C. G. WATERBURY.

Machines for Removing Snow and Ice from Roadways of Streets.

No. 144,488. Patented Nov. 11, 1873.

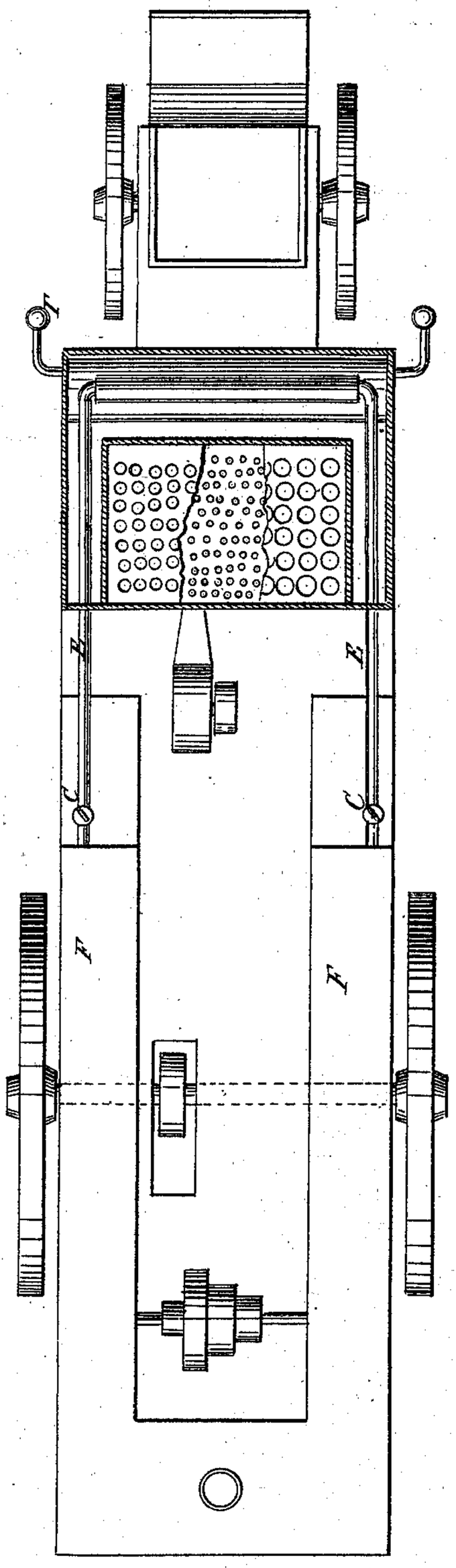

Fig: 1.

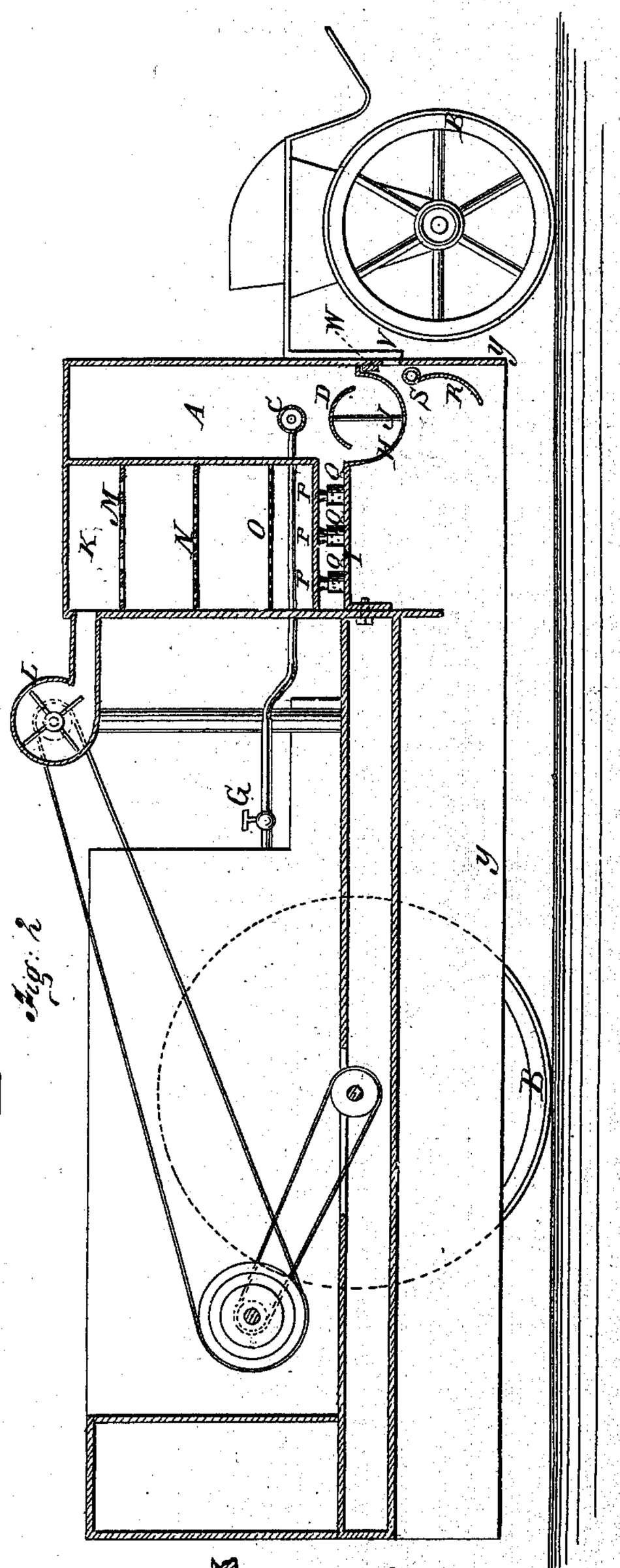

Fig: 2.

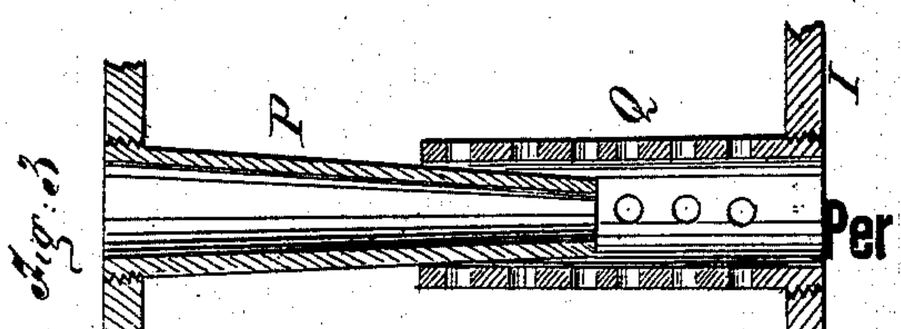

Fig: 3

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UNITED STATES PATENT OFFICE.

CHARLES G. WATERBURY, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR REMOVING SNOW AND ICE FROM ROADWAYS OF STREETS.

Specification forming part of Letters Patent No. **144,488**, dated November 11, 1873; application filed September 20, 1873.

To all whom it may concern:

Be it known that I, CHARLES G. WATERBURY, of the city, county, and State of New York, have invented a new and Improved Machine for Removing Snow and Ice from Streets, &c., of which the following is a specification:

My invention consists of apparatus in a portable machine adapted to run along the roadway, so contrived that it will sprinkle the surface of the roadway with hydrocarbon substances, at the same time converting some of the said substances into vapor and burning it in a space above, and causing the flame to impinge upon the surface and burn the portion sprinkled thereon directly in contact with the snow and ice in a manner calculated to secure great efficiency.

Figure 1 is partly a plan view and partly a horizontal section of my improved machine. Fig. 2 is a longitudinal sectional elevation of the said machine, and Fig. 3 is a detail of the apparatus for mixing oxygen with the vapor for the support of combustion.

Similar letters of reference indicate corresponding parts.

A represents an inclosed chamber in the front portion of a box or case of any suitable kind mounted on wheels B, so as to be drawn along the roadway; or the wheels may be arranged to run on the rails of a railway, if desired. Into this chamber the hydrocarbon is discharged through a perforated pipe, C, extending across the space from side to side a little above a convex spreading and heating plate, D, so as to drip upon it in greater or lesser volume, according to the requirements of the case, the said hydrocarbon substance being supplied to said perforated pipe by a feed-pipe, E, entering each end, and connecting with the supply-tanks F, and each pipe being provided with a regulating-cock, G. A little below the spreading-plate D is the bottom plate of the chamber A, which is composed of the concave portion H and the horizontal portion I. The oil not vaporized on plate D and dripping from it falls onto the sides of concave plate H, and that which is not vaporized in said plate drips through perforations J at the bottom and falls upon the ground. The air is forced into a chamber, K, from a pan, L, and through the perforated distributing-plates M N O to the nozzles P in the bottom of said chamber K, which enter the perforated tubes Q, rising up from bottom plate I of chamber A, and surrounding outlet-holes in said bottom. The air which is thoroughly distributed in the chamber K is brought into contact at these nozzles and tubes with the hydrocarbon vapor generated on the bottom H I and plate D, and contained in chamber A, and is thoroughly and evenly mixed with it, so as to issue in proper combination for combustion under the plate I, where it burns, so that the flame impinges directly on the surface, so as to vaporize the oil thereon coming through plate H, and extend the flames along the surface toward the rear end of the machine in a way calculated to bring the heat into the most direct contact with the surface to be heated, and thus greatly increase the effectiveness.

It will be observed that there will be no residuum of unvaporized material left in the vaporizing-chamber to clog it and obstruct the operation, as it will drip through the plate H and be consumed on the surface below.

In order to facilitate the lighting of the fire to begin, I have a little pan, R, arranged under the bottom H on a pivot, S, with weighted arms, T, to hold it up under and a little below bottom H, to hold the oil first dripping through said bottom for kindling the fire by a match introduced through an aperture, U, in the front of the case, which will have a damper for regulating the draft while kindling and shutting it off afterward. When sufficient heat is obtained on plate H to vaporize the oil in chamber A, the pan will then be thrown down out of the way of the drip from the holes J by throwing up the weighted arms T, after which the drip will fall on the surface to be heated. The plate D will be supported on standards, V, rising up from bottom H, and the latter will be supported on the rib W at the front end, and by bolts X at the other, so that by taking out said bolts the bottom can be readily taken out for cleaning and repairing, and to afford access to the interior of chamber A, when it may be required. The heat and flame will be confined on the surface by the sides Y of the case or box, which will be extended for the purpose, except at the rear end, and a water-jacket will be applied to the walls of chamber A for the protection of them from the heat.

By thus sprinkling the ice and snow to be melted and burning the oil directly on it, the heat is applied more directly and effectively than it can be in any other known way.

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

1. In a machine for removing snow and ice from the roadways of streets, the combination of a sprinkling apparatus and a burner, so that the roadway may be sprinkled with a liquid hydrocarbon, to be burned by the flames of the burner impinging upon the sprinkled surface, substantially as set forth.

2. A vaporizing hydrocarbon-burner combined in a machine for melting snow and ice from roadways, so that the unvaporized portion of the oil may drip through the bottom of the vaporizing-chamber and escape from it, substantially as set forth.

3. The method of removing snow and ice from the roadways of streets by a hydrocarbon sprinkler and burner, substantially as set forth.

4. The combination of the vaporizing-chamber A, air-distributing chamber K, nozzles P, perforated pipes Q, and the bottom plate I, substantially as set forth.

5. The combination of the oil-distributing pipe C, heating and distributing plate D, and the perforated bottom plate H, substantially as set forth.

6. The combination of the igniting-pan R with the perforated bottom plate H, substantially as set forth.

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Witnesses:
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