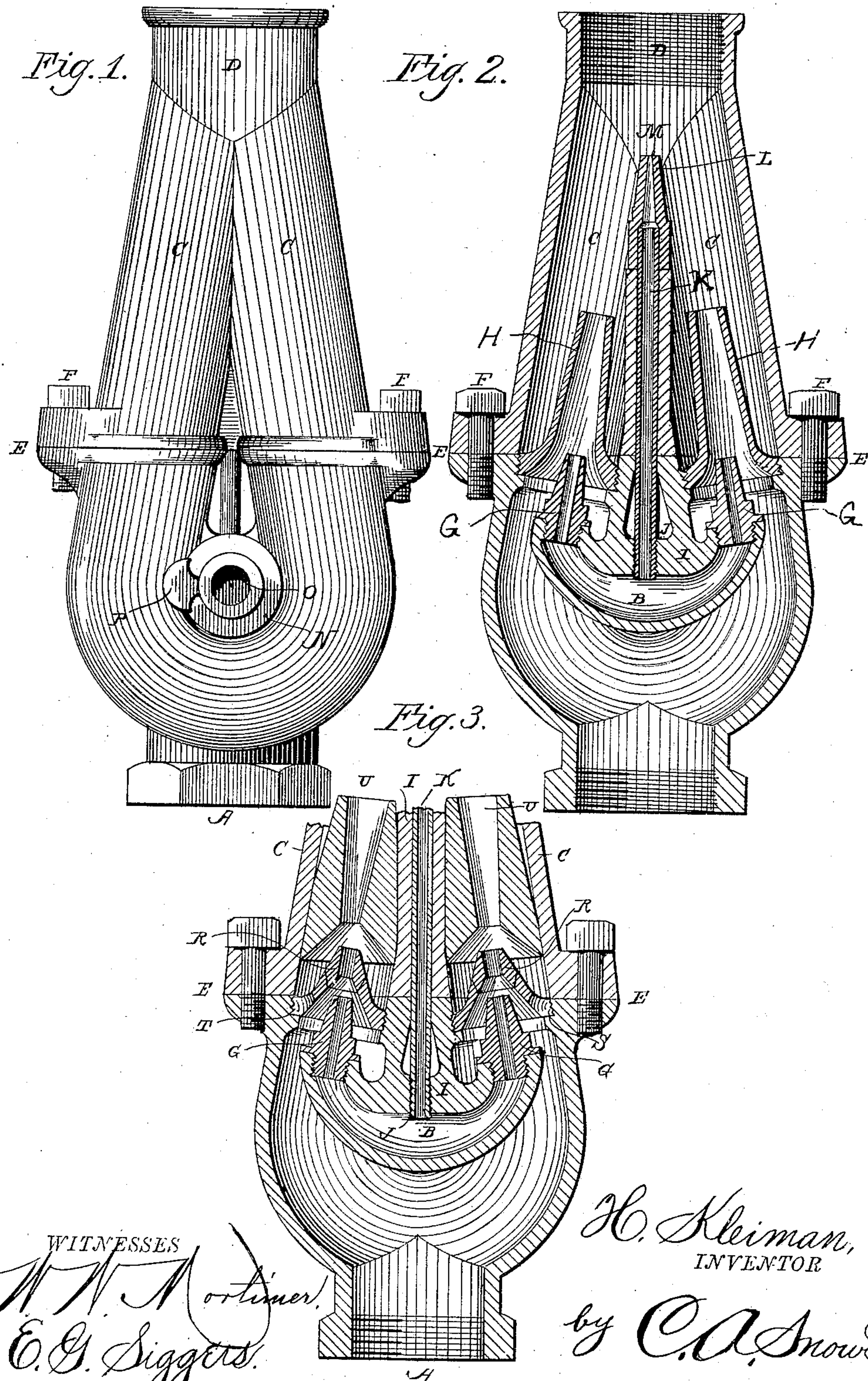


(Model.)

H. KLEIMAN.
EJECTOR PUMP.

No. 310,896.

Patented Jan. 20, 1885.



WITNESSES

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UNITED STATES PATENT OFFICE.

HENRY KLEIMAN, OF ALLEGHENY, PENNSYLVANIA.

EJECTOR-PUMP.

SPECIFICATION forming part of Letters Patent No. 310,896, dated January 20, 1885.

Application filed June 4, 1884. (Model.)

To all whom it may concern:

Be it known that I, HENRY KLEIMAN, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Ejector-Pump, of which the following is a specification, reference being had to the accompanying drawings.

This invention has relation to ejector-pumps for pumping water or other liquids from mines and wells and for extinguishing fires in buildings where steam is used, and also on board of steamships and steamboats; and it has for its objects to produce a steam-pump or steam water-ejector of the class referred to that shall possess superior advantages over others of this class in point of cheapness, simplicity, durability, and general efficiency.

The invention consists in the construction and novel arrangement of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a view in elevation of an ejector-pump embodying my improvements. Fig. 2 is a vertical longitudinal sectional view, and Fig. 3 is a vertical longitudinal sectional view of a modification.

Referring by letter to the accompanying drawings, A designates the suction-pipe, and B the steam-chamber, with two branch pipes, C C, which connect with the discharge-pipe or delivery-pipe D. These branch pipes are made in two sections, provided with lugs E at their meeting ends, and are suitably packed at the joint and connected by bolts F.

Within the steam-chamber B are two steam-nozzles, G G, which extend up in the two branch pipes C C and project slightly within the two water-nozzles H H, which are secured within the branch pipes by means of screw-threads, as shown. These water-nozzles extend up in the branch pipes C C, and terminate a little below the upper end of the web I, that connects the branch pipes above the steam-chamber B. The web I is bored vertically through its middle, as at J, and through this bore J is passed from above downward a small steam-pipe, K, which connects at its lower end with the steam-chamber B by a screw-joint, and is provided at its upper end with a small nozzle, L, having an opening, M, about the

size of a medium-sized pin-head in a two-inch pump. Steam is admitted to the steam-chamber B through a steam-inlet, N, in one side of said chamber, through steam-pipe O or a steam-hose leading directly from the steam-boiler or main steam-pipe. The steam-pipe O or hose should be provided with a stop-cock, P, to cut off the steam from the steam-chamber B when it is not desired to use the pump. When the pump is located in a well or coal-mine, the stop-cock should be located at some convenient place—say near the boiler or steam-pipe, or any other convenient place. When the steam enters the steam-chamber B, it passes through the steam-nozzles G G into water-nozzles H H, and creates a vacuum in the branch pipes C C and draws the water or other liquid up through the water-nozzles, and when the water reaches the steam the latter condenses and leaves its force in the water. The small steam-pipe K, with the small nozzle L, now comes into operation, though it did not assist in forming the vacuum, and drives the water on through the discharge-pipe to any desired height or distance.

This pump, although a double-acting pump, does not cost more to construct it than to construct others of a less capacity, while it pumps twice the amount that a single-action pump does with the same amount of steam. The working parts are all well finished, in order to avoid friction.

The pumps now in use lift and force; but they require twice the amount of steam, and will not force the water to as great a height, owing to the rapid condensation of the steam. In mine the two lower nozzles raise the water, and the third upper intermediate nozzle, L, forces it out through the discharge-pipe. The water-nozzles H H are plain smooth brass nozzles.

In the modification I have shown a water-nozzle, R, which is composed of two sections, the lower portion of which is in the shape of the frustum of a hollow cone, and is provided with three notches, S, in its threaded base portion, T. It is screwed into the branch pipes in place of the nozzles H H, and the other tapering hollow portion, U, is put in place in the branch pipes C C above the portion R, thereby making a double nozzle.

The pump starts as soon as the steam is turned on and pumps a steady stream. When the steam is cut off, the water runs back to the well, so there is no danger of the pump freezing, and therefore no danger in starting the pump.

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

1. In an ejector steam-pump, the combination of the branch pipes C C, separated by a central partition or web, I, but having free communication with each other at the ends where the suction and discharge pipes A D are connected, water-nozzles secured within each branch pipe, a steam-chamber, B, formed at the base of the partition or web and opening into each branch pipe below the water-nozzles, and a steam-pipe, K, arranged within the central partition or web, I, and opening into the steam-chamber intermediately between the outer ends thereof, as and for the purpose set forth.

2. In an ejector steam-pump, the combination, with the branch pipes C C, separated by a central web, I, but having free communication with each other at the ends where the suction and discharge pipes A D are connected, and water-nozzles H, secured within the branch pipes on each side of the web, of a steam-chamber, B, formed at the lower end of the web and opening into each branch pipe, an inlet, N, for supplying said chamber with steam, nozzles G, secured on the outlet ends

of the steam-chamber and opening into the lower ends of the water-nozzles, and a steam-pipe, K, fitted in a central opening of the web I, and connected with the steam-chamber intermediately between the nozzles G, as and for the purpose set forth.

3. In an ejector steam-pump, the combination, with the branch pipes C C, made in two sections and connected together, said pipes being separated by a central web, I, but having free communication with each other at the ends where the suction and discharge pipes A D connect, and water-nozzles H H, screwing into the inner faces of the branch pipes and web, of the semicircular-shaped steam-chamber B, formed at the lower end of the web and extending across and connecting the two branch pipes, steam-inlet N, nozzles G G, attached to the outlet ends of the steam-chamber and extending into the lower ends of the water-nozzles, a central opening, J, provided in the web I, a steam-pipe, K, fitted in the opening and communicating with the upper middle portion of the steam-chamber, and a nozzle, L, provided at the upper end of the web I, as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HENRY KLEIMAN.

Witnesses:

CHAS. J. WEITERSHAUSEN,
DAVID ROCK.