

(No Model.)

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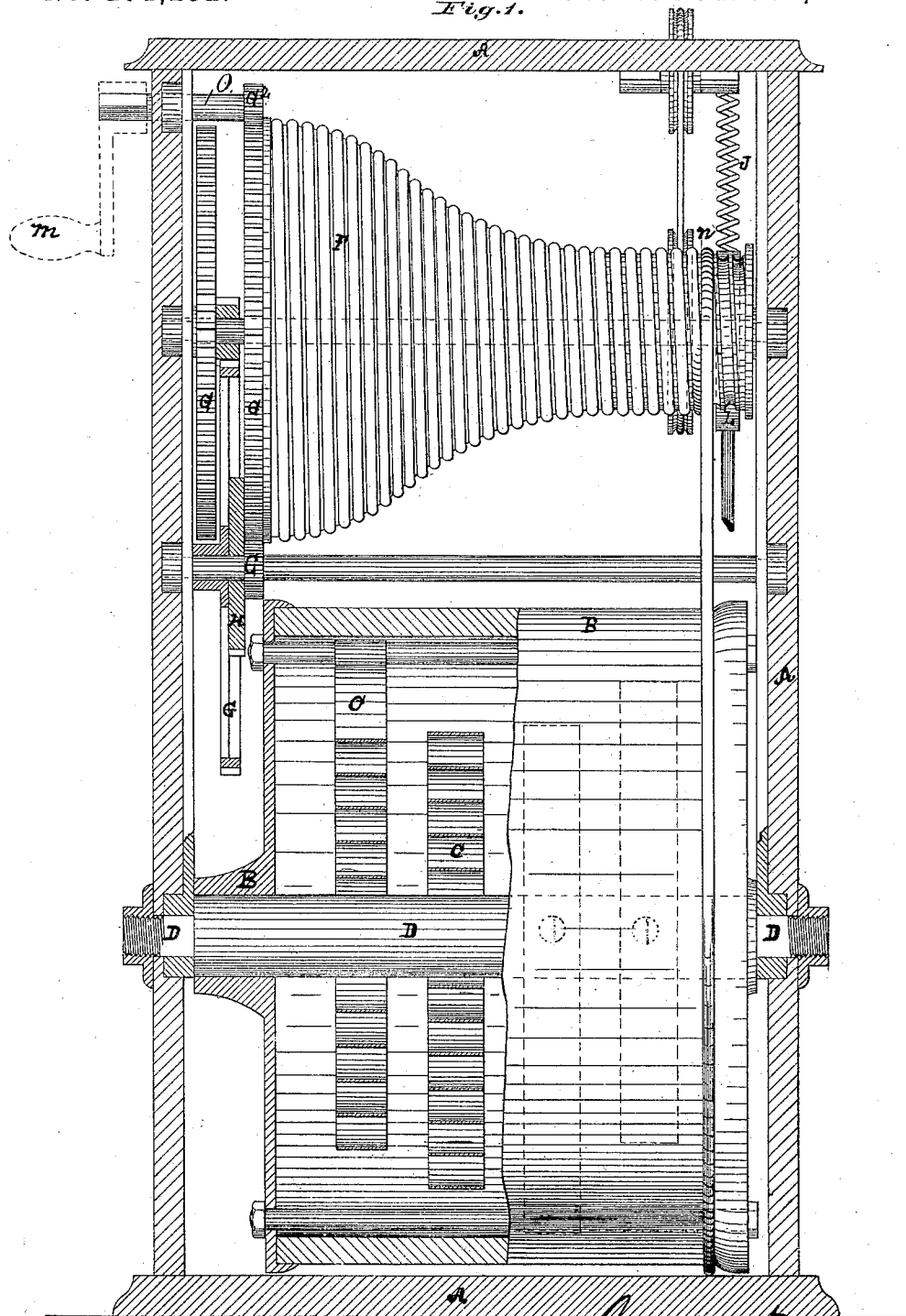
G. W. FITTS.

SPRING MOTOR.

No. 271,232.

Patented Jan. 30, 1883.

Fig. 1.



WITNESSES:

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(No Model.)

2 Sheets—Sheet 2.

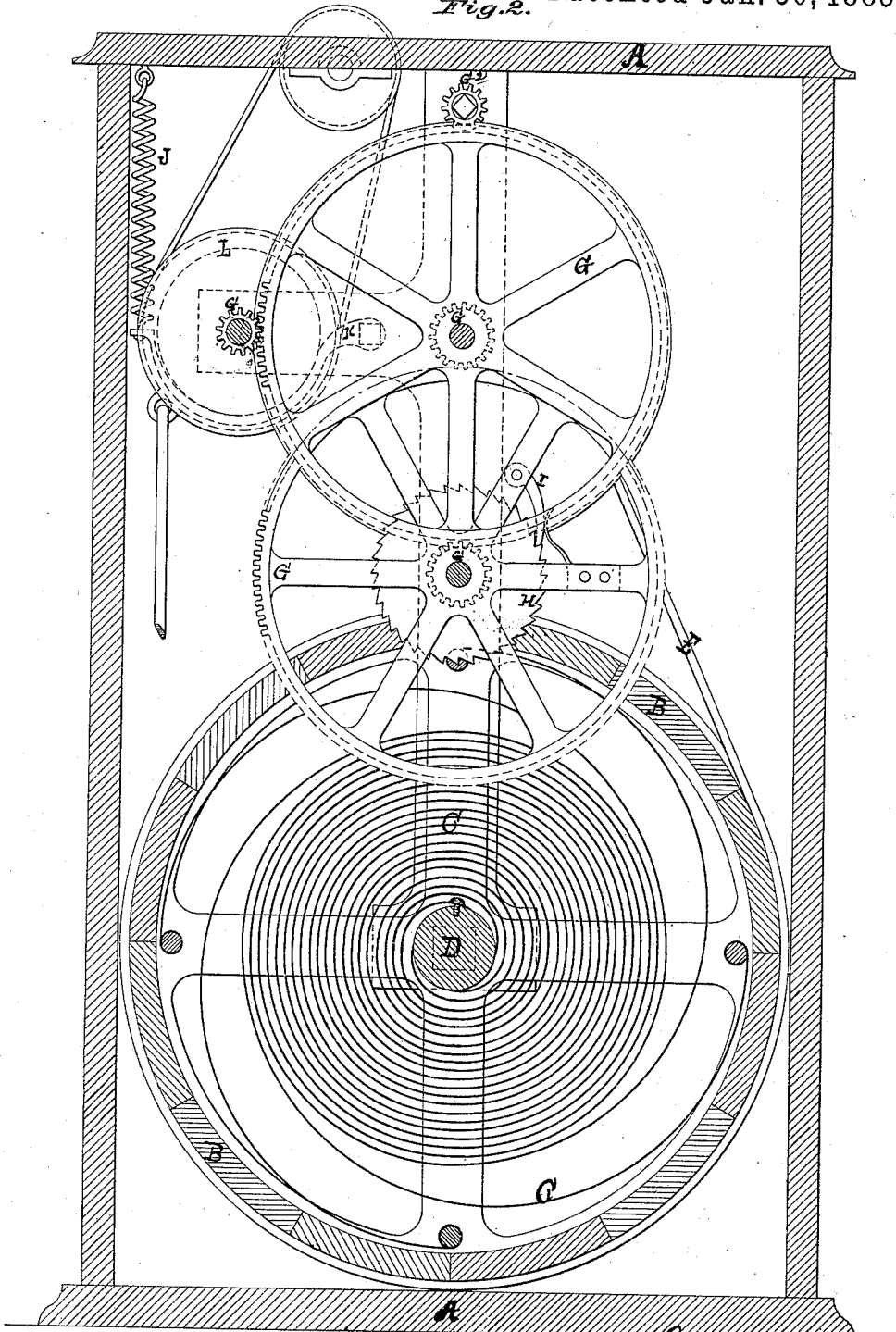
G. W. FITTS.

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Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 271,232, dated January 30, 1883.

Application filed May 26, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, GEO. W. FITTS, of the city of Philadelphia, in the Commonwealth of Pennsylvania, have invented a new and useful Improvement in Spring-Motors; and I do declare the following to be a full and clear description of my invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being made to the accompanying drawings, which form a part of this specification.

My invention relates to spring-motors upon a large or small scale; and it consists, first, of a drum or cylinder arranged to revolve upon a fixed shaft. Upon the inside of this drum is placed a coiled spring or springs, attaching the inner end of said coiled spring to the fixed shaft and the outer end of same to the inner surface of the drum, thus connecting the fixed shaft, the spring, and the drum together in such a way that if the drum is revolved it will wind up or unwind the spring. Upon the outer surface of this drum is wound a wire rope or cord, one end being fastened to the drum and the other end to a grooved cone-shaped pulley. By revolving this cone-shaped pulley by means of a crank or otherwise the wire cord is transferred from the drum to the pulley, causing the drum to revolve and wind up the springs, and when thus wound up the power of the springs is transmitted by means of the wire rope to the cone-shaped pulley, causing the pulley to revolve, and conveying the power by means of gear-wheels or otherwise for such purposes as may be required. By placing the springs within a drum safety is secured in case of accident. By fixing the center of the spring and revolving the outer end in connection with the drum the greatest return of power from the spring is obtained, and by connecting the wire rope with the spring-drum and cone-pulley a uniform motion and power from the spring is transferred to all parts of the machinery.

The drawings Figures 1 and 2 show front and side views of my device.

A, Figs. 1 and 2, is the case or frame which incloses and supports the works of the motor. It may be made of wood and iron.

B, Figs. 1 and 2, represents side view and end view of the spring-drum. It is constructed with cast-iron heads, fitted in the center to revolve upon the fixed shaft D. It also is fitted with wood pieces, which form the outer circumference of the drum. These wood pieces are held in place by iron rods, which pass through the heads, with nuts on each end, by means of which the heads may be screwed tight against the ends of the wood pieces, holding them and the beads in place and tight. These iron rods also pass through loops on the outer ends of the springs, thus fastening the springs and drum together, as shown in Fig. 1.

C, Figs. 1 and 2, shows the springs in place within the drum, the central or inner end being attached to the fixed shaft D and the outer end to inner periphery of the drum B, as shown at C, Fig. 1.

D is the spring-shaft. It is made of iron, turned round, the ends being made square, and fitted with nuts, so that it can be kept from turning in the frame, to which it is fitted. It is also fitted with small bolts or screws to hold the spring fast, as shown in Fig. 1.

E, Fig. 1, shows the wire cord which connects the spring-drum B and cone-pulley F. This wire cord is wound around the spring-drum, one end being fastened to the drum and the other end to the large end of the cone-pulley F.

F is the cone-shaped and spirally-grooved pulley. It is made of wood, through which passes an iron shaft, upon which it revolves. The office of this pulley is to equalize the power and motion of the springs as the same is communicated to the gear-wheels and other parts of the machinery through the spring-drum and wire cord. The shape of this pulley is determined or fixed by the action of the springs, as the change in leverage, as the wire rope is unwound onto the spring-drum from the small end of the cone-pulley to the large end of the same, is intended to be just equal to the loss of power which the spring sustains in uncoiling.

G, Figs. 1 and 2, are gear-wheels which transfer the motion and power of the spring-drum to other parts of the machinery as needed.

H and I are the ratchet-wheel and pawl.

These permit the spring-drum to be wound up without revolving the other parts of the machinery.

J is a spiral spring which holds the brake K against the brake-wheel L.

L is a friction-wheel whose office, in connection with the brake and attachments, is to regulate the speed of the motor, as shown in Fig. 2.

M is a crank, which is fitted to the short shaft O, with its pinion G<sup>2</sup>, by which means the cone-pulley is rotated, winding the wire cord from the spring-drum onto this pulley, and at the same time rotating the spring-drum and winding up the springs.

In operating my device the first act is to wind it up. This is done by rotating the crank M, as I have above described, which winds the wire cord onto the large end of the cone-pulley, and thus on down until it fills all the grooves of this pulley to the small end, thus unwinding the cord from the spring-drum and filling the cone-pulley with the same and rotating the spring-drum and winding up the spring, as shown in Fig. 1. When this is done the motor is ready for work, and by removing the brake K from the friction-wheels L the power of the springs is communicated through the spring-drum, wire cord, and cone-pulley to the gear-wheels and all parts of the machine, giving a rotary motion to the drum and rewinding the wire rope from the cone-pulley onto this drum. When the wire cord first commences to rewind, by the reaction of the springs, onto the spring-drum, it will be noticed that it is being unwound from the small end of the cone-pulley, at which time the springs are wound up and exerting their great

power. As they unwind, it will be further noticed that the cord is gradually unwinding toward the large end of the pulley, thus increasing the leverage and power of the springs upon this pulley as their own power is diminishing, by which action I obtain a uniform power and motion from the motor.

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

1. The combination, in a spring-motor, of the cylindrical spring B, inclosing a spring or springs secured at the center to a fixed shaft, wire cord E, spiral-grooved and cone-shaped pulley F, gear-wheels G, and brake-wheels and attachments J, K, and L, substantially as and for the purpose shown.

2. The combination of the drum B and its inclosed spring or springs, the drum being arranged to revolve on a fixed shaft, with the cord E and spirally-grooved and cone-shaped pulley F, substantially as and for the purpose described.

3. In a spring-motor, a revolving drum mounted on a fixed shaft and interiorly supplied with a series of coiled springs, each secured at its inner end to such fixed shaft and at its outer end to the revolving drum.

4. In a spring-motor drum mounted and revolving on a fixed shaft, one or more rods serving the double duty of holding the heads of the drum to place and also of holding the outer ends of the inclosed spring or springs.

GEO. W. FITTS.

Witnesses:

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