(No Model.) 3 Sheets—Sheet 1.

J. U. ELWOOD.

TRACK BRAKE.

No. 588,858. Patented Aug. 24, 1897.

Fig. 1.

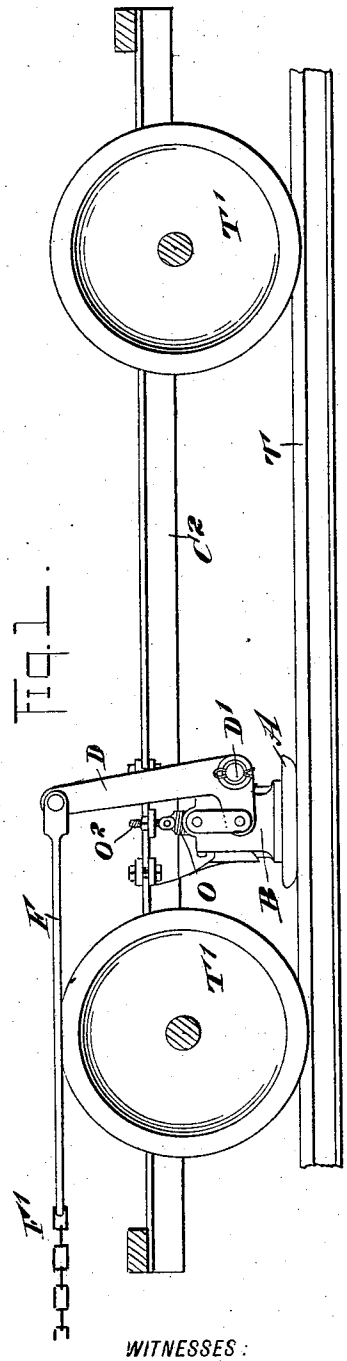
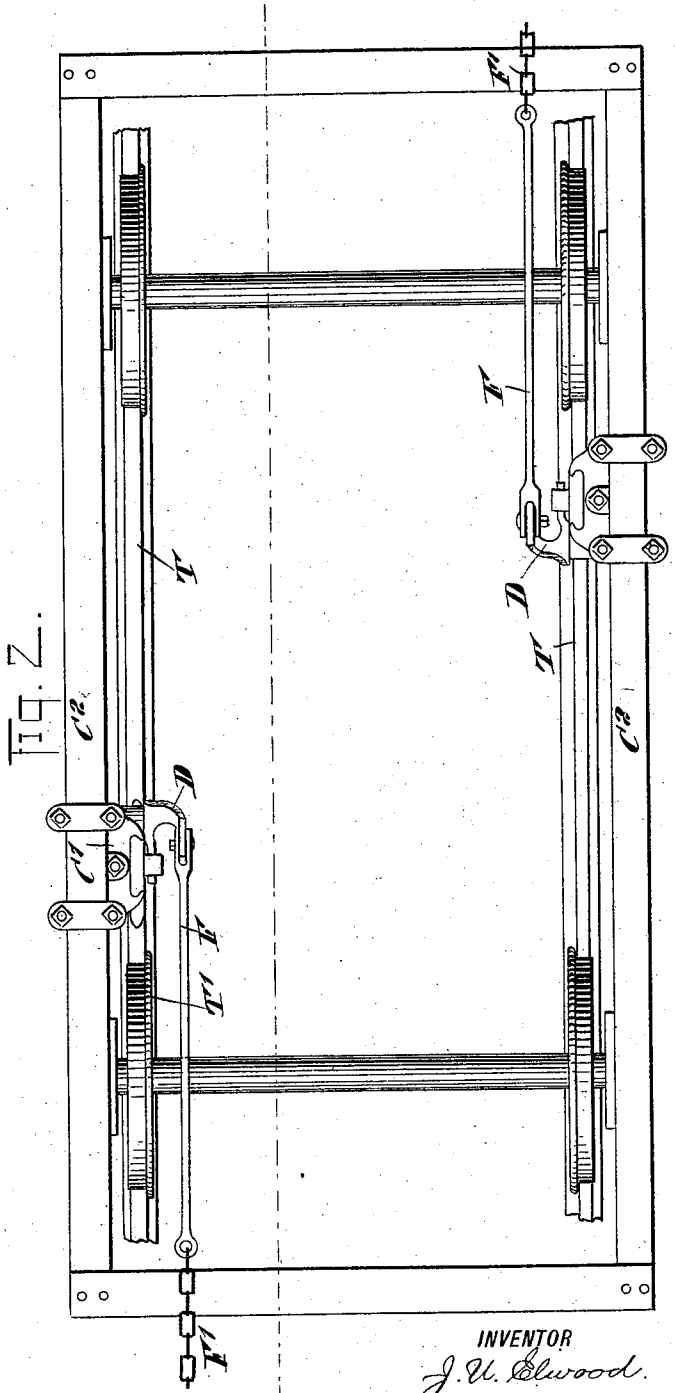


Fig. 2.



WITNESSES:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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J. U. ELWOOD.

TRACK BRAKE.

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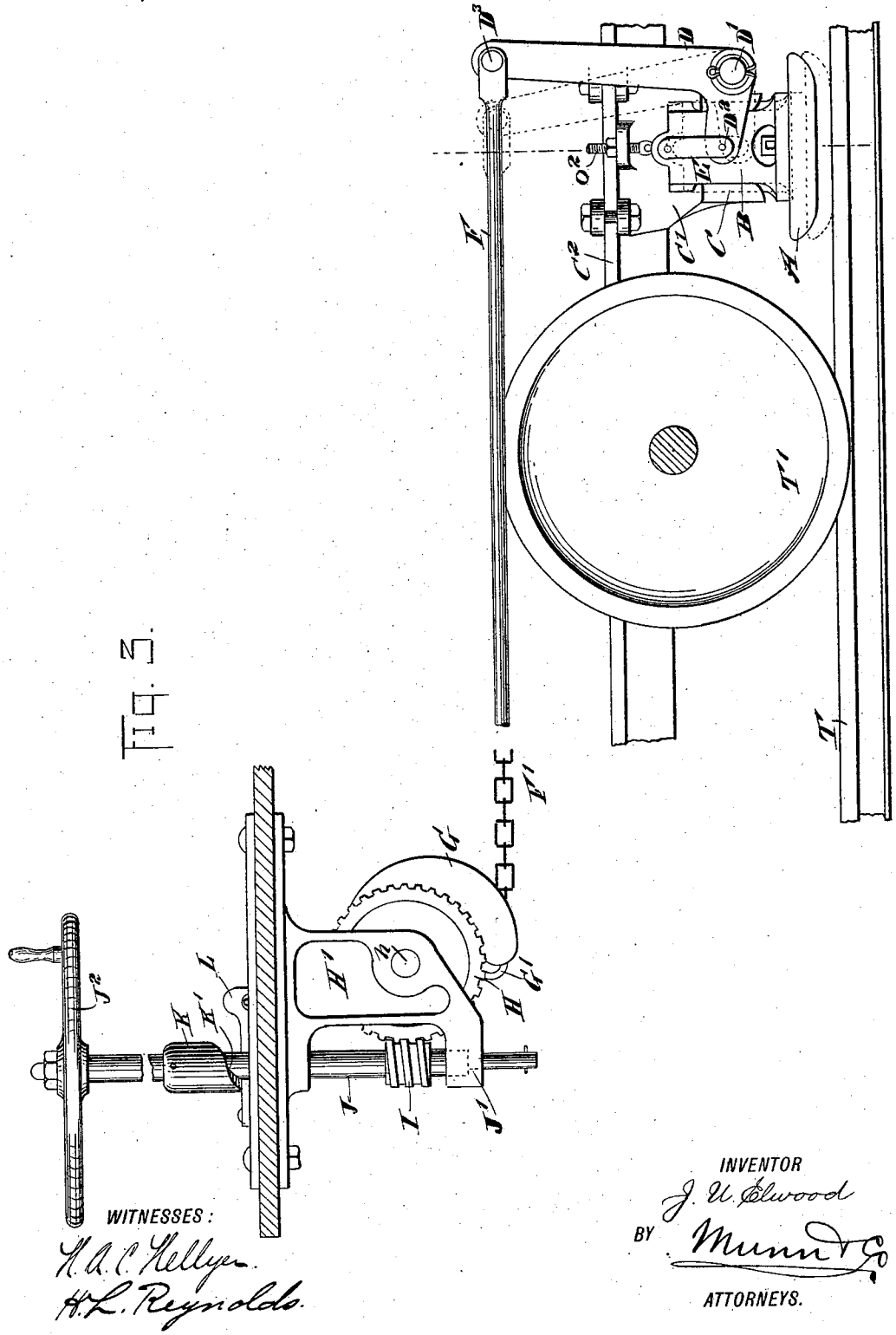


Fig. 1.

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(No Model.) 3 Sheets—Sheet 3.

J. U. ELWOOD.

TRACK BRAKE.

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Fig. 4.

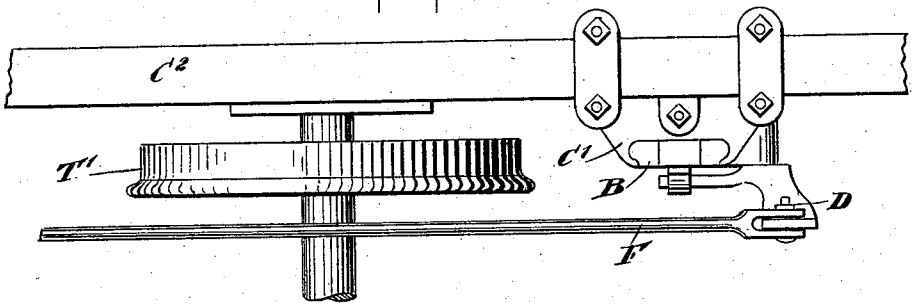


Fig. 5.

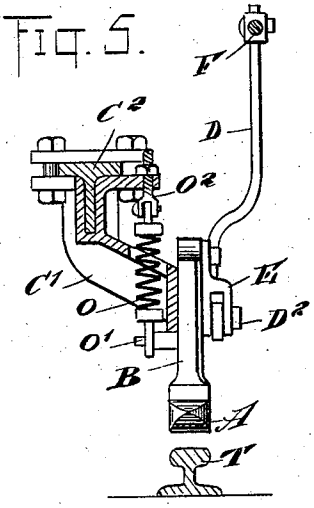


Fig. 6.

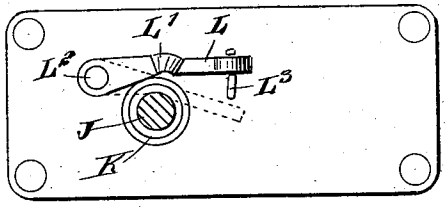


Fig. 8.

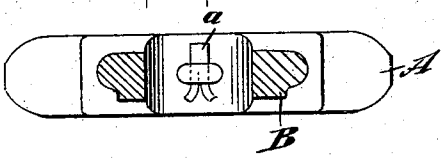


Fig. 7.

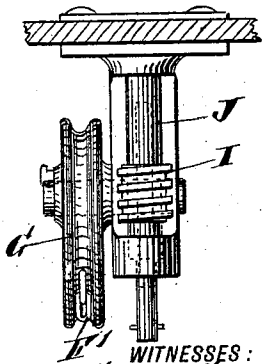


Fig. 9.

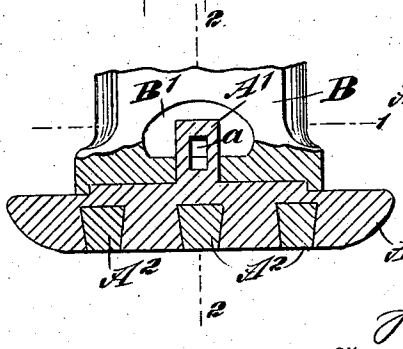
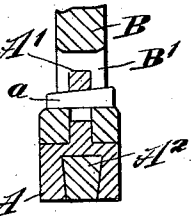


Fig. 10.



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UNITED STATES PATENT OFFICE.

JEFFERSON U. ELWOOD, OF McKEESPORT, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND DUANE P. SMITH, OF SAME PLACE.

TRACK-BRAKE.

SPECIFICATION forming part of Letters Patent No. 588,858, dated August 24, 1897.

Application filed November 6, 1896. Serial No. 611,208. (No model.)

To all whom it may concern:

Be it known that I, JEFFERSON U. ELWOOD, of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Track-Brake, of which the following is a full, clear, and exact description.

My invention relates to an improvement in track-brakes, particularly to those shown in my former patents, No. 544,574, of August 13, 1895, and No. 561,502, of June 2, 1896.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the brake-shoe and its immediate operating mechanism. Fig. 2 is a top plan view of the same. Fig. 3 is a side elevation, on a larger scale, of the same in connection with the power mechanism for operating it. Fig. 4 is a top plan view of the shoe and its immediately-connected mechanism. Fig. 5 is a section through the same, taken across the car. Fig. 6 is a top plan view of the latch for use in connection with the quick-release mechanism. Fig. 7 is an elevation of a portion of the power mechanism for operating the brake. Fig. 8 is a section taken through the slide carrying the shoe upon the line 1 1 of Fig. 9. Fig. 9 is a longitudinal section through the shoe and the lower end of the slide carrying the same, and Fig. 10 is a section taken on the line 2 2 of Fig. 9.

The object of my invention is to provide a shoe for track-brakes which will have a greater holding power than the ordinary shoe and to provide a more efficient mechanism for applying power to the same. The shoe is shown in detail in Figs. 8, 9, and 10. The shoe consists of the casting A, rounded at each end and flat on the bottom, adapted to bear upon the upper surface of the rail. This is attached by means of the lug A′ to the sliding member B. The lower end of this slide B is recessed to receive the upper portion of the shoe. It also has a hole, through which passes the lug A′ upon the upper side of the shoe. The upper end of this lug projects into a lateral opening B′ in the slide sufficiently so that a pin *a* may be inserted through a hole in the lug and thus fasten the shoe in place. This form of fastening makes the key easy to get at and to remove it when it is desired to remove the shoe. It also makes it possible to drive the shoe out by placing a wedge or chisel above the top of the lug and below the upper surface of the lateral opening B′.

The shoe itself is provided with a series of dovetailed recesses or holes opening upon the bottom and filled with plugs A^2 of a material which will have a greater holding effect upon the surface of the rail than will cast-iron. This may be emery, carborundum, clay, lead, or any substance having this quality.

The slide B is given a vertical movement by means similar to those used in the patents referred to. The slide is mounted so as to have a vertical motion in the ways C upon the bracket C′, which is fastened to a horizontal bar C^2 of the framework. To the slide B is attached a link E, and this in turn by the pin D^2 to one end of a bell-crank lever D. This lever is pivoted at D′ to the bracket C′. Its upper end is connected by the pin D^3 with a rod F, which leads to the power mechanism.

To insure the prompt raising of the slide B and shoe A, I have provided a pin O′ upon the rear thereof and have connected to this a spring O, which at the upper end is connected, by means of the bolt O^2, to the frame or a portion of the bracket. This is in tension when the shoe is down, and as soon as the power is removed therefrom the spring will quickly raise the shoe.

The mechanism for applying power to the brake consists of a vertical staff or shaft J, mounted in bearings on the end of the car and provided with a step-bearing J′ to prevent the motion of the shaft in one direction. This shaft carries a worm I, engaging with a worm-wheel H, which latter is mounted upon a pivot *h* in a bracket H′, which is fastened to the floor of the car. Attached to the worm-wheel H and revolving therewith is the cam G. This cam is in general of a spiral character—that is, with a varying radius. It is grooved upon its periphery and adapted to receive a chain F′. The end of this chain is attached to the cam at G′ or near the point where it is of the greatest radius.

The position shown in Fig. 3 is the position when the shoe is elevated and the brakes re-

leased. In this position the crank-arm for operating the chain is the greatest and the motion of the shoe will be greater for the same amount of angular rotation than in any other position, thus insuring a rapid movement of the brake at the beginning of its application. As the brake is tightened down this radius becomes smaller, thus giving less motion and greater power. The chain F′ is attached to the rod F, and thus acts upon the brake.

To secure a quick release of the brake, I have provided the following means: To the staff J, just above the car-floor, is fixed a collar K, which has a spiral cam-surface K′ upon the lower end thereof. This is adapted to engage the upper surface of the latch L. (Shown in plan view in Fig. 6.) This latch is pivoted at L^2 to one side of the staff J and has a sloping surface L′ matching with the sloping surface K′ of the collar K. This latch is adapted to be engaged by the foot of the motorman and thrown over, so that the surface L′ of the latch will engage the cam-surface on the collar K. As the shaft is revolved this will cause the shaft to be lifted sufficiently to disengage the worm I from the wheel H and the wheel H may then fly backward, releasing the brake. A slight projection L^3, placed upon the floor of the car, serves to hold the latch in disengaged position, but does not prevent its being raised over the same by the foot of the motorman. In the drawings I have shown but one track-brake upon each side of the car operated from opposite ends. I have found this to be sufficient for all ordinary purposes. It is very evident, however, that the number of these brakes or shoes may be increased whenever desired, using the connecting-levers in common use for such purpose.

The device herein described is one which gives great power in the application of the brake, a rapid movement at the beginning of the application, with a decrease in the speed, but an increase in power for the latter portion of the application. It also provides means for a quick release.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A shoe for a track-brake having dovetailed or inwardly-expanding recesses in its under surface, said recesses being filled with a material, the blocks of which may be molded in place and have a higher frictional resistance than the body of the shoe, a perforated lug upon the upper side of the shoe, a slide carrying the shoe and having a hole for said lug and an intersecting hole exposing the perforation in the lug and a key adapted to fit the perforation in the lug and lock the shoe in place, substantially as described.

2. In a vehicle-brake, the combination of the brake-shoe and a flexible connector for operating the same, with a pivoted cam having a variable radius which decreases as the brake is tightened and to which the flexible connector is attached, a worm-wheel attached to said cam, a worm engaging therewith, and a hand-wheel and shaft carrying said worm, and means by which the worm may be quickly disengaged from the gear, substantially as described.

3. In a vehicle-brake, the combination of the brake-shoe and a flexible connector for operating the same, with a pivoted cam having a variable radius which decreases as the brake is tightened and to which the flexible connector is attached, means for rotating the same, and means by which the worm may be quickly disengaged from the gear, substantially as described.

4. An operating mechanism for a brake, comprising a worm and worm-gear, an end-faced cam surrounding the worm-shaft, operating means attached to said shaft, and a movable latch adapted to be moved so as to engage said end-faced cam, substantially as described.

5. An operating mechanism for a brake, comprising a worm and worm-gear, a grooved cam of decreasing radius attached to the worm-gear, a flexible connector attached to said cam and operating the brake-shoe, an end-faced cam surrounding the worm-shaft, operating means attached to said shaft, and a movable latch adapted to be moved so as to engage said end-faced cam, substantially as described.

JEFFERSON U. ELWOOD.

Witnesses:
T. D. GARDNER,
J. WALLIG.