J. F. ARMSTRONG.

SPRING MOTOR.

APPLICATION FILED JULY 20, 1908.

916,523. Patented Mar. 30, 1909.

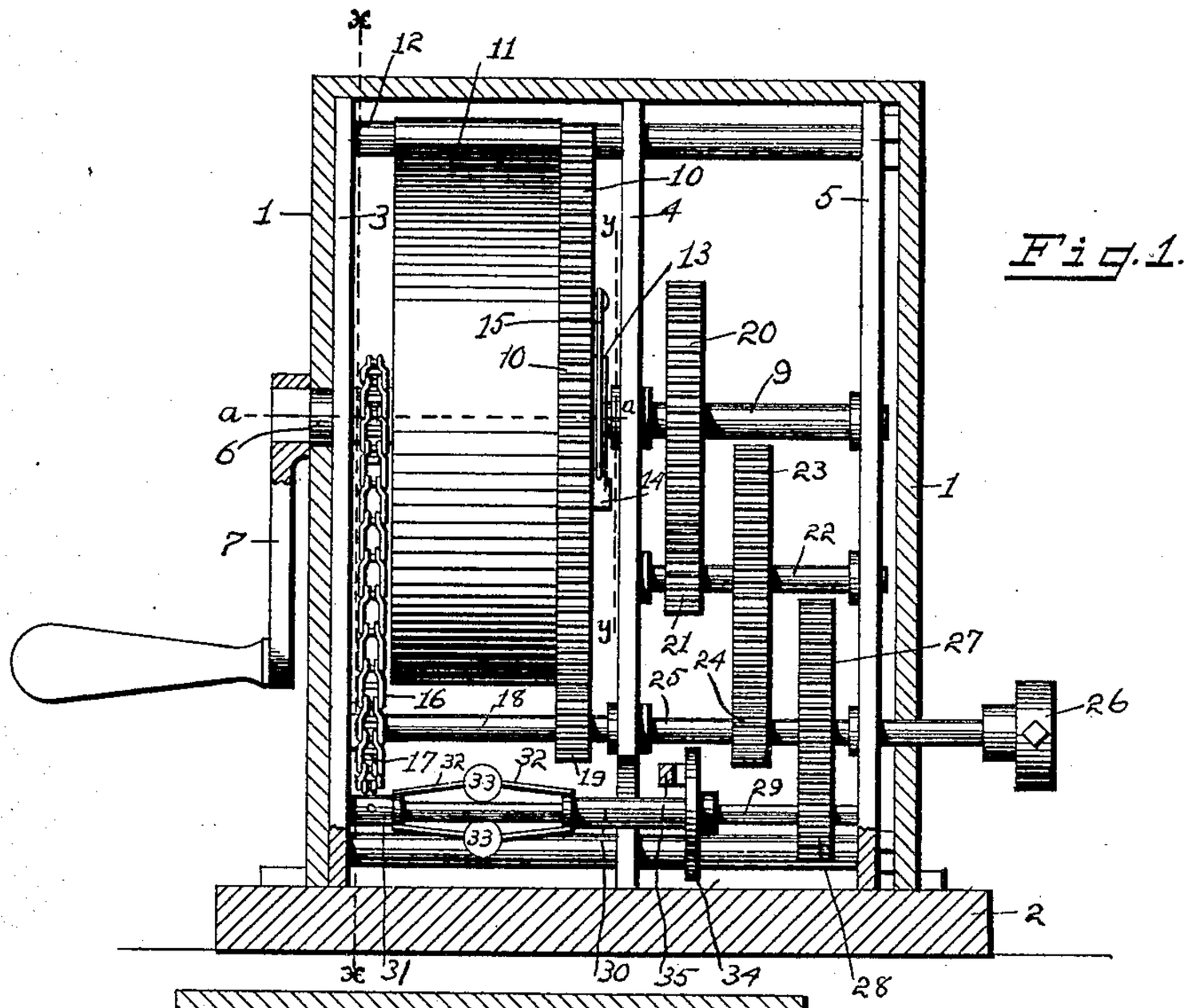

Fig. 1.

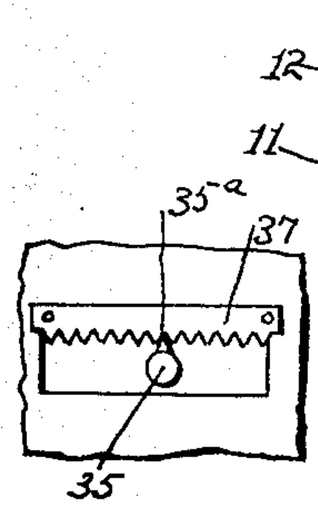

Fig. 5.

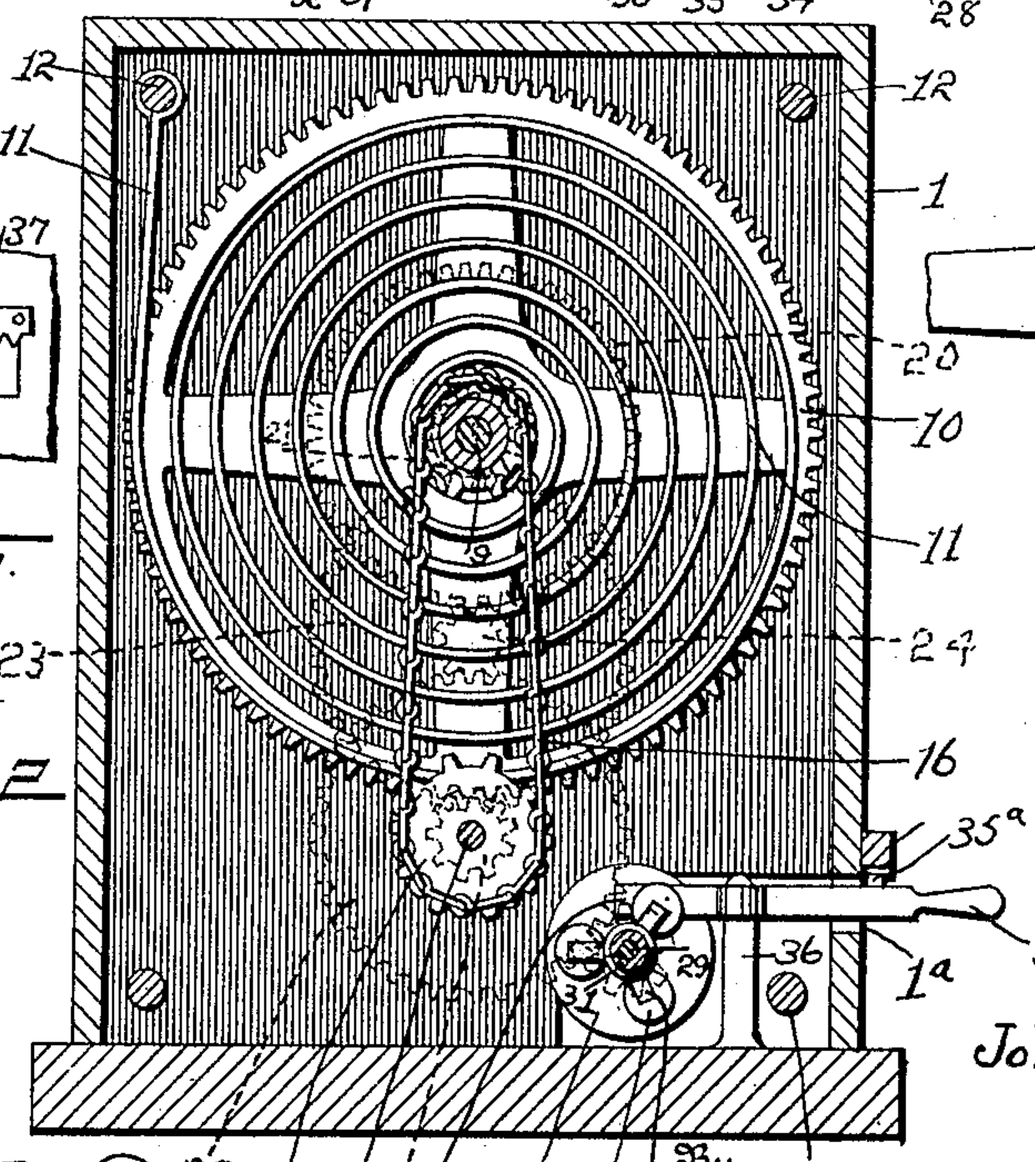

Fig. 2.

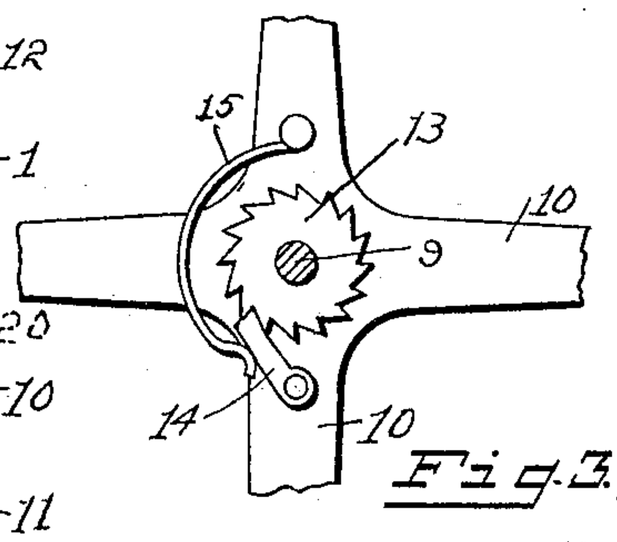

Fig. 3.

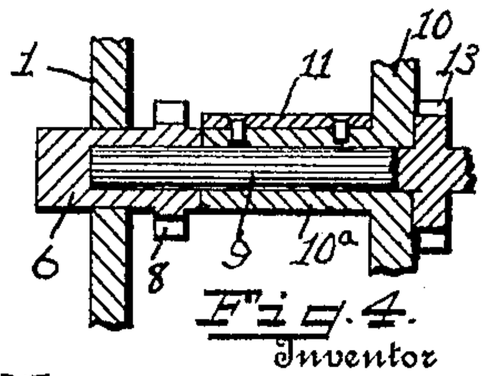

Fig. 4.

Witnesses

Carl Stoughton

A. L. Helps

Inventor

John F. Armstrong

By

C. C. Shepherd

Attorney

UNITED STATES PATENT OFFICE.

JOHN F. ARMSTRONG, OF COLUMBUS, OHIO.

SPRING-MOTOR.

No. 916,523. Specification of Letters Patent. Patented March 30, 1909.

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To all whom it may concern:

Be it known that I, JOHN F. ARMSTRONG, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Spring-Motors, of which the following is a specification.

My invention relates to the improvement of spring motors and the objects of my invention are to provide an improved construction of spring motor comprising means for imparting rotary motion from a spring under tension to a power shaft; to provide in conjunction with my improved spring motor, improved means for regulating the speed of the power shaft; to so construct my improved motor as to particularly adapt it for use in the operation of clothes wringers, washing machines etc., and to produce other improvements the details of which will be more fully pointed out hereinafter.

These objects I accomplish in the manner illustrated in the accompanying drawing, in which:

Figure 1 is a central vertical section of the motor casing showing in side elevation the mechanism contained therein, Fig. 2 is a sectional view on line *x*—*x* of Fig. 1, Fig. 3 is a detail sectional view on line *y*—*y* of Fig. 1, Fig. 4 is a sectional view on line *a*—*a* of Fig. 1, and, Fig. 5 is a view in elevation of the lower portion of the motor casing.

Similar numerals refer to similar parts throughout the several views.

In carrying out my invention, I employ a suitable operating casing 1 mounted on a horizontal base 2. Rising from the base 2 are frame standards 3, 4 and 5. Journaled in the rear wall of the casing 1 and projecting outwardly therefrom is a socket piece or member 6 on the outer squared end of which is adapted to be fastened a crank handle 7. Formed on the socket member 6 is a sprocket wheel 8.

In the inner end socket of the member 6 is journaled the rear end of a horizontal shaft 9, the latter also passing through and being provided with suitable bearings in the frame standards 4 and 5. Upon the shaft 9 is loosely mounted a comparatively large gear wheel 10, the latter having an inwardly extending hub 10ª with the periphery of which is connected, one end of a coiled spring strip 11. The outer end of this spring is suitably connected with a horizontal frame rod 12 extending between the upper portions of the frame standards. On the outer side of the gear wheel 10, the shaft 9 carries a ratchet wheel 13 with the teeth of which is adapted to engage the free end of a pawl 14, the remaining end of which is pivoted to the wheel 10. This pawl is held in engagement with said ratchet teeth through the medium of a spring 15, one end of which is connected with the wheel 10.

Running over the sprocket wheel 8 is an endless driving chain 16 which also passes about a sprocket wheel 17 carried on a journaled shaft 18 below the spring 11. The shaft 18 also carries a pinion 19 which meshes with the wheel 10. Between the frame standards 4 and 5, the shaft 9 carries a gear wheel 20, the underside of which gears with a pinion 21 on a shaft 22 which is journaled between the frame standards 4 and 5. The shaft 22 carries a gear wheel 23, the teeth of which mesh with those of a pinion 24 on a lower horizontal power shaft 25, which is also journaled in the frame members 4 and 5. This power shaft extends outward through the front of the casing 1 and is provided on its outer end with a suitable coupling device 26, by means of which said shaft may be readily connected with the power shaft of a clothes wringer, washing machine or other device to be operated.

Upon the power shaft is carried a gear wheel 27 which meshes with a smaller wheel 28 on a horizontally journaled governor shaft 29 below said power shaft. The shaft 29 has mounted thereon a governor which comprises an outer sliding sleeve section 30 and an inner fixed sleeve section 31, said sleeve sections being connected by flexible governor bars 32 which carry at their centers governor balls or weights 33. On the outer end portion of the sleeve 30 is carried a disk 34 which is thus supported normally in close proximity to one side of a horizontal lever 35, which lever, as shown more clearly in Fig. 2 of the drawing, is pivoted upon a standard 36 which rises from the base 2. The outer portion of the lever extends through an opening 1ª in the side of the casing 1 and has projecting from its upper side a tooth 35ª which is adapted to engage the desired one of a series of notches formed in the underside of a fixed bar 37 above the casing opening 1ª.

The manner of utilizing my device is substantially as follows: By turning the crank handle 7 and thereby rotating the socket member 6, rotary motion is imparted

through the chain 16 to the shaft 18 which through its pinion 19 imparts rotary motion to the gear wheel 10. Owing to the connection of one end of the spring with the gear wheel sleeve 10[a], it is obvious that a rotation of said gear wheel will result in a winding or tightening of the spring coil, which will tend to place the same under tension. When the rotation of the crank handle is discontinued, the pawl 14 will operate by engagement with the ratchet wheel 13 to prevent a free unwinding of the spring. It is obvious, however, that through the connection of the pawl and ratchet wheel and tension of the spring, a desirable rotary motion may be imparted to said shaft 9 and its gear wheel 20 and through the pinion 21, shaft 22, gear wheel 23 and pinion 24 to the power shaft 25. Through the gear wheel 27 and pinion 28, rotary motion will be imparted to the governor shaft 29 and as the speed of the latter increases, it is obvious that the governor balls 33 will swing outward to a greater degree, resulting in drawing the sleeve 30 toward the fixed sleeve 31 and thereby moving the disk 34 into frictional contact with the lever 35. It is obvious that the lever 35 will thus act as a brake or regulator to retard the speed of the disk and the shaft 29. It being desired to completely stop the rotation of the power shaft, it is obvious that the outer portion of the lever 35 may be sprung downward and said lever moved until in close contact with the disk 34, in which new position the lever may be retained by permitting the same to spring upward until its tooth 35[a] engages the proper notch of the bar 37. It will be understood that the angle or position in which the lever 35 is supported, will govern the degree of movement of the disk 34 before the same comes into contact with said lever, thereby providing for regulating the speed of the power shaft.

From the construction and operation described, it will be seen that simple and positive means are provided for placing the spring under tension and for imparting the power thus stored to a power shaft and for regulating the speed of the latter.

What I claim, is:

In a spring motor, the combination with a frame, a rotatably mounted member 6 therein, a shaft, a gear wheel loose on the latter, a spring coiled about said shaft having one end fixed to the casing and its other end affixed to the loose gear wheel, a ratchet wheel carried on the spring shaft, a pawl engaging the same carried by the loose gear wheel, gear connections between the member 6 and the loose gear wheel, a power shaft and gear connections between the spring shaft and power shaft.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. ARMSTRONG.

Witnesses:

GEORGE MOTTS,

L. CARL STOUGHTON.