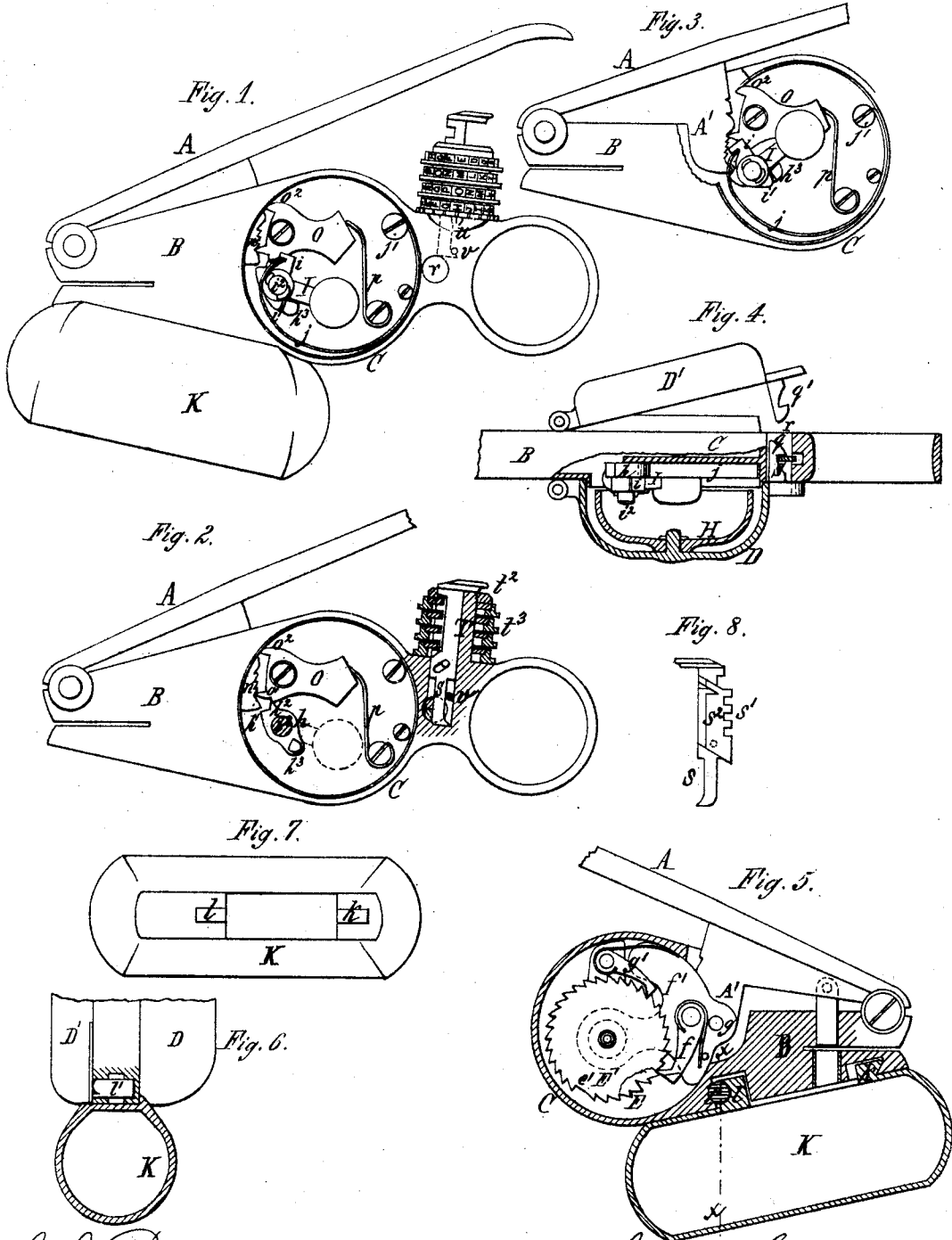


J. CORBETT.
Registering Ticket-Punches.

No. 152,081.

Patented June 16, 1874.



J. J. Donner
Ernst. Heddick Witnesses.

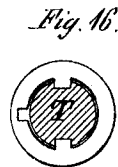
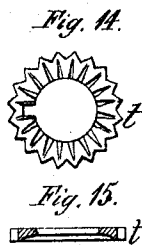
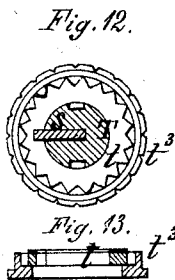
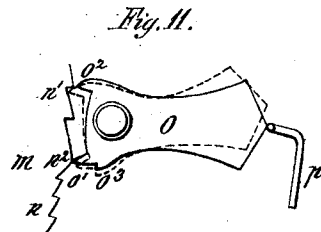
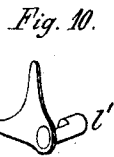
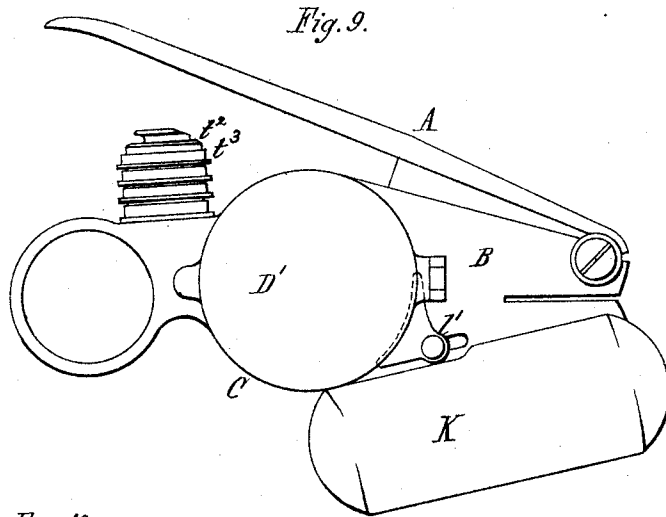
Joseph Corbett Inventor
by Jay Hyatt atty.

J. CORBETT.

Registering Ticket-Punches.

No. 152,081.

Patented June 16, 1874.



J. J. Donner.
Ernst Hodelich.
Witnesses

Joseph Corbett, Inventor
by Jay Hyatt
City.

UNITED STATES PATENT OFFICE.

JOSEPH CORBETT, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE RAILWAY REGISTER MANUFACTURING COMPANY, OF BUFFALO, N. Y.

IMPROVEMENT IN REGISTERING TICKET-PUNCHES.

Specification forming part of Letters Patent No. **152,081**, dated June 16, 1874; application filed May 19, 1874.

To all whom it may concern:

Be it known that I, JOSEPH CORBETT, of the city and county of Hartford and State of Connecticut, have invented certain Improvements in Registering Ticket-Punches, of which the following is a specification:

The improvements relate to a conductor's ticket-punch, such as is shown and described in Letters Patent No. 111,392, granted to James H. Small, January 31, 1871, to which reference is here made for a full description of said instrument. As shown and described in this patent, the punch proper has combined with it a suitable receptacle for the punch-cuttings, and an alarm-bell and a registering mechanism, both simultaneously operated each time the punch is used or the handle closed. The bell and registering device are arranged side by side, separated by a partition-plate within a case located between and attached to one of the handles of the punch. The two faces of this case are provided with hinged corners for affording access, respectively, to the bell and registering mechanism. These covers in the patent above referred to are shown fastened in a closed position by means of a single connecting-wire and soft-metal seal.

One part of the present invention relates more particularly to an improvement in the construction of the register-actuating mechanism, for the purpose of preventing the bell being rung without operating the register, which has sometimes been accomplished by partly closing the handles of the punch and raising the bell-hammer in such a degree that by suddenly allowing the handles to spring open the bell will be rung, while this movement of the handles is insufficient to move the register.

Another part of the invention relates to certain improvements in the means for locking the covers of the bell and register-case.

The invention consists, first, in the combination, with a ticket-punch, of a series of ratchets, a shifting-cam, and a spring detent-pawl, which latter is held in contact with said ratchets until released at the completion of the closing movement of the handles, whereby the ringing of the bell by partially closing the handles and then suddenly releasing the

same is prevented; second, in the combination, with the bell-hammer and handles of a ticket-punch, of two series of ratchets, an intermediate shifting-cam, and a reversible spring detent-pawl, whereby the movement of closing as well as opening the handles must be completed before it can be reversed, and the ringing of the bell by opening the handles partially, but not sufficiently to set the register for the next closing movement, is prevented; third, in the combination, with the bell-hammer and handles of a registering ticket-punch, of a cam engaging with the web of one of the handles for actuating the bell-hammer; fourth, in the combination, with the bell-actuating mechanism, of a reversible pawl, for returning the bell-cam to its normal position, as hereinafter described; fifth, in the combination of a locking-bar with the two oppositely-arranged covers of the bell and registering-case, each provided with a notched hasp, which, in closing the covers, overlap each other, so as to cause the notches therein to coincide and permit a single bar to lock both covers; sixth, in the arrangement of a combination-lock for securing the covers of the bell and registering mechanisms; seventh, in the combination, with the bar for the punch-cuttings and one of the covers of the bell and register-case of a ticket-punch, of a locking bolt or pin, arranged so that when the said cover is in a closed position it will retain the locking-pin in place and prevent the detachment of the bar; eighth, in the combination, with the unit-registering wheel and actuating-pawl, of a secondary registering-wheel, having one of its teeth or ratchets cut away, so that said wheel will cease to be actuated by the pawl when the latter engages in the space so formed in its circumference, whereby any attempt to start the registering mechanism back of the proper starting-point is detected, as hereinafter fully described; ninth, in the combination, with the locking-bar of a combination-lock, of a movable piece provided with the locking-notches, and so connected to the locking-bar that it will be moved outwardly, and thereby increase the hold or gripe of the bar on the locking-rings when an upward pressure is applied to the box in attempting to pick the lock.

In the accompanying drawing, consisting of two sheets, Figure 1 is an elevation of my improved punch in an open position, with the bell-cover removed. Fig. 2 is a similar view, with the device for locking the covers in section. Fig. 3 is a fragmentary elevation with the handles closed, portions being broken away to expose the mechanism by which the bell-hammer is operated. Fig. 4 is a fragmentary horizontal section through the bell-case of the punch. Fig. 5 is a reverse sectional elevation of the punch. Fig. 6 is a vertical section in line $x x$, Fig. 5. Fig. 7 is a top-plan view of the receptacle for the punch-cuttings. Fig. 8 is a detached view of the bar locking the covers. Fig. 9 is a reverse elevation of my improved punch. Fig. 10 is a detached perspective view of the locking-pin of the receptacle for the punch-cuttings. Fig. 11 is a detached view, on an enlarged scale, of the reversible pawl and ratchets. Fig. 12 is a top-plan view, and Fig. 13 is a vertical section of one of the locking-rings of the combination-lock. Fig. 14 is a bottom-plan view, and Fig. 15 is a vertical section of one of the inner adjustable locking-rings. Fig. 16 is a plan view of one of the washers arranged between the locking-rings.

Like letters designate like parts in each of the figures.

A is the upper and B the lower handle of the instrument, hinged together and provided with a punch-tool in a common manner. C is the case containing the bell and register mechanism on opposite sides of the partition thereof. D D' are the covers of this case. E E' are the register-wheels, and f the stepped pawl for actuating the same. It is attached to the radial arm f' , swinging on the arbor of the register-wheels, and connected with a projecting portion, A', of the web of the upper handle A by a pin, g , projecting therefrom. The pawl f moves the register one degree each time the handles of the punch are closed, in an obvious manner. g' are two spring detent-pawls, arranged on a common fulcrum, and engaging with the register-wheels E E', so as to prevent retrograde movement thereof. The general construction and operation of the register mechanism is substantially the same as that shown in the Letters Patent above referred to. H is the bell, secured to a stud on the inner side of the cover D, and I the arm of the bell-hammer pivoted to the partition of the case C. The arm I is provided with two secondary arms i^1 i^2 , arranged at right angles to the former, above and below its fulcrum i^2 . j is a curved flat spring secured to the case C at j' , and bearing with its free end against the upper arm i of the bell-hammer, so as to hold the latter closed. h is a cam mounted loosely on the pivot i^2 of the bell-hammer, between the arm I of the latter and the partition of the case C. It is provided with a tooth, h^1 , projecting under the portion A' of the upper handle A, and a smaller projection or tooth, h^2 , arranged in rear of the tooth h^1 , while it carries on the op-

posite side of the pivot i^2 a shoulder, h^3 , engaging under the arm I of the bell-hammer in the angle formed by the arm i^1 with the arm I. In closing the handles of the punch the portion A' of the upper handle strikes upon the tooth h^1 of the cam h , turning the latter on its pivot i^2 , and raising the hammer against the spring j by means of the shoulder h^3 engaging under the arm I. When the movement of the handles is completed and the bell-hammer released, the latter and the cam h are returned to their former position by the spring j , and the bell is rung. In opening the handles the end of the portion A' comes in contact with the tooth h^1 of the cam h , and turns the latter slightly on its pivot until said tooth clears the portion A', the shoulder h^3 having a little play in the angle of the arms I and i^1 , to permit the cam h to be so turned back. By this means the spring-pawl is dispensed with which was heretofore employed for operating the bell-hammer, and which frequently became deranged by the breaking of its spring. m is a ratchet-bar formed with the portion A' of the web of the upper handle A. It is provided with two series of ratchets, n n^1 , inclined in opposite directions, and an intermediate projecting tooth or cam, n^2 . o is the reversible detent-pawl, pivoted to the partition of the case C, and provided at one end with two teeth, o^1 o^2 , designed to engage, respectively, with the ratchets n n^1 . The opposite end of the pawl o is provided with two inclined sides or planes, as clearly shown in Fig. 11, against which the spring p alternately presses, according to the respective position of the pawl. o^3 is a smaller tooth arranged on the pawl o in the rear of the lower tooth o^1 , and designed to engage with the tooth h^2 of the cam h , as will be presently described. The punch being in the position shown in Fig. 1, with the handles distended, the spring p , bearing against the upper incline of the detent-pawl o , holds the lower tooth o^1 of the latter against the lower and upwardly-inclined ratchet n . In closing the handles in operating the punch, the detent-pawl o slides over the said ratchets until it comes in contact with the cam-tooth n^2 , which turns the pawl o on its pivot until the spring p , which has pressed against the upper inclined side of the pawl, passes the apex thereof, and engages against the lower incline, when the pawl o is shifted so as to engage its upper tooth o^2 with the upper series of ratchets n^1 , as clearly shown in dotted lines, Fig. 11. During the closing movement of the handles, the detent-pawl o , being in contact with the lower series of ratchets n , prevents any retrograde movement of the handles until after the closing movement is nearly completed, and the register moved one degree, when the pawl o is shifted, as above described, so as to clear the lower ratchets n , and prevent the handles opening. Hence, an attempt to ring the bell without operating the register, by partially closing the handles and then suddenly releasing the same, will be unsuccessful.

During the last portion of the closing movement of the handles, the portion A' is disengaged from the bell-hammer and the bell rung, the register having been moved one degree, and locked by the respective detent-pawl a little before the bell is rung. In opening the handles the pawl o slides over the upper series of ratchets n^1 , and prevents in a similar manner the closing of the same until the handles are almost completely opened. This prevents the ringing of the bell by opening the handles to such a degree as to engage the hammer-pawl with the bell-hammer, but not sufficiently to cause the register-actuating pawl to engage over the next notch of the register-wheel. During the last portion of the opening movement, the cam-tooth n^2 comes in contact with the upper tooth o^2 of the pawl o , and shifts the pawl to its normal position, leaving the punch free for a second operation. During this shifting of the pawl o , the tooth o^3 thereof comes in contact with the tooth h^2 of the cam h , as shown in Fig. 2, so that the said cam, which has been slightly turned back during the opening of the handles, as hereinbefore described, will be returned to its former position, with the tooth h^1 projecting under the portion A' of the upper handle, ready for a second closing of the handles. q q' are the notched hasps projecting inwardly from the covers D D' , respectively. r is a hole formed through the handle E , for the reception of the hasps q q' when the covers are closed. The hasps in the closed position overlap each other, so as to cause their notches to coincide. s is a sliding bar or bolt, arranged in a vertical recess or mortise intersecting the hole r , so that the lower end of the bar s projects into the latter and engages in the notches of the hasps q q' , firmly locking the same. T is a cylinder or arbor projecting upward from the handle B , and having formed radially in it the upper portion of the mortise in which the bar s slides. The outer edge of the latter is provided with notches or teeth s^1 , with which engage a corresponding number of notched locking-disks, t , turning freely on the arbor T , and held in place by a screw-cap, t^2 . Upon making the notches of all the disks t coincide, the bar s can be sufficiently raised to release the hasps q q' , as shown in dotted lines in Fig. 1, while by turning the disks t , so as to break this coincidence of their notches, the bar s is locked in its lowest position, as shown in Fig. 2. The outer disks t^3 , inclosing the locking-disks, are provided with characters or figures corresponding in number with the notches in the inner changeable disks t , and the proper position of the locking-disks t^3 for releasing the bar s is determined by arranging the same so that the required series of characters or figures coincides with a fixed mark or notch, u , of the handle B , in the manner common with this class of combination-locks. The combination of the characters or figures which permits the opening of the locks is, of course, known only to the person authorized to open the

punches. The lower portion of the bar s is reduced in width, and its lower end provided with a projection or hook, as shown in Fig. 2, which, when the bar is sufficiently raised to disengage the hasps q q' , engages under a pin, v , thereby preventing the entire withdrawal of said bar. The locking-bar s is preferably provided with a movable piece, s^2 , in which the notches s^1 are formed, and which is connected with the bar s at one end by a pin engaging in a downwardly-inclined slot of said bar, as shown in Fig. 2, and at the opposite end by an exterior or rib running in a groove arranged in the bar s , parallel to said inclined slot, as shown in Fig. 8. When an upward pressure is applied to the locking-bar s for the purpose of picking the lock, the teeth of the movable piece s^2 , in engaging under the locking-disks, will cause the piece s^2 to slide outwardly, and thereby increase the hold of the bar s on the locking-disks. K is the receptacle for the punch-cuttings, secured to the under side of the jaw B of the punch. It is of cylindrical or other suitable shape, and provided with a single aperture in its side, adjacent to the jaw B . As shown in the drawing, the receptacle K is fastened to the jaw B by a hook, k , engaging in a suitable mortise formed in said jaw, and a tenon or hasp, l , projecting into a recess in the jaw B , and secured therein by a locking-pin, l' , passing through the jaw B and tenon l . If preferred, a tenon, l , only may be used for connecting the receptacle K to the jaw B , and the hook k be dispensed with. The locking-pin l' is arranged so that its head or a flange formed therewith is overlapped by the cover D' when in a closed position, so as to prevent its withdrawal, and consequent detachment of the receptacle K and access thereto, until the cover D' is unlocked and opened. In the second registering-wheel E' , which is moved one notch for every revolution of the unit-wheel E , one of the ratchets or teeth is cut out, as shown at e' , Fig. 5, and the wheel E' so arranged that its movement will commence at the tooth next following this open space. After the wheel E' has almost completed a revolution, so that the actuating-pawl f engages in the space e' , the wheel E' remains stationary, irrespective of all further movement of the unit-wheel E . In order to bring the wheel E' again in engagement with the actuating-pawl f , it must be moved by hand one notch over this locking position.

When the person using the punch obtains access to the registering mechanism by picking the lock thereof, and sets the hands back of the starting-point for the purpose of retaining the number of fares which he cancels during the movement of the registering mechanism from the point on which it has been so placed to the starting-point, the fraud is exposed by the wheel E' remaining stationary at the last notch before reaching the starting-point, thus indicating that the full number of fares have been canceled which the apparatus

is capable of registering, while a less number of fares are returned.

I claim—

1. The combination, with a ticket-punch, of the series of ratchets n , shifting-cam n^2 , and spring detent-pawl o , substantially as and for the purpose hereinbefore set forth.

2. The combination, with a ticket-punch, of the ratchets n n^1 , intermediate shifting-cam n^2 , reversible detent-pawl o , and spring p , substantially as and for the purpose hereinbefore set forth.

3. The combination, with the bell-hammer and handles of a registering ticket-punch, of the cam h , provided with the tooth h^1 and shoulder h^3 , for raising the bell-hammer, substantially as hereinbefore set forth.

4. The combination, in a registering ticket-punch, of the bell-hammer I , cam h , provided with tooth h^2 , and reversible pawl o , having a tooth, o^3 , for returning the cam h to its normal position, substantially as hereinbefore set forth.

5. The combination, with the covers D D' , provided with notched hasps q q' , of the locking-bar s , for securing the covers, substantially as and for the purposes hereinbefore set forth.

6. The combination, with the covers D D' , notched hasps q q' , and locking-bar s , of the combination-lock herein shown and described.

7. The combination, with the receptacle K and cover of the bell or registering mechanism, of the locking-pin l , retained in place by said cover, substantially as and for the purpose hereinbefore set forth.

8. The combination, with the unit-registering wheel E and actuating-pawl f , of the secondary registering-wheel E' , provided with the space c' , formed by cutting away one of its notches or teeth, substantially as and for the purpose hereinbefore set forth.

9. The combination, with the locking-bar s , of the movable piece s^2 , provided with notches s^1 , and connected to said bar in such manner that it will slide outwardly to more firmly lock the bar s when an upward pressure is applied to the latter, substantially as hereinbefore set forth.

JOSEPH CORBETT.

Witnesses:

H. LORD,

C. B. RICHARDS.