

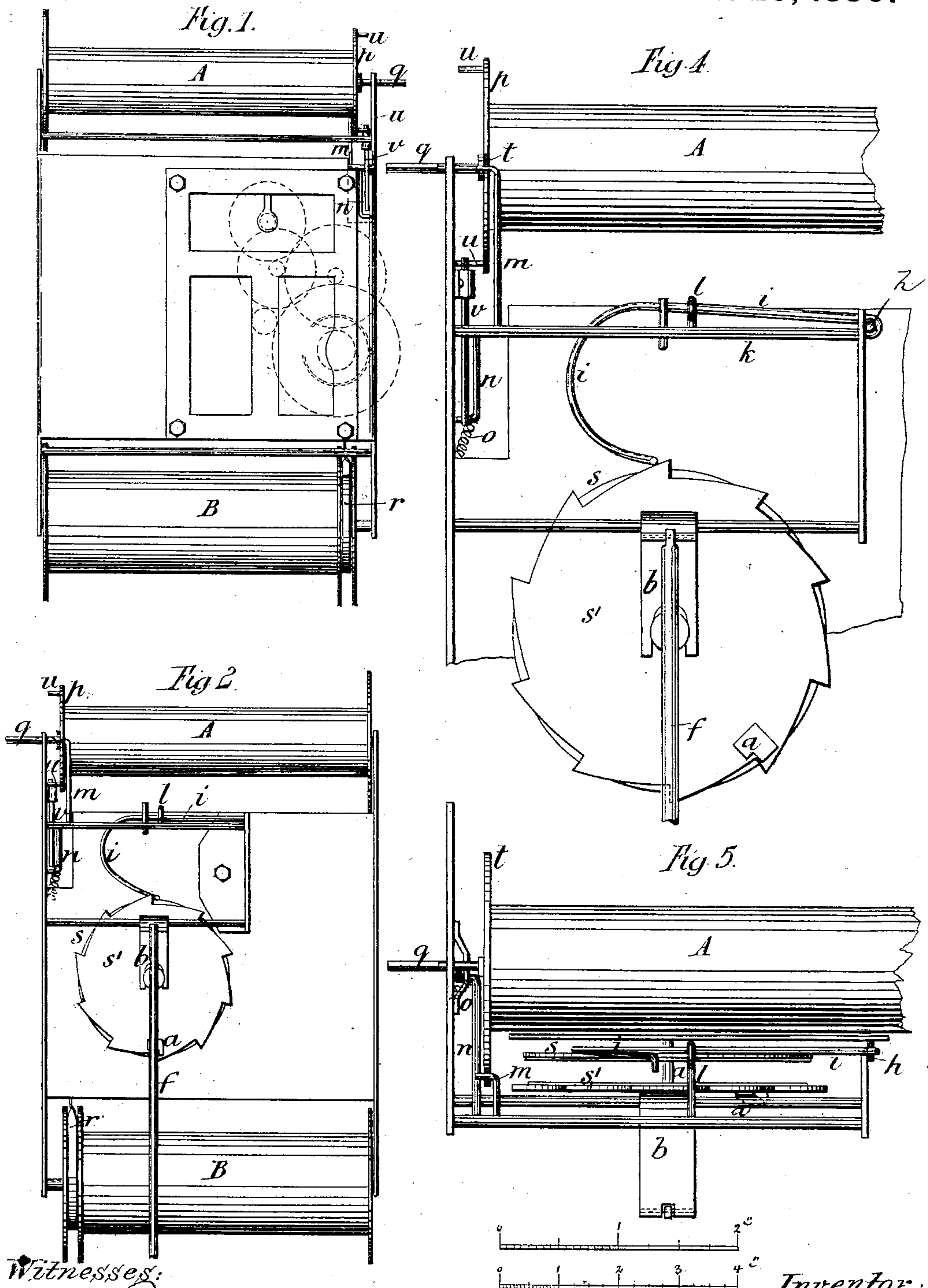
(No Model.)

2 Sheets—Sheet 1.

H. VON LEESEN.  
Automatic Billiard Time Register.

No. 236,123.

Patented Dec. 28, 1880.



Witnesses:

J. A. Rutherford  
A. B. Norris

Inventor:

Heinrich von Leesen,

By James L. Norris

Attorney.

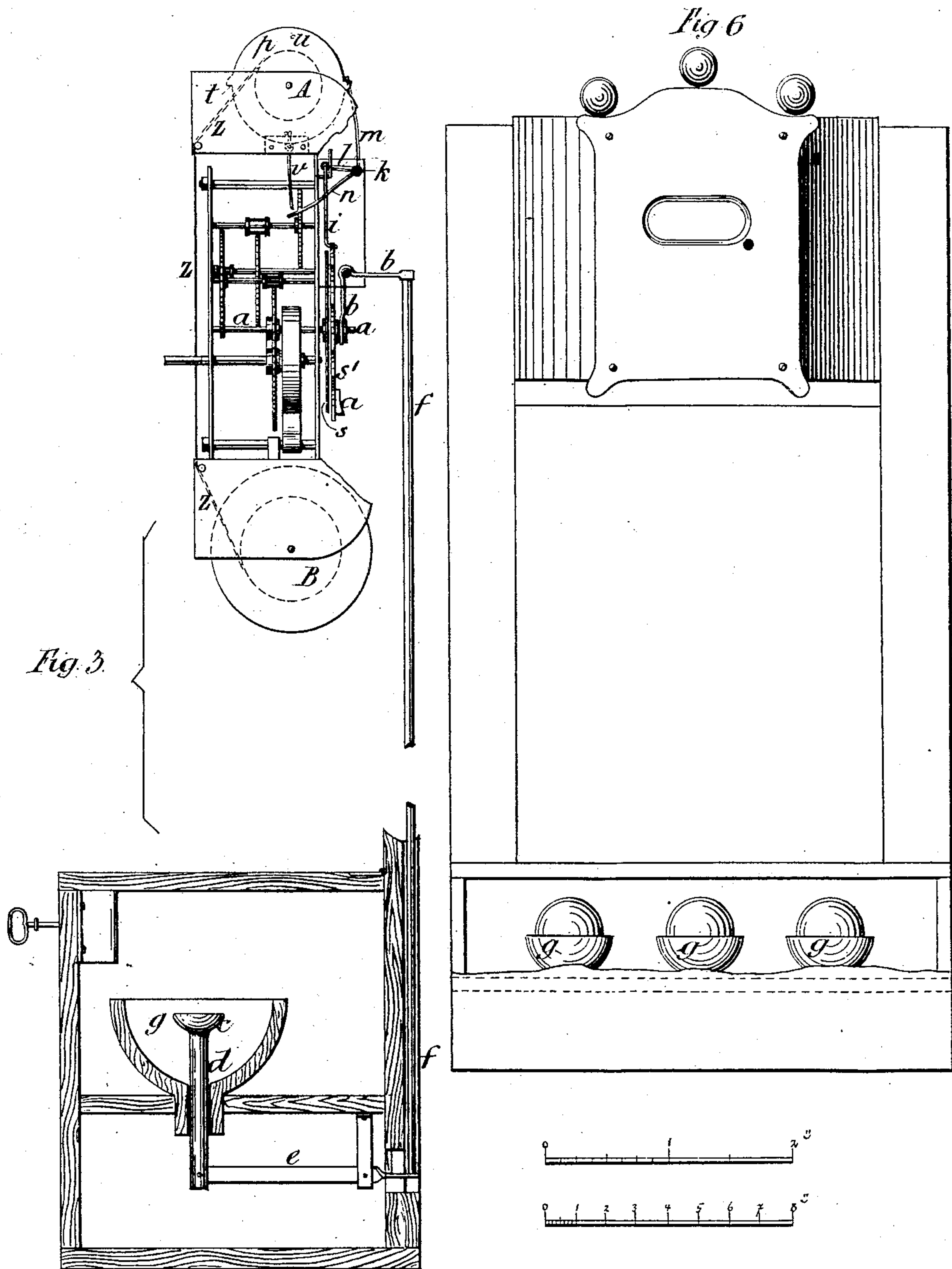
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# UNITED STATES PATENT OFFICE.

HEINRICH VON LEESEN, OF ITZEHOE, PRUSSIA, GERMANY.

## AUTOMATIC BILLIARD TIME-REGISTER.

SPECIFICATION forming part of Letters Patent No. 236,123, dated December 28, 1880.

Application filed October 16, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, HEINRICH VON LEESEN, a resident of the city of Itzehoe, Kingdom of Prussia, German Empire, have invented new and useful Improved Automatic Apparatus for Keeping Account of the Use of Public Billiard-Tables, of which the following is a specification, reference being had to the accompanying drawings.

This invention has for its object a new or improved apparatus designed to accurately and automatically register or record the length of time public billiard-tables are in use, so that the exact amount in money which is to be paid for the use of the said billiard-tables may be indicated by this apparatus, my apparatus thus providing means whereby the proprietor of a public billiard-table may have an accurate account of the amount due for the hire or use of the table, without having to calculate it himself, the record being kept automatically by the mechanism hereinafter described, according to the length of time the table may be in use.

In the drawings, Figure 1 is a front elevation of the clock-work I employ, without its casing. Fig. 2 is a rear view, and Fig. 3 is a side view, of the same, also showing in section the box in which the billiard-balls are to be kept when not in use, as hereinafter described. Figs. 4 and 5 are views of the mechanism which effects the counting or recording, but without the clock-work actuating the same. Fig. 6 is an elevation of the entire apparatus, the front of the ball-box being broken away so as to show the interior.

Like letters indicate the same parts throughout the drawings.

My improved apparatus is driven by ordinary pendulum or other clock-work, and any suitable clock-work may be used for the purpose, wherefore the clock-work itself, which forms no part of my invention, will not be fully described herein, as its construction will readily suggest itself to any one skilled in such matters.

In all ordinary clock-work there is one arbor which makes one revolution in every hour. Now, according to my invention, I key or otherwise mount securely upon the said arbor *a* a disk, *s*, and also a toothed loose or movable disk, *s'*, free to slide to and fro upon the arbor

*a*. This shifting motion is imparted to the disk *s'* by a suitable lever, *b*, which is connected with the stem *d* of a button or stud, *c*, placed in a bowl, *g*, by means of a rod, *f*, and a connecting-lever, *e*, as shown in Fig. 3. The weight of the rod *f* causes the loose disk *s'* to be pressed against the disk *s* upon the arbor *a*. Both these disks are faced with rough cloth on the faces which are turned to each other, so that the loose disk *s'* is compelled to rotate with the arbor *a* when pressed against the fixed disk *s*. This position of the disk *s'* is represented in Fig. 3.

The button or stud *c*, hereinbefore mentioned, is placed in the central one of the three bowls *g g g*, (shown in Fig. 6,) which serve for holding the billiard-balls when the same are not in use. By the weight of the ball placed in the middle bowl and upon the button or stud *c*, as aforesaid, the said button is depressed, and thereby the loose disk *s'* is put out of contact with fixed disk *s*, and remains stationary, although the arbor *a* revolves. Fig. 5 shows the said disk in this disconnected position. Now, as the loose disk *s'*, which is toothed, sets the counting mechanism in motion, as will be hereinafter explained, it is clear that the counting mechanism must also remain at rest as long as the billiard-balls are in place—that is to say, while the middle ball presses upon the stud *c* in the cup or bowl—and that the counting mechanism will commence to operate as soon as the ball is removed from the middle cup and leaves the rod *f* and the levers connected therewith free to press the loose disk *s'* against the fixed disk *s*. This loose disk makes one revolution per hour when in motion, as it is mounted upon an arbor having the same speed. Upon this disk *s'* the catch *i* presses, which catch is free to rotate upon a pivot, *h*, and it will rise and fall as moved by the teeth upon the periphery of the loose disk *s'*.

Upon an axle, *k*, there are fixed three arms, *l*, *m*, and *n*. The arm *l* is in its turn connected with a catch, and the arm *n*, whose end is bent into a hook, is connected with a coiled spring, *o*, which is attached to the frame-work of the clock-work, and which presses the arm *m*, also mounted upon the axle *k*, and hooked at its end against a disk, *p*, mounted upon the end of the roller *A*, hereinafter more fully de-



scribed. By means of the said coiled spring *o* the catch *i* is pressed against the loose disk *s'* by means of the arm *l*.

The roller *A* is connected with a second roller, *B*, by a strip of linen, paper, or other suitable flexible material. This strip *z* is wound upon the roller *A* by means of a key applied to the square end *q* of the axle of the said roller *A*, and when the apparatus is in operation the said strip is rewound upon the roller *B* by means of a spiral spring, *r*, attached to the latter.

Upon the strip *z* figures are marked in any suitable manner. These figures indicate sums of money in suitable intervals, in amounts rising with ten cents, for example, if the amount is to be shown in American coinage.

The disk *p* upon the roller *A* is provided with two cams or shoulders, *t*, and two studs, *u*, arranged at suitable distances apart, as shown in Fig. 3, which cams *t* and studs *u* are arranged for the purpose of causing the shifting of the strip *z* to take place by bounds or sudden movements and at suitable intervals, and not by continuous progress, which would not be suitable for the object in view. This periodical shifting is effected in the following manner—that is to say:

When the loose disk *s'* revolves, the catch *i* is raised and lowered, and with it the arms *m* and *n* upon the axle *k* also make a to-and-fro motion.

In Fig. 3 the disk *p* is shown as being held by one of its cams *t* through the hook of the arm *m*, and the bent end of the catch *i* is represented as being at the deepest part of a tooth of the disk *s'*, against which the said catch bears. Now, if the disk *s'* moves farther, the catch *i* is gradually lifted and rotates the axle *k* by means of the arm *l*, and consequently the arms *m* and *n*, attached to the said axle. When the toothed loose disk *s'* arrives into the position illustrated in Fig. 4, the hook of the arm *m* releases the cam *t* of the disk *p*. The disk *p* now rotates till the stud *u* presses against the short arm of a lever, (*v* in the drawings.) This lever *v* would allow the stud to pass if in the instant in which the arm *n* releases the disk *p* the said arm *n* did not retain the lever *v* aforesaid, and this continues to be so held until the catch *i* passes the highest point of the tooth upon the loose disk *s'*. Then the axle *k*, with its arms, being impelled by the coiled spring *o*, recedes, the arm *n* releases the lever *v*, the latter the stud or pin *u* upon the disk *p*, and the said disk, together with the roller *A*, to which it is attached, is rotated one hundred and eighty degrees by means of the recoil of

the spring *r*, connected with the roller *B*—that is to say, it is rotated till its second cam *t* is caught by the hook of the arm *m*. In consequence of the various parts acting as described, the next higher amount marked upon the strip *z* is shown at the glazed sight hole or opening of the case inclosing this apparatus.

In the apparatus illustrated in the drawings the strip *z* is shifted once in every six minutes, and is properly marked with figures indicating sums differing ten cents from each other, and would therefore show one dollar per hour.

If it is desired to cause the apparatus to show a different amount or indicate the amount in a different coinage, the marking upon the strip *z* or the number of teeth of the disk *s'*, or both, will have to be altered in the manner well understood by persons conversant with mechanisms of this class.

To insure that when the balls are taken out of the bowl *g* the counting mechanism shall be actually thrown into gear, and that the shifting of the strip *z* shall take place punctually at the lapse of the first interval, the loose disk *s'* is at one part loaded or weighted with lead. As soon as (by replacing the balls at the end of the game) the counting mechanism is thrown out of gear the weight of lead causes the loose disk *s'* to revolve till the loaded part arrives into the lowest position. This is so arranged that the catch *i* will stand exactly at the lowest part of one tooth when the counting mechanism begins to act.

What I claim is—

1. The combination, with a bowl for receiving a billiard-ball and a push bar or stud projecting upwardly through said bowl and capable of being depressed when the ball is therein, of a recording mechanism, substantially as described, connected with the push bar or stud, and adapted to be automatically set in operation when the billiard-ball is removed from the bowl, essentially as and for the purpose set forth.

2. The peculiar shifting apparatus consisting of the ratchet-wheel *s'*, arms *l*, *m*, and *n*, and the catch *i*, in combination with the rod *f*, levers *b* and *e*, stud *d*, and bowl *g*, for the purpose of automatically starting the recording mechanism when the billiard-balls are removed for use, substantially as above described, and as shown in the drawings.

This specification signed by me this 30th day of June, 1880.

HEINRICH VON LEESEN.

Witnesses:

H. SCHRADER,  
C. ZEUG.