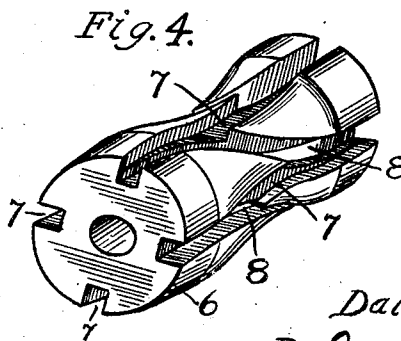
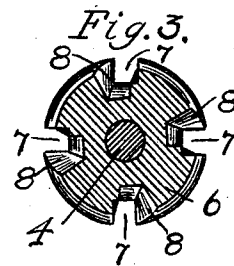
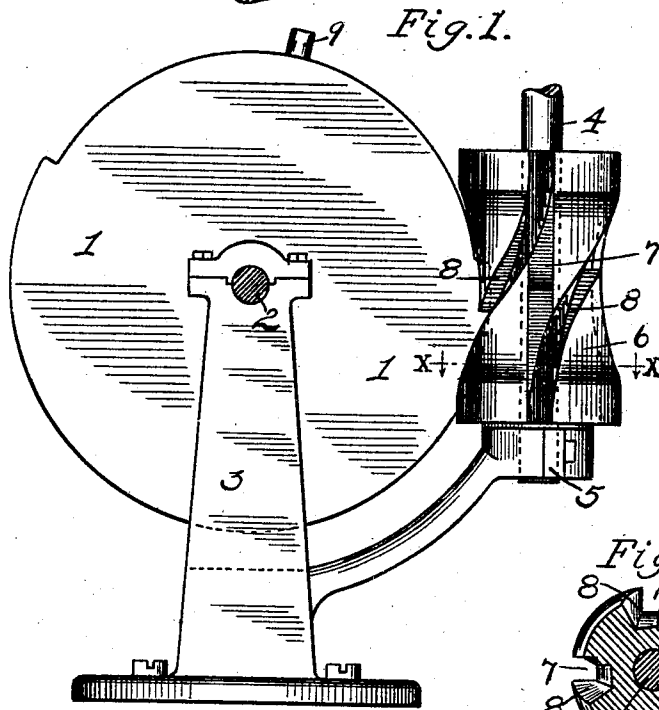
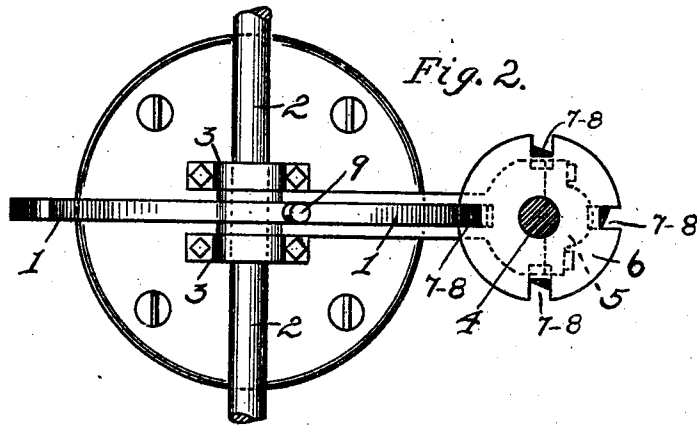


D. C. WOODWORTH.
MECHANICAL MOVEMENT.
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946,188.

Patented Jan. 11, 1910.



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UNITED STATES PATENT OFFICE.

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MECHANICAL MOVEMENT.

946,188.

Specification of Letters Patent.

Patented Jan. 11, 1910.

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To all whom it may concern:

Be it known that I, DALLAS C. WOODWORTH, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented a certain new and useful Mechanical Movement, of which the following is a specification.

My invention relates to mechanical movements and the object of my invention is to provide a novel mechanical combination by means of which intermittent rotary movement is obtained.

A further object of my invention is to provide a combination of such character which will be of such construction that by slight variations in the relative proportions of the parts comprising the same, any desired combination as to the duration of the interval intervening two successive rotary movements and that intervening two successive inoperative intervals or of the interval in which rotary movement is being effected, may be obtained.

A further object is to provide a combination of the nature stated by means of which a shaft or other construction may be turned through a complete revolution during the interval intervening two successive inoperative intervals, or may be turned through any fraction thereof, each time the same portion or fraction of a revolution or irregularly.

A still further object is to provide a combination as mentioned which will be of the highest possible efficiency in effecting the purposes above stated, and which will be simple and economical of construction.

Other objects will appear hereinafter.

With these objects in view my invention consists in a combination characterized as above mentioned and in certain details of construction and arrangement of parts all as will be hereinafter fully described and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a side elevation of my construction in its preferred form, Fig. 2 is a top plan view thereof, Fig. 3 is a transverse section taken on the line *x x* of Fig. 1, and Fig. 4 is a detail perspective of the pinion embodied in my invention.

Referring now to the drawings 1 indicates a gear wheel fixed to a shaft 2 jour-

naled in suitable bearings 3, said shaft being driven by any suitable means. Fixed to a shaft 4, the latter being mounted in suitable bearings 5, is a pinion 6 meshing with the gear wheel 1.

My invention lies wholly in the construction and arrangement of the gear wheel 1 and the pinion 6 it being understood that the remainder of the construction is auxiliary thereto, hence may be of any desired design.

The pinion 6 which is shaped in longitudinal cross-section to conform with the circular form of the gear wheel 1, is formed with a plurality of longitudinally extending grooves 7 either equally or irregularly spaced apart therein, the former arrangement being however shown in the drawings, and spirally extending grooves 8 of a depth greater than that of the grooves 7, each of said grooves 8 extending from the upper extremity of one of the longitudinal grooves 7 to the lower extremity of the next adjacent thereto. Said grooves 7 and 8 are, as shown, of equal widths. Radially projecting from the gear wheel 1 is a pin 9 preferably cylindrical in form. The gear wheel 1 is so arranged with respect to the pinion 6, that the periphery thereof is adapted to travel in the longitudinal grooves 7, the pin 9 being of a length such as to project beyond the peripheral path of said gear wheel, hence upon the rotation of the latter is adapted to engage the grooves 8. However, upon the engagement of said pin with said grooves the former will tend to effect the rotary movement of the pinion 6. In order to permit of such rotary movement of the latter, it is evident that the disengagement of the gear wheel therewith must first occur, it being clear that during the engagement of said gear wheel with said pinion, the latter is positively locked against all possible rotary movement. Hence, therefore, in order to permit of such rotary movement, as just stated, the periphery of the gear wheel 1 is cut away as at 10 for a portion of its circumference at either side of the pin 9, said cut away portion being of such length that the engagement of said pin with the pinion 6 and the engagement of said gear wheel with the latter, or vice versa, will occur simultaneously, the pinion at no time being entirely free for obvious reasons.

By the provision of a construction as shown and described it is evident that upon

each rotation of the gear wheel the pinion will be turned through a portion of a revolution equal to the pitch of the spiral groove engaged, hence by simply varying the pitch
 5 of the spiral grooves, the extent of the rotary movement of said pinion at each actuation thereof may be effected. By providing the pinion with spiral grooves of varying pitch the irregular intermittent rotary
 10 movement thereof may be effected. And further by varying the proportion of the diameter of the gear wheel and the length of the pinion, the duration of the interval of inoperative condition of the pinion relative
 15 to the interval of the operative condition thereof may be regulated with minute exactness.

While I have shown what I deem to be the preferable form of my invention, I do not
 20 wish to be limited thereto, as there might be many changes made in the details of construction without departing from the spirit thereof.

Having described my invention what I
 25 claim as new and desire to secure by Letters Patent is:

1. In a device for effecting intermittent rotary movement, a rotary member provided with a plurality of longitudinal grooves and
 30 a plurality of spiral grooves extending between opposite ends of said longitudinal grooves, in combination with rotary means for engaging said grooves alternately.

2. In a device of the class described, two
 35 members adapted to rotate upon different axes, one of said members being provided with longitudinal grooves and spiral grooves extending between the opposite ends of the first said grooves, and the other member
 40 comprising a disk-like portion a part of the periphery of which is adapted to engage said longitudinal grooves and means for engaging said spiral grooves, substantially as described.

3. In a device for effecting intermittent rotary movement, the combination of a rotary member, a second rotary member provided with longitudinal and spiral grooves,
 50 a part of the periphery of the first said rotary member engaging said longitudinal grooves, and provided with means for engaging said spiral grooves.

4. In a device for effecting intermittent rotary movement, the combination of a rotary member, a second rotary member provided with longitudinal and spiral grooves,
 55 each of said spiral grooves extending between opposite extremities of successive longitudinal grooves, the first said rotary member being mounted so that a part of the periphery thereof travels in said longitudinal grooves, the first said rotary member including means for engaging said spiral grooves.

5. In a device for effecting intermittent
 65 rotary movement, the combination of a ro-

tary member, a second rotary member provided with longitudinal and spiral grooves of different depths, each of said spiral grooves extending between opposite extremities of successive longitudinal grooves the
 70 first said rotary member comprising a disk shaped portion adapted to travel in said longitudinal grooves and means for engaging said spiral grooves.

6. In a device for effecting intermittent
 75 rotary movement, the combination of a rotary member, a second rotary member provided with longitudinal and spiral grooves, said spiral grooves extending between opposite extremities of adjacent longitudinal
 80 grooves, the first said rotary member comprising a disk shaped portion mounted so that a part of the periphery thereof travels in said longitudinal grooves, and means for engaging said spiral grooves, a portion of
 85 the periphery of said disk shaped portion being cut away to permit of the rotation of said second rotary member and said means being adapted to engage said spiral grooves upon the disengagement of said disk shaped
 90 portion from said second rotary member.

7. In a device for effecting intermittent rotary movement, the combination of a rotary member and a second rotary member provided with longitudinal and spiral
 95 grooves, the depth of said spiral grooves being greater than that of said longitudinal grooves, each of said spiral grooves extending between opposite extremities of successive longitudinal grooves, a part of the periphery of the first said rotary movement
 100 engaging said longitudinal grooves, and provided with means projecting therefrom for engaging said spiral grooves, said periphery being cut away at either side of said
 105 means to permit of the rotation of said second rotary member.

8. In a device for effecting intermittent rotary movement, the combination of a rotary member, a second rotary member provided with longitudinal and spiral grooves,
 110 each of said spiral grooves extending between opposite extremities of successive longitudinal grooves, the first said rotary member being mounted so that part of the periphery thereof travels in said longitudinal grooves, and including means projecting
 115 from its periphery for engaging said spiral grooves, the first said rotary member being so formed that the disengagement thereof
 120 with the second rotary member will be effected upon the engagement of said means with said spiral grooves.

9. In a device of the class described, a disk shaped rotary member having a portion
 125 of its periphery cut away and provided with a pin extending from the cut away portion, in combination with a rotary member mounted adjacent thereto and shaped to conform in longitudinal cross-section to the
 130

shape of the cut away portion of the periph-
ery of said disk, said rotary member being
provided with longitudinal grooves adapted
to be engaged by the non-cut away portion
5 of the periphery of said disk and spiral
grooves adapted to be engaged by said pin,
substantially as described.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

DALLAS C. WOODWORTH.

Witnesses:

JOSHUA R. H. POTTS,
JANET E. HOGAN.