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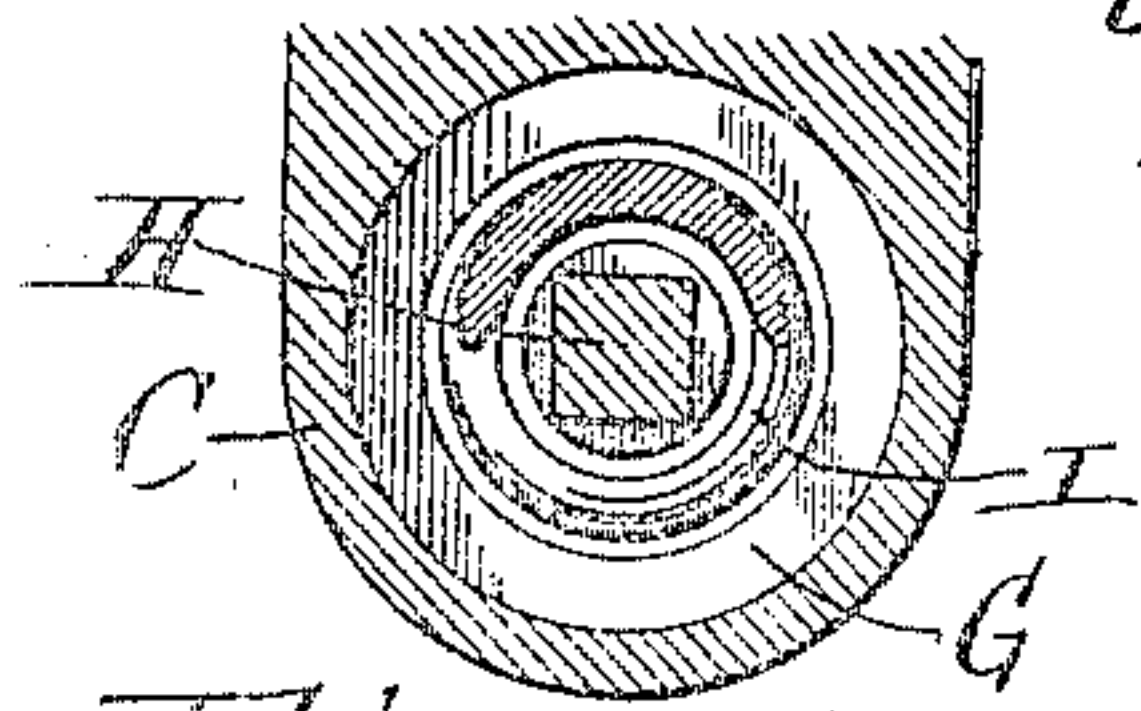
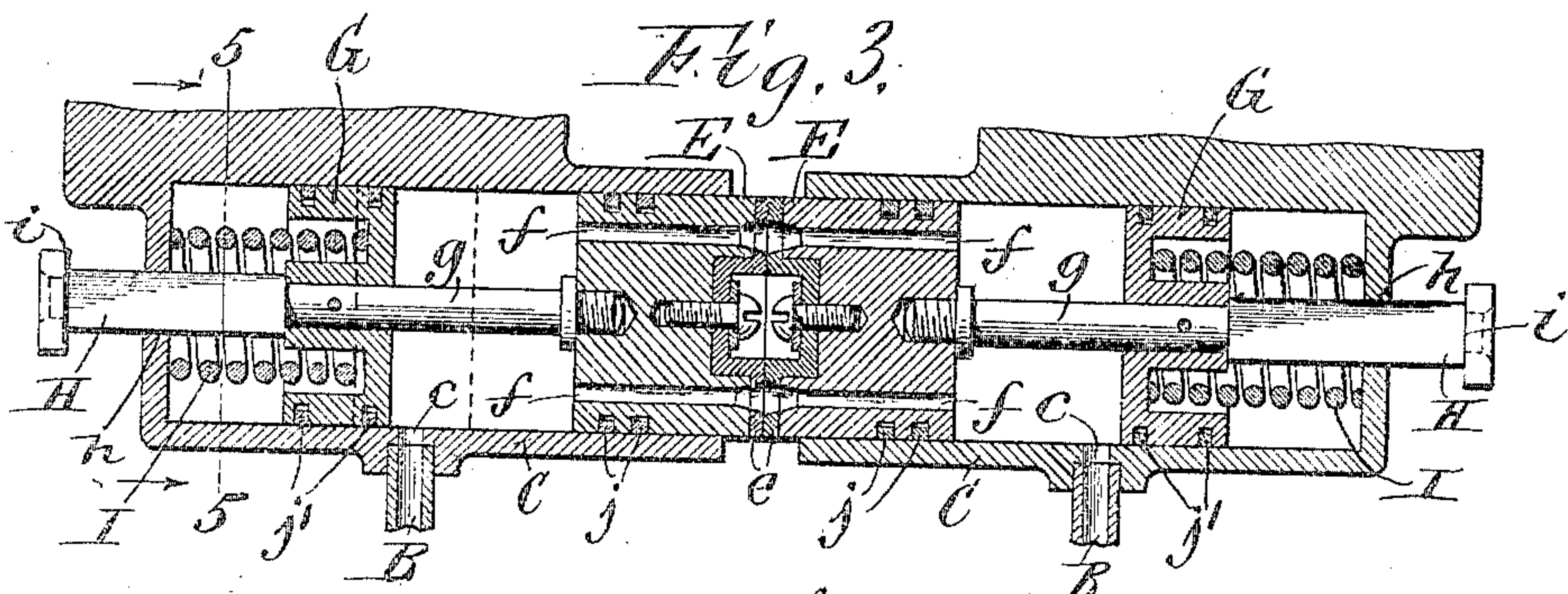


Fig. 2.



F. l'g. 3.

Inventors
Maurice Segal
Frederick C. Walker
Jas. Geyer & Popp
Attorneys.

UNITED STATES PATENT OFFICE.

MAURICE SEGAL AND FREDERICK C. WALKER, OF BUFFALO, NEW YORK; SAID
WALKER ASSIGNOR TO SAID SEGAL.

AUTOMATIC TRAIN-PIPE COUPLING.

976,402.

Specification of Letters Patent. Patented Nov. 22, 1910.

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To all whom it may concern:

Be it known that we, MAURICE SEGAL and FREDERICK C. WALKER, citizens of the United States and Canada, respectively, and residents of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Automatic Train-Pipe Coupling, of which the following is a specification.

This invention relates to couplings for automatically connecting two pipes as they approach each other, and more particularly to air pipes forming parts of the brake system of adjacent cars, although the same may also be used for connecting the water and gas conducting pipes of adjacent cars.

In the accompanying drawings: Figure 1 is a side elevation showing one way of embodying our invention for connecting the air pipes of the air brake system of two cars. Fig. 2 is a bottom plan view thereof. Fig. 3 is a fragmentary vertical longitudinal section of the air pipe coupling, on an enlarged scale. Fig. 4 is a front end view of one of the coupling members. Fig. 5 is a vertical cross section in line 5-5, Fig. 3.

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

A, A represent the opposing draw bars of two cars which are provided at their front ends with heads *a* of any usual or approved construction for coupling the draft rigging of said cars.

B, B represent the air pipes which form part of the air brake mechanisms of two cars and which have heretofore been coupled by hand for uniting the brake system of the entire train and causing the same to operate in unison.

Our improved coupling is designed to automatically effect the coupling of the air brake pipes of adjacent cars as the latter approach each other and the coupling of their draft rigging is effected, and to automatically disconnect such air pipes when the draft riggings of these cars are separated.

Although our invention may be embodied

in various forms, that shown in the drawings is preferred and constructed as follows:

C represents a horizontal air cylinder preferably secured lengthwise to the underside of each draw bar and having an open front end, a closed rear end and a port *c* on its underside about midway of its length which latter connects with the air pipe B of the respective car. This pipe preferably contains a flexible section *b* to permit the air cylinder to shift its position relatively to the body of the car without injuring the air pipe and the latter is also provided with a hand valve *d* whereby the respective end of the air pipe may be closed by hand when desired.

E represents an outer or front piston arranged in the outer or front end of the cylinder and provided on its front vertical end with a facing *e* of rubber or other elastic packing material and also provided with one or more air passages *f* extending lengthwise through the same from its outer to its inner end and also through said facing.

G represents a rear or inner piston arranged in the inner or rear part of the cylinder and spaced apart from the front piston but connected therewith by a longitudinal connecting rod *g*. The pistons are held against turning so as to always retain the air passages of the front piston in a position in which they will register with the corresponding air passages of the front piston of the coupling member of an opposing car. The means for thus preventing the pistons from turning may be variously constructed but that shown in the drawings is preferred and consists of a flat sided guide rod H projecting rearwardly from the rear piston through a flat side opening *h* in the rear end of the cylinder.

When the car is uncoupled from another car the pistons of each coupling member are projected into their outermost position by a spring I which is preferably arranged within the cylinder between the rear piston and the rear end of the cylinder. The forward or outward movement of the pistons is limited by a stop device consisting preferably

of a collar or shoulder *i* arranged on the rear end of the guide rod and adapted to engage with the rear end of the cylinder.

While the pistons are in their forwardly projected position the rear one is arranged with its periphery over the air port of the respective cylinder, as shown by dotted lines in Fig. 3, thereby preventing the escape of any air from the air brake system.

When two cars approach each other sufficiently close to permit of coupling their draft riggings the outer pistons abut against each other and are pushed backwardly into their cylinders, until the rear pistons are arranged in rear of the air ports and uncover the same, as shown in Fig. 3. The instant this occurs communication is established between the air pipes of the brake systems of both cars, inasmuch as the air passages of both outer pistons are in register and air can pass freely through the same and the cylinders from one air pipe to the other according to whichever direction the air is moving. The elastic facing on the outer pistons forms a tight packing between the same which prevents leakage of the air and thus maintains the brake system in a high state of efficiency.

The instant two cars are separated the air coupling pistons are moved into their outermost positions by their springs and the escape of air through the air pipes is cut off by the rear pistons covering the ports *c*.

Each of the front pistons is provided on its periphery with packing rings *j* and each rear piston is provided on its periphery with similar packing rings *j'* to prevent leakage of air either in the forward or rearward position of the pistons.

The outer ends of the air passages of the outer pistons are preferably flared, as shown in Figs. 3 and 4, so as to permit these pistons to move laterally relatively to each other without disturbing communication between the same.

It will be observed that by means of our improved coupling the connection and disconnection between the air brake systems of cars is effected automatically while coupling or uncoupling the draft mechanism of the same, thereby dispensing with the labor heretofore required for this purpose and avoiding the danger attending the air coupling as heretofore practiced and also reducing the time required for making up a train.

Although the foregoing description refers more particularly to connecting the air pipes of cars it is obvious that this coupling mechanism is equally useful for connecting gas and water pipes of cars and the like.

We claim as our invention:

1. The combination of opposing cars hav-

ing draw bars, air brake pipes, and means for coupling said pipes upon connecting said draw bars comprising cylinders each mounted on one of said draw bars and having a port connecting with one of said pipes, a piston movable lengthwise in each cylinder and having a passage adapted to connect with a corresponding passage in the other piston, and means moving with said piston for closing said port in the forward position of the piston and opening said port in the rearward position of said piston.

2. The combination of opposing cars having pipes, cylinders mounted on the cars and each having a port in its side which connects with one of said pipes, a front piston arranged in each cylinder in front of its port and having a passage adapted to register with the corresponding passage of the front piston of the other cylinder, and a rear piston in each cylinder adapted to cover and uncover the port in said cylinder and movable with the front piston in the respective cylinder.

3. The combination of opposing cars having pipes, cylinders mounted horizontally and lengthwise on said cars and each having a port in its side which connects with one of said pipes, a front piston arranged in the front part of each cylinder and having a longitudinal passage adapted to register with the corresponding passage of the front piston in the cylinder of the other car, a rear piston arranged in the rear part of each cylinder and apart from the companion front piston, a connecting rod connecting each pair of front and rear pistons, a flat-sided guide rod connected with each rear piston and passing through a correspondingly-shaped opening in the rear end of the respective cylinder, a spring arranged in each cylinder between the rear end thereof and the rear piston therein and operating to move the pistons outwardly, and a stop collar arranged on said guide rod and adapted to engage the rear end of the cylinder and arrest the pistons when the rear piston is arranged with its periphery over the port of the respective cylinder.

4. The combination of opposing cars having draw bars, air brake pipes, cylinders mounted on said draw bars and each having a port in its side which connects with one of said pipes, a front piston arranged in the front part of each cylinder and having a longitudinal passage adapted to register with the corresponding passage of the front piston in the cylinder of the other car, a rear piston arranged in the rear part of each cylinder and apart from the companion front piston, a connecting rod connecting each pair of front and rear pistons, a flat-sided guide rod connected with each rear

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of the respective cylinder.

Witness our hands this 2nd day of Febru-
ary, 1910.

MAURICE SEGAL.

FREDERICK C. WALKER.

Witnesses:

THEO. L. POPP,
ANNA HEIGIS.