

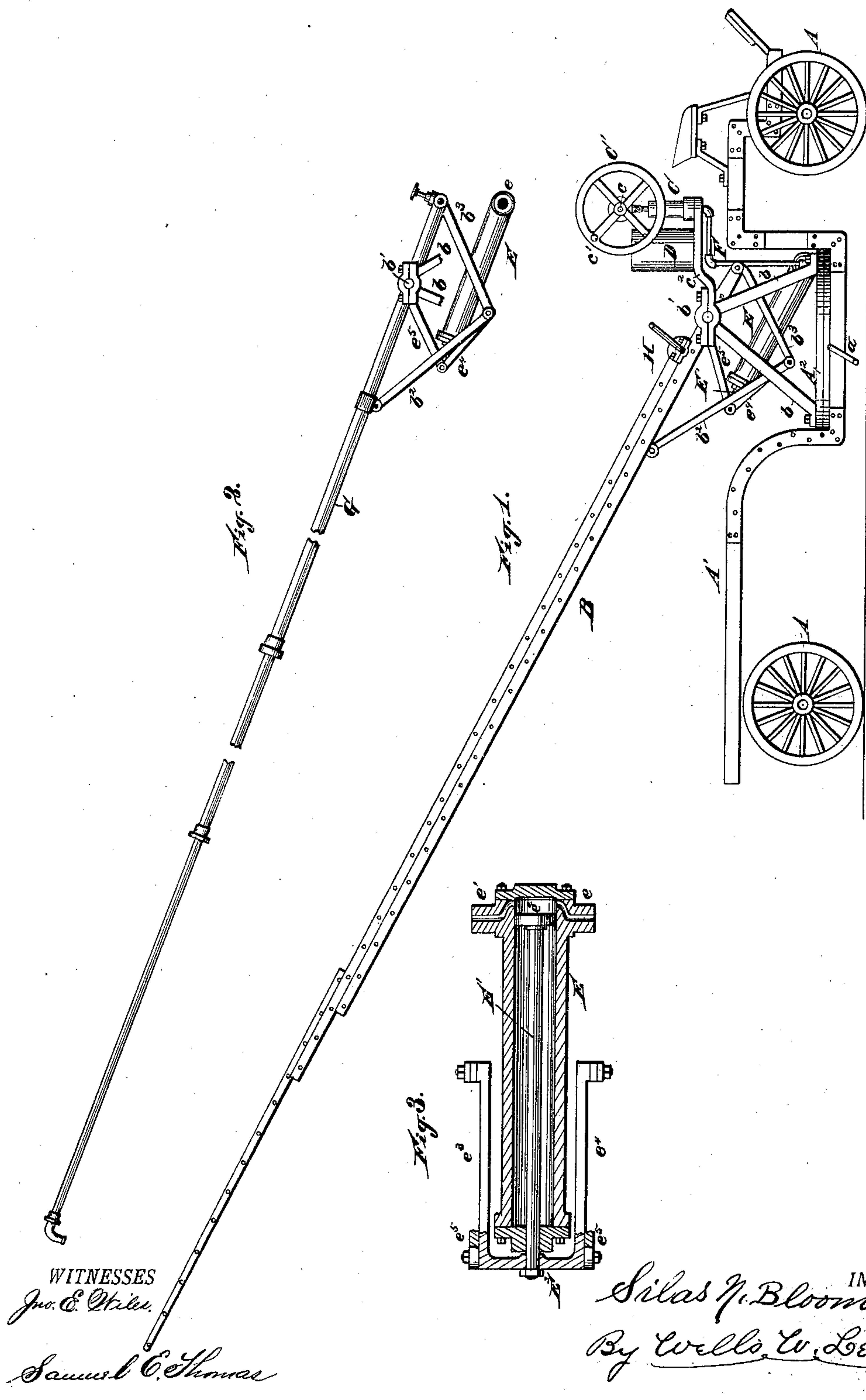
(No Model.)

S. N. BLOOM.

MECHANISM FOR RAISING LADDERS, PIPES, &c.

No. 323,264.

Patented July 28, 1885.



UNITED STATES PATENT OFFICE.

SILAS N. BLOOM, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF TO
JAMES BATTLE, OF SAME PLACE.

MECHANISM FOR RAISING LADDERS, PIPES, &c.

SPECIFICATION forming part of Letters Patent No. 323,264, dated July 28, 1885.

Application filed May 6, 1885. (No model.)

To all whom it may concern:

Be it known that I, SILAS N. BLOOM, of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Mechanism for Raising Ladders, Pipes, &c.; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improved mechanism for raising ladders and other structures from a horizontal to an upright position, and is designed more especially for the purpose of raising firemen's ladders, water-pipes, &c., from a horizontal to a vertical position, although the mechanism is equally adapted for raising ladders of any description, and may be applied to painters' ladders and for analogous uses, all of which are definitely considered as coming within the scope of my invention. The drawings, however, illustrate the invention as applied to firemen's ladders and water-pipes as ordinarily arranged or located upon a truck for transportation.

My invention consists in the combination of devices, hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of a fireman's ladder and truck embodying my invention. Fig. 2 illustrates a modification. Fig. 3 is a separate view in section.

I carry out my invention as follows:

A represents the trucks; A', the platform provided with a rotatable table or bed, A², which may be rotated by any ordinary mechanism—as, for instance, by a worm-gear or pinion upon the end of the crank-shaft *a*. B represents a ladder which may be made extensible in the usual way, said ladder journaled toward its base upon suitable supports, *b*, as shown at *b'*. These parts may be constructed and arranged in any suitable manner.

C is a forcing-pump of any suitable construction. I prefer to connect its piston eccentrically to a shaft, *c*, provided with a balance-wheel, C', and operating-handles *c'*; but I do not limit myself to any particular kind

of pump, or to any particular way of operating it. The pump is preferably located upon the bed A². In the drawings it is shown as supported upon an arm or table, C², engaged with the supports *b*, so as to rotate with the foot of the ladder.

D is a tank for supplying water to the pump.

E is a cylinder, preferably mounted upon trunnions *e e'* at its base, said trunnions communicating with the pump by means of a connecting-pipe, F.

E' is the piston-rod of said cylinder; E², its piston-head. The piston-rod may be connected with the ladder in various and suitable ways for elevating it from a horizontal to an upright position as the piston is forced outward.

I would have it distinctly understood that I do not limit myself to any particular way of connecting the piston-rod with the ladder to accomplish this purpose, as I regard any means of connection as coming within the scope of my invention. I deem it advisable, however, to provide a ladder with angular braces, *b² b³*, rigidly engaged therewith and with each other, as illustrated in the drawings, and to connect the piston-rod with a yoke, E², provided with arms *e³ e⁴* journaled in the angular braces *b² b³*, the ladder being provided with two sets of said braces, one upon each side.

e⁵ represents one or more bars, journaled at one end to the shaft *b'*, with which the foot of the ladder is engaged, and at its opposite end journaled also upon the yoke E².

The operation of the device will now be understood. Power being applied to the pump, water is forced through the pipe F into the base of the cylinder E, which forces outward the piston and arms *e³ e⁴* and bar *e⁵*, which operate as a compound lever, the bar *e⁵* closing toward the arms *e³ e⁴* as the piston-rod is forced outward, the latter being raised thereby from its horizontal position upon the platform of the truck to a required upright position.

A single pump or a series of pumps may be employed to force the water into the cylinder. The pump may be driven by hand or by power.

It is evident that by regulating the escape of the water from the cylinder the ladder may be lowered upon the truck-platform. By constructing the cylinder E with its piston of
5 suitable dimensions it is evident from the well-known principles of hydraulics that a very powerful pressure may be exerted thereby to raise the ladder, and that therefore a force can ordinarily be applied to the pump
10 which shall be able to communicate a pressure to the ladder sufficient to raise a weight equal to several tons at the outer end of the ladder, as before stated.

I do not limit myself to the application of
15 hydraulic power for the raising of ladders alone, as the same mechanism is equally applicable for raising water-pipes from a horizontal to an upright position, as illustrated in Fig. 2, in which case the pipes G are jour-
20 naled toward their base upon the shaft b' upon supports b , and the braces b^2 b^3 engaged with the pipe in a manner similar to that already described and illustrated in Fig. 1 in connection with the ladder.

25 When raised, the ladders or pipes may be extended in any ordinary manner—as, for instance, by means of a windlass, H—the extension of the ladders or pipes after being raised from a horizontal to a vertical position forming no feature of my invention.
30

This device is simple, may be easily applied and operated.

It is obvious that it is immaterial what fluid is used to operate the piston E'. In cold sea-
35 sons when water would be liable to freeze, alcohol, gasoline, or any other suitable fluid may be used.

Any means desired may be used for lowering the ladder. It will be seen that by mount-
40 ing the cylinder E upon trunnions engaged with the rotatable bed the cylinder occupies the same position relative to the ladder or pipes, and may have also an oscillatory motion upon its trunnions as the ladder is being
45 raised or lowered.

I would have it understood that I do not limit myself to any particular construction of the piston in the cylinder E, as various con-

structions may be employed without departing from the principle of my invention. 50

What I claim is—

1. The combination of a supporting-frame, a horizontally-rotating table or bed thereon, a ladder or pipe pivotally supported on the table or bed, a cylinder, and a piston in the
55 cylinder actuated by fluid-pressure and connected with the ladder or pipe, substantially as and for the purpose described.

2. The combination of a supporting-frame, a rotating table thereon, a ladder or pipe pivotally supported on the table, a cylinder jour-
60 naled on said table, and a piston in the cylinder actuated by fluid-pressure and connected with the ladder or pipe, substantially as and for the purpose described. 65

3. The combination of a supporting-frame, a rotating table thereon, a pivoted ladder or pipe, a cylinder having a piston connected with the ladder or pipe, and a pump connected with the cylinder, the ladder or pipe,
70 the cylinder, and the pump, being all supported by and moving with the rotating table, substantially as and for the purpose described.

4. The combination, with a ladder or pipe, of a cylinder provided with a piston actuated
75 by fluid-pressure, said piston engaged with said ladder or pipe by intervening compound levers to raise the ladder or pipe from a horizontal to an upright position, substantially as described. 80

5. The combination, with a ladder or pipe having a pivotal engagement toward its base and provided with braces b^3 b^4 , of a cylinder provided with a piston actuated by fluid-
85 pressure, said piston provided with a yoke pivotally engaged with said braces, and a bar, e^5 , pivotally engaged with said yoke and with the axle of the ladder, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses. 90

SILAS N. BLOOM.

Witnesses:

N. S. WRIGHT,
M. B. O'DOHERTY.