

A. A. SEARWAY.
MANUALLY OPERATED RAILWAY BRAKE.
APPLICATION FILED AUG. 9, 1909.

970,402.

Patented Sept. 13, 1910.

2 SHEETS—SHEET 1.

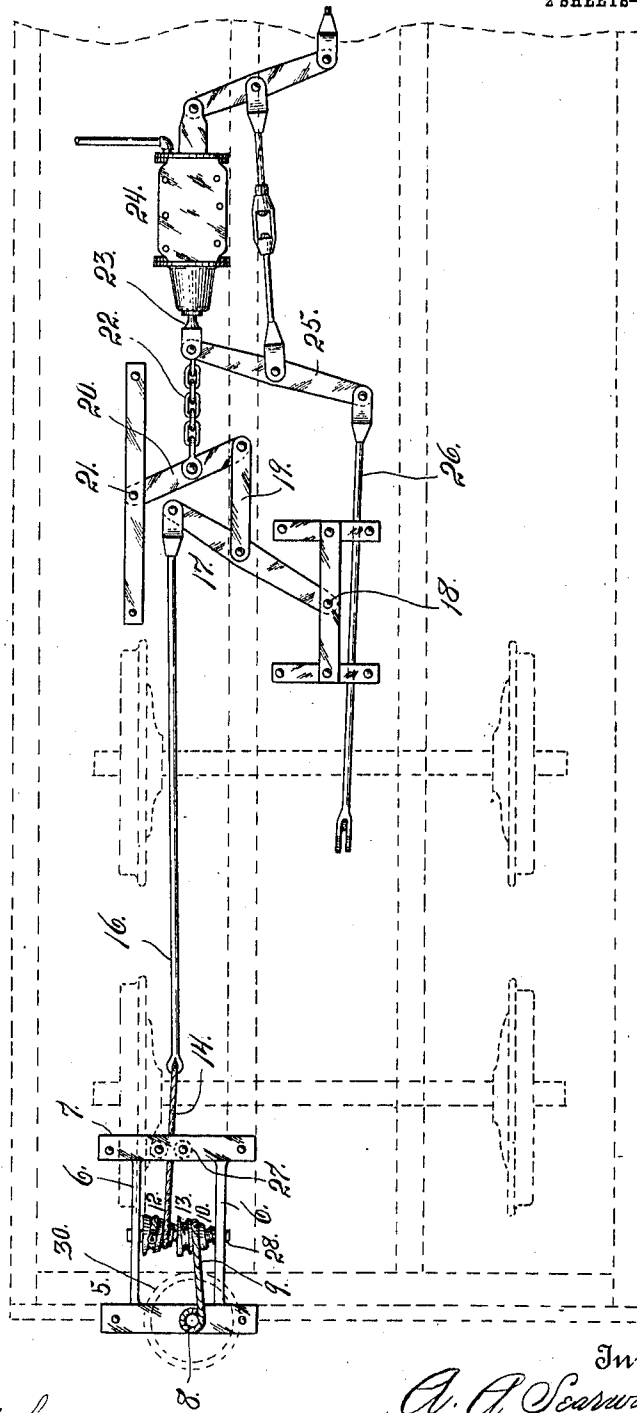


Fig. 1.

Witnesses

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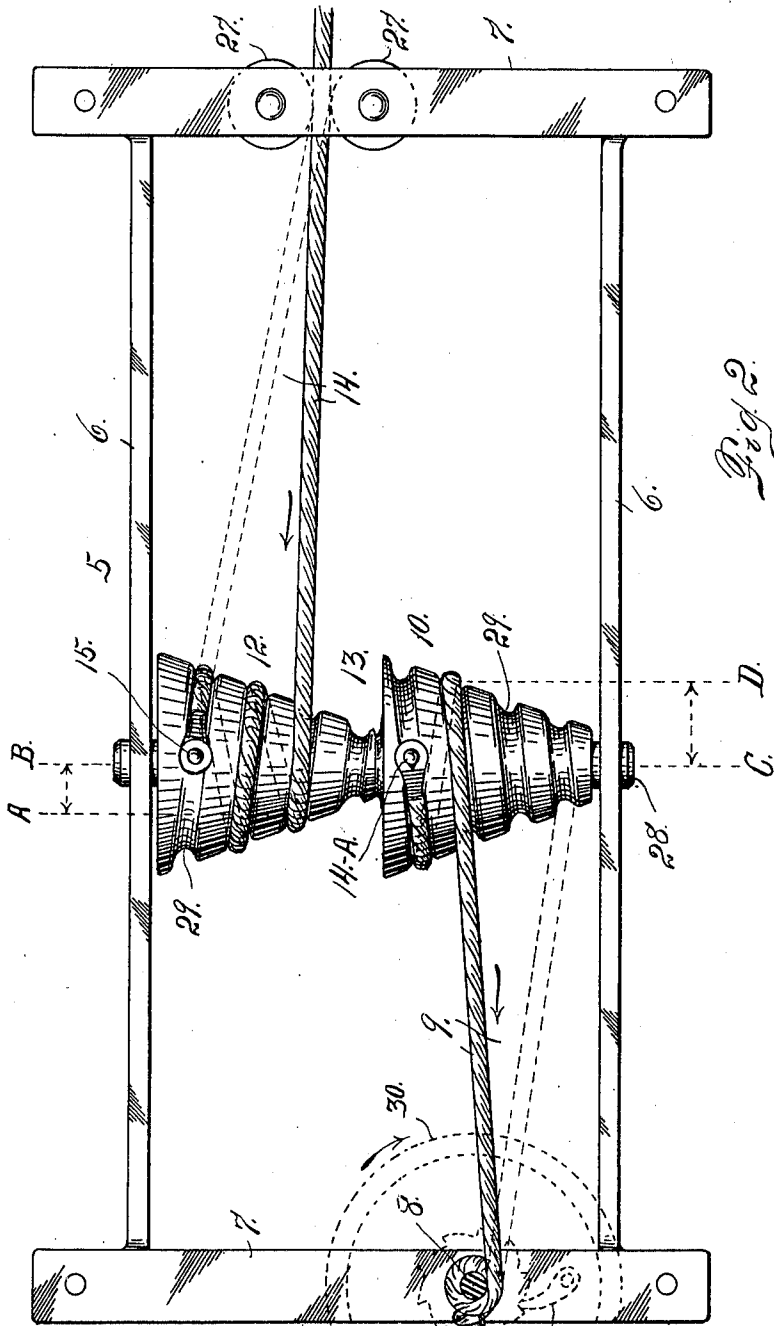


Fig. 2.

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UNITED STATES PATENT OFFICE.

ALEX A. SEARWAY, OF BUFFALO CREEK, COLORADO.

MANUALLY-OPERATED RAILWAY-BRAKE.

970,402.

Specification of Letters Patent. Patented Sept. 13, 1910.

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To all whom it may concern:

Be it known that I, ALEX A. SEARWAY, a citizen of the United States, residing at Buffalo Creek, county of Jefferson, and State of Colorado, have invented certain new and useful Improvements in Manually-Operated Railway-Brakes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in manually operated brakes for railway cars, my object being to provide a novel construction of this class in which the brakes may be quickly and easily applied.

The chief element of my improved construction consists of a double cone-shaped, operating drum. Connected with one of the cone members is the rope or cable, which is directly connected with the hand-operated stem or shaft; while the other cone member is suitably connected with the mechanism for setting the brakes. By virtue of the two cone members, it becomes practicable to rotate the drum rapidly, for the purpose of taking up the slack at the beginning of the operation, while after the slack is taken up, the pull upon the cone member connected with the operating shaft is upon a portion of the member of larger diameter, thus giving increased leverage, whereby the drum is more slowly operated, the leverage increasing and the rapidity of movement diminishing, as the brakes approach the limit of their application. In other words, the cable member, which is directly connected with the manually operated shaft, is wound upon the one cone member, so that at the beginning of the brake-setting operation, the cable connected with the manually operated shaft pulls from a portion of the cone member of relatively small diameter, the diameter increasing during the rotation of the drum, whereby the slack is rapidly taken up, as aforesaid, after which the rotary movement is slower with a corresponding lever advantage.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the ac-

companying drawing, in which is illustrated an embodiment thereof.

In this drawing: Figure 1 is a top plan view of my improved brake mechanism, shown in connection with suitable apparatus for utilizing the air brakes. The object of this view is to emphasize the fact that my improved construction operates in perfect harmony with the regular air brake mechanism. Fig. 2 is a similar view of my improved construction shown in detail and on a larger scale.

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

Let the numeral 5, designate a frame work which may be of any suitable construction, the same being secured below the body of the car. As shown in the drawing, this frame includes two parallel side bars 6, and two end beams 7. In one of these beams is journaled the vertically-disposed, manually-operated shaft or stem 8, with which is connected one extremity of a cable 9, the opposite extremity of the said cable being connected with one of the cones 10, as shown at 14^A. This cone member 10, together with a similar member 12, compose what I term the brake-operating drum 13. Another cable designated 14, has one of its extremities connected with the cone member 12, as shown at 15; while the opposite extremity of the cable 14, is connected with the brake-rod 16, leading to a lever 17, fulcrumed at 18, and connected by a link 19, with a lever 20, the latter being fulcrumed at 21, and connected by means of a chain 22, with the piston stem 23, of an air-brake cylinder 24. The stem 23 is also connected by means of a link 25, with a brake-rod 26.

If we assume that the brakes are set by the use of the air-brake cylinder, the stem 23, will be moved outwardly or toward the left, and the chain 22, slackened. Hence, no matter how tightly the brakes may be set by the use of the air, my improved, hand-operated brake mechanism may be released at will, since the slack in the chain 22, gives ample opportunity for turning the brake shaft 8, forwardly a sufficient distance to release the ratchet and pawl mechanism for holding the shaft 8, in the brake-setting position. As shown in the drawing, the cable 14, passes between two guide rollers 27, whereby the friction is reduced to a minimum.

In describing the operation of my improved construction, it must be assumed when the mechanism is in the position illustrated in Fig. 2, that the brakes are applied or that the brake-setting operation is approaching completeness. Hence at the time of the beginning of the operation, it may be assumed that the cables are in the position illustrated by dotted lines in Fig. 2, in which event the leverage upon the drum 13, exerted by the pull of the cable 9, will be approximately that indicated by the distance between the dotted lines A and B in Fig. 2; while the leverage utilized by the same cable, when the parts are in the position shown by full lines in Fig. 2, may be indicated approximately by the distance between the two dotted lines C and D. At this time it may also be assumed that the cable 14, is slack and that very little power is required in taking it up. It is therefore advantageous to rotate the drum quickly during the taking up of the slack. Hence, assuming that the cable 9, is in the dotted line position, it will be understood that the winding of a given length of cable upon the operating shaft 8, will turn the drum a greater number of times, when the cable engages the cone where the diameter of the latter is relatively small; at the same time, since the cable 14, engages the cone 12, where the latter is relatively large, it will be understood that the drum 13, is rotated relatively rapidly at the beginning of the operation, thus causing the winding of the cable 14, relatively rapidly upon the cone 12, the rapidity of movement of the drum co-operating with the relatively large diameter of the cone 12, which the cable 14, initially engages at the beginning of the operation, to effectually and rapidly perform the brake-setting function.

As illustrated in the drawing, the drum 13, is composed of the two cone members 10 and 12, having journals 28, which engage bearings in the side bars 6, of the frame. Each of the cone members 10 and 12, is provided with a spiral groove 29, the grooves forming ways which the cable members engage. These grooves are reversely arranged, that is to say, the one is a right hand and the other a left hand spiral. This being the case with both cables connected at the same

point with their respective cones, the rotation of the drum in a given direction will unwind one cable from its cone and wind the other on its corresponding cone, this, of course, being necessary to the operation of the mechanism.

It will be understood that the only function of the cable 9, is the operation of the drum 13, or the rotation of the latter; while the function to be performed by the cable 14, is that of operating the brake-setting mechanism. (See Fig. 1.) Hence in order to operate or rotate the drum for brake-setting purposes, the cable 9, must be unwound from its cone 10 simultaneously with the winding of the cable 14 on its cone 12.

In the drawing, the hand wheel for operating the shaft 8, is indicated by dotted lines in both views and the arrow adjacent to the wheel indicates the direction of the latter's rotation for brake-setting purposes.

From the foregoing description the use of my improved construction will be readily understood and need not be described further in detail.

Having thus described my invention, what I claim is:

The combination with a brake mechanism and a hand operated device, of a drum equipped with two cone members respectively provided with right and left hand spiral grooves, one of said members tapering to the base of the other member and integrally formed therewith, a frame in which the cone members are horizontally journaled, guide rollers positioned at one extremity of the frame, cables connected with the cone members and extending in opposite directions, one cable leading to the hand operated device and the other passing between the guide rollers and leading to the brake mechanism, whereby one cable is unwound from one cone simultaneously with the winding of the other cable upon the other cone, for brake-setting purposes, substantially as described.

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

ALEX. A. SEARWAY.

Witnesses:

A. J. O'BRIEN,

A. EBERT O'BRIEN.