H. Y. ARMSTRONG.

MECHANICAL MOVEMENT.

APPLICATION FILED MAR. 21, 1911.

1,045,102. **Patented Nov. 19, 1912.**

Fig. 1

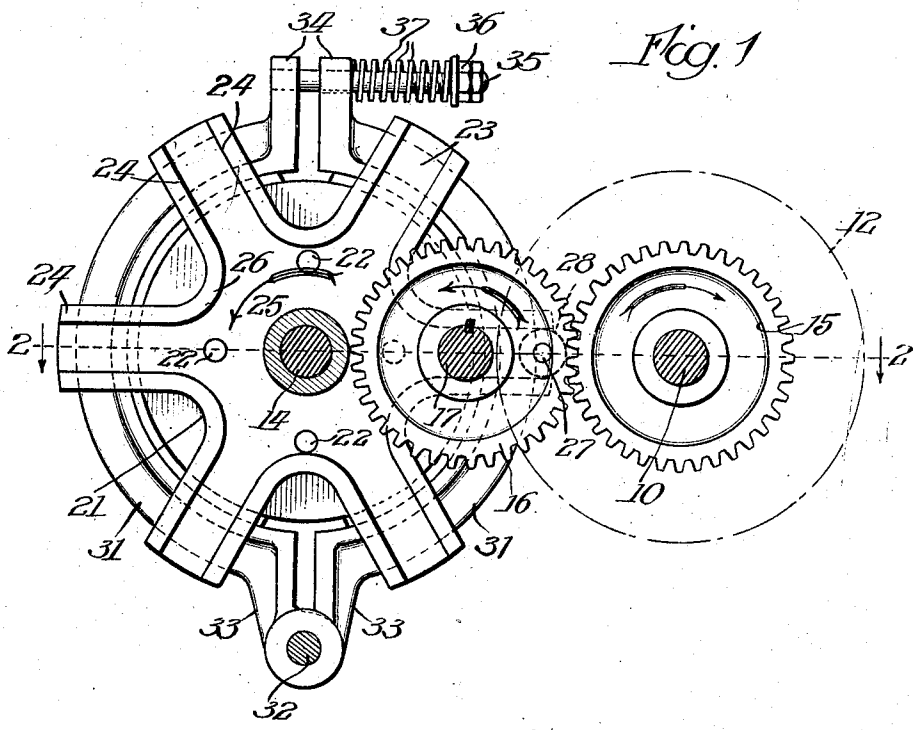
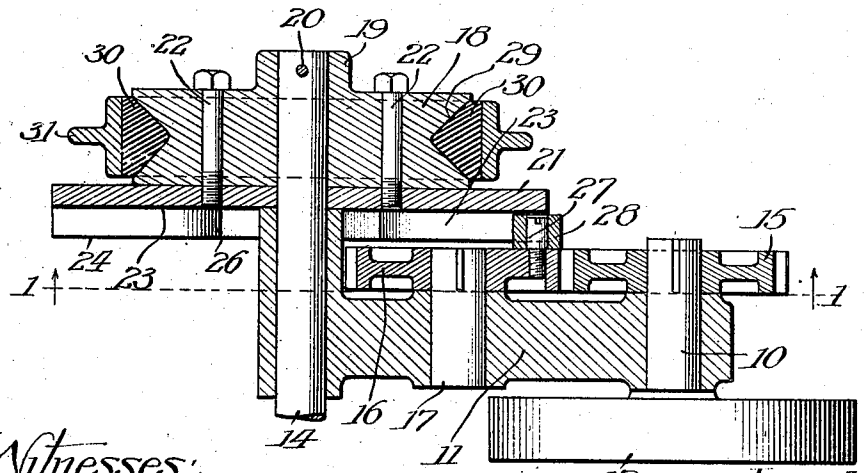


Fig. 2



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MECHANICAL MOVEMENT.

1,045,102. Specification of Letters Patent. Patented Nov. 19, 1912.

Application filed March 21, 1911. Serial No. 616,031.

To all whom it may concern:

Be it known that I, HARRY Y. ARMSTRONG, a citizen of the United States, and a resident of Elgin, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Mechanical Movements; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to a novel mechanical movement for translating the continuous rotary motion of a primary element into an intermittent rotary motion of a secondary element with means arranged to provide a pause or dwell between the intermittent movements of the secondary or driven element.

The invention is adaptable for use in a variety of machines where such combined intermittent movement and pause or dwell of a driven element is required, and I have shown said invention as practically applied to a wrapping machine for wrapping chewing gum in my co-pending application for United States Letters Patent, Serial Number 656,504, filed on the 24th day of October, 1911. In the application of the mechanical movement to the said machine, it is designed to give intermittent rotation and intermediate pauses or dwells to the mechanism which operates the folding heads which receive the gum or other article to be wrapped, together with the wrapper partially folded thereon, and to carry the partially folded articles from and deliver them to another mechanism for completing the folding of the wrapper about the article, the movement being designed to give the proper pause or dwell to the wrapping head when the latter is in position to receive or discharge a gum or like article and a wrapper.

The invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

In the drawing,—Figure 1 is a side elevation, with parts in section, of a mechanical movement embodying my invention, the same being taken on the line 1—1 of Fig. 2. Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1.

As shown in the drawing, 10 designates a shaft which, in the present instance, constitutes the driven or prime moving element. It has the form of a shaft that is mounted in bearings in a suitable support or member 11. It may be provided with a belt pulley or other transmission device 12 whereby to rotate the same.

14 designates the intermittently driven element, which has the form of a shaft that is mounted in bearings in the member 11, and which may be connected to any suitable mechanism that is designed to be operated by an intermittent rotary motion.

15 designates a gear wheel which is keyed or otherwise non-rotatively secured to the shaft 10. Said gear wheel 15 meshes with a second gear wheel 16 which, as herein shown, is keyed to a stub shaft 17 that is rotatably mounted in the member 11.

18 designates a disk which is mounted on the shaft 14 and is provided with a hub 19; said disk being secured to the shaft by means of a pin 20 extending through the hub and shaft.

21 designates a track member that is secured to the inner face of the disk 18, as by means of the screw bolts 22. Said track member is provided with a plurality of radial channeled tracks or grooves 23, there being six of such tracks or grooves shown. Said channeled tracks or grooves are open at their outer ends and are bounded at their sides by parallel flanges or ribs 24. They open at their inner ends into a central open space 25 of the track member. The ribs or flanges 24 of adjacent radial tracks are connected at their inner ends by the curved portions 26, constituting continuations of said flanges or ribs. The gear wheel 16 is provided near its periphery with a stud 27 which carries a loosely mounted roller 28 that extends toward and is adapted to travel in said channeled tracks 23. The disk 18 is provided with a V-shaped groove 29 in which fits a like shaped two-part brake element 30, 30 made of rubber or other suitable yielding friction material. The said two-part brake element is confined in said groove by means of the jaws 31, 31 which are pivoted to each other by means of the pivot link 32 which extends through the hinge lugs 33 of said jaws. Said jaws are provided diametrically opposite the hinge with parallel lugs 34, 34 to one of which is affixed a screw-threaded bolt 35 which ex-

tends loosely through an opening in the other jaw; and between the outer face of the latter jaws and a screw-threaded nut or nuts 36 at the end of said bolt is interposed a compression spring 37.

The operation of the device is as follows:—The primary or driven shaft 10 is rotated through power applied to the pulley 12 or otherwise, and operates, through the gear wheel 15, to continuously drive the gear wheel 16. The bearing roller 28 carried by the latter gear is thereby revolved continuously in one direction. During substantially one-half of its revolution said bearing roller 27 passes from a point at the outer end of one track (the position shown in Fig. 1) to the inner end of the track to impart to said track member and the disk 18 and shaft 14 associated therewith a partial rotation in the direction indicated by the arrow, and during the latter half of the revolution of said bearing roller 28 it travels outwardly through the next adjacent or rear track 23, relatively to the direction of rotation of the track member 21. The speed of the driven part, to wit, the shaft 14, is greatest while the bearing roller 28 is traveling through the outer ends of the tracks, such speed gradually decreasing as the bearing roller approaches the inner ends of the tracks and finally being brought to a rest to effect the proper pause or dwell as the bearing roller passes from one track to an adjacent track. During such time as the bearing roller 28 is engaged with the curved connecting rib or flange 26, the said latter flange is substantially concentric with the axis of rotation of the gear wheel 16 so that, as a result, said bearing roller 28 imparts no movement to the track member. During this period therefore the movement of said track member and the shaft 14 connected therewith is arrested to give the proper pause or dwell to said parts, notwithstanding the continuous movement of the bearing roller 28 in a circular path. As soon as the said bearing roller leaves the concentric portion of the curved connecting rib 26 and moves outwardly into the next rearward channeled track, rotary movement of said track member and the parts connected therewith begins and continues while the bearing roller is traveling outwardly through said track to the outer end thereof and inwardly to the inner end of the latter track. It will thus be seen that the track member and the parts connected to rotate therewith are brought to a very gradual stop or pause and that the movement of said track member is gradually resumed after such pause and gradually accelerated. By reason of the fact that the said track member is traveling at its slowest speed just before it is brought to a full stop, there is less likelihood of said track member and the parts rotating therewith overrunning the desired stopping point when brought to rest. Also by reason of the fact that the parts are brought into motion very gradually after the pause or dwell thereof, there is occasioned no shock or jar when said parts are thus brought into motion, so that the said secondary or intermittently rotated part may be connected to and operate delicate mechanism without danger of injuring the same.

The brake consisting of the members 30, 30 and the jaws 31, 31 is provided to avoid all likelihood of the parts overrunning when the parts are to be brought to rest.

In the organization of the mechanism here shown, and which is substantially the arrangement of the mechanism employed in the wrapping machine hereinbefore referred to, it becomes convenient to apply the power to the shaft 10. In some instances, however, the shaft 17 may become the primary driven element, with the same results in operation.

I claim as my invention:—

1. A mechanical movement comprising a driven element, a series of radial tracks thereon with adjacent tracks connected with each other at their inner ends, a rotary driving element arranged with its axis radially within the periphery of the driven element and a bearing stud arranged eccentrically on the driving element to travel through said tracks.

2. Mechanism for translating the continuous rotary motion of a driving element into an intermittent rotary motion of a driven element, with a pause or dwell between such intermittent motions, comprising a primary shaft with means for rotating the shaft, a secondary shaft, a member thereon having a plurality of radial tracks which are connected at their inner ends by curved portions, a bearing member rotating with and eccentric to the primary shaft and adapted to travel inwardly through one track, around said curved connecting portion and outwardly through an adjacent track, the curved connecting portion between adjacent tracks being concentric to the driven shaft while the bearing roller is passing around the same.

3. Mechanism for translating the continuous rotary motion of a driving element into an intermittent rotary motion of a driven element, with a pause or dwell between such intermittent motions, comprising a primary rotative shaft with means for rotating the shaft, a secondary shaft, a member thereon having a plurality of radial channeled tracks with side flanges, the flanges of adjacent tracks being joined by a curved connecting flange and a bearing member rotating with and eccentric to the primary shaft and adapted to travel inwardly

through one track, around said curved connecting rib and outwardly through an adjacent track.

4. Mechanism for translating the continuous rotary motion of a driving element into an intermittent rotary motion of a driven element, with a pause or dwell between such intermittent motions, comprising a driving shaft, a gear wheel thereon, a second shaft, a gear wheel thereon meshing with the first gear wheel, a third shaft, a member thereon having a plurality of radial tracks which are united at their inner ends by curved connecting portions, and a bearing member carried by the second gear wheel and eccentric thereto and adapted, during each rotation of the said second gear wheel, to pass inwardly through one track, around said connecting portion and outwardly through an adjacent track.

5. Mechanism for translating the continuous rotary motion of a driving element into an intermittent rotary motion of a driven element, with a pause or dwell between such intermittent motions, comprising a driving shaft, a gear wheel thereon, a second shaft, a gear wheel thereon meshing with the first gear wheel, a third shaft, a member thereon having a plurality of radial tracks which are united at their inner ends by curved connecting portions, a bearing member carried by the second gear wheel and eccentric thereto and adapted, during each rotation of the said second gear wheel, to pass inwardly through one track, around said connecting portion and outwardly through an adjacent track, and a brake device associated with the driven shaft to prevent the overrunning of said shaft.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 16th day of February A. D. 1911.

HARRY Y. ARMSTRONG.

Witnesses:
WILLIAM L. HALL,
WILLIAM GOLDBERGER.