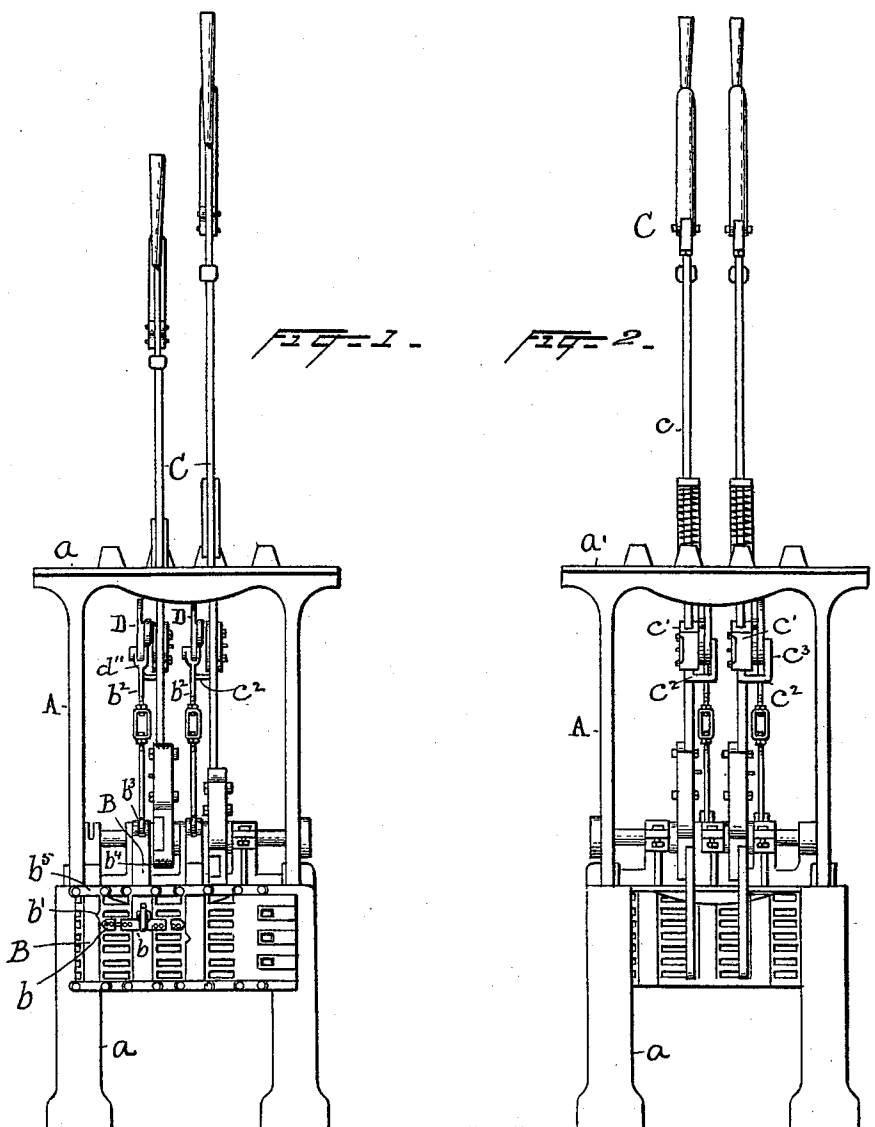


2 Sheets—Sheet 1.

INTERLOCKING SWITCH AND SIGNAL APPARATUS.

Patented May 25, 1897.



Witnesses
 Morris A. Clark.
 John R. Taylor.

Charles Haws Inventor
By his Attorneys Oyer & Atwell

(No Model.)

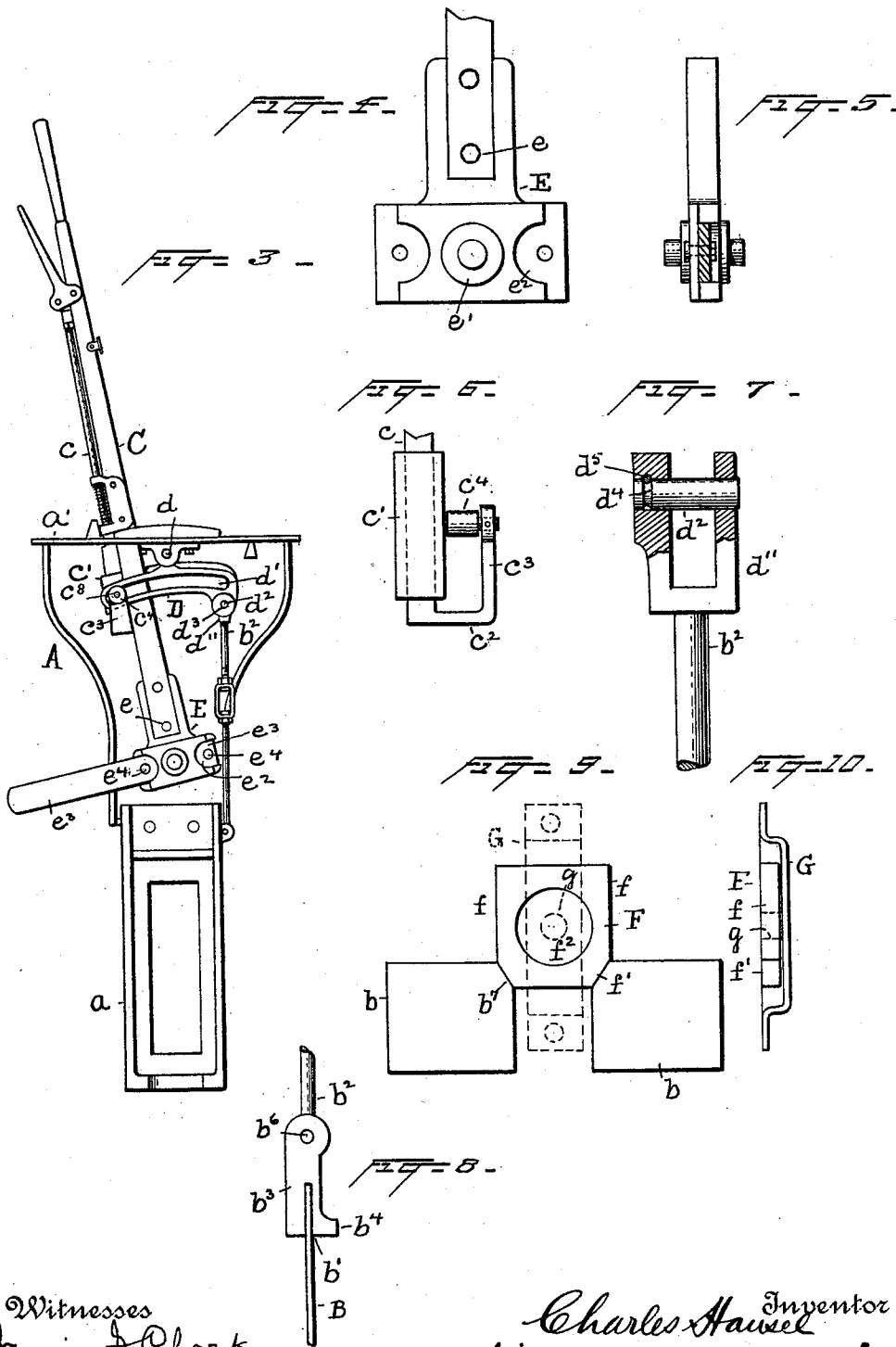
2 Sheets—Sheet 2.

C. HANSEL.

INTERLOCKING SWITCH AND SIGNAL APPARATUS.

No. 583,052.

Patented May 25, 1897.



Witnesses
Horris A. Clark.
John R. Taylor.

Charles Hansel Inventor
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UNITED STATES PATENT OFFICE.

CHARLES HANSEL, OF EASTON, PENNSYLVANIA.

INTERLOCKING SWITCH AND SIGNAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 583,052, dated May 25, 1897.

Application filed February 17, 1896. Serial No. 579,486. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HANSEL, a citizen of the United States, residing at Easton, in the county of Northampton and State of Pennsylvania, have invented a certain new and useful Improvement in Interlocking Switch and Signal Apparatus, of which the following is a specification.

This invention relates to interlocking switch and signal apparatus, and concerns particularly the interlocking machines commonly located in switch-towers or similar places from which switches and signals are governed.

The invention is directed generally to simplifying and increasing the efficiency and durability of these machines.

To this end I have devised certain improvements on the type of interlocking machines commonly in use, and these will be hereinafter fully described, and set forth in the claims.

In the drawings, Figures 1 and 2 are opposite end views of an interlocking machine provided with my improvements. Fig. 3 is a side view illustrating more clearly a signal-operating lever and adjacent mechanism. Figs. 4 and 5 are enlarged detail views illustrating the lower end of the signal-operating lever. Fig. 6 is an enlarged detail view illustrating in end view the rocker-link pin and the manner in which the same is mounted. Fig. 7 is a similar view illustrating the upper end of the tappet connection. Fig. 8 is a side view of the upper portion of one of the tappets. Figs. 9 and 10 illustrate, on an enlarged scale, the mechanism employed for operating the locking-dogs.

The main features of an interlocking machine being so well understood the same will not be described in detail herein, save in so far as they concern the improvements of the present invention.

Referring to the drawings, in which similar letters denote corresponding parts, A designates the sides, *a* the legs, and *a'* the top of an interlocking-switch machine, provided with tappets B and locking-dogs *b*, adapted to engage in recesses *b'* in the edges of said tappets.

C designates the signal-operating lever, provided with spring-actuated latch mechanism *c*. The lower end of the latch-rod *c*, as

shown in detail in Fig. 6, passes through and has approximately vertical movement in the sleeve *c'*, secured to the lever C, and terminates in a stirrup *c''*, the extreme end *c'''* being bent upwardly parallel with the plane of said latch-rod.

D designates the rocker-link, pivoted at *d* and provided with the elongated slot *d'* in the form of a segment of a circle. To one end of this rocker-link is secured the adjustable tappet connection *b''*, the lower end of which is secured at one end to the tappet B.

c'' designates the rocker-link pin, carrying the antifriction-roller *c'''*, said pin and roller passing through the slot *d'* in the rocker-link. The pin *c''* is journaled in the stirrup end of the latch-rod *c*. By means of the stirrup connection described I am enabled to give to the pin *c''* a support not at one end only, as in structures heretofore employed, but at both ends, thereby avoiding friction and making that portion of the machine more durable and compact and less likely to get out of repair.

In securing the tappet connection *b''* to the end of the rocker-link D, I have found it desirable to use the construction shown in Fig. 7, in which *d''* designates the bifurcate upper end of the connecting-rod *b''*. This upper end is perforated to receive the pin *d'''*, which passes through a perforation *d''''* in the rocker-link D and is journaled in the bifurcate ends *d'''* of connecting-rod *b''*. The pin *d'''* is provided near one end with an annular recess *d''''*, coinciding with a lateral perforation in one of the bifurcate ends. A key *d'''''*, passed through such perforation, registers with the recess *d''''* and securely holds the pin *d'''* against accidental displacement.

d'''' designates a turnbuckle by means of which the connecting-rod is made adjustable.

The lower end of the connecting-rod *b''* is secured to the tappet B, preferably by means of a pin *b'''*, passing through such end and through the bifurcate ends of a block *b''''*, to the lower end of which is secured the tappet proper. The block *b''''* is provided with an offset or shoulder *b'''''*, which when the tappet is at its lowermost position rests upon the locking-plate *b''''''* of the machine. It will thus be seen that the latter is a fixed stop, and the tappet is by reason of its coaction therewith

prevented from falling below a certain point. By this means the tappet is to a certain extent independent of adjustment. Each tappet B is provided with a notch or recess b' to receive the beveled end of a locking-dog b . These dogs are actuated by appurtenances carried by said tappets. One actuating device heretofore employed consists of a ring or annulus pivoted upon the tappet in such manner as that when the tappet is depressed the ring will be forced between the adjacent ends of two dogs, thereby giving them lateral movement, so that their beveled ends will engage with the notches or recesses in the edges of the tappets. I have found this construction open to objection for the reason that the friction between the periphery of the annulus and the ends of the locking-dogs causes the former to wear rapidly. This construction has been found objectionable owing to friction and lost motion and the consequent faulty operation. In lieu, therefore, of the construction described I employ a wedge-block F, rectangular in form, as shown in Figs. 9 and 10. The sides ff of the block are substantially parallel, the lower end being beveled at the corners $f'f'$, giving to this portion a wedge-like construction. The block F is centrally perforated at f^2 , and through this perforation passes the pin g , secured to or formed integral with the cage G. The ends of the cage G may be secured to the tappet B by means of rivets, as shown. In operation when the tappet is depressed the block F is forced downwardly between the locking-dogs b . In this operation the beveled surfaces f' come into contact with the beveled surfaces b' of the dogs, and the continued downward movement of the tappet presses the dogs apart and forces the block in its full width between them. The wear upon the block F comes, therefore, almost entirely upon the surfaces f' , and as it is uniform and does not affect the wedge-like action of the block such wear is unobjectionable. The lateral movement of the block F is provided for by the central perforation f^2 .

The lower end of the signal-operating lever C is secured at e to the block or casting E, and this block is provided with trunnions e' , by means of which it is pivoted to the frame of the machine. The block E is so constructed

as to provide for signal-operating connections not on one side only of the lever, but on both sides. To this end I provide the block with a recess e^2 at approximately a right angle to the longitude of the lever C and extending entirely through said block. In Fig. 3 I have shown the lever provided with a signal-operating connection e^3 on one side only of the lever. The end of this connection or bar may be secured by the pins e^4 in the recess e^2 . Should a connecting bar or link on both sides of the lever be desired, a single bar or link of the proper length may be employed, passing through the recess e^2 and extending about the same distance on either side thereof, pins similar to the pins e^4 being employed to retain said bar or link in position.

I claim—

1. In an interlocking machine, the combination with a switch or signal operating lever, of a latch-rod carrying a rocker-link pin, said latch-rod supporting said pin at both ends, substantially as set forth.

2. In an interlocking machine, the combination with a switch or signal operating lever, a rocker-link, a latch-rod on the operating-lever and carrying a rocker-link pin, said latch-rod supporting said pin at both ends, a tappet, a rod connecting said rocker-link and said tappet, and means for adjusting said rod, substantially as set forth.

3. In an interlocking machine, the combination with a tappet and its operating mechanism, of a shoulder carried by said tappet and coacting with a fixed stop when the tappet is in its lowermost position, substantially as set forth.

4. In an interlocking machine, the combination with a series of tappets, of locking-dogs coacting therewith to secure said tappets in position and blocks for operating said locking-dogs, said blocks having substantially rectangular upper portions and wedge-shaped lower portions, as and for the purpose set forth.

This specification signed and witnessed this 10th day of February, 1896.

CHARLES HANSEL.

Witnesses:

EUGENE CONRAN,
J. O. EDMONDS.