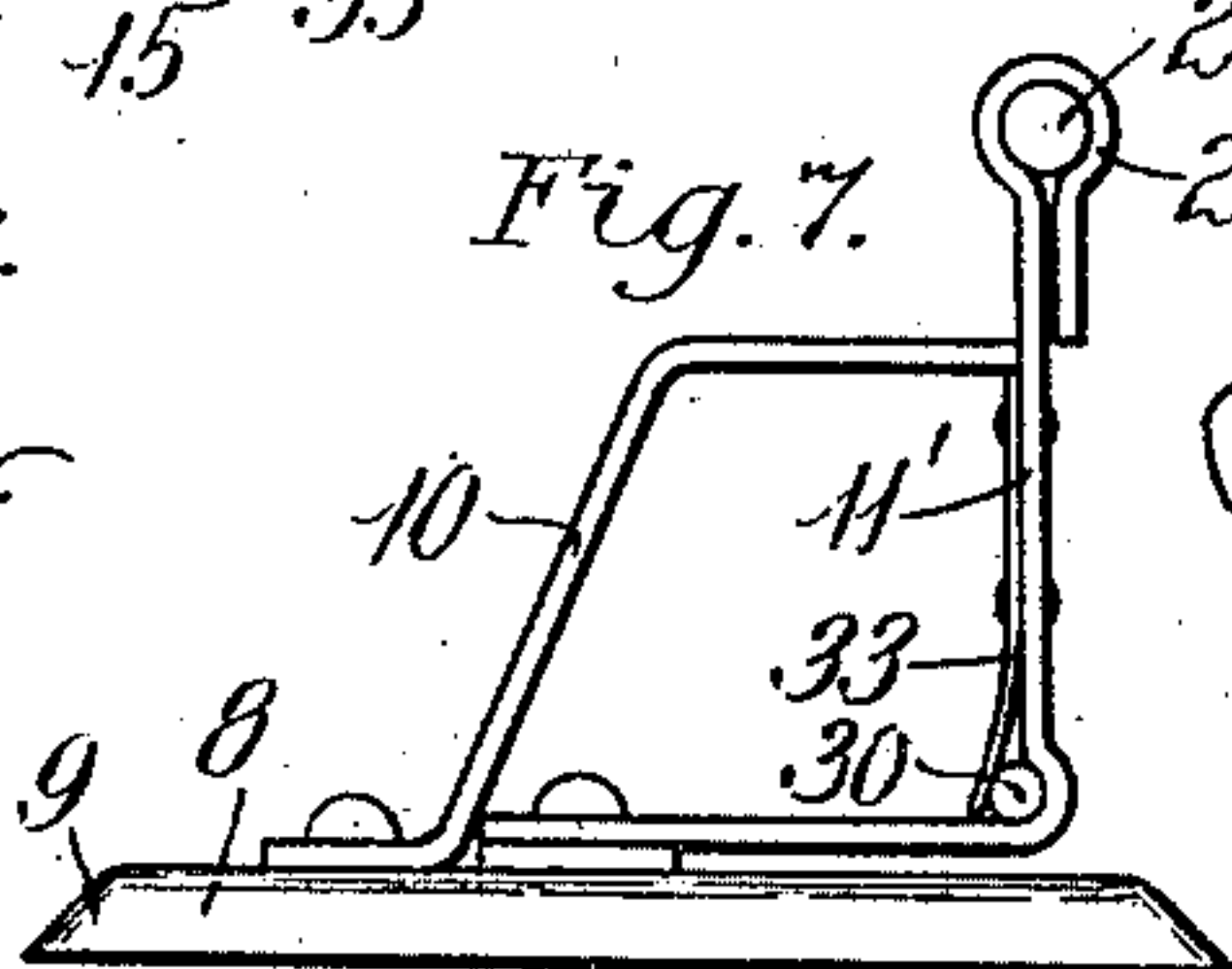
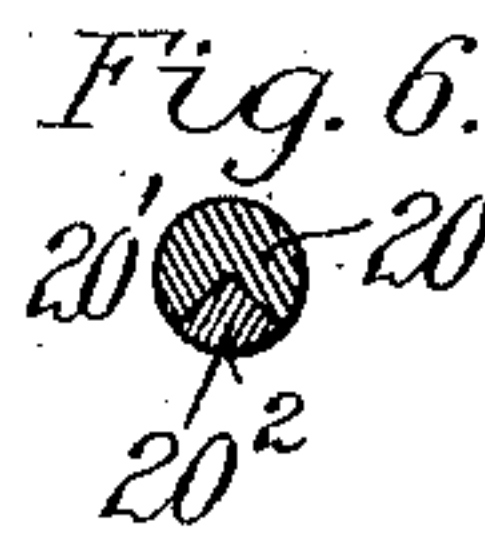
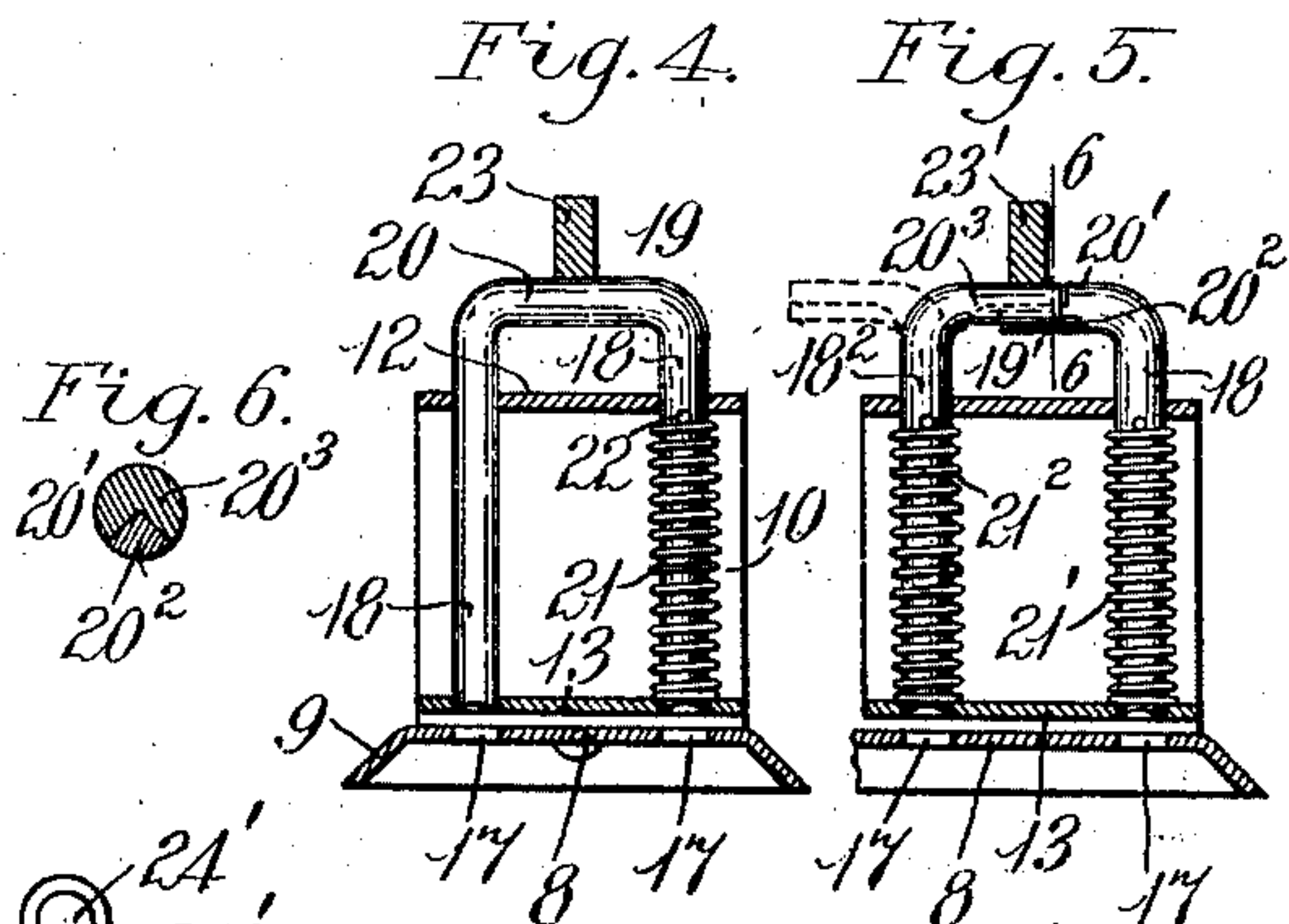
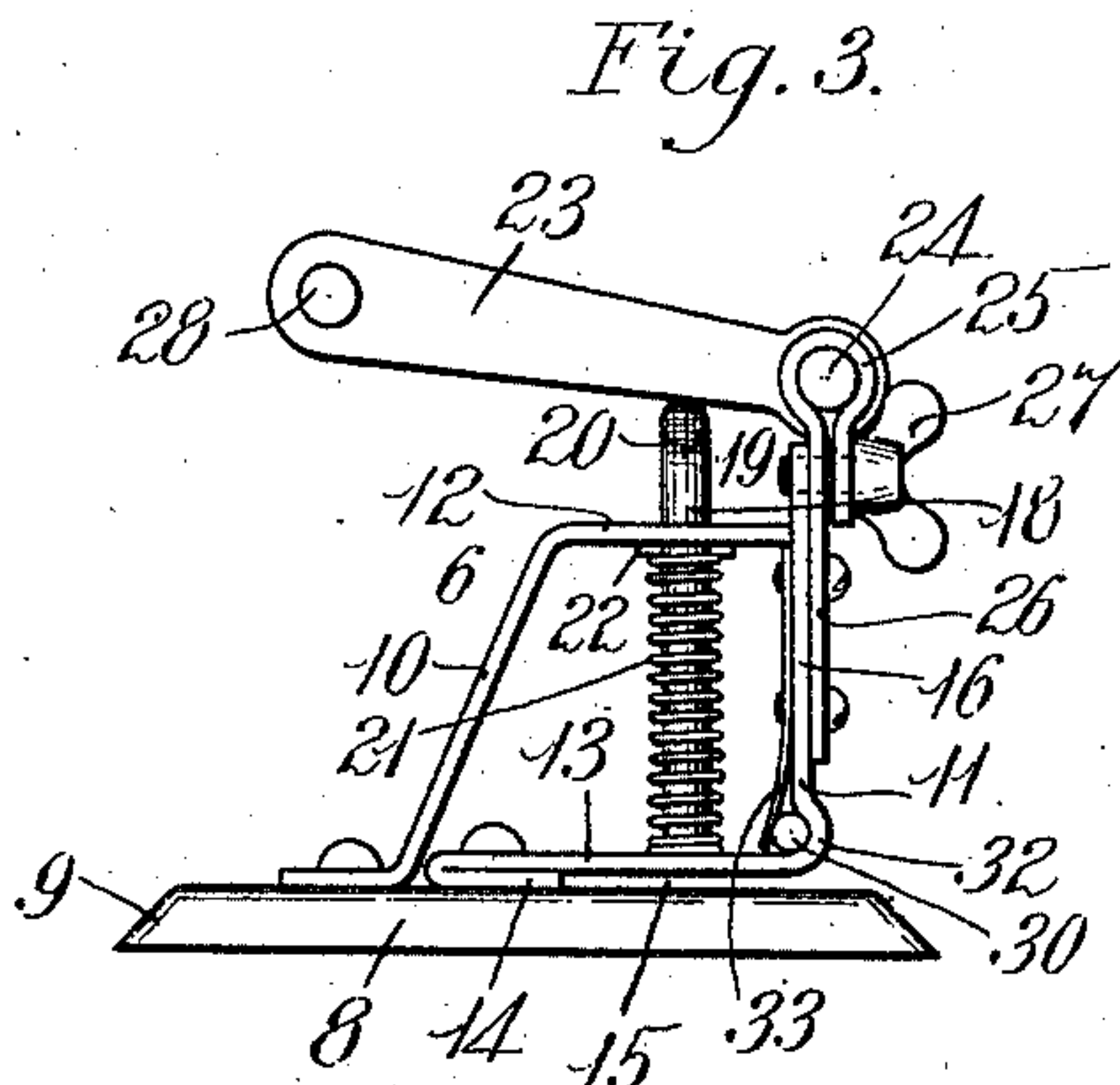
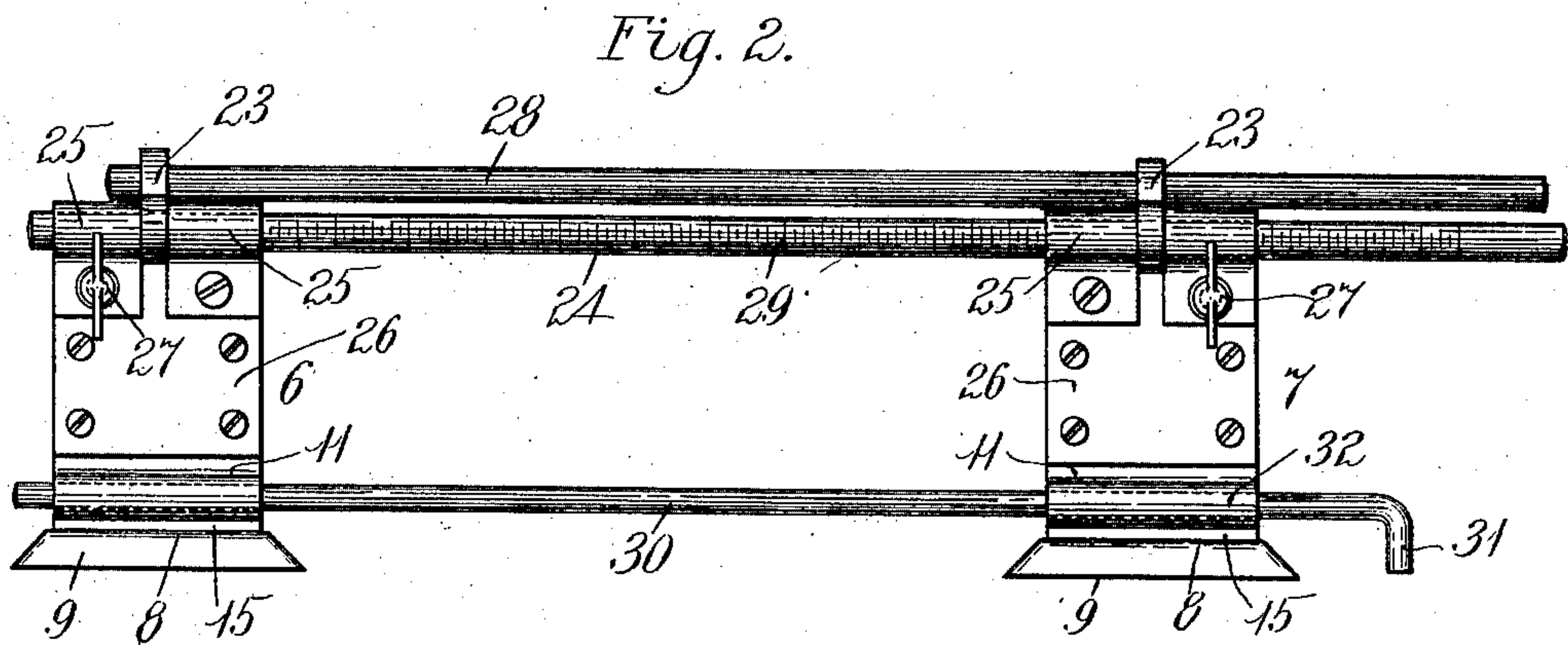
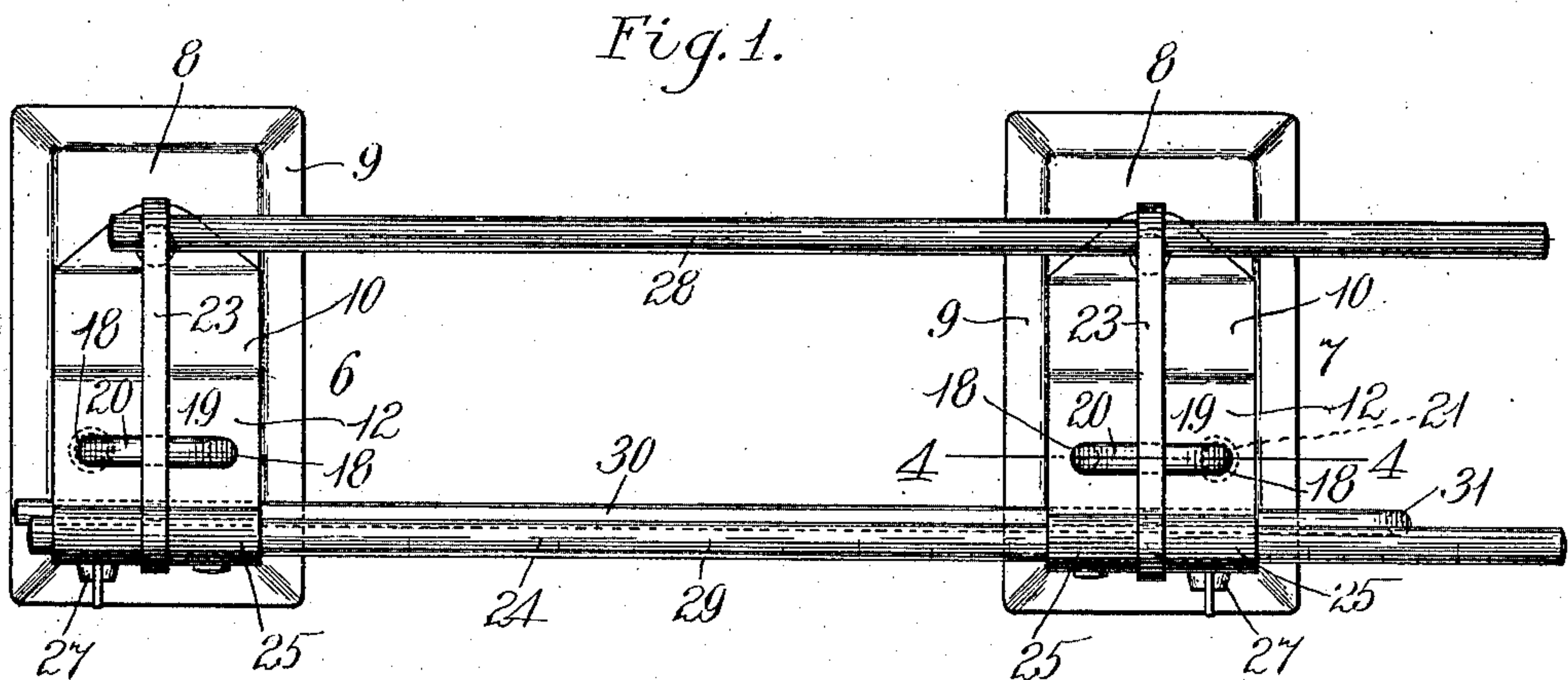


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PERFORATOR.
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987,201.

Patented Mar. 21, 1911.



Witnesses.

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UNITED STATES PATENT OFFICE.

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PERFORATOR.

987,201.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed October 14, 1909. Serial No. 522,558.

To all whom it may concern:

Be it known that I, SVEN HJ. WIBERG, a citizen of the United States, residing at Reading, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Perforators, of which the following is a specification.

This invention relates to an improved perforator, the object of the invention being to provide a perforator which will punch holes in sheet material, the same being particularly adapted to punch holes in series in sheets of paper, such as the leaves of loose leaf ledgers and the like, in which it is desirable to punch at one punching operation a series of holes at a certain distance from the edge of the sheet, said holes also being located at certain distances apart and at certain distances from the top of said sheet.

The invention consists in a punching mechanism which is duplicated when desired to form a series of punching mechanisms, all of the different members of this series of punching mechanisms being connected together, so that they may be all operated at one time preferably by hand, and the different units or punching mechanisms being adjustable relatively to each other.

As illustrated in the drawings, the specific punch is formed in duplicate, that is, with two legs, or male punching members, adapted to coöperate with two holes in the female member, or die, but without departing from the spirit of this invention, the punch may be made single instead of double, if so desired, and the punches, while shown cylindrical in form, may be made of any desired cross sectional contour.

The invention further consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings, Figure 1 is a plan view of my improved perforator showing two punching mechanisms connected together. Fig. 2 is a front elevation of the same. Fig. 3 is a side elevation of the same, as viewed from the left of Fig. 2. Fig. 4 is a sectional elevation, taken on line 4—4, Fig. 1. Fig. 5 is a detail view of a modified form of my invention. Fig. 6 is a detail section of the cross-bar taken on line 6—6, Fig. 5. Fig. 7 is a detail side elevation of a frame of modified construction.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 6 and 7 are two punching mechanisms constructed in accordance with my invention, and duplicates of each other, it being understood that when desired any number of such punching mechanisms may be used and connected together to operate simultaneously, as hereinafter described. The said punching mechanisms 6 and 7 being duplicates of each other, the following specific description of punching mechanism 6 will apply equally well to punching mechanism 7. Referring then to the punching mechanism (Figs. 1 to 4, inclusive) 6, 8 is a base, formed preferably of sheet metal, and having a flange 9 extending therearound, and adapted to rest upon any suitable support. 10 and 11 are guide plates. The guide plate 10 is fastened to the base 8 and extends upwardly therefrom at an angle to the upper portion 12, which is preferably parallel to the top of the base 8. The bottom 13 of the guide plate 11 is preferably parallel to the top of the base 8 and is provided with a flange 14, bent thereunder as seen in Fig. 3, and constituting a gage against which one edge of the paper which is to be punched rests. The space 15 enables the paper to be inserted between the portion 13 of the gage 11 and the top of the base 8, prior to the punching operation. From the bottom portion 13, the guide plate 11 extends upwardly, forming a vertical plate 16, against which the right hand edge, Fig 3, of the portion 12 of the guide plate 10, rests. Holes 17, 17 are formed in the top of the base 8 in alinement with the legs 18, 18 of the U-shaped punch 19, said legs being joined together by a cross-bar 20. A spring 21 encircles one of the legs 18 and bears at its lower end against the plate 13, and at its upper end against a cross-pin 22, in said leg 18, said cross-pin constituting a stop, which, when the punch is raised, bears against the under side of the top plate 12. A lever 23 bears against the cross-bar 20, and is arranged to rock upon a rod 24, which extends through two ears 25, 25 formed in the upper portion of a bearing plate 26, which rod is held stationary within said ears by means of a clamp screw 27.

When a plurality of the punching mechanisms hereinbefore specifically described is

employed, the rod 24 extends across from one to the other, and is adjustably fastened thereto by the clamp screws 27, 27. The levers 23, 23, by means of which the punches
 5 are forced downwardly on the material, are also connected together by a rod 28, so that all the levers in a series may be operated simultaneously by pressing downwardly upon said rod 28, and rocking the levers 23,
 10 23, which, bearing against the cross-bars 20, 20 of the different punches, force said punches downwardly, the same being guided by suitable holes in the plates 12 and 13, until the punches are forced through the
 15 paper and into the holes 17, 17 in the base 8. The flanges 14, upon the different guide plates 11, constitute gages to locate one edge of the sheet of paper which is being punched relatively to the centers of the different
 20 punches. In order to space the different punching mechanisms at any required distance apart, graduations 29 are provided upon the rod 24. For the purpose of locating another edge of the paper which is to be
 25 punched at the desired distance from the punches of mechanism 7, for instance, a gage rod 30 is provided, having a downwardly turned end 31, against the inner edge of which one edge of the paper to be punched is
 30 placed. This gage rod is slidably mounted upon the guide plate 11, said guide plate being preferably bent at 32 to form a guide for said rod, while the rod is held within the semicircular depression formed at 32 by
 35 springs 33, 33, the lower ends of which bear against said rod, the upper ends of which are fastened to the vertical portion 16 of the guide plate 11.

In operating my improved perforator, the
 40 sheet of material to be punched is placed within the space 15 between the plate 13, and the top of the base 8, one edge of the paper resting against the flange 14, another edge of the paper resting against the downwardly
 45 projecting end 31 of the gage rod 30. The operator then presses downwardly upon the rod 28, thus rocking the levers 23 upon the pivotal rod 24, and the levers pressing downwardly upon the cross-bars 20, 20,
 50 cause the punches to move downwardly, the legs 18, 18 sliding in the holes provided therefor in the plates 12 and 13, until the lower ends of said legs, which are suitably formed and sharpened, pass through the
 55 paper and into the holes 17, 17, thus punching said paper as desired. The operator then releases his pressure upon the rod 28, and the springs 21, 21 carry the different punches 19, 19 upwardly out of the holes 17,
 60 17, and out of the paper to the position illustrated in the drawings.

It will be understood that where a single punching mechanism is used the rods 24 and 28 are dispensed with, and the operator
 65 presses downwardly upon the lever 23 to op-

erate the punch. It will be understood that the frame of the punching mechanism consists, as a whole, of the base 8, the guide plate 10, and the guide plate 11, together with the bearing plate 26, that the upper
 70 portion of the guide plate 10 serves as one guide for the legs of the punch and that the lower portion of the guide plate 11 serves as another guide for said punch. The plate 13, a portion of the guide plate 11, also acts as a
 75 stripper to strip the paper from the punches as the same are carried upwardly by the springs 21 after the punching operation is completed.

In Figs. 5 and 6 I have illustrated a modified form of punch in which the U-shaped
 80 punch 19' has a cross-bar 20 divided into two parts 20² and 20³, the part 20² extending beneath the part 20³ and in cross section said parts are shown in Fig. 6, that portion of the
 85 part 20² which extends beneath a portion of the part 20³ being V-shaped and extending into a V-shaped groove upon the under side of the part 20³. The legs 18' and 18² of the punch slide in a frame substantially the
 90 same as that hereinbefore described and shown in Figs. 1 to 4 inclusive. The legs 18' and 18² are provided with springs 21' and 21², respectively, which operate to move the punches 18' and 18² upwardly against
 95 the action of the lever 23'.

The object of the construction hereinbefore set forth and illustrated in Figs. 5 and 6 is to enable the operator of the punch
 100 mechanism to disconnect one leg of the U-shaped punch and operate the other at will when he desires to punch a single hole, and this may be done by swinging the punch 18² around to the position illustrated in dotted
 105 lines in Fig. 5 and then operating the punch 18', or the punch 18' may be swung around in like manner and the punch 18² operated by their common actuating lever 23'.

In Fig. 7 a modified form of frame is illustrated in which the base 8 and guide plate
 110 10 are the same as the form illustrated in Figs. 1 to 4 inclusive, but the guide plate 11' is extended upwardly and has ears 25' formed thereon, constituting bearings for the rod 24', and the purpose of this construction
 115 is to simplify the frame by substituting for the plates 11 and 26 a single plate 11' with ears 25' formed thereon.

Having thus described my invention, what I claim and desire by Letters Patent to se-
 120 cure is:

1. A perforator having, in combination, a plurality of frames, a rod to which said frames are adjustably fastened, a complete punching mechanism mounted on each of
 125 said frames, respectively, and comprising a U-shaped punch consisting of two legs joined together by a cross-bar and a lever pivoted to said rod and adapted to bear against said cross-bar.
 130

2. A perforator having, in combination, a plurality of frames, a rod to which said frames are adjustably fastened, a complete punching mechanism mounted on each of
 5 said frames, respectively, and comprising a U-shaped punch consisting of two legs joined together by a cross-bar and a lever pivoted to said rod and adapted to bear against said cross-bar, and a rod joining said levers to-
 10 gether.

3. A perforator having, in combination, a plurality of frames, a rod to which said frames are adjustably fastened, a complete punching mechanism mounted on each of
 15 said frames, respectively, and comprising a U-shaped punch consisting of two legs joined together by a cross-bar and a lever pivoted to said rod and adapted to bear against said cross-bar, and a gage rod join-
 20 ing said frames together.

4. A perforator having, in combination, a frame formed of sheet metal and comprising a base, two guide plates and a bearing plate, fast to said base, a U-shaped punch consist-
 25 ing of two legs joined together by a cross-bar, said legs constituting the male members of said punch and adapted to slide in said guide plates, a gage for the material to be punched, said bearing plate supported
 30 upon said last named guide plate, said base provided with two holes adapted to coöperate with said legs in punching the material, a rod clamped to said bearing plate, and a lever pivoted to said rod and adapted to
 35 bear against said cross-bar.

5. A perforator having, in combination, a frame formed of sheet metal and comprising

a base, two guide plates and a bearing plate fast to said base, a U-shaped punch consist-
 40 ing of two legs joined together by a cross-bar, said legs constituting the male members of said punch and adapted to slide in said guide plates, a gage for the material to be punched, said bearing plate supported upon
 45 said last named guide plate, said base provided with two holes adapted to coöperate with said legs in punching the material, a rod clamped to said bearing plate, a lever pivoted to said rod and adapted to bear
 50 against said cross-bar, and a spring encircling one of said legs between said guide plates and adapted to move said punch in the opposite direction to that in which said lever is adapted to move the same.

6. A perforator having, in combination a
 55 U-shaped punch, consisting of two legs joined together by a cross-bar in two parts, said legs constituting the male members of said punch, and means to reciprocate said
 60 punch.

7. A perforator having, in combination, a U-shaped punch, consisting of two legs joined together by a cross-bar in two parts, one part of said cross-bar projecting into a slot pro-
 65 vided in the other part of said cross-bar, said legs constituting the male members of said punch, and means to reciprocate said punch.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SVEN HJ. WIBERG.

Witnesses:

CHARLES S. GOODING,
 LOUIS A. JONES.