J. H. LAKIN.

Car-Brakes.

No. 195,935. Patented Oct. 9, 1877.

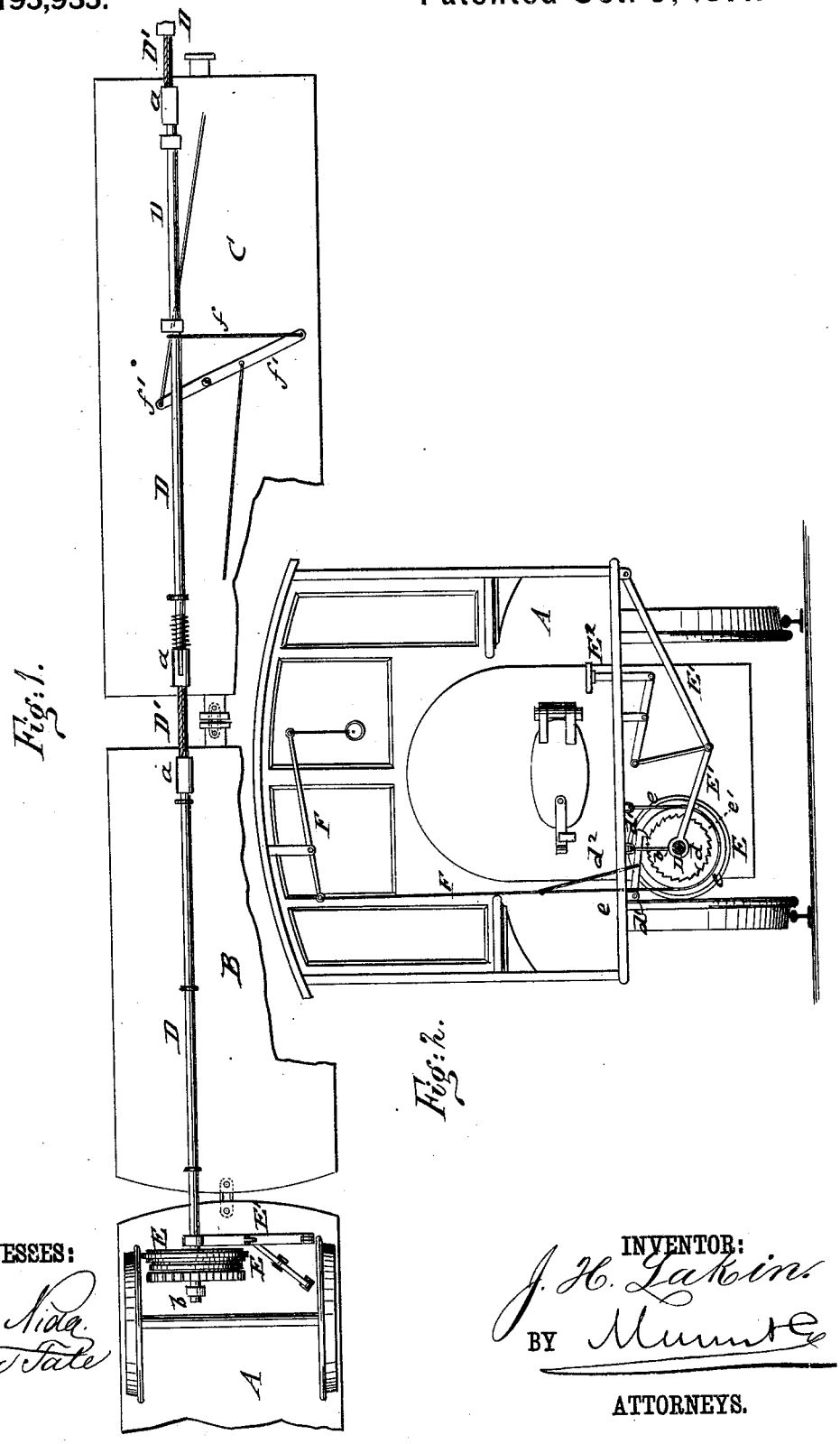

Fig: 1.

Fig: 2.

WITNESSES:

Chas. Nida.

Edgar Tate

INVENTOR:

J. H. Lakin.

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOSEPHUS H. LAKIN, OF MONTGOMERY, ALABAMA.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **195,935**, dated October 9, 1877; application filed August 18, 1877.

To all whom it may concern:

Be it known that I, JOSEPHUS H. LAKIN, of Montgomery, in the county of Montgomery and State of Alabama, have invented a new and useful Improvement in Railroad-Train Brake, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a bottom view of a locomotive-tender and car with my improved brake arrangement applied thereto, and Fig. 2 is an end view of the locomotive with the brake and friction mechanism.

Similar letters of reference indicate corresponding parts.

The object of this invention is to provide an improved mechanism for operating a railroad-train brake under the convenient control of the engineer with great facility and effectiveness, the same being also simpler and more economical than the brakes heretofore in use.

The main objection to most brake constructions relates to the complicated construction and expense of the same. In the use of the air-brake it frequently happens that when any opening in the pipes, cylinders, or connections occurs the apparatus throughout the train is inoperative, and the brakes will not hold at all.

My brake consists of longitudinal shafts turning in hangers at the bottom of the cars, and being connected by short flexible shafting and couplings, the turning of the shaft being accomplished by means of a friction-wheel below the foot-plate of locomotive, applied by a treadle to the driving-wheel of the engine. A ratchet-and-pawl mechanism of the friction-wheel retains the brakes, which are released by a suitable lever-and-brake connection of the pawl with a hand-lever in the cab of the locomotive. The turning-shafts wind up chains that work fulcrumed levers, which are connected by suitable rods to the brakes.

Referring to the drawing, A represents a locomotive; B, a tender, and C a car, to which my improved brake is attached, and which suffice to show the principle of my invention.

Along the bottom of tender and cars runs a simple shafting, D, along the full length of the train, the shafts being secured to short hangers under each car, and connected together between each car by the patent How or other shafting D′, so as to admit of vertical and lateral motion.

The flexible wire shaft D′, of proper length, is provided with a suitable coupling, *a*. The ends of the flexible shaft-section D′ are brazed solid for a few inches, and flattened into an oval male form, that is fitted into a suitable female socket at end of solid shaft, and secured by a set-screw. The solid shaft is flattened near the end into a plate, and a duplicate plate, fastened onto it, with a slotted opening, that permits of longitudinal motion. This duplicate plate carries the female coupler-socket for the male coupling of flexible shaft, a spiral spring keeping the flexible shaft taut when the cars slacken together.

The solid shafts D are revolved by a friction-wheel, E, of iron, wood, or rubber, which is secured to the solid shaft D, extending from the rear of the tender to the foot-plate of the locomotive, and held in position by hangers *b*, admitting a slight side motion. A toggle-jointed lever, E^1, is fastened at one end to the shaft near the friction-wheel, and at the other end to an extreme side point on the foot-plate of the engine. A foot-lever, E^2, is attached, by suitable levers, to the toggle-lever E^1, and operated by the engineer pressing his foot upon the treadle. The friction-wheel E is thereby pressed against the inner periphery of the driving-wheel, which, being in motion, revolves the shafts, and applies thereby the brakes connected thereto.

A ratchet, *d*, of the friction-wheel, and a pawl, d^1, prevent the unwinding of the friction-wheel, and keep the brakes on the wheels when the treadle is released.

A clog-brake, *e*, is fitted to the friction-wheel, and made of a chain or band, secured to the foot-plate of the engine, and passed around the neck *e′* of the friction-wheel, being attached to lever-rods F inside of the cab. The pawl d^1 is also connected, by a short chain, d^2, with the lever F, and raised from the ratchet whenever the engineer pulls the lever-handle. The clog-brake is thereby pressed at the same time against the neck of the friction-wheel, enabling the engineer to release the brakes gradually or suddenly at will.

At the extreme point of the toggle-jointed lever *e′* is arranged a trip, which, at a certain

number of revolutions of the friction-wheel, is withdrawn, thus letting the pressure go, and releasing the friction-wheel from the driver.

In lieu of the trip a brake-gage or other device may be fixed in the cab, by which the strain on the brakes is indicated.

The revolving solid shafts D produce the winding up of a chain, *f*, in center of car, which draws a fulcrumed lever, *f'*, that operates the lever-rods, which are attached to any of the ordinary truck-brake levers in use. On applying the brakes, the lever *f* is drawn by the chain toward the solid shaft, and so arranged in relation to the shaft that, as the pressure of the brake-shoes on the wheels increases, the strain on the brake apparatus increases but little, or in a much less ratio as the power applied increases, as will be readily shown. When the lever is drawn to a point at forty-five degrees from its normal position, or farther, its power is increased by the relative change in position of fulcrum weight and power, and thereby the application of a valuable principle secured in the working of train-brakes with a minimum exertion of power.

The brakes may be applied in running backward or forward, and can be easily adapted to produce unequal results on light and heavy cars by the lengthening or shortening of the chains connecting the shafts with the brake-operating levers.

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

In car-brakes, a flexible shafting, D D', arranged in hangers that allow a lateral motion, in combination with a toggle-jointed lever connected with shaft D, the friction-wheel, and foot-plate, as and for the purpose described.

JOSEPHUS H. LAKIN.

Witnesses:
J. B. NETTLES,
A. ABRAMS.