A. F. GUE & G. F. FIELD.
Car-Brakes.

No. 199,286. **Patented Jan. 15, 1878.**

Fig. 3.

Fig. 1.

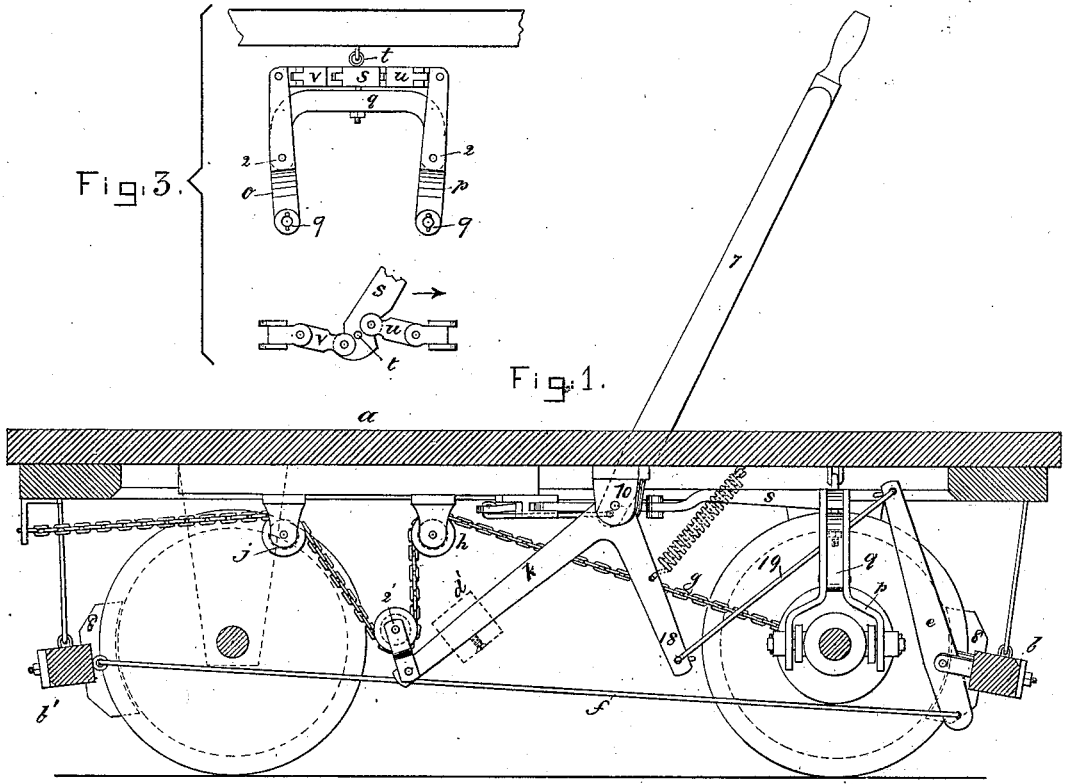
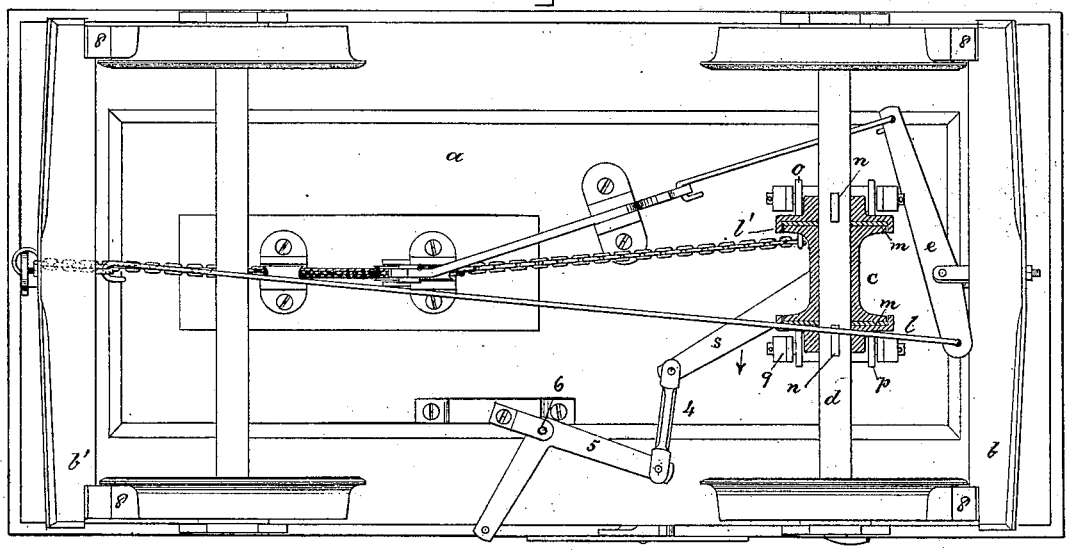


Fig. 2.



Witnesses
W. J. Pratt.
E. C. Perkins.

Inventors
Albert F. Gue and George F. Field
by Crosby & Gregory Attys

UNITED STATES PATENT OFFICE.

ALBERT F. GUE AND GEORGE F. FIELD, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **199,286**, dated January 15, 1878; application filed July 19, 1877.

To all whom it may concern:

Be it known that we, ALBERT F. GUE and GEORGE F. FIELD, both of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Car-Brake, of which the following is a specification:

This invention relates to car-brakes, and is an improvement on United States Patents Nos. 151,118 and 184,614, to which reference may be had.

In this invention we employ the loose spool therein described in connection with clutches, and preferably interposed friction-surfaces, the clutches being operated by means of forked levers, so as to engage the spool, move it with the clutches and the axle, and wind the brake-chain on the spool.

In the Patent No. 151,118 the brake-chain is passed about a sheave at the upper end of the brake-lever, attached to and adapted to operate the beam carrying the brake-shoes, and in Patent No. 184,614 the chain is connected directly with the longer end of such brake-lever.

To increase the power of the chain upon such brake-levers, and consequently the efficiency of the brake, we have in this instance of our invention interposed between the brake-lever and the chain an auxiliary brake-lever, which, moved by the brake-chain in the act of being wound upon the spool, operates the usual brake-lever to throw the shoes against the wheels. We have also connected the upper ends of the forked clutch-operating levers by links with portions of a pivoted lever at opposite sides of its fulcrum, whereby, by the movement of such pivoted lever, the clutch-operating levers are simultaneously and positively moved in opposite directions to clutch or unclutch the spool.

Figure 1 represents, in longitudinal section, the platform or bottom of a tender or car provided with our improvements; Fig. 2, an under-side view thereof, and Fig. 3 details of the clutch-operating levers.

The body or platform *a* of the tender or car, the running-gear and brake-shoes, and their carrying-beams *b* may be of any usual or suitable construction. The spool *c* will be placed loosely upon a suitable axle of the tender or of a car of the train, or of the locomotive, as may be desired and found most convenient. Each car will be provided, as usual, with brake-beams *b* and shoes 8, and with a brake-lever, *e*, connected by a rod, *f*, with the secondary brake-beam *b'*. The brake-chain *g* will be connected at one end with the loose spool, and will then extend in proper lengths along the under side of the cars of the train, passing over sheaves *h* on the truck, under sheaves *i* of the auxiliary brake-lever *k*, and over sheaves *j* of the truck, a set of sheaves, *h i j*, and an auxiliary brake-lever being employed, preferably, for each car.

At each end of the loose spool are clutches *l l'*, recessed upon their faces next and so as to embrace the ends of the spool, a friction-washer, *m*, of any usual material—leather, wood, or rubber—being interposed between the clutches and the spool. The clutches are joined with the shaft by means of splines or keys *n*, whereby they may be moved longitudinally with relation to the shaft and spool.

The clutch-operating levers *o p*, pivoted at 2 2 on a yoke, *q*, are provided at their lower forked ends (see Fig. 1) with friction-rollers 9, to bear upon the outer faces of the clutches when the latter are crowded against the spool ends. The pivoted lever *s*, having its fulcrum at *t*, is connected by links *u v*, one at each side such fulcrum, with the upper ends of the clutch-operating levers *o p*, whereby such levers are positively and simultaneously moved in both directions to engage the clutches with or disengage them from the spool. The pivoted lever *s* is, in this instance, connected, by means of a link, 4, with an elbow-lever, 5, having its fulcrum on a vertical stud, 6. The opposite or outer end of this lever 5 is connected with the lower end of a hand-lever, 7, projecting upward, so as to be easily reached by a person on the car or train.

In this instance of our invention, when the hand-lever is thrown forward, as shown in Fig. 1, it turns the pivoted lever *s* in the direction of the arrows marked near it, and so moves the clutch-operating levers as to cause the clutches to engage the ends of the spool, at which time the spool will commence to rotate with the clutches and axle, and the brake-chain will be wound upon the spool. As the chain is so wound up the longer end *k* of the

auxiliary brake-lever is raised, causing its other end, 18, connected, by rod 19 or otherwise, with the brake-lever *e*, to draw such lever and force the shoes of the brake-beam against the wheels, the shorter end of the brake-lever, through the connecting-rod *f*, operating the other brake-beam and its shoes. This auxiliary brake-lever is shown as an angular lever, pivoted to a hanger at the bottom of such car, and it will preferably be placed in a diagonal position. This auxiliary brake-lever, placed, as represented, on a horizontal fulcrum, enables the weight of the lever to aid in releasing the brakes; and by placing the sheaves on horizontal axles the body of the chain is always maintained on a rolling-surface, thereby reducing friction to its minimum. This auxiliary lever may be provided with a spring, as at *c'*, or the end *k* of said lever may be provided with an adjustable weight, *d'*, as shown in dotted lines, Fig. 1, to assist in throwing off the brakes quickly.

The recessed faces of the clutches exclude dirt and grit from the contacting portions of the clutches, packing, and spool, and add much to the durability of the brake mechanism.

The friction-pulleys on the clutch-levers, or their studs, will in practice be so made that they may be lubricated.

The lever 7, or an equivalent lever, in connection with the pivoted lever *s*, or its equivalent—an oscillating plate or a pinion—may be joined with a suitable lever under the control of the engineer, so that the brakes may be applied from the engine for the whole train.

With a very long train two or more cars will be provided with spools and clutches, preferably the tender and the caboose.

We have described that a spool and clutches may be applied to the caboose of a freight-car; but we do not herein claim the application of such devices to a caboose or the rear car of a freight-train in order that the caboose, through its spool and clutches, may operate as a power-brake for the cars in operative connection with the chain attached to the spool of the caboose, for such combination will form the subject-matter of another application for Letters Patent.

We claim—

1. The combination, with the spool, the brake-chain, and brake-lever to operate the brake-beam and shoes, of an auxiliary brake-lever loosely connected with the chain, and interposed between it and the brake-lever, substantially as described.

2. The combination, with the clutches and their operating-levers *o p*, of the pivoted horizontal lever *s* and the links *u v*, connected therewith at different sides of its fulcrum, to operate the clutch-levers positively and simultaneously, all substantially as described.

3. The combination, with the car-body and sheaves *h j*, of the brake-chain, its winding-spool, the auxiliary brake-lever connected with the main brake-lever, and the pivoted sheave *i*, arranged on a bight of the chain between the sheaves *h j*, substantially as described.

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

ALBERT FRED GUE.
GEORGE FRANKLIN FIELD.

Witnesses:
G. W. GREGORY,
W. J. PRATT.