

No. 675,526.

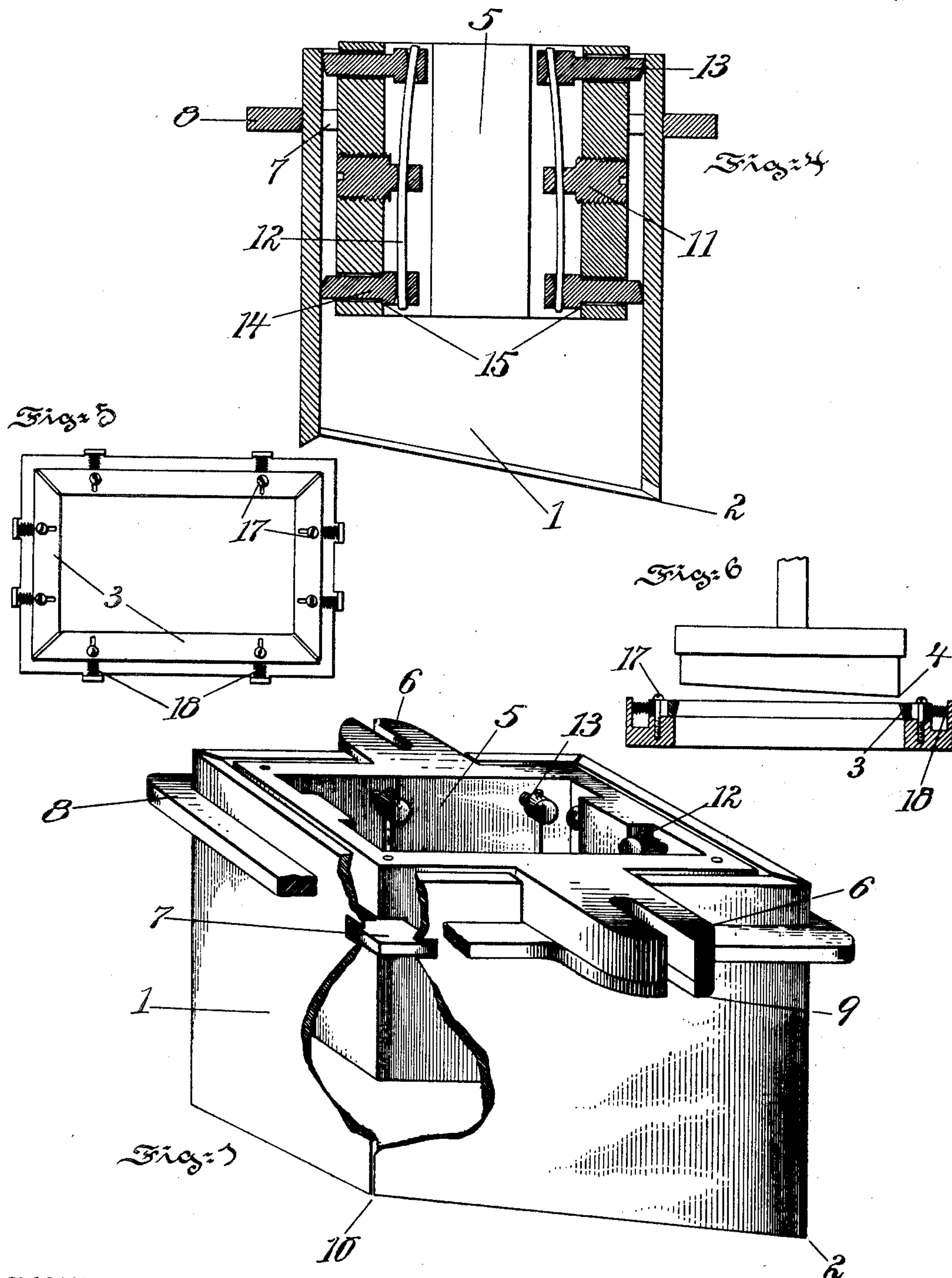
Patented June 4, 1901.

A. H. RANDALL, JR.
PUNCH.

(Application filed Jan. 29, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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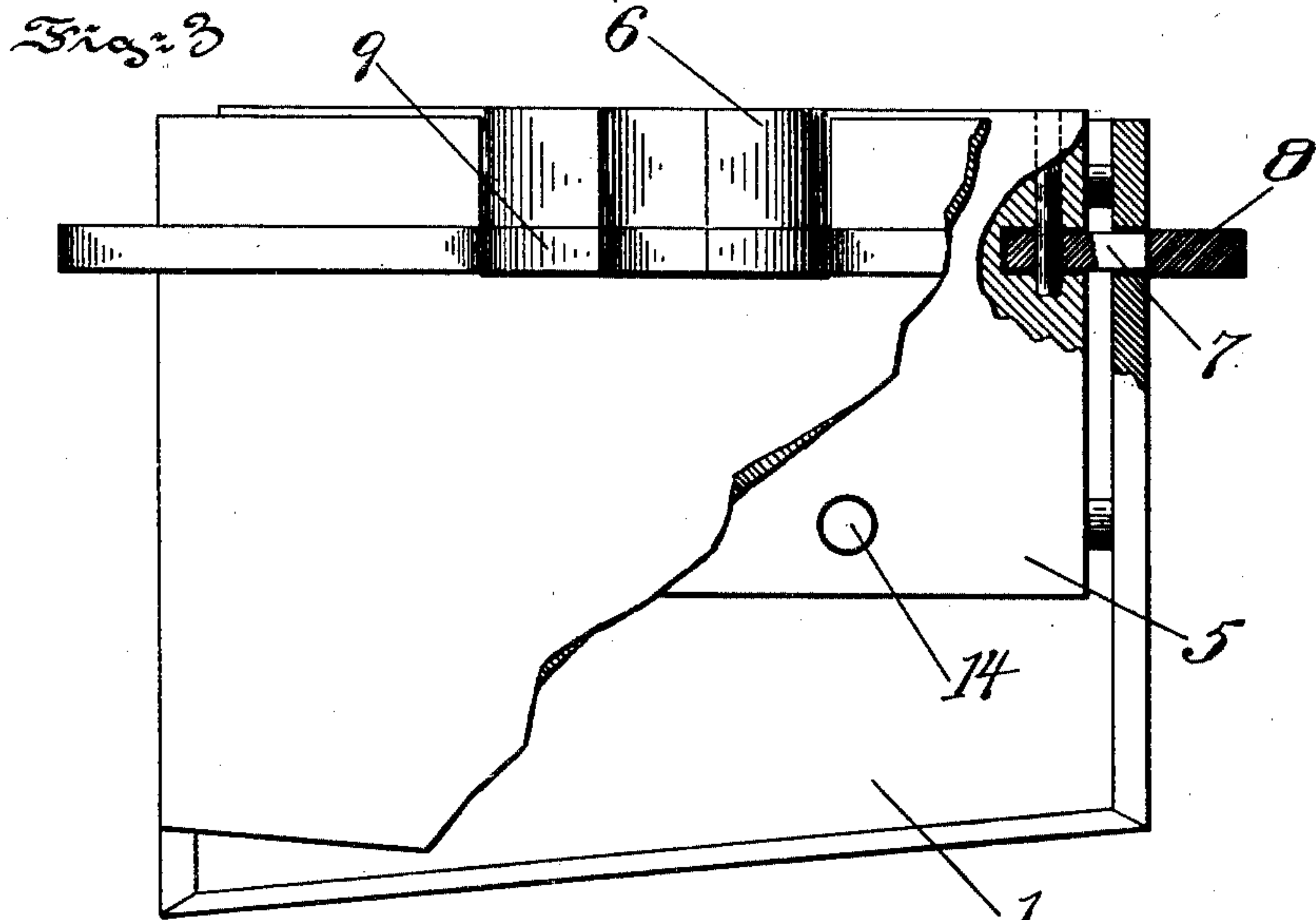
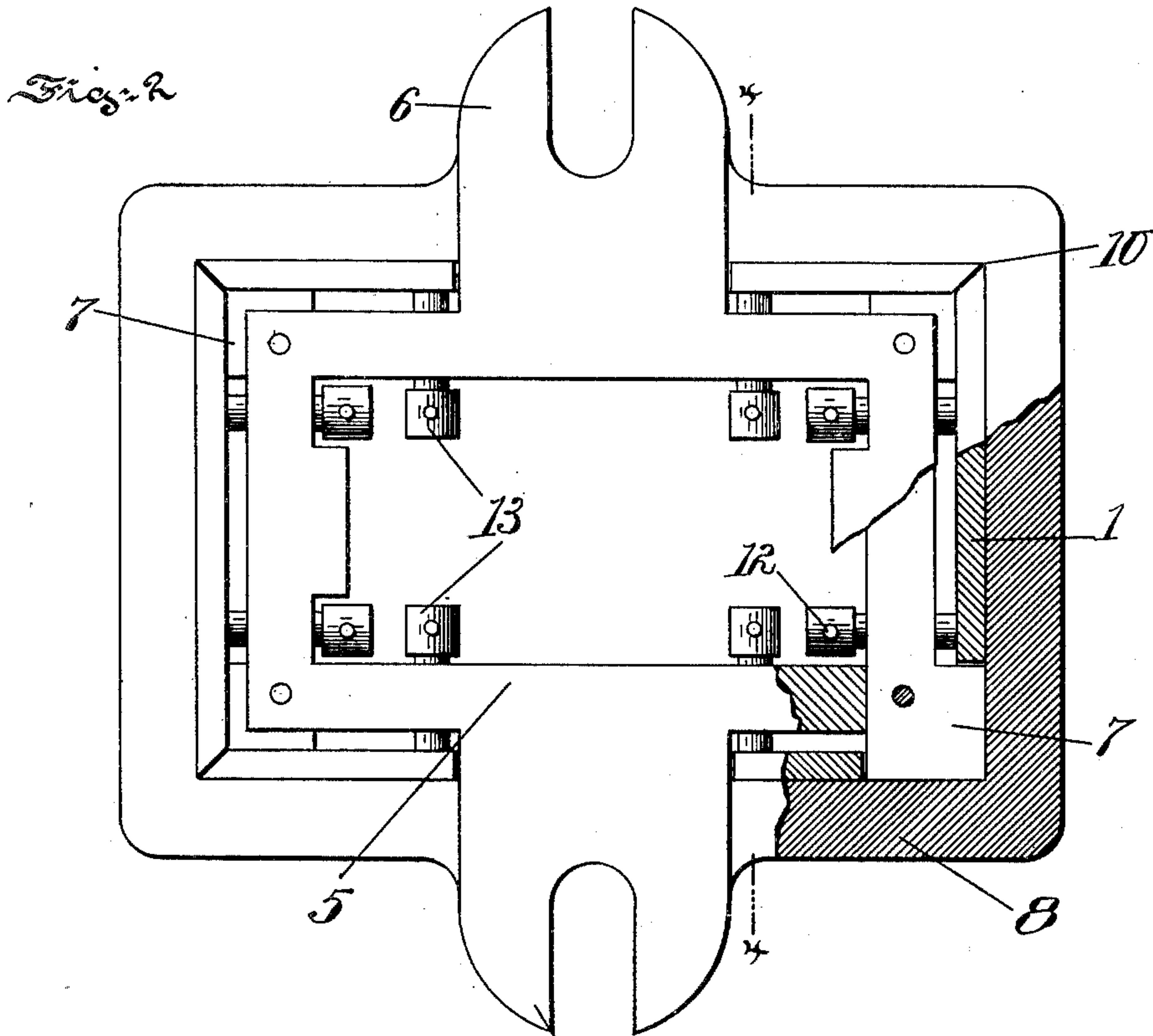
Patented June 4, 1901.

A. H. RANDALL, JR.
PUNCH.

(Application filed Jan. 29, 1900.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

ALFRED H. RANDALL, JR., OF PHILADELPHIA, PENNSYLVANIA.

PUNCH.

SPECIFICATION forming part of Letters Patent No. 675,526, dated June 4, 1901.

Application filed January 29, 1900. Serial No. 3,244. (No model.)

To all whom it may concern:

Be it known that I, ALFRED H. RANDALL, Jr., a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Punch, of which the following is a specification.

The object of the present invention is to provide devices for cutting thin sheets or other objects with a scissor-like cut, whereby they are not torn or injured.

Stated in general terms, the invention comprises a complementary punch and die, of which the sides of one are yielding in respect to the sides of the other, so that the cooperation of the sides produces a scissor-like cut.

The invention also comprises the improvements hereinafter described and claimed.

The nature, characteristic features, and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a perspective view of a punch embodying features of the invention and showing portions of the sides broken away. Fig. 2 is a top or plan view, partly in section, of the punch shown in Fig. 1. Fig. 3 is a side view, partly in section, of the same. Fig. 4 is a transverse sectional view taken on the line 4 4 of Fig. 2, and Figs. 5 and 6 are respectively plan and transverse sectional views of a modification of my invention in which the sides of the die are yielding.

In the drawings, particularly with reference to Figs. 1 to 4, inclusive, 1 represents the sides of the punch, of which four are shown, although the number is not material, but could not well be less than three. They are yielding in respect to the rest of the punch, and they are provided at their lower ends with cutting or knife edges, as shown. In use the punch enters the die, and when this occurs the lower portion, as 2, Fig. 1, of each blade first enters the die. This portion 2 may be slightly ground off, or the side of the die may be slightly ground, so that as the portion 2 enters the corresponding side or blade is drawn inward toward the center of the punch. This is possible by reason of the fact that the sides of the punch are yielding, and the result of it is that as the punch is forced into

the die the various sides of the punch tightly hug or press the corresponding sides of the die, and thus there is produced a scissor-like cut, which does not tear or otherwise injure the material being operated upon even though it is exceedingly thin. In Fig. 5 the sides 3 of the die are yielding, so that as the lower portion, as 4, Fig. 6, of a punch with non-yielding sides enters the die such portion 4 pushes back the corresponding sides of the die, and there is thus produced the described scissor-like cut.

In Figs. 5 and 6 the lowest portions of the blades of the punch are slightly ground off, or the same result can be accomplished by slightly grinding off the corresponding portions of the sides of the die. In each case the object is to permit the lowest portion of the punch to slightly push back the corresponding side of the die.

I will now proceed to describe the one of many constructions which I at this time consider to be the best embodiment of my invention, and in this connection I shall refer more particularly to Figs. 1 to 4, inclusive. 5 is a hollow head, shown as of rectangular form and provided with some means, as 6, for attaching it to the machine. At the various corners this head is provided with projections or projecting plates 7, which may be made integral with or attached to it. The sides 1 of the punch are notched, so as to fit over the plates 7, and a collar or band 8 is fitted around outside the sides, so as to hold them against accidental detachment, and this collar is secured to the head, for example, by means of lugs 9, which are engaged by the fastenings that secure the punch as a whole to the machine. The described construction permits of the convenient removal of the sides of the punch and also of their being assembled readily and rapidly. From the foregoing description it will be understood that the sides are, in a sense, hinged at their upper portions to the head, and sufficient clearance is provided, as indicated at 10, to enable the sides to yield slightly inward toward the head. The head is provided with adjustable screws 11, which carry springs 12, and the ends of these springs bear upon movable studs 13 and 14, whose outer ends or points press upon the two faces of the sides. The

effect of the springs is to push all of the sides apart and to permit of the sides yielding inward, as described. The stud 14 is provided with a shouldered head, as 15, which by taking against the inner face of the part 5 limits its range of motion, and consequently limits the extent to which the sides 1 are pushed outward from the part 5. Adjustment of the screw 11 serves to increase or diminish the tension of the corresponding spring 12. It may be remarked that the described arrangement of springs in no wise interferes with the detachment or attachment of the sides.

Referring now to Figs. 5 and 6, the sides 3 of the die are slotted, so as to permit of their movement in respect to the screws 17, and the springs 18 serve to push the sides normally inward. The ends of the slots in the sides serve to limit their range of motion in such direction.

It will be obvious to those skilled in the art to which my invention appertains that modifications may be made in detail without departing from the spirit thereof. Hence I do not limit myself to the precise construction and arrangement of parts hereinabove set forth, and illustrated in the accompanying drawings; but,

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A punch having separate, yielding, cutting sides, substantially as described.

2. In combination a punch and a die of which the cutting sides of one are independent of each other and are yielding in respect to the cutting sides of the other to keep the cutting edges in contact with each other, substantially as described.

3. A punch comprising a head provided with projecting plates, sides slotted to accommodate said plates, a collar around the sides, and springs interposed between the sides and head, substantially as described.

4. A punch comprising a hollow head provided with projections, sides fitted to the projections, a collar around the sides, springs located with and carried by the head, and studs extending through the walls of the head and interposed between the springs and sides, substantially as described.

5. In a punch the combination of a head, a side movably connected therewith, a spring, and a stud interposed between the spring and side and provided with a shouldered head, substantially as described.

In testimony whereof I have hereunto signed my name.

ALFRED H. RANDALL, JR.

In presence of—

W. J. JACKSON,
FRANKLIN T. KALAS.