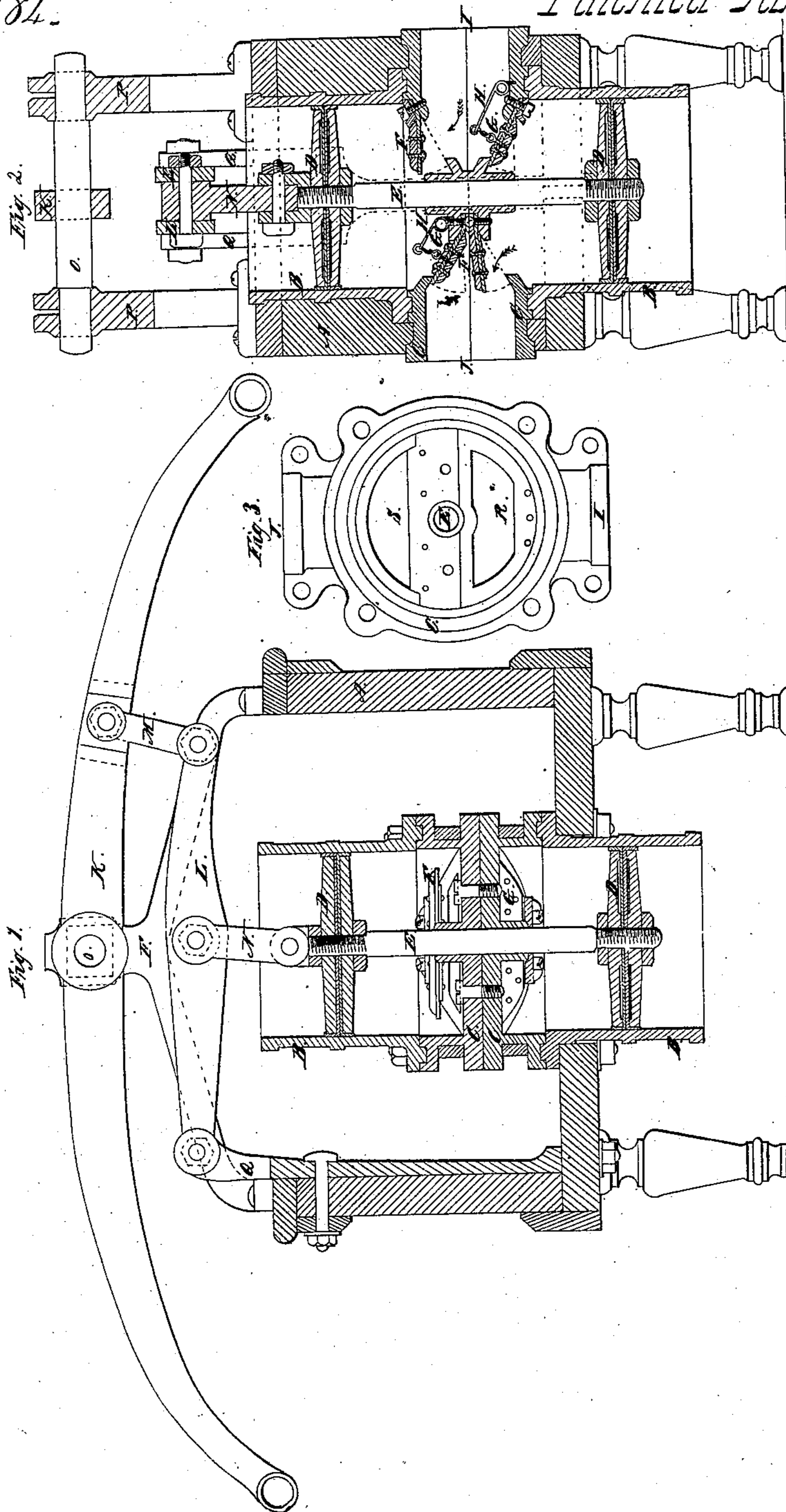


A. W. Roberts,

Fire Engine,

N^o 12,284.

Patented Jan. 23, 1855.



UNITED STATES PATENT OFFICE.

ALBERT W. ROBERTS, OF HARTFORD, CONNECTICUT.

FIRE-ENGINE.

Specification of Letters Patent No. 12,284, dated January 23, 1855.

To all whom it may concern:

Be it known that I, ALBERT W. ROBERTS, of the city of Hartford, county of Hartford, and State of Connecticut, have invented a
5 new and useful Improvement in the Construction of Fire-Engines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and letters of
10 reference marked thereon.

The nature of my invention consists in the improvement of the valves of the pump and the brakes and levers of the same.

To enable others skilled in the art to make
15 and use my invention I will proceed to describe its construction and operation.

The plan is part of a fire engine in detail.

Figure 1 is a transverse vertical section through the center of the pump, showing
20 valves also the levers and brakes; Fig. 2 a vertical section showing piston rod valves, plungers, &c.; Fig. 3 plan showing valve openings and seats.

Letter A, part of engine box; B, upper
25 and lower chamber of pump; C, bed plate or plates; D, upper and lower plunger; E, piston rod; F, valves open; G, valves shut; H, springs to retain valves to the seats; I, inlet of water; J, outlet of water; K, lever
30 brake; L, counter lever; M, connecting rod of lever and brake; N, connecting rod of lever and piston; O, rock shaft; P, rock shaft stands; Q, stationary fulcrum of lever; R, valve seats open; S, valve seats closed.

35 The box A and other parts of a fire engine I construct in the usual manner except the pumps, levers and brakes which form the basis of this improvement.

40 The pumps I construct of two cylinders open at the top and bottom, and placed vertically one over the other, connected together by a bed plate or plates G at the center. The plungers, D, one in the upper
45 cylinder and one in the lower cylinder are attached permanently to the piston rod E.

50 The four valves, F, F, G, G, are placed on the center at the meeting of the two chambers upon angularly inclined valve beds and openings S, R. Two of the valves are for injection and two for ejection, operating alternately with the rise and fall of the upper and lower plungers D, D.

55 When the plungers rise the upper plunger D, acts as a suction causing the upper valve, F, of the inlet opening, I, to open for the

admission of water to the upper chamber preparatory to being forced through opposite valve opening, G, the opposite valve, G, being closed at the same time by the action
60 of the plunger rising. At the same time the action of the rising of the lower plunger closes the lower valve G of the inlet opening, I, and opens the ejecting valve F of the outlet opening, J, and forces the water
65 through the same. When the plungers descend, the lower plunger acts as a suction to the lower valve, G, of the inlet opening I which opens to admit the water into the lower chamber preparatory to ejection by
70 lower opposite valve opening F through the outlet J, the opposite valve F being closed at the same time by the simultaneous action of the plunger descending. At the same
75 time the descending of the upper plunger closes the upper valve F of the inlet opening, I, and opens the ejecting valve, G, of the outlet opening, J, and forces the water through the same. Thus the alternate rising
80 and falling of the two plungers, keep up and cause a continual and unbroken injection through the opening I and a continual and unbroken forced current of ejection through the opening, J, having the
85 benefit and force of the propelling power of both the up and down stroke of the levers actuating upon the piston rod.

The levers of the pumps I construct of a main brake, K, and counter brakes, L, with
90 connecting rods, M, and N. The main brake K works upon a rock shaft, O, in the center and is connected by a joint at a proper distance to the counter brakes, L, by the connecting rod, M. The counter brakes are
95 supported at one end by the stationary fulcrum, Q, and work upon the center bearing joint of the connecting rod, N, which connecting rod, N, is attached to the piston rod, E, by a movable joint.

100 The advantages of the improved arrangement of this compound brake and lever over the usual fire engine brake, are the confining the power of the purchase to the center of the engine, and giving extra power and
105 purchase in operation, with a less vibrating distance to the brake arms up and down, and giving the operators the benefit of a shorter and quicker movement with equal power and less fatigue to the men. The
110 valve arrangement is also very beneficial by concentrating the whole body of the water

to the center and ejecting the same through a single enlarged opening, also avoiding considerable friction when operating.

I do not claim the brakes and levers as
5 a new invention; neither do I claim the valves or cylinders as new.

What I claim as my invention and desire to secure by Letters Patent, is—

1. The arrangement of the valves of
10 pumps for fire engines and other purposes

in the manner, substantially as herein set forth and described.

2. Also the arrangement of the compound brake and levers, substantially as herein set forth and described.

ALBERT W. ROBERTS.

Witnesses:

WM. VINE,
WATERMAN ROBERTS.