

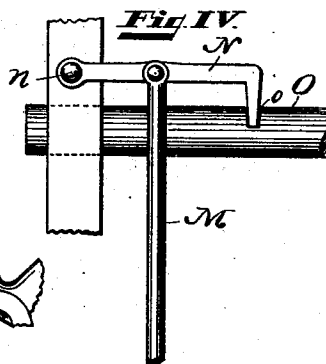
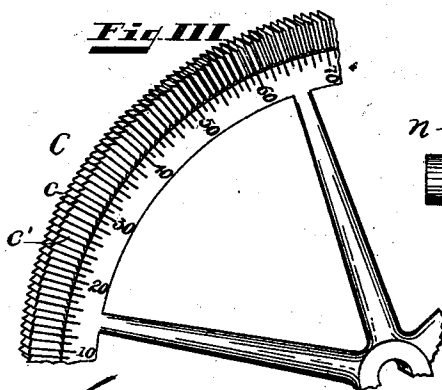
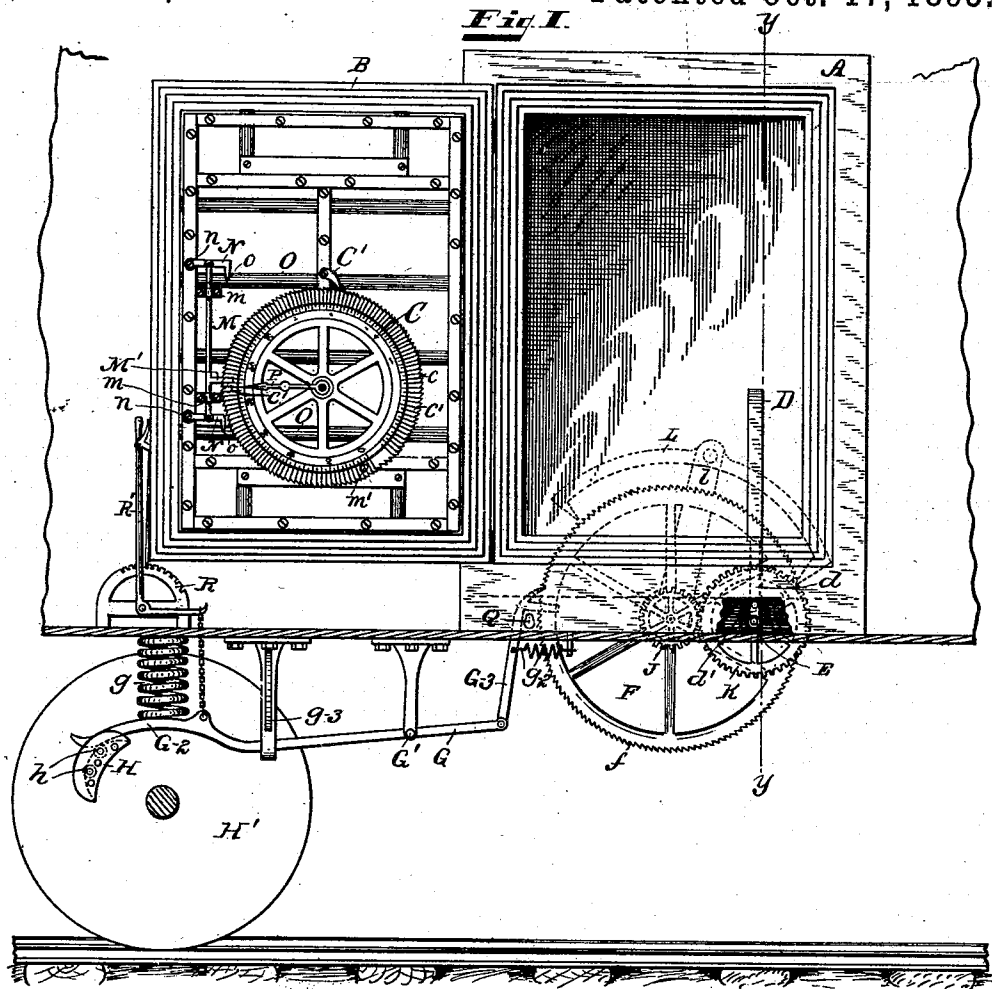
(No Model.)

2 Sheets—Sheet 1.

W. W. MUNSELL.
SAFE LOCK.

No. 506,714.

Patented Oct. 17, 1893.



Witnesses

J. J. Hattings
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Inventor:

Wm W. Munsell.

By R. A. Balderson
His Attorney

(No Model.)

2 Sheets—Sheet 2.

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Fig. II.

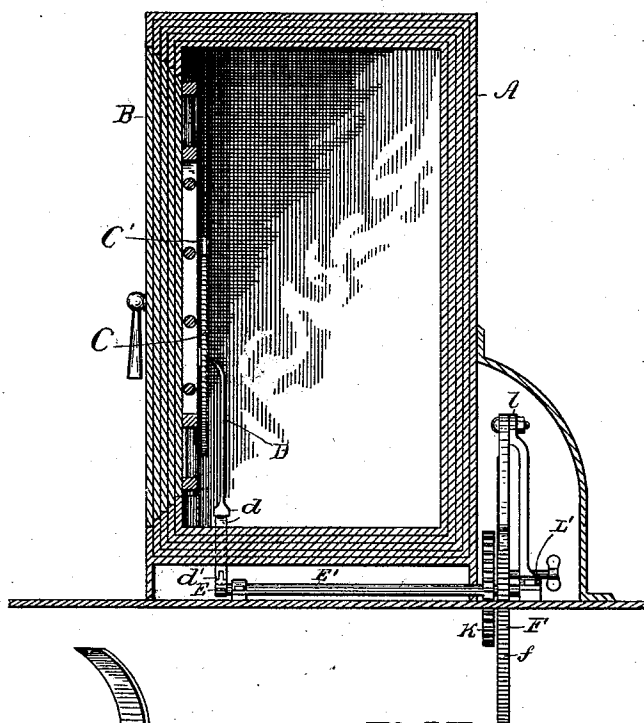


Fig. V.

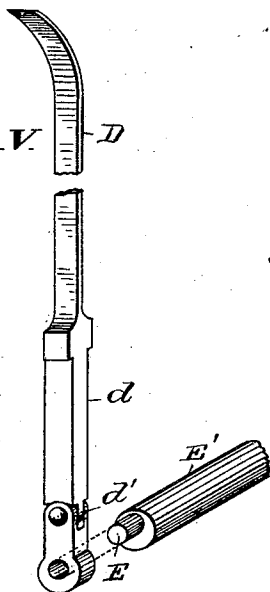


Fig. VI.

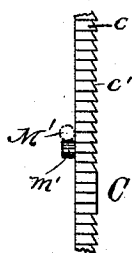
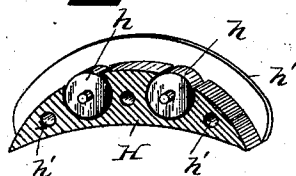


Fig. VII.



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UNITED STATES PATENT OFFICE.

WILLIAM W. MUNSELL, OF DODGE CITY, KANSAS.

SAFE-LOCK.

SPECIFICATION forming part of Letters Patent No. 506,714, dated October 17, 1893.

Application filed December 12, 1892. Serial No. 454,934. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. MUNSELL, a citizen of the United States, residing at Dodge City, in the county of Ford, State of Kansas, have invented certain new and useful Improvements in Apparatus for Controlling the Opening of Express-Safes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in an apparatus for controlling the opening of iron and steel safes, such as are used on railroads for transporting money and other valuables and my objects are, first, to provide and construct on the inner surface of the safe door a ratchet wheel and locking bolts, which are connected with and operated by mechanism located outside the safe, which receives its motions from a lug attached to one of the truck wheels; so that, when the train is in motion, the wheel revolving, operates a lever and thus transmits motion to a ratchet wheel and other mechanical devices, by means of which the bolts which lock the safe, are controlled by the distance traveled or the number of revolutions of the truck wheels, and not by a time lock or other such equivalent; second, to provide and construct such a device, which will be positive and accurate, and which may be easily applied to cars and safes now in use on railroads, to prevent said safe from being opened by any one, until the train has traveled the distance to which the lock controlling device has been set.

With these objects in view, my invention consists in the novel construction and arrangement hereinafter specified, and fully illustrated in the accompanying drawings in which—

Figure I represents a front elevation of a safe, the door of which is open, showing the mechanism which governs the bolts. Fig. II is a sectional view of the same, taken on line *y, y* of Fig. I, showing the door closed, and the bolt controlling devices in place. Fig. III is a detail view in perspective, partly broken away, of the ratchet, which is secured on the safe door. Fig. IV is a partly broken away detail view of one of the bolts, showing the locking key in place. Fig. V is a detail view of the eccentric which operates the pawl

D. Fig. VI is a partly broken away edge view of the ratchet-wheel, showing the lug which lifts the locking keys from the notches. 55 Fig. VII is a sectional detail view of the lug which is secured on one of the truck wheels, to operate the lever and pawl.

Referring to the drawings by letter, A represents a safe such as is commonly constructed, or placed in express cars, and used for transporting money and valuables; and may be of any desired design. 60

B, represents the door, hung on suitable hinges, and provided with requisite locking bolts, as shown; which are thrown by a suitable lever or handle. 65

C, represents a ratchet wheel, having ratchets *c*, on its periphery, and corresponding radiating ratchets *c'*, on its face, as shown in Fig. III, and provided further with a dial surface, with figures which indicate the number of ratchets (said ratchets corresponding to the miles and half miles, indicated by each notch.) 70 C', represents a suitable dog, which, falling in said ratchets as the wheel revolves, prevents it from turning backward. 75

D, represents a pawl which passes upward through the bottom of the safe, so that its point rests against the radiating ratchets *c'*, when the door B, is closed, and may be constructed substantially as shown in Fig. V, of any suitable material which will give the desired flexibility and strength. *d*, represents the shank of said pawl, which operates through the bottom of the safe, and is provided with a hinge *d'*, which permits the upper part to operate vertically by the eccentric E, without any lateral motion. 80

E' represents the shaft which operates under the safe and extends backward, where it carries a pinion K, that meshes with a smaller pinion J, which is keyed or otherwise secured to a shaft, which carries the ratchet wheel F. Said ratchet wheel F, is operated by a pawl G³, which is fulcrumed to the lever G, whose motion is received direct from the truck wheel H', by means of a lug H, which is rigidly bolted to said wheel by means of bolts passing through holes *h'*. 85 100

G', represents the bearing of lever G, made in any suitable manner, and firmly bolted to the bottom of the car by bolts; and in this bearing, said lever G is fulcrumed.

G^2 , represents the segmental terminus of the lever G, which rests directly over the car axle, against which the lug H, operates, and the object of the segmental formation is to permit the lug to operate against same with the least possible resistance. g , represents a spring, secured on said lever, whose upper end is properly secured to the timbers of the bottom of the car, and is designed to force lever G down after lug H, has passed.

g^3 , is the guide which holds the lever in place; and g^2 , represents a suitable spring, coil or flat, which holds pawl G^3 in contact with ratchet F.

The lug H, is provided with one or more friction rollers h , which are constructed in the manner shown in Fig. VII, and is also provided with flanges $h'' h''$, which serve to hold the lever in place, and assisted by guide g^3 , prevent any lateral motion.

J, represents a pinion wheel which is keyed on shaft E, and this meshing with pinion wheel K, operates the pawl D. The pinion wheel K, is twice the diameter of pinion wheel J, and revolves once, when said wheel J has made two revolutions, and each time it revolves, it carries ratchet wheel C, one space around.

L, represents an escapement which is secured on bearing l , and is to prevent ratchet wheel F from being thrown more than one space at a time.

M, represents a connecting bar, which is hinged to locking keys N, N and is provided with a lug or extension M' , which extends inward back of the ratchet wheel C, and is operated by a lug m' , which is fixed on said ratchet wheel C, as seen in Figs. I and VI. Said connecting bar M, is held in place by boxings m , m bolted to the inner face of door B. The locking keys N, N are fulcrumed to the bolt frames by suitable bolts n , n , and are provided with points that rest in notches o , o of locking bolts O, O, when the safe is locked, thereby preventing said bolts from being thrown until the keys have been lifted out of the notches.

P, represents the indicator or pointer, which is secured on the arbor of ratchet wheel C, and is to provide a means of setting the ratchet to a point indicating the number of miles to be traveled before the bolts are released from locking keys N, N.

R, represents a notched frame carrying a lever R' , which is connected to lever G, by a chain or its equivalent, and is for the purpose of raising the lever G, from contact with lug H, if so desired, while the train is in motion, thus making the entire mechanism in-operative should the train be run backward, or pass over a greater distance than indicated on the dial.

The principal object of this invention is to provide a means for locking the door of an express safe so that it may not be opened by any one, until its given destination has been reached, and the entire mechanism is gov-

erned by the distance traveled, and not by the time required for such travel, and is so constructed that it may be applied to cars and safes now in common use, by those skilled in the art. A blank space is left on the surface of wheel C, so that when the pawl D, has operated said ratchet to the point indicating a given distance on the dial, said pawl will operate idly against said smooth or blank surface, without forcing the ratchet wheel farther. The locking keys N, N will then be lifted out of notches o , o , but the bolts will remain in place, until thrown by the operator. The car wheel in revolving, will carry with it the lug H, which will throw the lever G, to such a position that the pawl G^3 , will operate one notch, and the motion is imparted to the ratchet wheel, by means of said pawl, and the lever G, through the expansion of the coil spring g , so that the severe and positive stroke of said wheel, is not imparted directly to the operating mechanism. The shank of pawl D, may be made round or square, and of any size desirable and practicable.

No change is made in the bolt work, nor in the manner of throwing the bolts, with the exception that suitable notches o , o , are cut in one or more of the bolts, in which the locking keys operate.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an apparatus for governing the unlocking of express safes, the combination of the lug H, secured on the car wheel; lever G, operated by said lug; pawl G^3 , pivoted to the free end of said lever and operating a ratchet wheel F; pinion J, secured on the axle of ratchet wheel F, and meshing with a larger pinion K, secured on the axle E' , bearing an eccentric E; pawl D, its lower end journaled on eccentric E, its upper end passing up through the bottom of the safe A, and operating the ratchet C, situated on the inside of the safe and bearing on its rear face a lug m' ; connecting bar M, hinged to locking keys N, N, and provided with an extension M' , adapted to be raised by the lug m' , on the ratchet wheel C; locking keys N, N, pivoted to the bolt frames and adapted to lock bolts O, and to be raised by the connecting bar M, substantially as shown and described and for the purposes set forth.

2. In an apparatus for governing the unlocking of express safes, the combination of the lug H, secured on the car wheel; lever G, operated by said lug; pawl G^3 , pivoted to the free end of said lever and operating a ratchet F; escapement l , to regulate the step of the ratchet F, substantially as shown and described and for the purposes set forth.

3. In an apparatus for governing the unlocking of express safes, the combination of the lug H, on the car wheel; lever G, operating the pawl G^3 ; pawl G^3 , operating ratchet F; pinion wheels J, K, and eccentric E; eccentric E, operating ratchet wheel C, bearing lug m' ; ratchet wheel C, operating bar M;

bar M, operating locking keys N, N, substantially as shown and described and for the purposes set forth.

4. In an apparatus for governing the unlatching of safes on express cars, the combination of the mechanism for operating the ratchet wheel C, set in motion by the revolution of the car wheel, carrying the lug H; the ratchet wheel C, carrying a lug *m'*; locking bar M, pivoted to the locking keys N, and

adapted to be operated by the lug *m'*, and locking keys N, adapted to lock the bolts O, substantially as shown and described and for the purposes set forth.

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

WILLIAM W. MUNSELL.

Witnesses:

LEON BLOCK,
HARRY GOODWIN.