

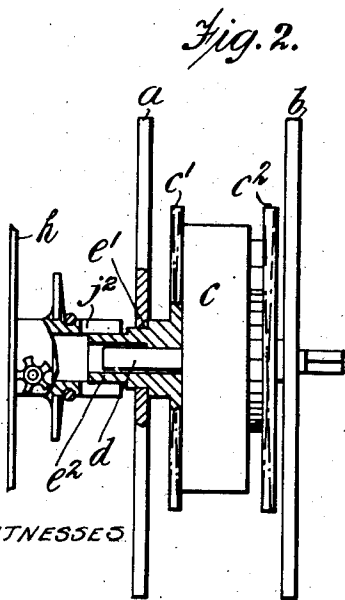
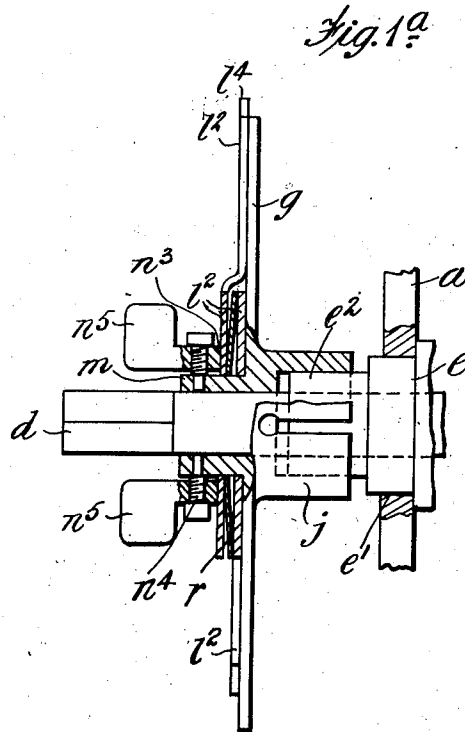
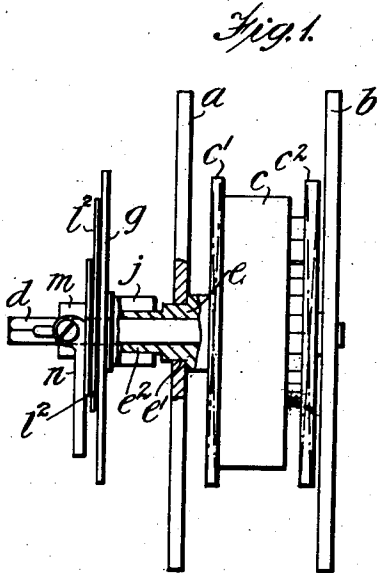
A., G. O. H., E. H. & S. A. HORSTMANN & W. T. EDGAR.
GAS CONTROLLER, ELECTRIC TIME SWITCH, AND OTHER TIMING DEVICE.

APPLICATION FILED OCT. 7, 1910.

1,027,653.

Patented May 28, 1912.

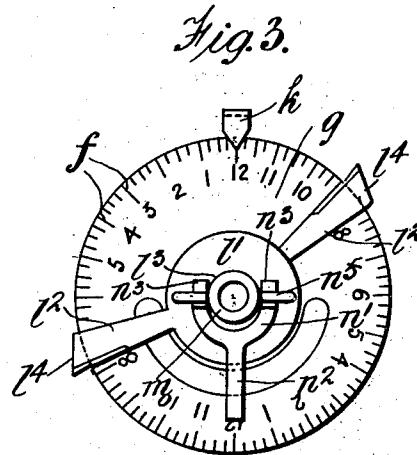
2 SHEETS—SHEET 1.



WITNESSES

R. C. Praddock.

Emory L. Groff.



INVENTORS

ALBERT HORSTMANN,
GUSTAV OTTO HENRY HORSTMANN,
ERNEST HERMANN HORSTMANN,
SIDNEY ADOLPH HORSTMANN,
WILLIAM THOMSON EDGAR.

By S. F. Walchaupter.
his attorney

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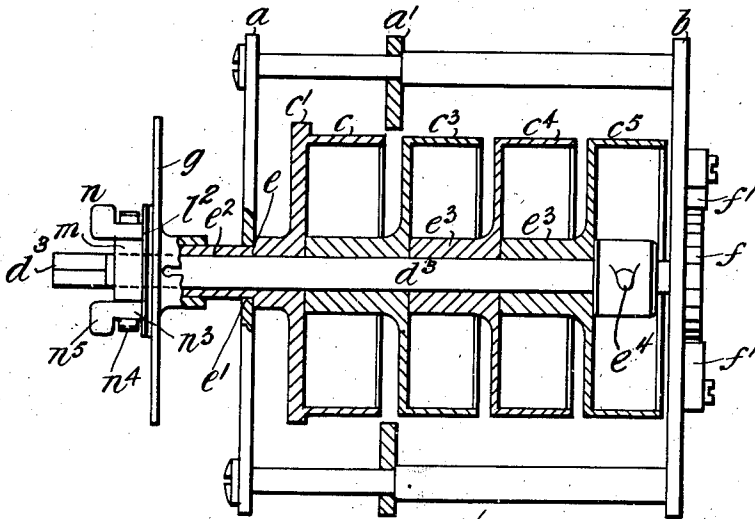


Fig. 4.

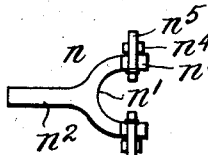


Fig. 5.

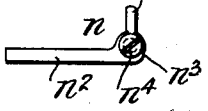


Fig. 5^a.

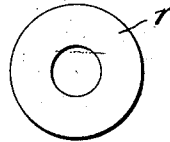


Fig. 7.



Fig. 7^a.

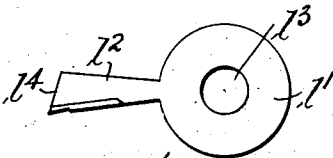


Fig. 6.

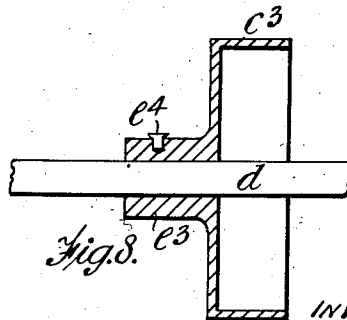


Fig. 8.

WITNESSES

R. C. Braddock.

Emory L. Groff.

INVENTORS

ALBERT HORSTMANN
GUSTAV OTTO HENRY HORSTMANN
ERNEST HERMANN HORSTMANN
SIDNEY ADOLPH HORSTMANN
WILLIAM THOMSON EDGAR.

By S. P. Whipple
his Attorney

UNITED STATES PATENT OFFICE.

ALBERT HORSTMANN, GUSTAV OTTO HENRY HORSTMANN, ERNST HERMANN HORSTMANN, SIDNEY ADOLPH HORSTMANN, AND WILLIAM THOMSON EDGAR, OF BATH, ENGLAND.

GAS-CONTROLLER, ELECTRIC TIME-SWITCH, AND OTHER TIMING DEVICE.

1,027,653.

Specification of Letters Patent.

Patented May 28, 1912.

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To all whom it may concern:

Be it known that we, ALBERT HORSTMANN, GUSTAV OTTO HENRY HORSTMANN, ERNST HERMANN HORSTMANN, SIDNEY ADOLPH HORSTMANN, and WILLIAM THOMSON EDGAR, subjects of the King of Great Britain and Ireland, and residents of Bath, county of Somerset, England, have invented certain new and useful Improvements in Gas-Controllers, Electric Time-Switches, and other Timing Devices, of which the following is a specification.

The present invention relates to certain new and useful improvements in time switches of that type which are actuated by clock work or the like and serve to open and close a switch or cock at predetermined times.

The object of the invention is the provision of a device of this character which can be readily mounted in position, which can be accurately and quickly adjusted to open and close a switch or cock at the desired times, and which is positive and reliable in its operation.

With these and other objects in view, the invention consists in certain novel combinations and arrangements of the parts as will more fully appear as the description proceeds, the novel features thereof being pointed out in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:—

Figure 1 is a side elevation of a switch operating mechanism constructed in accordance with the invention, portions being shown in section. Fig. 1^a is a top plan view on an enlarged scale, portions being broken away and shown in section. Fig. 2 is a side elevation of a modified form of the invention, portions being shown in section. Fig. 3 is a front elevation of the dial. Fig. 4 is a side elevation showing a still further modification, portions being shown in section. Fig. 5 is a plan view of the locking cam member. Fig. 5^a is a side elevation of the same. Fig. 6 is a plan view of one of the discharging arms. Fig. 7 is a plan view of one of the dish spring washers. Fig. 7^a is a side elevation of the same, and Fig. 8 is a sectional view through one of the bar-

rels employed in the modification illustrated in Fig. 4.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to Fig. 1 of the drawing, the reference characters *a* and *b* indicate two spaced plates having a barrel *c* arranged between the same, the said barrel being mounted upon a winding arbor *d* which projects outwardly beyond the plate *a* where it terminates in a square head adapted to be engaged in the usual manner by a key when winding the spring within the barrel *c*. The barrel *c* is formed with the usual gear wheel *c'* which constitutes one of the gears of an ordinary clock work or train of gears controlled by an escapement, the said wheel being regulated to make one complete revolution every twenty-four hours or other predetermined period of time. It will also be observed that the barrel *c* is formed with a centrally disposed boss *e* which surrounds the winding arbor and is formed with a bearing *e'* fitting within the opening within the plate *a*. The outer end of the boss is reduced as indicated at *e²* and frictionally engaged by a split sleeve *j* upon the dial plate *g*.

Suitable graduations *f* are provided upon the face of the dial *g* for cooperation with a fixed pointer *h*, and carried by this dial plate is a series of switch actuating or discharging arms *l²*. The outer end of each of these discharge arms *l²* projects beyond the periphery of the plate *g* and has the end thereof beveled as indicated at *l⁴* so as to contact with a suitable member arranged in the path thereof and either open or close the switch or cock as may be desired. The inner end of each of the discharge arms *l²* is formed with a disk *l'* having a central opening *l³* therein to receive a boss *m* which projects outwardly from the dial plate. Dish spring washers *n*, such as are shown in detail in Figs. 7 and 7^a may be interposed between the disks *l'* of the various discharge arms, and a clamping member *n* is employed for forcing the disks *l'* against the dial plate to lock the discharge arms rigidly in an adjusted position. This clamping member is shown in detail in Figs. 5 and 5^a, and com-

prises a lever n^2 having one end thereof bifurcated as indicated at n' , the arms of the bifurcation terminating in laterally offset cam portions n^3 which are pivotally connected to opposite sides of the boss m of the dial plate by suitable members such as the screws n^4 .

When the lever n^2 is swung outwardly away from the dial plate, the thinner portions of the cam members n^3 are brought into engagement with the disks l' of the discharge arms so as to release the said discharge arms and admit of the said arms being turned to any desired position upon the dial plate. In this position of the locking member n , however, the dished spring washers r would still frictionally engage the disks l' so as to take up any looseness and hold the discharge arms against accidental displacement. When the lever n^2 is swung inwardly toward the dial plate g , the thicker portions of the cam members n^3 are brought into engagement with the disks l' of the discharge arms so as to force the said disks tightly against the dial plate and hold the discharge arms securely in an adjusted position. Attention may also be directed to the fact that the cam portions n^3 of the locking member are formed with the wings n^5 which project radially from the winding arbor b and are arranged in a plane at right angles to the face of the dial plate when the locking member is in operative position. These wings n^5 are for convenience in setting the time dial g in relation to the exterior index-hand k .

In the operation of the device, the clock work mechanism will cause the dial plate g to make one revolution in every twenty-four hours or other predetermined period of time, and as the outer ends l^4 of the discharge levers l^2 come successively into contact with the switch actuating members arranged in the path thereof, the switch or cock may be opened and closed at certain times determined by the position of the discharge arms with relation to the dial.

A slight modification is shown in Fig. 2 in which the outer reduced end e^2 of the boss e projecting from the barrel c is engaged by a split sleeve j^2 projecting rearwardly from a dial plate h , which carries the discharge arms (not shown).

A further modification is shown in Fig. 4 in which the clock work mechanism is formed with a series of barrels mounted upon the single arbor d^3 , the said barrels being designated by the characters c , c^3 , c^4 , and c^5 . The usual springs would be arranged within these barrels, the inner end of each of the springs being secured to a hook e^4 upon the boss of the adjacent barrel, while the outer end is secured to the periphery of the barrel. With this construction, it will be apparent that by applying the key to the

arbor the various springs can be wound up in the usual manner so as to admit of the clock work running for a much longer time than would be possible where only one spring was employed.

Having thus described the invention, what we claim as new and desire to secure by Letters Patent, is:—

1. A switch actuating device including a dial plate provided upon one side thereof with an axially projecting sleeve adapted to frictionally engage a rotary member to support the dial plate in position, a discharging arm carried by the dial plate, a cam for locking the arm to the dial, and dial setting means carried by the cam.

2. A switch actuating device including a dial plate provided upon one side thereof with an axially projecting split sleeve adapted to frictionally engage a rotary member to support the dial plate in position, a discharging arm carried by the dial plate, a lever for locking the arm to the dial, and dial setting means carried by the lever.

3. In a switch actuating device, the combination of a plate, an arbor extending through the plate, a rotary member mounted upon the arbor and formed with a boss which receives the arbor and also extends through the plate, a dial plate provided with an axially projecting sleeve adapted to frictionally engage the boss to hold the dial plate removably in position, a discharging arm carried by the dial plate, locking means for holding said arm in position, and hand grips carried by the locking means for setting the dial.

4. In a switch actuating device, the combination of a dial plate mounted to have a rotary movement and formed with an axial projection, a discharge arm mounted upon the dial plate, the outer end of the discharge arm projecting beyond the dial plate while the inner end thereof is formed with an opening receiving the projection, and a cam locking member pivotally mounted upon the projection and provided with means for engaging opposite portions of the discharging arm for holding the discharge arm in position.

5. In a switch actuating device, the combination of a dial plate mounted to have a rotary movement and formed with an axial projection, a discharge arm mounted upon the dial plate, the outer end of the discharge arm projecting beyond the dial plate while the inner end of the discharge arm is formed with an opening loosely receiving the projection, and a locking lever having a bifurcated end which is pivoted upon the projection, the arms of the bifurcation being formed with cams adapted to clamp the discharge arm against the dial plate.

6. In a switch actuating device, the combination of a dial plate mounted to have a ro-

tary movement and formed with an axial projection, a discharge arm mounted upon the dial plate and provided at the inner end thereof with an opening receiving the said projection, a dished spring washer fitted upon the projection, and a cam locking member pivotally mounted upon the projection and provided with a bifurcated portion for clamping the discharge arm against the dial plate.

7. In a switch actuating device, the combination of an arbor, a wheel mounted upon the arbor and formed with a boss surrounding the arbor, a dial plate provided upon one side thereof with a sleeve adapted to frictionally engage the boss of the wheel and upon the opposite side thereof with a boss which also surrounds the arbor, a discharge arm mounted upon the dial plate and formed with an opening receiving the boss upon the dial plate; and a locking lever formed with a bifurcated end which is pivotally mounted upon the boss, the arms of the bifurcation being provided with cams adapted to clamp the discharge arm against the dial plate.

8. A switch actuating device comprising a rotatable dial provided with a boss, discharging arms mounted on the boss, and a cam pivotally mounted on said boss for lock-

ing the arms to the dial and provided with means whereby the dial may be manually set.

9. A switch actuating device comprising a dial, discharging arms, a cam for locking the arms against movement relative to the dial, and wings carried by said cam and forming hand grips to permit the dial to be manually set.

10. A switch actuating device comprising a motor having a central winding arbor, a separate arbor sleeve, a time dial, a supporting element having a frictional detachable mounting on the sleeve independently of the winding arbor, adjustable discharging arms coöperating with the time dial, and locking means for holding a relative adjustment between the dial and arms, said dial, arms, and locking means being carried by and with said supporting element.

In testimony whereof we have affixed our signatures.

ALBERT HORSTMANN.

GUSTAV OTTO HENRY HORSTMANN.

ERNST HERMANN HORSTMANN.

SIDNEY ADOLPH HORSTMANN.

WILLIAM THOMSON EDGAR.

In presence of—

A. L. MAYLOTT,

O. M. KETNOR.