

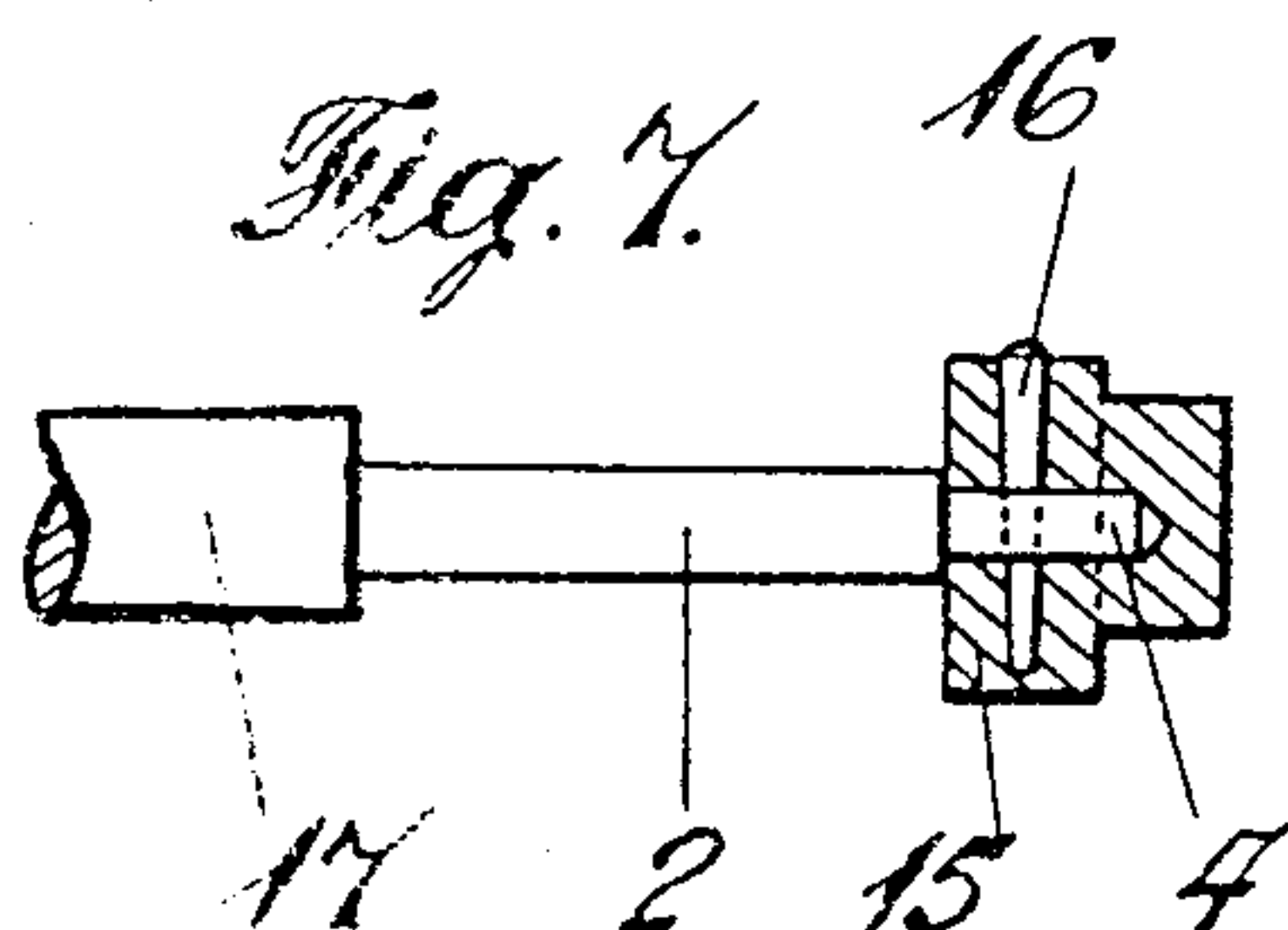
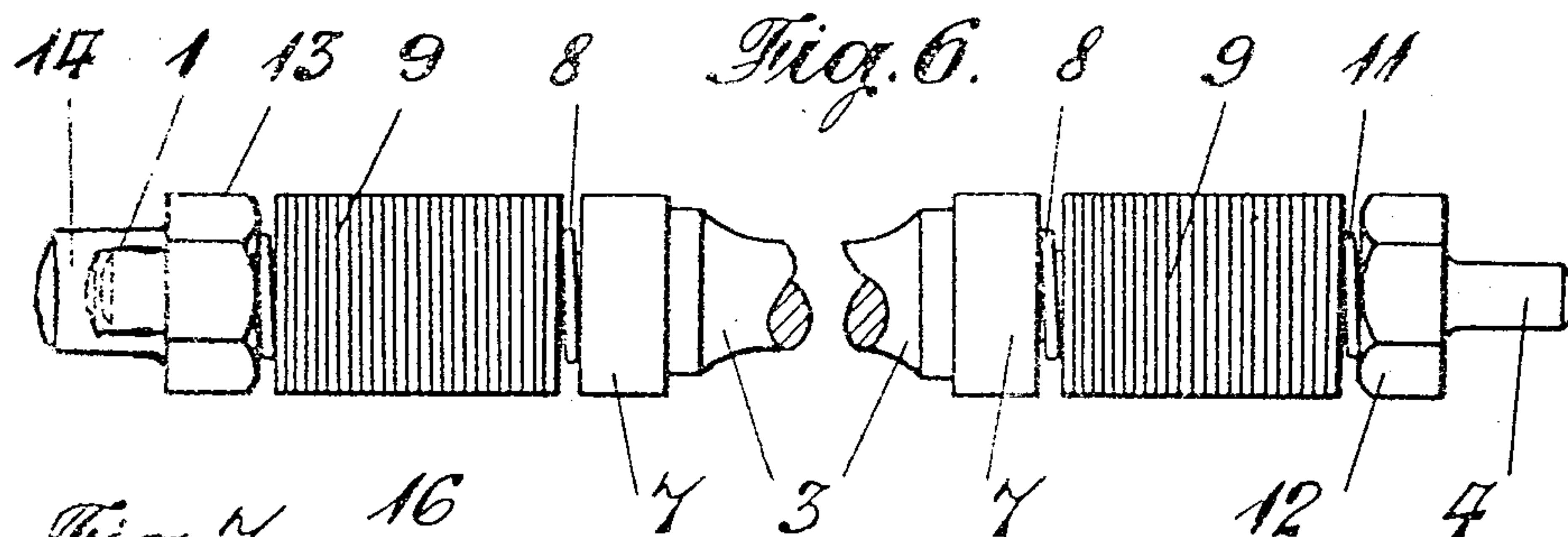
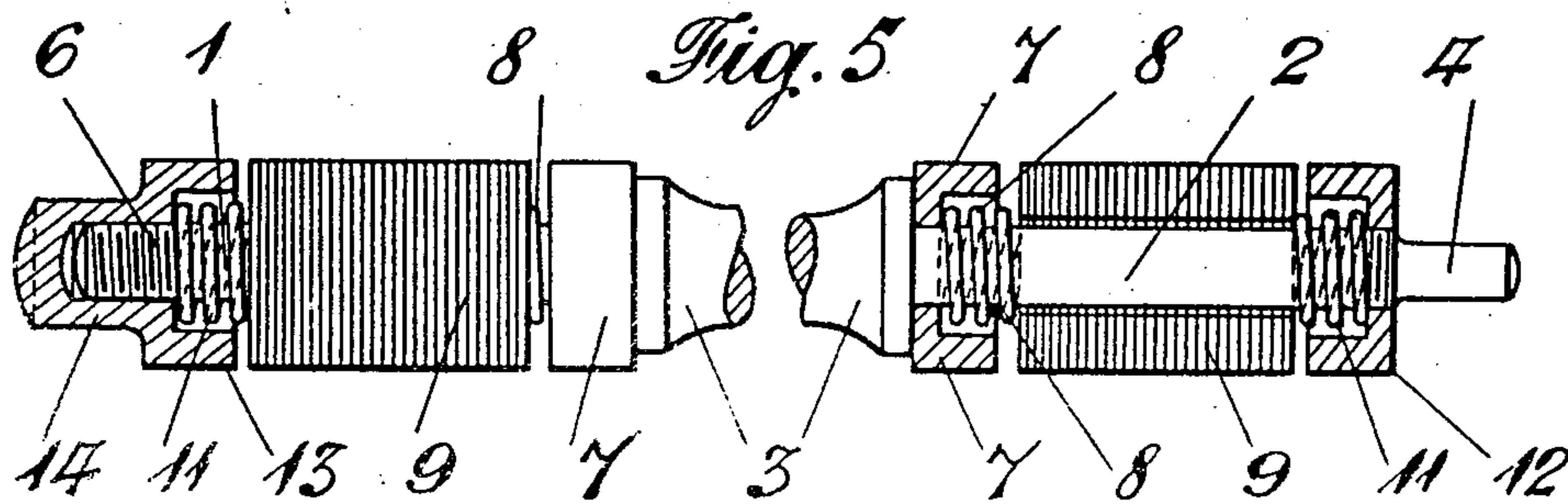
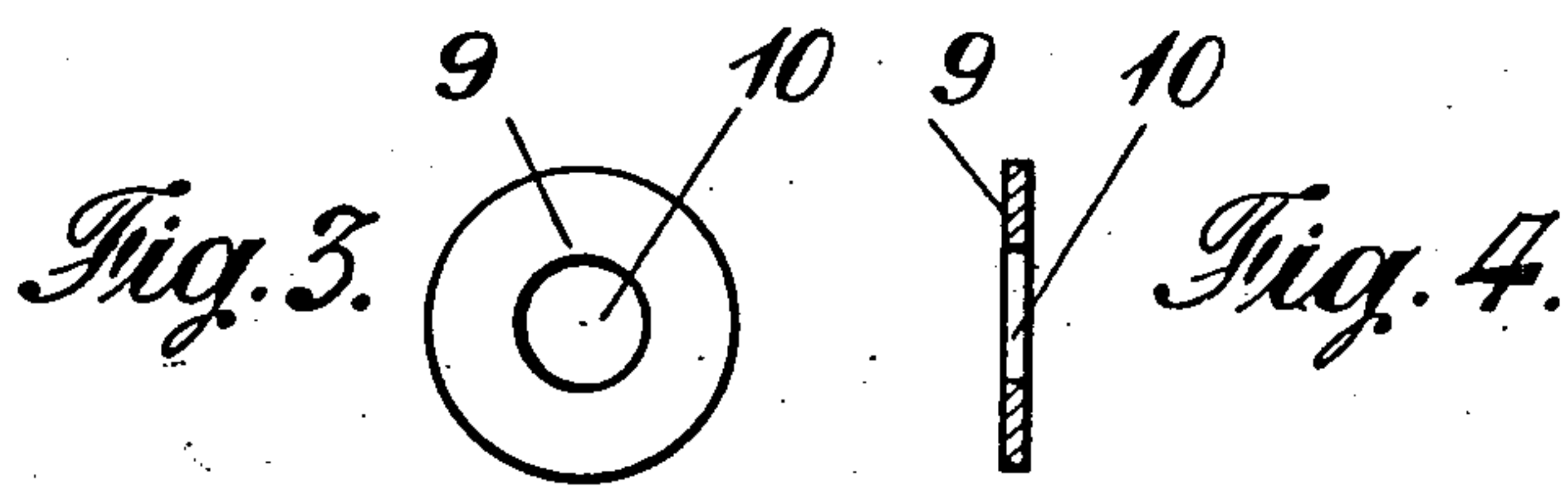
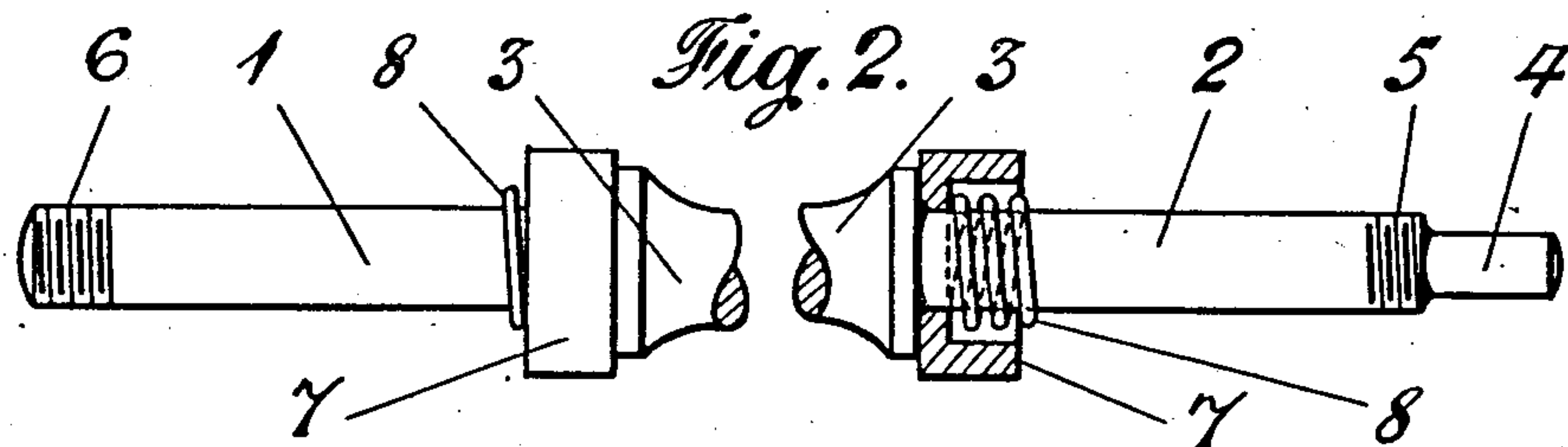
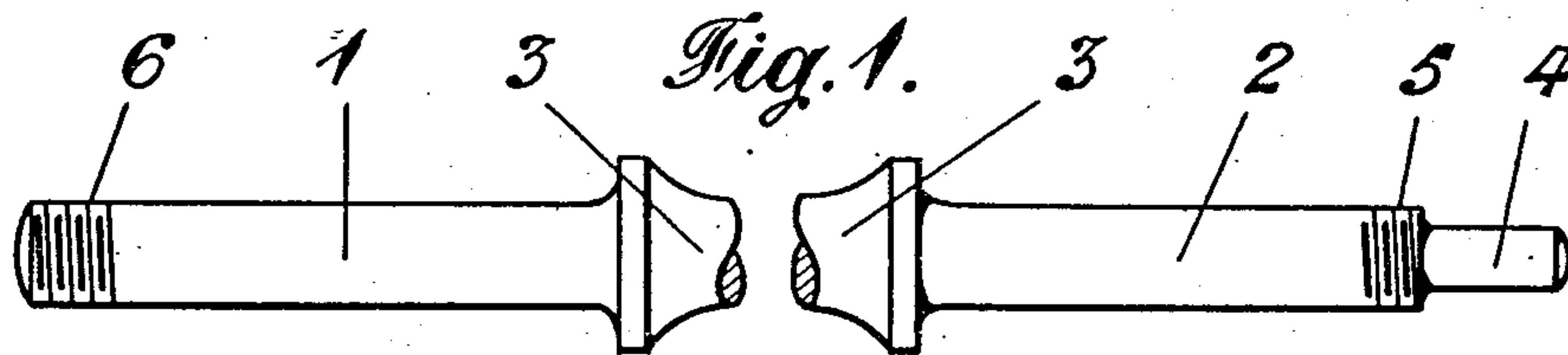
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H. MEYNELL

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DRAFTING AND LIKE ROLLER EMPLOYED IN YARN PREPARING AND SPINNING FRAMES

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## UNITED STATES PATENT OFFICE

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DRAFTING AND LIKE ROLLER EMPLOYED IN YARN-PREPARING AND SPINNING  
FRAMES

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The invention relates to the top rollers of drafting and like rollers employed in drawing, slubbing, intermediate and roving frames, as well as in ring spinning and like frames, between pairs of which rollers the yarn is passed during various stages of its preparation and formation, as is understood.

For such types of rollers it is common to provide the upper ones of a set thereof with leather-covered or may be fabric-covered peripheries. Also, to overcome certain defects known to arise from the use of rollers so covered, alternative means have been devised; that is to say, said rollers have been initially formed with grooves at their peripheries, cut in the metal of which the roller concerned is composed, and which grooves run concentrically round said roller. The fibres of each sliver of yarn passed between rollers of which the upper one is so provided as stated, tend to pass into the grooves named, the result being a combing action upon said yarn, as well as a prevention of slip between the rollers and the fibres referred to. It is obvious, however, that should such grooves in use become jagged, or otherwise imperfect, the roller as a whole must be discarded if poor results are to be avoided. Also a separate roller is required for each depth of groove provided, which depths are required to vary according to the kind or condition of yarn being treated, as well as to the particular stage of the operation thereon.

The object of my invention is to provide a top drafting or like roller which is not initially grooved as herein mentioned, and yet in operation attains a result equal in some cases, and may be better in others, than when such an initially grooved roller is employed. In addition, with the use of my invention, the same foundation or spindle portion of a roller may be used for different types or sizes of parts according to my said invention. To accomplish my invention, I first provide the foundation named in spindle form, and then build thereon the remainder of said roller, said remainder consisting primarily of a series of separate and comparatively thin discs of metal which are initially held closely adjacent to each other in resil-

ient manner, and suitable for the purpose in view. I have found that a roller of this character in use allows the fibres of a sliver of yarn to force their own way between the discs against the resistance, which latter may be provided in an adjustable manner. Such adjustment enables the resistance suitable for the conditions desired, to be conveniently attained.

The penetration of the yarn aforesaid between the discs is augmented by the weight of the top roller concerned, and by the traversing action of the motion which passes the roving hank across the bosses. This ensures a gentle hold on the fibres and results in even drafting. It is to be understood that the penetration named is more like that due to a knife edge, as the discs I employ average in thickness about 0.016 of an inch only. This small thickness is also more or less necessary in order to get the requisite combing action which the discs give in practice.

With reference to the accompanying drawing, Fig. 1 shows in elevation, what has been termed the foundation of a roller of the kind herein described, and really consisting of a pair of roller lengths, the connection between the two lengths being broken.

Fig. 2 shows a similar view to Fig. 1 but at a further stage of preparation of the operative roller-lengths, parts being in section.

Fig. 3 shows the face view of a detail or disc employed according to my invention, and Fig. 4 is a sectional edge view of the same.

Fig. 5 repeats Fig. 2 with parts added, partly in section and partly in elevation.

Fig. 6 shows Fig. 5 in elevation, or the completed roller-lengths according to my said invention.

Fig. 7 shows, on another scale, a modification of details herein referred to.

It is obvious that the invention is applicable whether roller-lengths in combination, such as shown, are employed or, alternatively, only a single length is involved. The foundation of the rollers here given as an example, comprises spindles 1 and 2, with a central joining part 3, and a part for forming a pivot here marked 4, for support in bearings



in a frame. The spindle-part 2 is shown screw-threaded at 5, and the spindle-part 1 is also shown screw-threaded at 6. In Fig. 2 a ring-like member or ferrule 7 of hollow form is shown slid into position upon the spindle 2 and abutting against the shoulders of the part 3. Also slid along the spindle 2, and recessed freely within the ferrule 7 is a short length of helical spring 8. A similar ferrule and spring device is provided for the spindle-part 1.

In Fig. 5 the yarn-operating part of the rollers is, for the requisite length, built up of a series or number of thin metal circular discs marked 9 (see also Figs. 3 and 4). These are purposely left unhatched in Fig. 5 to prevent confusion.

Each disc is formed with a central aperture such as 10 to enable it to be freely passed about the particular spindle part to receive it, and after the application of the required number of discs, further short lengths of helical springs, such as 11, are passed along the spindle parts concerned so as to abut against the end-most disc in each case.

Finally, a nut-like member, of hollow formation is attached to the screw-threaded part of spindle 2, said member being marked 12, in the example given; also another nut-like member marked 13 is attached to the screw-threaded part of spindle 1 in manner shown. In other words means are provided for forming resistances to the pressure of the springs, and here capable of adjusting the amount of said compression. The member 13 is here shown with an extended bearing-end 14 shaped to form a pivot for taking into the bearing provided at the commencement of a row of rollers or roller lengths in the frame concerned, but a nut-like member as before could be so provided instead. The thicknesses of the discs indicated are assumed to conform to conditions required, variation in said thicknesses not affecting the invention within reasonable limits. The discs are shown of simple form in section by way of example only.

In Fig. 7 an abutment piece 15 is shown between which and a shoulder 17 on the foundation 2 is a space for containing a number of discs similar to those already marked 9. This piece 15 is however pinned to 4 by a taper pin at 16.

It will be obvious that should one or more of the discs become broken or worn, another or others may be substituted of a perfect nature without discarding the foundation part or parts of the roller or roller lengths involved.

The compression of the springs employed is also capable of being adjusted in manner shown, where such adjustment means is desired.

The mounting of the discs in a free manner upon the spindle or support for them, allows

said discs to move to some slight extent in radial directions, or at right angles or thereabouts to the axis of the spindle, the clearance between the latter and the surfaces of the disc bores being sufficient to allow of this. In addition, the discs are capable of movement in lateral directions, or in either direction longitudinally considered with respect to said spindle. These possibilities of movements I find to be essential in order that the completed roller shall operate gently on the roving, and resulting in sufficient attenuation thereof without rupture of the same, the resilient nature of the discs in said longitudinal movements enabling the discs to open and close automatically under the action of the roving named, as any tendency to clip or hold the same un-naturally would utterly spoil the effect desired. By making the discs in metal, I am able to provide an elasticity thereof very valuable in arriving at the conditions suitable for my purpose, since I find that in cutting or manufacturing said discs of so thin a nature requisite, they become slightly distorted out of the normal plane, and therefore are what may be termed "self-resilient" when pressed one against another, said pressure tending to flatten them into the true normal plane thereof, or thereabouts.

I claim:—

1. A top drafting or like roller or series of top drafting-roller or like lengths for use in drawing, slubbing, intermediate and roving frames, also in ring spinning and like frames, comprising a foundation, a number of metal discs resiliently and freely mounted upon said foundation, with their faces parallel to a plane at right angles to the axis of said foundation, or thereabouts, said discs initially closely adjacent to each other, and adapted in shape for use in said frames, and whereby the discs are capable of movements in radial directions, as well as movements in resilient manner in longitudinal directions, for the purpose herein intended and as herein set forth.

2. A top drafting or like roller or series of top drafting-roller or like lengths for use in drawing, slubbing, intermediate and roving frames, also in ring spinning and like frames, comprising a foundation, a number of circular discs freely mounted upon said foundation, with their faces parallel to a plane at right angles to the axis of said foundation, or thereabouts, said discs initially closely adjacent to each other, helical springs mounted upon said foundation and in contact with endmost discs employed, adjustable abutments on said foundation for said helical springs, whereby the discs are capable of movements in radial directions, as well as movements in longitudinal directions, for the purpose herein intended and as herein set forth.

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