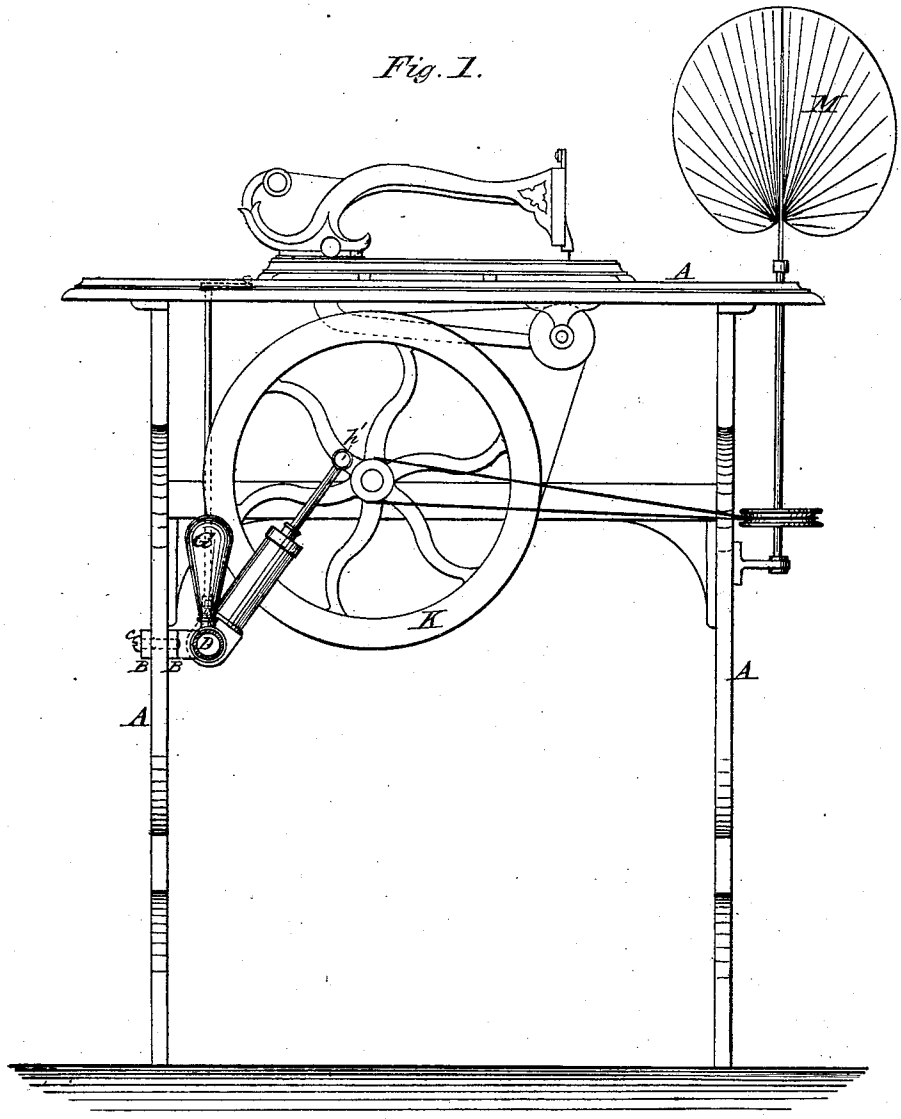
4 Sheets--Sheet 1

JAMES H. WELCH & ROSIA W. WELCH.

Hydraulic and Pneumatic Motors for Sewing Machines.

No. 121,441. Patented Nov. 28, 1871.

Fig. 1.



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4 Sheets--Sheet 2.

JAMES H. WELCH & ROSIA W. WELCH.

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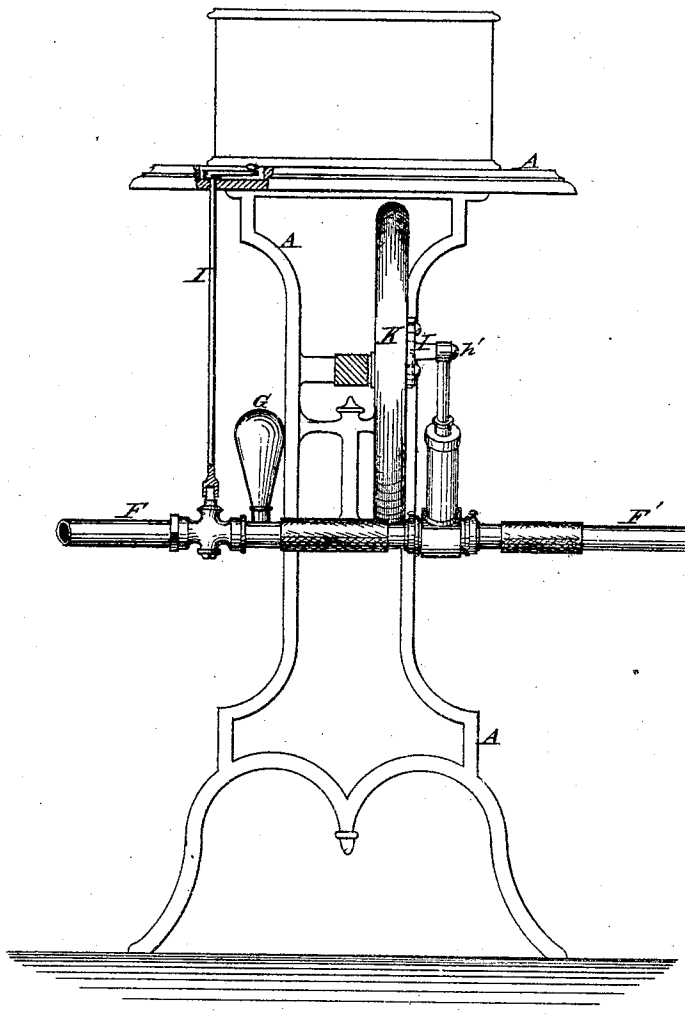
Fig. 2.



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4 Sheets--Sheet 3.

JAMES H. WELCH & ROSIA W. WELCH.

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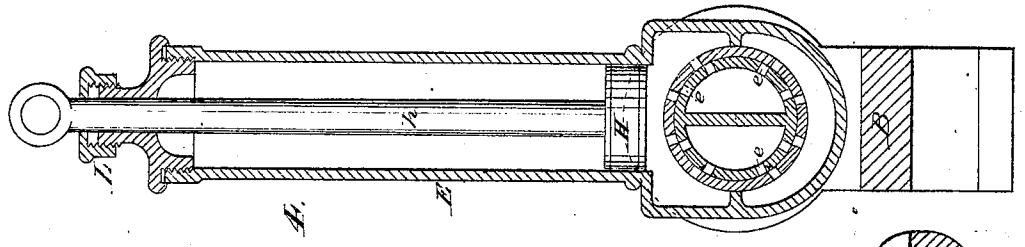

Fig. 4.

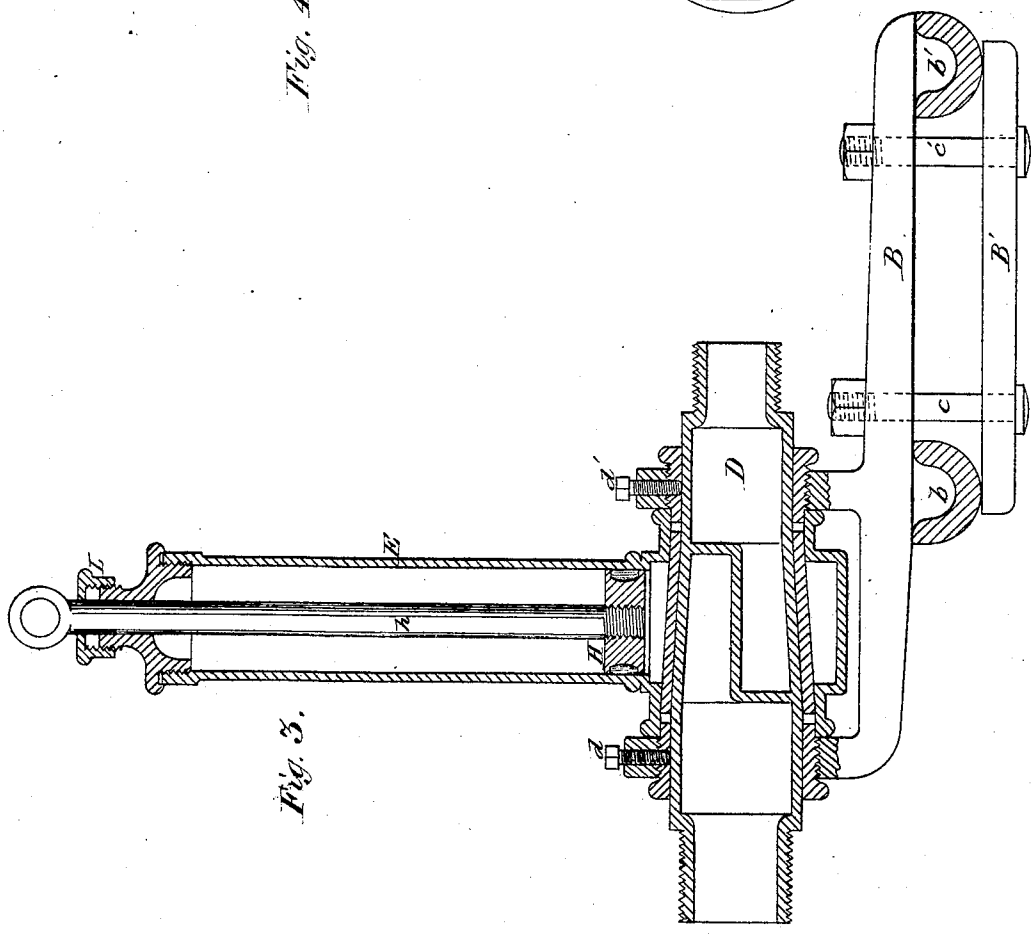

Fig. 5.

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4 Sheets--Sheet 4.

JAMES H. WELCH & ROSIA W. WELCH.

Hydraulic and Pneumatic Motors for Sewing Machines.

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Fig. 5.

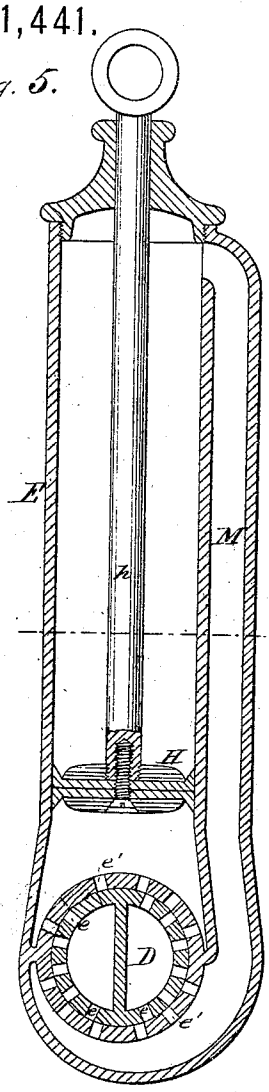


Fig. 6.

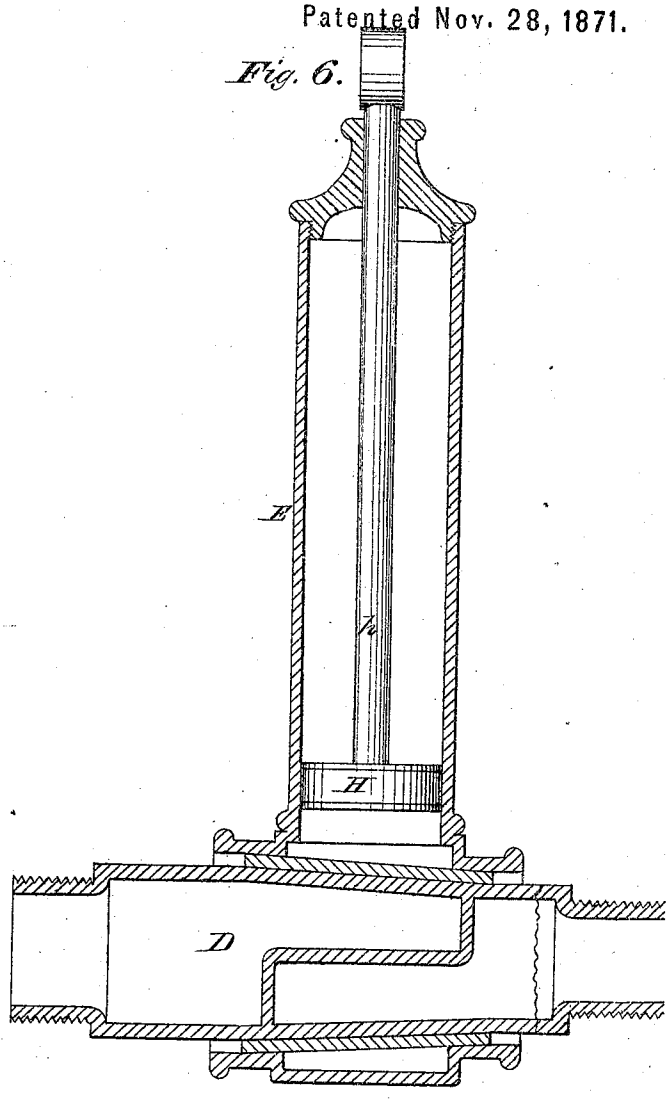
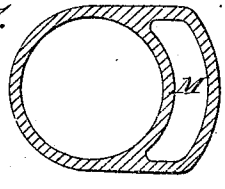


Fig. 7.



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Reissued April 23, 1872.

UNITED STATES PATENT OFFICE.

JAMES HAMPTON WELCH AND ROSIA WASHINGTON WELCH, OF GEORGETOWN, DISTRICT OF COLUMBIA.

IMPROVEMENT IN HYDRAULIC AND PNEUMATIC MOTORS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 121,441, dated November 28, 1871.

To all whom it may concern:

Be it known that we, JAMES HAMPTON WELCH and ROSIA WASHINGTON WELCH, both of Georgetown, District of Columbia, have invented a new and useful Hydraulic and Atmospheric Motive Power for Sewing and other Machinery, such as paint, drug, coffee, and mixing-mills, knitting machinery, organs, &c.; and we hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing which represents a sewing-machine of the Grover & Baker manufacture, to which our motor is applied.

Figure 1 is a side elevation of a sewing-machine with our invention attached. Fig. 2 is an end view of the same. Figs. 3, 4, 5, 6, and 7 are detail sectional views of the same.

The objects of our invention are to produce a compact and cheap but effective and powerful mechanism which can be readily applied to any sewing-machine or other machine of ordinary or suitable construction, to wit: Machinery for knitting; for grinding and mixing drugs, paints, oils, coffee, &c.; for blowing organs and melodeons, &c. The nature of our invention consists of a double-acting, open-ended, conically-tapering and circumferentially-perforated balanced valve, oscillating on fixed trunnions, in combination with a sewing-machine for operating the same, substantially as hereinafter described. It further consists in combining a brake with the foregoing mechanism for instantly arresting or for retarding the operation of the machine, as presently described.

The trunnions may be made solid instead of hollow, and grooved on their circumference.

In the drawing, A represents the frame of a sewing-machine, to the legs of which are bolted or otherwise secured suitable bearings B, shown in two parts, best seen in Fig. 3, where the legs are represented in sections *b b'*, and the bearings are secured by the bolts *c c'*. The hydrostatic or water-engine is secured to the bearings B B', through the sides of which the set-screws *d d'* pass, which securely hold the trunnion D, around and upon which the cylinder E oscillates. The trunnion D is provided with a number of ports, *e e*, best shown in Figs. 4 and 5, for the admission and discharge of the water which enters through the pipe F, that may be attached to a cistern or hydrant by a flexible tube, and discharged at the opposite end F'. The flow to or from the engine can be controlled by the operator by a suitable cock and a handle, I, and thereby more or less pressure obtained, forming an effectual brake. An air-vessel, G, is placed close to the engine to make the flow of water or air steady. A piston, H, and piston-rod *h* are connected to a suitable pin, *h'*, on a bracket, J, which is secured to the fly or balance-wheel K, and may be adjusted thereon to make a longer or shorter stroke of the piston. The piston may be packed with any suitable packing so as to fit closely. The cylinder may also be provided with a stuffing-box, L, for the piston-rod. If preferred, the engine may be made double-acting by having the side pipe M and a suitable partition in the trunnion. If it is desired to use these motors in a factory a main pipe may be arranged with branch pipes for each sewing-machine.

The great advantages of our motor are great simplicity in construction and of course moderate cost; it is not dangerous, as steam would be, and also less expensive, doing away altogether with boiler and fuel; it is more reliable than electricity, springs, weights, and levers, and not liable to get out of order.

The plug or trunnion D, by its tapering form, is made adjustable, thereby making up for the wear.

In summer fans M may be attached and operated by a pulley and cross-belt, as shown in Fig. 1.

Having now described our invention, what we claim, and desire to secure by Letters Patent, is—

The oscillating engine E having stationary trunnion D, constructed substantially as described.

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(167)