

(No Model.)

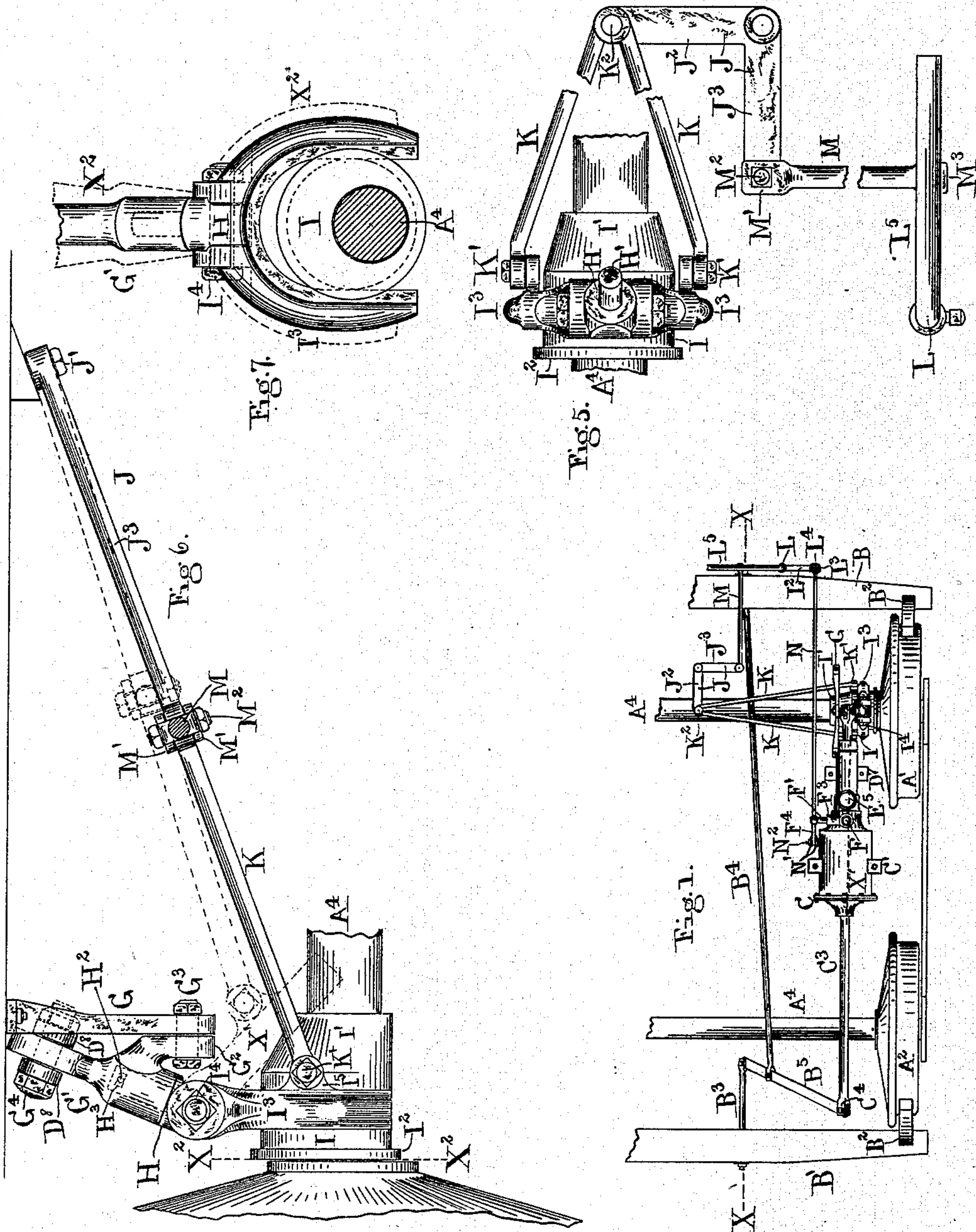
2 Sheets—Sheet 1.

T. V. NORRIS.

AIR BRAKE.

No. 413,205.

Patented Oct. 22, 1889.



Witnesses:

W. A. Myers.
E. F. Dowling.

Inventor.

Thomas V. Norris,
per L. L. Morrison
Attorney.

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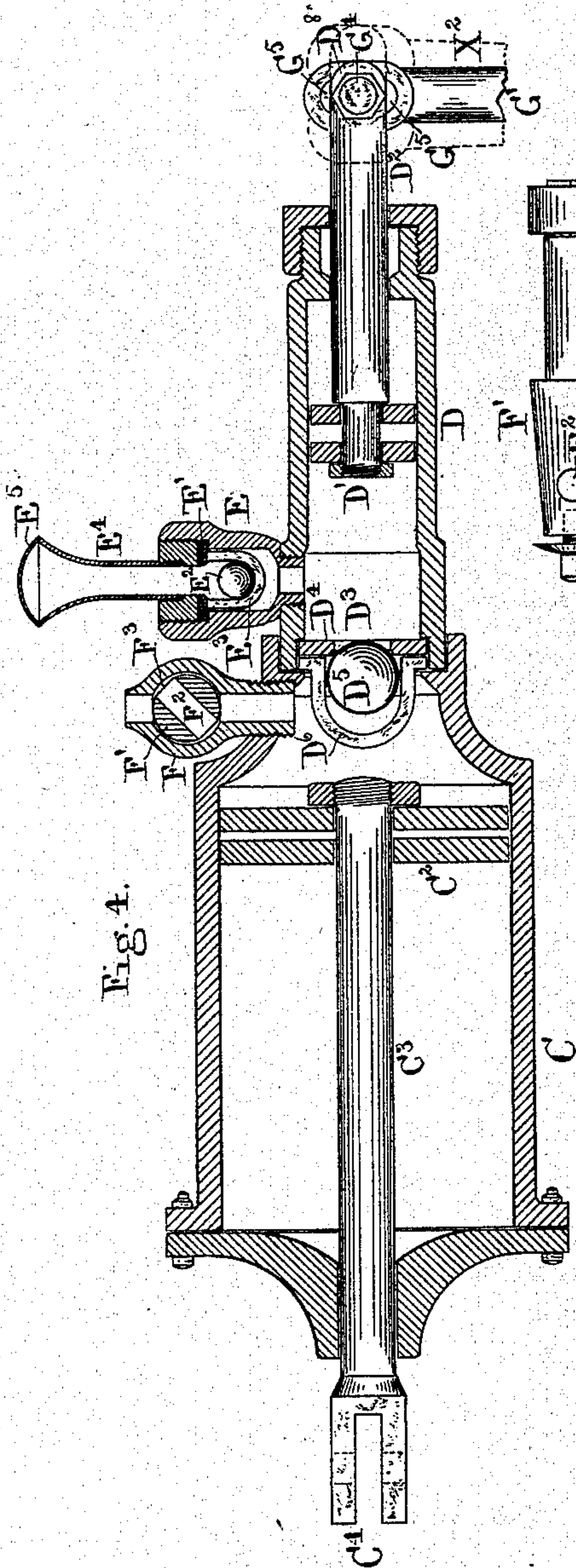


Fig. 4.

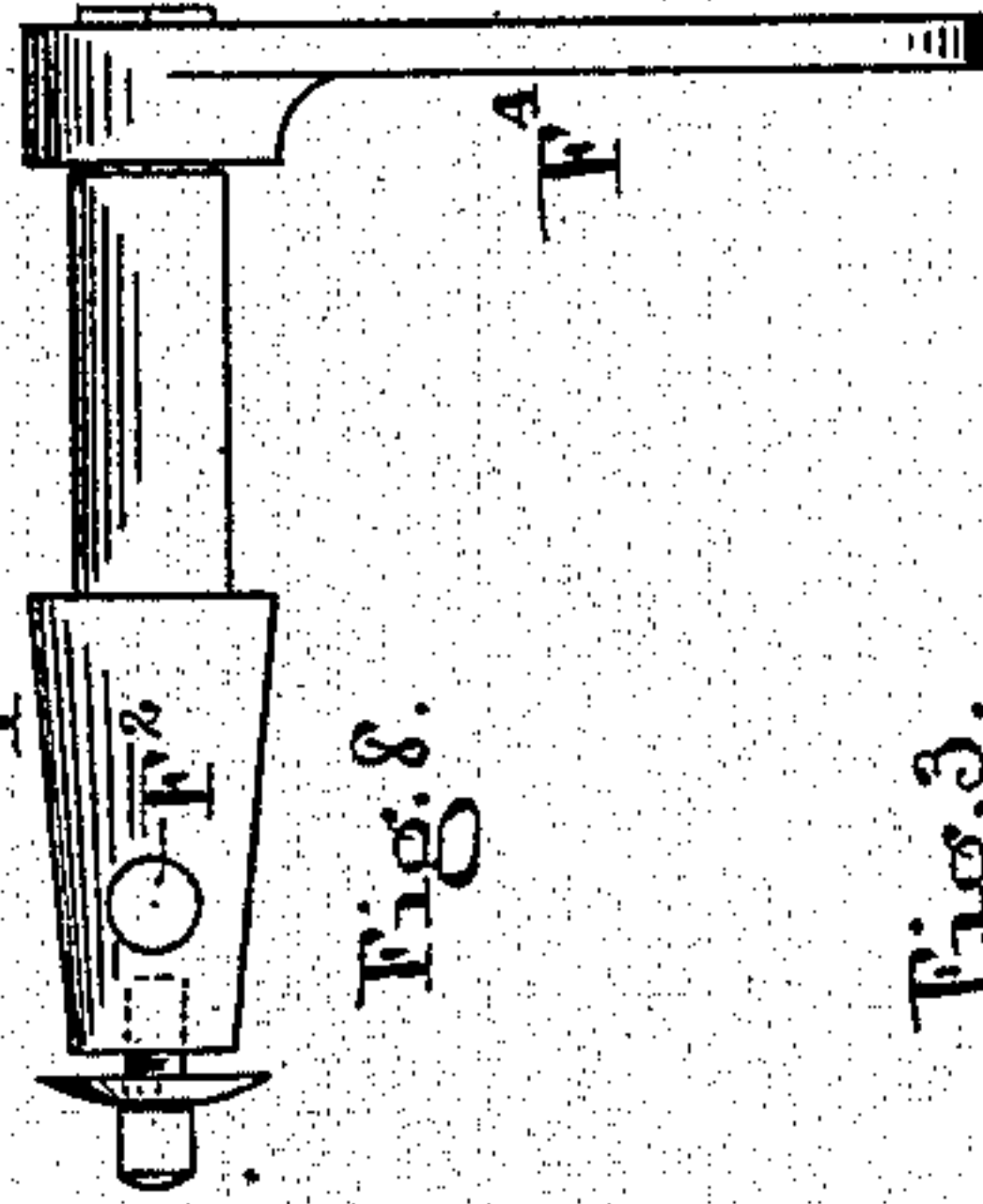


Fig. 8.

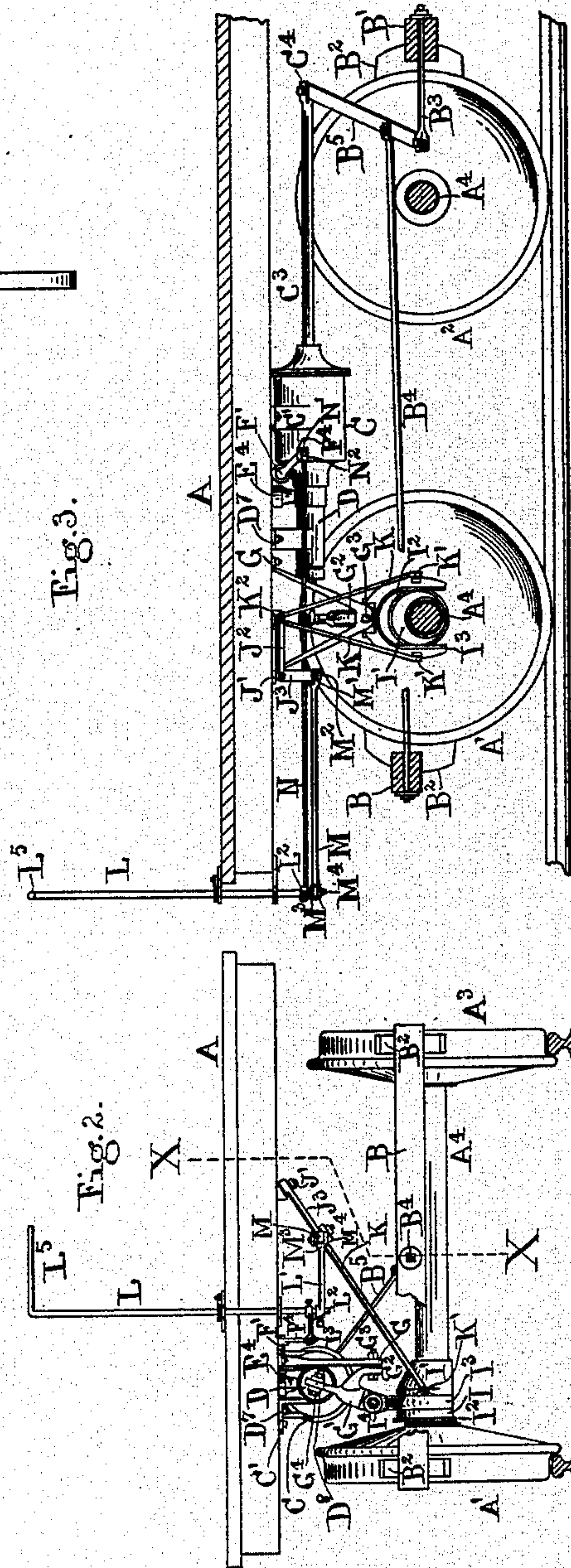


Fig. 3.

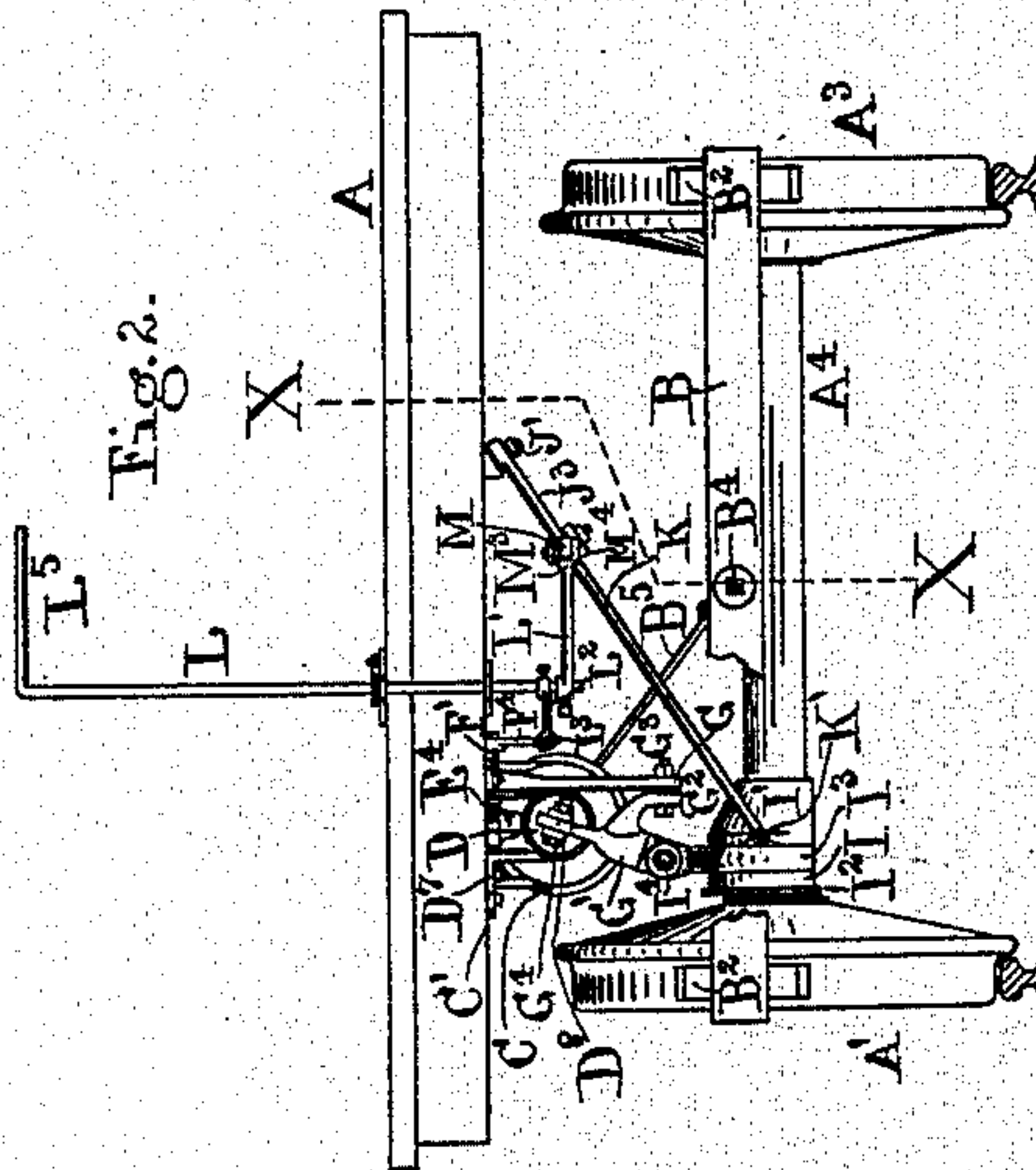


Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS V. NORRIS, OF ROCKFORD, ILLINOIS.

AIR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 413,205, dated October 22, 1889.

Application filed November 16, 1888. Serial No. 291,070. (No model.)

To all whom it may concern:

Be it known that I, THOMAS V. NORRIS, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented a certain new and useful Improvement in Air-Brakes, of which the following is a specification.

My invention relates to air-brakes adapted for use on all kinds of railway and other cars; and it consists of certain new and useful constructions and combinations of parts hereinafter described, and pointed out in the claims.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a plan view of my improved air-brake in operative connection with the running-gear of a car. Fig. 2 is an end view of the same surmounted by a platform. Fig. 3 is a view of a section, through the dotted line X X, of parts illustrated in Figs. 1 and 2. Fig. 4 is a longitudinal central vertical section, through the dotted line X' in Fig. 1, of the compressed-air cylinder and air-pump that operate the brakes. Figs. 5 and 6 are respectively plan and rear views of an eccentric and attachments for operating the air-pump and cylinder. Fig. 7 is a view of a vertical section, through the dotted line X², of a part illustrated in Fig. 6. Fig. 8 is a view in detail of a valve for opening and closing the compressed-air cylinder.

Like letters of reference indicate corresponding parts throughout the several views.

A is a car-platform, mounted on wheels A¹ A² A³ by means of suitable truck-frames (not shown) and axles A⁴.

B B' are brake-beams. B² are brake-shoes. B³ B⁴ are connecting-rods. B⁵ is a lever for operating said parts from B to B⁴, inclusive, when connected together, as shown.

C is a compressed-air cylinder, secured to the under side of a car by means of lugs C'.

C² is a piston adapted to operate in the cylinder C.

C³ is a piston-rod connected with the piston C², and provided with jaws C⁴ to admit the free end of the lever B⁵.

D is the cylinder of an air-pump, which is used for forcing air into the cylinder C.

D' is a piston adapted to operate in the cylinder D.

D² is a piston-rod connected with the piston D' to drive the same.

The pump-cylinder D opens into the compressed-air cylinder C through a valve D³, consisting of a seat D⁴, ball D⁵, and cage D⁶. The cylinder D is secured to the car by means of suitable lugs D⁷. The cylinder D is furnished with air by means of a valve E, consisting of a seat E', a ball E², and a cage E³.

E⁴ is a tube for admitting air to the valve E.

E⁵ is a perforated screen, which prevents dirt from entering the tube E⁴.

F is a rotary valve—a preferable form—consisting of a cylindrical plug F', having a passage F² extending therethrough, and a tubular seat F³ to support the same.

F⁴ is a crank, by means of which the valve is opened and closed.

G is a hanger secured to and depending from the under side of the car-platform A.

G' is an eccentric-lever provided with a lug G², branching therefrom, by means of which and a bolt G³ the same is mounted upon the hanger G. The lower end of the eccentric-lever G' has a longitudinal cylindrical socket therein to admit a part, to be described hereinafter, and the upper end thereof is embraced between the piston-rod jaws D⁸, wherein it is held by means of a bolt G⁴, which passes through them and an elongated slot G⁵ therein.

H is a knuckle having a horizontal cylindrical opening extending therethrough.

H' is a cylindrical shank integral with the knuckle H, of proper diameter to readily enter the socket in the lower end of the eccentric-lever G', with which it forms a semi-swivel-joint. The shank H' is held in its socket by means of a pin H², which passes through a horizontal slot H³ therein and the lever G'.

I is an eccentric secured to an axle A⁴, and having the inner end I' thereof gradually tapered toward said axle.

I² is an annular flange which serves to prevent the eccentric-strap, to be described hereinafter, from coming in contact with the wheel-hub.

I³ is an eccentric-strap hinge-jointed to the knuckle H by means of a bolt I⁴ and provided with lugs I⁵, projecting horizontally

therefrom, said lugs being perforated by means of horizontal openings therein.

J is a bell-crank mounted by means of a bolt J' on the under side of the car-plat-
5 form A.

K are connecting-rods hinge-jointed to the lugs I⁵ of the eccentric-strap I³ by means of bolts K' and to the arm J² of the bell-crank J by means of a bolt K².

10 L is a brake-rod secured to the car in the ordinary manner.

L' L² are arms secured rigidly to the brake-rod L.

15 M is a connecting-rod hinge-jointed to the arm J³ of the bell-crank J by means of the jaws M' and bolt M², and to the arm L' by means of the jaws M³ and the bolt M⁴.

20 N is a connecting-rod hinge-jointed to the crank F⁴ by means of the jaws N' and bolt N² and to the arm L² by means of the jaws L³ and bolt L⁴.

L⁵ is a lever for operating the brake-rod L.

Supposing the plug F' of the valve F to be turned so that the passage F² therein would
25 be vertical, and the eccentric-strap I³ to be in position indicated by the dotted lines X' in Fig. 6, the brake would be operated in the following manner: Press the free end of the brake-lever L⁵ from the car. The impulse of
30 such pressure will be transmitted through the media of the brake-rod L, the arm L², and the connecting-rod N to the crank F⁴, which, being slightly turned thereby, will close the valve E, as shown in Fig. 4. The movement
35 of the lever L⁵, above referred to, will also transmit motion, through the media of the rod L, the arm L', the connecting-rod M, the bell-crank J, and the connecting-rods K, to the eccentric-strap J³, which will be thereby car-
40 ried downward from the position indicated by dotted lines X' in Fig. 6 to the position there shown and engage with its eccentric I. Immediately after the engagement of the strap I³ with the eccentric I the eccentric-le-
45 ver G' will be reciprocated thereby, as indicated by the dotted lines X² in Figs. 4 and 7, and the piston-rod D² and piston D' in the

air-pump cylinder D, and thereby force air through the valve D³ into the compressed-air cylinder C, whereby the piston C² and piston-rod C will be forced from the valve D³, and through the media of the lever B⁵, connect-
5 ing-rods B³ B⁴, brake-beams B', and brake-shoes B² brake the wheels of the car. To re-
move the brakes, press the brake-lever L⁵ toward the car, and the valve F will be
55 opened and the eccentric-strap I³ disengaged from its eccentric I by reverse movements of the media connecting the brake-lever L⁵ with the said valve and eccentric-strap.
60

I claim—

1. In combination, an air-pump, an eccentric mounted upon and taking power from the axle of a railway-truck, an eccentric-strap constructed and arranged in such a
65 manner as to readily admit of being engaged with and disengaged from said eccentric while revolving, an eccentric-lever connect-
ing said eccentric-strap with the piston-rod of said air-pump, a brake-rod L, the arm L',
70 rigidly secured thereto, the rod M, hinge-jointed to said arm L', the bell-crank hinge-jointed to said rod M, and the rods K, hinge-jointed to said bell-crank and eccentric-strap, substantially as described, and for the pur-
75 pose set forth.

2. In combination, the herein-described compressed-air cylinder and air-pump having the operative parts and connections, as shown, an eccentric I, mounted upon and taking
80 power from an axle A⁴, the eccentric-strap I³, mounted upon and depending from the eccentric-lever G', the brake-rod L, the arms L' L², secured thereto, the connecting-rod M, hinge-jointed to said arm L', the bell-crank
85 J, hinge-jointed to said rod M, the rods K, hinge-jointed to said bell-crank and eccentric-strap, the valve-crank F⁴, and the rod N, connecting the latter with said arm, substantially as set forth.

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Witnesses:

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