(No Model.)

2 Sheets—Sheet 1.

B. J. C. HOWE.

FIRE ENGINE.

No. 262,196

Patented Aug. 1, 1882.

Fig. 1.

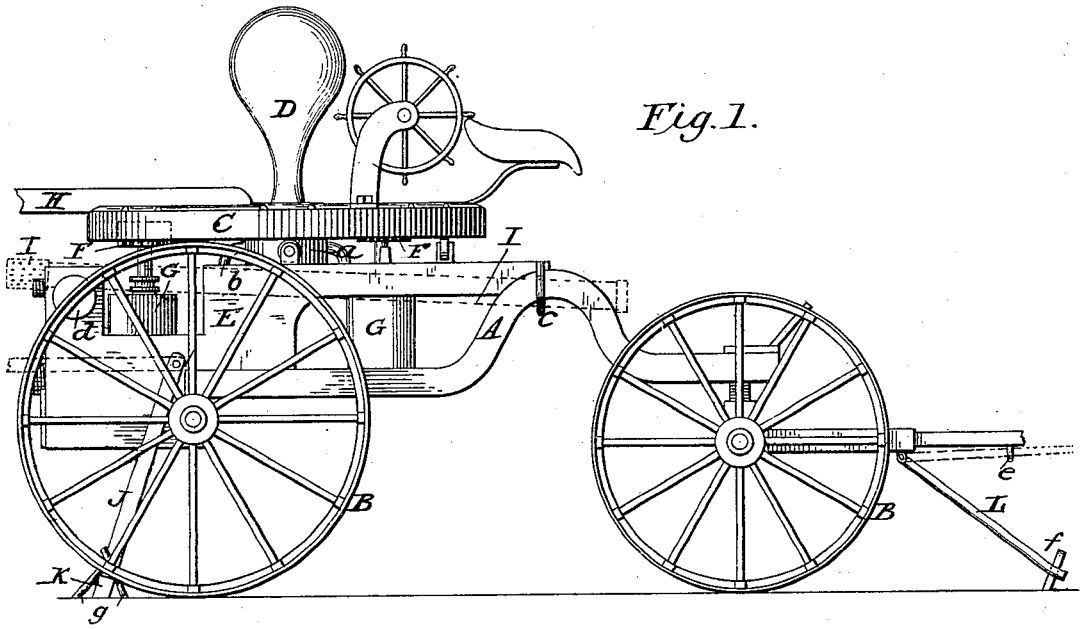
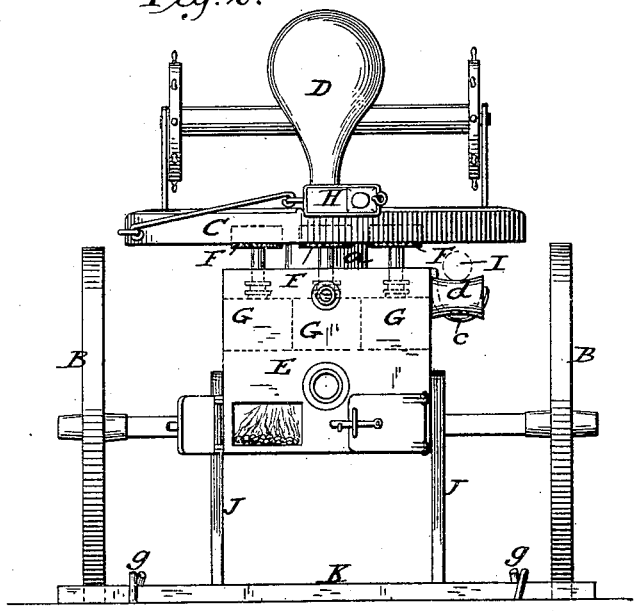


Fig. 2.



Attest.

Sidney P. Noelingsworth

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(No Model.) 2 Sheets—Sheet 2.

B. J. C. HOWE.

FIRE ENGINE.

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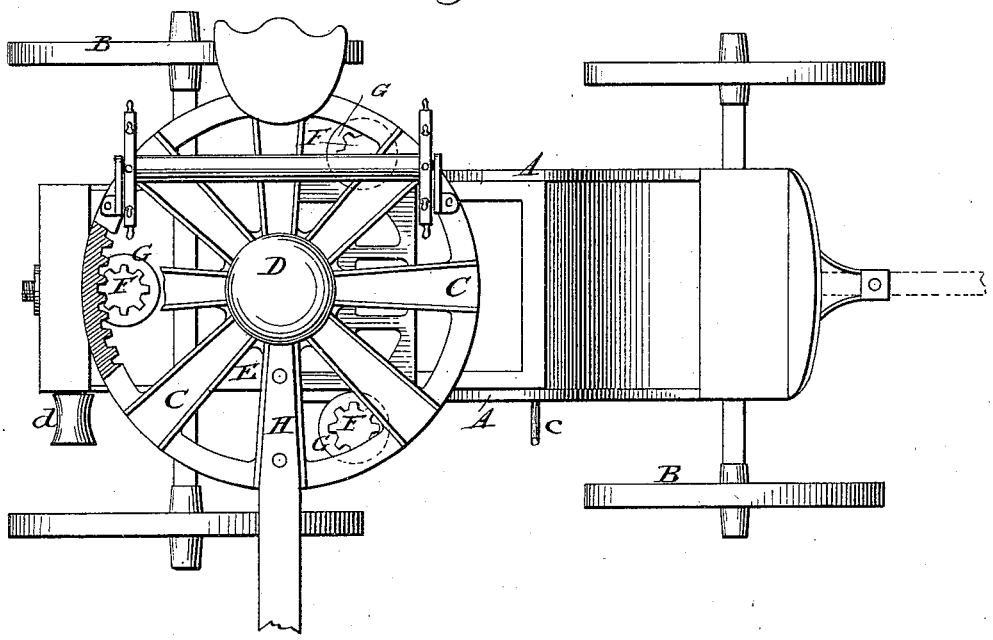
Fig. 3.



Attest.

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UNITED STATES PATENT OFFICE.

BENJAMIN J. C. HOWE, OF SYRACUSE, ASSIGNOR TO THE REMINGTON AGRICULTURAL COMPANY, OF ILION, NEW YORK.

FIRE-ENGINE.

SPECIFICATION forming part of Letters Patent No. 262,196, dated August 1, 1882.

Application filed April 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN J. C. HOWE, of Syracuse, in the county of Onondaga and State of New York, have invented certain Improvements in Fire-Engines, of which the following is a specification.

My invention relates to improvements on the fire-engine for which Letters Patent were issued to me, bearing date July 12, 1881, and numbered 244,131; and the invention consists in the substitution of rotary pumps for the reciprocating pumps formerly used, and in certain modifications of the engine to adapt it to the change mentioned.

In the drawings representing my improvements, Figure 1 is a side elevation, and Fig. 2 and end view, looking from the rear. Fig. 3 is a top plan-view, showing the relative position of the pumps and the drive-wheel.

The object of this invention is to render the action of the engine more steady and regular than heretofore, to distribute the strain equally on all sides of the post or axle of the driving-wheel, and to render the engine compact without placing the pumps in positions where they will be difficult of access.

With these objects in view I construct my improved engine as shown in the drawings, in which A represents the frame, preferably made of metal, and mounted upon wheel B. At the top of the frame is a horizontal internally-toothed driving-gear, C, rotating about a tubular post or axle, *a*, upon the top of which is an air-chamber, D, connected by the tubular post *a* and a pipe, *b*, with the water chest or chamber E, into which the several pumps discharge their water.

F represents a pinion, a series of which are arranged at equal distances from one another about the post *a*, and caused to mesh with the gear-wheel C. Each pinion is secured rigidly upon the shaft of a rotary pump, G, which thus receives motion direct and without the intervention of any mechanism whatever. In this way I avoid loss from indirectness of application of the power, and also the friction attending the use of numerous intermediate parts. The motion being a continuous one, there is no vibration or jumping of the engine so objectionable in reciprocating-pump engines, and the wear of the hose and supply-pipe caused by the movement of the engine rubbing said hose and pipe back and forth on the ground is avoided. It will also be seen that under this arrangement the strain upon the post or axle *a* is on all sides alike. Hence there is no tendency to tip or twist said post out of its true vertical position, nor is there any tendency of the wheel C to rock or tip in rotating.

While I prefer to arrange the pumps at equal distances apart around the center post, I do not limit myself to that arrangement, as in some cases it may be found desirable to group the pumps at the rear to bring their weight directly over the axle.

The engine thus constructed is light, compact, and serviceable, and the rotary pumps are peculiarly adapted to this style of engine, in which a constant motion in one direction is produced by the driving-power in the first instance.

The gear-wheel C is furnished with a sweep or operating-lever, H, as in my former patent, and is further provided with means for warming the water pumped, and other improvements, which, however, constitute the subject-matter of a separate application of even date herewith.

In order that the suction-pipe I may be conveniently passed beneath the driving-wheel C to its supporting arm or bracket *c*, a roller, *d*, is applied to the side of the engine or frame at the rear, over which the pipe can be shoved lengthwise to its place, the forward end being sustained by the hook or bracket and the rear end by the roller, as indicated.

To prevent the engine from moving or tipping while in action, I pivot to the sides of the frame, directly over the rear axle, braces or bars J, carrying at their outer ends a cross-bar, K, which serves as a chock for the rear wheels when lowered, as in Fig. 1, and may be secured by stakes or pegs *g* to prevent the forward movement of the engine. To still further steady the engine, I attach to the under side of the hounds of the front axle a rod or bar, L, perforated at its outer end to receive a stake or peg, *f*, when lowered, as in Fig. 1, said rod or bar being held up by a staple, *e*,

on the lower side of the tongue, as shown in dotted lines, when the engine is not in operation.

Having thus described my invention, what I claim is—

1. In a horse-power fire-engine, the combination of a horizontal rotary driving gear-wheel provided with a sweep or lever, a rotary pump, and a pinion secured to the pump-shaft and meshing directly with the driving-gear, whereby all intermediate mechanism between the driving gear-wheel and the pump is dispensed with.

2. The combination, substantially as herein described, of a horizontal driving gear-wheel and a series of rotary pumps arranged concentrically about the supporting post or axle of said wheel, and adapted to be directly driven thereby, as explained, whereby the post is relieved of unequal side strain.

3. The herein-described fire-engine, consisting of frame A, wheels B, driving-wheel C, mounted upon the top of the frame, rotary pumps G, located beneath the driving-wheel, and pinions F, secured upon the pump-shafts and meshing with wheel C, as shown.

4. In a fire-engine, the combination of a support or bracket, *c*, at the forward part of the engine, and a roller, *d*, at the rear part thereof, whereby the suction-pipe can be passed longitudinally to place upon said bracket and rollers, as explained.

5. In combination with the frame A, mounted on wheels, the pivoted arms J, having the cross-bar K secured thereto, the arms J being of such length and so pivoted in relation to the wheels as to cause said cross-bar to rest upon the ground and against the wheels when lowered, substantially as and for the purpose set forth.

BENJAMIN J. C. HOWE.

Witnesses:
WALTER S. DODGE,
WILLIAM W. DODGE.