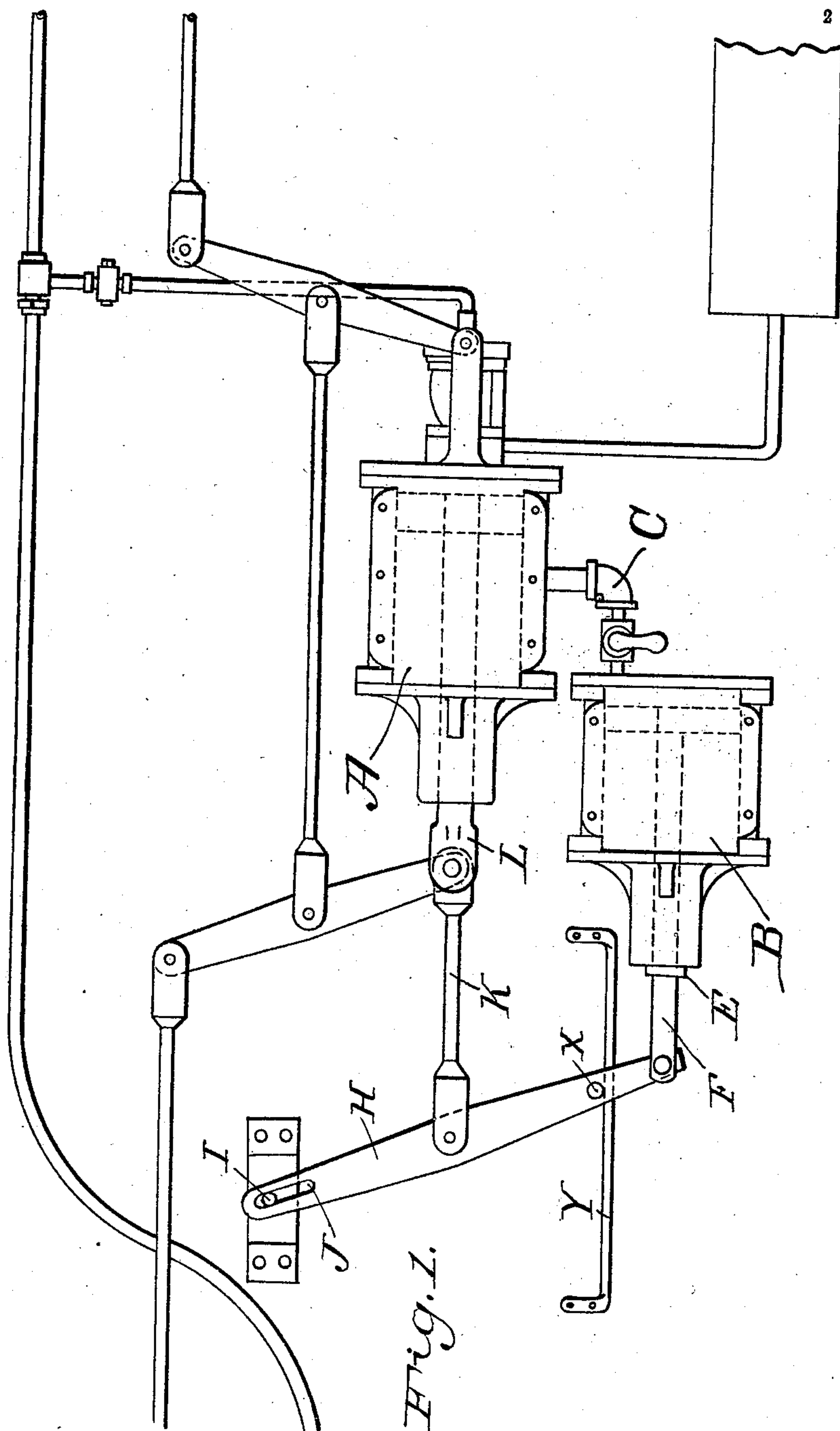


No. 842,425.

PATENTED JAN. 29, 1907.

W. H. SAUVAGE.  
FLUID PRESSURE BRAKE.  
APPLICATION FILED SEPT. 1, 1906.

2 SHEETS—SHEET 1.



Witnesses  
G. L. Macabrey  
M. G. Crawford

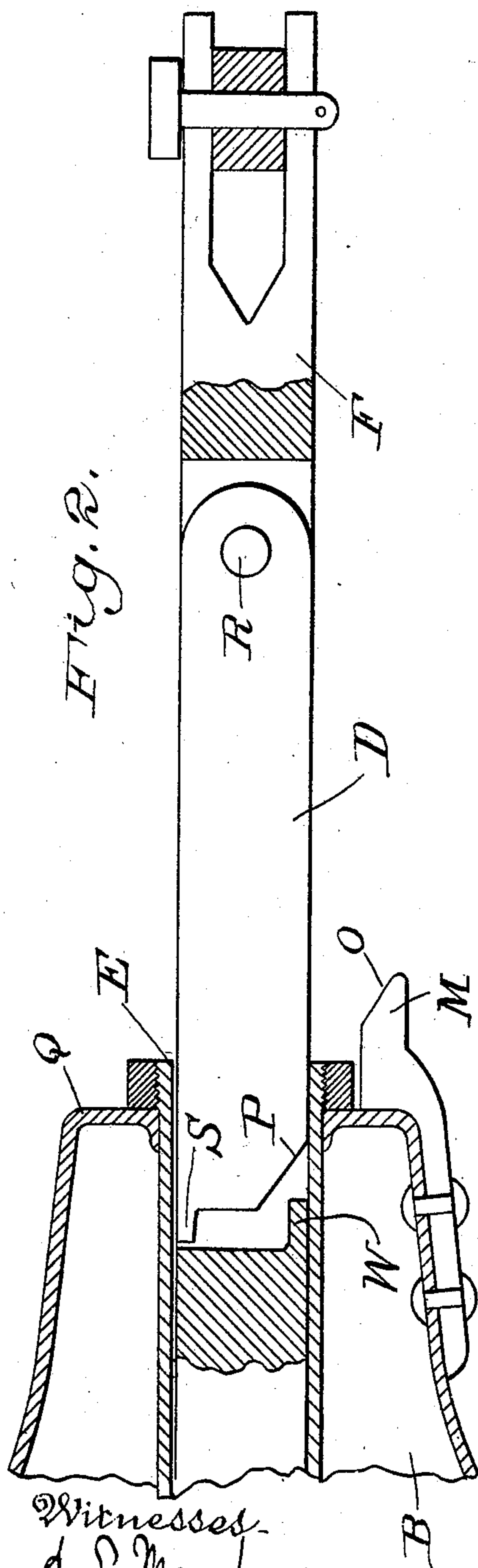
Inventor  
William H. Sauvage  
By his Attorney A. Parker Smith

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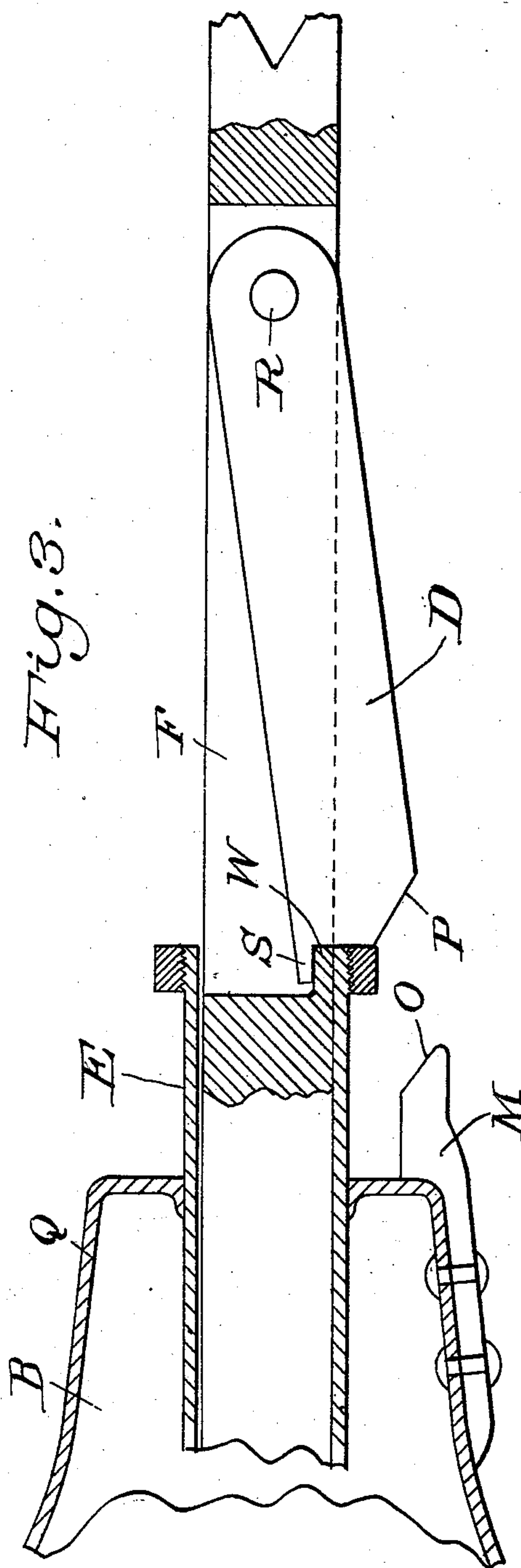
2 SHEETS—SHEET 2.



Witnesses.

C. L. Macubrey

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Inventor

By *his* <sup>Inventor</sup> *William H. Savage*  
Attorney *A. Parker Smith*

<sup>24</sup> A. Parker Smith



# UNITED STATES PATENT OFFICE.

WILLIAM HENRY SAUVAGE, OF NEW YORK, N. Y., ASSIGNOR TO SAUVAGE SAFETY BRAKE COMPANY, A CORPORATION OF NEW JERSEY.

## FLUID-PRESSURE BRAKE.

No. 842,425.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed September 1, 1906. Serial No. 332,889.

*To all whom it may concern:*

Be it known that I, WILLIAM HENRY SAUVAGE, a citizen of the United States of America, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Fluid-Pressure Brakes, of which the following is a specification.

My invention relates to fluid-pressure brake systems, and consists of an improvement on the apparatus disclosed in my re-issued Letters Patent No. 12,229, dated June 7, 1904. In the brake system therein described, in which the auxiliary cylinder goes into action only after the movement of the piston of the main cylinder has begun, means is of course necessary for causing the movement of the auxiliary piston to be transmitted to the brake-rigging, but at the same time to permit movements of the brake-rigging without causing a movement of the auxiliary piston.

My present invention relates to the improved mechanism for producing such action. The best form of apparatus at present known to me embodying my invention is illustrated in the accompanying two sheets of drawings, in which—

Figure 1 is a plan view of the parts of the standard brake-rigging with the auxiliary cylinder and my invention attached thereto. Fig. 2 is an enlarged detail sectional view of the telescoping piston-rod, the parts being in position assumed just after the piston of the auxiliary cylinder has completed its return stroke; and Fig. 3 is a similar view showing the parts in the position assumed while the auxiliary piston is on its outward stroke.

Throughout the drawings like reference letters indicate like parts.

A is the main cylinder of the ordinary brake apparatus.

B is an auxiliary cylinder connected to the main cylinder by the pipe C, which enters the main cylinder at a point five or six inches from its pressure-head. This auxiliary cylinder B has a telescoping piston-rod, which is formed of the ordinary hollow piston-rod E and the push-rod F inserted therein. This push-rod has a longitudinal slot cut in it, and in this slot is mounted a latch D, pivoted at R to the push-rod. This latch has one corner beveled at P, and

the other corner has a projecting lug S, which engages a stop W, formed by a portion of the push-rod not cut away.

H is an auxiliary lever, which is fulcrumed on a fixed pin I by the slotted bearing J, formed in one end of the lever. This lever is connected at the other end to the piston of the auxiliary cylinder through the medium of the push-rod F, to which it is pivoted, and intermediately of its length the lever is connected to the piston of the main cylinder A by the link K and piston-rod L.

M is a fixed stop preferably bolted to the pressure-head Q of the auxiliary cylinder. This stop preferably has a beveled face O coöperating with the beveled face P on the end of the latch D.

Such being the construction of the apparatus, the operation of my invention is as follows: When air is admitted to the main cylinder A, the piston is of course driven out, and motion is transmitted, through link K and auxiliary lever H, to the push-rod F, pulling the same out of the hollow piston E, but not moving the piston in the auxiliary cylinder. The push-rod and the hollow piston-rod form a telescoping piston-rod for such auxiliary piston, which telescoping piston-rod is capable of extension in the manner above described. After the parts have moved a distance corresponding to about five inches of travel of the main piston the latch D will have been withdrawn from out the hollow piston-rod E and will drop down into position shown in Fig. 3. Immediately thereafter air will pass over through pipe C from the main cylinder A to the auxiliary cylinder B, and the piston of the auxiliary cylinder will start to move out. As soon as it moves the hollow piston E engages the end of the latch D and carries the push-rod F along with it, transmitting its force through the auxiliary lever H and link K to the main brake-rigging. When the brakes are released, the air will exhaust first from auxiliary cylinder B into main cylinder A, and the piston in the auxiliary cylinder will complete its return stroke. Just before it does so the beveled face O on the stop will engage the end of latch D and lift same back into its original position within the slotted portion of the push-rod, so that push-rod and latch may together be pushed back into the hollow



piston-rod E during the return travel of the piston in main cylinder A, all as shown in Fig. 2.

As the auxiliary lever H is of necessarily limited length, and therefore swings through quite an arc in the course of a heavy brake application, there is a tendency for it to shove the push-rod to one side and cause it to bind in the hollow piston E, with the result that the complete brake application is prevented or the piston in the cylinder B is pulled out too soon before the latch D has had a chance to drop into position for engagement. To avoid this, the lever is given a sliding connection to its fulcrum I by means of a slot J. With this construction the outward movement of the main piston (the auxiliary lever being initially in about the position shown in Fig. 1) tends to cause the auxiliary lever to slide inward on its fulcrum pin and adjust itself to the proper position before any thrust upon the push-rod F. To insure this action of the lever, a projection may be formed on it in any convenient manner, as by inserting a pin X, which bears against the lever-guide Y, usually provided for such auxiliary lever and arranged in a line parallel to the line of the piston travel.

The advantages of my invention comprise a compact arrangement of the parts, the fact that they cannot be thrown out of operative relation by any warping of the car-body, and that no jamming of the parts or other destructive action is produced by the failure of the latch to work.

Having, therefore, described my invention, I claim—

1. In a fluid - pressure - brake apparatus comprising a main cylinder and an auxiliary cylinder, the auxiliary cylinder going into action after the movement of the piston of the main cylinder has begun, the combination of a telescoping piston-rod for said auxiliary cylinder, a latch arranged to hold the telescoping members extended, and means for tripping said latch before the piston completes its return stroke, said means comprising a fixed dog having a beveled face located in the line of travel of the latch.

2. In a fluid-pressure-brake apparatus the combination of a cylinder, a piston having a

hollow piston-rod, a push-rod telescoping therein, and a latch pivoted on the push-rod and adapted to engage the outer end of the hollow piston when the push-rod is partly withdrawn therefrom.

3. In a fluid-pressure-brake apparatus the combination of a cylinder, a piston having a hollow piston-rod, a push-rod telescoping therein, and a latch pivoted on the push-rod and adapted to engage the outer end of the hollow piston when the push-rod is partly withdrawn therefrom together with means for tripping said latch when the piston completes its return stroke.

4. In a fluid-pressure-brake apparatus the combination of a cylinder, a piston having a hollow piston-rod, a push-rod telescoping therein, and a latch pivoted on the push-rod and adapted to engage the outer end of the hollow piston when the push-rod is partly withdrawn therefrom together with means for tripping said latch when the piston completes its return stroke, said means comprising a dog fixed to the cylinder-head and engaging said latch.

5. In a fluid - pressure - brake apparatus comprising a main cylinder and an auxiliary cylinder, and the usual brake-levers, the combination of an auxiliary lever pivoted at one end to a fixed fulcrum by a sliding connection, connected at the other end to the piston of the auxiliary cylinder and midway of its length to the piston of the main cylinder, a guide for said auxiliary lever parallel to the line of piston travel, and a projection on said lever engaging the guide.

6. In a fluid-pressure-brake apparatus the combination of a main cylinder, an auxiliary cylinder, the usual system of brake-levers and an auxiliary lever, pivoted at one end to a fixed fulcrum by a sliding connection, connected at the other end to the piston of the auxiliary cylinder, and intermediate of its length to the piston of the main cylinder.

Signed at New York, N. Y., this 31st day of August, 1906.

WILLIAM HENRY SAUVAGE.

Witnesses:

E. L. MACUBREY,  
M. G. CRAWFORD.