

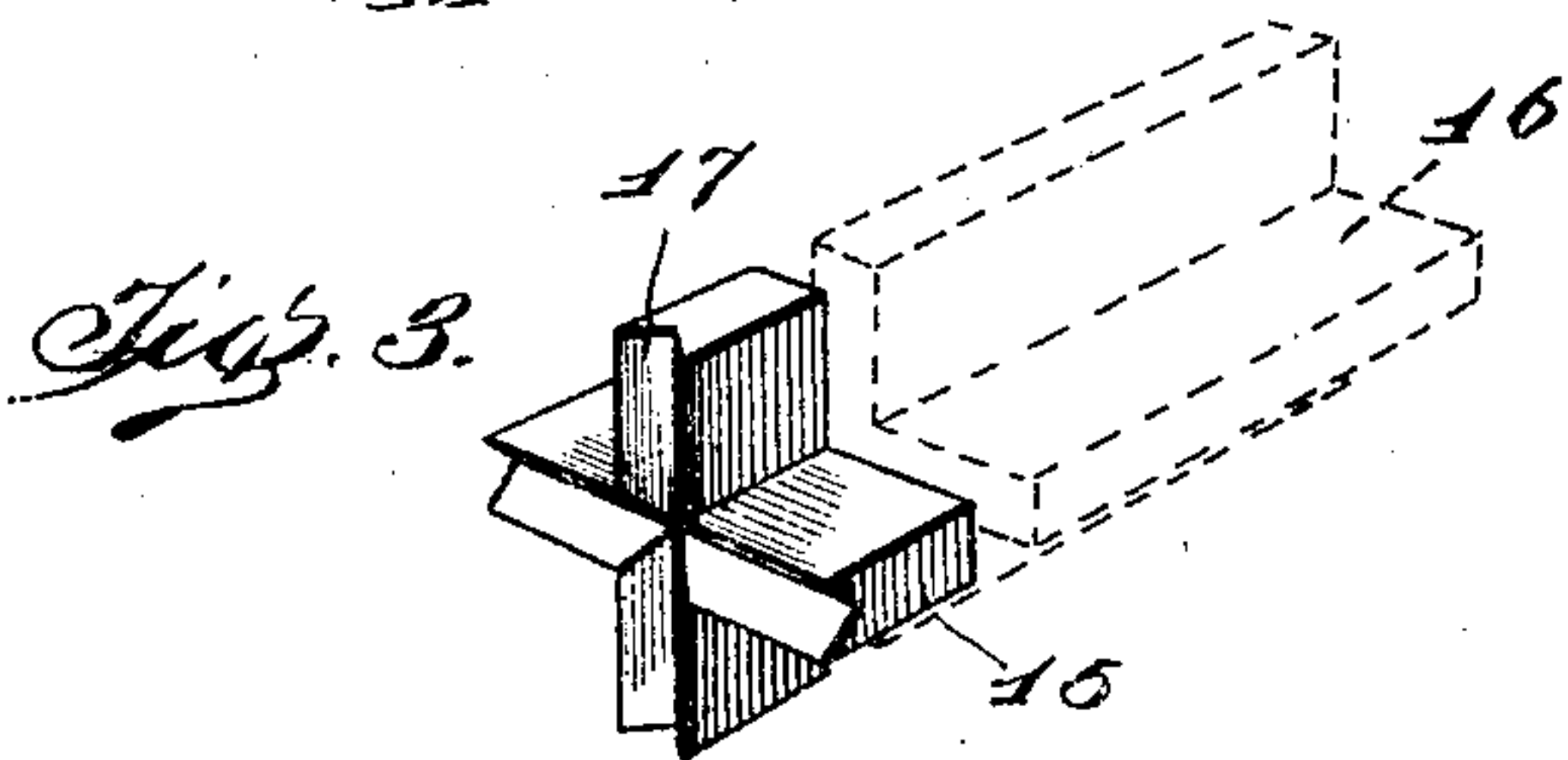
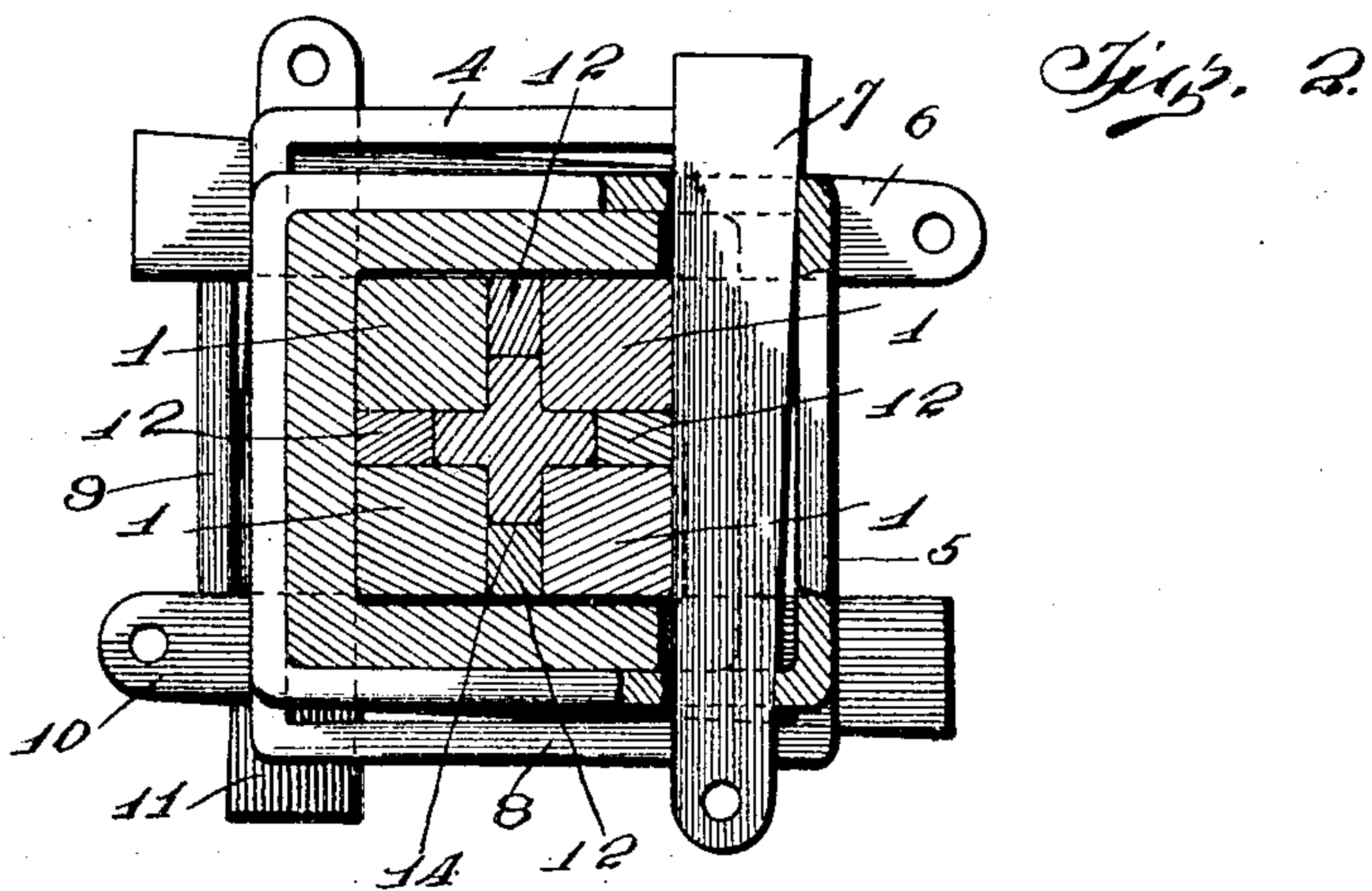
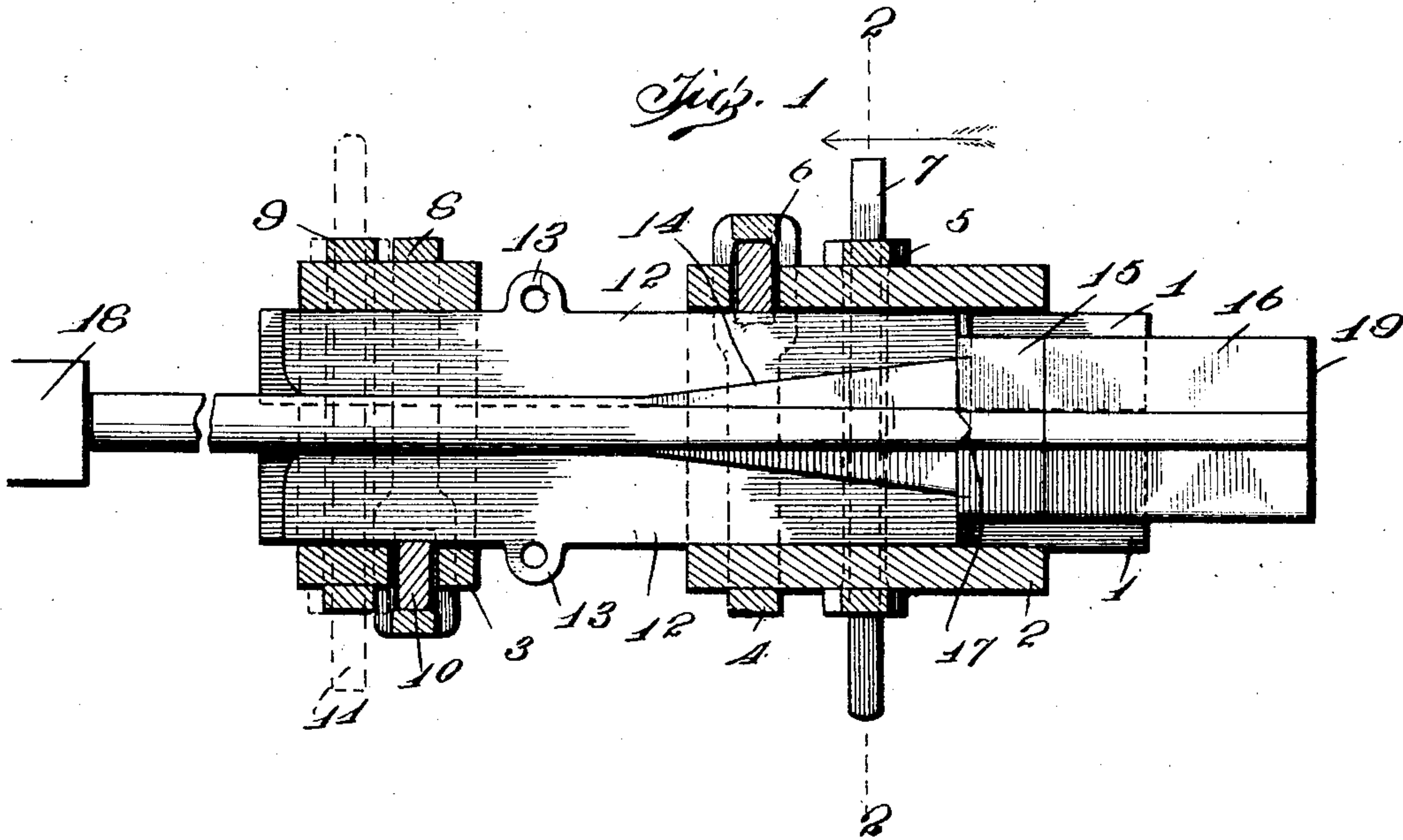
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PATENTED OCT. 4, 1904.

F. MARKWICK.
DRILL SHARPENER.

APPLICATION FILED NOV. 6, 1903.

NO MODEL.



Witnesses

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UNITED STATES PATENT OFFICE.

FREDRICK MARKWICK, OF SCRANTON, PENNSYLVANIA.

DRILL-SHARPENER.

SPECIFICATION forming part of Letters Patent No. 771,737, dated October 4, 1904.

Application filed November 6, 1903. Serial No. 180,066. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK MARKWICK, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Drill-Sharp-
5 eners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled
10 in the art to which it appertains to make and use the same.

This invention relates to improvements in means for forming radial wings upon a drill and also means for sharpening the ends of
15 said wings of the drill.

The invention further consists in providing means assembled with a die for gaging the width of the wings formed upon the drill and also in providing means for forming the wings
20 upon the drill.

Another object of the invention consists in forming a die for sharpening the edges of the drill when the same has become worn and also assisting in upsetting the same.

25 With these and other objects in view the invention consists in the novel construction, combination, and arrangement of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the claims hereto ap-
30 pended.

In the drawings, Figure 1 is a vertical longitudinal sectional view of the device, showing the drill in side elevation retained therein and the edge-forming die and its removable head-block in an assembled position within
35 said device. Fig. 2 is a transverse sectional view of the device, showing the parts in an assembled position and the drill retained therein. Fig. 3 is a detail perspective view of the edge-forming die having an engaging member for the same, shown in dotted lines.

Referring to the drawings by reference-numerals, 1 designates metallic bars which
45 are square in cross-section and which form the primary members of the die. In constructing the device I provide four of these bars, and upon the same is preferably mounted a plurality of bonding-sleeves 2 and 3. Said
50 bonding-sleeves are rectangular in shape and

are provided with a plurality of slots which are adapted to receive wedges or like members for retaining the parts forming the die in a predetermined position. The bonding-sleeve 2 is provided with clamping collars or
55 members 4 and 5, which surround the bonding-sleeve 2. Said clamping members are provided with wedges or keys 6 and 7, which pass through suitable apertures formed within the said members 4 and 5 and also are adapted
60 to engage the grooves or slots formed upon the bonding-sleeve, each of said clamping collars or members being formed with an apertured enlargement for the reception of the respective wedge. The said wedges 6 and
65 7 engage the sides of the longitudinal members or bars 1, and when the said members 6 and 7 are forced into a locked position by any suitable means the said members 1 are retained in a locked position.
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The bonding-sleeve 3 has also slipped upon it a plurality of clamping collars or members 8 and 9, which are also provided with suitable keys or wedges 10 and 11, which are adapted when in a locking position upon the device to
75 engage the sides of the members 1 for retaining the same in a locked position. Removably assembled with the die is a plurality of spacing-pieces or center die members 12, which are each provided with an apertured
80 extension 13 for assisting in the adjustment and also removable of said gage-keys from an assembled position with said die. The said gage-keys 12 are each provided with an inclined face 14, which is formed at an angle to
85 the longitudinal outer surface of said member, and the degree of inclination of the said face 14 is varied upon different gage-keys for the purpose of controlling the width of the radial wings or flanges which are to be formed
90 upon the drill. When it is desired to upset a drill-rod and also sharpen the edge thereof, the end to be upset is heated and said drill, after the clamping members thereof have been loosened, is inserted into and between
95 the same and is then retained in such a position by the clamping members and also gage-keys being forced into a locked position.

In Fig. 1 a drill-rod is shown in a locked position within the device, said rod being
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shown with an upset cutting edge and all the parts in a locked position. An edge-forming die 15 is shown mounted within said die in Fig. 1 and is also shown in a detail perspective in Fig. 3. A suitable plunger or engaging member or block 16 is also mounted within the end of said device and is adapted to normally engage the outer surface of the edge-forming die member 15. If it is desired to form the radial wings or flanges of greater width and length, the keys 12 for gaging the degree of thickness are formed with faces 14 of greater or less length according to the requirements of the die which is to be sharpened. It will be apparent that after the edges of the drill have been worn and it is desired to resharpen said edges this operation can easily be performed by inserting the die-gage keys, which are reduced in length and which are provided with inclined faces 14 of such a degree as to correspond with the flanges or radial wings which are formed upon the drill which is to be resharpened.

The edge-forming die 15 is constructed by forming integrally a plurality of flanges which project at right angles to a common center, and upon one edge of said flanges is formed a V-shaped forming-groove 17. The member 16 is likewise formed with a plurality of rectangular extensions projecting from a common center and said member is adapted to engage the corresponding extensions of the edge-forming die 15 when the said members are inserted within the end of the device. When the drill is secured within the die in a locked position and the end of said drill is projected beyond one end of the device, it is preferred to have said end engage a suitable bumping-block 18 for the purpose of receiving the stroke which is delivered upon the end of the drill by means of a hydraulic hammer engaging the outer end 19 of the head. It is obvious that the hammer, which is adapted to engage the member 16, may be actuated by hydraulic pressure, steam, compressed air, or electrical energy, or if it is preferred to use the device in cases of necessity a suitable manually-operated hammer can be employed for the purpose of assisting in forming the cutting edges as well as the flanges upon the drill. The bars 11 provide a suitable guide for the edge-forming die 15 and its engaging member 16. The said members are removably mounted within the device and are preferably retained in a position for permitting of the sliding of said members when the device is in operation.

In operation the wedges are removed or loosened upon the bonding members 2 and 3 and gage-keys 12 are inserted for forming the desired flanges upon the drill. A suitable drill-rod, which is provided with an enlarged end portion, is inserted within the device in a heated condition, and the said parts are then secured in a locked position upon said drill-

head and the said drill-rod is caused to engage a suitable bumping-block at its outer end, and the edge-forming die 15 and its engaging member 16 are then placed in an assembled position with the device, as shown in Fig. 1, and a suitable hammer is caused to engage intermittently the member 16. It will be apparent that owing to the construction of the edge-forming die 15 the cutting edges of the drill will be formed with an upset or V-shaped portion, and the flanges or radial wings of the drill will also be formed to conform with the degree of the inner face 14 of the gage-keys or center die members 12.

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

1. A drill-forming die comprising a plurality of forming-bars, spacing-pieces interposed between said bars, a sleeve inclosing said bars and pieces, said sleeve being formed with a transverse slot, a collar surrounding said sleeve in the plane of said slot, and a wedge arranged within said slot between said collar and said bars.

2. A drill-forming die comprising a plurality of forming-bars, spacing-pieces interposed between the said bars, a sleeve surrounding said bars and spacing-pieces and formed with a transverse slot in one of its horizontal walls, and a transverse slot in one of its vertical walls, wedges arranged within said slots, and means for limiting said wedges against outward movement for causing engagement of the same with said bars and spacing-pieces when the wedges are moving longitudinally.

3. A drill-forming die comprising a plurality of rectangular forming-bars, spacing-pieces interposed between said bars, a rectangular sleeve inclosing said bars and spacing-pieces, a wedge carried by said sleeve engaging the horizontal surface of each of two of said bars, and a wedge carried by said sleeve at right angles to the first-mentioned wedge and engaging the vertical surface of one of the bars engaged by the first-mentioned wedge and also engaging the vertical surface of another of said bars, whereby the wedging action of said wedges is designed to compress the forming-bars and spacing-pieces against the sides of said sleeve opposite said wedges.

4. A drill-forming die, comprising a plurality of forming-bars, a sleeve formed with a transverse slot surrounding the same, an apertured collar inclosing said sleeve, and means extending through the aperture in the collar and slotted portion of the sleeve and in engagement with said bars for clamping the same together, the said clamping means engaging said collar for causing the same to take up the strain of said clamping action.

5. A drill-forming die comprising a bonding-sleeve having an aperture formed in one side thereof, forming-bars extending through the said sleeve, a collar surrounding said sleeve

and having an enlargement upon one side in line with said aperture, and a wedge extending through said enlargement lying within said aperture and engaging said forming-bars 5 for clamping the same in position.

6. A drill-forming die comprising a plurality of bars rectangular in cross-section, spacing-pieces interposed between said bars, a bonding-sleeve surrounding said bars, said 10 sleeve being formed with apertures in the sides thereof, collars surrounding the said sleeve in line with the apertures therein, each

collar having an offset portion opposite each of said apertures, and a wedge extending through each of said apertures in said sleeve 15 and engaging the bars within the sleeve for clamping the same in position.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

FREDRICK MARKWICK.

Witnesses:

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E. MAY HALLSTEAD.