

June 5, 1934.

G. LAGANAS

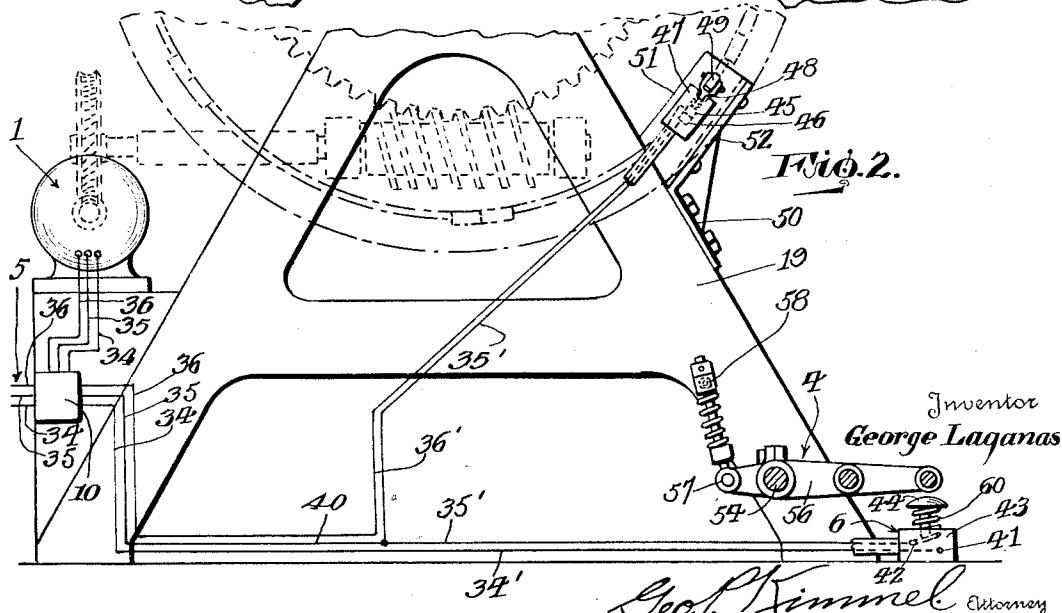
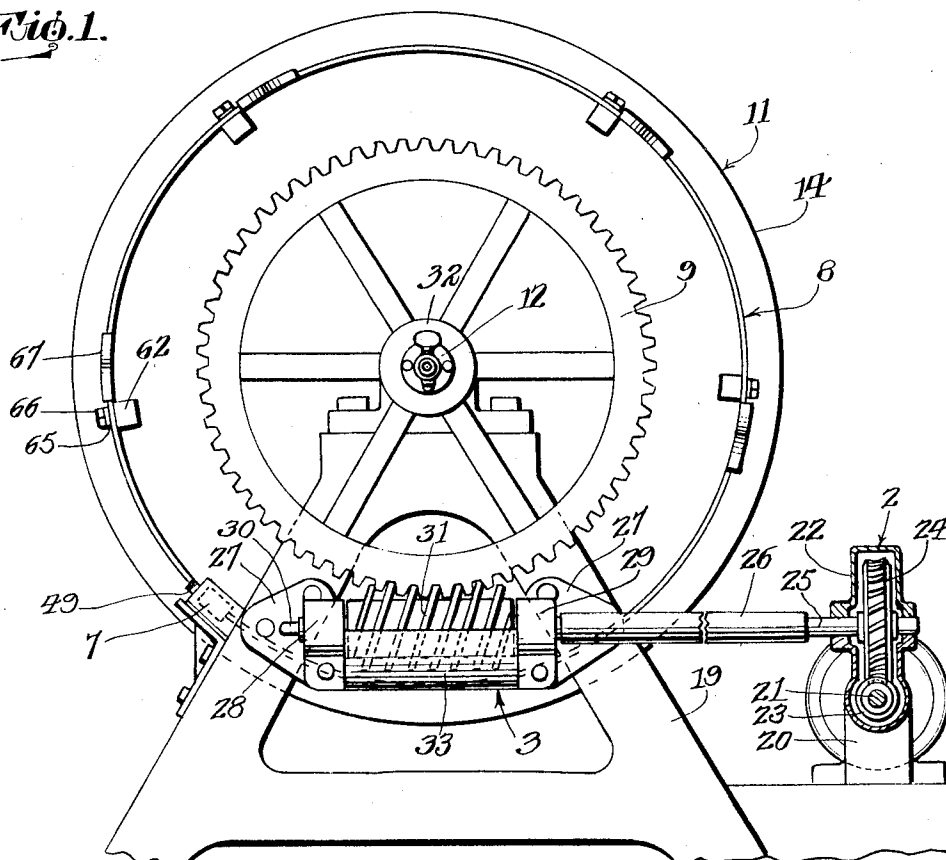
1,961,882

ELECTRICALLY CONTROLLED DRIVING MECHANISM

Filed Sept. 30, 1932

2 Sheets-Sheet 1

Fig. 1.



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2 Sheets-Sheet 2

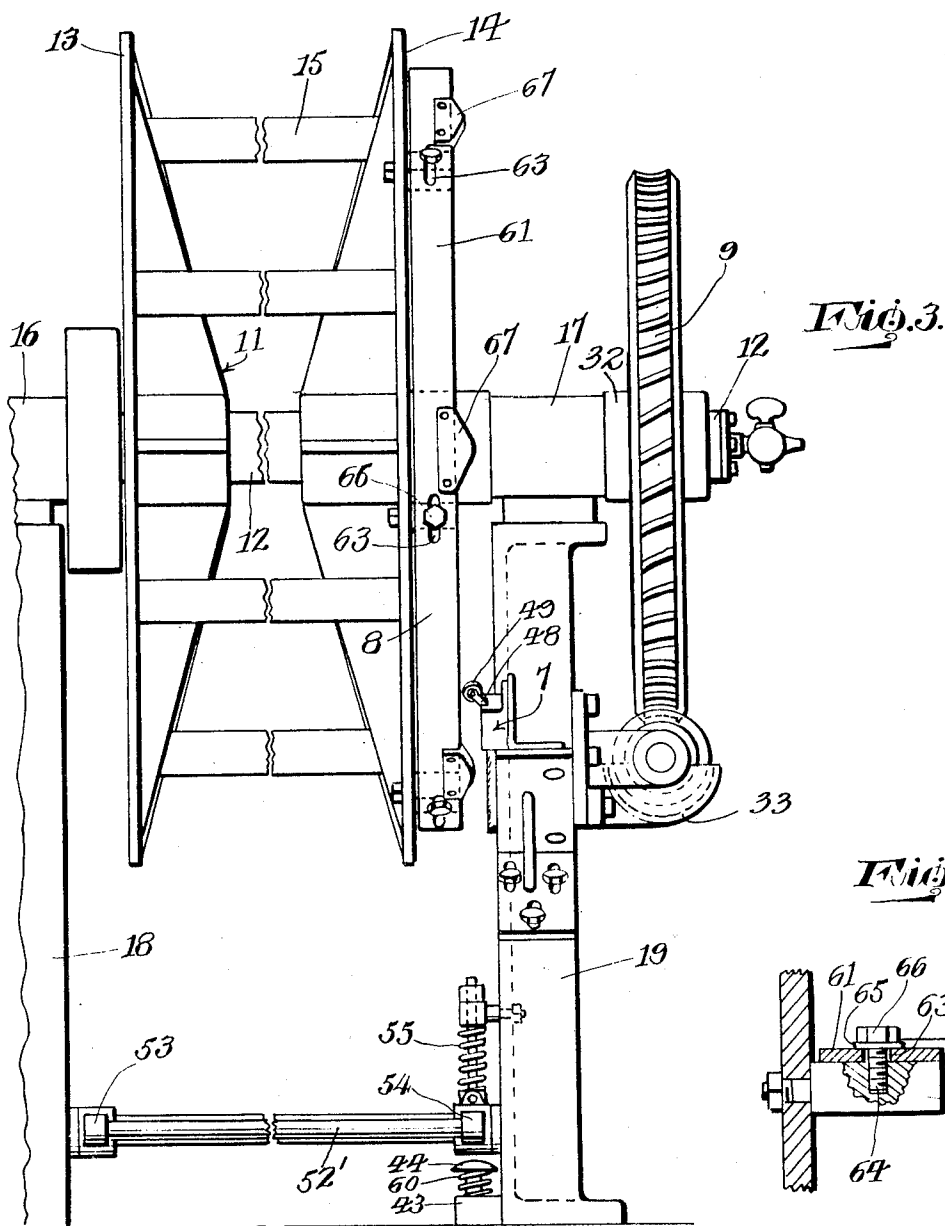
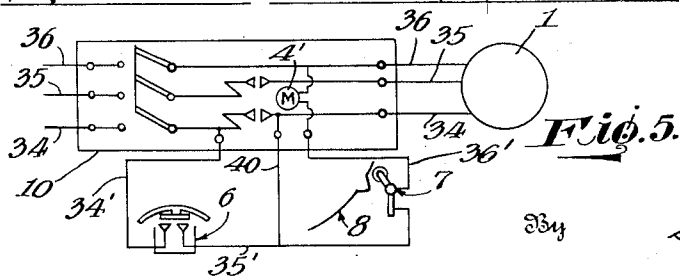
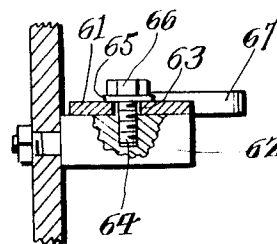


Fig. 4.



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UNITED STATES PATENT OFFICE

1,961,882

ELECTRICALLY CONTROLLED DRIVING
MECHANISM

George Laganas, Lowell, Mass.

Application September 30, 1932, Serial No. 635,709

2 Claims. (Cl. 172-239)

This invention relates to an electrically controlled driving mechanism for an intermittently revolving carrier, and has for its object to provide, in a manner as hereinafter set forth, a mechanism for the purpose referred to including means depending upon the movement of the carrier to automatically discontinue the operation of the driving mechanism after the carrier travels a portion of a complete revolution.

10 A further object of the invention is to provide, in a manner as hereinafter set forth, a mechanism for the purpose referred to for imparting to a carrier a series of intermittent impulses to revolve it and each impulse having the duration thereof depending upon the movement of the carrier.

15 A further object of the invention is to provide, an electrically controlled and electrically operated driving mechanism for a revoluble carrier and having the operation of the electrical controlling means thereof dependent upon the movement of the carrier for the purpose of imparting intermittent impulses to the carrier to provide a complete revolution thereof.

20 A further object of the invention is to provide, an electrically controlled driving mechanism for a revoluble carrier including a starter element for successively making the mechanism active to revolve the carrier, and further including a controlling means depending upon the movement of the carrier for successively discontinuing the operation of the driving mechanism on the movement of the carrier thereby providing for the intermittent revolving of the carrier.

25 A further object of the invention is to provide, in a manner as hereinafter set forth, an electrically controlled driving mechanism for a revolving carrier, and having means depending upon the movement of the carrier for arresting the revolving thereof successively during its movement for any desired period of time.

30 Further objects of the invention are to provide, an electrically controlled driving mechanism for a revolving carrier which is comparatively simple in its construction, strong, durable, thoroughly efficient for the purpose intended thereby, readily installed with respect to the carrier, and comparatively inexpensive to set up.

35 To the above ends essentially, and to others which may be hereinafter referred to, the invention consists of such parts, and such combination of parts which fall within the scope of the invention as claimed.

40 The carrier which is revolved by the mechanism

can be of any suitable form, but of a construction whereby the elements of the driving mechanism may be attached to one end thereof and further one that is to have imparted thereto a complete revolution and stoppage at the end of the revolution, or of a type which is to have successive impulses imparted thereto to provide for the intermittent revolving thereof. The form of carrier illustrated and hereinafter referred to, is shown by way of example, to enable one to readily understand the adaptation of a driving mechanism, in accordance with this invention for the purpose of revolving a carrier or any other structure with which the mechanism is applicable. The electrically controlled mechanism forming the subject matter of this application is briefly referred to and illustrated in my application, Serial Number 634,249 filed September 21, 1932.

In the drawings:

Figure 1 is an end view of a revoluble carrier showing the adaption therewith of the electrically controlled driving mechanism.

Figure 2 is a fragmentary view in elevation looking towards the inner face of one of the supports for the carrier and showing in full and dotted lines the electrically controlled driving mechanism for the carrier.

Figure 3 is a fragmentary view in front elevation of the carrier showing the adaptation therewith of portions of the driving mechanism.

Figure 4 is a sectional detail of the operating means for the cutout.

Figure 5 illustrates the arrangement of the circuits diagrammatically.

The electrically controlled driving mechanism includes an operating motor 1 of the electrical type, a reducing gearing 2, a starter structure 4, a magnetic switch 4', a normally open power line 5, a starting circuit to be hereinafter referred to, a normally open switch 6 interposed in said circuit, a controlling circuit to be hereinafter referred to, a normally closed cutout 7 in said controlling circuit, operating means 8 for cutout 7, a worm gear 9 connected to the shaft of the carrier and operated from drive 3.

The power line 5 includes circuit conductors 34, 35, and 36 and a magnetic switch 4' interposed in conductors 34 and 35. This switch is operated by the starting and controlling circuits shown diagrammatically in Figure 5, which circuits are of conventional form as illustrated in Patent 1,862,158 issued June 7, 1932.

The starting circuit includes conductors 34', 35', and 40, and a switch 6 interposed between

conductors 34' and 35'. The conductor 34' is electrically connected to the conductor 34 on the line side of the switch 4'. The conductor 40 is electrically connected to the conductor 34 on the load side of the magnetic switch 4' and leads from the conductor 35'.

The controlling circuit includes circuit conductors 35', 36', and 40, a cutout 7 interposed between conduits 35' and 36', and the switch 4' interposed in the conductor 36'. The conductor 36' is connected to the conductor 36.

The motor 1 is mounted upon a suitable support 20 arranged adjacent to support 19. The shaft 21 of motor 1 is extended into a housing 22 and provided with a worm 23 which meshes with a worm gear 24 fixed to one end 25 of a worm shaft 26. The end 25 of shaft 26 is journaled in housing 22. The worm 23 and gear 24 provide the reducing gearing 2.

Secured to the outer face of support 19 a substantial distance below the top thereof is a pair of opposed spaced brackets 27 formed with outwardly directed bearings 28, 29. The shaft 26 extends through bearing 29 and has its other end 30 mounted in bearing 28. The shaft 26 between bearings 28, 29 is formed with a worm 31 which meshes with and drives the worm gear 9, the latter being fixed to shaft 12 outwardly with respect to bearing 17. The hub of gear 9 is indicated at 32 and opposes the outer end of bearing 17 in close relation thereto. Secured to the brackets 27, arranged between bearings 28, 29 and below worm 31 is an open top lubricant container 33 of semi-cylindrical cross section and into which worm 31 extends during the rotation of the latter. On the operation of motor 1 shaft 26 will be driven thereby providing for the operation of gear 9 resulting in the revolving of carrier 11.

The conductors 34', 35' are attached to spaced contacts 41, 42 respectively arranged in the housing 43 of switch 6. A normally inactive vertically movable spring controlled circuit closing element 44 coacts with the contacts for closing the circuits and it projects upwardly a suitable distance above the top of housing 43.

The conductors 35', 36' are attached to a pair of normally abutting contacts 45, 46 arranged within the housing 47 of cutout 7. The contact 45 is moved from engagement with contact 46 by a shiftable pivoted circuit cutout member 48 which depends into housing 47, as well as extends from the upper end of the latter and has its outer end provided with a roller 49 impacted upon in a manner to be referred to for the purpose of shifting member 48 in a direction to move contact 45 clear of contact 46 to cut out the power line to motor 1, thereby discontinuing its operation and the revolving of the carrier 11. The contact 45 is carried on the inner end of member 48. The latter assumes its normal position to bring the contacts 45, 46 into engagement after member 48 is clear of the means which impacts against roller 49. The housing 47 is disposed at an upward and outward inclination with respect to support 19. The latter has adjustably secured to its front side an angle shaped bracket 50 carrying an angle 51 at its top, to which is secured the cutout 7. The upper leg 52 of bracket 50 supports the angle 51 at an inclination with respect to support 19.

The starter structure 4 is associated and coacts with the switch 6 for closing the starting circuit to cause the operation of the drive to revolve the

carrier and it includes a spring controlled foot tread 52', arranged between and eccentrically pivoted at its sides to the supports 18, 19, a suitable distance above the bottoms of the latter, as at 53, 54 respectively. The spring controlling means 55 for tread 52' is arranged at the inner end of its side 56 and pivotally connected thereto, as at 57. The means 55 is slidably coupled to the support 19, as at 58 and extends upwardly from the tread 52'. The outer end of side 56 is arranged directly over and normally spaced from the element 44 of switch 6. On depressing tread 52' element 44 will be shifted downwardly against the action of its controlling spring 60 whereby the contacts 41, 42 will be electrically coupled together to close the starting circuit whereby the power line circuit to the motor is closed, causing the operation of the motor and providing for the revolving of the carrier until the cutout 7 is shifted to cutout position by the operating means 8 for the latter thereby opening the closing circuit. When cutout 7 is shifted to cutout position the power line will be opened to the motor 1 and the operation of the latter discontinued. The actuation of the means 8 depends upon the movement of the carrier 11. After element 44 is moved downwardly to engage contacts 41, 42 the pressure on tread 52' is removed and the starter structure 4 and switch 6 will be moved by the spring 60 to the position shown in Figure 2.

The operating means 8 for the cutout 7 comprises a circular band 61 positioned against and laterally extending from the outer face of disc 14. The band 61 can be adjusted relatively to the disc 14 and is positioned against the outer side faces of a series of spaced posts 62 anchored to and extending laterally from the outer face of disc 14. The band 61 is formed with a series of spaced slots 63 disposed circumferentially thereof and extending through said slots are removable head holding screws 64 engaging in the posts 62. Positioned on the screws 64 are washers 65 which abut the other face of the band 61. Bearing against the washers 65 are the heads 66 of the screws 64 for clamping the band 61 against the posts 62. The screws 64 and slots 63 permit of the band being adjusted relatively to the disc 14. The band 61 bodily revolves with disc 14 and has rigidly secured thereto at spaced intervals, as well as overlapping and extending from its outer edge a series of tapered trips 67 for successively acting, at spaced intervals to move the circuit cutout member 48 to circuit opening position providing for the stoppage of the operation of the motor. The trips 67 successively impact with roller 49. When a trip 67 moves clear of roller 49, the member 48 automatically returns to its normal position to place contacts 45, 46 in engagement to electrically couple conductors 36', 40 together, but as the magnetic switch 4' will not be closed thereby the motor 1 will not operate.

The impulse given to the carrier 11 will be equal to the distance between a pair of trips 67. The stoppage of the carrier permits of removing work or articles therefrom and for placing new work or new articles thereon. The adjusting of band 61 carrying the trips therewith will permit of the stoppage of the carrier at the point desired for the convenient handling of the work or article when removing and placing thereon respectively completed work and work to be acted upon.

When the starting structure 4 is depressed,

thus closing the normally open switch 6, a closed circuit is formed from the line or live side of the conductor 34 through conductor 34', switch 6, conductor 35', normally closed switch 7, conductor 36', and the actuator of the magnetic switch 4' to the live conductor 36. This energizes the actuator of the magnetic switch, such actuator usually being in the form of a solenoid, and causes the magnetic switch to close, thus starting the motor 1. When the magnetic switch is in closed position, the load side of the conductor 34 becomes live. The switch 6 may then be allowed to open by removing the pressure therefrom, and there will remain a closed circuit from the load side of the conductor 34 through the conductors 40 and 35', the cutout 7, the conductor 36', and the magnetic switch actuator to the conductor 36. The actuator will therefore continue to be energized, thus maintaining the magnetic switch in closed position and keeping the motor running.

After the carrier has rotated by a predetermined amount, one of the trips 67 will open the cutout 7 as previously described. This breaks the circuit through the magnetic switch actuator, deenergizing the same and permitting the magnetic switch to open and stop the motor.

What I claim is:—

1. An electrical mechanism for intermittently revolving a work carrier, comprising an electric motor, a drive connection for the carrier leading from the latter to said motor, a power line leading to the motor, electrical control means including a normally open starting switch and a shiftable automatically returnable normally closed stopping cutout associated with said power line, said starting switch providing when moved to closed position for connecting said power line to said motor to start the same and cause the carrier to revolve, said stopping cutout providing when moved to open position for the disconnecting of said power line to said motor to

stop the same and cause the carrier to stop, a band secured to, bodily movable with, and depending upon the movement of the carrier, and having spaced projecting trips adjacent its outer edge for shifting said cutout to and maintaining it in open position during predetermined relatively small portions of the path of travel of the carrier to insure the stopping of the carrier at predetermined points, said band being bodily adjustable with respect to said carrier to simultaneously adjust the positions of said projecting trips with respect to the carrier.

2. An electrical mechanism for intermittently revolving a work carrier, comprising an electric motor, a drive connection for the carrier leading from the latter to said motor, a power line leading to the motor, electrical control means including a normally open starting switch and a shiftable automatically returnable normally closed stopping cutout associated with said power line, said starting switch providing when moved to closed position for connecting said power line to said motor to start the same and cause the carrier to revolve, said stopping cutout providing when moved to open position for the disconnecting of said power line to said motor to stop the same and cause the carrier to stop, a plurality of spaced projecting trips secured to, bodily movable with, and depending upon the movement of the carrier for shifting said cutout to and maintaining it in open position during predetermined relatively small portions of the path of travel of the carrier to insure the stopping of the carrier at predetermined points, said starting switch being of the spring controlled type and normally maintained open by its controlling spring, and said stopping cutout being of the pivoted counterbalanced type normally maintained closed by its counterbalance and means for simultaneously adjusting the positions of said trips with respect to said carrier.

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