

S. VAN EMON.

Hydrostatic Hoisting Machine.

No. 134,019.

Patented Dec. 17, 1872.

Fig. 1

Fig. 2

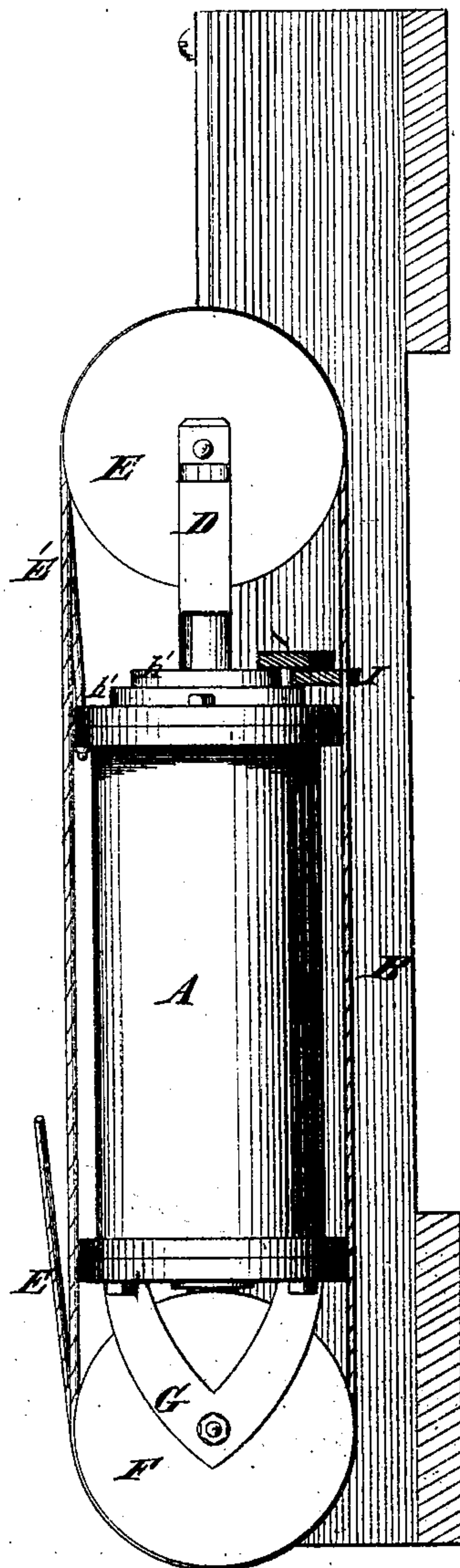
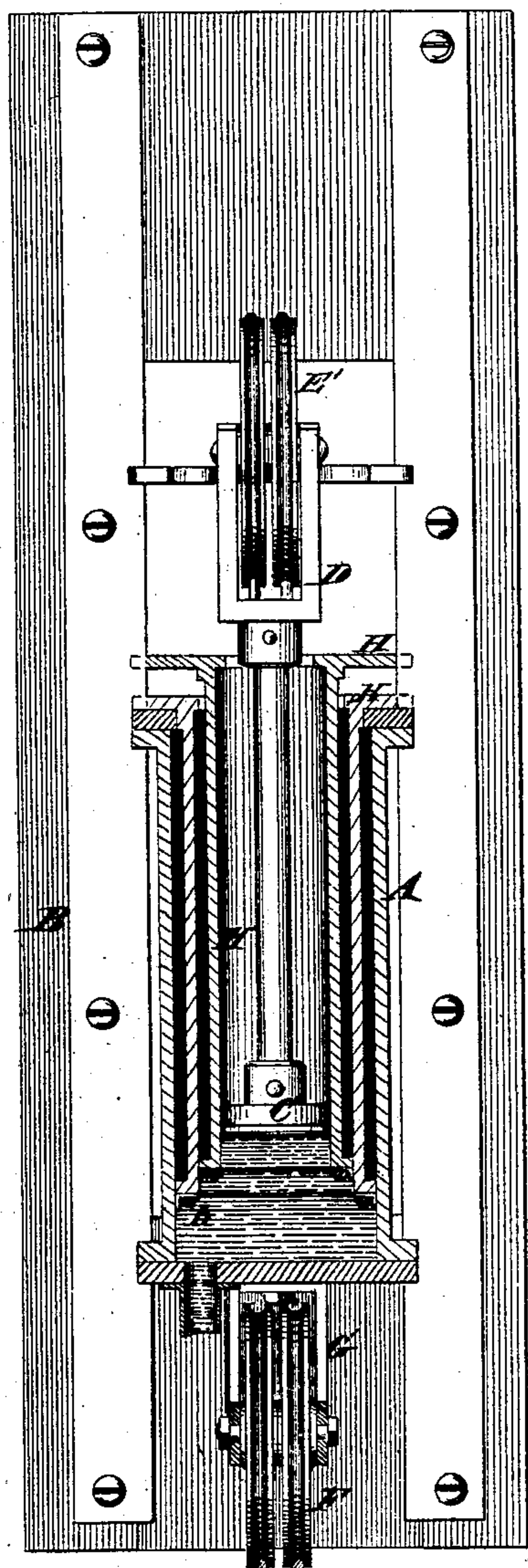
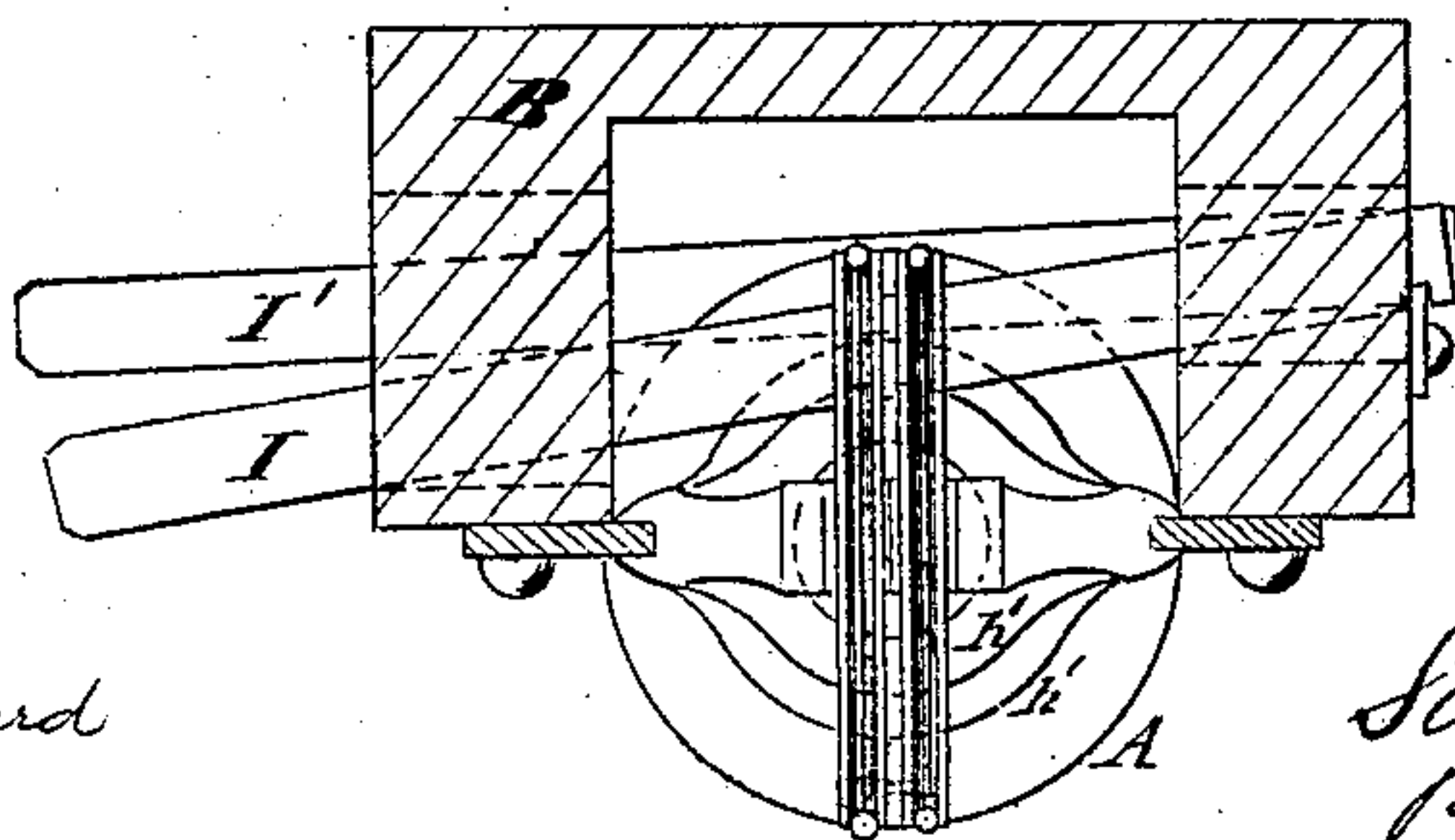


Fig. 3



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UNITED STATES PATENT OFFICE.

SAMUEL VAN EMON, OF CINCINNATI, OHIO.

IMPROVEMENT IN HYDROSTATIC HOISTING-MACHINES.

Specification forming part of Letters Patent No. 134,019, dated December 17, 1872.

To all whom it may concern:

Be it known that I, SAMUEL VAN EMON, of Cincinnati, Hamilton county, Ohio, have invented a certain new and useful Improvement in Hydrostatic Hoisting-Machines, Cranes, or Hydraulic Presses, of which the following is a specification:

Nature and Objects of the Invention.

My invention consists, in the first part, in the employment, with the hoisting-rope of an elevator and localized and movable pulleys, of a series of pistons within a cylinder, the central one being a solid circular head, operating within an annular piston, which in its turn operates either within a stationary cylinder or within the next annular piston of the series used, the last of the series operating immediately within the stationary outer cylinder; the purpose of my invention being to permit the use of one, two, or more pistons to raise the load, so as to adapt the means to the end; or, in other words, to adapt the size of the piston or area thereof to the weight of the load, and to avoid using a large cylinder full of water to raise a load which can be as efficiently raised by the expenditure of a small cylinder full. My invention relates, in the second part, to a device for securing the pistons which are not brought into service, admitting only the one or more needed to move and raise the load, the pistons not required being retained within the outer cylinder by this device for securing them.

Description of the Accompanying Drawing.

Figure 1 is a plan, in section, of a water-elevator embodying my invention. Fig. 2 is a side elevation of the same, and Fig. 3 a cross-section.

General Description.

A is the outer or stationary cylinder, bolted to the customary bed B. C is the solid circular interior piston, connected to the cross-head D, which serves as a bearing for one or more sheaves, E, the rope E' of which connects at one end to the cylinder A or other stationary object, and after passing over the sheaves F on a stationary bearing, G, connects with the hoisting-platform in such a way that a slight movement of the piston or pistons will cause the platform to move through a much greater distance. Between the piston C and the outer cylinder A I introduce one or more annular pistons, H, which are bored interiorly to form a cylinder for the interior piston to move in,

and are provided with packing h at the inner ends to fit the interior of the outer pistons H or the outer cylinder A. The exterior end of each annular piston H is provided with an outwardly-projecting flange, h', and the one in which the solid piston C is fitted acts, when not fastened down, upon the cross-head D or upon the rod of the solid piston. The effective piston-area is regulated by means of the tubular pistons H, which are so arranged that they may either play in conjunction with the solid piston or remain stationary in the cylinder.

For each tubular piston a separate locking device is provided, and I prefer to employ the following means for this purpose: The flanges h' of the pistons H are of unequal sizes, so as to enable the lever I or I' to be brought into such a position (see Fig. 3) that it will stop the piston H to which it belongs, and let the piston C alone move to raise a light load on the platform, or allow the piston C and one of the pistons H to move together to raise a heavier load, the piston H giving a greater area of effective pressure-surface. Both levers I I' can be lowered, and all the pistons C H H be permitted to move together to give sufficient area to raise the heaviest load on the platform. Thus the area of the piston-surface on which the water acts can be made to correspond nearly to the work required to be done, and only so much water is used as the work requires. The cylinder A is fed with water in the ordinary way, and the water is discharged through a suitable valve-governed aperture to permit the platform to descend.

Claim.

The hoisting-rope E', localized pulleys F, and movable pulleys E, in combination with the cylinder A, solid piston C D, and tubular pistons H, the latter being constructed with flanges h' and arranged, in connection with the locking devices, substantially as described, so that they may either remain inactive or be caused to act in conjunction with the solid piston, in the manner and for the purposes specified.

In testimony of which invention I hereunto set my hand.

SAMUEL VAN EMON.

Witnesses:

FRANK MILLWARD,
J. L. WARTMANN.