(No Model.)

I. H. SIMPSON.

DEVICE FOR THAWING ICE FROM PIPES.

No. 458,503. Patented Aug. 25, 1891.

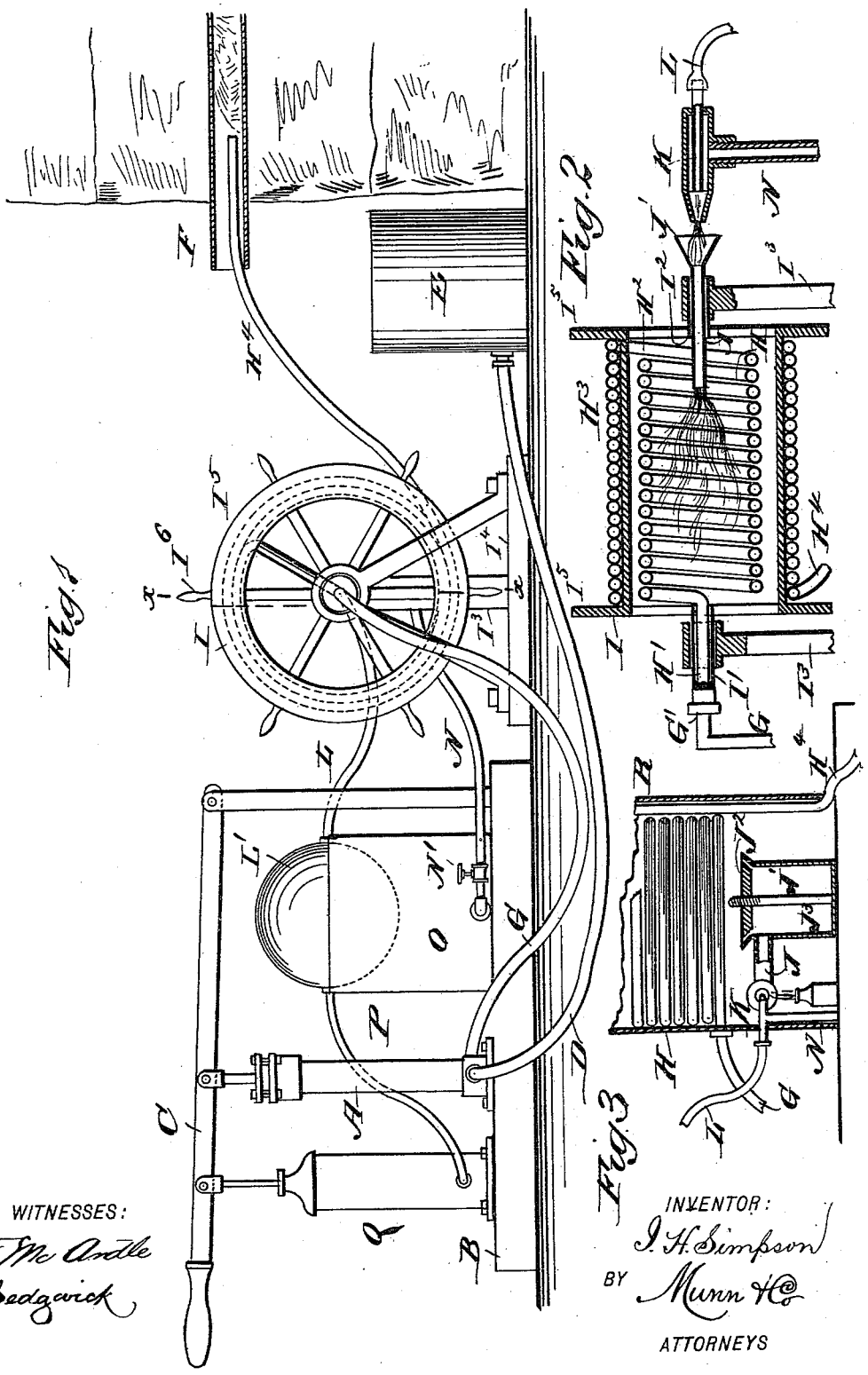

Fig. 1

Fig. 2

Fig. 3

WITNESSES:

F. McArdle

C. Sedgwick

INVENTOR:

I. H. Simpson

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

ISAIAH H. SIMPSON, OF BRUNSWICK, MAINE.

DEVICE FOR THAWING ICE FROM PIPES.

SPECIFICATION forming part of Letters Patent No. 458,503, dated August 25, 1891.

Application filed February 3, 1891. Serial No. 380,033. (No model.)

To all whom it may concern:

Be it known that I, ISAIAH H. SIMPSON, of Brunswick, in the county of Cumberland and State of Maine, have invented a new and Improved Device for Thawing Ice from Pipes, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved portable device for conveniently and rapidly thawing ice formed in water-pipes.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement as applied, the frozen pipe being shown in section. Fig. 2 is a transverse section of part of the improvement on the line *x x* of Fig. 1, and Fig. 3 is a sectional side elevation of a modified form of the improvement.

The improved device for thawing ice from pipes is provided with a suitable pump A, mounted on a base B and operated by a hand-lever C, fulcrumed on a bracket erected on the said base. The pump A is connected by a suction-hose D with a receptacle E, adapted to be set under the end of the pipe F from which the ice is to be thawed.

The pump A is provided with a discharge-hose G, connected by a coupling G′ with one end H′ of a coil of pipe H, arranged within a hollow drum I, as plainly shown in Fig. 2. The other end H^2 of the coil of pipe H passes onto the rim of the drum I, is coiled thereon, the other end H^4 being adapted to be run off the said drum I and into the frozen pipe F. The coil of the pipe H, its ends H′ and H^2, the coil H^3, and the end H^4 thus form a continuous pipe, of which the coil H^3 and end H^4 are formed of a pliable metal—such as zinc, lead, &c.—while the inner coil H is preferably made of wrought-iron to withstand heat.

The drum I is provided on its ends with hollow trunnions I′ and I^2, mounted to revolve in suitable bearings formed on brackets I^3, arranged on a base I^4. The drum is also provided with flanges I^5, extending outward at the ends of the rim of the drum, the said flanges being provided with handles I^6 for conveniently turning the said drum in its bearings. The coupling G′ permits the end H′ of the coil of pipe H to revolve without disconnecting the pipes H and G, the latter being stationary.

Through the hollow trunnion I^2 of the drum I passes a conducting-pipe J, extending at its inner end within the coil of pipe H, the outer end J′ being bell-shaped, as plainly shown in Fig. 2. Into this bell-shaped end J′ passes the flame of a hydrocarbon-burner K, of any approved construction, provided with the air-pipe L and the oil-feed pipe N, of which the latter leads to a reservoir O, containing in its lower part the oil. The upper part of the reservoir O supports an air-receiver L′, connected with pipe L and also connected by a pipe P with an air-compressor Q, connected with the lever C, so as to be simultaneously operated with the pump A. The oil-feed pipe N is provided with a valve N′, for regulating the quantity of oil passing from the reservoir O to the hydrocarbon-burner K.

The device is used as follows: The several parts of the device are arranged as shown in Fig. 1, the receptacle E being placed under the end of the pipe F to be thawed. The end H^4 of the pipe H is unwound from the drum I and passed into the frozen pipe F. The operator now manipulates the lever C, so as to actuate the pump and the compressor Q. The pump A draws the water from the receptacle E and forces it through the hose G into the pipe H, and the air-compressor Q forces the air into the air-receiver L′, from which the air passes to the hydrocarbon-burner K, in which the oil is drawn in from the reservoir O, and is atomized by the compressed air. The atomized mixture of oil and air is ignited and passes through the bell-shaped mouth J′ of the pipe J onto the coil of pipe H and through the drum I, so that the water passing through this pipe is heated and finally passes in a heated state through the end H^4 into the pipe F onto the ice therein. The ice is thus quickly melted by the hot water and flows out with the hot water through the pipe F into the receptacle E, which water is to be used over again. The water returning into the receptacle E is still warm, so that it re-

quires but a small amount of heat from the burner K to keep the water heated.

In case the device is used a long time the water in the receptacle E has to be cooled by snow or ice, as otherwise the hose D and G would be injured. Any length of pipe can be run over the drum I to pass the desired distance into the pipe F. As coil part H^3 is of pliable material, it readily follows the bends in the pipe being thawed in case there are any.

As shown in Fig. 3, the pipe H is heated within a separate shell R instead of within the drum I. In this case the hose G is connected with one end of the coil of pipe arranged within the shell R, the other end H^4 of the said pipe passing to an ordinary drum I, from which the extreme other end of the pipe H is withdrawn to pass into the pipe F.

The hydrocarbon-burner K leads to the conducting-pipe J, which discharges into a vessel J', arranged in the bottom of the shell R underneath the coil of pipe H. The upper end of the vessel J' is provided with an upwardly and outwardly extending annular flange, in which is fitted a conical disk J^2, so as to form a burner with the said flange, the said disk screwing on a screw-rod J^3, so as to regulate the size of the flame. This device is used in the same manner as the one above described.

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

1. A device for thawing ice from pipes, comprising a pump, a water-receptacle connected therewith, a coil into which the pump discharges, having a pliable metallic pipe leading therefrom to enter the pipe to be operated on, and a burner for heating the coil, substantially as set forth.

2. A device for thawing ice from pipes, comprising a pliable metallic pipe adapted to be passed into the pipe to be thawed, a pump for forcing the water through the pliable pipe, a hydrocarbon-burner to heat the water in its passage from the pump to said pipe and having an oil-supply pipe and an air-compressor connected with it, and an operating-lever connected with said pump and air-compressor, substantially as set forth.

3. In a device for thawing ice from pipes, the combination, with a pliable metallic pipe formed with a coil of pipe and having its front end adapted to be passed into the pipe to be thawed, of a pump connected with the rear end of said pipe, a hydrocarbon-burner adapted to heat the coil in the said pipe, an oil-reservoir and an air-compressor connected with said burner, and means for operating said compressor simultaneously with operating the said pump, as set forth.

4. In a device for thawing ice from pipes, the combination, with a pliable metallic pipe, of a pump connected with one end of said pipe, and a receptacle adapted to be set under the pipe to be thawed to gather the water discharged from the said pipe and the water from the thawed ice, the said receptacle being connected with the said pump, substantially as shown and described.

5. In a device for thawing ice from pipes, the combination, with a pliable metallic pipe, of a pump connected with one end of said pipe, a receptacle adapted to be set under the pipe to be thawed to gather the water discharged from the said pipe and the water from the thawed ice, the said receptacle being connected with the said pump, and a hydrocarbon-burner for heating a coil in the said pipe and fed simultaneously with the operation of the said pump, substantially as shown and described.

6. In a device for thawing ice from pipes, the combination, with a hollow drum mounted to rotate, of a pliable metallic pipe wound on the said drum and having part extending into the hollow space of the said drum to form a coil therein, and a hydrocarbon-burner for heating the coil within the said drum, substantially as shown and described.

7. In a device for thawing ice from pipes, the combination, with a hollow drum mounted to rotate, of a pliable metallic pipe wound on the said drum and having part extending into the hollow space of the said drum to form a coil therein, a hydrocarbon-burner for heating the coil within the said drum, and a pump connected with one end of the said pliable metallic pipe to force water through the same, substantially as shown and described.

8. In a device for thawing ice from pipes, the combination, with a hollow drum mounted to rotate, of a pliable metallic pipe wound on the said drum and having part extending into the hollow space of the said drum to form a coil therein, a hydrocarbon-burner for heating the coil within the said drum, a pump connected with one end of the said pliable metallic pipe to force water through the same, a reservoir containing oil connected with the said hydrocarbon-burner, and an air-compressor to supply the hydrocarbon-burner with compressed air, substantially as shown and described.

9. In a device for thawing ice from pipes, the combination, with a hollow drum mounted to rotate, of a pliable metallic pipe wound on the said drum and having part extending into the hollow space of the said drum to form a coil therein, a hydrocarbon-burner for heating the coil within the said drum, a pump connected with one end of the said pliable metallic pipe to force water through the same, a reservoir containing oil connected with the said hydrocarbon-burner, an air-compressor to supply the hydrocarbon-burner with compressed air, and a lever for simultaneously operating the said pump and the said air-compressor, substantially as shown and described.

ISAIAH H. SIMPSON.

Witnesses:
SAMUEL B. DUNNING,
DUDLEY E. CAMPBELL.