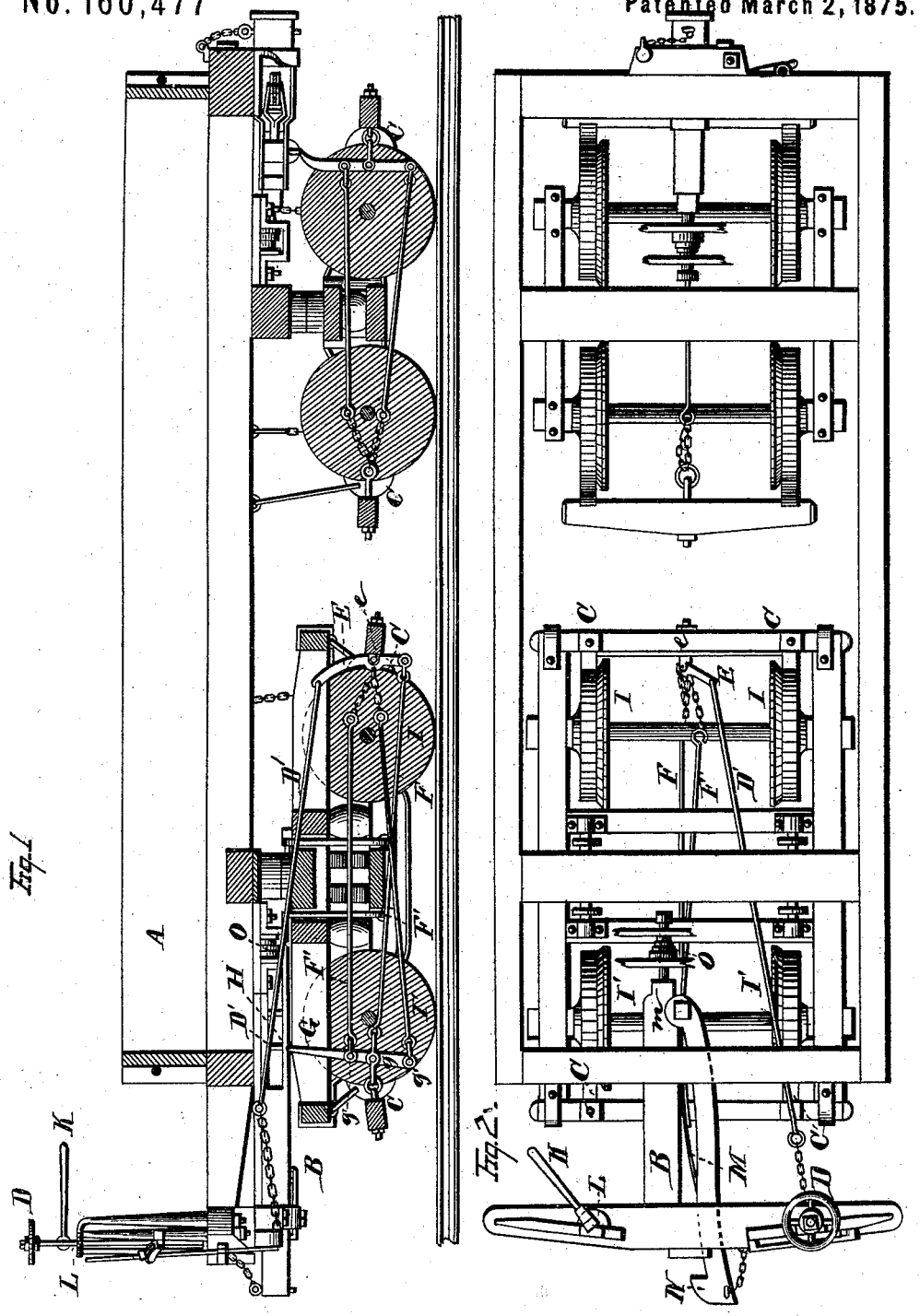
2 Sheets--Sheet 1.

F. SVOBODA & F. LUXA.

Car-Brake.

No. 160,477 Patented March 2, 1875.



WITNESSES

W. T. Newman,

R. M. Barr.

INVENTORS.

Franz Luxa.

Ferdinand Svoboda.

By Leggett & Leggett, Attorneys.

2 Sheets--Sheet 2.

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Fig. 3.

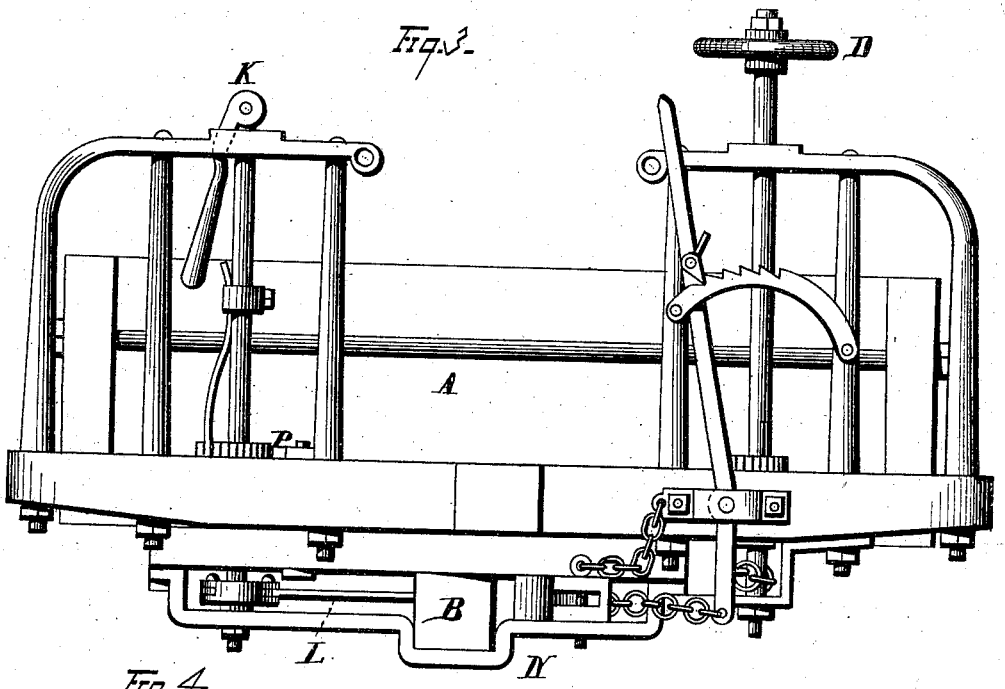


Fig. 4.

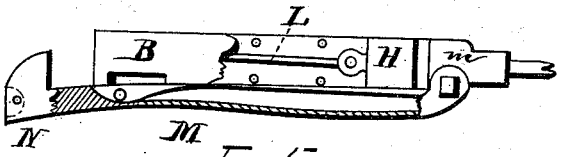
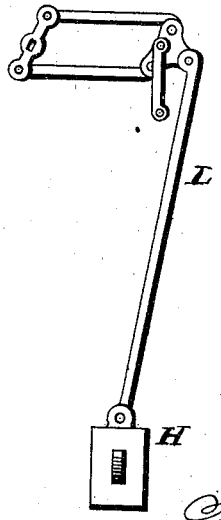


Fig. 5.



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UNITED STATES PATENT OFFICE.

FERDINAND SVOBODA AND FRANZ LUXA, OF CLEVELAND, OHIO.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **160,477**, dated March 9, 1875; application filed January 30, 1875.

To all whom it may concern:

Be it known that we, FERDINAND SVOBODA and FRANZ LUXA, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Car-Brakes, &c.; and we do hereby 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates, first, to improvements in car-brakes; and, second, to the combination, with the said car-brake, of a car-coupler; and, third, to a peculiar coupler.

Our invention consists in the combination of devices and appliances, as hereinafter set forth and claimed.

In the drawings, Figure 1 is a longitudinal vertical section through the center of a car, showing our improved brake in elevation. Fig. 2 is a plan view of same, the body of the car removed. Fig. 3 is an end view of the car with our improvements attached. Fig. 4 is a separate view of the draw-head, with the top broken away to show the spring and slide-block. Fig. 5 is a separate view of the device for shifting the block in the draw-head.

In the different drawing like letters of reference represent similar parts.

A is the car. B is the draw-head. C are the brakes suspended in the usual manner from the bottom of the car. D is the brake-wheel; D′, the rod connecting it with the brakes. E is the lever, to the top of which the brake-rod D′ is attached. It is pivoted at *e* to the cross-bar bearing the brake-shoes. To the lower end of its short arm is attached the rod F, which connects it with the pivotal point *g* of the lever G; and from the points *g′ g′* the rods F′ connect the lever G with the pivotal point *e* of the lever E. The lever G is attached at its top to the slide-block H in the draw-head.

If it is desired to check the car by turning the brake-wheel, the operation is as follows: The brake is turned in the usual manner, drawing upon the rod D′. This in turn draws the top of the lever E forward. This brings its brake-shoe loosely in contact with the wheels I. As soon as it strikes this wheel the point E becomes the fulcrum of a lever of the first order, whereby it draws upon the rod F, drawing toward it the lever G, and bringing its brake-shoes against the wheel I′. As soon as this shoe is brought against the wheel I′, the lever E changes from a lever of the first order to a lever of the second order. Its lower end becomes the fulcrum, and its shoe is pressed firmly against the wheel I. If, however, the train should be checked in any manner so as to cause the cars to bump against each other, the draw-bar would be driven back, and in coming back would brake the cars in the following manner: It would carry with it the block H, supposing the said block to be in its most backward position. This would immediately throw the shoe lightly into contact with the wheel I′. The lever G would become a lever of the first order, and, drawing upon the lever E, would force its shoe against the wheel I. The lever G would then instantly change to a lever of the second order, and bind its shoe against the wheel I′. If, however, it is desired to brake the car by drawing upon the draw-bar, instead of pushing upon it, it is effected as follows: A lever, K, is attached to the yoke L, and this is connected with the block H. By turning the lever K, the block H is drawn to its most forward position. In this position a draft upon the draw-bar would immediately cause a draft upon the upper rod F′, which, in turn, would draw upon the lever E, and force its shoe against the wheel I, the lever G acting as a lever of the second order. The lever G would then instantly change to a lever of the first order, and force its shoe firmly against the wheel I′. If it is desired that the brakes shall not be effected either by drawing upon or pushing against the draw-bar, the block H is left in an intermediate position in the draw-bar, in which position the brake can only be operated by the brake-wheel.

The draw-bar may be of any style; but if it has an arrow or barbed head, we would make it as follows: In the draw-bar we would place the spring M, and would hinge or hook an arrow-headed or barbed coupling bar or arm, N, into the draw-bar at *m*, so that it would be held firmly in its place by the spring M; and

back of the draw-bar we would place a spring, O, in the usual manner. A pawl, P, is placed at the bottom of the rod K, so that in whatever position the rod or lever K may be, it and the block H will be held rigidly by the said pawl, which is operated by the foot.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the brake-shoes and draw-head, of the levers E G, their connecting-rods F F′, and the brake-rod D, whereby the brake-shoes are automatically or by hand brought into contact with the wheels, said wheels then, by their action against the shoes and through the connections G E F F′, causing the shoes to still further bind and "brake" the wheels, substantially as and for the purposes set forth.

2. The combination of the draw-bar, the sliding block H, the levers E G, and their connecting-rods F F′, substantially as and for the purpose set forth.

3. In combination with the block H, bearing the lever G, the lever or rod K, and the yoke L, substantially as and for the purpose set forth.

4. The combination, with the draw-bar, of the shifting-block and mechanism for shifting the said block H, whereby the brakes may be operated either by a draft or by a push upon the draw-bar, or can be adjusted so as not to be affected by either, substantially as and for the purpose described.

5. The draw-bar, provided with the sliding block H, the spring M, and the barbed or arrow-headed arm N, for operating automatically the brake-shoes of the car, substantially as and for the purposes set forth.

6. The combination with the sliding block H, yoke L, and lever K, of the pawl and ratchet-wheel P, for holding the block H in position, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FERDINAND SVOBODA.
FRANZ LUXA.

Witnesses:
FRANCIS TOMNEY,
H. P. TOWER.