

No. 763,273.

PATENTED JUNE 21, 1904.

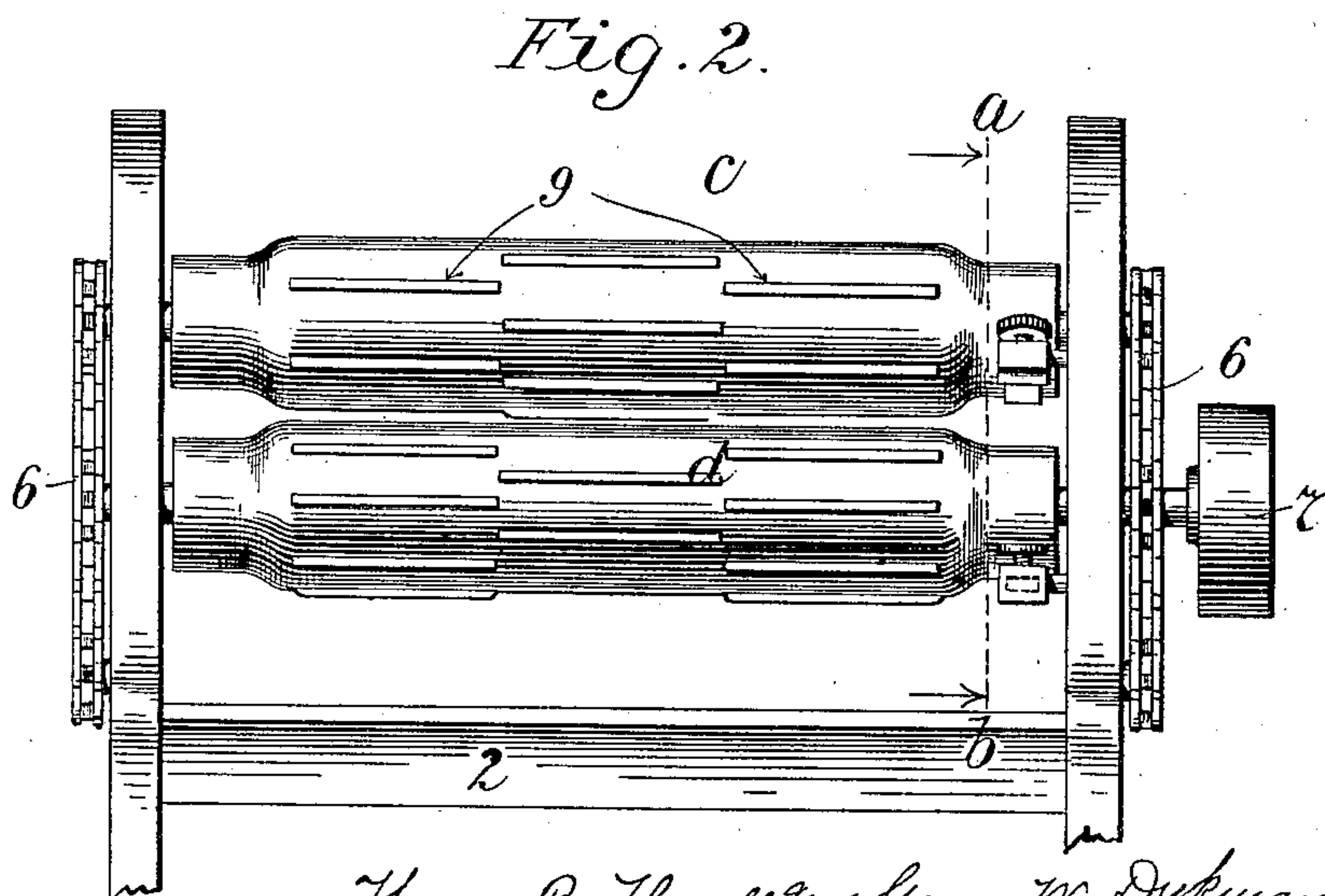
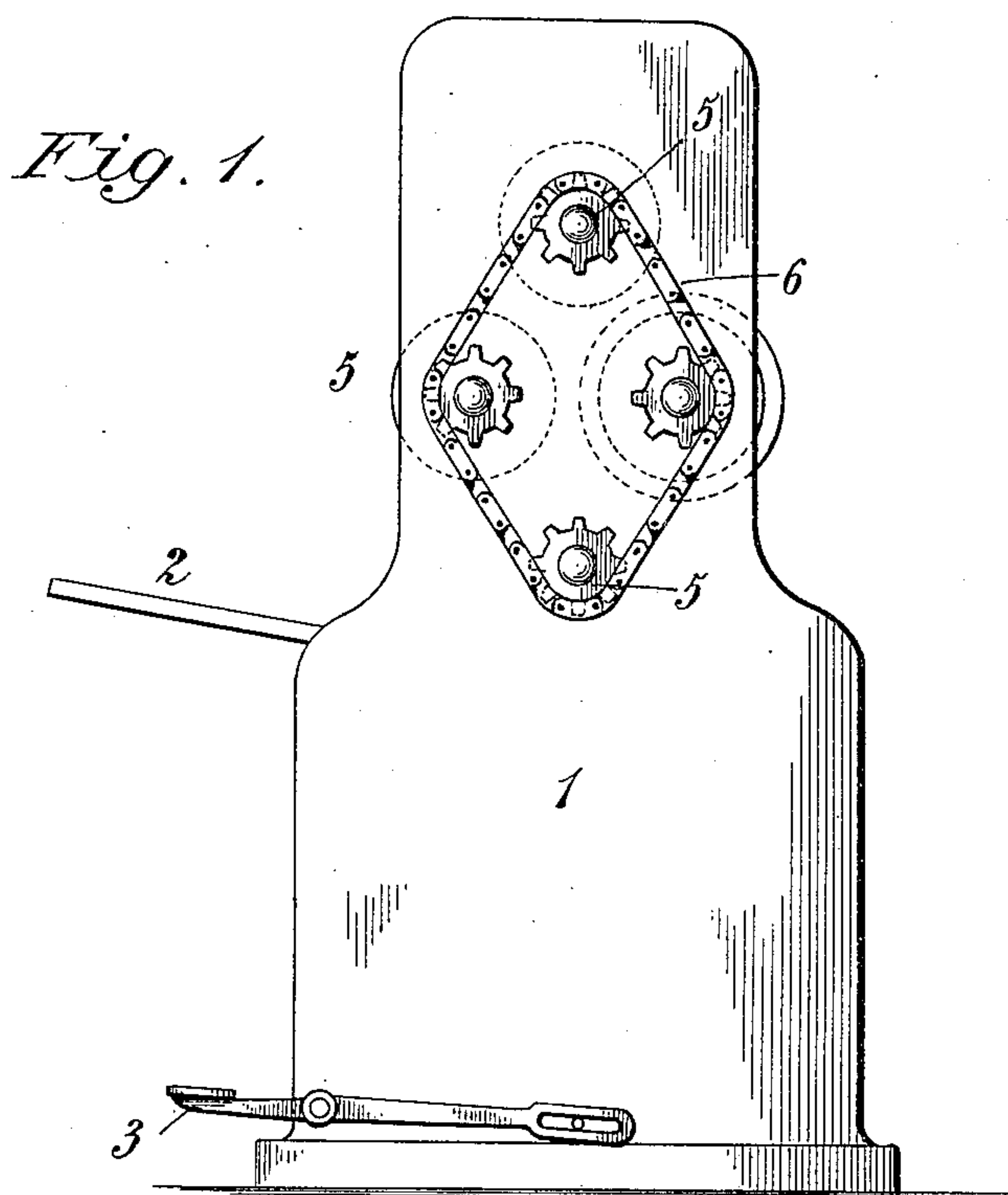
T. B. FLAVELL & G. W. DYKMAN.

APPARATUS FOR FELTING.

APPLICATION FILED NOV. 18, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses
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3 SHEETS—SHEET 2.

Fig. 3.

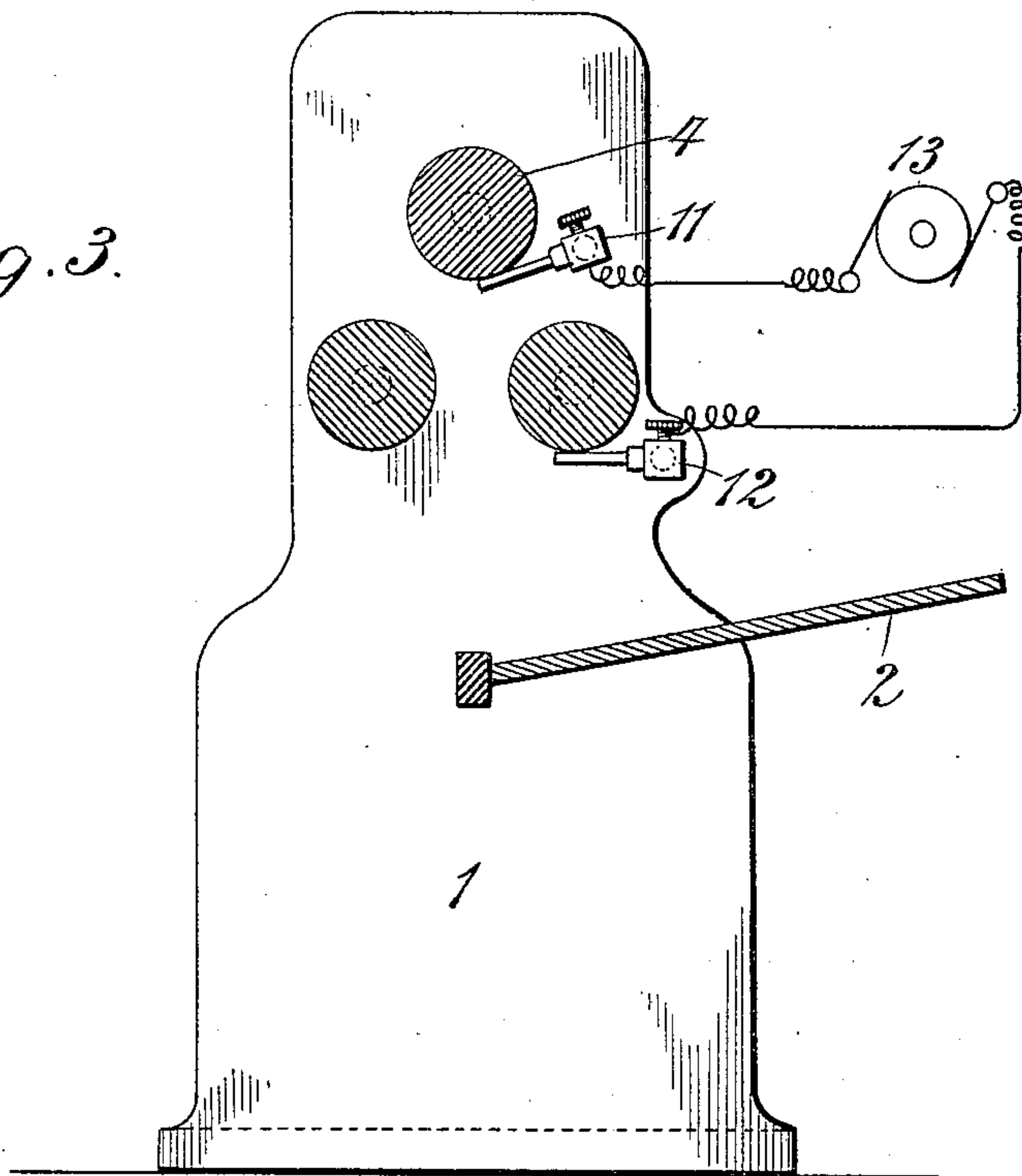
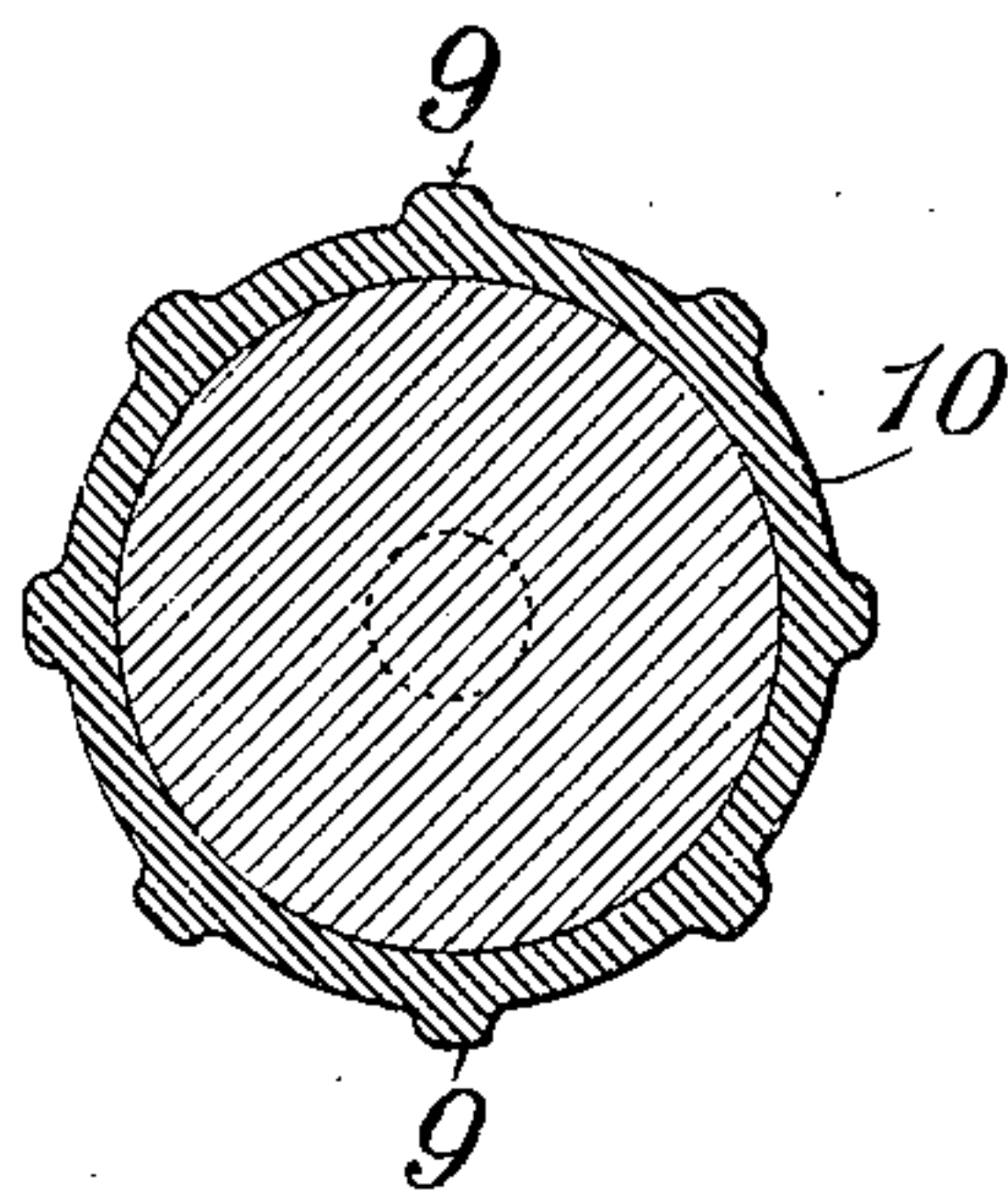


Fig. 4.



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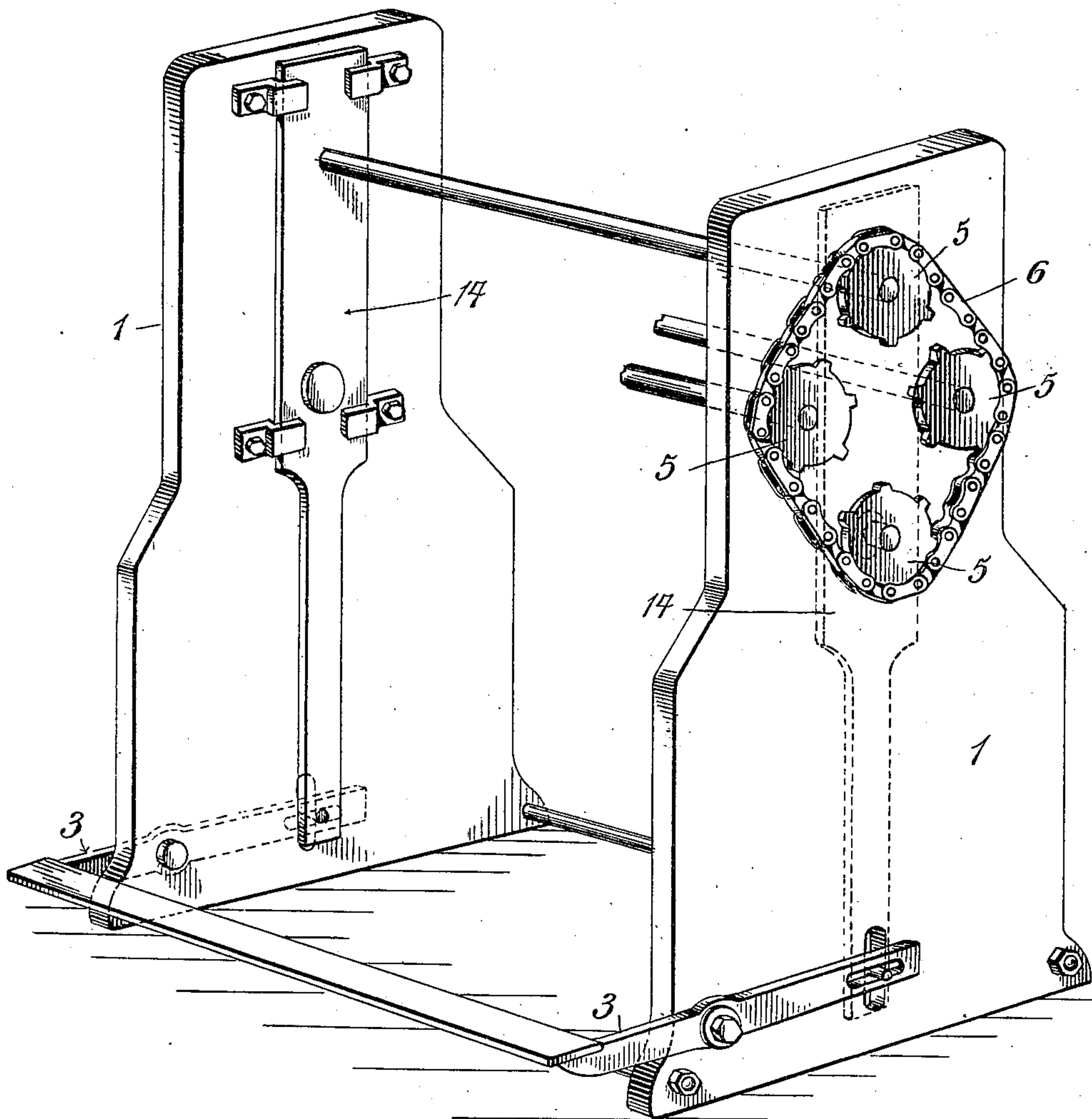
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NO MODEL.

3 SHEETS—SHEET 3.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR FELTING.

SPECIFICATION forming part of Letters Patent No. 763,273, dated June 21, 1904.

Application filed November 18, 1902. Serial No. 131,806. (No model.)

To all whom it may concern:

Be it known that we, THOMAS B. FLAVELL and GEORGE W. DYKMAN, citizens of the United States, residing in Yonkers, in the county of Westchester and State of New York, have invented a certain new and useful Apparatus for Felting, of which the following is a specification.

In felting processes, and particularly in the sizing of felt hats, the fabric is repeatedly dipped in hot water, folded, and squeezed between rapidly revolving "sizing-rollers." The end achieved by this process is the compacting of the soft loose fibers and the contracting of the whole fabric as it gains in strength and body. The fibers used for hat-making before being subjected to the sizing-rollers are treated in a well-known manner to give them "life" and to promote felting. It is of course very desirable that the fibers should in the course of treatment become as intimately and inextricably matted and tangled together as possible, and it is to promote this end that the first treatment to which they are subjected, as above mentioned, is resorted to.

It is the principal object of this invention to provide means for promoting the prompt and efficient intermingling of the fibers during the sizing process, and the preferred means employed are illustrated in the accompanying drawings, wherein—

Figure 1 is a side view of a sizing-machine of a well-known form. Fig. 2 is a front view of the upper part of the same with the present invention applied thereto. Fig. 3 is a sectional view of the same on the plane *a b* of Fig. 2. Fig. 4 is an enlarged sectional view of our preferred roller on the plane *c d* in Fig. 2. Fig. 5 is a perspective view showing a means for raising the top roller, the roller-shafts being shown without the rollers.

The side frames 1 support the front shelf or table 2 and the pivoted treadle 3, the latter acting in a well-known manner for lifting the upper roll of the machine when the material to be felted is to be inserted between the rollers. The gears 5 and sprocket-chain 6 cooperate in a well-known manner to drive

all three rollers in the same direction and are driven by the pulley 7 or otherwise. The two lower rolls 8 are placed side by side, and all three rollers are provided with projecting ridges 9 in the usual manner; but at one or both ends the rollers in this improved machine are left smooth. (See Fig. 2.) It will also be well to reduce the diameter of the rolls where left smooth to lessen the danger of short circuits. The entire surface of two or more of the rollers is preferably covered with a layer 10 of metal, and upon the smooth ends of the rollers so covered conducting-brushes 11 and 12 are made to bear in the manner familiar in the collector-brushes of alternating-current dynamos. These brushes are respectively connected to the terminals of a generator 13, which may produce either direct or alternating current. It is preferred to arrange one of the brushes, as 11, so as to bear on the under surface of the upper or movable roller. By use of this arrangement when this roller is lifted the circuit is broken and is made again only when the rollers assume operative position while at work.

Fig. 5 shows in detail the treadle 3 applied to the lifting of sliding carriers 14 just inside of the outer supports of the machine. In these carriers the driving-gears 5, which are placed one over the other, have their bearing on both sides of the machine, so that both of said gears are raised together when the outer end of the treadle 3 is pressed downward. By this expedient the raising of the shaft of the roll 4 is not impeded by the chain 6, since said chain is relaxed below as fast as it is taken up above by virtue of the movement of the gears. This form of driving-gear and apparatus for lifting the gears is old and well known in the art and forms no part of our present invention.

The body of the rollers is made of wood or other insulating material, as is common in this art. When so made, there can be no short circuit between the rollers through the pivots. If the rollers are made entirely of metal, any well-known means may be used to prevent passage of current through the pivots from one roller to another. As no very high po-

tential will probably be used, no high degree of insulation is required.

It is obvious that, the material being wet, a considerable current of electricity will be made to pass through it during the sizing process without too high a potential between the wires. This current, combined with the rapid movement of the material between the revolving rollers, will produce a mutual agitation among the fibers, which being simultaneous with the compression exercised by the machine will insure a rapid felting and contraction of the fabric. The agitation of individual fibers, which obviously promotes their interlacing under pressure, results from the fact that as the hat revolves the various groups of fibers are carried rapidly across or through the path of current between rollers. Every time any group of fibers enters the area of current-flow the electrified individual fibers exercise a momentary mutual repulsion. On leaving the path of current the momentary minute separation caused by this repulsion is followed by a contrary movement together, caused by the continual pressure of the rollers. Thus the effect of an alternating current is produced within the felting machinery whether direct or alternating current be used, and the fibers suffer simultaneous intimate agitation and pressure.

In some forms of felting and sizing machines two rollers are used alone. In such a case both are to be covered with metal and a brush-terminal applied to each. Our invention is not confined to the use of any particular number of rollers and, indeed, covers the use of the electric current passing through the material when and while subjected to any two or more cooperating felting agents.

What we claim is—

1. In a felting-machine, two cooperating compression members and means for causing a difference of electrical potential between said members.

2. In a felting-machine, two cooperating compression members having metallic surfaces, a source of electricity and connections

between the two terminals of said source and said two compression means respectively.

3. In a felting-machine, two rollers, means for revolving the same, a generator of electricity and connecting-conductors from the two terminals of said generator to said two rollers respectively.

4. In a felting-machine, two rollers, means for revolving the same, a metallic covering on said rollers, a generator of electricity and conductors connecting the two terminals of said generator with said two rollers respectively.

5. In a felting-machine, two rollers in a horizontal plane and a third roller above and between the lower two and conducting parts on two of said rollers; in combination with a separate brush bearing on each of two of said rollers, an electric generator and conductors from the terminals of said generator and said brushes.

6. In a felting-machine, two rollers, means for revolving them, means for lifting one away from the other, contact-brushes bearing against said rollers, an electric generator and conductors connecting said generator with said two brushes.

7. In a felting-machine, two rollers covered with metal, contact-brushes against the surfaces thereof, means for moving one roller away from the other and from its contact-brush, an electric generator and conductors joining said generator with said brushes.

8. In a felting-machine, two rollers covered with metal and having projecting ridges along a part of their peripheries and having another part on each roller smooth, brushes bearing against the smooth portions of said rollers, means for moving one roller away from the other and from its brush, an electric generator and conductors joining said generator electrically with said brushes.

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