

(No Model.)

E. HAND.
SNOW PLOW.

No. 325,075.

Patented Aug. 25, 1885.

Fig. 1.

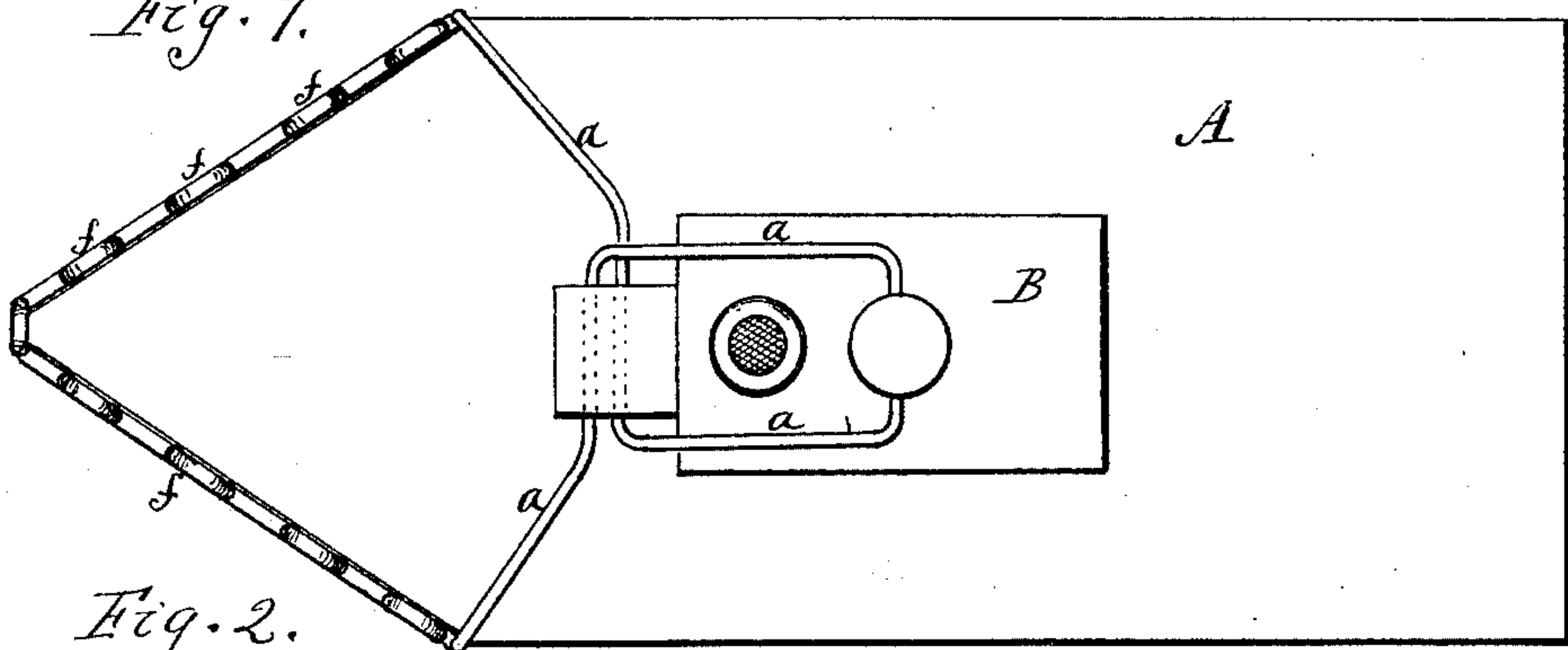


Fig. 2.

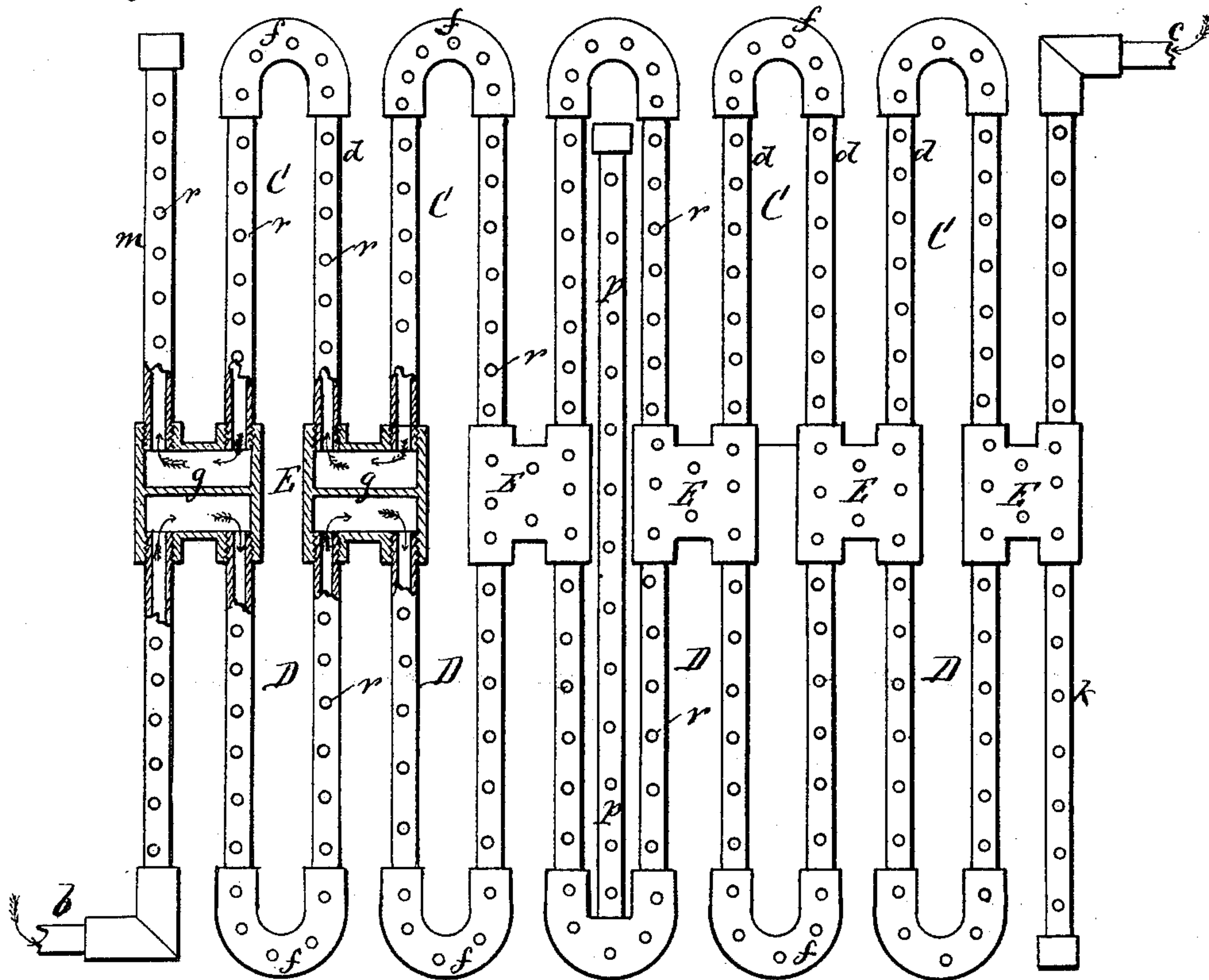


Fig. 3.

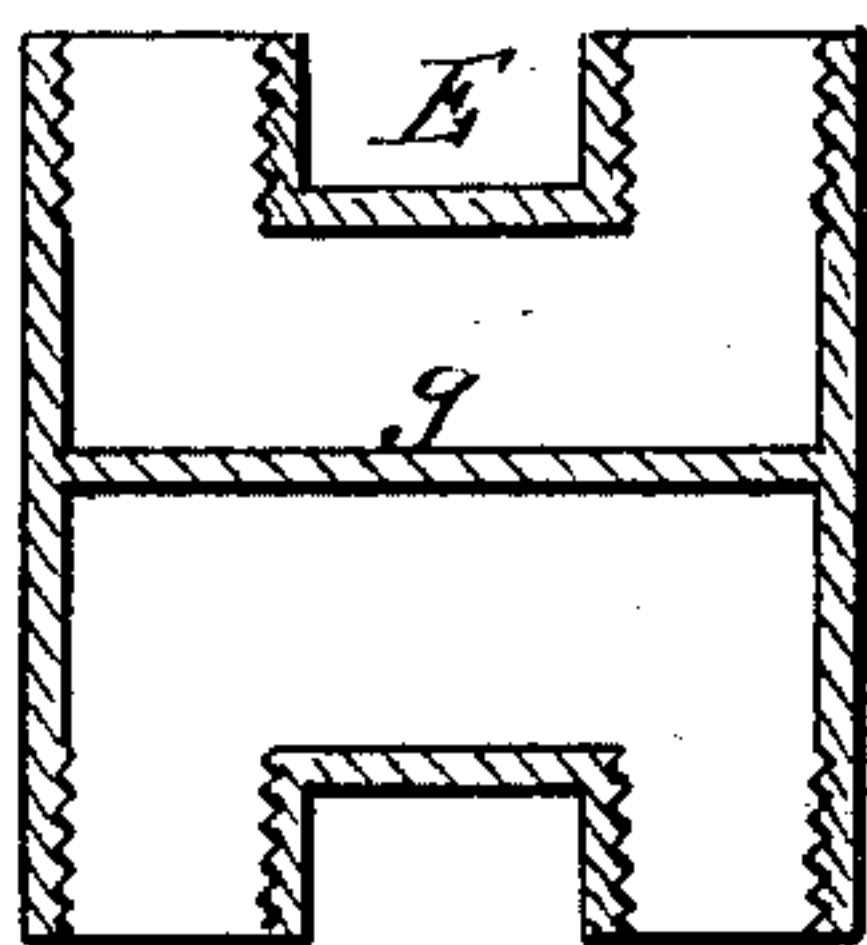


Fig. 4.



Attest.

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UNITED STATES PATENT OFFICE.

EKINS HAND, OF ROCHESTER, ASSIGNOR OF TWO-THIRDS TO HUGH HAMMOND, JR., OF PHELPS, AND LYMAN P. JOHNSON, OF SENECA CASTLE, NEW YORK.

SNOW-PLOW.

SPECIFICATION forming part of Letters Patent No. 325,075, dated August 25, 1885.

Application filed April 13, 1885. (No model.)

To all whom it may concern:

Be it known that I, EKINS HAND, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Snow-Plows; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

10 Figure 1 is a plan of a platform-car, showing my improvement. Fig. 2 is an elevation, partially in section, of the steam attachment enlarged. Fig. 3 is a section of one of the joint-sections between the pipes. Fig. 4 is a
15 section of one of the steam-nozzles.

My improvement relates to a steam-plow in which the steam-pipes are arranged up and down in front of the nose of the plow, and in which the steam is superheated, and is ejected
20 out into the body of snow through nozzles to melt the same, the action being accomplished not only by the great heat, but also by the force and impact of the escaping steam, as hereinafter more fully described.

25 The invention consists, substantially, in the combination, with the plow, of two distinct sets of steam-pipes arranged one above the other and provided with steam-ejecting nozzles in the manner and for the purpose hereinafter more fully described.

In the drawings, A shows a car, which may be of any desired form, to which the heating-pipes may be attached, or they may be attached directly to the front of the engine. B
35 shows a boiler, which may also be of any desired form and kind, and, if desired, two or more may be used. *a a* are steam-pipes connected with the dome of the boiler, through which the steam is conveyed, said steam-pipes
40 being carried through the fire-chamber of the boiler, through the flue-space, or, preferably, through a separate fire chamber or furnace for superheating the steam before it escapes.

C and D are two series of steam-pipes arranged in front of the plow and standing vertically, as shown in Fig. 2. They are arranged one above the other in two distinct sets, one above and the other below the horizontal central line, each set having a separate action of
50 its own. The two sets of pipes connect with

joint-couplings E E at the center, and the pipes at each end are connected with the pipes *a a*, one set connecting at the bottom at the pipe end *b*, the other at the top at the pipe end *c*. Thus the steam has two passages independently through the two sets of pipes. Each set of pipes is made up of straight lengths *d d*, connected at their outer ends by elbows *f f*, their inner ends opening into the joint-couplings E E, and the latter are each provided
60 with a central diaphragm or partition, *g*, by which the separation is made. The steam in each set thus flows in zigzag form from one end to the other, as indicated by the arrows in Fig. 2.

h is a stand-pipe at the end of the lower set of pipes, D. *m* is a similar stand-pipe at the end of the upper set of pipes, C; and *p* is a central stand-pipe rising from the center bottom elbow, *f*, and extending to the top of the
70 stack, as shown. The outer ends of each of these stand-pipes is closed, so that the steam can pass no farther than the ends of the coils. The stand-pipes are provided with suitable escape-cocks. The central stand-pipe serves
75 as the central divider at the nose of the plow, to open the way.

r r are numerous nozzles or ejectors inserted in the pipes at suitable distance apart, pointing outward, and serving to eject the superheated steam into the snow.

The operation is as follows: As the plow is driven along the superheated steam will be ejected into the snow, and will rapidly melt it off, not only by reason of the intense heat passing out through the great number of nozzles,
85 but also by reason of the great force and impact of the currents, which, striking the snow, melt it off very rapidly.

One great advantage of my invention is the use of the two distinct and separate sets of steam-pipes arranged one above and the other below the central horizontal line of the plow, as before described. By this means it is adapted to either light or heavy work. If the snow
95 is thin, only the lower set can be used, thus concentrating the whole force at the point required. If the snow is thick and heavy, the steam can be let on through both sets equally; or it can be graded by letting a greater vol-
100

ume through one set than the other, as necessity may require, thus adapting the application of the steam to the necessities of the case.

Another advantage results from the use of
5 the several vertical stand-pipes *k m p*, which carry the steam to the extreme edges of the plow and up the center, the points where the ordinary coils cannot reach. The center pipe especially, by extending up the whole height
10 of the stack and presenting numerous nozzles for the ejection of the steam, opens the way effectually for the plow.

This invention is applicable not only on railroads, but also for clearing sidewalks and for
15 other purposes where snow is to be melted.

If desired, the steam may be ejected through slots instead of the nozzles above described.

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

In a snow-plow, the combination of two separate and distinct sets of steam-pipes attached to the front of the plow and provided with nozzles for the ejection of superheated steam, and the stand-pipes *k m p*, two at the sides and one
25 in the center, as shown and described, and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EKINS HAND.

Witnesses:

R. F. OSGOOD,
Z. L. DAVIS.