enables a solid shaft to be used, as the cavity in the die and the lateral openings e^4 therefrom are all external to the shaft.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a rotary die, of a series of punches and a rotary punch-holder composed of two disks or sections clamped together side by side, one of said sections having radial grooves in its face for the reception of the punches, and one of said sections having a circular shoulder underlying the inner ends of the grooves and forming a fixed abutment for the inner ends of the punches, substantially as herein described.

2. The combination, with a rotary die, of the punches d and the rotary punch-holder composed of the sections D D′, clamped together, the section D having in its face the circular groove d' and the grooves d^2, extending radially from the groove d' to the circumference of the section, and the section D′ having a circular tongue or flange, d^3, which enters the groove d', and by underlying the inner ends of the radial grooves d^2, forms an abutment for the inner ends of the punches, substantially as herein described.

3. The combination, with a rotary punch-holder and punches, of a shaft and a rotary die secured thereon, and composed of two disks or sections arranged side by side and constructed to form between them an internal cavity which is external to the shaft, one of said disks or sections having in its face radial grooves leading inward to the internal cavity and forming die-openings, and one of said disks or sections having lateral openings leading from the internal cavity, substantially as herein described.

4. The combination, with the rotary punch-holder and punches, of a shaft and a rotary die secured thereon, and composed of two disks or sections arranged side by side, one section, E, having a flange, e', projecting from its face at the circumference and provided with radial grooves e^2, and having the portion within the flange depressed below the face of the flange, so as to form between the disks or sections an internal cavity which is external to the shaft, and the other section, E′, having lateral openings e^4 leading from said cavity, substantially as herein described.

5. The combination, with a rotary punch-holder and punches, of a rotary die composed of the sections E E′, clamped side by side, the section E having the flange e', which is grooved radially, and also having the projections e^3 flush with said flange, and the section E′ having the openings e^4, for the escape of scrap, substantially as herein described.

EDWIN B. STIMPSON, JR.

Witnesses:
FREDK. HAYNES,
EMIL HERTER.