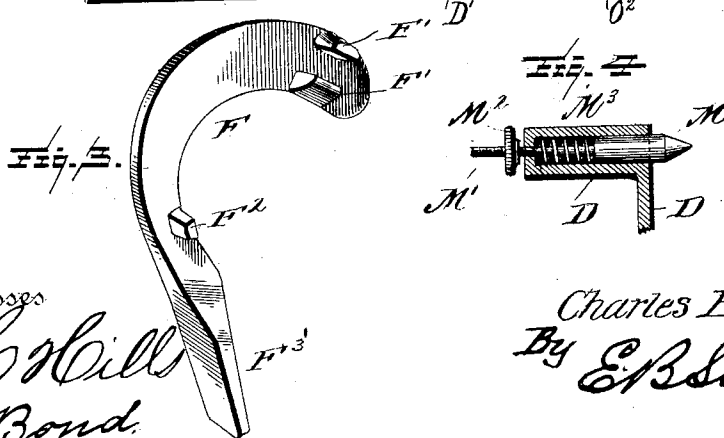
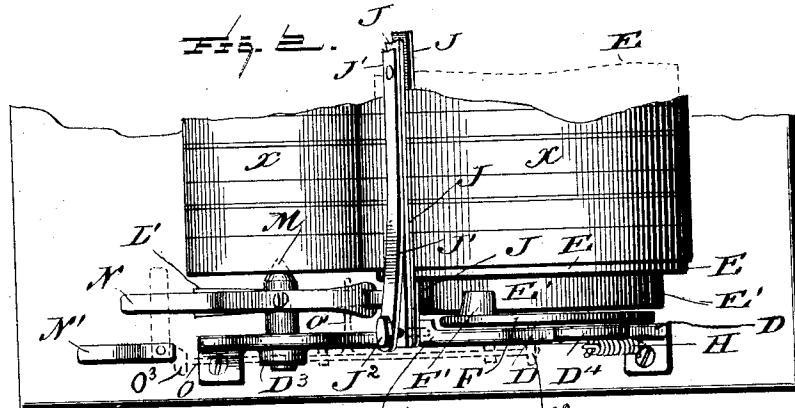


C. H. MORFORD.
CASH RECORDER.

Patented June 14, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

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CASH-RECORDER.

SPECIFICATION forming part of Letters Patent No. 476,890, dated June 14, 1892.

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To all whom it may concern:

Be it known that I, CHARLES H. MORFORD, a citizen of the United States, residing at Allentown, in the county of Lehigh, State of Pennsylvania, have invented certain new and useful Improvements in Cash-Recorders, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to cash-recorders; and among the objects in view are to provide a mechanism which shall automatically present successive spaces on a record-sheet for the recording of sales, items of account, and other
15 matters of record to insure a uniform, regular, and predetermined quantity of paper fed at each operation, to provide means for varying said quantity, and to insure against looseness, wrinkles, and other irregularities of the
20 record-sheet at the part where entries are to be made thereon.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a vertical section of the desk and drawer-case, the recording mechanism and drawer being shown in side elevation. Fig. 2 is a partial
30 plan with the desk removed. Fig. 3 is a perspective of the clutch-lever. Fig. 4 is a detail of the web-supporting cone.

A represents the desk and drawer-case, in the top of which there is the usual sight-opening, one-half of which is covered by the glass or other transparent substance A², a portion
35 A' of said sight-opening being left uncovered to give access to the record-sheet for the purpose of writing upon the same. A partition B is arranged in the case A for the purpose of supporting the recording mechanism, and it has a slot B' for the passage of the device which operatively connects the recording
40 mechanism with the drawer C, which is arranged within the case below said partition.

In a frame-work D there is mounted the record-cylinder E, which has upon one end an annular clutch-ring E', upon which a clutch-lever F is adapted to operate for the purpose
50 of intermittently rotating the cylinder E. The clutch-lever has near one end two lugs F', between which the clutch-ring E' passes

loosely when the lug F² bears upon the inner surface of the clutch-ring. When, however, the tail F³ of the clutch-lever is pressed so as
55 to throw the lug F² inwardly away from the clutch-ring, the two lugs F' bind upon said ring and upon opposite sides thereof and cause a movement of the record-cylinder, said movement being that which winds the record-
60 sheet upon the cylinder. This movement is produced by a dog G, which is suitably mounted upon the drawer C. The dog may be secured to the drawer (inside or outside) in various manners, it being requisite that it
65 should be capable of contact with and escape from the clutch-lever in an outward or inward movement of the drawer and passing beneath and behind the clutch-lever in an inward movement and closing of the drawer.
70 To accomplish this operation, the dog is pivoted at G'.

To give strength and serviceability, the dog is pivoted to a metal plate G², which is secured by screws or otherwise to the outer surface of one side of the drawer, the latter being cut away, as shown by dotted lines G³, to form a recess in which the dog may operate. A lug G⁴ may be formed on the inner face of the plate G², against which, instead of against
75 the edge of the drawer, on the line G³, immediately under said lug, an adjusting-screw G⁵ may impinge. The purpose of this screw is to regulate the continuance of the contact of the dog G with the clutch-lever F, whereby a
85 greater or less movement of the record-cylinder, and therefore a greater or less space of the paper, may be presented after each movement of the lever. The point G⁶ of the dog will reach farther up on the lever if the screw
90 G⁵ is withdrawn from the tail G⁶ of the dog, whereby a withdrawal of the drawer will move the lever F a greater distance than when the screw G⁵ is run farther down into the tail of the dog.

95 H is a coiled spring, which is secured at one end to the frame D and at the other to the lever. This is for the purpose of insuring a return of the lever to a position for a successive partial rotation of the record-cylinder.
100 Instead of the spring H an adjustable stud H', having a slot H² where a screw H³ passes into the edge of the drawer for the purpose of adjustably securing the stud H' rigidly,

may be employed. It will be noted that after the operation of the clutch-lever by the dog in an outward movement of the drawer the succeeding inward movement of the drawer will bring the stud II' against the clutch-lever and carry it to its position for a succeeding movement of the record-cylinder.

The record-cylinder is provided with a bail I, pivoted in the ends, as at I', and extending longitudinally along the periphery of the cylinder, and, if desired, into a recess immediately under the bail, and between the bail and cylinder the leading end of the record sheet or web X is inserted to connect the same with the cylinder. An arm D' projects from the frame D. It is understood that there is a frame D at each end of the record-cylinder and that an arm D' is provided at each end. Upon this arm there are mounted two bars J, between which the record sheet or web X passes, and upon the upper bar there is arranged a spring J', through which and the bars J and at each end thereof there passes a screw J², which is threaded into the arm D'. (See Fig. 2.) These devices serve to clamp the record-sheet so as to remove all wrinkles therefrom and to keep it snugly upon the cylinder by the tension caused by the bail I in the operation of winding the paper gradually upon the cylinder.

It is desirable to provide means for preventing a backward or unwinding movement of the cylinder except when removing the record-sheet therefrom. Several forms of detents may be employed—as, for example, a spring-brake K may be arranged to bear upon the periphery of the clutch-ring E', one end of the spring being secured to the framework by a screw K' and adjustably pressed upon the ring E' by a screw K². Another form of detent consists of a small roller L, arranged between the periphery of the clutch-ring and a step or bracket D³, formed on the frame. This roller L is mounted on a spring-bracket L', secured to the partition B, which has a tendency to keep the roller in such a position that any backward rotation of the cylinder will be stopped by the wedging action of the roller between the relatively inclined faces of the bracket D³ and the clutch-ring E', while the yielding nature of the bracket L' will permit a forward motion for winding the record-sheet of the cylinder.

At each end the frame-work D carries a standard or bearing D³ for the web-supporting cones M. One of these is rigidly mounted in the frame or bearing D³, while the other is movably mounted, as shown in Fig. 4, and has a screw-threaded rod M' connected therewith, extended through the bearing, and carries a thumb-nut M² for regulating the tension of a coiled spring M³ within the bearing and pressing against the inner end of the cone. By tightening the nut upon the screw-threaded rod the compression of the spring against the cone is increased, and by drawing outwardly upon the rod M' the cone is drawn into the

bearing and away from the web to permit it to be removed or the insertion of a new one.

N is a lever pivoted on the fixed cone M and connected with the spring arm or bracket L' for the purpose of removing the brake-roller L from between the bracket and clutch-ring when it is desired to unwind paper from the cylinder E. In order to retain the brake-roller in an inoperative position, the free end of the lever is depressed and a latch N' is swung around upon the same, as shown by dotted lines in Fig. 2.

When the spring II is not employed to return the clutch-lever to an operative position, I may use the rod O for the purpose of releasing the roller L and throwing the clutch-lever lug F² toward the clutch-ring in order that the cylinder may be rotated backward. In such case the rod O is supported in any suitable bearings on the frame D and D³ and is provided with a rock-arm O', (see Fig. 2,) projecting under the bracket L', and a disk O², secured at its end. Now by pushing the button O³ on the rod the disk O² is forced against and moves the lever to bring the lug against the clutch-ring, and by simultaneously turning the rod the rock-arm raises the bracket and the roller-brake, when the cylinder may be rotated backward.

The clutch-lever F may be retained in operative position upon the clutch-ring E' by any suitable means; but in this instance an arm D⁴ extends from the frame D in front of and terminates opposite the clutch-lever, so as to retain it loosely in position upon the ring.

What I claim is—

1. In a recording apparatus, a record-cylinder provided with a clutch-ring, a clutch-lever, and a lever-operating dog mounted on a drawer, substantially as specified.

2. In a recording apparatus, a record-cylinder and its operating mechanism, a drawer, and a dog pivoted to the drawer and provided with means for adjusting the same on its pivot, substantially as specified.

3. In a recording apparatus, a record-cylinder and its operating devices, in combination with the drawer carrying a pivoted dog and an adjustable stud, substantially as specified.

4. In a recording apparatus, the combination, with the cylinder and means for securing the record-sheet thereto, of tension-bars, one being arranged upon each side of the paper, and means for yieldingly regulating their pressure upon the paper, substantially as specified.

5. The combination, with the record-cylinder of a recording apparatus, of tension-bars, one being arranged upon each side of the paper, a spring contacting therewith, and means for controlling the tension of the spring, substantially as specified.

6. In a recording apparatus, a record-cylinder provided with a clutch-ring, and a clutch-lever mounted on said ring and means for operating the lever, substantially as specified.

7. The combination, with a record-cylinder,
of a clutch-ring and a clutch-lever having
lugs arranged to bear upon both sides of the
ring at one end of the lever and upon one side
5 at another point on the lever, substantially as
specified.

8. The combination, with a record-cylinder
having a clutch-ring and a clutch-lever, of a
frame-work provided with an arm for retain-
10 ing the lever on the ring, substantially as
specified.

9. The combination, with a record-cylinder
having a clutch-ring, of a clutch-lever and a

brake arranged to bear on the ring, substan-
tially as specified.

10. The combination of a record-cylinder 15
having a clutch-ring, a clutch-lever, a brake,
and means for moving the lever and remov-
ing the brake, substantially as specified.

In testimony whereof I affix my signature in 20
presence of two witnesses.

CHARLES H. MORFORD.

Witnesses:

J. C. MOORE,

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