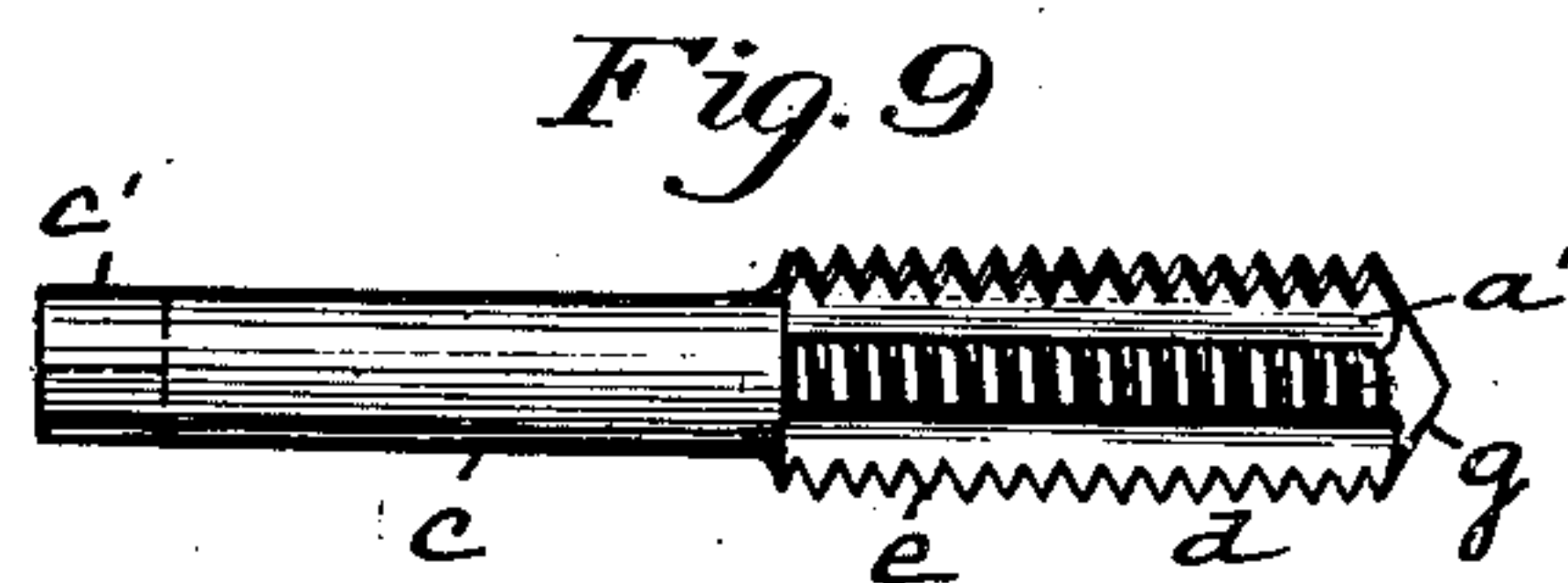
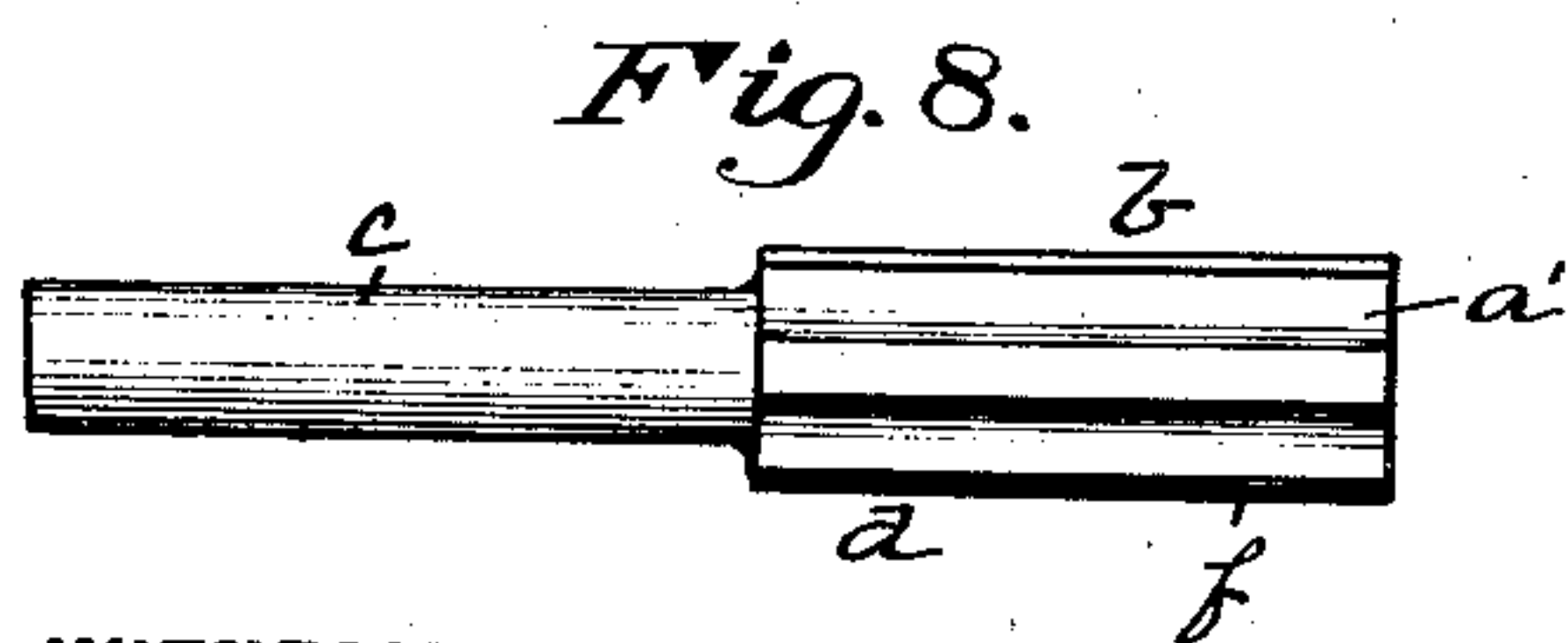
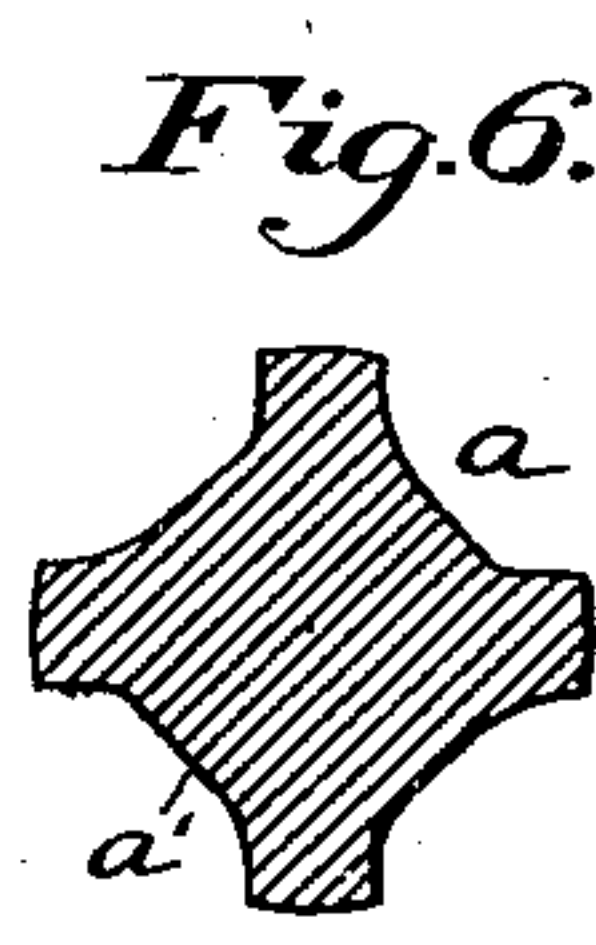
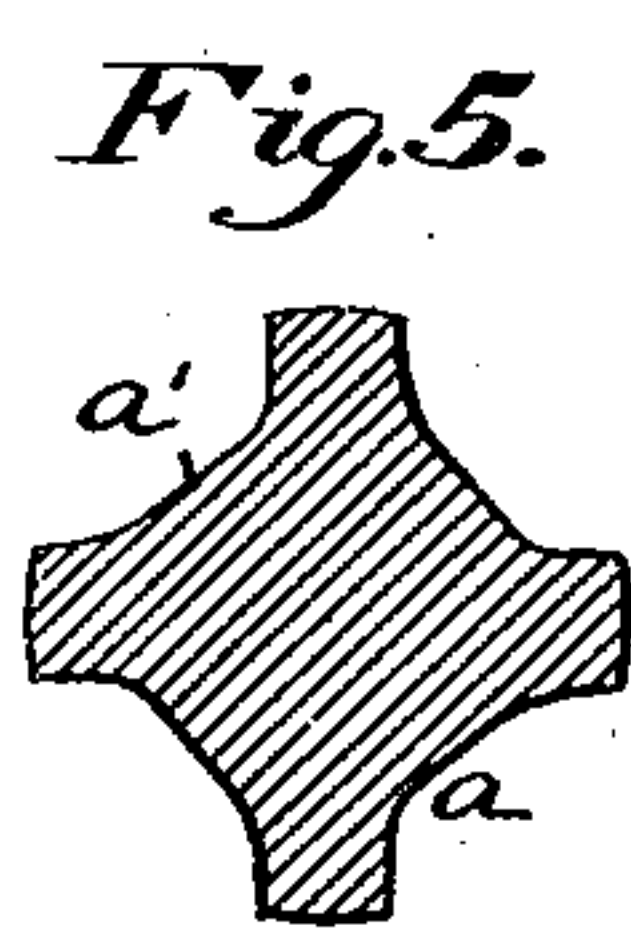
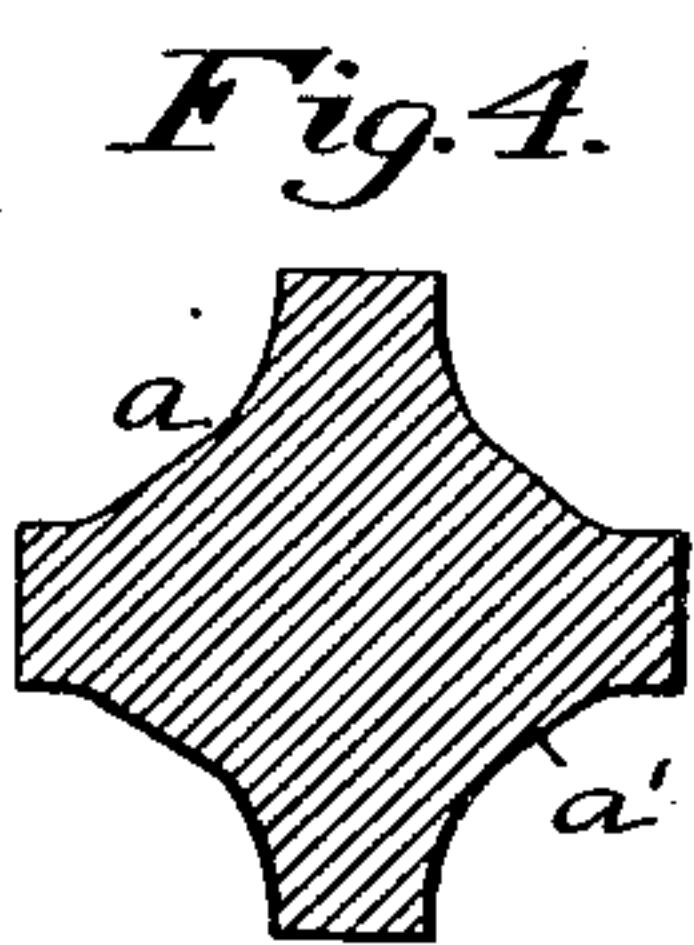
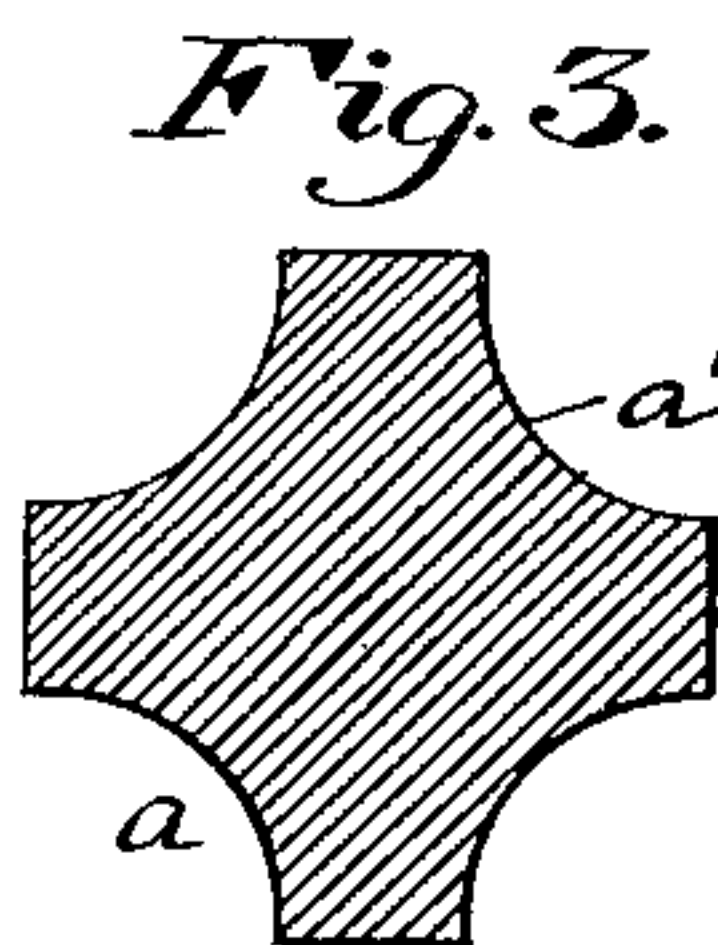
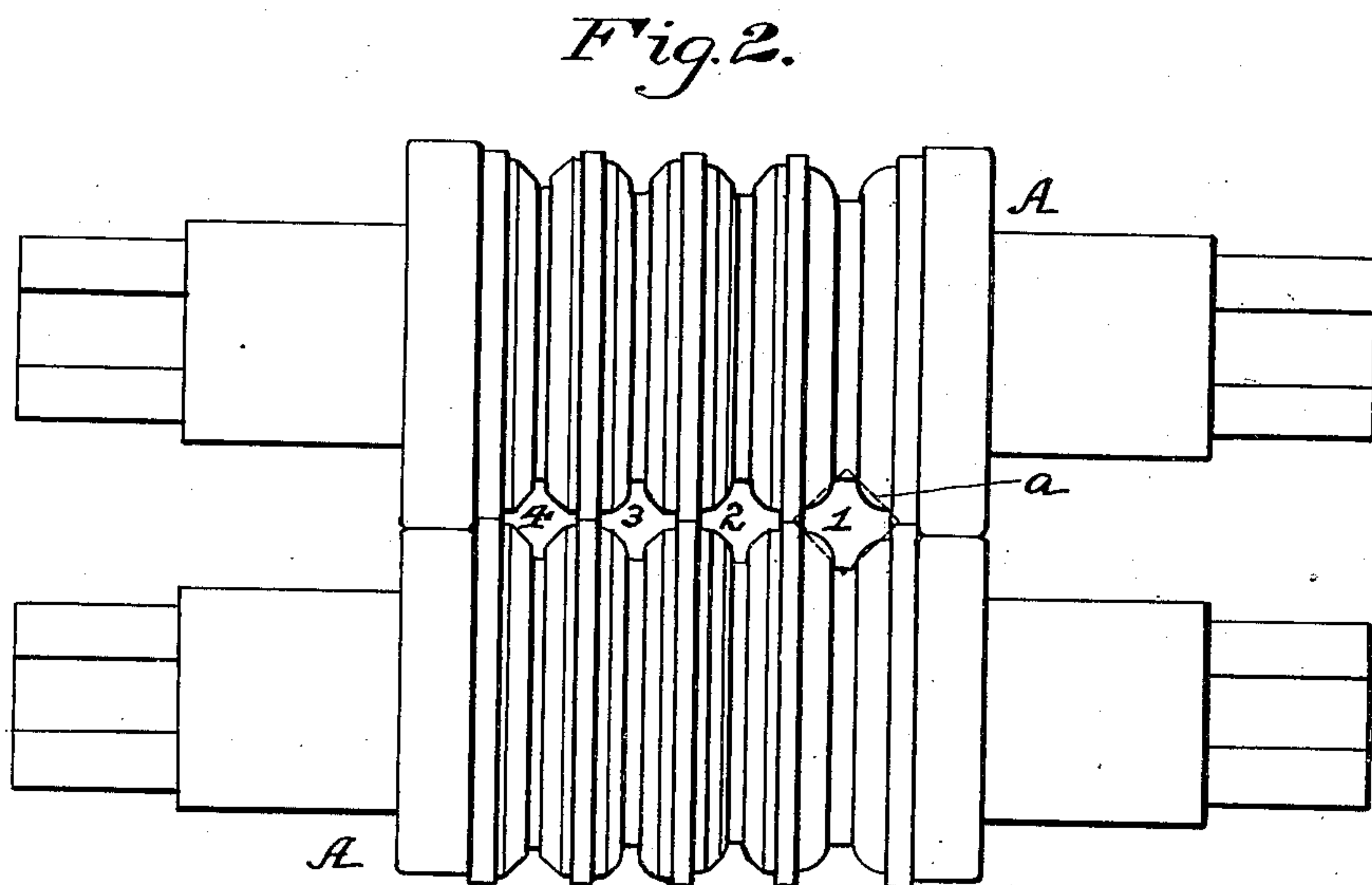
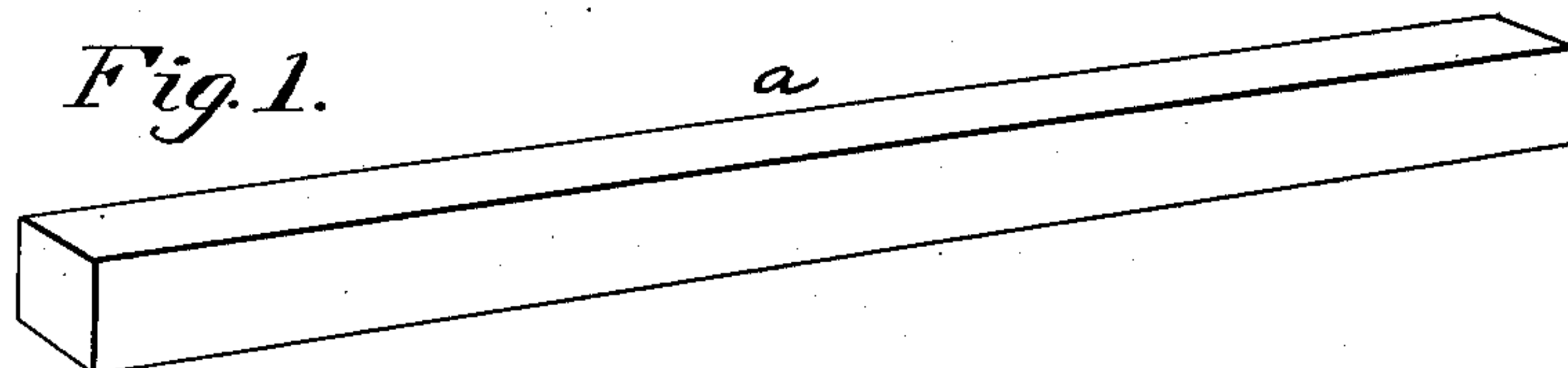


No. 827,533.

PATENTED JULY 31, 1906.

F. E. JOHNSON.  
METHOD OF MAKING SCREW TAPS.

APPLICATION FILED FEB. 8, 1905.



WITNESSES

Walter Samaras  
Robert H. H. H. H.

INVENTOR.

Frank E. Johnson,  
By J. M. Cooley  
attorney.



# UNITED STATES PATENT OFFICE.

FRANK E. JOHNSON, OF GREENSBURG, PENNSYLVANIA.

## METHOD OF MAKING SCREW-TAPS.

No. 827,533.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed February 8, 1905. Serial No. 244,704.

*To all whom it may concern:*

Be it known that I, FRANK E. JOHNSON, a resident of Greensburg, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Methods of Making Screw-Taps; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the method of making screw-taps.

Heretofore in the manufacture of screw-taps it has been general and customary to cut the sections for the taps from a round bar, then turn the same to form the shank and body to the size required, then form the flutes in the body of each section by milling, after which the body is screw-threaded and pointed.

The object of my invention is to provide a cheap, simple, and effective method of forming screw-taps which will do away with the laborious and expensive milling for the flutes, so that a great saving in the weight of the steel to be rolled for such screw-taps is accomplished, and the cost of the manufacture of the same is thereby greatly cheapened.

My invention consists, generally stated, in the novel method hereinafter more specifically set forth and described, and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to practice my improved method of making screw-taps, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a perspective view of the billet or bar to be rolled to shape. Fig. 2 is a side elevation of the rolls for rolling such bar to shape. Figs. 3, 4, 5, and 6 are cross-sections of such bar as it is rolled to different shapes for the finished bar. Fig. 7 is a side elevation of the finished bar. Fig. 8 is a side view of the tap, as severed from the finished bar and with the shank formed thereon. Fig. 9 is a view of the finished tap.

Like symbols of reference herein indicate like parts of each of the figures of the drawings.

The billet or bar *a* to be rolled is preferably flat or square in cross-section and is of the proper size, so that when it is heated it can be passed through the reducing-pass 1 of the rolls *A*, as shown by dotted lines in Fig. 2, and after such bar *a* has been so reduced to shape shown in Fig. 3 by passing through the pass 1 it can be passed through the reducing-

pass 2 to assume the shape shown in Fig. 4. The bar *a* is now ready to be formed into its finished shape, and this can be accomplished by passing the same through the finishing-pass 3, which pass will cause said bar to assume the shape shown in Fig. 5 and form the flutes *a'* therein. The fluted bar *a*, being now in its finished shape, it is now ready to be cut into blanks or sections *b* for the different-sized taps, as shown in Fig. 7, and this can be done in any suitable manner or by any suitable means. After the sections *b* have been cut or severed from the bar *a* a shank *c* is turned on each of said sections by machine-work, and, if desired, the flat or square end *c'* at end of the shank may be produced in the usual manner for a hand-tap, as shown in Figs. 8 and 9. The forming of said shank leaves the body portion *d* at the opposite end of the section. The body portion *d* can then be finished for the particular style of tap desired, and, if desired, pointed, as at *g*, Fig. 9. It will be understood that the sequence of operations in forming the tap after the blanks have been cut from the rolled bar may be varied from that just described.

It will be evident that for a smaller size tap the bar *a* can be passed through another finishing-pass 4 in the rolls *A*, so as to bring the bar down to the shape and size shown in Fig. 6 and that other reducing and finishing passes can be formed in the same set of rolls for forming bars for different shapes and sizes of taps, while it will also be evident that a deeper groove can be formed in the rolling of the bar in order to enable the end to be ground back and get a newly-pointed end quickly, and, if desired, various other additions, modifications, and changes in carrying out my improved method of making screw-taps may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

It will thus be seen that in the use of my improved method of making screw-taps a flat sided or square billet or bar of tool-steel can be rolled out to approximate shape and size for the making of pipe-taps, taper taps, plug-taps, bottoming-taps, or any other style of taps desired, and practical experience has proved the method to have a great advantage in many ways over the ordinary way of making taps from a round bar. In the rolling of such a bar to the size and shape for taps there is a saving of about fifty per cent. in the weight of the steel rolled by this



method over the round bar, and no milling being required for such a bar in forming the flutes for the tap a great saving is thereby obtained on this account both in material and labor, while the turning to form the shank and the body portion for the teeth is much more quickly done than in turning a round bar. It will also be seen that a right or left hand tap can be made from the same bar and the same cutting edge can be given to the one as to the other. The steel is rolled out in long bars, so that a number of sections or blanks for forming taps can be cut therefrom, and the shape of such bar when rolled is suitable for whatever size taps are to be made. It will also be evident that a round of other-shaped bar could be rolled to the desired shape, although such operation would probably require a few more passes in the rolls than is required for the other shaped bars to bring it down to the desired shape for forming the fluted bar. A great many other advantages will be apparent to tap-makers in the use of this method over the ordinary milling of a round bar generally used for this class of work—as, for example, if high-speed steel is used an enormous saving over the milling operation is made. Another advantage in the rolling of the lands and flutes is that you obtain a closer grain of steel in the lands by rolling, as the lands and flutes are formed at one and the same time, and there is no inter-

ruption of the grain of the metal incident to the milling or cutting out of the flutes. In the ordinary manner of making taps it is necessary to cut a keyway in the shank or form a square cut on the same for the purpose of securing it in the holder. 35

What I claim as my invention, and desire to secure by Letters Patent, is— 40

1. The method of making screw-taps, consisting in rolling a bar into a grooved shape to form lands and flutes for the bodies of the taps, cutting sections from said bar of the desired length, cutting away the lands on one portion of each section to form a shank, and forming the screw-cutting edges on the remainder of each section, substantially as described. 45

2. The method of forming screw-taps, consisting in rolling a bar into a grooved shape to form lands and flutes for the bodies of the taps, cutting sections from said bar of the desired length, reducing the lands on one end of each section to form a shank, and forming the screw-cutting edges on the remainder of each section, substantially as described. 50 55

In testimony whereof I, the said FRANK E. JOHNSON, have hereunto set my hand.

FRANK E. JOHNSON.

Witnesses:

W. C. LOOR,  
J. B. HUNTER.