

(No Model.)

C. A. JOHNSON.

MECHANISM FOR ROLLING THREADS ON BARS OR RODS.

No. 541,551.

Patented June 25, 1895.

Fig. 1.

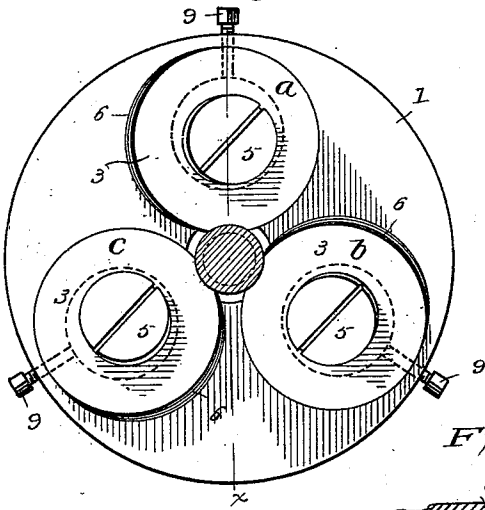


Fig. 4.

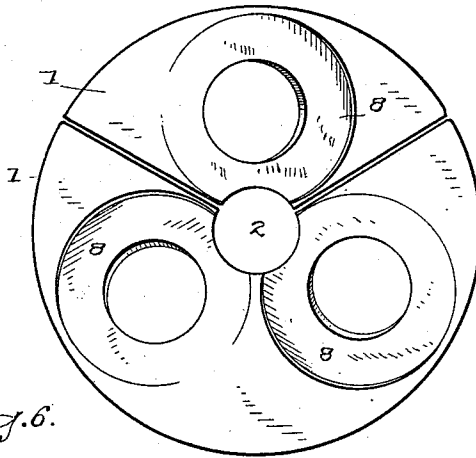


Fig. 6.

Fig. 2.

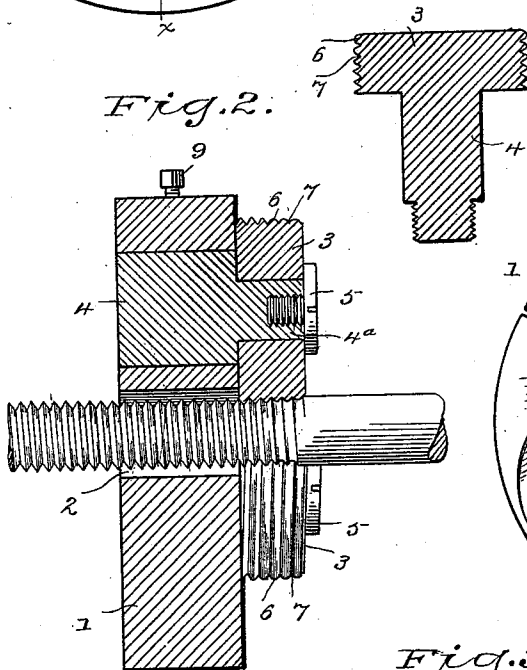


Fig. 5.

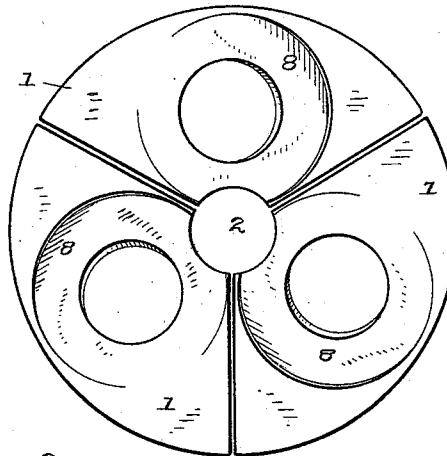
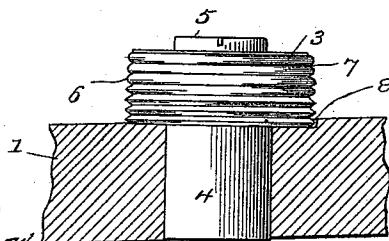


Fig. 3.



WITNESSES

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MECHANISM FOR ROLLING THREADS ON BARS OR RODS.

SPECIFICATION forming part of Letters Patent No. 541,551, dated June 25, 1895.

Application filed June 28, 1894. Serial No. 516,959. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. JOHNSON, a citizen of the United States, residing at Port Chester, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Mechanism for Rolling Threads; 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.

My invention has for its object to produce a novel mechanism for producing threads upon metal rods and bolts without cutting and without removal of metal therefrom, which is adapted to be applied to any of the various threading and screw-cutting machines now in use, which while adapted for general use shall be especially adapted to the cold rolling of threads, and which will thread a bolt clear to the head.

With these ends in view I have devised the novel method and mechanism for producing threads on rods and bolts, of which the following description, in connection with the accompanying drawings, is a specification, numbers and letters being used to designate the several parts.

Figure 1 is an elevation of my novel mechanism, showing three threading-rollers upon a block; Fig. 2, a section on the line *xx* in Fig. 1; Fig. 3, a detail view showing one of the threading-rollers in elevation, the block being in section. Figs. 4 and 5 are respectively elevations of two and three jaw chucks with the threading-rollers removed, and Fig. 6 is a detail sectional view illustrating a form in which the threading-roller and its shank are formed in a single piece.

1 denotes a suitable support for the rollers, as a block or the jaws of a chuck, which is provided with a central opening 2 through which the rod to be threaded is passed.

3 denotes the non-driven threading rollers which are carried by studs 4 seated in the blocks or jaws. The rollers may be formed integral with the studs as in Fig. 6, the studs turning freely in the blocks or jaws, or if preferred the rollers may turn on the studs as in

the other figures, the rollers being secured to the studs in any suitable manner, as by screws 5. In the form shown in Figs. 1 to 5 inclusive I preferably place the pins denoted by 4^a, on which the rollers are journaled eccentrically to the bodies of the studs so that the rollers may be adjusted toward opening 2, so as to compensate for wear upon the rollers or for variations in the size of the rods, the studs being locked in position after adjustment in any suitable manner as by set screws 9. The peripheries of the rollers are provided with parallel ribs 6 having between them grooves 7, said ribs and grooves being the exact shape of the threads which it is desired to produce upon a rod, the size and shape of the thread that is produced upon the rod being determined by the size and shape of the ribs and grooves upon the rollers. The first rib from the top of each roller is made lowest, the next slightly higher and the third nearly, if not quite the full height necessary to produce the complete thread on the rod.

In practice I ordinarily make either the second, third or fourth rib full height. As the ribs and grooves upon the rollers are circles, not threads, it is necessary to set the studs which carry the rollers slightly obliquely to the central line of the rod to be threaded, the angle of inclination of the studs corresponding to the pitch of the thread which it is desired to produce upon the rod.

8 denotes inclined recesses in the blocks or jaws in which the bases of the rollers are seated.

In practice I use three rollers as that number enables me to use heavy studs and to thread small rods and also perfectly centers and supports the rod that is being operated upon. It will be apparent that the rollers must be set in such a manner as to act successively upon the rod or bolt that is being threaded. For example, the second roller must be set in such a manner that the upper thread on said roller will engage the bolt or rod a third of a rib lower than the first roller, and a third of a rib higher than the third roller, the successive rollers following in the partly rolled threads. By that I mean that the width

of a rib and groove corresponding to the width of a thread upon the rod or bolt to be threaded must be divided between the rollers, so that the second threading action of the first roller will be a full thread lower than the first threading action of that roller. The same result may be accomplished if preferred by setting the rollers at the same height and making the upper ribs on the second and third rollers the required distance lower so that they will follow in the same partly rolled thread.

Suppose for example that the roller indicated by "a" in Fig. 1 is the first roller, and the roller indicated by "b" the second roller, and the roller indicated by "c" the third roller, the upper rib upon roller "b" will be a distance lower than the upper rib upon roller "a" equal to one-third the width of a rib and groove. In practice either the rod, or the blocks or jaws may be rotated. In either case the rod will be self feeding, that is to say, it will be drawn forward by the rollers as the thread is rolled thereon. No metal whatever is removed from the rod, but the thread is produced thereon by rolling, that is, by displacement of metal on the rod, a portion of the surface being depressed and a portion raised.

My novel method is of course applicable to the production of all kinds of threads as for

bolts, screws, taps, &c., and upon rods made of any kind of metal or alloy.

Having thus described my invention, I claim—

1. The combination with a suitable block having inclined recesses and studs in said recesses set at right angles to the plane thereof, of non-driven rollers upon said studs having ribs and grooves upon their peripheries, the upper rib upon each roller being lower than the upper rib upon the preceding roller and higher than the rib upon the following roller.

2. In a device of the character described the combination with a suitable support for the rollers as a block, of a series of studs set obliquely and provided with pins placed eccentrically to the bodies of the studs, non-driven rollers journaled on said pins and having upon their peripheries ribs and grooves substantially as described, and suitable means for locking the studs in position after adjustment.

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

CHARLES A. JOHNSON.

Witnesses:

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P. M. FORTUNE.