No. 648,192. Patented Apr. 24, 1900.

A. CAPRA.

SPRING MOTOR.

(Application filed Sept. 7, 1899.)

(No Model.) 2 Sheets—Sheet 1.

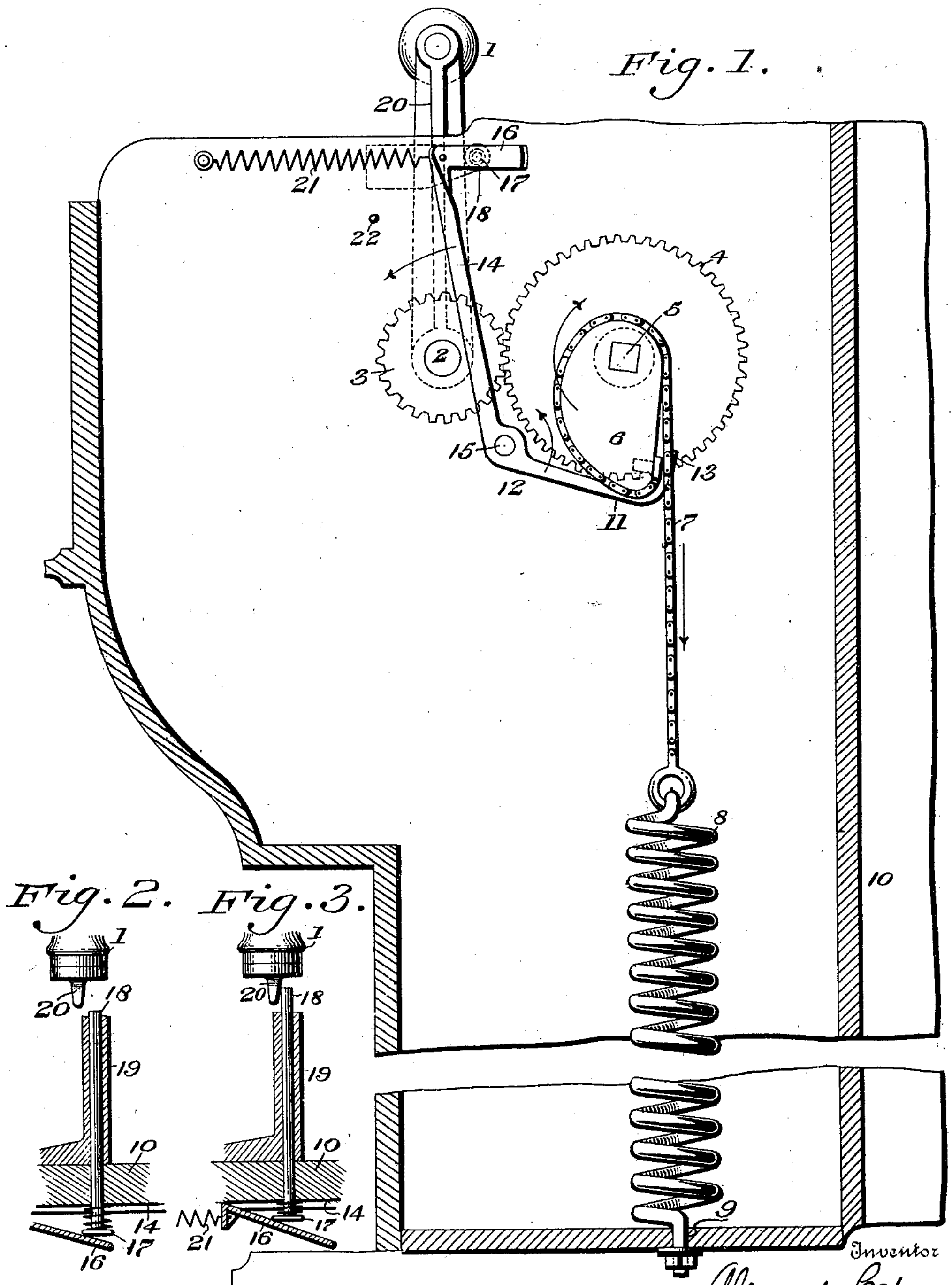

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Fig. 4.

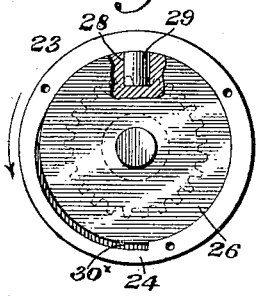


Fig. 5.

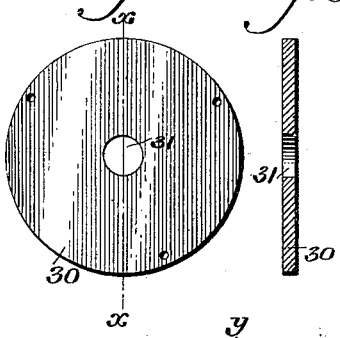


Fig. 6.

Fig. 7.

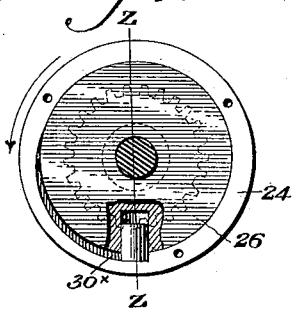
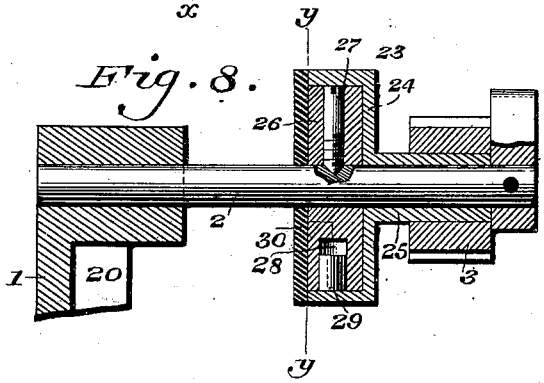


Fig. 8.



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UNITED STATES PATENT OFFICE.

ALESSANDRO CAPRA, OF PHILADELPHIA, PENNSYLVANIA.

SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 648,192, dated April 24, 1900.

Application filed September 7, 1899. Serial No. 729,721. (No model.)

To all whom it may concern:

Be it known that I, ALESSANDRO CAPRA, a subject of the King of Italy, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Spring-Motors, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of an improved construction of spring-motor which is especially adapted for use in street pianos, organs, or similar devices, provision being made for permitting the unwinding of the motor or mechanism for playing the organ without necessitating a backward rotation of the handle by which the winding up of the spring-motor is effected.

The invention also consists of an improved construction of cam, bell-crank lever, and automatically-operated stop device, assembled substantially as described, whereby the further rotation of the winding-handle of the motor beyond the desired extent is prevented.

It further consists of novel details of construction, all as will be hereinafter fully set forth, and particularly pointed out in the claims.

Figure 1 represents a side elevation of a portion of the spring-motor embodying my invention, the casing thereof being shown in section. Figs. 2 and 3 represent detached sectional views showing the upper portion of the bell-crank or lever seen in Fig. 1 and a bolt or stop actuated thereby. Fig. 4 represents an end elevation, partly in section, of a portion of the device which permits the unwinding of the motor without rotating the handle thereof. Fig. 5 represents a side elevation of the cover of the housing seen in Fig. 8. Fig. 6 represents a section on line *x x*, Fig. 5. Fig. 7 represents a section on line *y y*, Fig. 8. Fig. 8 represents a section on line *z z*, Fig. 7.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, the winding of the motor is effected by rotating the crank or handle 1, which is mounted on the shaft 2, which carries the pinion 3, in mesh with the gear 4, which is mounted on the shaft 5, having the cam 6 secured thereto, so as to rotate in unison therewith.

7 designates a chain or other connection which has one end attached to the cam 6 at a point eccentric to the shaft 5, the other end of said chain being secured to an end of the spring 8, the lower extremity of the latter being fastened to a suitable portion 9 of the casing 10. The cam 6 is so located and constructed that when it is rotated a portion thereof will contact with the arm 11 of the bell-crank lever 12, said arm having an offset portion 13. The bell-crank is fulcrumed at 15, and its other arm 14 extends upwardly in the present instance and is provided with the laterally or substantially horizontally extending member 16, which is deflected at an angle to the arm 14, as will be understood from Figs. 1 to 3, inclusive.

The member 16 is normally located with respect to the head 17 of the bolt 18 as seen in Fig. 2, said bolt passing through the casing 10 and the guide 19, secured thereto. When the cam 6 is turned into the position seen in Fig. 1, the bell-crank 12 is located in the position seen in said figure and Fig. 3, the end of the bolt 18 being forced outwardly into the path of the rib or abutment 20, which is attached to the handle 1, whereby the extent of rotation of the latter will be positively checked, this action taking place as soon as the desired tension has been put upon the spring 8 and the bell-crank and its adjuncts are in the position seen in Fig. 3. 21 designates a spring by means of which the bell-crank 12 is held in its normal position, the same abutting against the pin 22 prior to the operation of winding, as is apparent.

It will thus be seen from the foregoing that a simple and effective device is provided whereby when the shaft 2 and the handle 1, carried thereby, have been rotated to the requisite extent, so as to impart the desired tension to the spring 8, further rotation of said shaft and handle is automatically prevented.

In street pianos and organs, to which my motor is especially applicable, it is desirable when the winding is effected by means of an external crank or handle or similar device 1 that there shall be no rotation of said handle to any great extent during the unwinding of the apparatus, since the hands or fingers of the operator or bystanders are liable to be caught and cut or seriously crushed thereby,

and in order that the extent of rotation of the handle 1 may be reduced to a minimum while the organ is running down I provide the device 23, (seen in Figs. 4 to 8, inclusive,) the same consisting of a casing or housing 24, which has the extension 25 and mounted on the shaft 2, as is best seen in Fig. 8, the pinion 3 being rigidly mounted on said extension.

26 designates a disk which is secured to the shaft 2, so as to rotate in unison therewith, by means of the screw 27 or similar means, said disk being provided with a seat 28, in which the movable plug 29 is located.

30× designates a recess in the inside of the rim of the housing 24, said recess being located eccentrically to the shaft or axis 2, wherefrom it will be seen that when said shaft is rotated in the direction of the arrow seen in Fig. 4 the disk 26 will be rotated in unison therewith; but rotation will not be imparted to the housing 24, the extension 25, the gear 3, and its adjuncts until the plug or pin 29 has reached the position seen in Figs. 7 and 8, at which point it will drop by gravity and engage the shoulder 31 of the housing, and thus impart rotation thereto and to the pinion 3 and its adjuncts.

It will thus be apparent from the foregoing that the piano, organ, or other apparatus being wound up during the act of playing, the gear 3, the handle 1 and its adjuncts, the shaft 2, and the housing 24 can unwind to the desired extent without necessitating any extent of rotation of the handle 1. The housing 24 is closed by means of a cover 30, which has an opening 31 therein whereby it can be placed upon the shaft 2 and held in position on said housing by any suitable fastening devices.

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

1. In a spring-motor, a shaft, means for actuating the same, a cam mounted on said shaft, a spring, secured to a fixed point, a connection from said cam to said spring, a bolt adapted to be moved into the path of said means, and a device intermediate said cam and bolt for actuating the latter.

2. In a spring-motor, a shaft, means for actuating the same, a cam mounted on said shaft, a spring, a connection from said cam to said spring, a bolt adapted to be moved into the path of said means, a lever actuated by said cam, said lever having a deflected portion engaging said bolt and a tension device for said lever.

3. In a spring-motor, a shaft having a crank-handle thereon, a cam mounted on an adjacent shaft and actuated by said handle, a spring a connection from said cam to said spring, a bell-crank lever suitably fulcrumed, and actuated by said cam, a lateral extension on one arm of said lever, a spring attached to the latter, a bolt actuated by said extension, and adapted to be moved into the path of said handle, a head on said bolt and a spring bearing on said head and adapted to normally retain said bolt out of the path of said handle.

4. In a spring-motor, the combination of a shaft a handle thereon for actuating the same, another shaft carrying a cam, a gear-wheel on said shaft, a spring, a connection from said cam to said spring, a bolt adapted to be moved into the path of said handle, a device intermediate said cam and bolt for actuating the latter, a casing loosely mounted on said first-mentioned shaft, and having an extension carrying a pinion thereon meshing with said gear-wheel, a disk secured to said shaft and having a movable pin seated therein and an eccentric recess in the inner face of said casing, said recess having a shoulder adapted to be engaged by said pin.

5. In a spring-motor, a shaft, means for actuating the same, a cam mounted on said shaft, a flexible connection secured to said cam, a tension device for said connection, a bolt adapted to be moved into the path of said means, and a device intermediate said cam and bolt for actuating the latter.

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