

(No Model.)

W. N. BEARDSLEY & A. D. MOULTON.

GUN ROD COUPLING.

No. 468,530.

Patented Feb. 9, 1892.

FIG. 1.

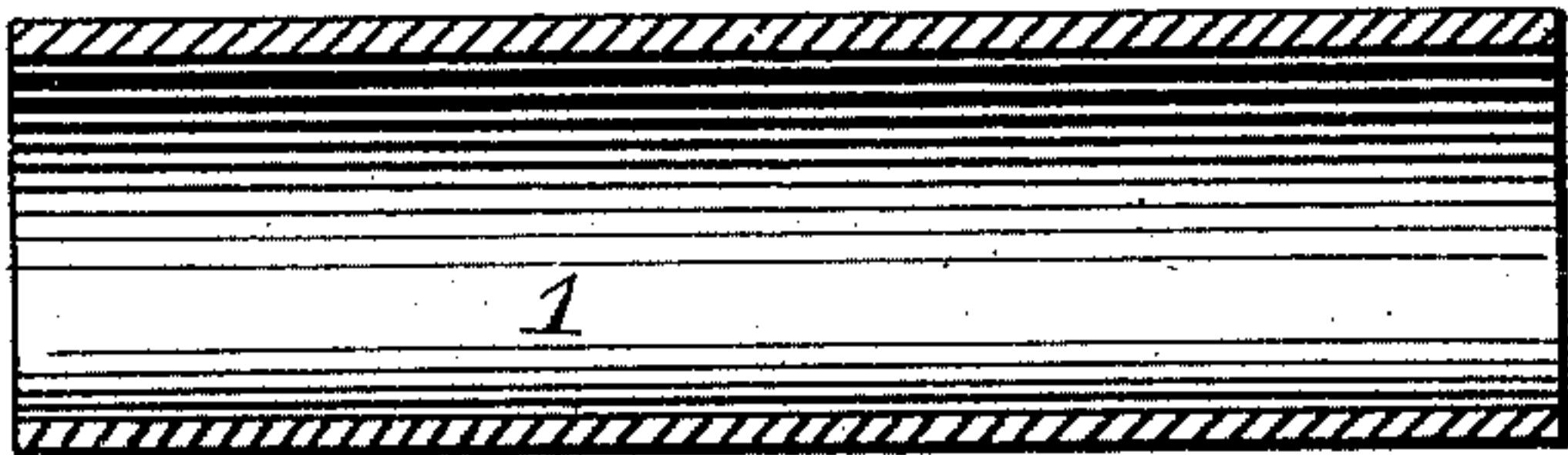


FIG. 2.

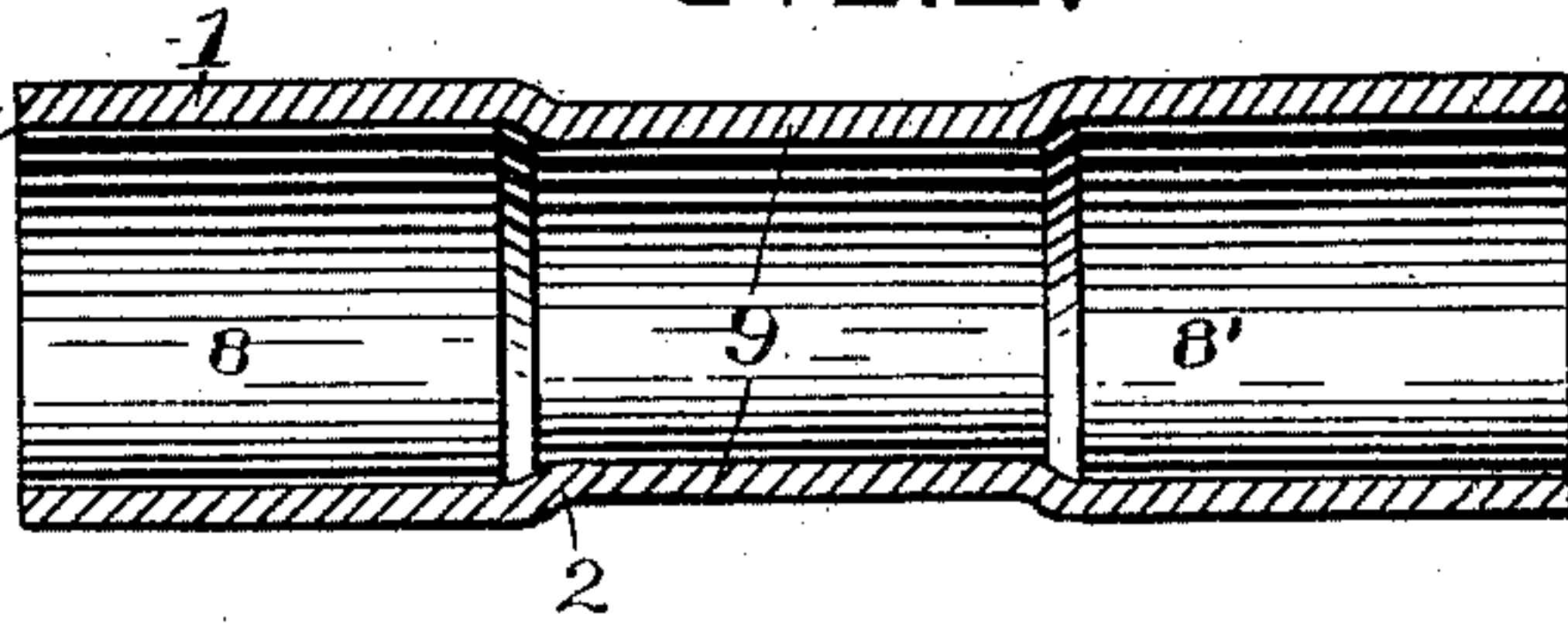


FIG. 3.

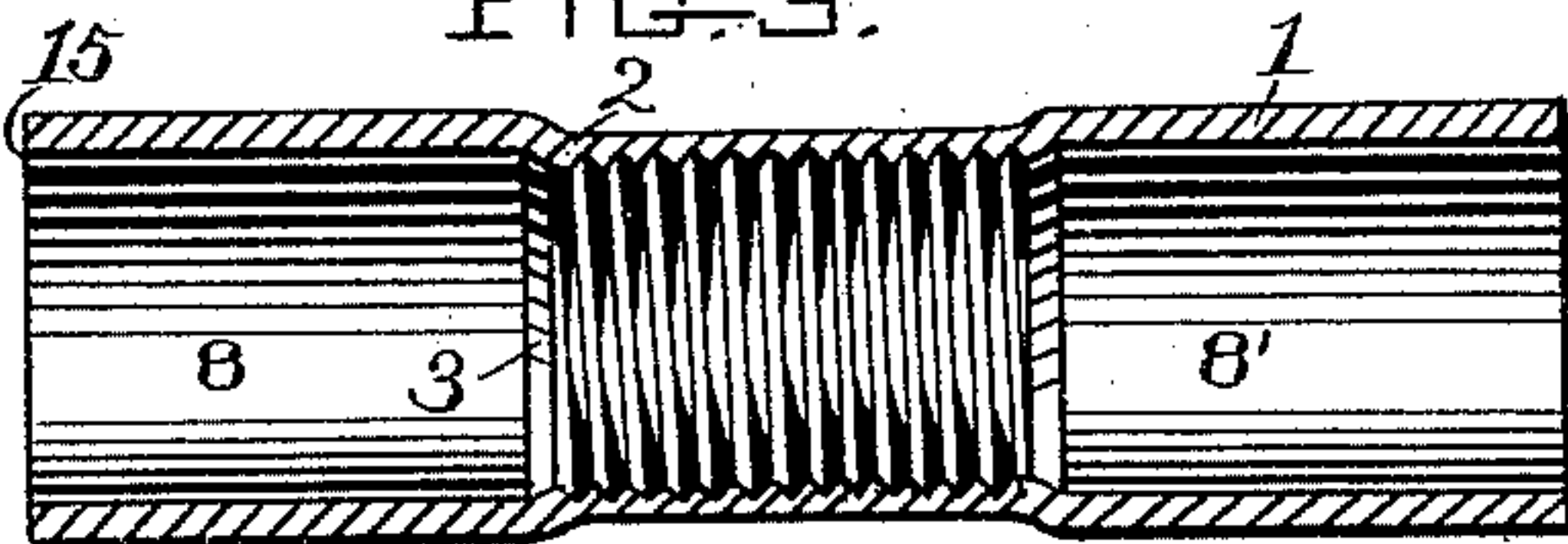


FIG. 4.

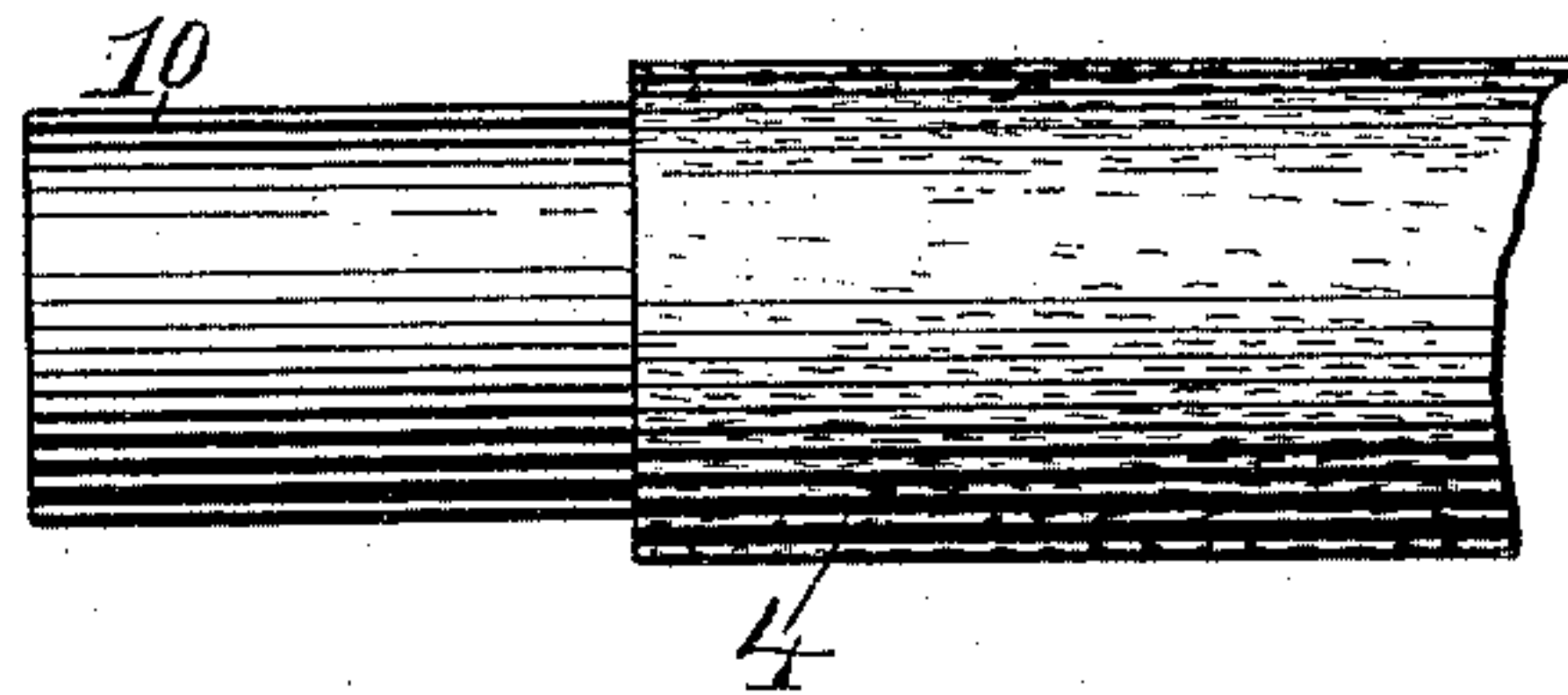


FIG. 5.

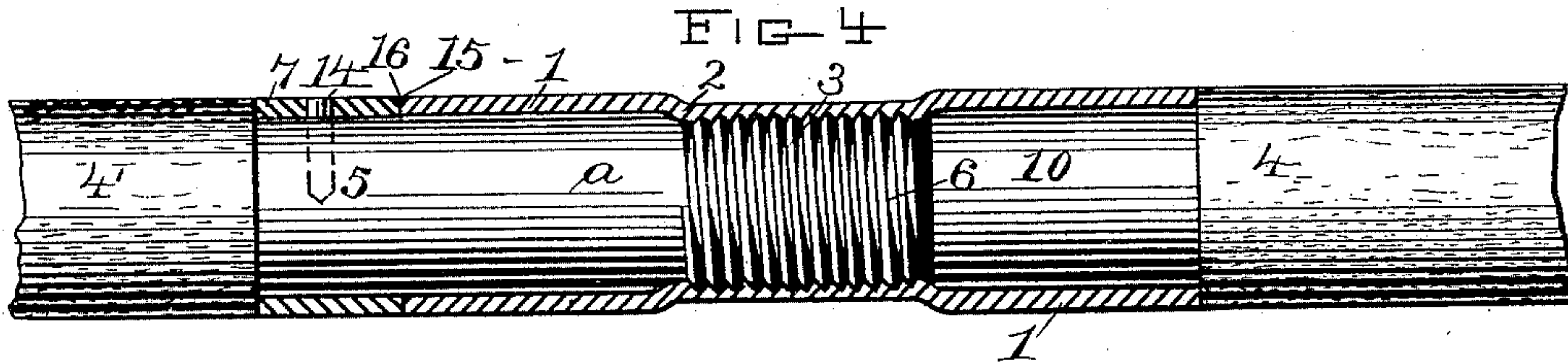


FIG. 6.

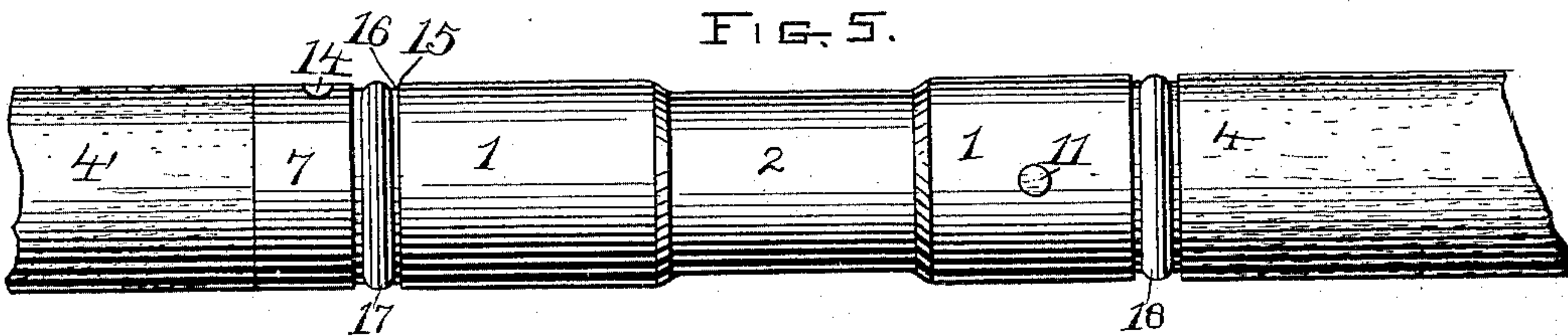


FIG. 7.

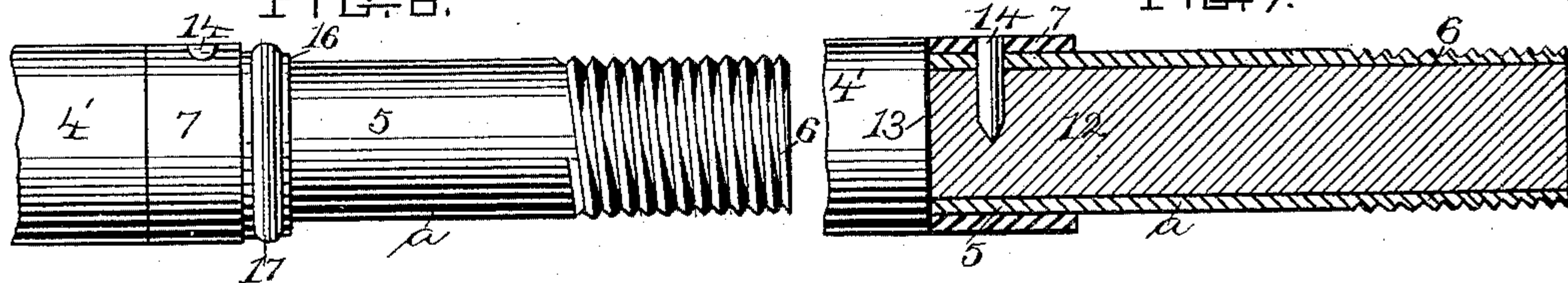
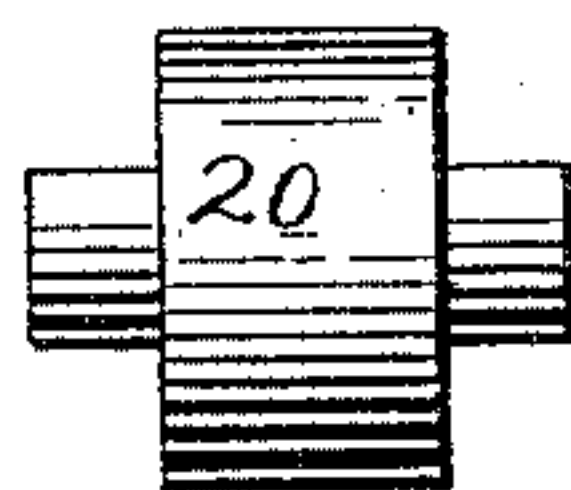


FIG. 8.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## GUN-ROD COUPLING.

SPECIFICATION forming part of Letters Patent No. 468,530, dated February 9, 1892.

Application filed May 7, 1891. Serial No. 391,910. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM N. BEARDSLEY and ALVIN D. MOULTON, citizens of the United States, and residents of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Gun-Rod Couplings, of which the following is a specification.

Our invention relates to gun-rod couplings and is an improved method of constructing the coupling, whereby the same is produced much cheaper and stronger than by the methods heretofore employed.

Couplings have been made heretofore of both cast and drawn metal. The former method is both expensive and bulky, owing to the extra amount of metal needed to give it the required strength and the labor necessary to finish it. Such coupling is now generally discarded, drawn-metal tubes being substituted therefor as being much stronger and with less weight of metal. When the mouth of the coupling-sleeve is threaded to engage a threaded tip, such sleeve can be made quite thin, sufficient stock being left after forming the thread to give the necessary strength required. In some cases the threaded portion is located midway within the sleeve, leaving a smooth cylindrical mouth at each end, which engages a cylindrical portion of the tip, the end of such tip being threaded to engage the centrally-threaded portion of the sleeve. As the smooth cylindrical surface of the sleeve must be below the threaded portion, it is necessary, first, to thread the whole interior portion of the sleeve, and then to remove so much of the thread at each end of such sleeve as will form the smooth cylindrical portion or mouth, leaving a threaded center for the threaded end of the tip. It is also desirable to employ tubing as thin as possible consistent with the strength required. Therefore the above operation will tend to weaken the joint, unless thicker tubing is used, which will also increase the cost of manufacture due to the additional labor required to bore out the ends of the sleeve.

Our invention consists in selecting a piece of tubing of the required diameter and length and form a depression or indentation in the central portion (or any part of such shell) of

its outer surface, such indentation or depression representing by its length the length required for the internal threaded portion. This operation will reduce the internal diameter of the shell for the thread, while at the same time the mouth of the shell will remain the same size as the original tube. By this construction a very thin shell can be used without weakening the same by forming the thread, also in dispensing with the extra operation of boring out the mouth, thus greatly reducing the cost of manufacture.

To enable those skilled in the art to which our invention belongs to understand its method of operation, reference is had to the accompanying drawings, and to the figures and letters of reference marked thereon, forming a part of this specification.

Figure 1 represents a longitudinal sectional view of a plain cylindrical piece of tubing, cut off the proper length required to form the sleeve portion of the rod joint or coupling. Fig. 2 represents a longitudinal section similar to Fig. 1, showing the central portion thereof reduced, forming a groove or depression on its outer surface. Fig. 3 represents a view similar to that shown in Fig. 2, after the thread is formed on the reduced interior portion of the sleeve. Fig. 4 represents a longitudinal view of the coupling, consisting of the sleeve and the tip mounted upon their respective rod-sections, being a sectional view of the sleeve; also a sectional view of the ring mounted upon the tip, against which ring the sleeve abuts; also a full view of the tip, its threaded end engaging the female thread of the sleeve. Fig. 5 represents a longitudinal side elevation of the completed joint and short section of rod. Fig. 6 represents the tip mounted on a wooden rod-section. Fig. 7 represents a longitudinal section of the rod-tenon, tip, and shoulder mounted thereon. Fig. 8 represents the tenon end of the wooden rod-section, which engages with one end of the sleeve. Fig. 9 represents an apparatus that may be employed in indenting the surface of the sleeve.

Its construction and operation is as follows: 1 represents the sleeve; 2, the depression formed in its surface; 3, internal threaded portion; 4 4', wooden rod-sections; 5, metal



thimble to form the tip mounted on rod-section 4', said thimble having threaded end 6 to engage the internal threaded portion 3 of the sleeve; 7, tubular section mounted on tip 5 to form a shoulder to support the end of the sleeve 1.

The first operation in the construction of the sleeve 1, as shown in Fig. 1, is either to draw the same from a metal blank and then trim off the ends, or to cut the section from the end of a tubular rod. The section thus cut off will be of equal diameter from end to end. Then, by means of the proper tools, the surface of the stock is depressed, preferably as shown, at or near the central portion of the section. This operation will form the groove or indentation 2 on the outer surface of such section, and the metal thus forced inward will reduce the internal diameter, as shown in Fig. 2, sufficiently to form the thread 3, as shown in Fig. 3. It will therefore be readily seen that a uniform thickness of metal is maintained throughout the whole section forming the sleeve, which would not be the case if the interior were first threaded and the cylindrical portions 8 8' afterward enlarged by removing the threads from that portion of the sleeve. The smaller diameter 9, (see Fig. 2,) which will represent the top of the thread, will be substantially the same as the bottom of the thread of the threaded end 6 of tip 5, Figs. 6 and 7, while the top of such thread and the smooth surface *a* between such threaded end and shoulder 7 are preferably the same diameter as the mouth 8 of the sleeve. So, also, is the tenon 10 of rod-section 4, Fig. 8, which tenon enters the cylindrical mouth 8' of the sleeve and is maintained there by pin 11 (see Fig. 5) or in any other suitable manner.

To cheapen the construction of the tip, and in place of machining down the end to form the threaded portion, we employ the shell 5, (see Fig. 7,) drawn to the exact diameter required to fit the cylindrical mouth of the sleeve, and drive such shell onto the tenon 12 of the wooden rod section 4'. Then the piece of tubing 7, cut off the proper width, is mounted on the shell 5, abutting the shoulder 13 of the rod-section. The pin 14, passing through 5 and 7 and into the tenon 12, secures them firmly in place. When the joint is made up, as shown in Figs. 4 and 5, the face 15 of the sleeve 1 will abut firmly against the face 16 of the tubular section 7. The cylindrical portion *a* of the tip will engage the cylindrical mouth of the sleeve, which, together with the engagement of the threaded portion of the tip with the central threaded portion of the sleeve, will form a joint of great firmness and durability.

Several ways may be employed to depress or indent the surface of the sleeve. Any means that will furnish sufficient pressure for the purpose may be used. In the reduced view, Fig. 9, is shown one construction that may be used for this purpose. 17 represents an arbor whose diameter is the size required for the reduced internal portion of the sleeve, and mounted on this arbor are the two sleeve arbors or supports 18, one in each end or mouth of the sleeve 1. This will leave the central portion 19 of sleeve 1 unsupported. The roll 20, operated by the proper mechanism, (not shown,) will be brought against such unsupported portion of the sleeve, and such sleeve being revolved against the pressure of the roll will force the stock against the central arbor 17. When this operation is completed, the central arbor is withdrawn first, when the sleeve arbors or supports 18 can also be removed.

To relieve the plain surface of the coupling and give it a finished appearance, we prefer to form the bead 17 on the end of the outer shell 7 of the tip. Then we balance the same by the bead 18, cut in the surface of the end of the sleeve 1, which is mounted on the tenon 10 of rod-section 4. If required, the beading may be formed or cut at intervals along the surface of said sleeve. This beading will be very shallow so as not to weaken the coupling.

We hereby reserve the right to make subsequent application for the method of constructing the tip of a gun-rod, as shown in Figs. 4, 5, 6, and 7 of the drawings and fully described in this specification, but not claimed herein.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The herein-described improvement in constructing drawn tubular sleeves for rod-couplings, which consists in forming an indentation or depression in a portion of the outer surface of such tubular sleeve intermediate between the ends of said sleeve, so that by means of such outersurface indentation the internal diameter is correspondingly reduced, leaving the remaining diameters of the sleeve both inside and out of the original or substantially the original size, and then threading such reduced internal portion, as set forth.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 1st day of May, A. D. 1891.

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ALVIN D. MOULTON.

Witnesses:

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