C. P. BRADLEY.

HAND GENERATOR.

APPLICATION FILED NOV. 24, 1914.

**1,209,932.** Patented Dec. 26, 1916.

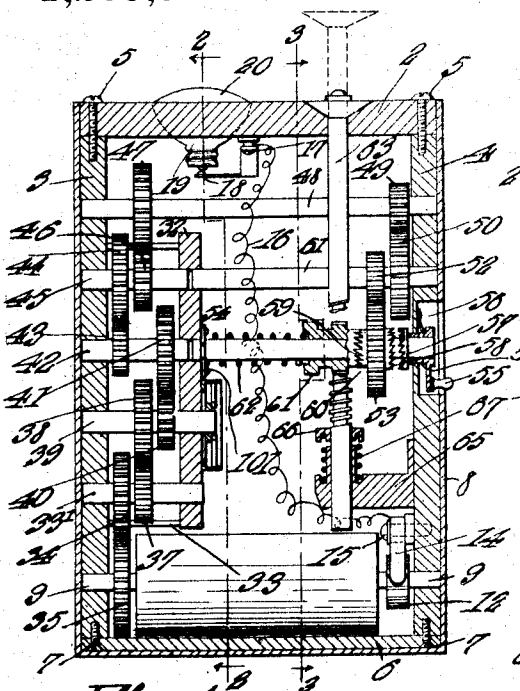


Fig. 1.

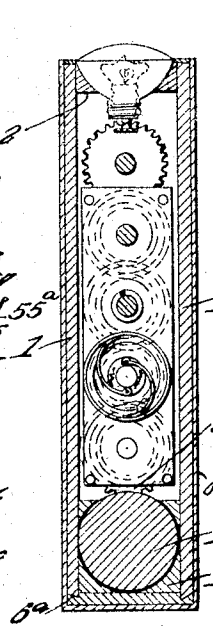


Fig. 2.

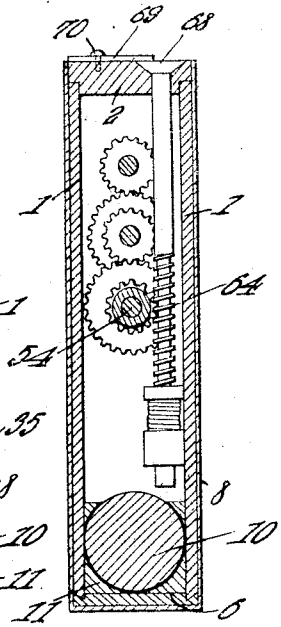


Fig. 3.

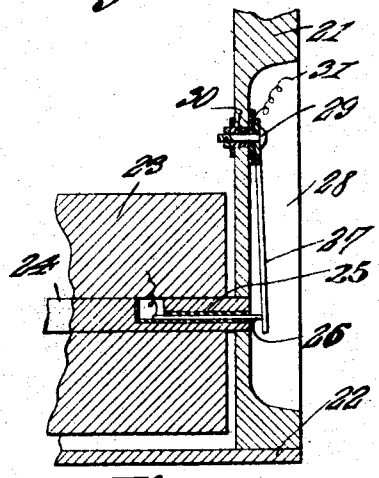


Fig. 4.

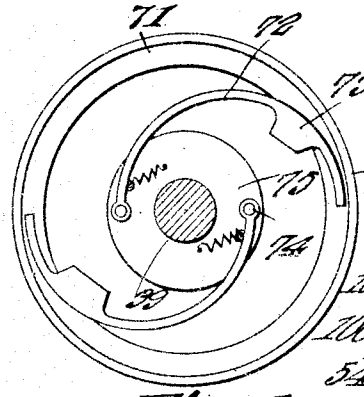


Fig. 5.

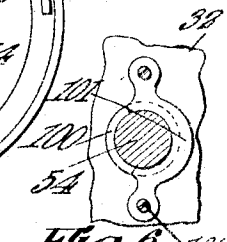


Fig. 6.

Witnesses

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# UNITED STATES PATENT OFFICE.

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## HAND-GENERATOR.

1,209,932. Specification of Letters Patent. Patented Dec. 26, 1916.

Application filed November 24, 1914. Serial No. 873,761.

*To all whom it may concern:*

Be it known that I, CHARLES P. BRADLEY, a citizen of the United States, residing at Pemberton, in the county of Burlington and State of New Jersey, have invented a new and useful Hand-Generator, of which the following is a specification.

The device forming the subject matter of this application is an electric flash lamp, and one object of the present invention is to provide novel means whereby the lamp may be operated without using a battery.

Another object of the invention is to improve the driving mechanism whereby the dynamo is operated.

It is within the scope of the invention to provide novel means for coupling up the different driving portions of the structure operatively.

The invention aims to improve generally and to enhance the utility of devices of that type to which the structure shown in this application appertains.

With the above and other objects in view which will appear as the description proceeds the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawing: Figure 1 shows the invention in a longitudinal section; Fig. 2 is a longitudinal section on the line 2—2 of Fig. 1; Fig. 3 is a longitudinal section on the line 3—3 of Fig. 1; Fig. 4 is a fragmental section showing a modified form of the invention; Fig. 5 is an elevation of the brake drum and attendant parts. Fig. 6 is a fragmental longitudinal section showing a shaft holding means.

In the accompanying drawing there is shown a pair of permanent steel magnets 1 connected at their upper ends by a bar 2 preferably of wrought iron. The frame of the structure includes supports 3 and 4 in the form of plates, the upper ends of the plates 4 being connected by means of screws 5 with the bar 2. The lower ends of the supports 3 and 4 are united by an end plate 6 held in place by screws 7, the end plate 6 preferably being fashioned from brass or some other non-magnetic material. If desired, as clearly shown in Figs. 2 and 3, the lower ends of the magnets 1 may be received in recesses $6^a$ formed in the end plate 6. The entire frame thus formed may be surrounded by a suitable cover or casing indicated by the reference character 8.

Journaled for rotation in the supports 3 and 4 is an armature shaft 9 carrying the armature 10 of the dynamo whereby current is generated. As shown in Figs. 2 and 3, the lower ends of the magnets 1 may be provided with field pieces 11, coöperating closely with the periphery of the armature 10 to reduce the air gap. Attached to the shaft 9 is a slip-ring 12 coöperating with a brush 14 held upon but insulated from the support 4 by means of a securing element 15. Leading from the brush 14 is a conductor 16 connected with a binding element 17 mounted on the bar 2, the binding element 17 holding in place a spring arm 18 having contact with a lamp socket 19. A portion of the socket 19 is grounded in a common and well known manner to the frame of the structure. The socket 19 is adapted to hold an electric lamp 20.

In Fig. 4, a modified form of the invention is shown. In Fig. 4, one of the supports is shown at 21, the end plate being shown at 22, the numeral 23 indicating the armature and the numeral 24 indicating the armature shaft. Inserted into the armature shaft 24 is a tube 25 of insulating material, receiving a pin 26, the outer end of which is in contact with a spring tongue 27 located in a recess 28 in the support 21, one end of the tongue 27 being fixed to the support 21 within the contour of the recess 28 by means of a connecting element 29 insulated from the support 21, as shown at 30, the lamp conductor being indicated at 31. The pin 26 is in circuit with the winding of the armature. Projecting from the support 3 as clearly shown in Fig. 1 are spindles 33 or the like upholding a bearing plate 32 disposed parallel to the support 3. Journaled in the bearing plate 32 and in the support 3 is a shaft 33′, carrying a pinion 34, meshing into a gear wheel 35 on the shaft 9. The shaft 33′ carries a pinion 37 meshing into a gear wheel 38 on a shaft 39 journaled in the support 3 and in the bearing plate 2. Mounted on the shaft 39 is a pinion 40 meshing into a gear wheel 41 on a shaft 42 journaled in the bearing plate 32 and in the support 3. On the shaft 42 is a pinion 43 meshing into a gear wheel 44 on a shaft 45 journaled in the

bearing plate 32 and in the support 3. The shaft 45 carries a pinion 46 meshing into a pinion 47 on a shaft 48 journaled in the supports 3 and 4. The shaft 48 carries a pinion 49 meshing into a gear wheel 50 on a shaft 51 journaled in the support 4 and in the bearing plate 32. The shaft 51 carries a pinion 52 meshing into a gear wheel 53 journaled for rotation on a shaft 54 rotatable in the parts 32 and 4. In order to prevent the shaft 54 from moving endwise, the same may be provided with a circumferential groove 100 adapted to receive an arched plate 101 attached adjacent its ends by means of securing elements 102 to the inner face of the bearing plate 32.

An actuating crank 55 is shown, the same having a collar $55^a$ surrounding the end of the shaft 54, the collar $55^a$ and the crank 55 being slidable to move the clutch 57 which forms a part of the collar $55^a$ into and out of engagement with the clutch 58 constituting a part of the gear wheel 53. Preferably, the support 4 is equipped with the recess 56 in which the crank handle 55 is located. A clutch 60 forms a part of the gear wheel 53 and is adapted to coact with the clutch 59 mounted to rotate on the shaft 54 and carrying a pinion 61. The clutch 59 is controlled by a spring 62 surrounding the shaft 54 and abutting against the bearing plate 32.

Mounted to reciprocate in the bar 2 and in a bracket 65 which projects from the support 4 is a plunger 63 having a spiral, circumscribing rack adapted to coact with the pinion 61. Owing to the specific form of rack employed, the plunger and the pinion 61 may coact without binding. The plunger 63 carries a head 66 and interposed between the head 66 and the bracket 65 is a compression spring 67. At its upper end, the plunger 63 carries a button 68, and the bar 2 is recessed upon its outer face to receive the button. Mounted to swing on the bar 2 and held thereon by a pivot element 70 is a latch 69, adapted to overlap the button 68 and thereby to hold the plunger 63 in a depressed condition, so that when the device is not in use, the plunger 63 may not be advanced into a protruding, objectionable location, by the action of the spring 67.

Attached to the inner face of the bearing plate 32 is a drum 71 which is shown in detail in Fig. 5. The drum 71 includes an outstanding peripheral rim 76, adapted to be engaged by the ends of curved arms 72, suitably weighted as indicated at 73, the arms 72 being connected pivotally at their inner ends, as shown at 74, with a disk 75 which is attached to the inner end of the shaft 39. The arms 72 coacting with the rim 76 of the drum 71 act as a governor or brake, tending to equalize the speed of the structure when the same is in operation.

In practical operation, the clutch 59 is moved to the right, referring to Fig. 1, by the action of the spring 62 and is brought into engagement with the clutch 60 on the gear wheel 53. By this operation, the pinion 61 which forms a part of the clutch 59, is brought into operative relation with the rack 64 on the plunger 63. The plunger 63 is then thrust inwardly, compressing the spring 67. As the plunger 63 is pushed inwardly, the armature shaft 9 of the dynamo is driven by a gear train comprising the following elements:—the rack 64 and the plunger 63, the pinion 61, the clutches 59 and 60, the gear wheel 53, the pinion 52, the gear wheel 50, the pinion 49, the shaft 48, the gear wheel 47, the pinion 36, the gear wheel 44, the pinion 43, the gear wheel 41, the pinion 40, the gear wheel 38, the pinion 37, the pinion 34 and the gear wheel 35. Owing to the train above described, a comparatively slight movement in the plunger 63 will cause the armature shaft 9 to revolve rapidly, generating the necessary current to light the lamp 20 for a predetermined time. Owing to the fact that the drums 72 coact with the rim of the brake-drum 71, the speed of rotation of the shaft 9 is maintained practically constant, and the lamp 20 is lighted with uniform brilliancy.

So soon as the pressure on the plunger 63 is released, the same begins to move upwardly, due to the action of the spring 67. The teeth on the clutch 60 and the teeth on the clutch 59 are so shaped that they will interengage and lock when the plunger 63 moves downwardly, but when the plunger 63 moves upwardly under the action of the spring 67, the beveled faces of the teeth on the clutch 60 and on the clutch 59 coact, when the pinion 61 is rotated, to move the said pinion out of mesh with the rack on the plunger, whereupon the plunger will rise under the action of the spring 67 without rotating the entire gear train. If desired, at the will of the operator, the shaft 54 may be rotated through the medium of the crank handle 55 and the clutch 57, instead of by means of the plunger 63 and corresponding parts.

When the device is not in use, the plunger 63 may be thrust inwardly and the latch 69 may be swung on the pivot element 70 so that the latch overhangs the button 68 on the upper end of the plunger, thus to hold the plunger within the contour of the framework or casing, and in an out-of-the-way position.

Having thus described the invention, what is claimed is:—

1. In a device of the class described, a pair of permanent magnets; a yoke connecting the ends of the magnets; supports lying between the magnets; an armature journaled in the supports and located between the

magnets; a bracket projecting from one support; a plunger mounted to slide in the yoke and the bracket; yieldable means coacting with the bracket and with the plunger for moving the plunger in one direction; a gear train operatively connected with the armature; and means for connecting one member of the gear train operatively with the plunger.

2. In a device of the class described, a frame; a dynamo carried thereby and including an armature; a bearing plate supported by the frame; a main shaft journaled in the frame; a gear train operatively connecting the main shaft with the armature and including rotatable elements journaled in one side of the frame and in the bearing plate; a second shaft journaled in the other side of the frame and in the bearing plate; a gear train operatively connected with the main shaft and including a wheel journaled on the second shaft, the wheel being provided with clutch elements on its opposite sides; an actuating member slidable longitudinally of the second shaft and including a clutch element adapted to coact with one of the clutch elements of the wheel; a pinion movable longitudinally of the shaft and including a clutch element adapted to coact with the other clutch element of the wheel; a slidable, frame-supported rack bar wherewith the pinion coacts; and a compression spring abutting against the pinion and the bearing plate and surrounding the second shaft.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CHARLES P. BRADLEY.

Witnesses:
CLARA D. WARD,
H. E. BRADLEY.

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