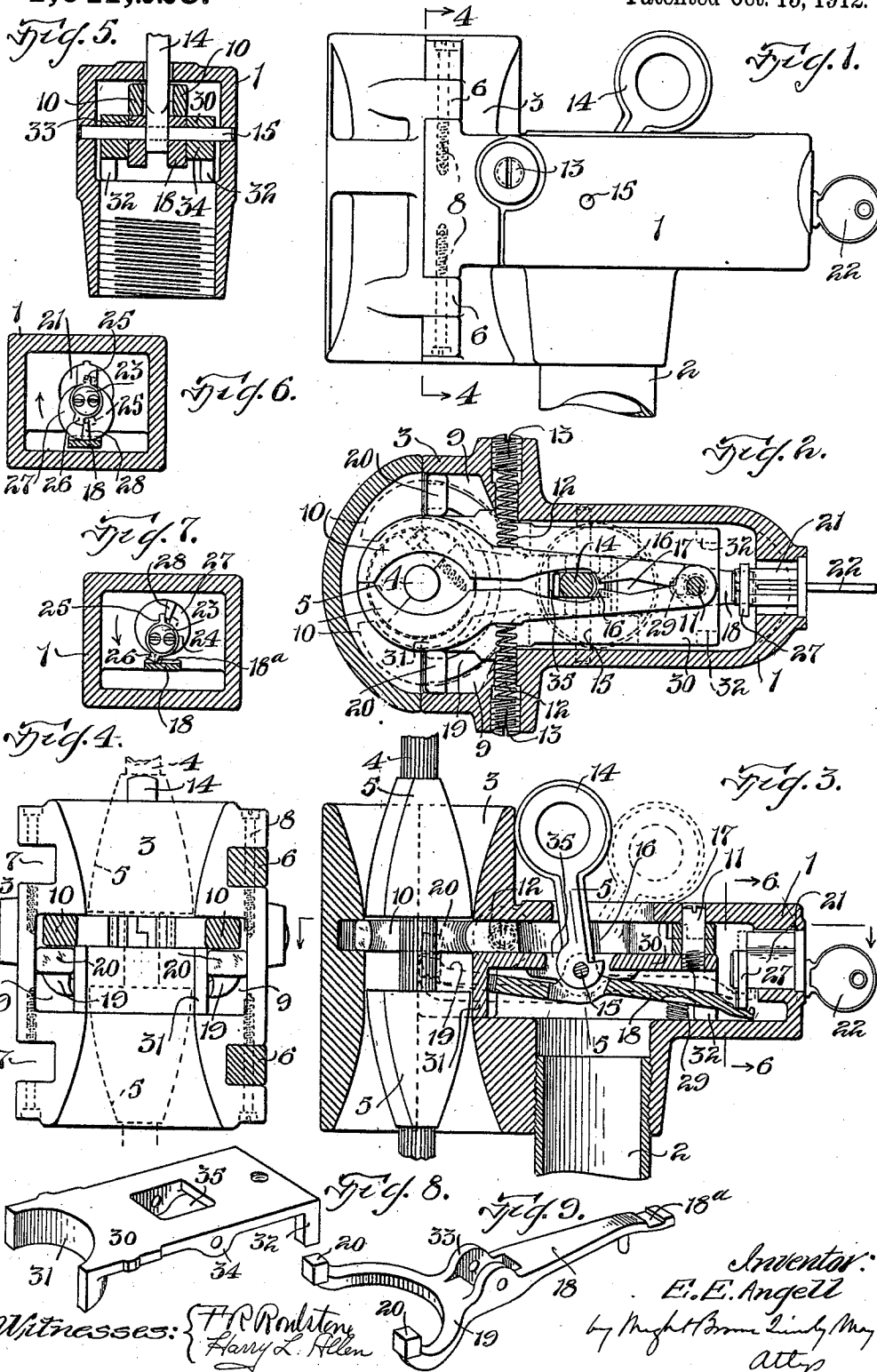


E. E. ANGELL.
ELEVATOR LOCK.
APPLICATION FILED JUNE 2, 1911.

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EDWIN ELLOITT ANGELL, OF SOMERVILLE, MASSACHUSETTS.

ELEVATOR-LOCK.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWIN E. ANGELL, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Elevator-Locks, of which the following is a specification.

This invention relates to a lock adapted to be used in connection with elevators or lifts, particularly those used for merchandise, of which the shipper cable is provided with collars or knobs. The lock coöperates with such knobs for so moving the shipper cable, when the elevator is in motion, as to stop the elevator, and for preventing unauthorized starting of the elevator.

My object in particular is to improve on the elevator locks shown in the patents numbered 411,274 and 648,678, granted to me September 17th, 1889 and May 1st, 1900 respectively, to the end that a more secure lock may be provided.

In the accompanying drawings I have illustrated the preferred embodiment of my present invention.

Figure 1 represents the lock in side elevation. Fig. 2 is a horizontal section of the lock. Fig. 3 is a vertical longitudinal section. Fig. 4 is a vertical cross-sectional elevation on line 4—4 of Fig. 1. Fig. 5 is a detail sectional view on line 5—5 of Fig. 3. Fig. 6 is a cross-section on line 6—6 of Fig. 3. Fig. 7 is a view similar to Fig. 6, showing the key-operated lock in a different position. Figs. 8 and 9 are detail perspective views of parts of the lock.

The same reference characters indicate the same parts in all the figures.

The device comprises a casing or housing 1 adapted to be mounted upon an elevator in the manner illustrated in Patent No. 411,274 above referred to, by being attached upon a standard 2 rising from the elevator platform. The forward end of the casing is formed as a guide 3 to receive the shipper cable 4, by which the hoisting mechanism of the elevator may be started and stopped. The upper and lower ends of this guide are made flaring in order to more rapidly admit the stop collars or abutments 5 applied upon the shipper cable. The guide is divided transversely into two parts, one of which has lugs 6 at each side adapted to enter notches 7 at corresponding points on the other part, and to be retained therein by

pins or screws 8. This construction permits opening of the guide to admit the shipper cable. In its central part the guide is horizontally recessed at 9 to admit the jaws 10, which are formed on the outer ends of levers pivoted upon a pin 11 within the casing. These jaw levers are acted upon by springs 12 which react against screw abutments 13 set into opposite sides of the casing. The springs press the jaws toward one another, and tend to hold them in the position shown in Fig. 2, where the space between them is sufficient to receive the cable 4 freely, but less than the largest diameter of the stop collars 5.

An operating lever 14 is pivoted upon a pin 15 within the casing and extends between the jaw levers, being adapted to swing in a plane perpendicular to that of said jaw levers. On the inner sides of the jaw levers are cam projections 16 adjacent to the back of the operating lever, so placed that when the operating lever is swung back as shown in Fig. 1 and in dotted lines in Fig. 3, it bears on these cams and swings the jaw levers apart. When in this position the operating lever lies between the surfaces 17 of the jaw levers and holds the jaws so far separated that the stop collars 5 may pass freely through them. Also pivoted within the casing is a detent lever 18 of which one arm 19, which I term the detent arm or member, is forked, and is provided upon each fork with a detent 20. These detents lie in the recesses 9 of the guide 3 and are movable into and out of the plane of the jaws 10. When in the plane of such jaws they flank the jaws, each detent being closely adjacent to one of the jaws at its outer side. They can occupy this position, however, only when the jaws are closed, and then they lock the jaws in closed position so that separation of the latter is impossible.

One of the particular objects of the invention is to enable the jaws to be locked in their closed position by means of a lock which cannot be picked, as, for instance, one of the locks which are now in common use and afford the greatest security. It is to permit of such a lock being used that I provide the detent lever 18. The lock as a whole is indicated at 21. I have not shown its details of construction and do not attempt to describe the same, because this lock is one

of the common types of safety lock, such, for instance, as the Yale, and of itself is not my invention.

My invention, so far as it relates to this safety lock, consists in the idea of means by which a lock of this character may be applied for maintaining the jaws in their closed position. Accordingly a detailed explanation of the lock itself is not necessary to an understanding of this idea. It is sufficient to say that the locking device has a tumbler shaft which can be rotated only by a key 22 of the proper character. Such tumbler shaft is above the tail of the detent lever 18 and on its inwardly projecting end is a head 23 carrying rigidly fixed thereto a collar 24. Said collar has projections 25 and 26. Adjacent to the head 23 a cam 27 is loosely mounted upon the shaft. This cam has a single projection 28 which lies in the path of the projections 25 and 26 on the collar 24. When the cam 27 is turned into the position shown in Figs. 3 and 6, it bears on the tail of detent lever 18, entering a recess 18^a therein and raises the detents 20 to an extent sufficient for locking the jaws 10. When the cam is turned through a half revolution into the position shown in Fig. 7, the detent lever is free to be moved by the spring 29, shown in Fig. 3, into the inoperative position represented in Fig. 4, where the detents are below the jaws and do not interfere with their movement.

The cam 27 is loosely mounted and the two projections 25 and 26 provided for turning it, in order to make possible withdrawal of the key when the device is either locked or unlocked. The key is of such a character that it can only be withdrawn or inserted into the lock when it is in a certain position, and must be completely rotated in locking or unlocking before it can be withdrawn. Accordingly the projections 25 and 26 are so located that in turning the cam through a half revolution, the shaft must be turned an additional half revolution. When the cam is in the locking position the projection or stop abutment 26 of the shaft head is beside the projection or complementary stop 28 of the cam.

In order to unlock the detent lever, the key and tumbler shaft must be turned in the direction of the arrow shown in Fig. 6, for the lock is so constructed that rotation in the other direction is prevented. The shaft at first has a lost motion amounting to a semi-rotation, when the projection 25 comes into the position shown in dotted lines, and engages the stop 28. Then a further semi-rotation of the shaft brings it and the cam into the position shown in Fig. 7. Conversely rotation of the shaft in the direction of the arrow in the latter figure results in a semi-rotation of lost motion of the shaft and then a semi-rotation of the cam.

Thus at each instance the shaft and key have made a complete rotation.

In order to make the guide complete immediately below the jaws I provide a piece 30, shown in detail in Fig. 8, which lies in the interior of the casing and has a semi-cylindrical lip 31 crossing the intersection between the guide and the interior of the casing immediately below the jaws 10 and between the detents 20, forming a continuation of the walls of the guide. The piece 30 is supported at its rear end by feet 32 and thus provides space for the detent lever 18. The latter has lugs 33 which lie between lugs 34 on the piece 30, through which passes the pivot pin 15. The ends of this pin are anchored in the sides of the casing or housing 1 and the pin serves the purpose of a fulcrum point for the operating lever 14 and detent lever 18, and of a securing device for the filler piece 30. The latter piece has an opening 35 in its top through which the operating lever 14 passes. The pivot pin 11 of the jaw levers is conveniently carried by the piece 30, being detachably screwed therein and serving as an additional anchor for such piece.

I have described both jaws 10 as being movable toward and from each other, and two detents, one for each jaw. I desire to state that a construction in which only one of the jaws is movable toward and from the other, such other jaw being fixed, and in which only one detent for the single movable jaw is provided, is within the contemplation of my invention, and I therefore wish it to be understood that I do not limit the application of the particular improvements of which this invention is embodied to elevator locks in which both jaws are movable.

I claim,—

1. An elevator lock, consisting of jaws between which the shipper cable of the elevator passes, one of said jaws being movable away from and toward the other, a detent arranged to occupy a position outside of the movable jaw, and locking means for placing said detent in such position.

2. An elevator lock comprising a pair of separable jaws, a detent member having detents arranged to occupy positions outside of said jaws to prevent their separation, and a key-operated device for so moving said detent member as to place the detents in such position.

3. In an elevator lock, a jaw movable into and out of a position relatively near the shipper cable, a detent for preventing movement of said jaw from such position, and a key-operated cam arranged to make said detent operative for this purpose.

4. In an elevator lock, means for coöperating with the control cable of the elevator and adapted to be respectively opened and closed, a detent arranged to interlock with

said means to prevent opening of said means when the latter is closed, and a key-operated safety-locking device arranged to cooperate with such detent and operable to place the same in and out of its operative position.

5 5. An elevator lock comprising in combination a laterally shifting jaw movable respectively into operative and inoperative positions, an operating lever for moving the jaw into one of such positions, a spring for moving it into the other position, a detent engageable with the jaw when in its operative position for preventing movement to the inoperative position, and a locking device for placing and maintaining the detent in such engagement with the jaw.

10 6. In an elevator lock a pair of jaws arranged to embrace the shipper cable of the elevator hoist, said jaws being mounted with provision for movement apart from one another, and detents movable into and out of positions outside of said jaws for preventing separation thereof.

15 7. In an elevator lock an oscillating member, a key-operated locking device including a rotating shaft, and a cam mounted upon said shaft arranged to engage and actuate said oscillating member, the shaft and cam having interengaging stops arranged to permit lost motion between the two.

20 8. In an elevator lock an oscillating member, a key-operated locking device including

a rotating shaft and a cam mounted upon said shaft arranged to engage and actuate said oscillating member, the shaft and cam having interengaging stops constructed and arranged to permit lost motion between the shaft and cam of an amount sufficient to cause the shaft and key to turn through a complete rotation in bringing the cam from operative to inoperative position and vice versa.

25 9. In an elevator lock a detent lever arranged to oscillate, and a key-operated locking device including a rotating shaft, a cam loosely mounted upon said shaft arranged to engage and move said lever, and complementary stops on the key-operated shaft and cam arranged to permit lost motion between the shaft and cam.

30 10. An elevator lock comprising jaws separable to permit opening and closing thereof, an operating lever for opening the jaws, springs for closing the jaws, a detent lever having detents arranged to engage the jaws when closed to prevent opening thereof, and a locking device for actuating said detent lever for that purpose.

In testimony whereof I have affixed my signature, in presence of two witnesses.

EDWIN ELLOITT ANGELL.

Witnesses:

H. L. ALLEN,
P. W. PEZZETTI.