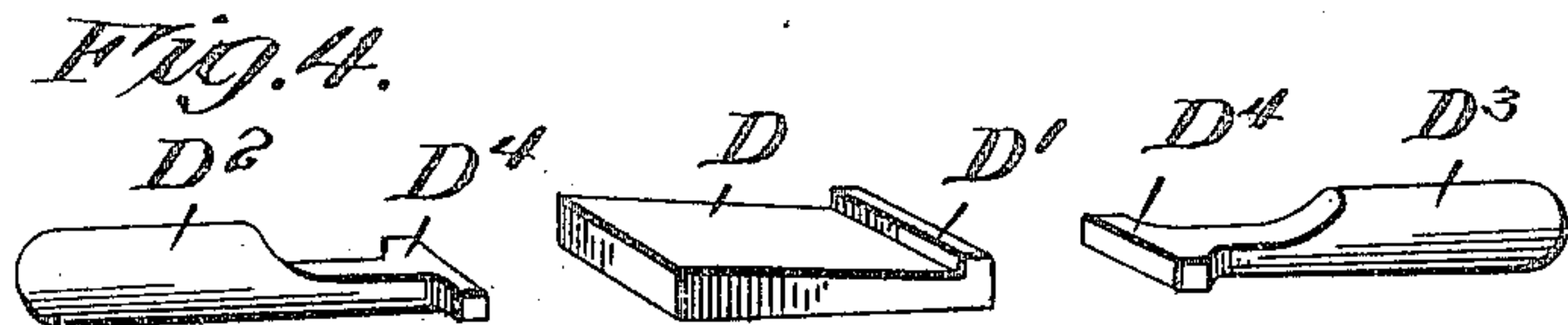
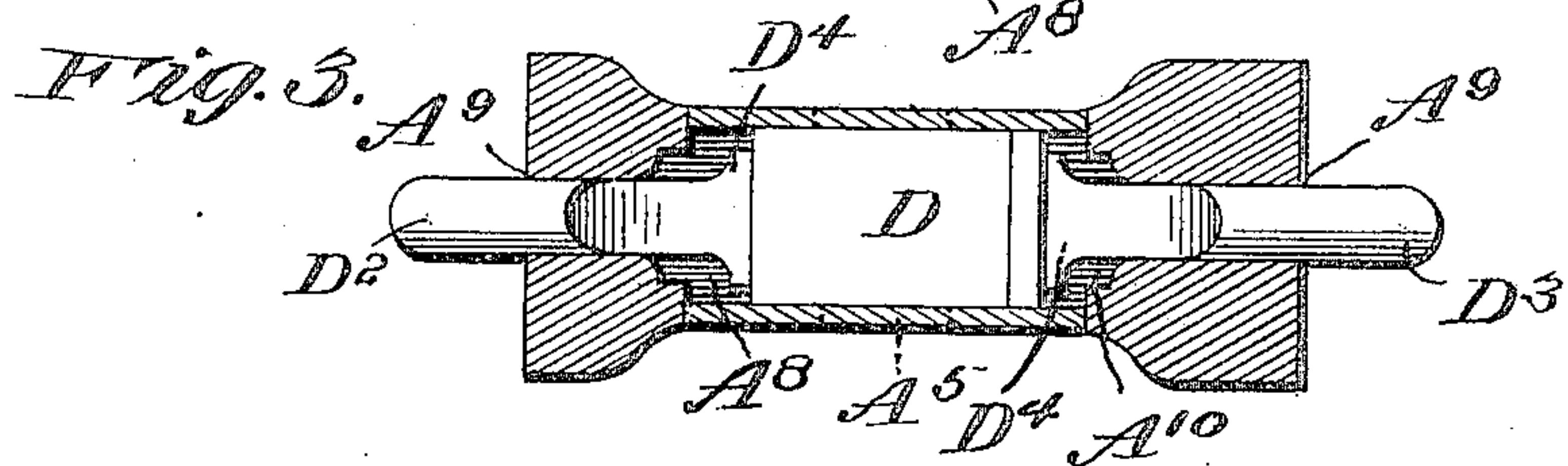
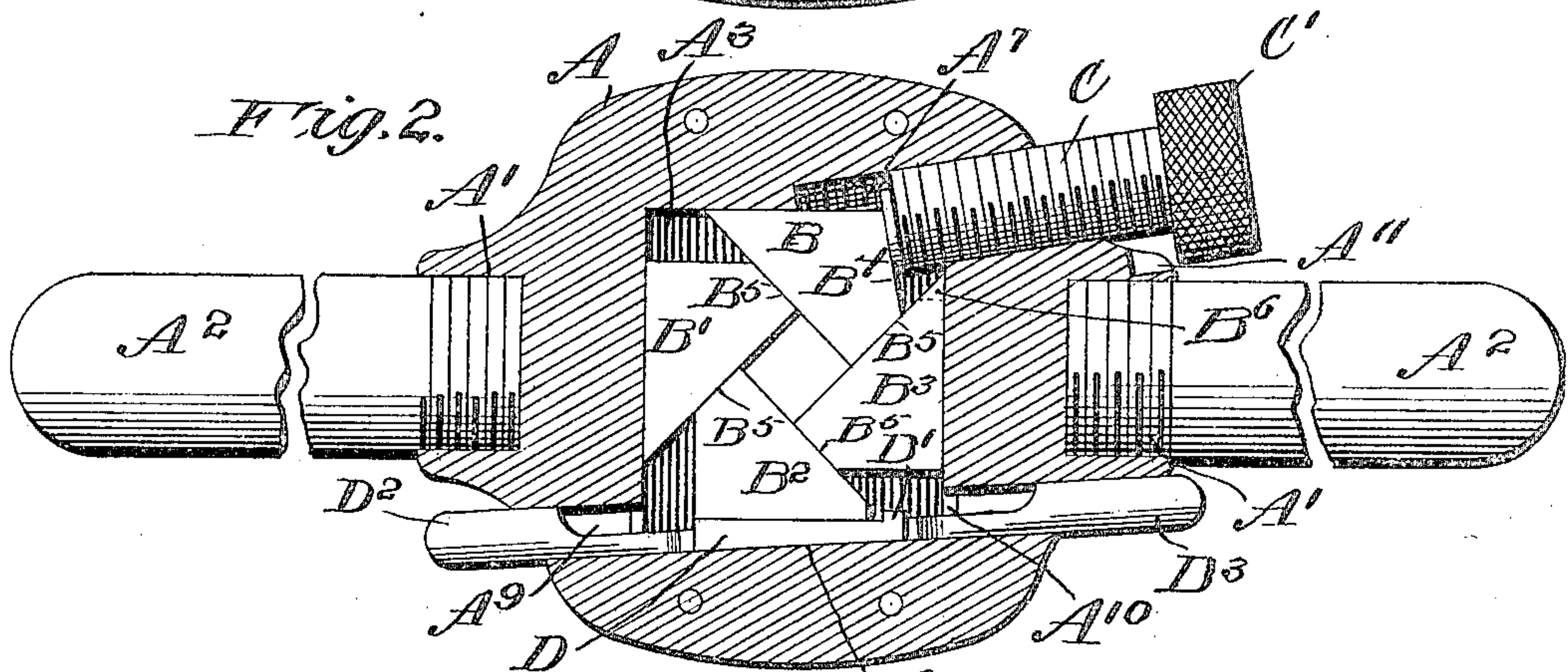
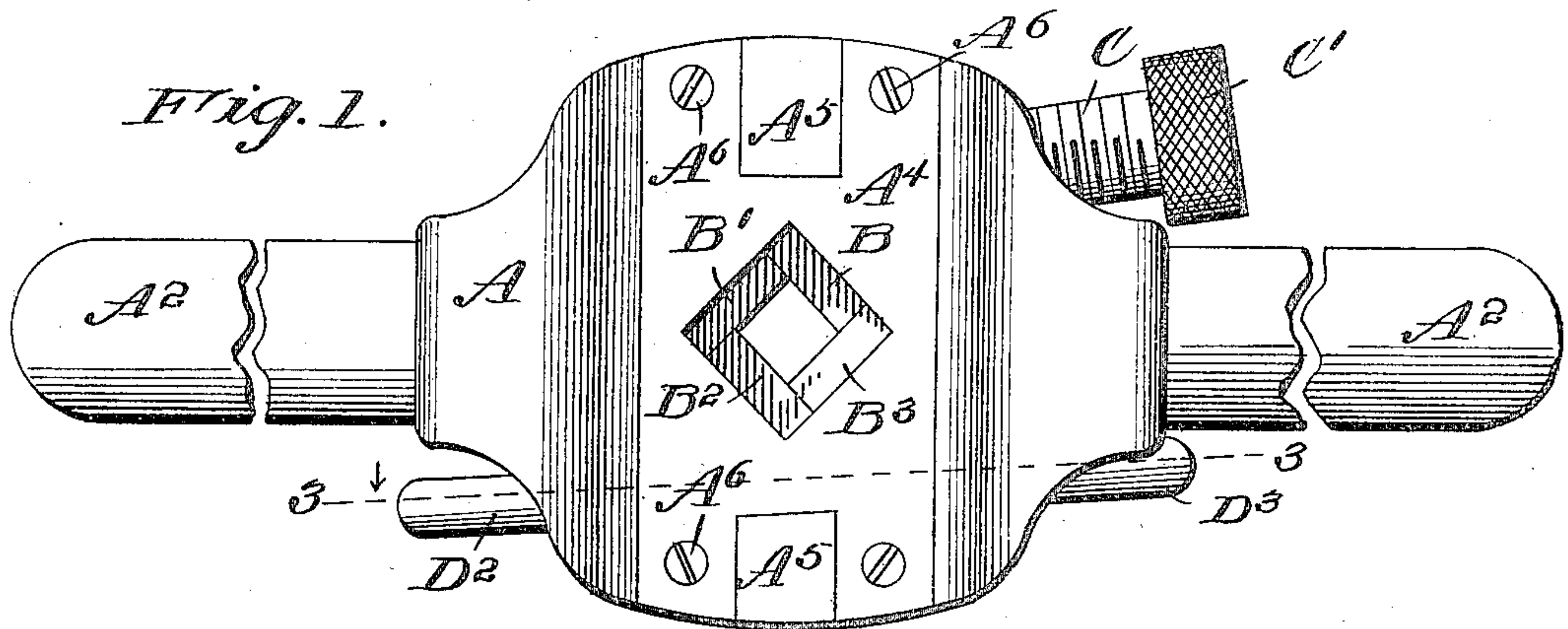


No. 812,440.

PATENTED FEB. 13, 1906.

G. McKERAHAN.
ADJUSTABLE WRENCH.
APPLICATION FILED NOV. 23, 1904.



WITNESSES:
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Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE MCKERAHAN, OF MARSHFIELD, OREGON.

ADJUSTABLE WRENCH.

No. 812,440.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed November 23, 1904. Serial No. 234,040.

To all whom it may concern:

Be it known that I, GEORGE MCKERAHAN, a citizen of the United States, residing at Marshfield, in the county of Coos, State of Oregon, have invented certain new and useful Improvements in Adjustable Wrenches, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an adjustable wrench, and while applicable to various uses it is particularly adapted for use in connection with taps and reamers.

The invention has for an object to provide a construction embodying a plurality of jaws movable upon each other, with means for adjusting said jaws and means for locking the jaws in their adjusted position to prevent any play thereof due to lost motion, which usually occurs in connection with an adjusting-screw for the jaw members.

A further object of the invention is to provide an improved form of wedge for performing this locking function, adapted to be quickly inserted and removed from operative position by means of oppositely-disposed push-pins.

A further object of the invention is to provide an improved construction for the disposition of the set-screw for adjusting the wedge members, whereby a proper clearance may be secured without enlarging the frame and the rigidity of the frame structure to resist the operating strain of the wrench thoroughly insured.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

In the drawings, Figure 1 is an elevation of the wrench; Fig. 2, a longitudinal section thereof with the jaws, adjusting means, and locking means in elevation; Fig. 3, a section on line 3-3 of Fig. 1; Fig. 4, a detail perspective of the members of the locking device separated, and Fig. 5 a similar view of one of the jaws.

Like letters of reference refer to like parts in the several figures of the drawings.

The letter A designates a frame, which may be of any suitable construction and configuration and provided at opposite sides with sockets A', adapted to receive the usual handle-bars A² for the operation of the wrench.

This frame is provided with a centrally-disposed opening A³ therethrough, preferably of

rectangular form, which is adapted to receive the jaws B, B', B², and B³, as shown in Fig. 2. These jaws when inserted are retained against lateral displacement by means of face-plates A⁴, adapted to embrace laterally-extending lugs A⁵ at the opposite sides of the jaw-opening and to be secured in any desired manner—for instance, by screws A⁶, as shown in Fig. 1. These lugs strengthen the frame where most liable to spring under strain. The jaws are each provided with a base portion adapted to bear against a wall of the opening A³ or against a similar face upon the locking means to be hereinafter described, and for the purpose of adjusting these jaws a set-screw C is provided, having any desired form of operating-head C' and bearing at its opposite end against a contact-face B⁴, carried by the jaw B. This screw is disposed in a threaded recess A⁷, formed in one side of the frame in a line extending diagonally or at a slight angle to the axis of the handles, whereby the screw is removed from a position liable to contact or injury, and a proper clearance is obtained for the travel of jaw B³ without impairing the rigidity of the frame to resist the operating strain of the tool. Each of the jaws is provided with a face B⁵, contacting with an adjacent jaw, and the sliding movement of the jaws upon each other is secured by the pressure transmitted through these contact-faces when pressure is applied to the face B⁴ of the jaw B. For the purpose of allowing a proper travel of the jaw B³, herein shown, without interference with the set-screw C said jaw is cut away at one corner, as shown at B⁶ in Fig. 5, and the recessed portion A¹¹ is also provided adjacent to the handle-socket to permit the proper travel of the screw-head C' in the feed of the screw. It has been found that when an adjusting-screw is used to retain the jaws in position considerable lost motion soon develops, and when the wrench is adjusted to fit upon a tool and afterward removed, as is necessary in taking quarter-turns, this lost motion permits the jaws to move closer together, making it difficult to replace the wrench upon the tool without opening the jaws and readjusting it, which causes much trouble and loss of time. For the purpose of obviating this difficulty a locking device is applied to the base of one of the jaws, which wedges the series of jaws against the frame and each other, thus taking up all lost motion and locking them firmly in their adjusted re-

lation. This device may be of any desired character; but a preferable form thereof is here disclosed and comprises a wedge-block D, slidingly mounted upon an inclined face A⁸ of the jaw-opening within the frame and bearing upon its opposite face against the base of one of the jaws—for instance, the jaw B², as shown in Fig. 2. This wedge is provided at one end with a stop lug or projection D', disposed to limit the travel of the wedge in one direction and to permit sufficient movement to release it from its locking-bearing upon the jaw, while pressure thereon serves to open the jaws. For the purpose of operating this wedge a setting-pin D² is provided at one side thereof and a releasing-pin D³ at the opposite side, by which pressure is applied to either end of the wedge for shifting the same. These pins are each provided at their inner ends with an enlarged head D⁴, by which removal from the casing is prevented and a proper contacting face provided to engage the opposite ends of the wedge-block. The frame is also provided with suitable apertures A⁹ to receive these pins, which are enlarged at their inner ends A¹⁰ to provide a recess adapted to receive the head D⁴ of the pins when the latter are withdrawn. It will be seen that the pins may be inserted from the interior of the jaw-opening and when the remaining parts are assembled are thereby securely held against removal from the frame.

In the operation of the wrench the jaws are adjusted to effect a wrench-opening of any desired size having an unbroken perimeter, thus providing a continuous bearing around all sides of the tool, and this adjustment is secured by means of the set-screw disposed diagonally to the axis of the handle contacting with the face of one of the jaws which is disposed parallel to the face of the screw. This disposition of the set-screw with only a portion of its diameter entering the jaw-opening obviates the difficulties in the matter of clearance and rigidity of frame structure previously encountered and provides means for directly applying the power to one of the jaw members. The jaw which travels at an angle to the screw is also provided with a recessed portion to permit its full travel to a closed position, and therefore assist in securing its clearance without enlarging the frame-opening. The jaws when adjusted to their desired position are firmly locked by pressure upon the setting-pin, which forces the wedge into contact with the base of one of the jaws, thus preventing any relative movement of the jaws if the same be removed from a tool, which frequently occurs where the jaws are held by a screw alone.

In the use of tap-wrenches it is often found inconvenient and sometimes impossible to effect a complete rotation of the wrench, and it is necessary to perform the work by quarter-turns, the wrench being removed from the

tool and replaced a quarter-turn backward, and in this character of work the lost motion permits the jaws to close together, rendering it difficult to replace the wrench without opening and readjusting the same. The locking device effectually prevents this difficulty and can be instantly replaced or released by pressure upon either of the pins disposed at its opposite ends. Such a locking device, besides taking up lost motion and immovably locking the jaws in position, avoids excessive wear and gives a safeness of hold upon the tool and secures a manipulation in every respect equal to an accurately-fitted solid wrench.

It will be obvious that changes may be made in the details of construction and configuration without departing from the spirit of the invention as defined by the appended claims.

Having described my invention and set forth its merits, what I claim, and desire to secure by Letters Patent, is—

1. In an adjustable wrench, a frame, a series of jaws disposed within the same in sliding contact with each other, means for adjusting said jaws by engagement with one thereof, a locking device inserted beneath the base of one of the jaws, and operating means therefor provided with push-pins projected beyond the frame at opposite sides of said device.

2. In an adjustable wrench, a frame, a series of jaws disposed within the same in sliding contact with each other, means for adjusting said jaws by engagement with one thereof, a locking device comprising a wedge-block inserted beneath the base of one of the jaws, and operating means disposed at the opposite ends of said block to bear thereon and having exposed ends projected through the frame.

3. In an adjustable wrench, a frame, a series of jaws disposed within the same in sliding contact with each other, means for adjusting said jaws by engagement with one thereof, a locking device comprising a wedge-block inserted beneath the base of one of the jaws, slidable operating means disposed at the opposite ends of said block to bear thereon, and means movable with the operating means to engage and shift the jaw when released.

4. In an adjustable wrench, a frame provided with a jaw-opening therein having at one side an inclined face, a series of jaws disposed within the same in sliding contact with each other, means for adjusting said jaws by engagement with one thereof, a locking device comprising a wedge-block inserted beneath the base of one of the jaws and slidably mounted upon said inclined face, and slidable operating means for said wedge-block disposed in recesses in alinement with said inclined face and provided with push-pins pro-

jected through the frame at each end of said block.

5 In an adjustable wrench, a frame provided with a jaw-opening therein having at one side an inclined face, a wedge member disposed upon said face, a series of jaws contacting with the walls of said opening and with a face of said wedge member, slidable operating-pins for said wedge member disposed in openings in alinement with said inclined face, and

enlarged contact-heads upon said pins adapted to seat in recesses at the inner end of said openings.

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

GEORGE McKERAHAN.

Witnesses:

MILLIE E. JOHNSON,
W. U. DOUGLAS.