

No. 662,569.

Patented Nov. 27, 1900.

W. K. LORD.
SPEED REGULATOR.

(Application filed Apr. 13, 1900.)

(No Model.)

Fig. 1.

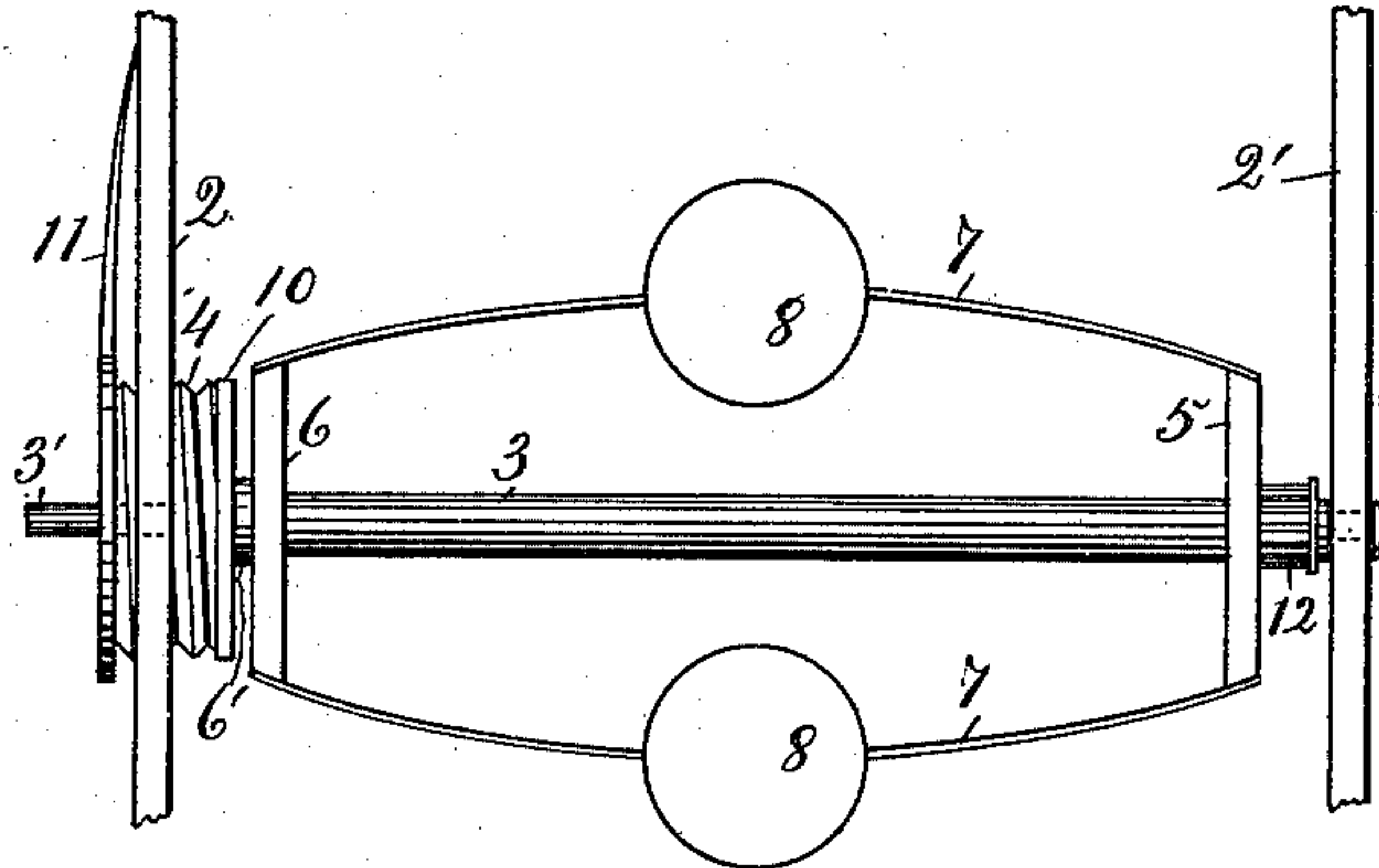


Fig. 2.

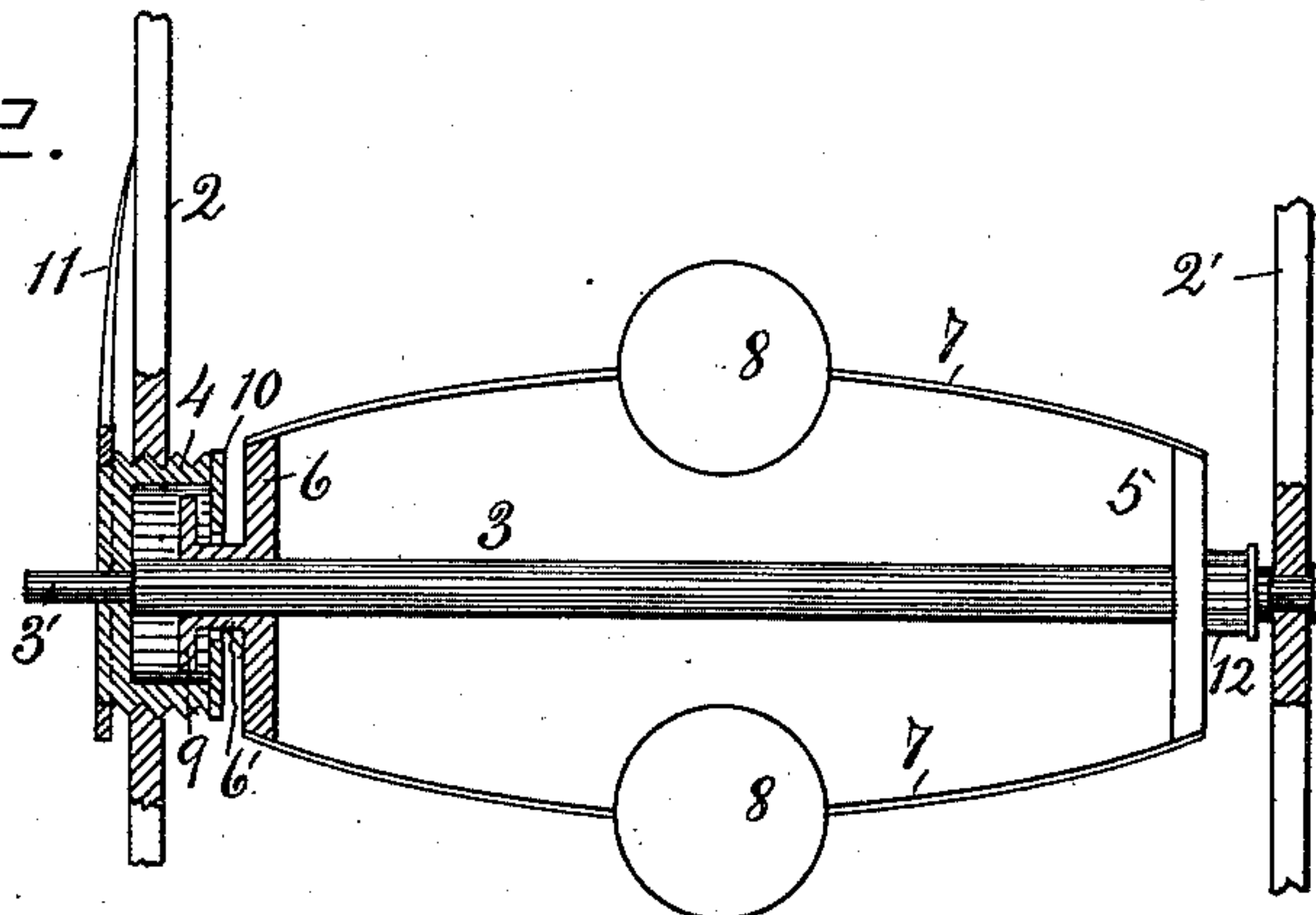
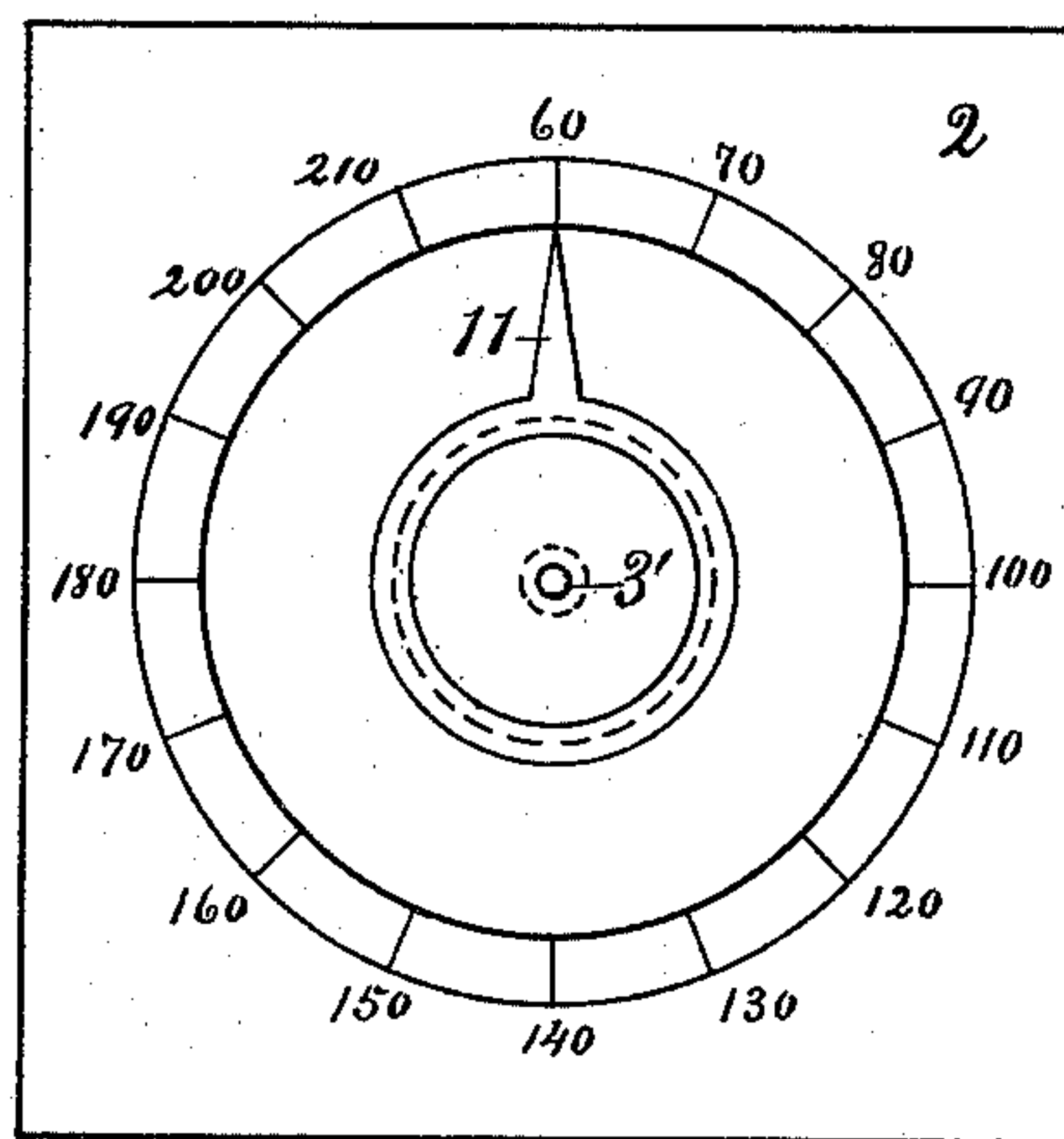


Fig. 3.



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SPEED-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 662,569, dated November 27, 1900.

Application filed April 13, 1900. Serial No. 12,698. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM K. LORD, a citizen of the United States, residing at Mount Carmel, in the county of Northumberland and State of Pennsylvania, have invented certain new and useful Improvements in Speed-Regulators, which improvements are fully set forth in the following specification and accompanying drawings.

10 In the drawings, Figure 1 is a view in elevation of a speed-regulator embodying my said improvements. Fig. 2 is a view similar to Fig. 1, a portion of the parts being shown in section. Fig. 3 is an elevation view showing the dial with its cooperating pointer which I make use of.

Similar reference-numerals denote like parts throughout the several views of the drawings.

20 This invention relates, in a general sense, to improvements in devices of that class commonly known as "speed-regulators" or "governors," and more particularly to speed-regulators having special utility in connection with phonographs, metronomes, and analogous mechanical structures.

30 The object of my invention is to provide a speed-regulator which shall be simple and cheap as regards construction, positive and efficient in operation, which shall embody in its construction means for speed indication, and which shall possess palpable advantages over prior analogous devices.

40 The invention consists in the employment of certain novelty-formed parts, in the novel disposition and arrangement of the various parts, in certain combinations of the latter, and in certain details of construction, all of which will be specifically referred to hereinafter.

50 Having reference to the accompanying drawings, 2 2' denote frame portions. The shaft 3 is journaled at one end in the frame portion 2', and at the other end said shaft is provided with an extended journal 3', which bears rotatably in the crown of the inwardly-turned cup 4, the latter being disposed within a suitable opening formed in the frame portion 2 and having adjustment to and from within said opening and longitudinally with respect to the shaft 3, the latter adjustment

of said cup being made permissible through the employment of the extended journal 3'.

To the end that the cup 4 may adjustably occupy the opening with which the frame 55 portion 2 is provided I prefer to provide the annular wall of said cup with suitable exterior threads adapted to engage corresponding threads formed in the wall of said opening, so that the cup 4 may be adjusted with respect 60 to the frame portion 2 after the manner of a screw.

5 denotes a bracket or disk fixed on the shaft 3, and 6 is a friction-disk loosely mounted on said shaft, the said bracket 5 and friction-disk 6 being connected by the opposing 65 semi-elliptic springs 7, each of which carries a regulator-ball 8. The friction-disk 6 has a boss or extension 6', which carries a minor friction-disk 9, the latter normally within the 70 cup 4.

10 is a friction-disk which encircles the extension 6' between the friction-disk 6 and the minor disk 9 and is fixed in any approved 75 manner to the inner surface of the annular body portion of the cup 4.

The frame portion 2 is provided with a dial, as illustrated in Fig. 3 of the drawings, and for cooperation therewith I fix to the cup 4 a 80 pointer 11.

A rotary motion may be imparted to the shaft 3 through the medium of the pinion 12, fast on said shaft.

To obviate the noise incident to the engagement of two metallic parts, I form the disk 85 6 and minor disk 9 from indurated fiber or material analogous thereto in degree of hardness and the disk 10 from suitable sheet metal, or the latter may be formed from indurated fiber or material analogous thereto 90 in degree of hardness and the disks 6 and 9 from suitable sheet metal.

In operation upon the shaft 3 attaining a certain degree of speed the regulator-balls, through the action of centrifugal force, contract each its cooperating spring, thus bringing the disk 9 into frictional contact with the disk 10, with the result of retarding the speed 95 of the shaft 3. The lateral position of the disk 10 in respect to disk 9 being determined 100 by the rotation of cup 4 and its pointer 11, it necessarily follows that the position of the

pointer 11 on face of instrument will denote the speed of the shaft 3. Under a decreased speed of the shaft 3 the regulator-balls act to distend each its coöperating spring, thus bringing the disk 6 into frictional contact with the disk 10. This action of disks 6 and 10 would only be used by having threads of cup 4 engaging loose enough in frame 2 for the frictional contact of disks 6 and 10 to rotate cup 4 backward out of contact and not loose enough for the frictional contact of disks 9 and 10 to affect same. This action, then, would indicate itself on the dial as the regular maximum speed of shaft 3. By moving the pointer 11 to any less indicated speed the frictional contact of disks 9 and 10 will regulate it at that speed. I may also pivot shaft 3 in frame 2 and place cup 4 to one side of same, but near enough so, by increasing the diameter of the disk 10, it will engage the disks 9 and 6, as before.

It is obvious that my improved speed-regulator may be modified to some extent, particularly as to the form of any of the parts and as to the details of construction, without materially departing from the spirit and principle of my invention.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a device of the class described, the combination of a suitable frame portion, a cup-like element supported by said frame portion, adjustable with respect thereto, a friction-disk at its inner surface, a friction-disk within said cup-like element, and means for effecting frictional contact of the last-named friction-disk with the first-named friction-disk, as herein specified.

2. In a device of the class described, the combination of a suitable frame portion having a threaded opening, an exteriorly-threaded cup-like element disposed within said opening, a friction-disk arranged exteriorly to said cup-like element and adjacent to the inner surface thereof, and means for effecting frictional contact of said friction-disk with the inner surface of said cup-like element, as herein specified.

3. In a device of the class described, the combination of a suitable frame portion having a threaded opening, an exteriorly-threaded cup-like element disposed within said opening, a friction-disk, as 10, at its inner surface, suitably-supported friction-disks, as 6 and 9, one at each side of the disk 10, and means for effecting frictional contact of the disks 6 and 9 alternately with the disk 10, as herein specified.

4. In a device of the class described, the combination of a suitable frame portion, a cup-like element adjustably supported by said frame portion, a friction-disk at its inner surface, another friction-disk for coöperation with the first-named friction-disk, one of said friction-disks being formed from material of a less degree of hardness than the material

from which the other is formed, and means for effecting frictional contact of one of said disks with the other disk, as herein specified.

5. In a device of the class described, the combination of suitable frame portions, a cup-like element adjustably supported by one of said frame portions, a friction-disk at its inner surface, a shaft journaled at one end in one of said frame portions and having at its opposite end an extended journal rotatably bearing in the crown of said cup-like element, a bracket fast on said shaft, a friction-disk loosely mounted on said shaft, springs connecting said bracket and said disk, a regulator-ball carried by each spring, the said friction-disk being adapted to engage the friction-disk on said cup-like element through distention of said springs, and means for rotating said shaft, as herein specified.

6. In a device of the class described, the combination of suitable frame portions, a cup-like element adjustably supported by one of said frame portions, a friction-disk, as 10, fast to the inner surface of said cup-like element, a shaft journaled at one end in one of said frame portions and having at its opposite end an extended journal rotatably bearing in the crown of said cup-like element, a bracket fast on said shaft, suitably-connected friction-disks, as 6 and 9, loosely mounted on said shaft one at each side of the disk 10, springs connecting said bracket and said disk 6, a regulator-ball carried by each spring, and means for rotating said shaft, as herein specified.

7. In a device of the class described, the combination of suitable frame portions, one of which has an opening the surrounding wall of which is provided with suitable threads, a cup-like element having exterior threads adapted to engage the threads with which the surrounding wall of said opening is provided, a friction-disk at its inner surface, a shaft journaled at one end in one of said frame portions and having at its opposite end an extended journal rotatably bearing in the crown of said cup-like element, a bracket fast on said shaft, a friction-disk, as 6, loosely mounted on said shaft, springs connecting said bracket and said friction-disk last named, a regulator-ball carried by each spring, and means for rotating said shaft, as herein specified.

8. In a device of the class described, the combination of suitable frame portions, one of which is provided with a dial, and has an opening the surrounding wall of which is provided with suitable threads, a cup-like element having exterior threads adapted to engage the threads with which the surrounding wall of said opening is provided, a friction-disk, as 10, fast to the inner face of said cup-like element, a shaft journaled at one end in one of said frame portions and having at its opposite end an extended journal rotatably bearing in the crown of said cup-like element, a bracket fast on said shaft, suitably-connected friction-disks, as 6 and 9, loosely

mounted on said shaft, one at each side of said disk 10, springs connecting said bracket and said disk 6, a regulator-ball carried by each spring, the said cup-like element being provided with a pointer for coöperation with said dial, and means for rotating said shaft, as herein specified.

9. In a device of the class described, the combination of suitable frame portions, one of which is provided with a dial, a cup-like element adjustably supported by said dialed frame portion and having a pointer for co-operation with said dial, a shaft journaled at

one end in one of said frame portions and at the other end in the crown of said cup-like element, centrifugally-operative parts carried by said shaft and capable of effecting adjustment of said cup-like element through frictional contact of one of said parts therewith, upon said shaft being rotated, and means for thus rotating said shaft, as herein specified.

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