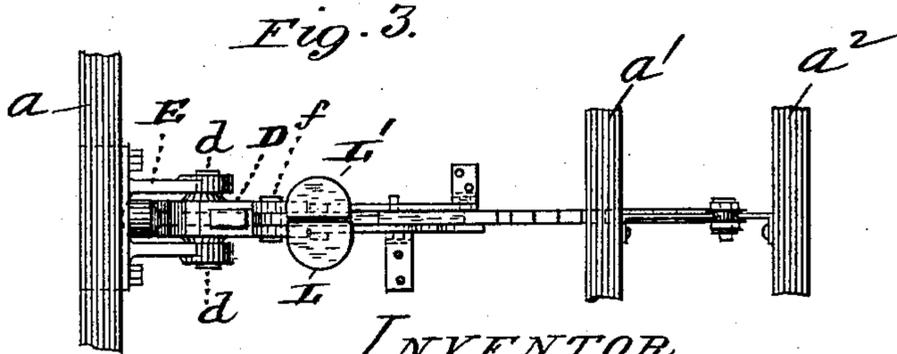
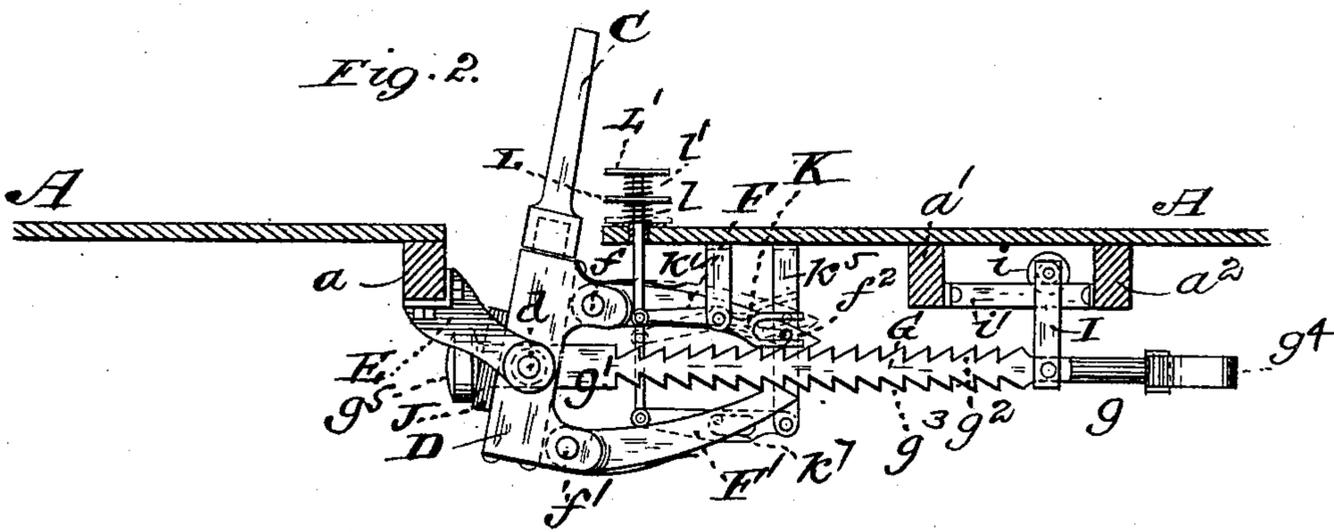
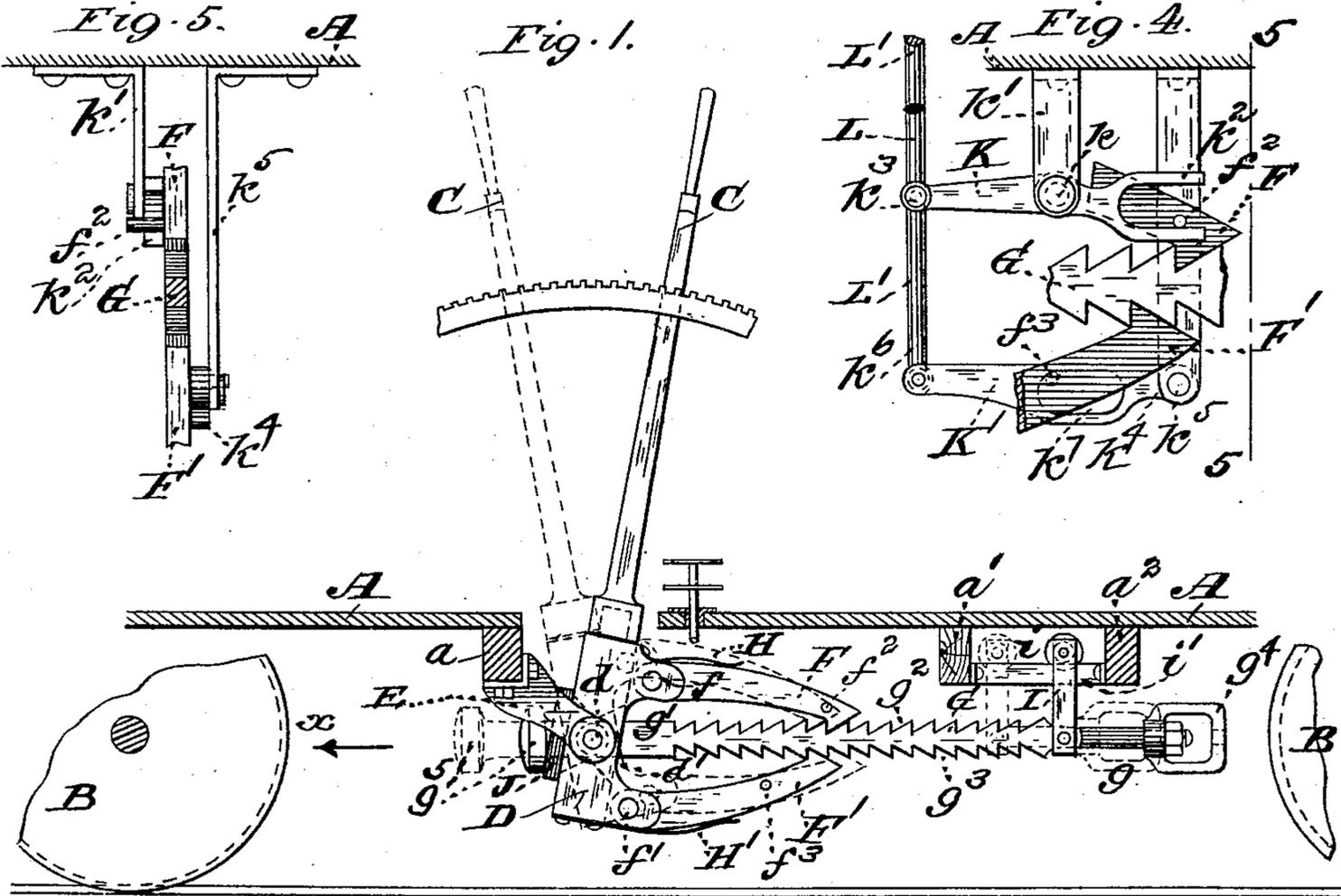


(No Model.)

J. H. TONG.  
CAR BRAKE.

No. 480,910.

Patented Aug. 16, 1892.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

JAMES H. TONG, OF ST. LOUIS, MISSOURI, ASSIGNOR OF SEVEN-FIFTEENTHS  
TO JOHN F. DE LASSUS, OF SAME PLACE.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 480,910, dated August 16, 1892.

Application filed December 26, 1891. Serial No. 416,205. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. TONG, of St. Louis, Missouri, have made a new and useful Improvement in Car-Brakes, of which the following is a full, clear, and exact description.

The improvement relates to the means whereby a brakeman upon a motor or other street-railway car is enabled to operate the brake more promptly and effectively than hitherto has been practicable.

It consists, mainly, in the means for applying the brake in either position and at each half-stroke of the brake-lever, substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, in which—

Figure 1 is a longitudinal sectional elevation exhibiting a sufficient portion of the car for an understanding of the improvement; Fig. 2, a view analogous to that of Fig. 1, but including the means for detaching the pawls from the ratchet-bar; Fig. 3, a plan of the parts of Fig. 2, omitting the car-floor; Fig. 4, a view, upon an enlarged scale, showing portions of the pawls and ratchet-bar and the means for detaching the pawls from the ratchet-bar; and Fig. 5, a cross-section on the line 5 5 of Fig. 4.

The same letters of reference denote the same parts.

A represents the floor of the car, and  $a a'$  some of the floor-timbers.

B B represent the car-wheels.

C represents the ordinary lever used by the brakeman in braking the car. It is adapted at its lower end to be applied to a part D, which may be termed a "pawl-block" or "head," and which is journaled at  $d d'$  to enable it to be rocked forward and backward in the direction of the length of the car. A convenient support for said block is the bracket E, which is attached to one of the floor-timbers and projects suitably to support the block in the proper position. The block is provided with two pawls F and F', which are pivoted to the block at  $f$  and  $f'$ , respectively. The pawls are designed to coact with a ratchet-bar G, which is connected at one end  $g$  with the customary brake-rods, (not shown,) and whose other end  $g'$  extends

through or past the block, substantially as shown. Suitable means—such as the springs H H'—serve to keep the pawls in engagement with the ratchet-bar, saving as hereinafter explained. With the parts thus arranged and connected it will be seen that whether the brake-lever C is moved forward or backward the ratchet-bar is drawn in the direction of the arrow  $x$ , Fig. 1, for the ratchet-bar is a double one; having an upper set of teeth  $g^2$  and a lower set of teeth  $g^3$ , with which the pawls F F' respectively coact, and when the brake-lever is thrown in one direction—say in the direction indicated by said arrow—the upper pawl operates to draw the ratchet-bar in the same direction, and meanwhile the lower pawl slides backward upon the ratchet-bar, and when the brake-lever is thrown in the opposite direction the lower pawl operates to draw the ratchet-bar in the direction of the said arrow, and meanwhile the upper pawl slips backward upon the upper set of teeth. Thus at each half-stroke of the brake-lever the ratchet-bar is worked forward in the direction of the arrow. The ratchet-bar is conveniently held in position by having its forward end carried through an opening  $d'$  in the block D and having its rearward end supported by a hanger I, whose trolley  $i$  travels upon a suitable bearing  $i'$ , supported, say, from the floor-timbers  $a' a^2$ , substantially as shown. The rear end of the ratchet-bar is provided with means—such as the swivel  $g^4$ —for connecting it with the brake-rod, and the opposite end of the ratchet-bar has a shoulder  $g^5$ , which when the ratchet-bar is released and is allowed to fly back encounters a suitable elastic buffer J, attached to the block D, substantially as shown.

The means for releasing the ratchet-bar and brake are preferably as follows: K represents a lever pivoted at  $k$  to a bracket  $k'$ , attached to the car-floor. Its forked end  $k^2$  engages with a stud  $f^2$  upon the pawl F, and its opposite end  $k^3$  is jointed to a pedal L. K' represents another lever, pivoted at its end  $k^4$  to a bracket  $k^5$ , attached to the car-floor, and at its opposite end  $k^6$  jointed to another pedal L', and between its ends slotted at  $k^7$  to engage with a stud  $f^3$  upon the other pawl F'. Springs  $l l'$ , respectively, serve to

uphold the pedals in their normal positions, substantially as shown in Fig. 2. In this position of the pedals the pawls are both in engagement with the ratchet-bar, and so long as said pawls remain thus in engagement the ratchet-bar can not only be worked forward, notch by notch, by operating the brake-lever, but also can be held at any point of tension; but when it is desired to release the brake the pawls are detached from the ratchet-bar by means of the described pedals, and as follows: By depressing the pedal L the lever K is turned upon its pivot, and its forked end in consequence bears upward against the stud  $f^2$ , and the pawl F is lifted out of the upper set of teeth of the ratchet-bar, and by depressing the pedal L' the lever K' acts in an analogous manner to effect the disengagement of the pawl F' from the under set of teeth of the ratchet-bar, and the ratchet-bar being free slips backward into or toward the position shown in the full lines in Fig. 1. If it is desired to but partially release the ratchet-bar, but a single one of the pedals is operated, in which case one of the pawls remains in engagement with the ratchet-bar. This arrangement is sometimes desirable. By making the brake-lever detachable from the pawl-block said lever can be readily removed

therefrom whenever desired—as, for instance, when the lever is needed elsewhere. The same brake-lever can thus be used in connection with two or more of the described brake-operating devices.

I claim—

1. The combination, in a car, of the ratchet-bar, the two pawls, the pivoted pawl-block, the pedals, and the levers connecting said pedals and pawls, substantially as described. 35
2. The combination of the car, the double ratchet, the pawls, the pivoted pawl-block, and the brake-lever, said ratchet-bar being upheld at or toward both ends thereof, substantially as described. 40
3. The combination of the car, the ratchet-bar, the pawl F, the tilting pawl-block, and the pedal I, substantially as described. 45
4. The combination of the car, the ratchet-bar, the pawl-block, and the buffer, said ratchet-bar having the shoulder, substantially as described. 50

Witness my hand this 17th day of December, 1891.

JAMES H. TONG.

Witnesses:

C. D. MOODY,  
A. BONVILLE.