

No. 698,113.

Patented Apr. 22, 1902.

D. HEGGIE.  
COUPLING WELDING ROLLS.

(Application filed Aug. 30, 1901.)

(No Model.)

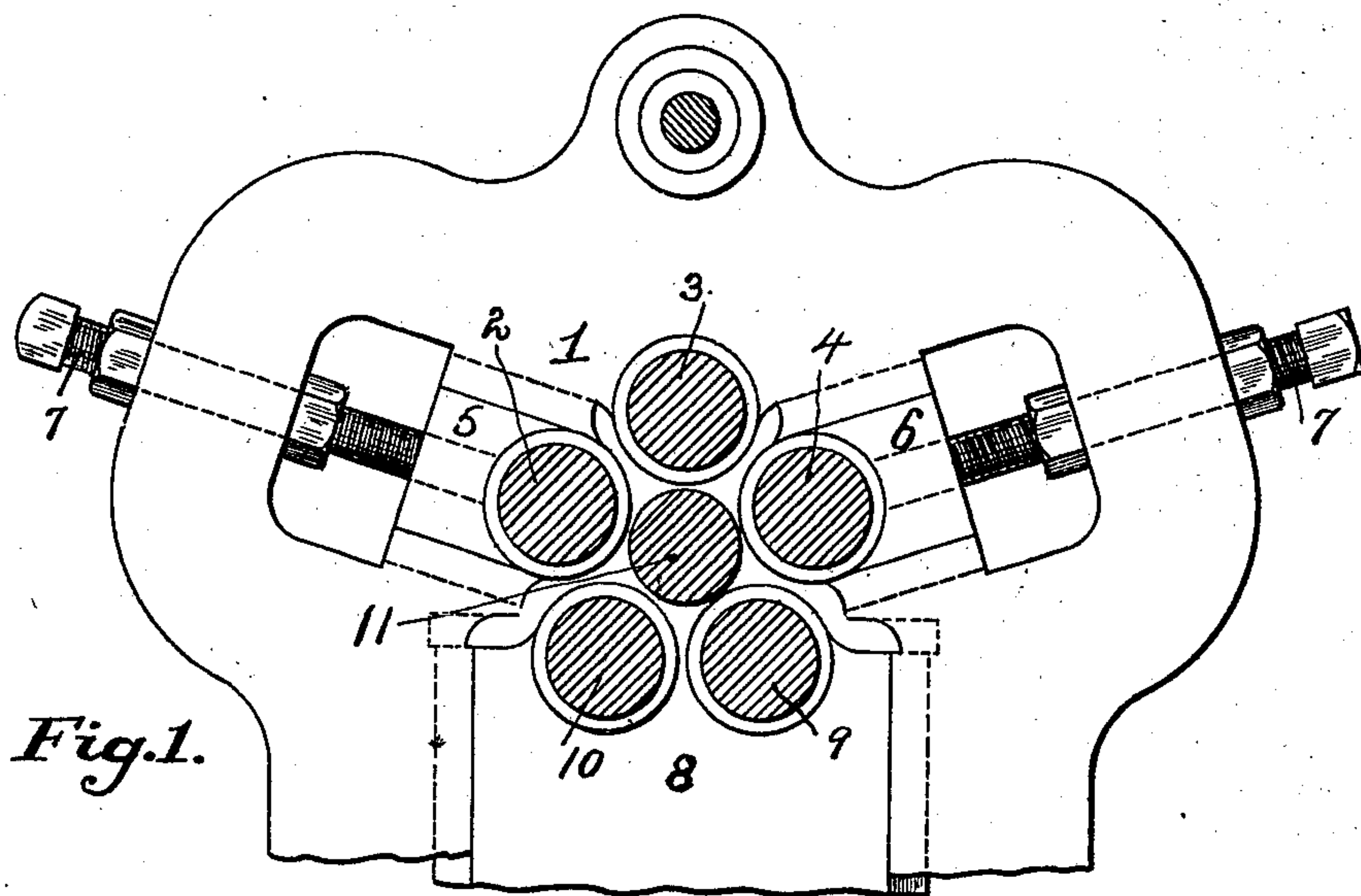


Fig. 1.

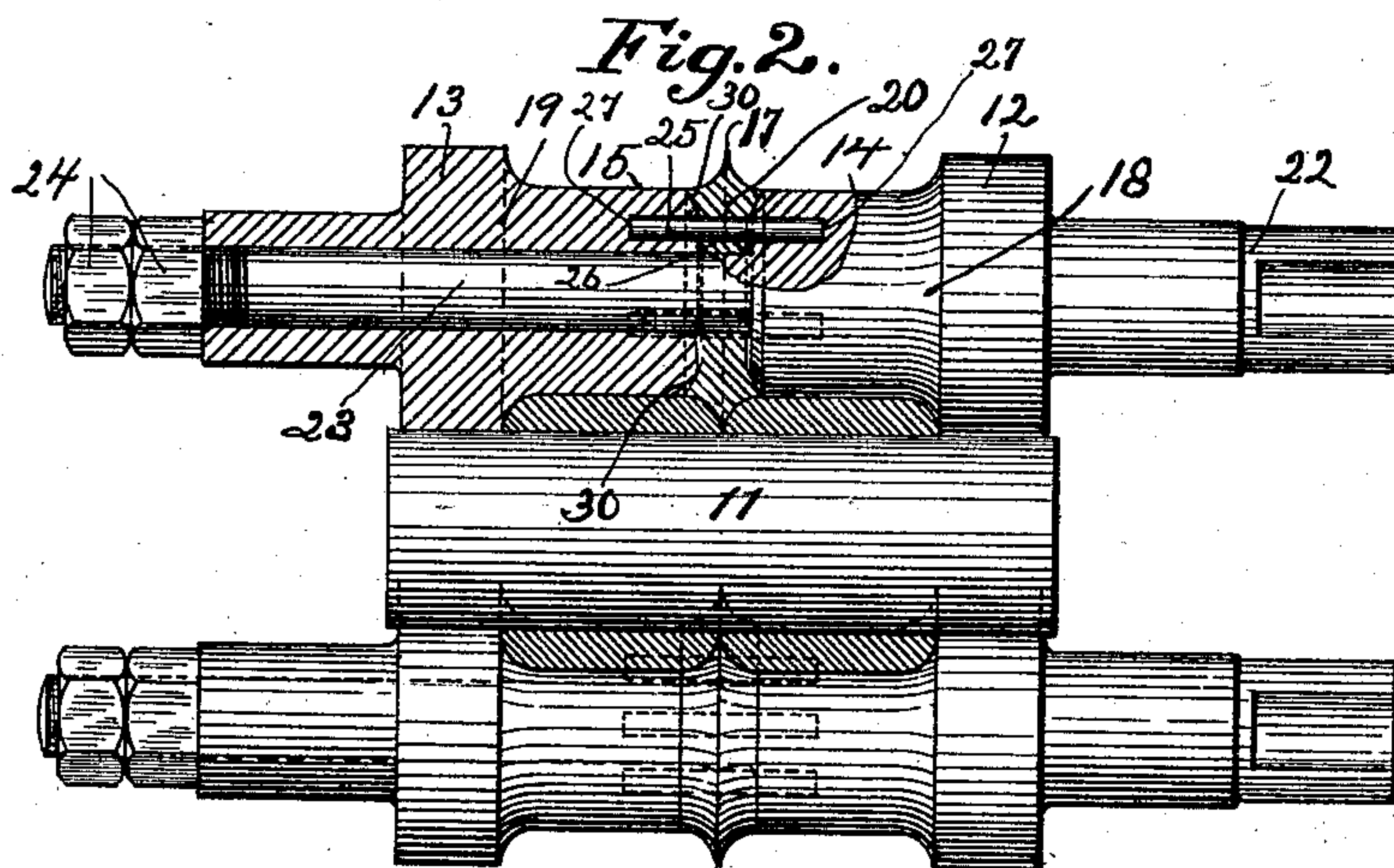


Fig. 2.

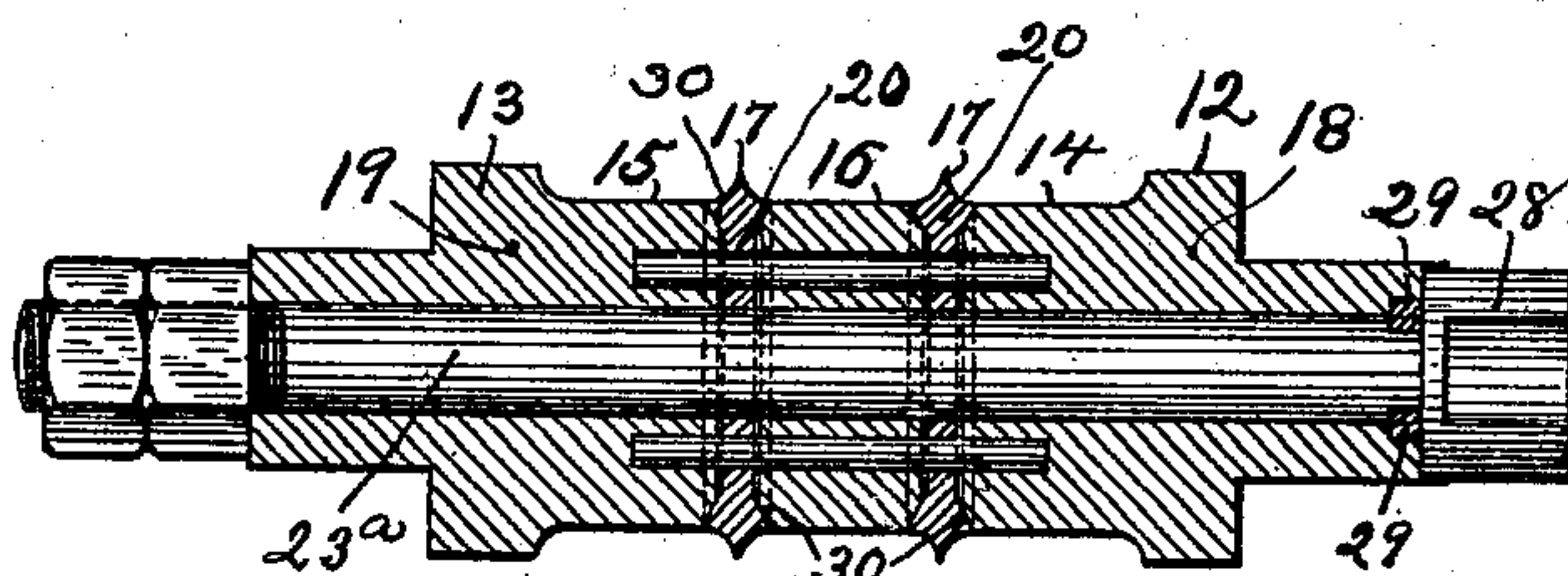


Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## COUPLING-WELDING ROLLS.

SPECIFICATION forming part of Letters Patent No. 698,113, dated April 22, 1902.

Application filed August 30, 1901. Serial No. 73,864. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID HEGGIE, a resident of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Coupling-Welding Rolls; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to rolls for the manufacture of pipe-couplings, thread-protectors, and similar articles, and more particularly to such rolls for forming a plurality of such articles at a single welding operation, as described in my patent granted July 17, 1900, No. 653,913.

The object of my invention is to so construct the rolls that the annular projection or projections intermediate the working faces of the rolls and which divide the blank and finish the end faces of the couplings or other articles are renewable, so that the entire roll need not be thrown away when the annular projection or projections become worn.

In forming a plurality of pipe-couplings from a single blank by means of the rolls shown and described in my patent above referred to I have found that the annular projection or projections intermediate the working faces of the rolls, which projections divide the blank and form the end faces of the couplings, quickly wear out, this being due to the fact that said annular projections are comparatively thin in order to divide the blank, and as a consequence do not stand up long under the intense heat of the blank in which they are embedded. The life of the rolls, therefore, has been comparatively short, as it is impossible to bring said annular projections back to the required height or size after they have once become worn or flattened down. The object of my invention is to overcome this and to provide rolls for this purpose which are so constructed that these annular projections may be renewed and the discarding of the entire roll when these projections wear down will be avoided.

To this end my invention consists, generally stated, in forming the rolls in sections which are suitably secured together to form a solid roll, the annular projections being

formed on sections or portions separate from the sections or portions on which the other parts of the working faces of the rolls are formed, so that when said annular projections wear down it will be necessary to replace only that particular section or sections by a new one.

In the accompanying drawings, Figure 1 is a transverse section through a coupling-welding mill with my improved rolls applied thereto. Fig. 2 is a longitudinal section thereof, one of the rolls being shown in section to illustrate the construction thereof; and Fig. 3 is a longitudinal sectional view of a modified form of roll.

My invention has been employed more particularly in forming pipe-couplings and pipe-thread protectors or collars, and the invention will be illustrated in connection with the same. The apparatus is preferably provided with a cluster of five rolls mounted in a suitable housing 1, of the usual construction employed in mills of this character except that it is of greater width. The top rolls 2, 3, and 4 are usually held stationary, the roll 3 being mounted in a fixed bearing in the housing 1, while the rolls 2 and 4 are mounted in adjustable bearings 5 and 6, so that they can be brought to proper relative position with the other rolls in the cluster—as, for instance, by means of the screws 7. Below these three rolls is the sliding bearing 8, which has mounted at its upper end the rolls 9 and 10, so forming the five rolls of the cluster. Fitting within said several rolls is the mandrel 11, which is inserted within the cluster before the metal is fed to the rolls and is withdrawn by hand after the welding operation. The several rolls of the cluster have the end flanges 12 and 13, adapted to bear upon the mandrel 11, which is circular and practically of the same diameter throughout, and between said flanges the said rolls have two or more working faces, each corresponding in width and shape to the finished coupling to be produced. The rolls shown in Fig. 2 have two working faces 14 and 15, while the roll shown in Fig. 3 has three such working faces 14, 15, and 16. These working faces are separated by the annular projections



or ribs 17, which extend around the rolls, and the edges of which are formed of such contour as to readily separate the blank and to properly finish the end faces of the couplings to be produced. It is desirable that the ribs or projections 17 shall not be of any great width, so that they shall easily swage down the metal in both welding the blank into ring form and separating it into several couplings. These annular ribs or projections 17 may either project to the same height as the end flanges 12 and 13, so as to contact with the mandrel 11, in which case the rolling operation completely separates the several couplings produced, or these ribs or projections may be of a height slightly less than the end flanges, in which case they will leave a thin web connection between the several couplings which can afterward be separated in any desired way.

The apparatus so far described is substantially the same as that covered by my patent above referred to. It was found in the use of this apparatus that the annular ribs or projections 17 by reason of not being of any considerable width, as shown, do not stand up very long under the heat of the blank in which they are embedded during the working of the rolls. I therefore propose to so construct the rolls that these ribs or annular projections can be renewed when worn, so as to avoid discarding the entire roll. I therefore form the rolls in sections, as shown, one end flange 12 and its contiguous working face 14 being formed as one section 18, the other end flange 13 and its contiguous working face 15 being formed as another section 19, while the annular rib 17 is formed on a third section 20, which is interposed between the two sections 18 and 19. In case the roll has more than two working faces—as, for instance, that shown in Fig. 3—the middle working face 16 is formed in a section by itself, and a section 20, with an annular rib or projection 17 thereon, is interposed between this middle section and each of the two end sections 18 and 19. The same principle of construction can be applied to a roll with any number of working faces, as will be readily understood.

In the form shown in Fig. 2 the end section 18 is formed integral with the wabblers 22, and also integral therewith is the axial projection or core 23. The sections 19 and 20 are formed as sleeves or rings, which encircle the extension or core 23 and which are held thereupon by any suitable means—such, for instance, as the nuts 24, engaging screw-threads on the end of the core 23. It will be obvious, however, that any other convenient means may be substituted for these nuts. Suitable means will be provided for locking the various sections together, so that they will rotate in unison as a single solid roll. Various means for this purpose will readily suggest themselves to the skilled mechanic—such, for instance, as the pins 25, which pass through openings 26 in the sections 20 and have their ends pro-

jecting into holes or recesses 27 in the sections 18 and 19, as shown in Fig. 2, or a feather or key fitting in suitable keyways cut in the tie-rod or core and in the several sections constituting the roll, as will be readily understood.

In the modification shown in Fig. 3 the core or extension is not integral with the section 18, but is formed as a tie-rod 23<sup>a</sup>, having its head 28 formed as a wabblers. The section 18 is formed as a sleeve, and all of the sections are secured together by the tie-rod 23<sup>a</sup>, the latter being locked to the section by suitable means, such as keys 29, fitting in suitable recesses in the section 18 and tie-rod 23<sup>a</sup> or wabblers.

I prefer to form the abutting faces of the sections 18 and 19 and the sections 20 with a slight clearance, as shown in Figs. 2 and 3, in which the section 20 is concaved and the sections 18 and 19 provided with conical projections fitting therein, but bearing thereagainst only at 30. The faces 30 must of course be accurately ground or machined; but there is a clearance inside the same, so that a close joint is always insured, and the sections can be more accurately centered with reference to each other.

My apparatus is used in precisely the same manner as the apparatus described and claimed in the patent above referred to—that is, a blank of sufficient width to form the desired number of pipe-couplings or thread-protectors and of sufficient length for the welding operation is raised to a welding heat and then fed to the cluster of rolls between said rolls and the mandrel 11. By the operation of the rolls the blank will be wound around the mandrel 11, and as the rolls revolve they weld the overlapping edges of the blank, and the ribs or projections 17 will be forced into the blank to separate the same into a series of couplings, either connected by thin webs or entirely separated, and finish the end faces thereof. As soon as these annular ribs or projections 17 wear or melt down the rolls are taken out of the housings, the several sections thereof separated, and the worn-out sections 20 replaced by new sections, when the sections of the rolls are again locked together and returned to the housing and operated in the manner above described.

It will thus be seen that I provide a welding-roll for forming a plurality of couplings and similar articles at a single operation in which the annular ribs or projections can be easily renewed; so that the life of the roll as a whole is greatly increased. It will of course be understood that various modifications in the construction of the rolls may be made within the scope of my invention, it being necessary merely to form the annular ribs or projections 17 on sections or portions separate from the other portions of the roll and to provide suitable means for securing the same to the other portions of the roll. It will



be understood that the same principle of construction may be applied to rolls other than coupling-welding rolls.

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

1. A roll for forming pipe-couplings and similar articles, provided with a plurality of working faces each corresponding to a finished coupling and an annular projection or projections or ribs intermediate the working faces for dividing the blank and finishing the end faces of the couplings, said annular projection or rib being formed on a section separate from the other parts of the roll, and means for securing said sections together.

2. A roll for forming pipe-couplings and similar articles, provided with a plurality of working faces each corresponding to a finished coupling and an annular projection or projections intermediate the working faces for dividing the blank and finishing the end faces of the couplings, said roll having each end flange and the contiguous working face formed in one piece, and the remaining working faces and annular ribs or projections formed in separate sections interposed between the end sections, and means for locking said sections together.

3. A roll for forming pipe-couplings and similar articles, provided with a plurality of working faces each corresponding to a finished coupling and an annular projection or projections intermediate the working faces for dividing the blank and finishing the end faces

of the couplings, said roll having one end flange [and the contiguous working faces formed in one section which has integral therewith a wabblers and an axial core or projection, the other end flange and its contiguous working face being formed as a sleeve adapted to surround the axial projection or core, and the annular projection being formed on a separate ring which is interposed between the end sections, and means for locking said parts together.

4. A roll for forming pipe-couplings and similar articles, provided with a plurality of working faces each corresponding to a finished coupling and an annular projection or projections intermediate the working faces for separating the blank and finishing the end faces of the couplings, said roll having each end flange and the contiguous working face formed in one section and the remaining working faces and annular projection or projections formed in separate sections interposed between the end sections, means for securing said sections together, and pins passing through the annular rib-section and having their ends seated in the working-face sections to lock said sections together.

In testimony whereof I, the said DAVID HEGGIE, have hereunto set my hand.

DAVID HEGGIE.

Witnesses:

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F. L. PINKHAM.