No. 684,478. Patented Oct. 15, 1901.

J. A. TRIMBLE.

BRAKING APPARATUS.

(Application filed June 11, 1901.)

(No Model.)

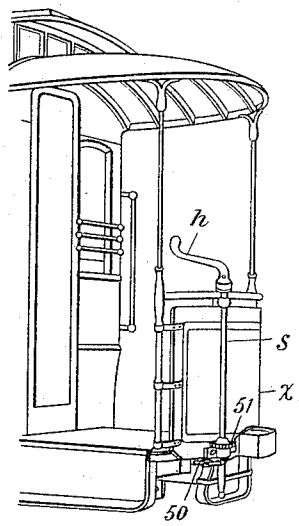


Fig. 1.

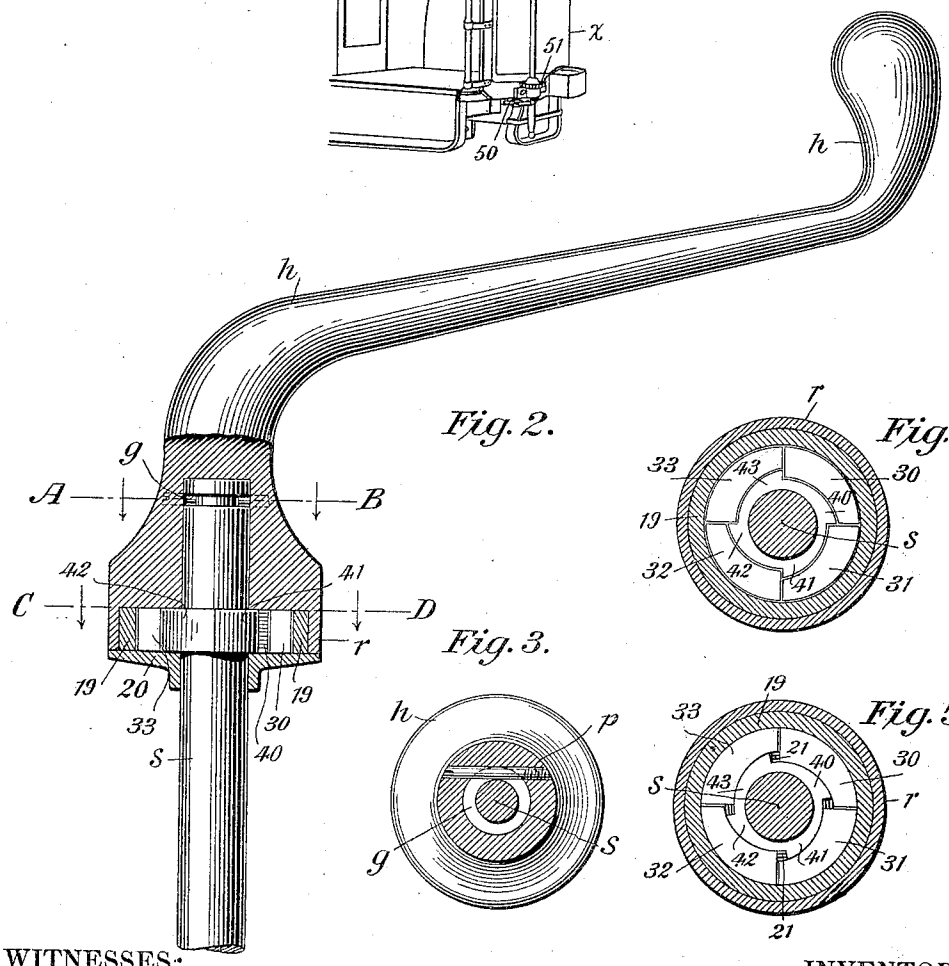


Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

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BRAKING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 684,478, dated October 15, 1901.

Application filed June 11, 1901. Serial No. 64,109. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. TRIMBLE, a citizen of the United States, residing in the city of New York, county and State of New York, have made certain new and useful Improvements in Braking Apparatus, of which the following is a specification.

My invention relates to the hand-brakes employed on tram-cars, and more particularly to the means for engaging and disengaging the handle or crank and the spindle upon which the chain connected with the brake-shoe is wound.

The object of my invention is to provide a brake-handle which can be made to engage with the spindle at any radial point and to provide a more durable and stronger device than any heretofore known or used.

The accompanying drawings illustrate my invention.

Figure 1 is the platform-section of a tram-car, showing the brake-handle and spindle with part of the chain. Fig. 2 is a vertical section through the means for connecting and disconnecting the handle and spindle. Fig. 3 is a cross-section on the line A B, Fig. 2. Fig. 4 is a cross-section on the line C D, Fig. 2. Fig. 5 is a similar view showing the cam-surfaces and wedges in a different position with respect to each other.

h is the handle or crank.

s is the spindle to which the chain 50 is attached and upon which it is wound. The opposite end of the chain is attached to the brake-shoe in the usual manner, so that when the chain 50 is wound upon the spindle *s* the brake is applied or being applied. There is the usual cog or ratchet 51, fixed on the spindle, with a pawl or dog on the platform *x*, by means of which the brake may be set. The dog is of the well-known arrangement and is not shown. The handle *h* is of inoxidizable metal, as brass or bronze, with a central opening to receive the end of the brake-spindle *s*. A groove *g* in the end of the spindle *s* receives a pin *p*, fixed in the handle *h*, as shown in Fig. 1, providing freedom of rotation for the handle without permitting vertical movement. The lower end of the handle *h* is bored out to form a ring *r*. This rides upon the circular table or support 20, which is fixed on the spindle *s*. Within the ring *r*, which is of comparatively soft metal, I place and fix a closely-fitting ring 19, preferably of steel. In line with the ring *r*, firmly fixed to spindle *s*, I fix a series of cam-surfaces 40, 41, 42, and 43. These are of uniform dimensions and approximate one-quarter of a circle each in extent. In the same plane with the cam-surfaces is an equal number of arc-shaped wedges 30, 31, 32, and 33, one such wedge being assigned to each cam-surface. When the brake-handle is moved from left to right or clockwise, the cam-surfaces 40 to 43 and the wedges 30 to 33 are jammed together and between the surface of the spindle *s* and the interior surface of the ring 19. The handle *h* and spindle *s* are thus caused to engage, as shown in Fig. 5, and the handle and spindle move together, while the chain is wound up. When the handle *h* is turned from right to left, the wedges 30 to 33 are shifted to the position shown in Fig. 4 and the brake-spindle and handle are free of each other.

It is to be noticed that the surfaces jammed into engagement are of considerable extent and that the handle can be made to take hold of its work upon very slight movement at practically any radial point, thus permitting the brakeman to apply his muscular power in the manner most advantageous. The extent of movement necessary to engage the handle and spindle is very slight and is indicated. The space 21 in Fig. 5 shows the extent of the movement necessary.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of a brake-spindle and its operating-handle, a ring or cylinder outside the spindle, a circular plate fixed to said spindle having a series of cam-surfaces cut out of its periphery, a series of detached arc-shaped wedges floating or resting freely upon a table or support, said wedges with said plate forming a complete circle and closely fitting the interior of said ring.

2. The combination of a brake-spindle and its operating-handle, a ring or cylinder outside the spindle, a disk having four equal cam-surfaces, four arc-shaped wedges forming complementary parts of said disk and a table to support said wedges in position to exert equal pressure at all points of said ring.

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