

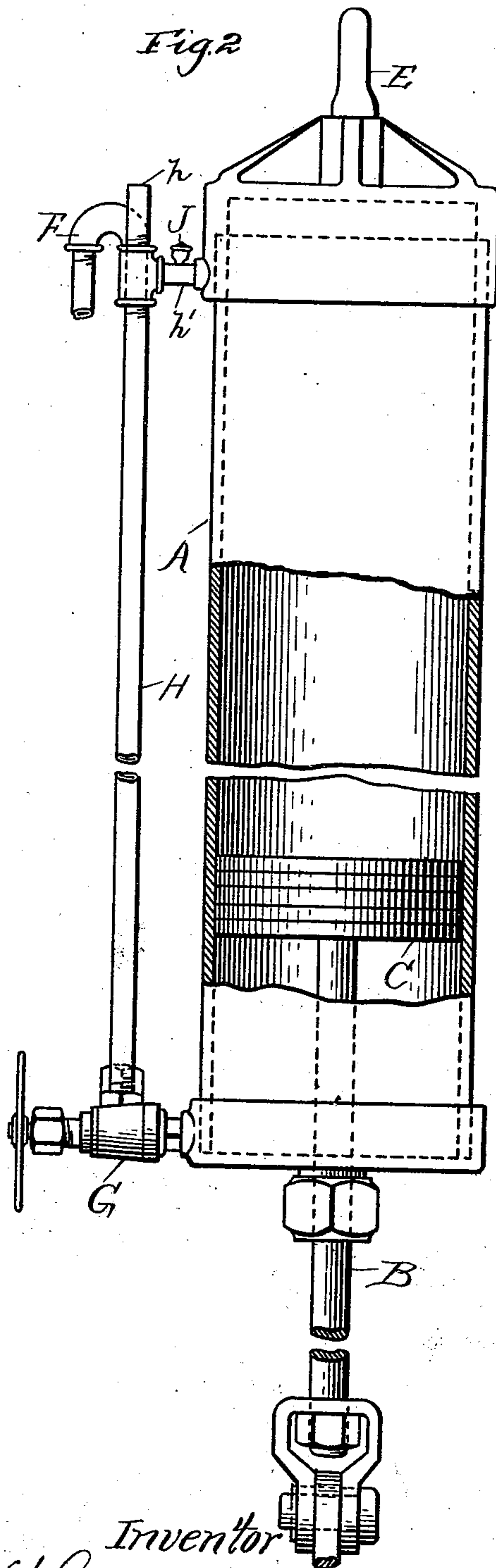
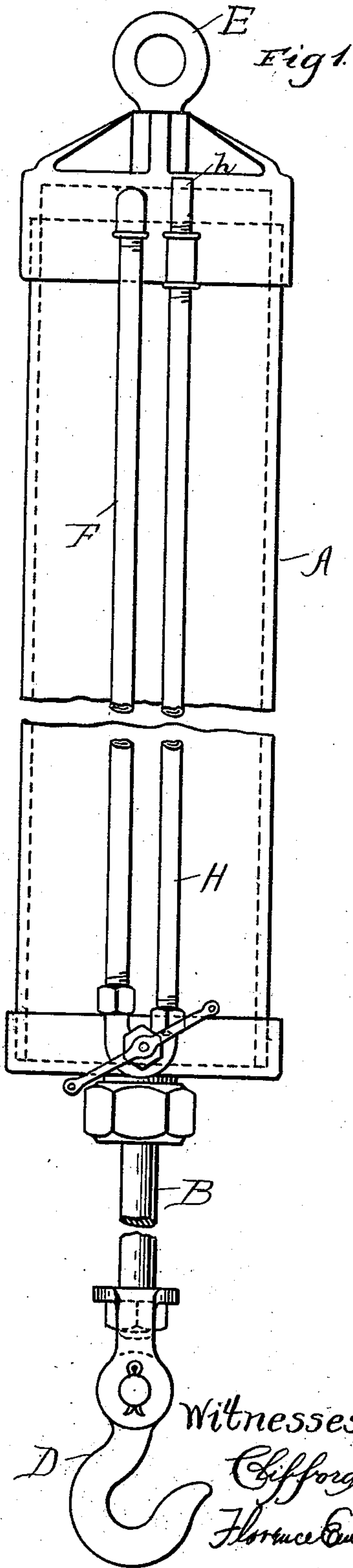
(No Model.)

2 Sheets—Sheet 1.

G. A. TRUE.  
PNEUMATIC HOIST.

No. 549,979.

Patented Nov. 19, 1895.



Witnesses:

Inventor

Clifford N. White George A. True  
Florence Embrey By Walter H. Chamberlain  
Atty.

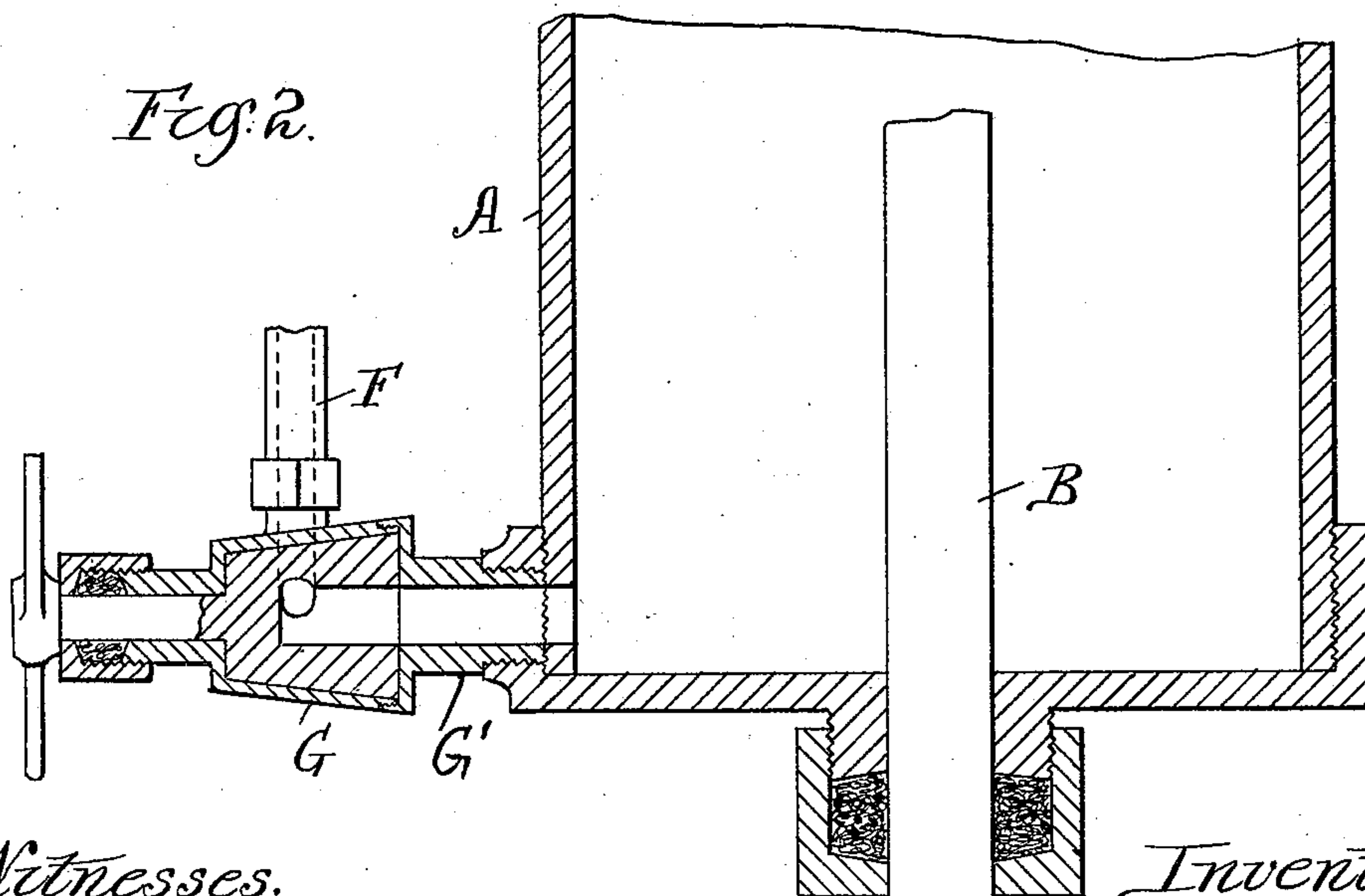
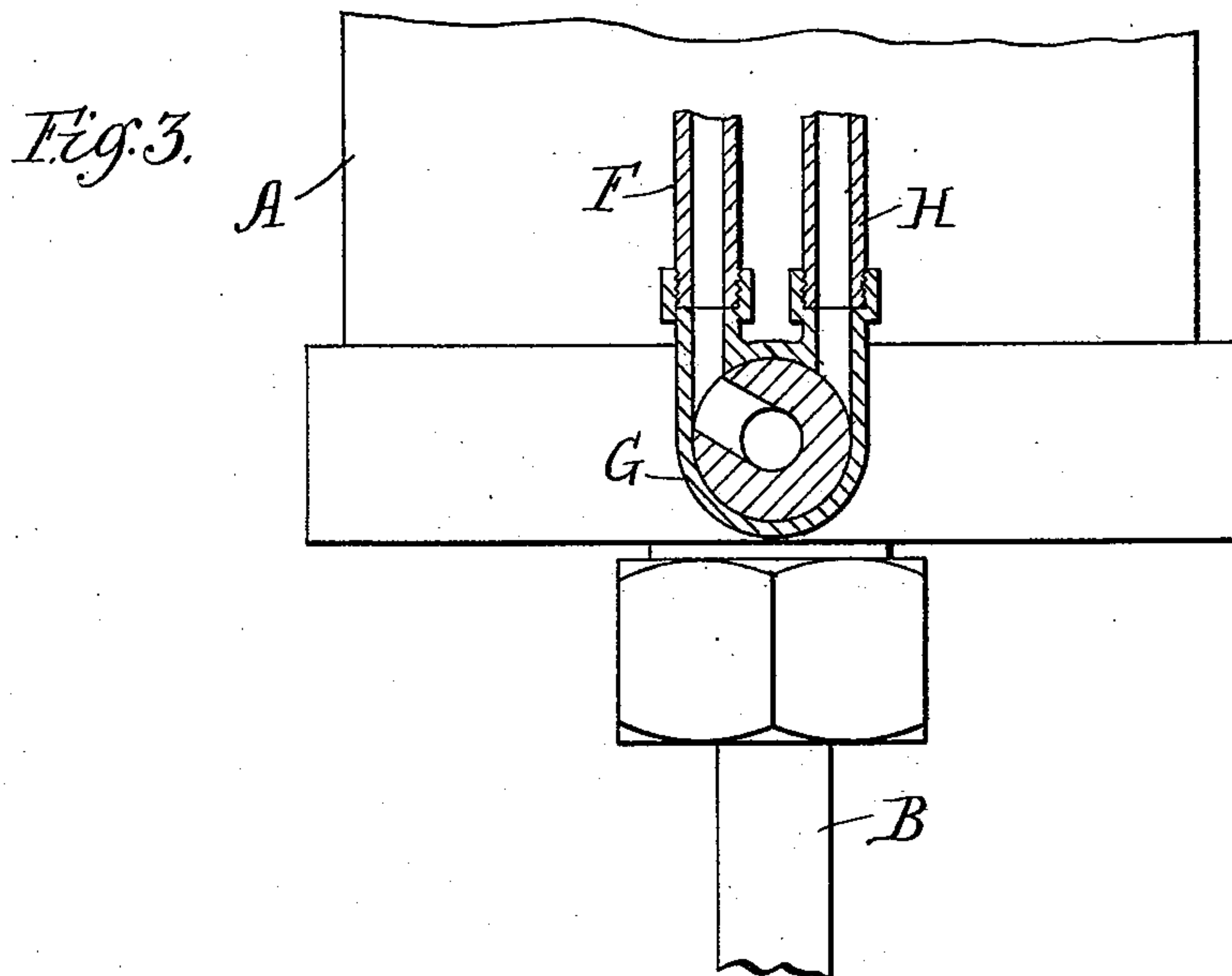
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Witnesses.  
S. M. Rheem  
W. J. Hamming

Inventor:  
George A. True  
by Walter H. Hamman  
Att'y.



# UNITED STATES PATENT OFFICE.

GEORGE A. TRUE, OF CHICAGO, ILLINOIS.

## PNEUMATIC HOIST.

SPECIFICATION forming part of Letters Patent No. 549,979, dated November 19, 1895.

Application filed March 13, 1895. Serial No. 541,568. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE A. TRUE, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Pneumatic Hoists; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that class of hoisting apparatus in which the direct pressure of air in an upright cylinder lifts the piston-head and thereby the load, the latter being engaged to the upwardly-moving piston-rod. In this class of air-hoists when the air beneath the piston-head is exhausted and the load lowered a vacuum is created above the piston. It has heretofore been customary to relieve this vacuum by providing the cylinder adjacent to the upper end with a series of orifices, but the serious objection to this is that the air entering the cylinder through these orifices carries the dust, grit, and metal particles of the shop into the cylinder, and they soon cut out the packing of the piston-head and the interior of the cylinder. My invention is designed to overcome this radical defect by providing a pipe leading from the exhaust-port at the base or lower end of the cylinder to a point adjacent to the top thereof and connecting this exhaust-pipe with the upper end of the cylinder.

Another feature of the invention is the provision adjacent to the admission-port in the upper end of the cylinder of an oil-cup.

The particular arrangement of the parts will be hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of my apparatus. Fig. 2 is an elevation at right angles to that shown in Fig. 1.

In carrying out the invention, A represents the cylinder, B the piston-rod, and C the piston-head.

D is the usual hook at the lower end of the piston-rod, to which the load is engaged, and E the usual eye on the upper end of the cylinder, by which the latter is suspended.

F is the pipe, which is connected with the

compressed-air supply and which enters the lower end of the cylinder through a pipe G', being controlled by the valve G.

H is the exhaust-pipe, also controlled by the valve G. This pipe H extends up along the side of the cylinder to a point adjacent to the top, where it is provided with a port *h*, into the open air, and also with a pipe *h'* leading into the cylinder. Located on this branch *h'* into the cylinder is an oil-cup J. It will be observed that the branch *h'* is connected below the extreme upper end of the cylinder. This is for the purpose of leaving a body of air in the upper end to cushion the flow of the ascending piston-head.

The operation is obvious. The valve G is so set that the air will pass from the supply-pipe F into the cylinder below the piston-head, thus elevating it, the air above the piston-head exhausting through the pipe *h'* and port *h*. When it is desired to lower the piston-head and load, the valve G is thrown so that the supply-pipe is closed and the exhaust-pipe H opened, the exhaust from beneath the piston-head passing up through the pipe and off through the port *h*, a sufficient percentage passing through the branch pipe *h'* to relieve the vacuum above the piston-head. It will thus be seen that the air employed to relieve the vacuum above the piston-head when the latter is lowered is not that taken from the atmosphere in the shop, which is dust and grit laden; but it is the air from beneath the piston-head, which just previously came from the compressor. Thus the admission into the cylinder of the fine particles always floating in the air of foundries and shops where this class of apparatus is employed and which soon wear out the piston-head packing and scratch and mar the interior of the cylinder is prevented. So also the oil in the oil-cup on the branch *h'* will be drawn into the cylinder by the flow of air into the upper end thereof, and the parts are easily and effectually lubricated.

What I claim is—

1. In a pneumatic hoist, the combination with the cylinder and piston, said cylinder provided beneath the piston with an air supply, a valve governing the admission of air, an exhaust pipe leading from the lower end



of the cylinder to the upper end, said exhaust pipe having an opening to the atmosphere, substantially as described.

2. In a pneumatic hoist, the combination of  
5 the cylinder and piston, a pipe into the lower end of the cylinder, a supply pipe and an exhaust pipe connected with the first named pipe, a valve governing the admission of air  
10 from the supply to the cylinder and the emission of air from the cylinder to the exhaust, said exhaust connected with the upper end of the cylinder and with the atmosphere, substantially as described.

3. In a pneumatic hoist, the cylinder having  
15 an imperforate upper end, and an exhaust pipe leading from the lower to the upper end, said exhaust having also an opening to the atmosphere, substantially as described.

4. In a pneumatic hoist, the cylinder having  
20 an imperforate upper end, an exhaust pipe leading from the lower to the upper end, said exhaust pipe having an opening to the

atmosphere, and a source of oil supply connected with said exhaust pipe between the cylinder and the opening to the atmosphere, 25 substantially as described.

5. In a pneumatic hoist, a cylinder having an imperforate upper end, a piston in the cylinder, an air supply pipe, an exhaust pipe, a pipe leading from the supply and exhaust 30 pipes into the base of the cylinder, a valve governing the two pipes, a branch pipe from the exhaust to the upper end of the cylinder, said exhaust provided with an opening to the atmosphere, and an oil cup on the branch 35 from the exhaust to the cylinder, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

GEORGE A. TRUE.

Witnesses:

W. H. CHAMBERLIN,  
FLORENCE EMBREY.