

H. B. BEST.

PIPE WRENCH.

APPLICATION FILED NOV. 30, 1900.

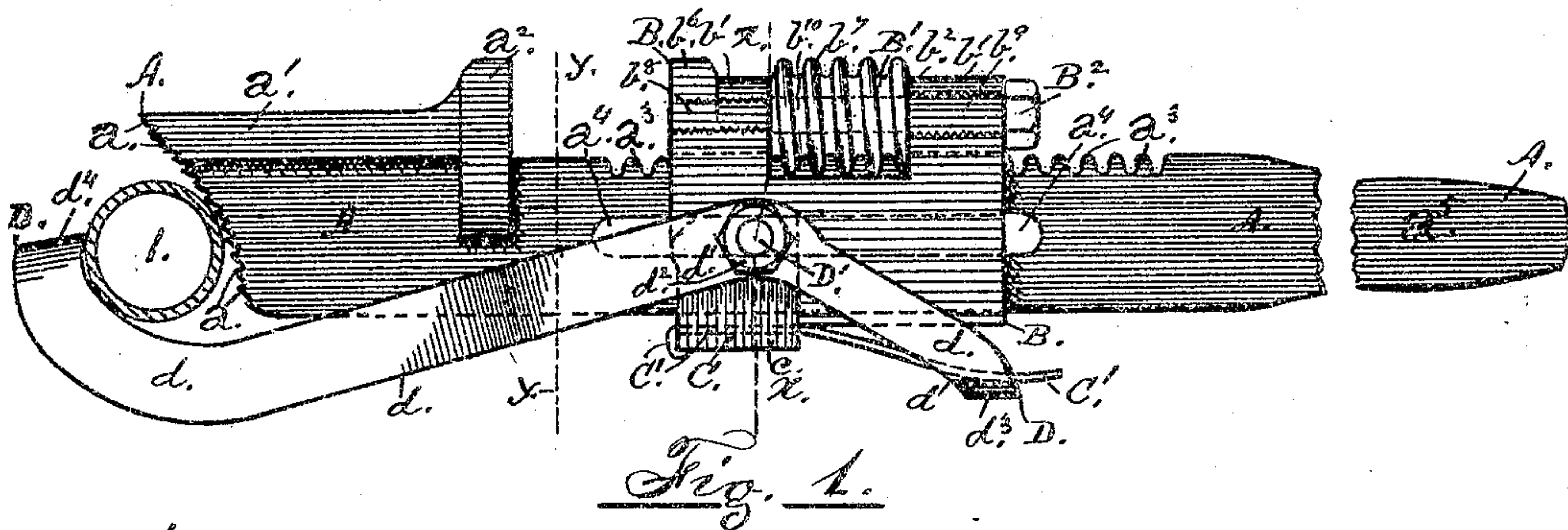


Fig. 1.

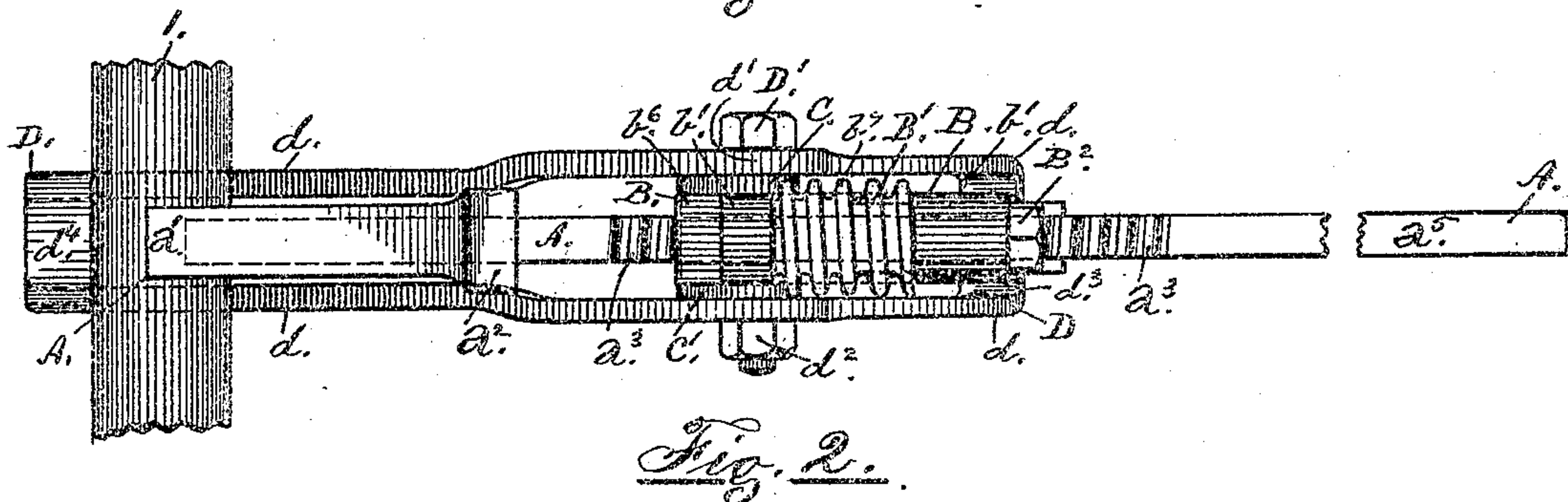


Fig. 2.

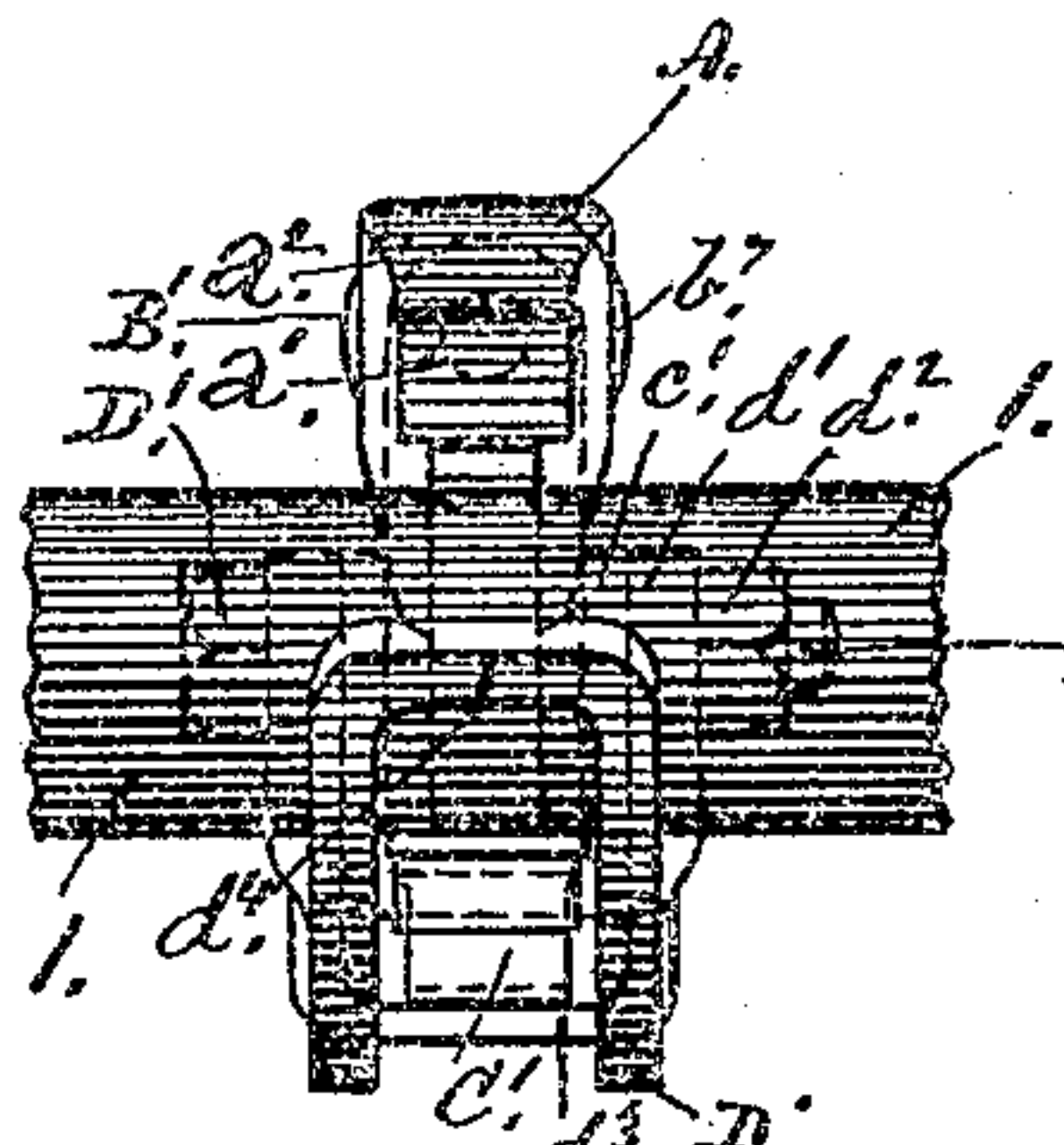


Fig. 3.

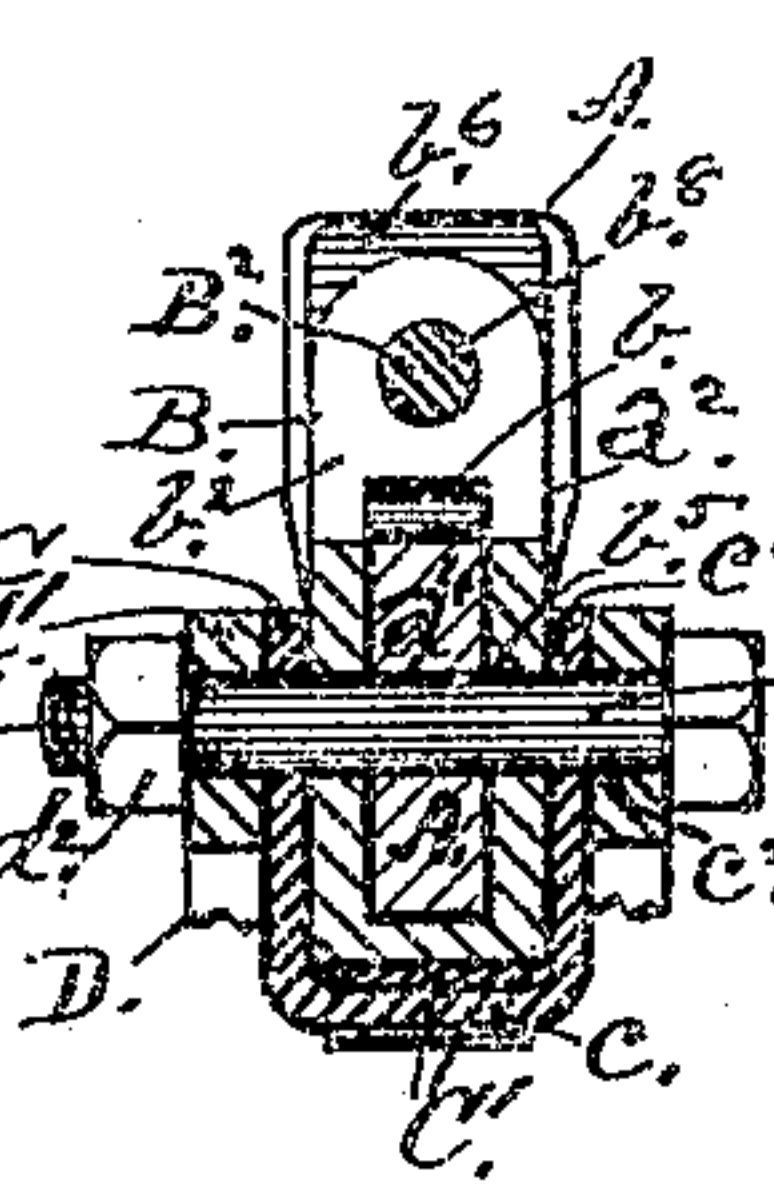


Fig. 6.

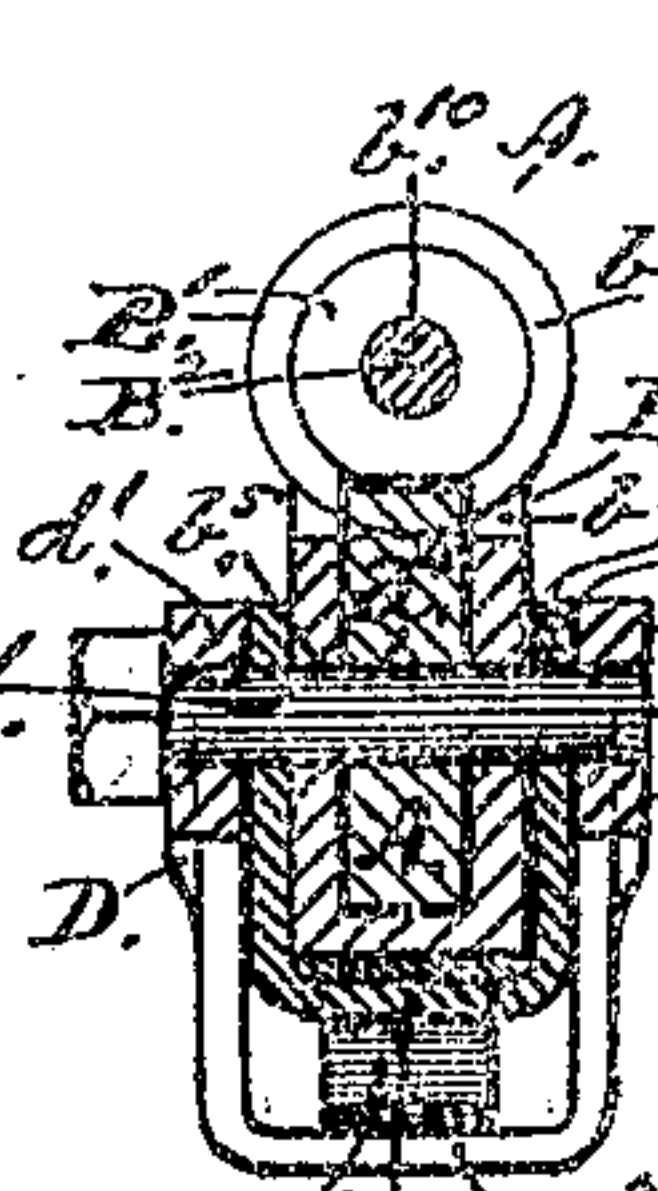


Fig. 5.

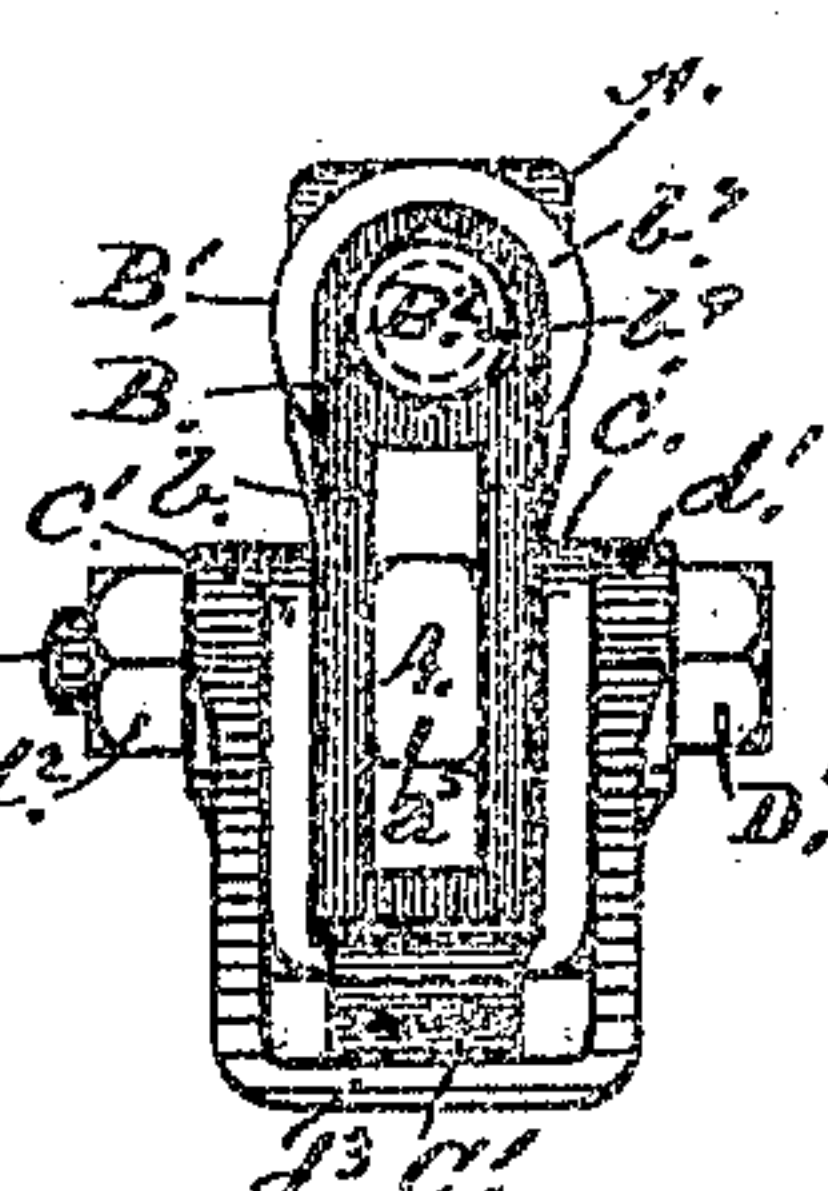


Fig. 4.

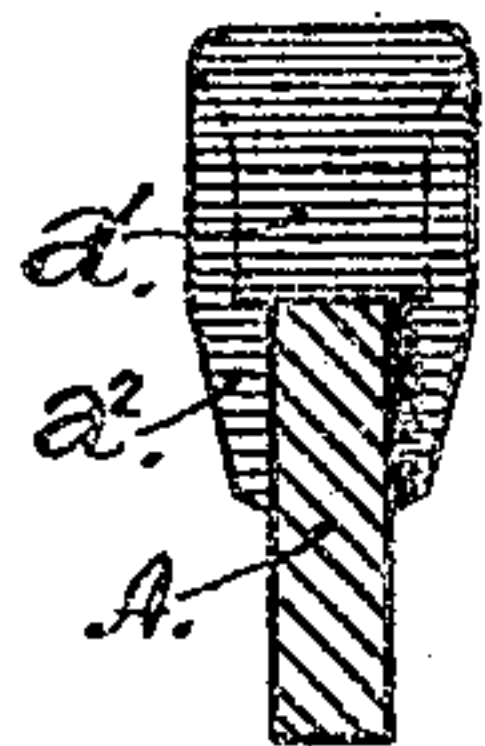


Fig. 7.

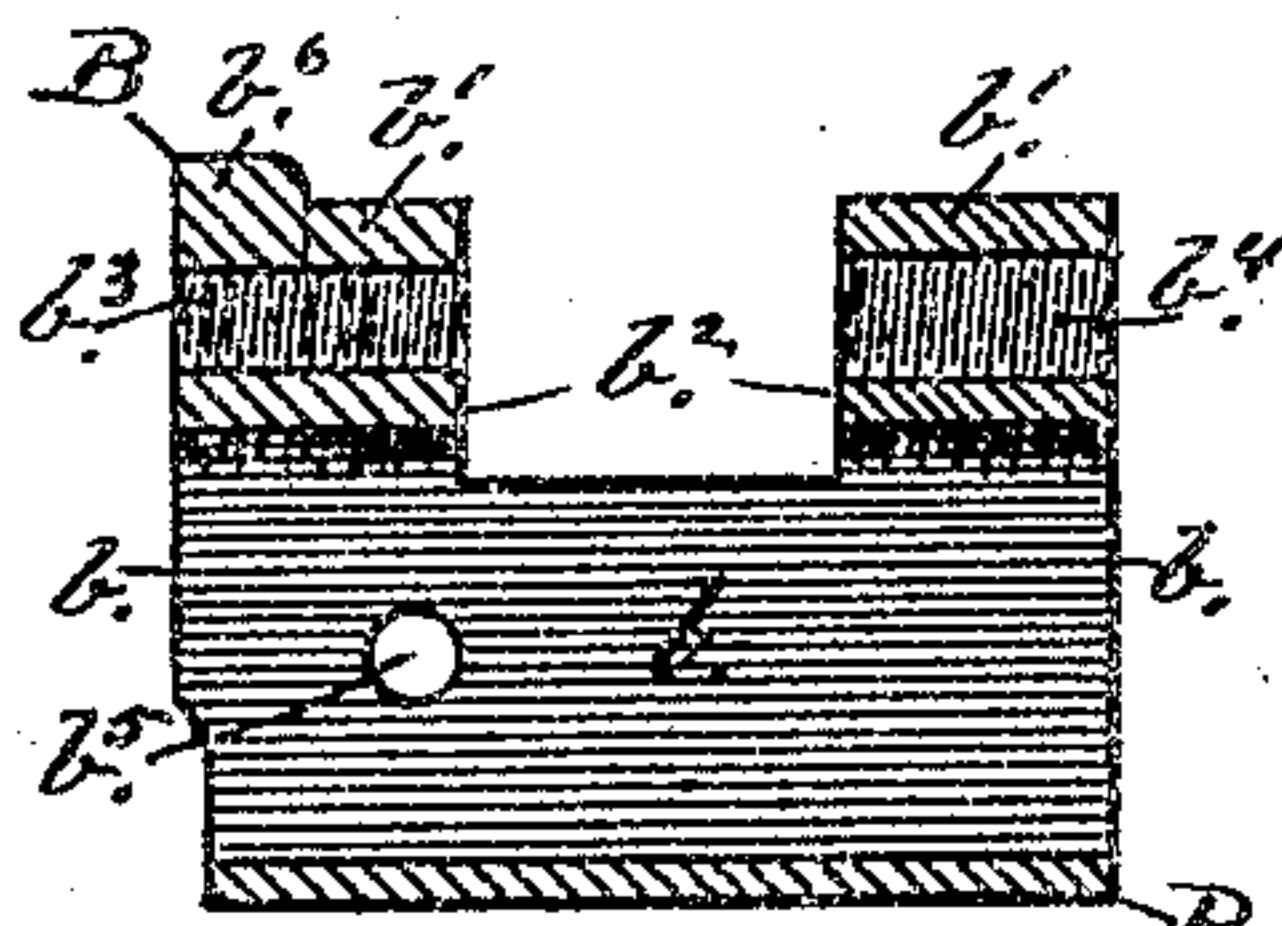


Fig. 8.

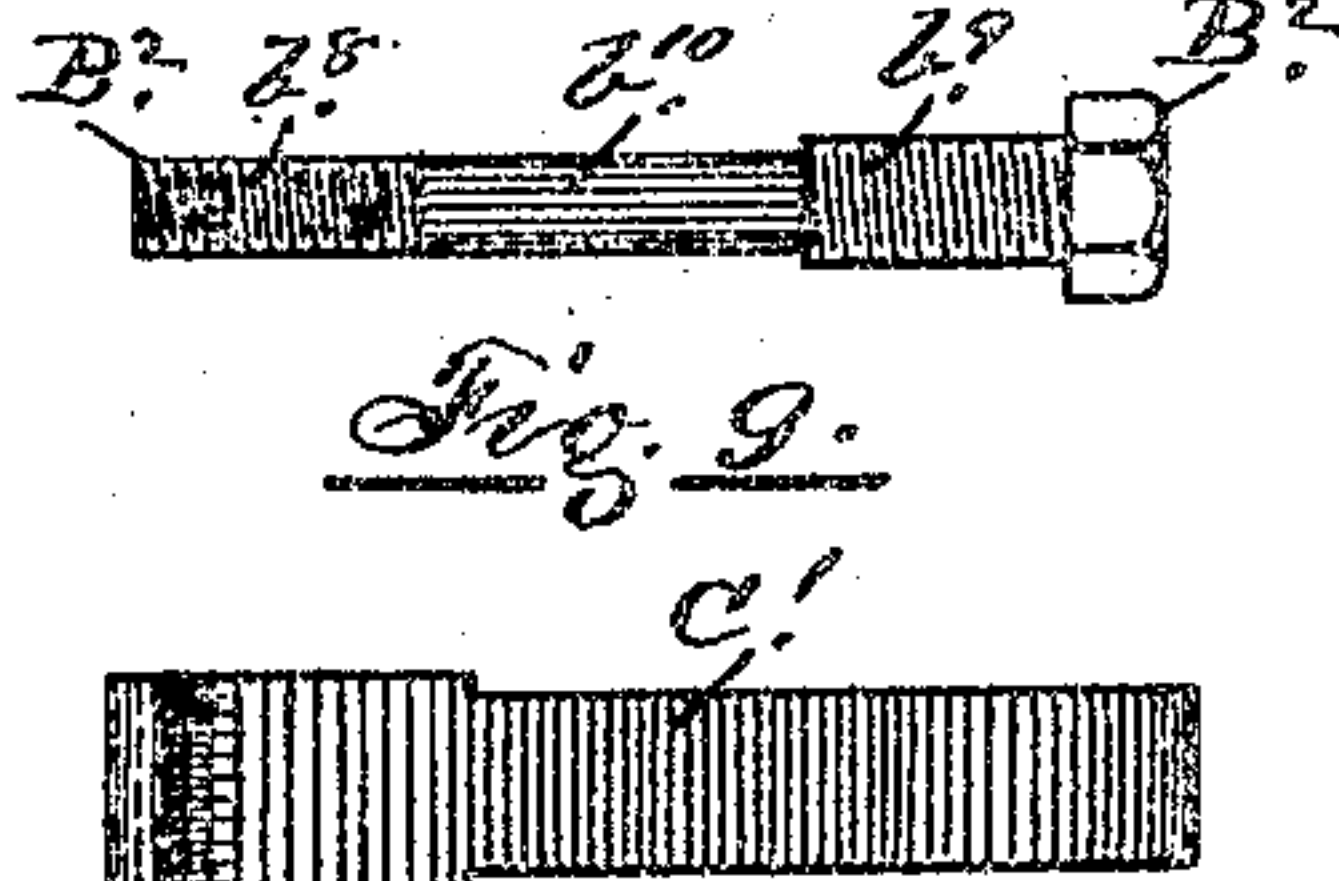


Fig. 9.



Fig. 10.

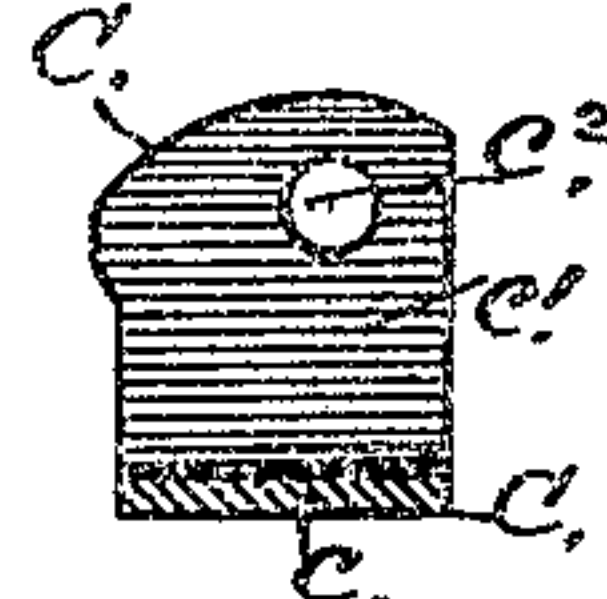


Fig. 11.

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UNITED STATES PATENT OFFICE.

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PIPE-WRENCH.

SPECIFICATION forming part of Letters Patent No. 794,482, dated July 11, 1905.

Application filed November 30, 1900. Serial No. 38,076.

To all whom it may concern:

Be it known that I, HERBERT B. BEST, a citizen of the United States, residing at Morgantown, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Pipe-Wrenches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in a pipe-wrench of that class in which a two-branched or open jaw with an upwardly-curving forward end fold and a downwardly-curving rear end fold has its side bars or branches pivoted to the sides of a slide-block sleeved on the body of a lever arm or bar and movable back and forth thereon by means of a worm-screw journaled between upwardly-projecting ears of said block, with the screw-thread of said worm engaging in rack-teeth formed in the upper edge of said bar, in which the concaved inner edges of the side bars in the forward end of the jaw are made smooth, and the forward end of the bar, upwardly and forwardly sloping, is made slightly concaved and rounded at the lower end thereof, with upwardly-engaging serrations or teeth formed across said concaved edge, and in which a strap-spring engaging on the downwardly-curving rear end of the jaw serves to keep the forward end thereof thrown normally upward.

The object of the invention is the construction of an effective pipe-wrench in which the contact, grip, or bite upon the pipe will be centrally exerted and greatly increased, with the crushing force upon the pipe reduced to a minimum.

The elements of the invention will severally and at large appear in the following description, and they will be separately and combinedly set forth, or pointed out in the appended claims.

The purposes of the invention are attained by the mechanism, devices, and means illustrated in the accompanying drawings, similar reference characters designating like parts throughout the several views, in which—

Figures 1 and 2 are respectively a side elevation and direct plan of a pipe-wrench embodying the elements of the invention, showing the parts in operative positions with a portion of piping in place and a portion of the lever-bar removed; Figs. 3 and 4, respectively left and right hand end views of Fig. 1 with the forward end of the jaw and piping omitted in Fig. 4; Figs. 5 and 6, respectively right and left hand sectional views taken on line xx in Fig. 1; and Figs. 7, 8, 9, 10, and 11 detached sectional and plan views of elements used in the construction, Fig. 7 being a section of the lever-bar taken on the line yy in Fig. 1, Figs. 8 and 11 longitudinal sections of the sliding block and washer-plate, Fig. 9 a direct plan of the worm-journaled screw, and Fig. 10 an inverted plan of the strap-spring.

In the construction of the pipe-wrench referred to in the opening paragraph hereto, A designates an oblong lever arm or bar of approved dimensions and preferably rectangular in cross-section, having its forward or left-hand end edge slightly hollowed out or concaved and rounded off at the lower end thereof, with upwardly-engaging serrations or saw-teeth a across said concaved edge, and having integral with its top edge for a prescribed distance rearward from said forward end a strengthening-rib a' , with a vertical wall or rib a^2 at the rearward end of said former rib, said latter rib extending sidewise a prescribed distance down over the sides of said arm or bar. (Best shown in Fig. 7.) In the top edge of the bar between prescribed points are formed gear or rack teeth a^3 . Through its body between prescribed limits is formed an oblong slot a^4 , while the rearward or right-hand end of the bar is formed into a handle or hand-grip a^5 , partially shown. (See Figs. 1 and 2.)

Movable back and forth on the bar and over the gear rack and slot is sleeved a slide-block B, having lengthwise through its body an aperture b , through which said bar A engages, steadying or guiding the block in said back-and-forth motions. On the upper edge of the block are formed upwardly-projecting ears b' b' , with a recess b^2 therebetween, said

ears having screw-threaded orifices b^3 b^4 longitudinally through their bodies, with the orifice b^3 of less diameter than the orifice b^4 , while transversely through the sides of the block in the forward portion thereof are orifices b^5 , being in registering alinement with the slot a^4 before mentioned, and at the forward end of the block flush with its forward edge is an upwardly-projecting ridge b^6 , rising to the height of the wall a^2 before mentioned. Seated in the recess b^2 is a worm-screw or screw-block B' , with its thread b^7 engaging in the rack-teeth a^3 before mentioned, while the bolt B^2 , with the threaded portions b^8 b^9 and a plain journal portion b^{10} passing through the axis thereof, serves to journal said worm-screw or screw-block in place.

Embracing the lower edge and sides in the lower left-hand portion of the block is a practically U-shaped plate C , with the folded portion c of said plate securing the base of an outwardly-acting strap-spring C' to said block, and its side walls c' , each provided with an orifice c^2 through its body to register with the orifices b^5 before mentioned, said side walls serving also as bearings for the side bars of the jaw yet to be described to ride or engage against and the spring holding said jaw normally in pipe-engaging position.

The pipe engaging or holding jaw D is an oblong fold or skeleton body of approved dimensions, preferably of selected strap or bar metal, and made by forging in the required shape, and to the end that the wrench may be most effective said jaw comprises two side bars d , with pivot portions d' engaging against the sides c' of the plate C , through which portions d' a bolt D' , passing also through the orifices c^2 of said plate and through the orifices b^5 of the block, as well as through the slot a^4 of the bar, with a nut d^2 thereon, serves to secure the several parts in place, pivotally connecting the jaw and block. The side bars d from said pivot portions are made rearwardly and downwardly sloping to prescribed points, where they are integrally joined by a fold-over bar d^3 , on which the spring C' engages with a downward pressure, while from said pivot portions they are made forwardly and downwardly sloping the required distance, with their forward ends upwardly curving and integrally joined by a fold-over bar d^4 , making their inner edges, remaining perfectly smooth, concaved to engage on a pipe or tube 1 and hold it in close contact against the forward edge of the bar A , the spring C' through its outward resiliency enforcing said contact.

Now, the several parts hereinbefore described and occupying the respective positions indicated in the drawings, the following observations will be noted: First, that the

jaw D , having the side bars d d with the forward end fold-bar d^4 , presents a shearing grip on the pipe as against the forward or bite end of the bar A , and said fold-bar engaging against the pipe prevents said pipe from being bent or sprung; second, that the concaved edges of the jaw D and the concaved edge of the bar A being toward each other with the pipe therebetween an increased bite or grip is assured on said pipe; third, that the concaved edges of the jaw-bars d d being perfectly smooth remove the tendency to abrade or injure the pipe contacting therewith; fourth, that the line of contact of the jaw D and the bar A with the pipe 1 therebetween being practically in alinement with said bar when the wrench is applied the turning force or pressure on said pipe will be centrally exerted, and, fifth, that the adjusting-screw B' , moving with the block B in adjusting the jaw D to the pipe, assures compactness in construction.

The invention having thus been ascertained and described and the manner in which it is performed duly shown and set forth, what is considered new, and desired to be secured by Letters Patent, is—

1. The combination in a pipe-wrench with the handle-bar, A , as described; the slide-block, B , carrying the axially-journaled worm-screw, B' , both as described; the U-shaped plate, C , and the outwardly-acting strap-spring, C' ; both as described, of a pipe engaging or holding jaw, D , said jaw having the side bars, d , with pivot portions, d' , bearing against said plate, C , with the bolt, D' , passing through said pivot portions, through the sides of the plate, C , through the sides of the block, B , and through the slot of the bar, A , and the nut, d^2 , on the end of said bolt; said side bars having the downwardly and rearwardly sloping portions, with the fold-over bar, d^3 , joining said sloping portions, and on which said strap-spring engages, and said side bars having also the downwardly and forwardly sloping portions, with the upwardly-curving and concaved forward ends, and the fold-over bar, d^4 , integrally joining the said ends, all substantially as described and for the purpose hereinbefore set forth.

2. A pipe-wrench comprising: the lever-bar, A , having the concaved forward end edge with the serrations, a , the top strengthening-rib, a' , with the vertical wall, a^2 , the rack of screw-gear teeth, a^3 , the oblong slot, a^4 , and the hand-grip, a^5 ; the slide-block, B , having the aperture, b , the ears, b' b' , with the recess, b^2 , and the orifices, b^3 b^4 , the orifices, b^5 , and the projection, b^6 ; the worm-screw, B' , with the screw-thread, b^7 , and the bolt, B^2 , with the threaded portions, b^8 b^9 , and the smooth portion, b^{10} ; the U-shaped washer-plate, C , having the fold portion, c , and the side portions, c' , with the orifices, c^2 ,

and the strap-spring, C'; and the jaw, D, having the side bars, d , with the pivot portions, d' , and the pivot-bolt, D', with the nut, d^2 , said bars, d , having the downwardly and rearwardly sloping portions with the fold-over bar, d^3 , and the downwardly and forwardly sloping portions having the upwardly-curving forward ends with the fold-over bar, d^4 , all arranged, combined and secured in po-

sition, substantially as described and for the purpose hereinbefore set forth.

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

HERBERT B. BEST.

Witnesses:

CHAS. E. LONG,
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