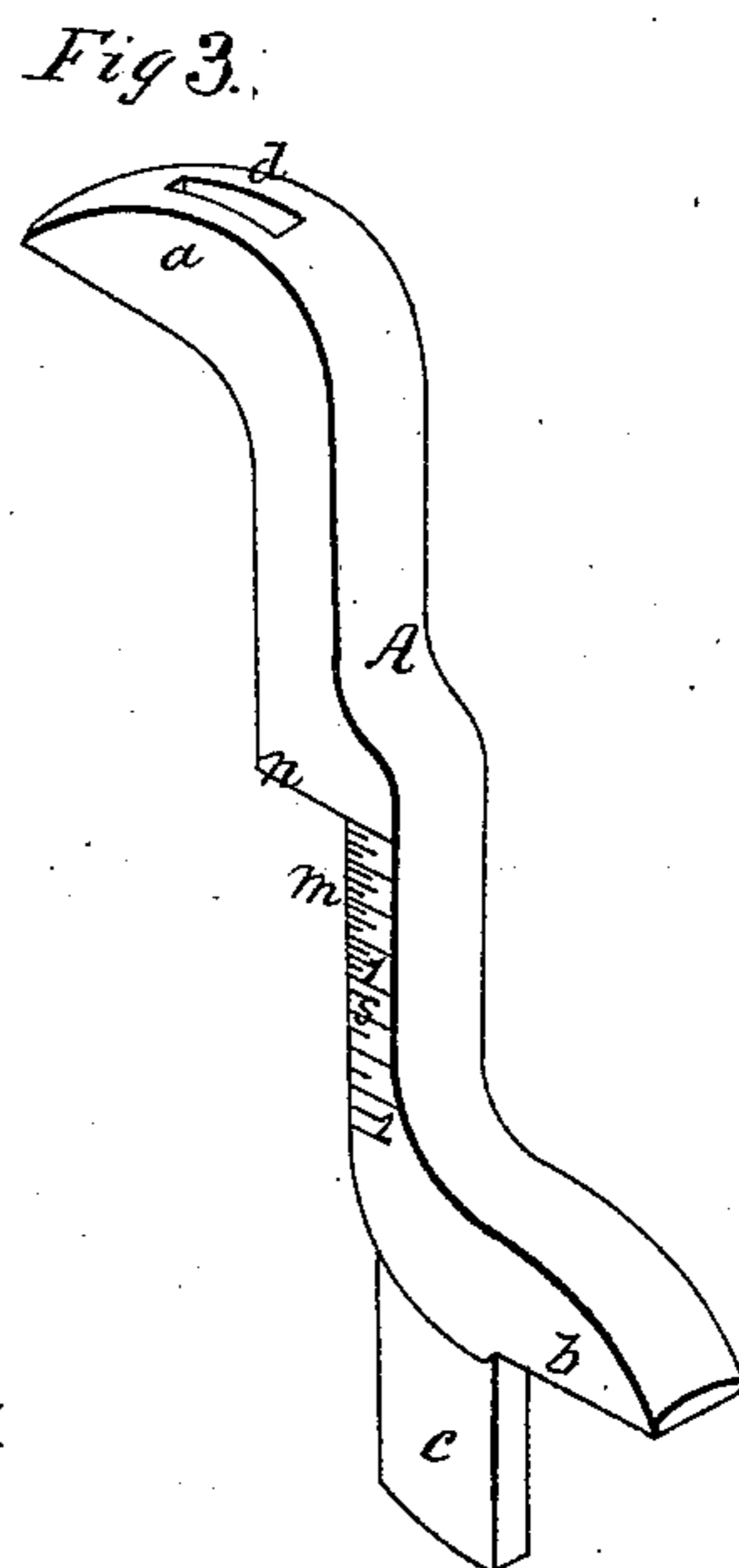
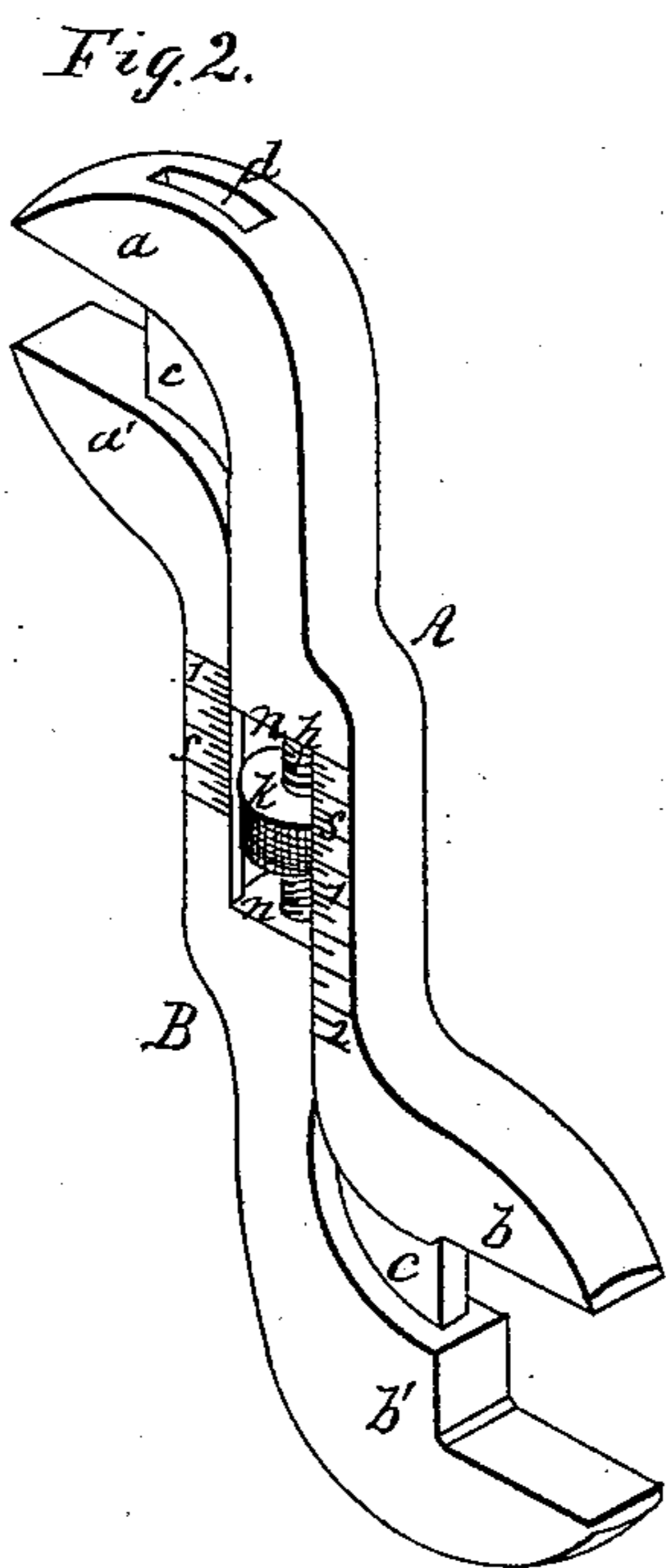
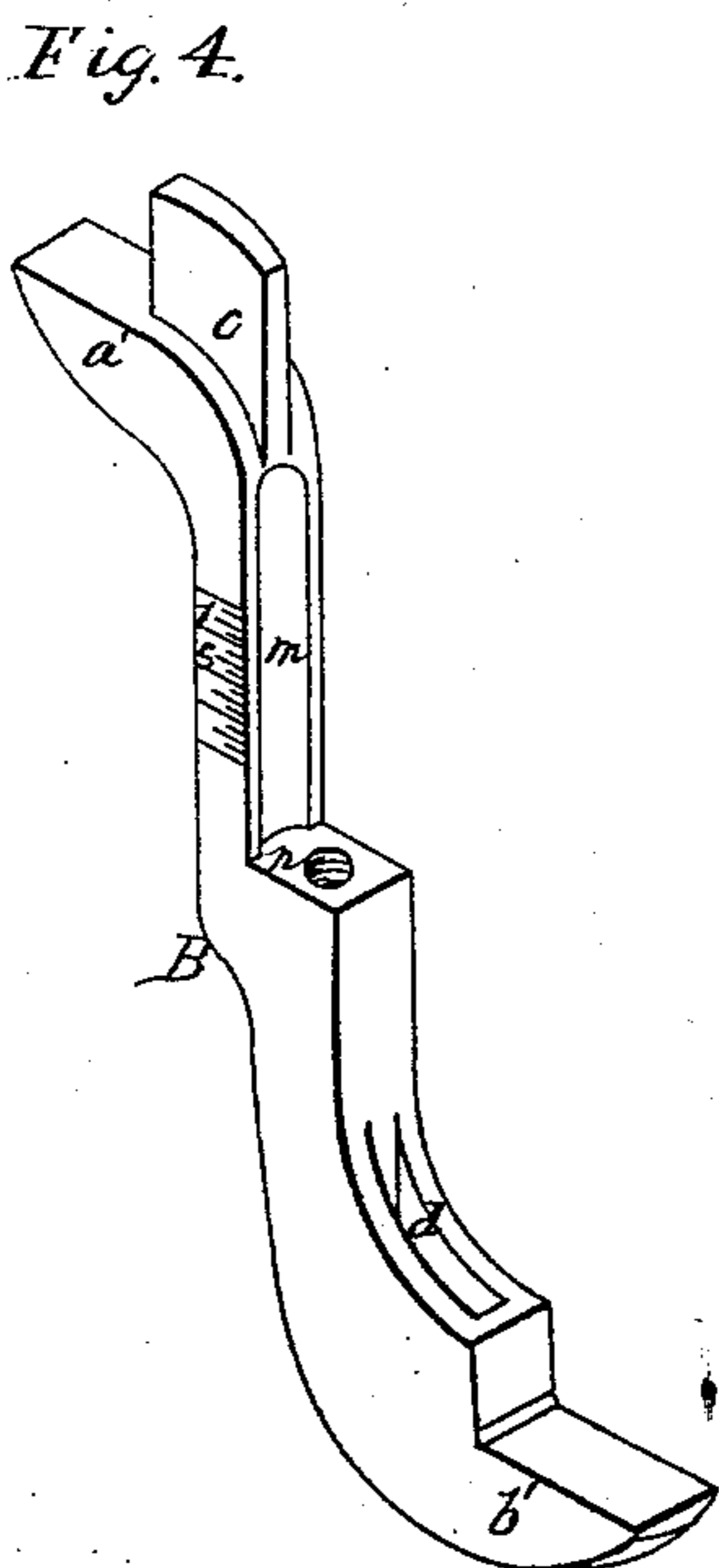
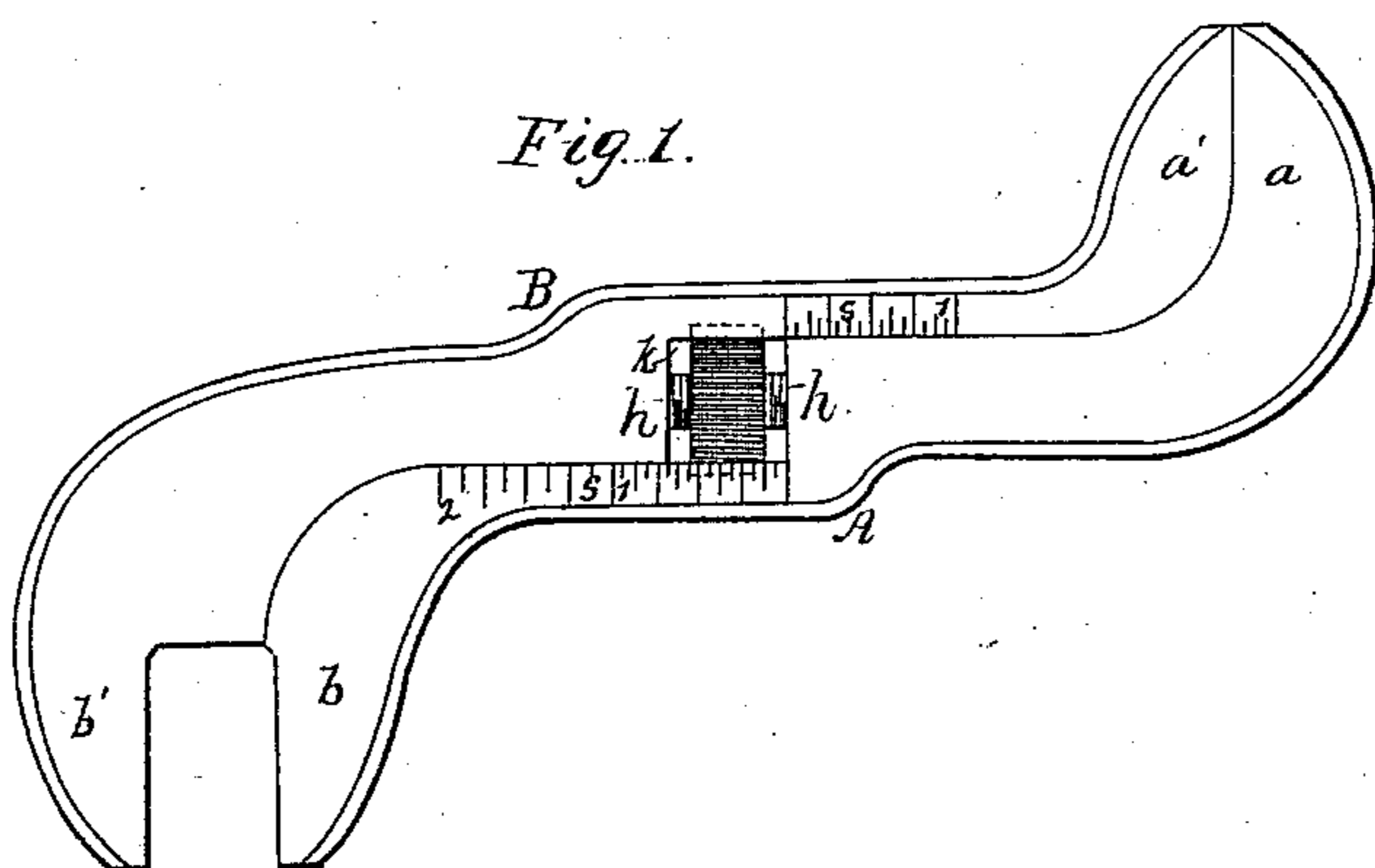


W. Baxter,

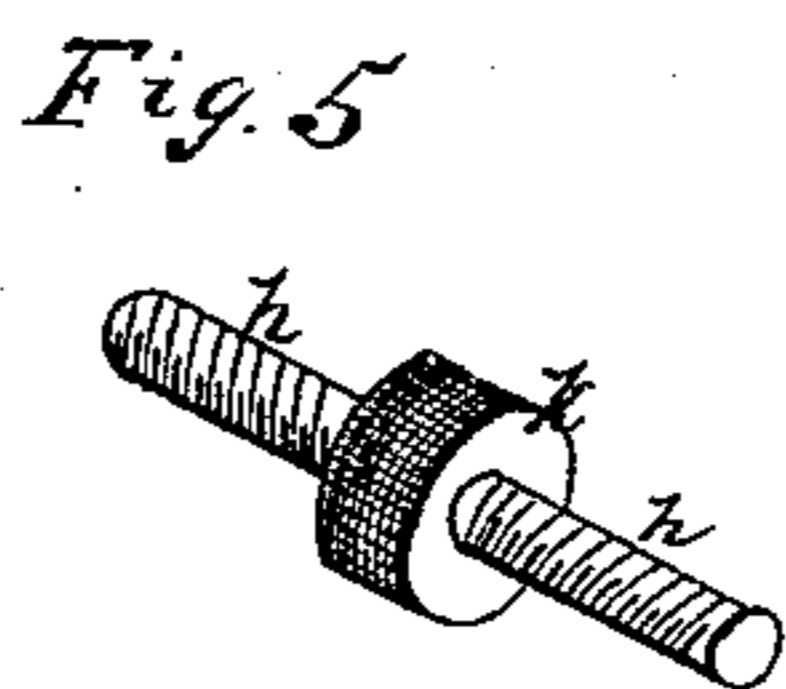
Wrench.

N^o 84,605.

Patented Dec. 1, 1868.



Witnesses;
Wm. H. R. R. R.



Inventor;
William Baxter
by *A. H. R. R.*
W. H. R.

United States Patent Office.

WILLIAM BAXTER, OF NEWARK, NEW JERSEY, ASSIGNOR TO HIMSELF AND WILLIAM D. RUSSELL, OF THE SAME PLACE.

Letters Patent No. 84,605, dated December 1, 1868.

IMPROVEMENT IN WRENCHES.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, WILLIAM BAXTER, of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Wrenches; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved wrench, closed.

Figure 2 is a perspective view of the same, opened.

Figures 3, 4, and 5 are like views of the two-jawed pieces, and right and left-hand thumb-screw, of which the wrench is composed.

My invention relates to that class of wrenches known as S-wrenches, having jaws at right angles to the shank. Owing to the peculiar form of such wrenches, their jaws have heretofore been fixed, and adapted to grasp only one size of nuts.

The object I have in view is to render the jaws adjustable, so as to fit different sizes, at the same time avoiding the clumsiness and unwieldy nature of the ordinary adjustable hammer and other wrenches, and preserving the proportions which give to the ordinary non-adjustable S-wrench its value in so many instances.

To this end, my invention may be stated to consist—

First, in an adjustable S-wrench, composed of two parts, mortised and tenoned together in the manner hereinafter described, the mortise being formed in the exterior and the tenon in the interior jaw of each part.

Second, in combining with the two mortised and tenoned parts of the S-wrench a right and left-hand screw, and thumb-piece to operate it, thereby contracting or extending the jaws much more speedily than when a single screw is employed.

Third, in the construction and combination of the two parts composing the S-wrench, each being provided with a tenon and mortise, arranged on opposite ends, so that the plane of movement of the two parts shall be in the direction of the length of the wrench, and at right angles or transversely to the jaws.

Fourth, in the combination, in an adjustable S-wrench, of scales upon the shank with the right and left-hand screw and thumb-piece, so that the wrench may serve the purpose of calipers for measuring iron or nuts; and,

Lastly, in minor features of construction, to be hereinafter described.

To enable others skilled in the art to understand and use my invention, I will now proceed to describe the manner in which the same is or may be carried into effect, by reference to the drawings.

The two parts A B, of which the wrench is composed, are shown separately in figs. 3 and 4. The part A is provided at one end with an exterior jaw, *a*, and upon the other with an interior jaw, *b*, the two jaws being turned in opposite directions, as usual in S-wrenches. The part B is provided, in like manner, at one end with the interior jaw *a'*, and at the other with the exterior jaw, *b'*, these jaws, when the parts are

placed together, forming, in conjunction with the jaws *a b*, the two sets of jaws with which the wrenches should be provided.

Each interior jaw *a' b* carries a tenon, *c*, which fits in a mortise, *d*, cut in each exterior jaw *a b'*.

The contiguous sides of the shank-portion of the two parts A B fit together, when the parts are properly adjusted, so as to admit of their sliding longitudinally, in order to open and close the jaws, which stand at right angles to the plane of movement.

The arrangement of tenons upon the interior jaws and mortises in the exterior jaws, enables me to impart great strength and solidity to the jaws, at the same time retaining perfectly the S-shape of the wrench, but, if desired, the position of parts may be reversed, though with not as good results.

It will be noticed that the mortises and tenons are formed upon that side of the division-line between the two parts of the divided shank, nearest their respective jaws, so that, without increasing the size or amount of metal in the jaws, I am enabled to preserve their strength while projecting them out from the shank, and giving them that "bill-shape" which is requisite in an S-wrench.

For the purpose of adapting the wrench to very small nuts, as well as to those of large size, I so construct and arrange the jaws that, when the smaller pair, *a a'*, are entirely closed, the larger pair, *b b'*, will be opened to the maximum extent to which the smaller pair can be extended and used. And thus the smaller pair can be employed for sizes less than the minimum opening of the larger jaw, the latter, on the other hand, being capable of grasping nuts and like articles which cannot be contained between the former.

When the two parts A B are placed together, they may be actuated to contract or expand the openings between the jaws by a pawl and ratchet, worm and rack, or other well-known devices. I much prefer, however, to employ the means shown in fig. 5, consisting of a right and left-hand screw, *h*, provided with a milled head or thumb-piece, *k*, located midway between its two ends.

In order to provide a place in the wrench in which this device may be held, so as to be conveniently located with respect to the hand of the operator, and at the same time entirely out of the way, I form in the interior edge of each part A B a recess, *m*, terminating in a shoulder, *n*, the recess in the one part being formed so as to extend in the direction opposite to that of the recess in the other part, so that when the two are placed together, as shown in figs. 1 and 2, the thumb-piece *k* and exposed parts of the screw will be enclosed by the shoulders or end *n* and the sides *m* of the recesses.

In the one shoulder, *n*, a screw-threaded socket is tapped, for receiving the end of the screw carrying the right-hand thread, and in the other shoulder a like socket receives the left-hand screw-threaded end of the screw *h*.

The thumb-piece *k*, situated between the two, will lie within the space enclosed by the four sides, *n m*. By turning the thumb-piece, it will be seen that the jaws, owing to the employment of the right and left-hand screw, will move apart with twice the speed which could be obtained by the employment of either a right-hand or left-hand screw, and I attain by this means a great advantage over ordinary wrenches.

Again, by reason of the formation of the recesses *m*, and the employment of the right and left-hand screw in this manner, I am enabled to make the wrench serve also the purpose of calipers, a graduated scale, *s*, being formed on the edge of each recess. And by this means the size of any bolt or nut or iron can be determined with the greatest facility, and without the employment of a separate instrument.

From the foregoing, it will be perceived that this method of dividing the wrench into two parts, whose line of movement, in parallel planes, is in the direction of their length, is especially applicable to *S*-wrenches in which the jaws stand at right angles to the shank, and not to what are known as "diagonal wrenches."

The construction and arrangement of parts is such as to secure the greatest strength and solidity, at the same time preserving perfectly, for all practical purposes, the form of the non-adjustable *S*-wrench, and thus adapting the instrument to many uses for which the ordinary adjustable hammer-wrenches are entirely unfitted.

The adjustment of the implement can readily be effected with one hand alone, the shank being held in the hand, and the roughened or milled head *k* pressed upon and rolled over a board or other suitable surface. And the arrangement of the adjusting-screw and head is such that, practically, the wrench has the same unbroken surface as the ordinary *S*-wrench.

Having now described my invention, and the manner in which the same is or may be carried into effect,

What I claim, and desire to secure by Letters Patent, is—

1. An adjustable *S*-wrench, composed of two parts, mortised and tenoned together in the manner and for the purposes described.

2. The combination, with the two mortised and tenoned parts of the *S*-wrench, of a right and left-hand screw, and thumb-piece to operate it, substantially as and for the purposes set forth.

3. The construction and combination of the two parts composing the *S*-wrench, each being provided with a tenon and mortise, arranged on opposite ends, so that the plane of movement of the two parts shall be in the direction of the length of the wrench, and at right angles or transversely to the jaws, as set forth.

4. The combination, in an adjustable *S*-wrench, as described, of scales upon the divided wrench-shank, with the right and left-hand screw and thumb-piece, arranged within a recess formed in the two parts of the said shank, as and for the purposes set forth.

5. The tenons formed upon and at right angles to the inner jaws, in combination with the corresponding mortises in the heads of the outer jaws, substantially as and for the purposes herein shown and set forth.

6. The construction and arrangement of the larger and smaller jaws of the wrench, so that, when the smaller jaws are completely closed, the larger will be open to the maximum extent of the former, as and for the purposes set forth.

7. The formation of the mortise and tenon in the body of the divided shank of an adjustable wrench, and upon that side of the division-line between the two parts of the shank nearest the jaws, substantially as and for the purposes set forth.

In testimony whereof, I have signed my name to this specification, before two subscribing witnesses.

WILLIAM BAXTER.

Witnesses:

WM. D. RUSSELL,
S. S. MORRIS.