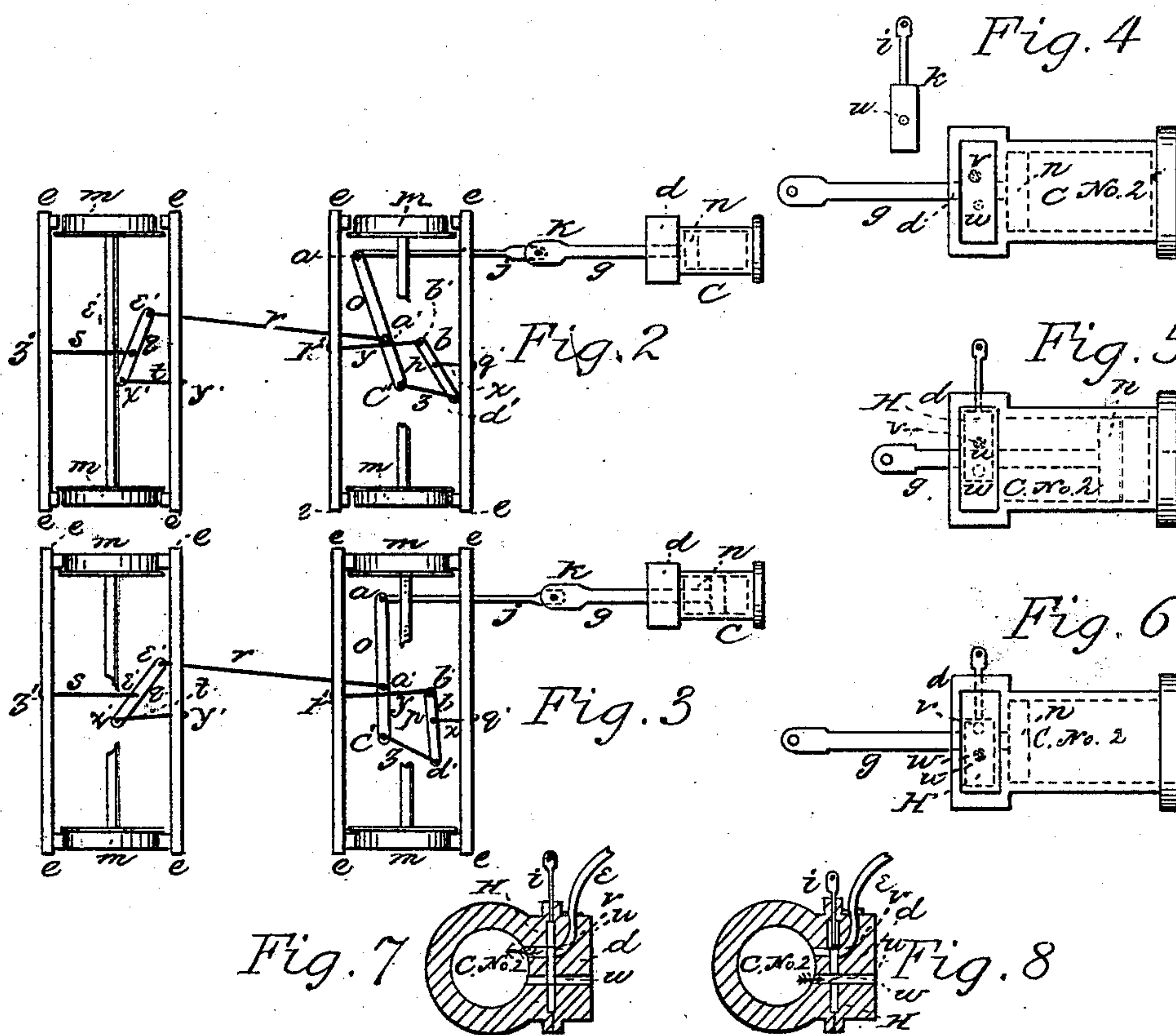
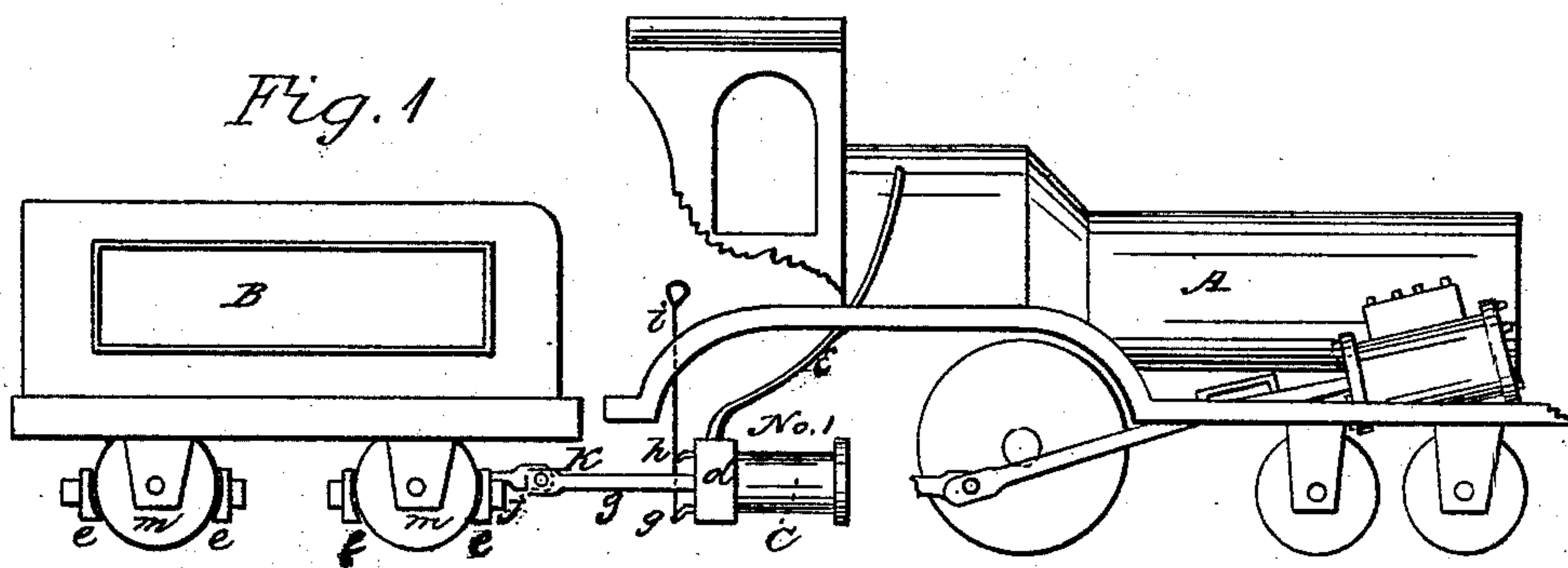


CROSBY & BALLARD.

Steam Car-Brake.

No. 99,539.

Patented Feb. 8, 1870.



Witnesses:
N. Bouton
Cornelius F. Harker

Inventors:
Jay M. Crosby
William Ballard

United States Patent Office.

JAY M. CROSBY, OF MARATHON, AND WILLIAM BALLARD, OF CAROLINE,
NEW YORK.

Letters Patent No. 99,539, dated February 8, 1870.

IMPROVEMENT IN RAILWAY-CAR BRAKES.

The Schedule referred to in these Letters Patent and making part of the same.

We, JAY M. CROSBY, of the town of Marathon, Cortland county, and State of New York, and WILLIAM BALLARD, of the town of Caroline, Tompkins county, and State of New York, have invented certain Improvements in Car-Brakes, of which the following is a specification.

Our invention relates to the combination of pipes, cylinders, double stop-cocks, or double sliding stops, steam-chests, levers, plungers, rods, arms, and brakes, in such a manner that the same shall be capable of applying the brakes to the wheels of the cars, tender, and engine, the object of our invention being to overcome the momentum of the locomotive, and the train attached thereto, by the application of steam through and to the different parts and portions of our said invention, which we will now proceed to describe, so that those skilled in the art may be able to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a locomotive and tender, with our invention attached thereto, one drive-wheel being off, to show the same fully.

Figure 2 represents the system of levers adopted by us, and also the inside view of the cylinder, when not in use.

Figure 3 represents the same in use.

Figure 4, a sectional view of cylinder No. 2.

Figure 5, a view of the same in position to admit the steam therein, and retain it.

Figure 6, a view of the same in position to shut the steam therefrom, and to allow the steam in said cylinder to escape therefrom.

Figure 7, an end view of the same, so placed as to admit the steam.

Figure 8, an end view of the same, so placed as to shut off the steam, and to allow that in the cylinder to escape.

Similar letters of reference indicate like parts.

A is a portion of a locomotive.

B is a tender attached thereto.

C is a steam-cylinder.

d is a steam or valve-chest.

E is a steam-pipe.

h and f are both stop-cocks, so arranged, that when one is open the other is shut.

i is a lever, or handle, applied to both of said stop-cocks, in such manner as to work both at the same time, being so arranged as to open one and close the other, as aforesaid.

g is a plunging-rod.

n is the inside head or stop to the same.

K is the connecting-joint between the plunging-rod g, and the rod, cord, or chain j.

O, b, and q, are arms or levers.

z is a rod or chain, connecting the arms or levers O and b, at C' and d' respectively.

r is a rod or chain, connecting the arms or levers O and q, at the points a' and E' respectively.

x is a rod or chain, connecting the arm or lever o with the front brake l of the forward truck, at the points p and q' respectively.

y, a rod or chain, connecting said arm or lever with the back brake l of said truck, at the points b' and r' respectively.

t is a rod or chain, connecting the arm or lever q with the front brake l of the rear truck, at the points x' and y' respectively.

s is a rod or chain, connecting the arm or lever q with the back brake l of the rear truck, at the points s' and z' respectively.

l l are common, or other brakes, as desired.

m m are the car-wheels.

No. 1 represents the cylinder, with the steam or valve-chest, in which the steam is applied by stop-cocks, and

No. 2 is the cylinder, with the steam or valve-chest, in which the steam is let on or applied by means of a sliding valve, as is fully shown in figs. 4, 5, 6, 7, and 8, in the accompanying drawings.

We use but one of the steam-cylinders and steam or valve-chests at a time, but hereby claim the privilege to use either, at our option.

The parts of the steam or valve-chest to cylinder No. 2, are explained as follows:

H is a metallic slide, with the hole u in or near the centre thereof.

v is a hole in the chest, communicating with the steam-pipe E and the cylinder C.

w is a hole communicating with the cylinder C and the outside.

H is attached to the handle or lever i.

If it is desired to admit steam into the cylinder, it is done by drawing up the slide H, by means of the lever or handle i, until the hole u in said slide is opposite the hole v in the steam or valve-chest d, while the plate H covers the lower hole w, and retains the steam therein, thereby pressing the plunger g n back, and applying the brakes. The position is fully shown in fig. 5.

The steam is shut off by pushing down the slide H, until the hole u therein is opposite the hole w in the chest, when the steam is shut off by the plate H against the hole v, while the steam in the cylinder escapes at the hole w, and the brakes cease to act. The position is fully shown in fig. 6.

Thus it will be seen, that by letting the steam into the cylinder C, through the steam-pipe E, which is attached to the boiler A and said cylinder C, for that purpose, the plunger g n is thrown back, and the

brakes are thereby applied by the action thereof upon the lever or arm *O*, and its resulting action upon the other levers or arms *b* and *q*, by means of the chains, rods, and cords, attaching the same to the brake-bars of said cars.

Having thus described our invention,

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

The combination of the steam-pipe *E*, the lever or handle *i*, the steam-cocks *h* and *f*, or the slide-valve *H*, and the steam or valve-chest *d*, the cylinder *C*,

the plunging-rod *g* *n*, the rod, cord, or chain *j*, the levers or arms *O*, *b*, and *q*, the rods or chains *r* and *z*, and the cords or rods *x*, *y*, *t*, and *s*, substantially as and for the purpose hereinbefore set forth.

Dated October 30, 1869.

JAY M. CROSBY.
WILLIAM BALLARD.

Witnesses:

N. BOUTON,
C. F. HONBECK.