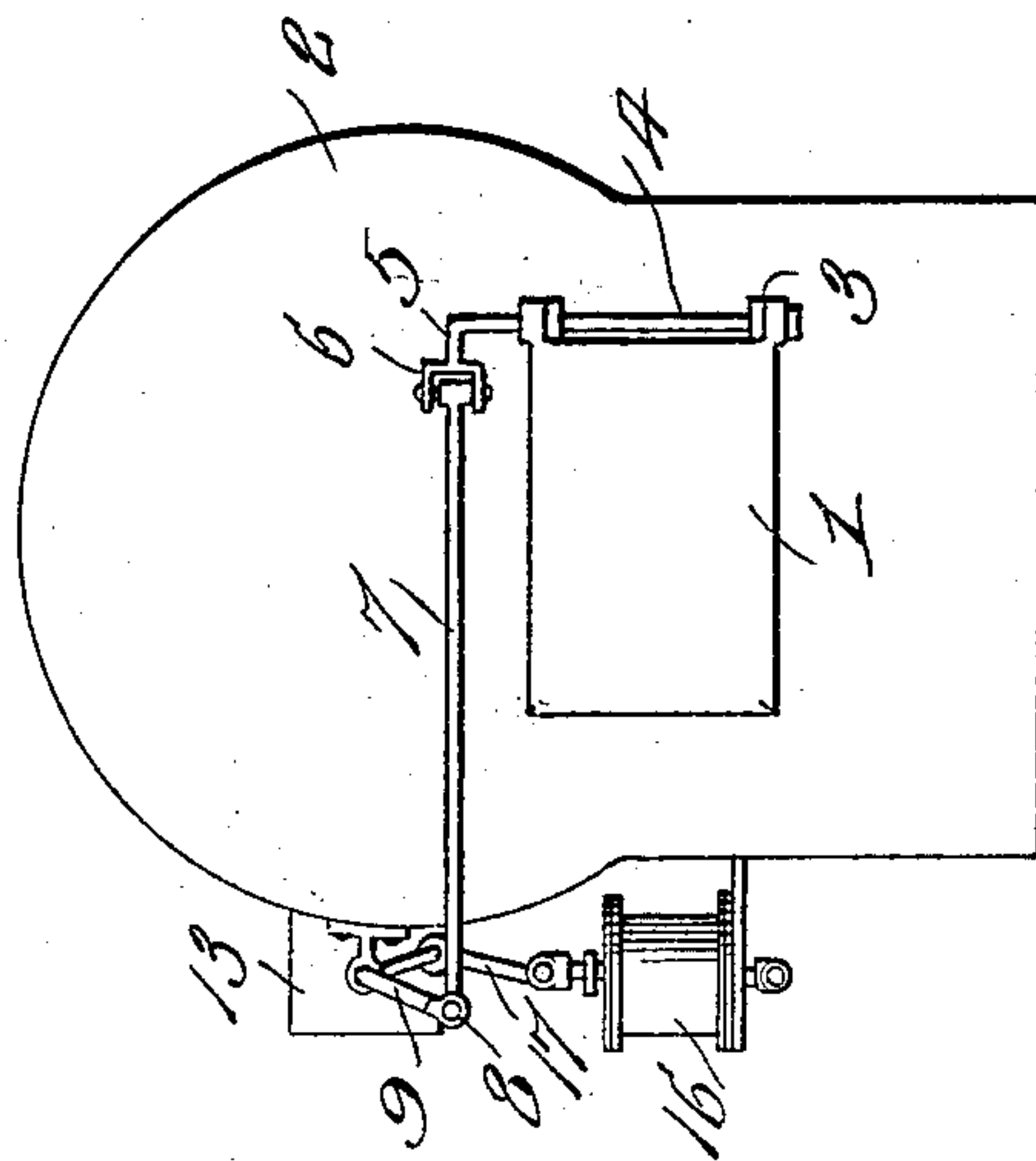
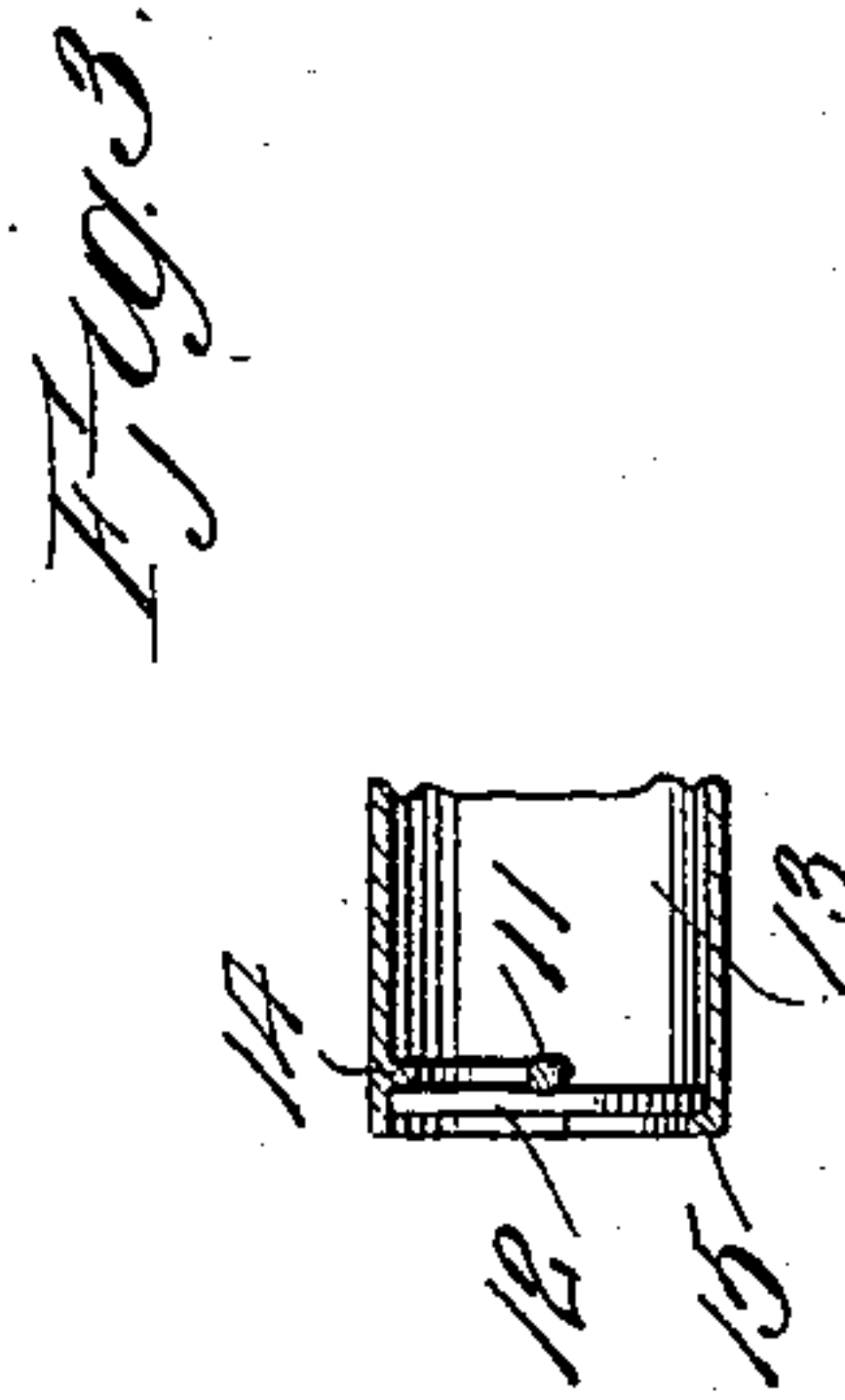
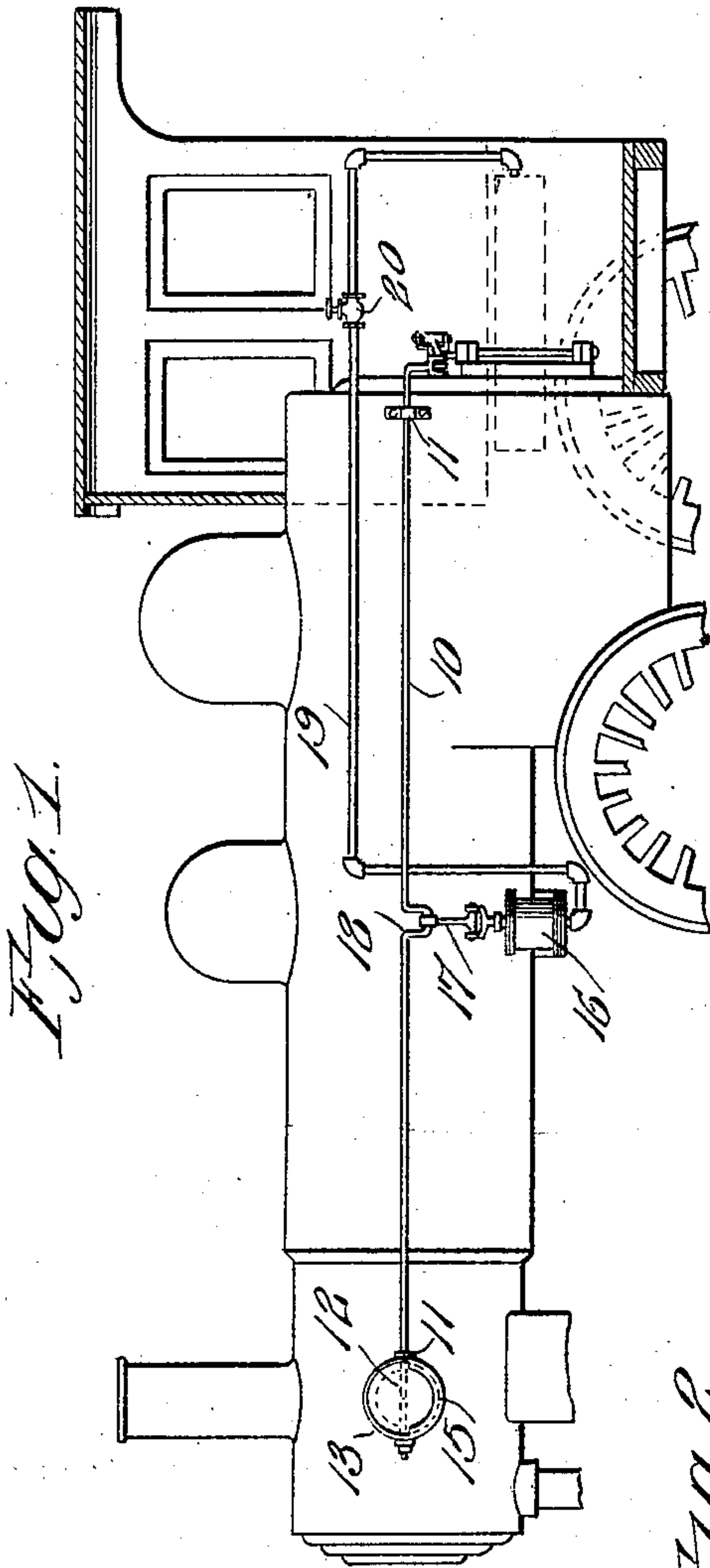


S. LYON.  
LOCOMOTIVE ATTACHMENT.  
APPLICATION FILED FEB. 29, 1908.

917,631.

Patented Apr. 6, 1909.



Witnesses

*Frank Hough.*  
*R. M. Smith.*

Inventor

*Shepard Lyon*

By

*Victor J. Evans*

Attorney



# UNITED STATES PATENT OFFICE.

SHEPARD LYON, OF SAULT STE. MARIE, MICHIGAN.

## LOCOMOTIVE ATTACHMENT.

No. 917,631.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed February 29, 1908. Serial No. 418,554.

*To all whom it may concern:*

Be it known that I, SHEPARD LYON, a citizen of the United States, residing at Sault Ste. Marie, in the county of Chippewa and State of Michigan, have invented new and useful Improvements in Locomotive Attachments, of which the following is a specification.

This invention relates to locomotive attachments, the object of the invention being to provide in connection with the fuel door of the fire box, a damper located at a distance therefrom and mechanically and operatively connected therewith in such manner that when the fuel door is open for supplying additional fuel to the furnace, the damper is simultaneously opened, the effect being to admit cold air through the damper flue to prevent reducing the steam pressure due to the opening of the fuel door.

It is well understood that cold air entering through the furnace door causes the flues to leak and also quickly reduces the steam pressure and necessitates the use of additional coal to compensate for such reduction in the steam pressure. By means of the present invention, when the furnace door is open, the damper will be open at the same time and cold air will be admitted through the damper flue to the smokestack, which will have the effect of greatly increasing the life and efficiency of the tubes and flue sheets.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as herein fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a sectional side elevation of a locomotive illustrating the attachment applied thereto. Fig. 2 is a rear elevation of the boiler and furnace. Fig. 3 is a detail vertical section through the damper flue, showing the damper in elevation.

In the drawings, 1 designates the fuel door of an ordinary locomotive boiler shown at 2, said door being hinged at 3 to swing open horizontally.

In carrying out the present invention, the door 1 is mounted fast on the hinged rod 4 and said hinge rod is provided at one end with a lateral extension or crank arm 5 which is forked as shown at 6 to receive pivotally the adjacent end of a connecting rod 7, the opposite end of which is pivotally

connected at 8 to a crank arm 9 on an operating shaft 10 which is mounted in suitable bearings 11 on the outside of the boiler, said shaft extending lengthwise of the boiler to a point near the front end thereof. On the forward end of said operating shaft 10 is mounted a damper 12 adapted to turn with the shaft, said damper being mounted in a flue 13 extending laterally from the side of the boiler as shown in Figs. 1 and 2, the shaft 10 passing through opposite openings in said flue. The flue is provided in the upper portion thereof with a stop 14 which lies at the inside of the damper when closed and is provided in its lower portion with another stop 15 which lies outside of the damper when closed, the stops 14 and 15 serving to stop the damper in a vertical position and also to more effectively seal the flue to prevent the admission of cold air.

A convenient means for operating the shaft 10 is illustrated in Figs. 1 and 2 the same consisting of an air cylinder 16 the piston rod of which is connected by a link 17 to a crank 18 of the operating shaft 10, the cylinder 16 having in communication therewith an air pressure pipe 19 under the control of the fireman in the cab by means of a valve 20 by which air may be admitted to the cylinder 16 and cut off therefrom.

To open the fuel door and damper, the engineer opens the hand-controlled valve 20 and thereby admits air to the cylinder 16. This causes a movement of the piston and through the link 17 rocks the crank shaft 20 which is connected at its opposite ends to the fuel door and damper respectively, thereby effecting an opening of said door and damper. When the air pressure is relieved the fuel door and damper are returned to their closed position.

From the foregoing description it will be observed that when the door 1 is thrown open the damper 12 will at the same time be moved to an open position thus allowing cold air to enter the side of the boiler near the front thereof, thus counteracting the damaging effect of the opening of the fuel door. This not only saves the tube sheets and flue sheets of the boiler but also economizes in the use of coal and avoids the rapid decrease in steam pressure which takes place when the ordinary fuel door as now arranged is opened.

Having thus described the invention, what is claimed as new, is:—

The combination with a locomotive boiler



and furnace, and a door for said furnace, of a  
damper controlling an opening in the smoke-  
box near the front end thereof, and opera-  
tive connections between said door and  
5 damper comprising an operating shaft adapt-  
ed to simultaneously open the door and  
damper and also close the same, a com-  
pressed air cylinder and piston, an air supply  
therefor, a crank connection between the

piston of said cylinder and the operating 10  
shaft and a valve for controlling said air  
supply, substantially as described.

In testimony whereof I affix my signature  
in presence of two witnesses.

SHEPARD LYON.

Witnesses:

REUBEN SMITH,  
A. W. TAYLOR.