(No Model.)

J. J. GLEASON.

AUTOMATIC BILLIARD REGISTER.

No. 343,169. Patented June 8, 1886.

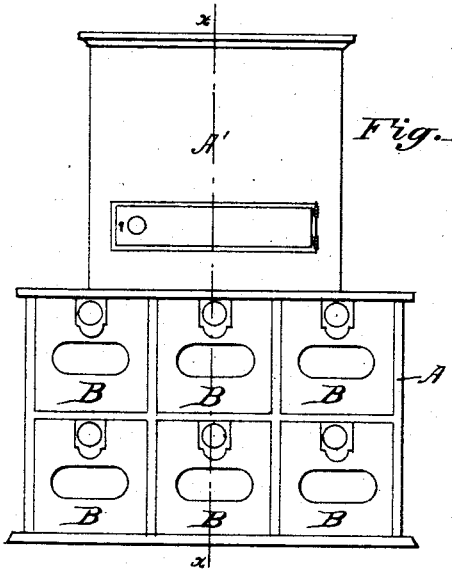


Fig. 1.

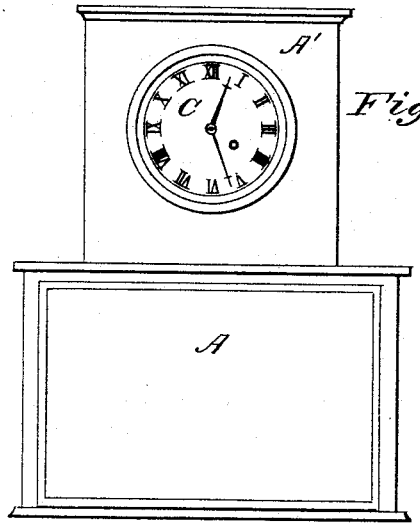


Fig. 2.

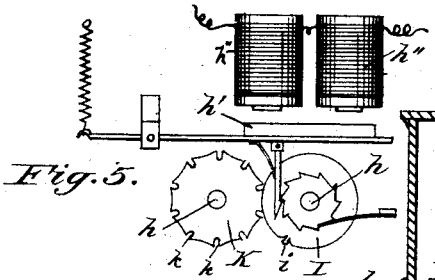


Fig. 5.

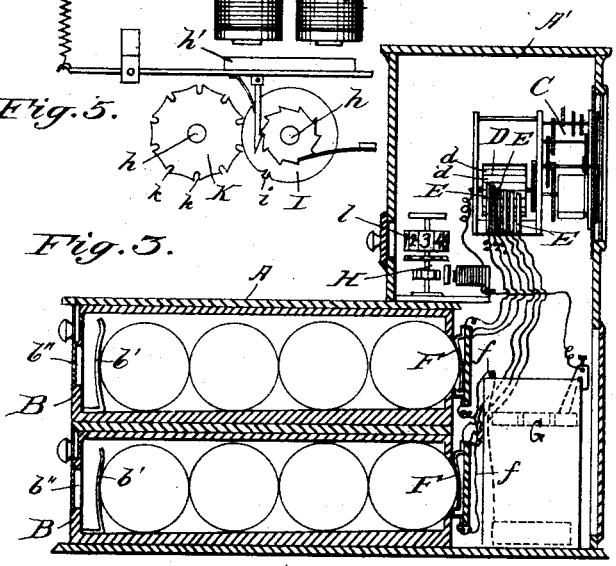


Fig. 3.

Fig. 4.

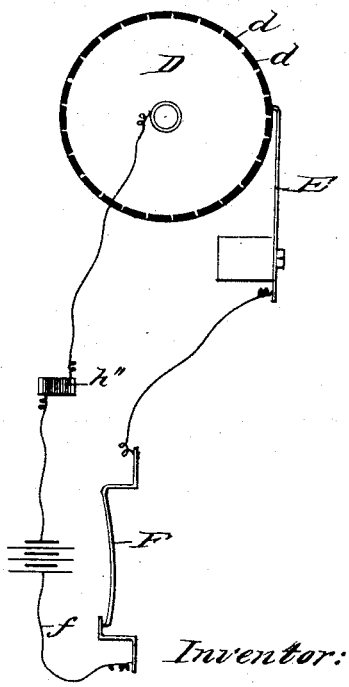
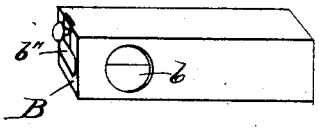


Fig. 6.



Attest:

Jacob Felbel

Edgar D. Smith

Inventor:

Joseph J. Gleason

By Andrew P. Steiger

Atty.

UNITED STATES PATENT OFFICE.

JOSEPH J. GLEASON, OF NEW YORK, N. Y.

AUTOMATIC BILLIARD-REGISTER.

SPECIFICATION forming part of Letters Patent No. 343,169, dated June 8, 1886.

Application filed January 23, 1886. Serial No. 189,491. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH J. GLEASON, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Automatic Registers, of which the following is a specification.

My invention relates to an improved automatic register, the object being to register and indicate the aggregate sum of a number of irregular intervals of time by means of electric circuits arranged in combination with a clock-train and an electro-magnetic register. It is more particularly adapted for use in connection with a set or sets of billiard-balls, to charge up and register the amount of time during which they are in use, or the amount in money due therefor. Arranged for this latter purpose, it consists, as hereinafter more fully described, of a number of receptacles equal in number to the number of sets of balls to be stored; in connecting with a going clock-train a contact maker and breaker connected within a series of electric circuits equal in number to the number of sets of balls and adapted to make and break each of the electric circuits at regular predetermined intervals; a push-contact within each circuit located so that the balls in each receptacle when in place will break one of the circuits, and an electro-magnetic register having a step-by-step motion connected so as to be included in all of the circuits, so that it will respond to the makes and breaks in the several circuits caused by the circuit maker and breaker driven by the clock-train. The number of makes and breaks caused by the clock-work in each circuit is made to correspond with the number of units to be charged against each set of balls when in use or removed from their receptacles for a given length of time, and these units are charged against the proper balls by the register, there being no charge made against the sets of balls which are in place within their receptacle, by reason of the push-contacts adjusted thereto being open and the corresponding electric circuits through the register incomplete.

In the accompanying drawings, Figure 1 is a front view of my improved register. Fig. 2 is a rear view of the same. Fig. 3 is a vertical section on *x x* of Fig. 1. Fig. 4 is a diagram view of the circuit maker and breaker and its connections. Fig. 5 is a diagram illustrating the construction of the electro-magnet register; and Fig. 6 is a perspective view of one of the receptacles within which the billiard-balls are stored.

A is the frame or case of the machine, preferably made rectangular in shape, with an upwardly-projecting portion, A′, at its rear end. Within the frame A are fitted a number of receptacles, B B, preferably made of such a size and shape as that when a set of four billiard-balls are placed therein they will lie in a row, and the rear ball will project through an opening at the rear of the receptacle, as shown in Figs. 3 and 6—that is, in the form of a rectangular drawer closed in at the top and having an opening through its rear end through which the rear ball will project for a short distance, and an opening, *b*, through its side near the forward end through which the balls may be removed. A spring, *b′*, is placed at the front end of the drawer, to bear against the forward ball and hold the rear ball in its rearwardly-projecting position. I also prefer to make an opening, *b″*, through the front end of the drawer, through which can be seen the interior of the drawer when the latter is closed, and this opening *b″* may be covered with a glass plate.

C is a clock-movement, and is geared to a circuit maker and breaker, preferably formed as illustrated in Figs. 3 and 4—that is, having a cylindrical drum, D, with insulating-strips *d* set into its face.

E E E are insulated springs, made to bear upon the drum D, so that as the drum is rotated by the clock-work the springs will bear alternately upon the metallic and the insulating portions of the drum. The insulating-strips are so spaced and the springs are so adapted as that there will at any given time be only one spring in contact with the metallic portion of the drum, and the drum is geared to the clock-work so that in a given time—say one hour—there will be a given number of contacts—say fifty—made by each spring. Each of these springs E is electrically connected with an arm of a push-contact, F, so located behind the receptacles B as that when the balls are in place and the receptacles closed the

rearwardly-projecting ball will operate the push-contact and open the circuit controlled thereby. The remaining arms of the contacts F are connected through a conductor, *f*, with one pole of an electric battery, G. The remaining pole of the battery is connected through an electric register, H, with the metallic portion of the drum D. This latter connection may be made through the frame-work of the clock.

The electro-magnetic register H may be of any of the well-known kinds which go by a step-by-step movement and will indicate the number of makes and breaks that have been made in the circuit; but I prefer the register as shown in the diagram Fig. 5, wherein *h h* are parallel rotating shafts, one of which is actuated through a pawl-and-ratchet movement by a pivoted armature, *h'*, vibrating before an electro-magnet, *h''*, connected in the electric circuit. The second shaft is actuated through a peculiar shaped gearing by the first shaft, there being an annular disk, I, mounted upon the driving-shaft and having a single projecting tooth, *i*, thereon. A second disk, K, is mounted upon the second or driven shaft, and has ten notches, *k*, cut into its edge. Each time the first disk is rotated its projecting pin *i* engages one of the notches in the disk K and moves it around far enough to bring the next notch into gearing position. Ten revolutions of the first disk causes one revolution of the second. Any number of these parallel shafts may be so geared together in series, and if the impulses or movements of the first shaft represent the unit to be registered the movement of the several shafts will represent tens and hundreds of such units. To make the movements of these registering-shafts visible and to permit the register of their movements to be taken at any time, a polygonal-shaped block, *l*, having ten sides, is mounted on each shaft, and the ten faces are numbered from 0 to 9.

The operation of my device is as follows: The clock being put in motion and the balls being all in position, the several circuits will be open, and there will be no movement of the register. If, now, one of the sets of balls be removed for use, the push-contact behind that particular receptacle will be closed, and the contacts made by the spring E in that particular circuit will operate the register, giving one movement to the first wheel of the register for each make and break in the circuit. If there are fifty makes and breaks in the circuit each hour, there will be fifty units registered. Suppose, now, a second set of balls are removed, a second circuit will be completed, and there will be double the number of makes and breaks in the circuit and a double number of units registered.

I do not contemplate restricting myself to the special construction of the circuit maker and breaker shown, nor to the form of electro-magnetic register, nor do I confine myself to the special form of receptacle used for the balls.

What I claim is—

1. The combination, with one or more receptacles for billiard-balls and with a going clock-train, of an electric circuit for each receptacle, a circuit maker and breaker in each circuit operated by the clock mechanism to make and break said circuit at regular predetermined intervals, an electro-magnetic register connected in all the circuits to register the total number of makes and breaks in all the circuits, and a spring-contact connected in each circuit in position to be operated by balls in the receptacle to break the particular circuit within which it is connected, all as and for the purpose set forth.

2. The combination, with one or more receptacles for billiard-balls, of an electric circuit for each such receptacle, a spring-contact in each circuit to be operated by the balls within its corresponding receptacle, a circuit maker and breaker to make and break all the circuits at regular predetermined intervals of time, a clock-train to drive said circuit maker and breaker, and an electro-magnetic register connected in common with all the circuits, all as and for the purpose set forth.

3. In a machine for measuring and registering the aggregate sum of varying periods of time, the combination, with one or more electric circuits and a switch in each of said circuits, the latter adapted to be closed automatically at the beginning of the period of time to be registered by that particular circuit and opened at the termination of that time, a circuit maker and breaker, a clock mechanism to drive said circuit maker and breaker to make and break all the circuits at regular predetermined intervals of time, and an electro-magnetic register for registering and indicating the aggregate number of such makes and breaks as have been made in all of the circuits which have been closed while they have been so closed.

4. In an electro-magnetic time-register, the combination, with a going clock-train, of a circuit maker and breaker driven by said clock-train, one or more electric circuits, an electro-magnetic register connected in all such circuits, one or more receptacles, each governing one of said circuits, and a switch mechanism for each of said receptacles, all arranged as and for the purpose set forth.

Signed at New York, in the county of New York and State of New York, this 20th day of January, A. D. 1886.

JOSEPH J. GLEASON.

Witnesses:
JACOB FELBEL,
ANDREW W. STEIGER.