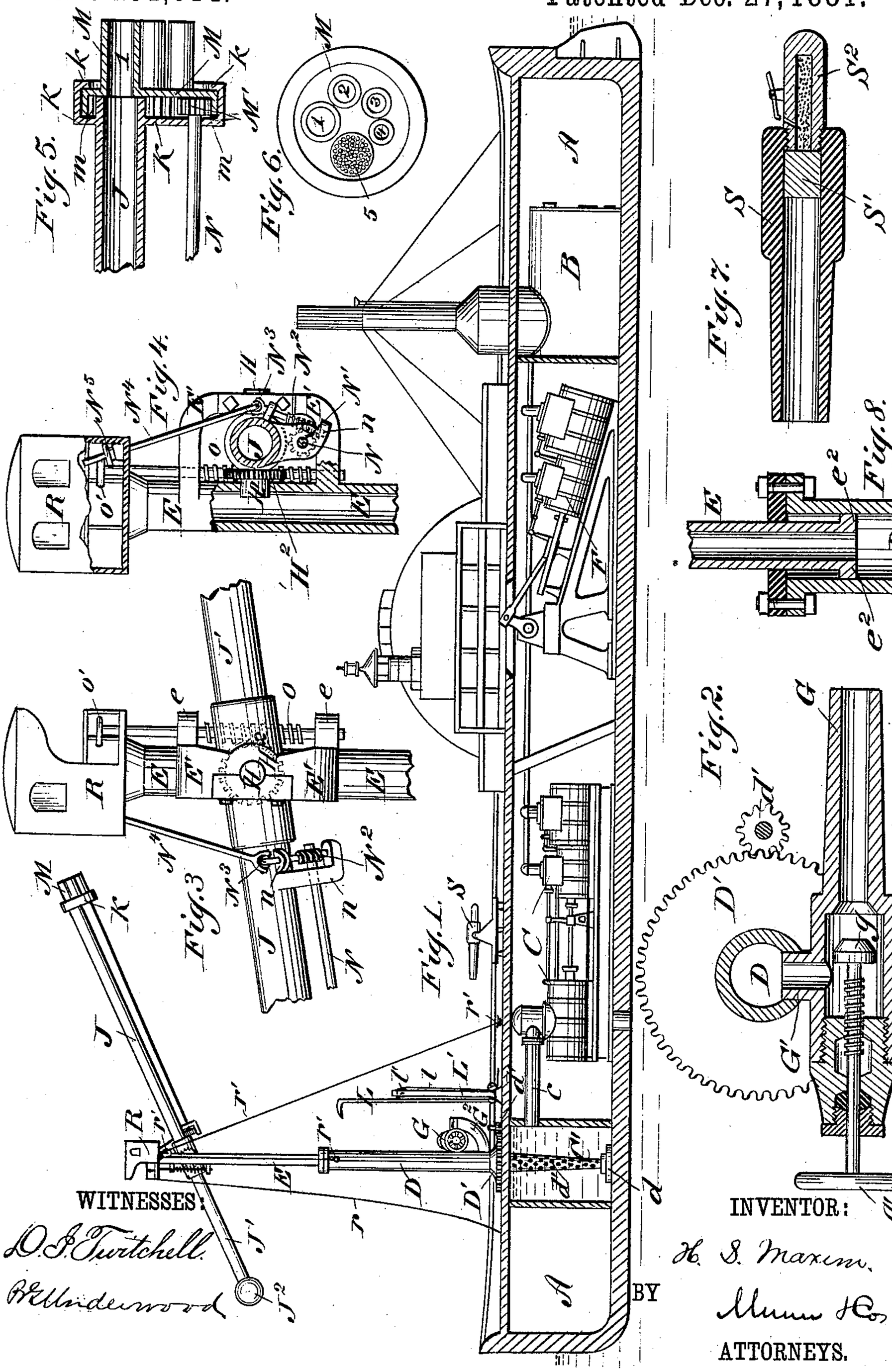
(No Model.)

H. S. MAXIM.

APPARATUS FOR EXTINGUISHING FIRES.

No. 251,614. Patented Dec. 27, 1881.



UNITED STATES PATENT OFFICE.

HIRAM S. MAXIM, OF NEW YORK, N. Y.

APPARATUS FOR EXTINGUISHING FIRES.

SPECIFICATION forming part of Letters Patent No. 251,614, dated December 27, 1881.

Application filed August 23, 1881. (No model.)

To all whom it may concern:

Be it known that I, HIRAM S. MAXIM, of the city, county, and State of New York, have invented a new Improvement in Apparatus for Extinguishing Fires, of which the following is a full, clear, and exact description.

Figure 1 is a longitudinal sectional elevation of my improved fire-boat. Fig. 2 is a sectional elevation, the section being through the lower discharge-nozzle, G. Fig. 3 is an elevation of the top of the apparatus. Fig. 4 is a sectional elevation of the top of the apparatus at right angles with Fig. 3. Fig. 5 is a longitudinal section of the outer end of the discharge-pipe, showing the chambered discharge-nozzle. Fig. 6 is an elevation of the chambered discharge-nozzle, looking at its outer face. Fig. 7 is a longitudinal section of gun. Fig. 8 is a longitudinal section through the head of stand-pipe D and foot of stand-pipe E.

Similar letters of reference indicate corresponding parts.

The object of my invention is to provide a fire-extinguishing boat or floating fire-engine which shall be capable of promptly extinguishing fires on vessels afloat or in buildings on or adjacent to the water-front.

The invention consists in a novel construction and arrangement of parts, as hereinafter fully described.

My vessel or fire-boat A, of suitable size, and built preferably of iron or other fire-proof material, carries within its hold powerful steam-generators B and pumping machinery C, which latter is connected by the pipe *c* to the reservoir C′, with which the stand-pipe, composed of sections D E, has proper connection. I prefer to make my fire-boat self-propelling and to use side paddle-wheels, each connected with a powerful separate engine, as at F, to facilitate the ease and rapidity of movement of the vessel, said engines to be supplied with steam from the boilers B. The outer lower stand-pipe, D, is properly supported vertically, or nearly so, in the deck of the vessel and in the step *d*, its lower portion within the reservoir C′, and for a considerable length, being perforated to admit a free flow of water from the reservoir into pipe D.

The gear-wheel D′ is rigidly attached to the pipe D, and is driven by the pinion *d′* to cause the entire water-discharging apparatus to revolve in a horizontal plane. Such revolution may be caused by any connected system of gearing operated by any connected motor; but I prefer to use an independent steam-engine, the valves of which may be controlled direct from the hold or deck of the vessel, or from the upper cab, R, through the medium of any suitable connections.

The discharge-nozzle G is supported on the stand-pipe D by the hollow trunnion G′, through which the water from D is forced, and in an outer solid trunnion supported in suitable bearings by the bracket G^2, which is secured to the stand-pipe D. Said nozzle G can thus be inclined to the horizon to direct the water as desired; and as it is intended to discharge a large stream of water, it is therefore strongly made and provided with a screw-plug valve, *g*, to be opened and closed by the hand-wheel *g′* to admit and shut off the water-supply from the stand-pipe D, by the horizontal revolution of which, or the turning of the vessel A, said nozzle G can be advantageously used to direct a great body of water into the hold of vessels or upon wharves or buildings. More than one of these nozzles G may be connected with the stand-pipe D, if desired.

The inner section of the stand-pipe E is adapted to slide within the outer stand-pipe, D, to secure greater elevation of the upper discharge-nozzles, and is forced upward by the impact of the entering water upon the interior of its closed head and upon the area of its lower annular rim, e^2. Said pipe E also carries the lookout or cab R at its upper end, the rope ladder *r* affording access thereto, and the rope and tackle *r′* retaining the pipe E at any desired height.

The bracket E′ projecting from the pipe E supports the solid outer trunnion, H, of the upper discharge-pipe, J. Its inner hollow trunnion, H′, is supported in the stand-pipe E, and is open to water-communication with E. The short arm J′ of the discharge-pipe is preferably solid, and may also be weighted, as at J^2, to balance the overhanging weight of the longer or discharge pipe J, which latter is hollow. When the telescoping-pipe E is not used the pipe J and its appurtenances and cab R may be attached upon the upper end of pipe D,

Pipe J carries eccentrically at its outer end the casing K, between the inner face and the outer face shoulders, *k*, of which the chambered-nozzle mouth-piece M is held. Said mouth-piece M is provided with an internal gear, *m*, and a series of nozzles, 1 2 3 4, of varying diameters, and a sprinkler, 5. Any one of these nozzles, or the sprinkler, may be brought in direct line with the bore of the discharge-pipe J, as is the nozzle No. 1 in the drawings, by revolving the mouth-piece M by means of the pinion M′, which engages with the internal gear, *m*, and connects by means of the rod N, worm-wheel N′, worm N^2, supported in bearings *n*, and the universal joint N^3, and square rod N^4, with the hand-wheel N^5, which is held within the cab R, so as to permit said wheel N^5 to freely revolve, and also allow the square rod N^4 to pass through it on the adjustment of the discharge-pipe J to different angles with the horizon. These mechanical agents N^2 N^4 N^5 may connect the lower end of the worm N^2, to also permit the mouth-piece M to be revolved from any convenient point below the discharge-pipe.

Any one of the nozzles 1 2 3 4, or the sprinkler 5, can be adjusted from the cab R, or other point, without shutting off the water-supply, to direct varying volumes of water upon any part of a burning building, as required.

The worm *o* is supported in the bearings *e* and provided with the hand-wheel *o′* within the cab R, and meshes with the worm-wheel H^2, which is fixed to the trunnion H′. A rod carrying a lever or hand-wheel may connect the lower end of the worm *o*, to also permit the horizontal adjustment of the discharge-pipe J from any convenient point below it. By turning said wheel *o′* the angle of inclination with the horizon of the discharge-pipe J can be altered at pleasure to direct the stream of water from any nozzle in the mouth-piece M upon any portion of a high building, and any required horizontal change of direction of the said water-stream can be quickly secured by either horizontally turning the lower stand-pipe, D, or by turning the entire vessel A. My fire-boat thus provides means for discharging water in any required volume within or upon any portion of a burning ship or high or low building.

As a means for making a hole in a burning vessel to render the water-discharge more effective, or for making fast to another vessel, I provide one or more heavy picks, L, which are preferably hinged at the base of the standard L′, which is secured to the vessel and adapted to revolve horizontally. Said picks L are held up by ropes or chains *l*, which pass over sheave-blocks *l′*, supported in the standard L′.

The water-discharge from my fire-boat is also made more effective by the gun S, which is properly mounted on the deck of the vessel, and is adapted to throw a shot or missile, S′, preferably of wood, through the side of a ship or wall of a building. An enlarged section of the gun is shown in Fig. 7.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a fire-extinguishing apparatus, the combination, with the stand-pipe D, provided with the bracket G^2, and adapted to be revolved, of the discharge-nozzle G, provided with a hollow trunnion at one side and a solid trunnion at the other, and with a valve, *g*, substantially as and for the purpose set forth.

2. In a fire-extinguishing apparatus, the combination, with the sliding section E, of the cab R, the discharge-pipe J, and means for operating the said discharge-pipe, substantially as shown and described, whereby the discharge-pipe is adapted to be operated from the cab, as set forth.

3. The combination, with the steam pumping machinery C, adapted to receive its water through the bottom of the vessel, of the reservoir C′ and the stand-pipe D, having its lower end perforated and stepped in said reservoir, substantially as and for the purpose set forth.

4. In a fire-extinguishing apparatus, the combination, with the sliding section E, the pivoted discharge-pipe J, and the chambered mouth-piece M, provided with internal gear, *m′*, of the pinion M′, the rod N, worm-wheel N′, worm N^2, swivel-joint N^3, rod N^4, and hand-wheel N^5, substantially as and for the purpose set forth.

5. In a fire-extinguishing apparatus, the combination, with the sliding section E, of the pivoted discharge-pipe J, having the weighted end J′, substantially as and for the purpose set forth.

6. In combination with the stand-pipe D E and discharge-pipe J, the worm-wheel H^2 and worm *o*, provided with suitable lever or hand-wheel for operating them to adjust and hold the said discharge-pipe J at varying angles of inclination to the horizon, substantially as herein described.

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Witnesses:
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