(No Model.)

I. F. GOOD.

MECHANICAL MOVEMENT.

No. 453,903. Patented June 9, 1891.

Fig. 1.

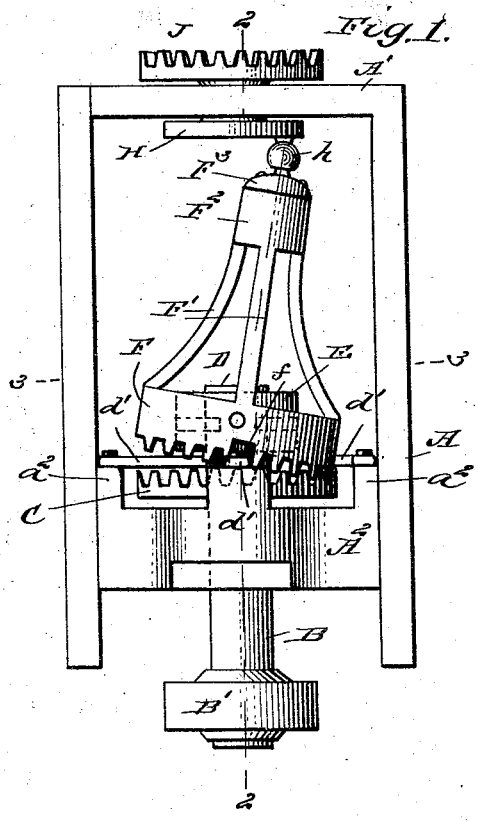


Fig. 2.

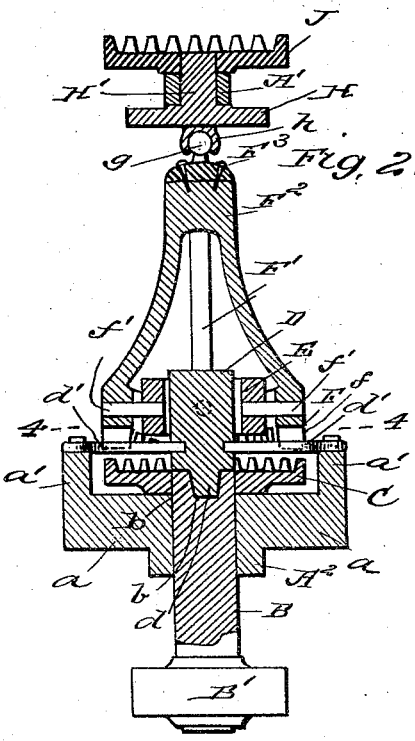


Fig. 3.

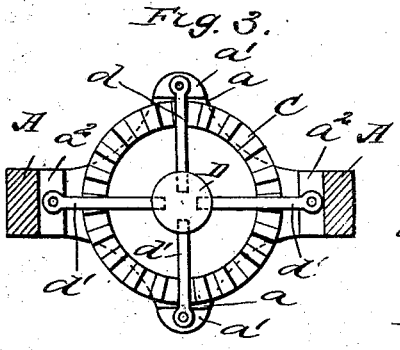


Fig. 5.

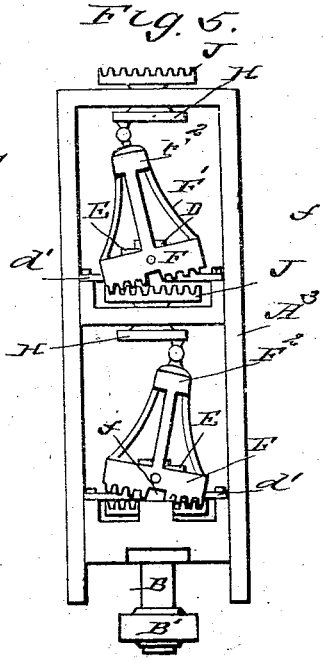
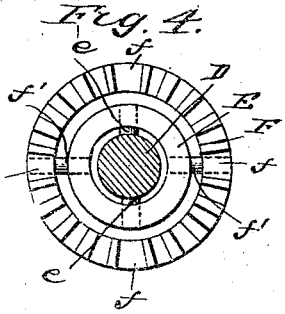


Fig. 4.



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UNITED STATES PATENT OFFICE.

ISRAEL F. GOOD, OF ALLENTOWN, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO THOMAS F. DIEFENDERFER AND SYLVESTER RUCH, BOTH OF SAME PLACE.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 453,903, dated June 9, 1891.

Application filed September 29, 1890. Serial No. 366,510. (No model.)

To all whom it may concern:

Be it known that I, ISRAEL F. GOOD, of Allentown, in the county of Lehigh and State of Pennsylvania, have invented a new and Improved Mechanical Movement, of which the following is a full, clear, and exact description.

My invention relates to improvements in mechanical movements; and the object of my invention is to produce a simple, durable, and inexpensive mechanism by means of which power may be efficiently transmitted and speed greatly increased.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the device embodying my invention. Fig. 2 is a vertical cross-section of the same on the line 2 2 of Fig. 1. Fig. 3 is a sectional plan view on the line 3 3 of Fig. 1 with the upper-gear mechanism removed. Fig. 4 is an inverted plan of the upper gear and its connected parts on the line 4 4 of Fig. 2, and Fig. 5 is a side elevation showing the mechanism duplicated in order to greatly increase the speed.

The device is provided with a frame A, which is preferably vertical and which is provided at top and bottom with the cross-pieces A′ and A^2, respectively. The lower cross-piece A^2 is provided with laterally-extending arms a, having vertical posts a' thereon, and the said cross-piece is also provided with shoulders a^2, corresponding in height to the height of the posts a' and arranged at right angles to the same. A vertical shaft B extends through the cross-piece A^2, the lower end of the shaft being provided with a suitable driving-pulley B′, although a gear-wheel may be substituted, if desired. The shaft B has a recess b in the upper end, and fixed to the upper end of the shaft is a gear-wheel C, having teeth upon its upper side near the outer edge.

A vertical post D is mounted above the shaft B so as to align therewith, and the lower end of the post is provided with a tenon d, which fits in the recess b of the shaft B, and thus serves as a guide for the shaft and also serves to strengthen the post. The post is supported in a fixed position by means of the bars d', which are fixed to the post and extend radially therefrom, the outer ends of the bars being secured to the top of the posts a' and shoulders a^2.

A collar E loosely encircles the post D, said collar being pivoted to the post by means of the pins e, which are fixed to the post and are journaled in opposite sides of the collar, so that the collar may rock upon the pins.

A gear-wheel F loosely encircles the collar E, the said gear-wheel having teeth upon its under side, which mesh with the teeth of the gear-wheel C. The gear-wheel F has more teeth than the gear-wheel C, and is cut away at the parts f so that it may fit upon the bars d' and may rock in the manner described below without interfering with the bars. The gear-wheel F is pivoted to the collar E by the pins f', which are fixed to the collar and turn in the gear-wheel, the pins f' being arranged at right angles to the pins e, by which the collar is pivoted to the post D, so that the gear-wheel F rocks in the opposite direction from the collar E, and the gear-wheel and collar being pivoted in the manner described form practically a universal joint.

The gear-wheel F is provided with upwardly-extending arms F′, which converge toward the top and are united to form the block F^2, which is provided with a removable cap F^3, and the cap has centrally thereon a ball g. A wheel H is pivoted on the under side of the cross-piece A′, the trunnion or shaft H′ of the wheel extending upwardly through the cross-piece, and on the lower side of the wheel is a cup h, eccentric to the axis of the wheel, and which fits over the ball g on the cap F^3, thus forming an ordinary ball-joint. A gear-wheel J is fixed to the upper end of the shaft H′, and power may be taken from this gear-wheel, or a pulley may be substituted, if desired.

The operation is as follows: When power is applied to the pulley B′, the shaft B and

gear-wheel C revolve and the teeth of the gear-wheel C, meshing with the upper gear-wheel F, actuate said gear-wheel, and as soon as said upper gear-wheel moves the upper ends of the arms F′ are tilted, thus moving the block F^2 and imparting motion to the wheel H and gear-wheel J. As soon as the wheel H starts it changes the position of the gear-wheel F by means of the connection between the gear-wheel and the said wheel H, thus tilting the gear-wheel and causing the position of the teeth thereon to be changed, and it will thus be seen that only the teeth on one edge of the gear-wheel D will engage the teeth of the gear-wheel C at a given time; but as the position of the gear-wheel is constantly changing it will rock on the pins *f′* and at the same time the collar E will rock on the pins *e*, thereby permitting of the necessary movement in the gear-wheel F. A slight movement of the gear-wheel C and of the wheel F serves to impart a complete revolution to the wheel H and gear-wheel J, so that a complete revolution of the pulley B′ and gear-wheel C will impart many revolutions to the wheels H and J, and consequently the device furnishes a very simple means for multiplying speed and for transmitting power. If the speed is not sufficiently increased by the use of a single device, as described above, it may be duplicated, as shown in Fig. 5, in which case the frame A^3 is made taller than the frame A, and the upper-gear mechanism, comprising the post D, collar E, and gear-wheel F and its connected parts, is arranged above the gear-wheel J so that the gear-wheel F will mesh therewith, and it will readily be seen that the parts may be duplicated indefinitely until the desired speed is obtained.

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

1. A mechanical movement comprising a frame, a vertical shaft mounted therein and provided at its upper end with a gear-wheel, a post secured above said gear-wheel and supported by radially-extending bars, a gear-wheel meshing with the lower gear-wheel and connected to the post by a universal joint, said upper gear-wheel having recesses to fit over the radially-extending bars, as shown, and having upon its upper side converging arms terminating in a head or block, and a wheel fixed to a shaft and pivotally connected with said head or block, substantially as described.

2. The combination, with the revoluble vertical shaft having a gear-wheel fixed to its upper end and the post supported above the gear-wheel and aligning with the shaft, of a collar encircling the post and pivoted thereto on opposite sides, a gear-wheel pivoted to the collar at right angles to the post-pivots, said gear-wheel meshing with the lower gear-wheel and having converging arms upon its upper side which terminate in a head or block, and a wheel fixed to a suitable shaft and pivotally connected with said head or block, substantially as described.

3. A mechanical movement comprising a frame, a vertical shaft mounted therein and provided at its upper end with a gear-wheel, a post secured above the gear-wheel and having a depending tongue projecting into a recess in the vertical shaft, a collar encircling the post and pivoted on opposite sides thereto, a gear-wheel encircling the collar and pivoted thereto, the pivots being at right angles to the post-pivots, said gear-wheel meshing with the lower gear-wheel and having upon its upper side converging arms which terminate in a head or block, and a wheel fixed to a suitable shaft and pivotally connected with said head or block, substantially as described.

ISRAEL F. GOOD.

Witnesses:
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