

W. A. GREENLEAF.

Improvement in Motors for Sewing-Machines.

No. 128,615.

Patented July 2, 1872.

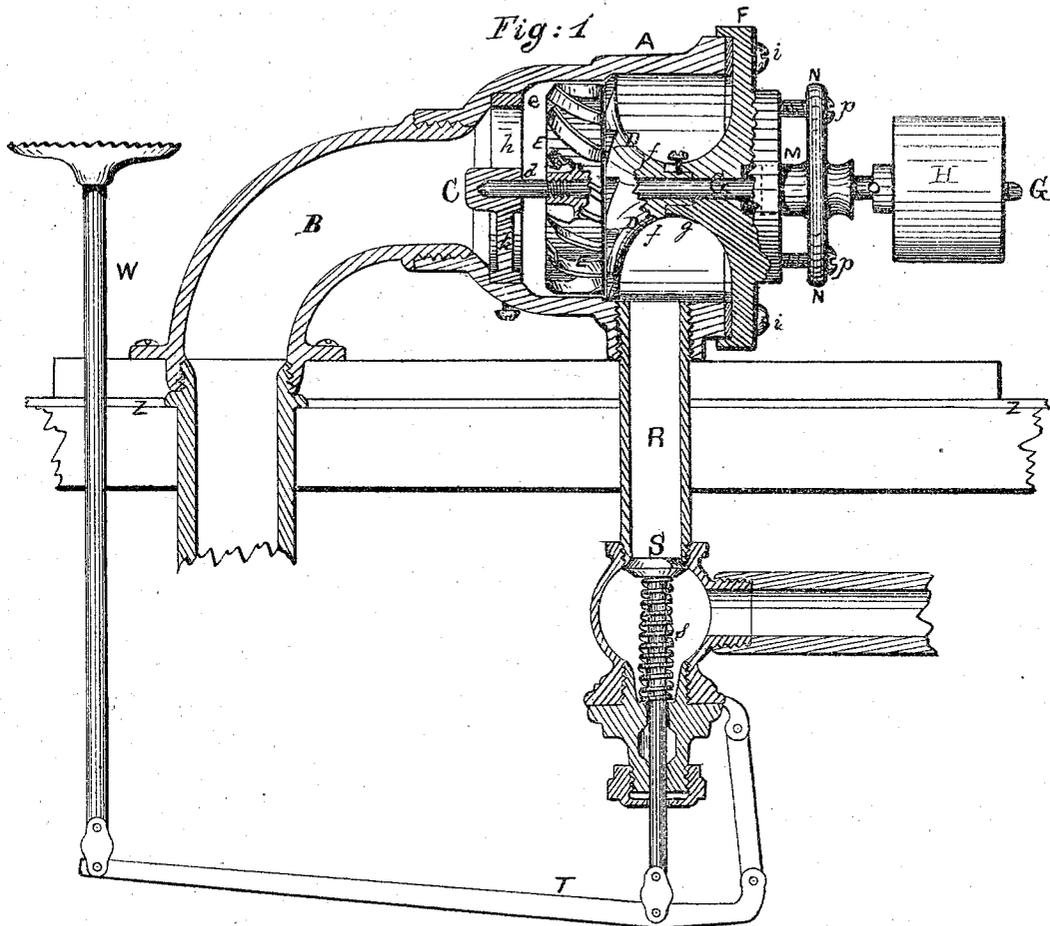
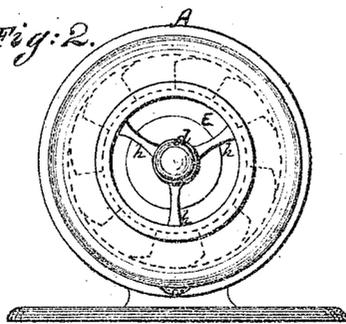


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM A. GREENLEAF, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF HIS RIGHT TO L. M. PHIPPS, OF SAME PLACE.

IMPROVEMENT IN MOTORS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 128,615, dated July 2, 1872.

SPECIFICATION.

I, WILLIAM A. GREENLEAF, of Indianapolis, in the county of Marion and State of Indiana, have invented an Improved Hydraulic Motor for Sewing-Machines, Organs, and Lathes, and for other light work, of which the following is a specification:

My invention relates to the combination of a spring-actuated valve with the supply-pipe of a hydraulic motor, constructed as hereinafter described, and with a lever to be actuated by the operator's foot, to open and close the valve.

In the accompanying drawing, Figure 1 is a vertical central section of the motor and its valve; and Fig. 2 an elevation of the discharge-end of the motor with the waste-pipe detached, the size and position of the wings or buckets of the wheel being illustrated by dotted lines.

A is the outer shell or casing of my improved motor, contracted at one end to receive the waste-pipe B, and turned interiorly to form seats for the step-iron and the port-plate of the apparatus. C is the step-iron, consisting of a small block, *d*, confined centrally with an outer ring, *e*, by means of radial arms *h*. A central recess is formed on the inner side of the block *d* to form a bearing for the inner end of the spindle carrying the wheel and pulley of the apparatus. The ring *e* fits closely into an annular seat formed to receive it within the casing A at the discharge-end thereof, as shown in Fig. 1. D is the port-plate, consisting of a circular casting made to fit closely against an annular offset or shoulder formed within the casing A at such a distance from the seat of the step-iron C as to leave sufficient space between them for the water-wheel E. This port-plate is pierced around its rim with radial ports so inclined as to direct the water passing through them against the curved wings of the wheel at a right angle, or nearly so, to their faces, as in the most approved forms of turbines. The total area of these open ports is so proportioned with reference to the area of the supply-pipe, as that the latter shall be much greater than the former, so that the water shall be projected through the ports with the full force due to the maximum of pressure in the supply-pipe. The central portion of this port-plate projects far enough to form a neck or pillar, *f*, the end of which fits into a recess in

the end of a central projection or neck, *g*, on the cap-plate F of the casing, the projection or necks *f* and *g* being so proportioned as that when the cap-plate is secured upon the open end of the casing, as shown in Fig. 1, the port-plate will be pressed down firmly and confined thereby against its seat within the casing. A revolution of the port-plate when thus confined is prevented by a simple stop or screw, *k*, in the neck of said plate, engaging a slot in the neck of the cap-plate. F is the cap-plate, covering the casing and secured over or upon the wide open end thereof, either by screwing thereon or therein, or by means of a series of screws, *i i*, as illustrated in the drawing. The joint between the cap F and casing A is packed with a gasket of rubber or other suitable material to make it perfectly water-tight. G is a spindle, passing and working freely through a central aperture pierced through the port and cap-plates and their connecting-necks, as illustrated in Fig. 1. The inner end of this spindle is pivoted in the step-block *d*, and its outer end, projecting through the cap-plate, is fitted with a suitable pulley, H. E is the water-wheel, screwed upon the spindle or otherwise secured so that when the end thereof is pivoted in the step-block *d* the wheel will bear closely against the face of the port-plate confined within the casing, as shown in Fig. 1. The buckets or wings of the wheel are placed at such an angle with reference to the inclination of the ports as that the water discharged from the latter shall strike them at a right angle, or nearly so, and they may be of any approved form or curvature to obtain the largest possible percentage of power. M is follower or gland working upon the spindle G into an annular recess or stuffing-box formed in the cap-plate F, and containing packing material. This follower is provided with a flange, N, to receive set-screws *p p*, whereby the follower M is forced, more or less, into the stuffing-box to properly pack the joint of the spindle in the customary manner, and thus prevent any leakage of water thereat. R is a water-supply pipe screwing into the casing A between the port-plate and cap so as to deliver the water under pressure into the chamber between the two. S is a valve placed in the supply-pipe and closed automatically by the pressure thereon of a spring, *s*. The stem

or said valve projects through a suitable stuffing-box, and is pivoted to a lever, T, to be operated by an arm, W, by the operator's foot or hand.

In Fig. 1 the motor is illustrated as secured upon a suitable base-plate, y, which is screwed down upon the floor of an apartment over the carpet Z.

The supply and waste pipes are carried through the floor and the valve of the supply-pipe is arranged under the floor, the arm W of its actuating-lever being carried up so as to project above the floor, as shown in the drawing.

The apparatus thus constructed occupies very little space, and is under complete control of the operator by means of simple pressure upon the valve-arm W. The machine to be driven needs only to be placed over it and

connected therewith by a band from the pulley. In some cases it may be found expedient to provide a bearing for the outer end of the spindle outside of the pulley to steady it.

I claim as my invention—

In combination with a hydraulic motor, constructed, substantially as herein described, with an outer casing, A, detachable port-plate D, cap-plate F, wheel E, and spindle G, a spring-actuated valve, S, placed in the supply-pipe of the apparatus to be operated by a lever, T, and arm W, for the purpose of regulating and controlling said motor, substantially as herein set forth.

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Witnesses:

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