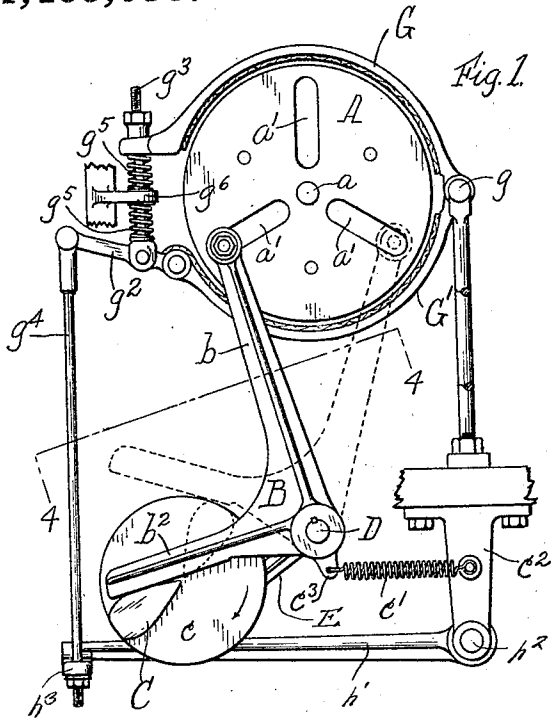
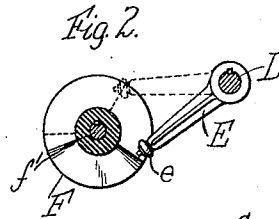
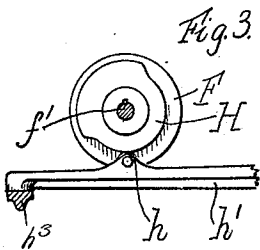
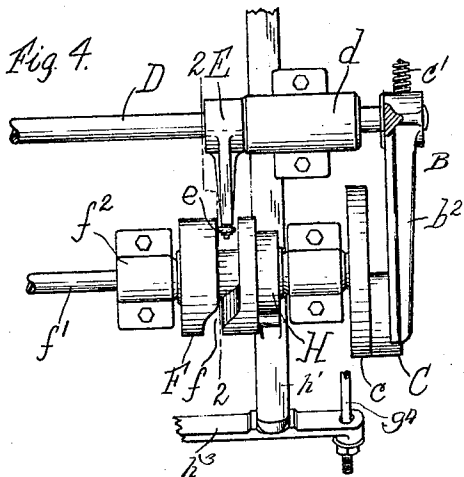
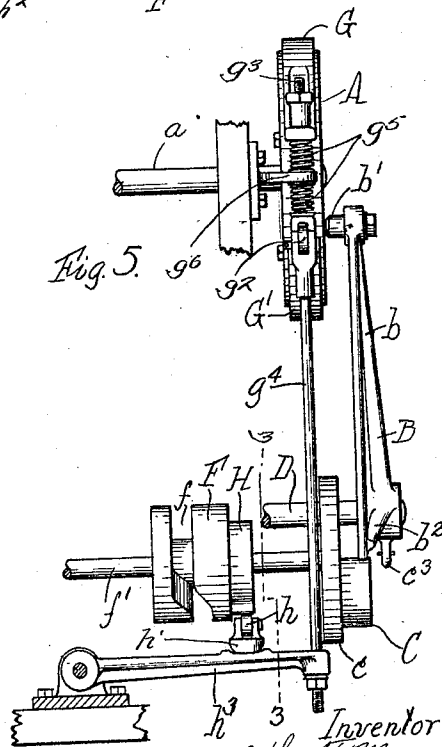


A. T. MOORE.
MECHANICAL MOVEMENT.
APPLICATION FILED MAY 24, 1920.

1,405,058.

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MECHANICAL MOVEMENT.

1,405,058.

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To all whom it may concern:

Be it known that I, ARTHUR T. MOORE, a citizen of the United States, residing at Batavia, in the county of Genesee and State of New York, have invented a new and useful Improvement in Mechanical Movements, of which the following is a specification.

This invention relates to mechanical movements or mechanisms for producing intermittent rotary motion.

The objects of this invention are to provide a mechanism of this kind of improved construction by means of which a rotary member may be turned through a predetermined angle at regular intervals; also to produce a mechanism of this kind which is simple in construction and efficient and positive in operation; also to produce a mechanism of this kind in which the member which is being rotated is moved from its starting position with a gradual acceleration and is then gradually retarded until brought to a stop; also to provide means of improved construction for intermittently holding the movable member against movement; also to improve mechanisms of this kind in other respects hereinafter specified.

In the accompanying drawings:

Fig. 1 is a front elevation of a mechanism embodying the invention.

Fig. 2 is a fragmentary transverse sectional view thereof on line 2—2 Fig. 4.

Fig. 3 is a fragmentary transverse sectional elevation on line 3—3 Fig. 5.

Fig. 4 is a sectional plan view of the mechanism on line 4—4 Fig. 1.

Fig. 5 is a side elevation thereof.

A represents a rotary driven member adapted to receive movement from the mechanism and which is suitably secured to a shaft *a*. This rotary member in the construction shown is provided with a plurality of radial slots *a'*, three of these slots being shown in the construction illustrated. B represents a bell crank lever having an arm *b* which extends into operative relation to the rotary member A and which is provided at its end with a part adapted to enter into any one of the radial slots *a'*, an anti-friction roller *b'* being shown for this purpose, which is suitably journaled on the end of the arm *b*. The bell crank lever B is adapted to swing about its axis from the full line position to the dotted line position shown in Fig. 1, and during this movement the anti-friction roller *b'* is in engagement in

one of the radial slots *a'* and therefore moves the rotary driven member A through a part of a revolution. The movement of the bell crank lever about its axis may be effected by any suitable means. In the construction shown for this purpose, the bell crank lever is provided with an arm *b²* which extends into operative relation to a suitable lever actuating member which includes a crank or eccentric C, which as shown projects outwardly from the disk *c* and which engages with the arm *b²* of the bell crank lever. This arm of the lever is preferably held in engagement with the crank or eccentric C by a spring *c'* or other suitable means, the spring shown being connected at one end to a part *c²* of the frame of the machine, and at its other end to a projecting part or arm *c³* of the bell crank lever B. It will be seen that the parts of the mechanism are so arranged relatively to each other that as the crank or eccentric C moves in the direction of the arrow in Fig. 1, the rotary member A will be rotated with a gradually increasing speed until the bell crank lever and the part C of its actuating device approach the position shown in dotted lines in Fig. 1, at which time the movement of the bell crank lever will be gradually retarded until the dotted line position is reached, which indicates the limit of the movement of the bell crank lever.

It is desirable to intermittently rotate the member A in one direction only and for this purpose means are provided for causing the bell crank lever B to disengage the rotary member A when the bell crank lever reaches the dotted line position shown in Fig. 1, and to cause the lever to move back into engagement with the next slot of the rotary member A. In order to produce this movement on the part of the bell crank lever, the following construction is preferably employed:

The bell crank lever is rigidly secured on a shaft D which is suitably journaled in a bearing, such as *d*, Fig. 4, and this shaft is adapted to slide lengthwise of the bearing. The shaft D is provided with an arm or extension E which is rigidly secured to the shaft D. The outer end of this arm is adapted to engage a cam or other suitable means for moving the shaft D lengthwise of its axis. In the construction shown for this purpose, a cam F is provided having a slot *f* in which a roller *e*, secured on the end of the arm E, engages. The arm F is so designed

that when the bell crank lever reaches the dotted line position shown in Fig. 1, the shaft D will be moved lengthwise of its axis to disengage the roller b' from the radial slots a' of the rotary member A. The cam F holds the shaft D in this position until the spring c' has moved the bell crank lever back to its starting position, shown in full lines in Fig. 1. When the bell crank lever reaches this position, the cam F again causes the arm E and the shaft D to move axially, thus placing the bell crank lever into engagement with the next radial slot a' of the rotary member. The cam F is rigidly secured on a shaft f' journaled in bearings f'' suitably secured on the frame of the machine, the same shaft also having the disk c and cam or eccentric C arranged thereon. The crank or eccentric C is made of sufficient length to permit the arm b^2 of the bell crank lever to move relatively thereto as described without becoming disengaged therefrom, and the cam F is so constructed as to permit the arm E to swing relatively thereto as shown in Fig. 2.

It is desirable to provide means for positively holding the rotary member A against movement when the bell crank lever B is out of engagement therewith. Any suitable means may be provided for this purpose, a brake being shown in the construction illustrated, consisting of two brake members G and G' which are hinged on a pivot g secured on a suitable part of the frame of the machine. These brake members extend around the periphery of the rotary member A in opposite directions, and the brake member G' is connected to one end of a brake lever g^2 . The corresponding end of the other brake member G is connected by means of a rod g^3 to the brake lever g^2 intermediate of the ends thereof. The other end of the brake lever is connected to a brake actuating rod g^4 . When the rod g^4 is moved downwardly, the two parts of the brake are moved into engagement with the rotary member A to hold the same against movement. When the brake actuating rod g^4 is moved upwardly the brakes are released and are held out of engagement with the rotary member A by means of springs g^5 engaging the two parts of the brake and a part g^6 of the frame. A brake of any other suitable kind may be employed if desired.

In order to actuate the brake at the proper time, the brake rod g^4 is preferably also actuated by means of a cam mounted on the shaft f' . In the construction shown for this purpose, a cam H is provided which is rigidly secured on the shaft f' and which has an outer cam face adapted to engage a roller or other part h of a lever or arm h' suitably pivoted at h^2 on the frame of the machine. The free end of this arm or lever is connected with the brake actuating rod g^4 in any de-

sired manner, for example through the medium of a second lever h^3 , so that the movement of the lever h' is imparted to the rod g^4 and hence to the brake. The face of the cam H is so proportioned that the brake is applied to the rotary member A as soon as the bell crank lever B is moved out of engagement with a radial slot of the rotary member, and is released when the bell crank lever begins to impart movement to the rotary member A. By means of this construction the rotary member is entirely released by the brake when the same is advanced, and is rigidly held against movement when not engaged by the bell crank lever.

The mechanism described has the advantage of effecting the intermittent rotary movement in a very desirable manner, by accelerating the movement of the driven rotary member from its starting position and gradually retarding the movement before stopping the rotary member. The mechanism shown in the drawings is designed to turn the driven rotary member through a third of a revolution at a time, but it will be understood that the rotary member may be turned through different fractions of a revolution by different arrangements of slots in the driven member and changing the travel of the arm b of the bell crank lever accordingly.

I claim as my invention:—

1. A mechanism for producing intermittent rotary motion including a rotary driven member, a swinging arm adapted to engage said member during its movement in one direction to advance said driven member, and to move in the opposite direction when out of engagement with said driven member, means for imparting an oscillatory movement to said arm, and means for producing relative movement between said driven member and said swinging arm to cause said member and arm to move into and out of engagement.

2. A mechanism for producing intermittent rotary motion including a rotary driven member, a swinging arm adapted to engage said member during its movement in one direction to advance said driven member, and to move in the opposite direction when out of engagement with said driven member, means for imparting an oscillatory movement to said arm, and means for moving said swinging arm in a direction substantially parallel to the axis about which the arm swings to move said arm into and out of engagement with said driven member.

3. A mechanism for producing intermittent rotary motion including a rotary driven member, a lever adapted to swing about its pivot and having a part adapted to move into and out of engagement with said driven member, means for swinging said lever about its pivot, and means for moving said lever

lengthwise of its pivot to place the lever into and out of engagement with said driven member.

4. A mechanism for producing intermittent rotary motion including a rotary driven member, a swinging arm adapted to engage said member during its movement in one direction to advance said driven member, and to move in the opposite direction when out of engagement with said driven member, means for swinging said arm, means for producing relative movement between said driven member and said swinging arm to cause said member and arm to move into and out of engagement, and means for locking said driven member against movement when said arm is out of engagement therewith.

5. A mechanism for producing intermittent rotary motion including a rotary driven member, a swinging arm adapted to engage said member during its movement in one direction to advance said driven member, and to move in the opposite direction when out of engagement with said driven member, means for holding said driven member against movement when said arm is out of engagement therewith, means for moving said arm lengthwise of its pivot to place the same into and out of engagement with said driven member, an actuating member for said holding means, an actuating member for said means for moving said arm lengthwise of its pivot, and a common shaft on which said actuating members are mounted.

6. A mechanism for producing intermittent rotary motion including a rotary driven member, a pivoted lever, means for oscillating said lever about its pivot, means for moving said lever into engagement with said driven member before the lever moves in one direction and for moving said lever out of engagement with said driven member before the lever moves in the opposite direction, and a brake on said driven member which holds said member against movement when said lever is out of engagement therewith.

7. A mechanism for producing intermittent rotary motion including a rotary driven member, a pivoted lever, means for oscillating said lever about its pivot, means for moving said lever lengthwise of its pivot

into and out of engagement with said driven member, and means for holding said driven member from movement when said lever is out of engagement therewith.

8. A mechanism for producing intermittent rotary motion including a rotary driven member, a pivoted lever, a rotary driving member for causing said lever to oscillate about its pivot, and a cam connected with said rotary driving member for moving said lever lengthwise of its pivot into and out of engagement with said driven member.

9. A mechanism for producing intermittent rotary motion including a rotary driven member, a pivoted lever, a rotary driving member for causing said lever to oscillate about its pivot, a cam connected with said rotary driving member for moving said lever lengthwise of its pivot into and out of engagement with said driven member, and another cam movable with said rotary member and causing the locking of said driven member against motion when said lever is out of engagement therewith.

10. A mechanism for producing intermittent rotary motion including a driven member, a pivoted lever, means for oscillating said lever about its pivot, and a cam which causes said lever to move lengthwise of its pivot into and out of engagement with said driven member whereby said lever is in engagement with said driven member when moving in one direction and out of engagement therewith when moving in the opposite direction.

11. A mechanism for producing intermittent rotary motion including a driven member having a plurality of disconnected slots, a pivoted lever having a part adapted to enter into any one of said slots, means for oscillating said lever, and means for moving said lever toward and from said driven member to cause said lever to engage in a slot of the driven member when moving in one direction and to be disengaged from said driven member when moving in the opposite direction.

Witness my hand this 20 day of May, 1920.

ARTHUR T. MOORE.

Witnesses:

FRANK F. BURR,
CLEVELAND A. DAVIS.