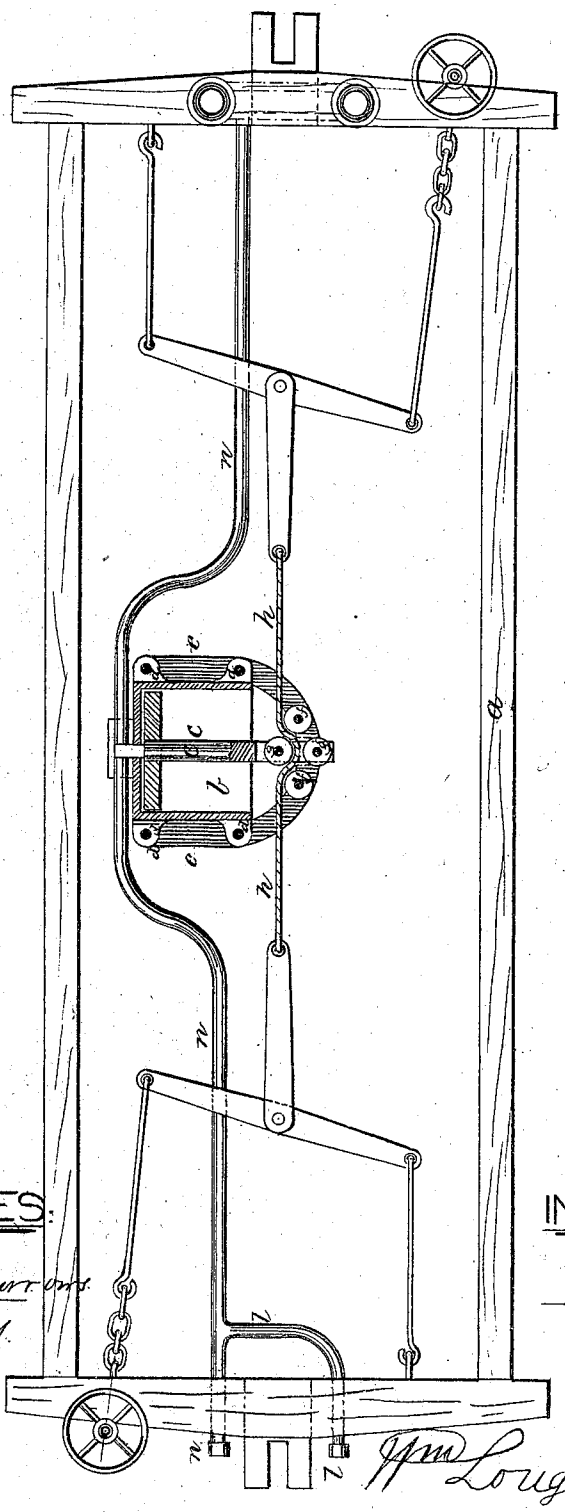
2 Sheets--Sheet 1.

W. LOUGHRIDGE.

Steam and Air Brakes.

No. 135,828. Patented Feb. 11, 1873.

FIG. 1.



WITNESSES:

Frank M Burrows
G. T. Jones.

INVENTOR:

Wm Loughridge

2 Sheets--Sheet 2.

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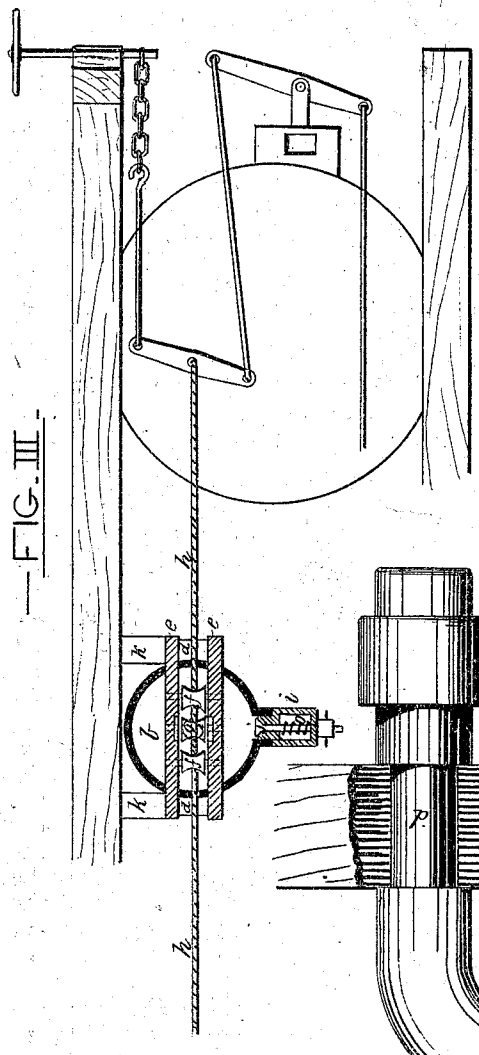
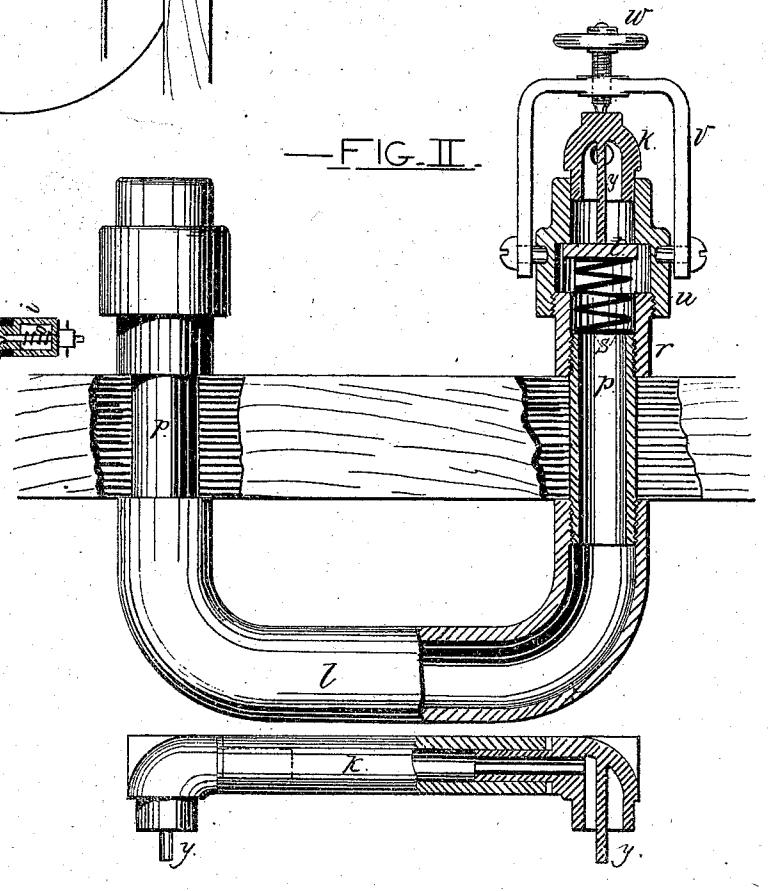
—FIG. III.



—FIG. II.



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UNITED STATES PATENT OFFICE.

WILLIAM LOUGHRIDGE, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN STEAM AND AIR BRAKES.

Specification forming part of Letters Patent No. **135,828**, dated February 11, 1873.

To all whom it may concern:

Be it known that I, WILLIAM LOUGHRIDGE, of the city of Baltimore and State of Maryland, have invented certain Improvements in Operating Car-Brakes, of which the following is a specification:

The first part of my invention consists of a cylinder with lugs as thimbles, a piston-rod and pulleys, a pulley-frame and pulleys as a guide for the piston-rod, combined with the hand-brake mechanism, so that the power of steam or air on the piston will exert an equal force on each truck of the car, and enable the brakesman to force back the piston under each car by winding the hand-brake windlass. The second part of my invention relates to coupling the pipes; and consists of a combination of a right-angle pipe with a pin projecting from each end as a coupling, a section of pipe passing up through the platform, nuts, spring-valve, and bail, to hold the coupled pipes together. The object is to utilize the nuts that hold the under and upper connecting air-pipes together as valve-seats, and to make a safe and reliable coupling.

Figure 1 is a plan with the cylinder in section and the upper part of the pulley-frame omitted. Fig. 2 is a part of an end elevation with the left side in section. Fig. 3 is a side elevation with left end of the car omitted, partly in section.

I construct the cylinder *b*, piston and rod *c*, having pulleys *g g* in a jaw on the end of the piston-rod; a pulley-frame, *e*, with two or more pulleys, *f;* lugs *d* on the cylinder, to be used as thimbles to separate the pulley-frame *e*. In the bottom of the cylinder, or in some point in the pipes lower than the cylinder, I construct a water-escape, *i*, with a valve, *j*, that is held open by a spring, *o*, until it is closed by the force of steam or air entering the cylinder. The cylinder, piston, pulley-frame, pulleys, and water-escape valve are combined, and suspended to the car-frame with blocks *k*, adjusted in thickness, so that the center of the piston hangs in line with the center of the rope or chain *h* of the hand-brake mechanism. I pass the rope or chain *h* between the jaw and pulleys in the end of the piston-rod; and when the hand-brakes are fully adjusted the rope *h* should be pressed out of line enough to prevent lost motion and slack of chain or piston—that is to say, the rope *h* should hold the piston firmly against the bottom of the cylinder; then when the slack chain of the hand-brakes is taken up before the steam is admitted into the cylinders the motion of the piston will be less, and steam economized; or if, after the steam is exhausted from the cylinder, the brakesmen wind up the hand-brake windlass the piston will be forced back into its cylinder and the brakes relieved from the wheels when the chain on the windlass is unwound. I construct on the ends of the main air-pipes *n* branch-pipes *l*, which are shown in Fig. 2, as if the coupling was made above the platform.

With this same arrangement turned at right angles with its present position the coupling may be made below the platform. The illustration given in the left end of Fig. 1 shows substantially the same thing. I construct an angle-pipe, *l*, and cut a thread in each end, into which I screw two pipes, *p*, and pass them from below the platform upwardly, and screw on them the nuts *r;* and on the end of the pipe *p* I set a spring, *s*, and on the spring a valve, *t;* over these I screw a nut, *u*, having a valve-seat for *t*, and to the top of *u* I construct a bail, *v*, with a screw, *w*. I construct a right-angle coupling-tube, *k*, with a pin, *y*, projecting from its center, so that when it is forced into the nut *u* and held by the bail *v* the pin will open the valve *t*, allowing free communication of the steam or air from the boiler or air-reservoir to the rear end of the train, where it abuts against the last valves at the rear of the pipes *n l*.

I claim as my invention—

1. The cylinder, piston-rod, pulleys, pulley-frame, the intermediate rope *h* or chain, when combined and operated with the hand-brake mechanism, in the manner and for the purposes as set forth.

2. The right-angled coupling-pipe *k* having a projecting pin, *y*, the bail *v*, and nut *u*, when constructed and operated for the purposes substantially as set forth.

3. The U-shaped pipe arranged with its arms or connecting-pipes passing up through the floor or platform of the car, with the main pipe entering below, and with the couplings above, substantially as shown and described.

WM. LOUGHRIDGE.

Witnesses:

FRANK M. BURROWS,

G. T. JONES.