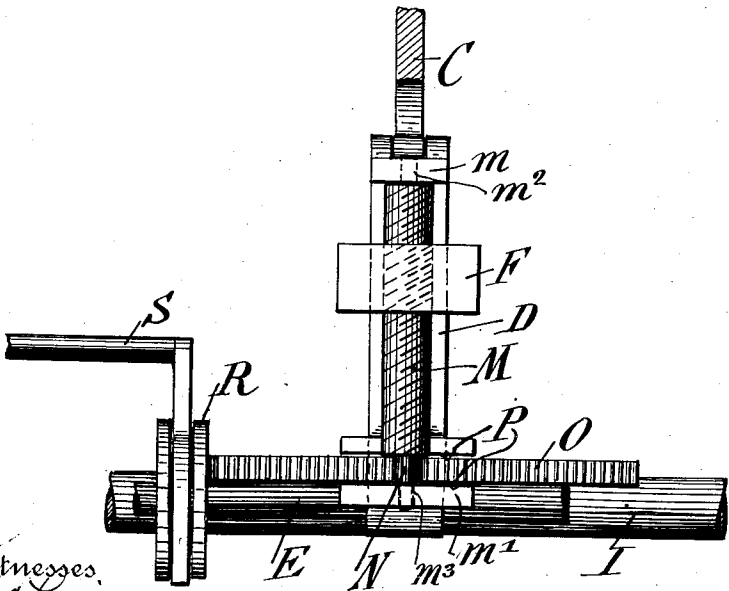
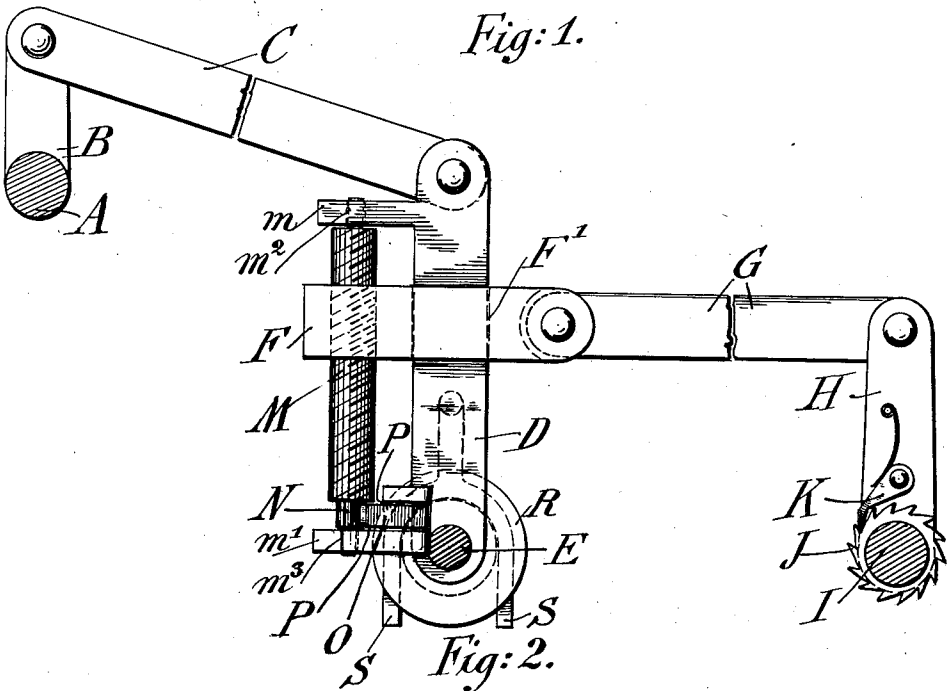


F. J. ZIEGLER.
MECHANICAL MOVEMENT.
APPLICATION FILED DEC. 18, 1906.



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UNITED STATES PATENT OFFICE.

FREDERICK J. ZIEGLER, OF NEW YORK, N. Y.

MECHANICAL MOVEMENT.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERICK J. ZIEGLER, a citizen of the United States, residing in the borough of Manhattan, city of New York, county and State of New York, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification.

My invention relates to mechanical movements, and more particularly to means for regulating the power driving ratio of driving-shafts used on automobiles or other mechanical appliances.

The invention has for its object to provide a simple and positive means for regulating the power of driving-shafts; and for this purpose the invention consists of a mechanical movement, comprising a motor-shaft, a crank arm, motion transmitting means connecting the motor-shaft with the crank arm, a block adjustably movable on said crank arm, a driving shaft, and motion transmitting means connecting the block on the crank arm with the driving shaft. And the invention consists further of certain novel features and combination of parts, which will be more fully described hereinafter and set forth in the claims.

In the accompanying drawing, Figure 1 represents a side view of my improved mechanism, and Fig. 2 is an end view of the same.

Similar letters of reference indicate corresponding parts in the figures of the drawing.

Referring to the drawings, A represents the motor-shaft of an automobile, carrying a crank-arm B, to the end of which a pivot-link C is pivotally connected. Said link is in turn pivoted to a crank-arm D mounted to oscillate on a shaft E. Longitudinally movable on the crank-arm D a block F is arranged, to which is pivotally connected a link G connected with a crank-arm H. The driving-shaft I has secured thereto a ratchet-wheel J which is rotated by means of the intermittent engagement of a spring-pressed pawl K arranged on the crank-arm H.

The crank-arm D is provided with an upper bracket m and a lower bracket m^1 having arranged therein openings m^2 and m^3 respectively, in which are rotatable the ends of a threaded spindle M. The spindle M engages a threaded opening of the block F, so that by the rotation of the spindle the block F is moved along the same. The block F is further provided with a guide-slot F^1 by which it embraces the crank-arm D, so as to be

guided during its movement by the latter. By this arrangement the block is also given a fixed position so as to prevent it from being easily misplaced. The spindle M is provided at its lower end with a pinion N which is engaged by a rack O suitably guided in guide-flanges P arranged on the crank-arm D. To one end of the rack O a grooved collar R is secured, which is rotatable and movable along the shaft E and which is engaged by a forked lever S arranged within easy reach of the operator.

The operation of my improved device is as follows: By the operation of the lever S the collar R is moved axially of the shaft E, whereby the rack O is reciprocated, and the spindle M thereby rotated, which causes the upward or downward movement of the block F. When the block F is in a position on the oscillating crank-arm D near the intermediate shaft E the movements of the crank-arm H are short and more powerful, whereas when the block F is in its uppermost position away from pivot E then the reciprocations of the crank-arm H are long and less powerful than in the former case and in direct ratio to the distance from the pivot E. Thus by the variation of the position of the block on the crank-arm D the length of the reciprocations of the crank-arm H may be varied. When running with heavy loads uphill, where much power is required or in the city streets, when a lower gear is desired, it is desirable to apply the force on the driving-shaft through a smaller space of reciprocation, that is, to have the position of the block F near the shaft E, while during ordinary runs the force is applied on the driving-shaft through a longer space of reciprocation, that is, the position of the block F is near the upper part of the crank-arm D.

In the practical embodiment of my invention, in automobiles for instance, the mechanism above described is arranged triple or quadruple so that the motor force is applied continually to the driving-shaft, whether the reciprocations are long or short, whereby a steady drive is attained.

The great advantage of my improved construction is that the operation of the parts is positive and that when once the device is set, the position of the sleeve can only be changed by the operation of the hand lever.

My improved device has been described in connection with its application to automobiles; it may, however, be applied to any

mechanical appliance where it is desirable to vary the length of the reciprocations of a reciprocatory device, or where a variable gear ratio is desired.

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

1. In a mechanical movement, the combination, with the driving and driven shafts, 10 of a crank-arm mounted for oscillation between said shafts, a longitudinally-disposed, rotatably-mounted, threaded spindle carried by said crank-arm, a connection between said crank-arm and the driving-shaft whereby 15 by the crank-arm is oscillated by the latter, a block embracing said crank-arm and threaded on said spindle to move longitudinally of said crank-arm, means whereby said spindle may be manually rotated, and an 20 operative connection between said block and the driven-shaft.

2. In a mechanical movement, in combination, a driving-shaft, a driven-shaft, an intermediate shaft, a crank-arm mounted to 25 oscillate on said intermediate shaft, a connection between the outer end of said crank-arm and said driving-shaft whereby the crank-arm is oscillated, a block guided longi-

tudinally along said crank-arm, a threaded spindle carried by said crank-arm and by 30 which said block is fed in either direction, a pinion carried by said spindle adjacent the intermediate shaft, a rack engaging said pinion, and operating mechanism for said rack guided on and movable longitudinally 35 along said intermediate shaft.

3. In a mechanical movement, the combination of a driving-shaft, a driven-shaft, an intermediate shaft, a crank-arm mounted on said intermediate shaft and which is oscillated thereon by said driving-shaft, a block 40 guided longitudinally along said crank-arm by means of a slot, a connection between said block and the driven-shaft, a threaded spindle disposed longitudinally of the crank-arm and which engages a threaded opening 45 in said block, a pinion carried by said spindle, and means guided along said intermediate shaft whereby said pinion may be rotated.

In testimony, that I claim the foregoing as 50 my invention, I have signed my name in presence of two subscribing witnesses.

FRED. J. ZIEGLER.

Witnesses:

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