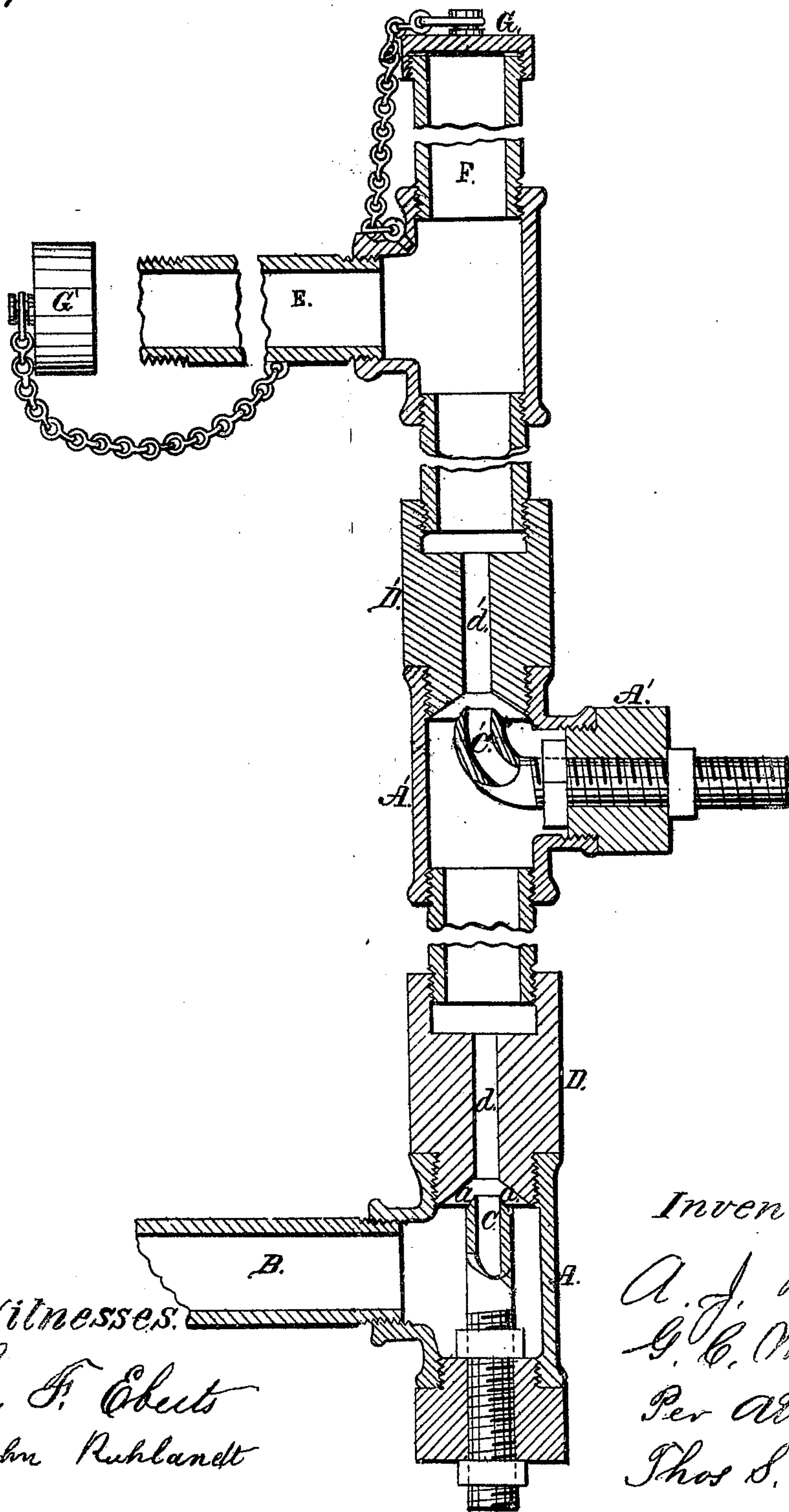


*Blakslee & Williams*

*Injector.*

*No 91,205.*

*Patented Jun 15 1869.*



*Witnesses.*

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# UNITED STATES PATENT OFFICE.

ALBERT J. BLAKSLEE AND GARNER C. WILLIAMS, OF DU QUOIN, ILL.

## IMPROVEMENT IN INJECTORS.

Specification forming part of Letters Patent No. 91,205, dated June 15, 1869.

*To whom it may concern:*

Be it known that we, ALBERT J. BLAKSLEE and GARNER C. WILLIAMS, of Du Quoin, in the county of Perry and State of Illinois, have invented a new and useful Improvement in Steam-Siphons; and we do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and being a part of this specification.

This device relates to that class of inventions known as "steam-siphons;" and consists of a steam-pipe, delivery-pipe, and suction-pipe, all terminating in a T or globe shaped connection or socket, and operating for the purpose of elevating and forcing a column of water by the action of a jet of steam impinging thereon; also, in the employment of a series of two or more steam-jets in the same column, for the purposes hereinafter described.

In the drawings, which are a vertical section of our device, A represents a T-shaped socket, into the branch of which enters the suction-pipe B.

C is a steam-pipe entering the lower arm of the T, and extending nearly through it and across the mouth of the suction-pipe B, and terminating in or near the mouth of the funnel *a*, formed in the opposite end of the arm of the T, leaving only space enough between the end of the steam-pipe C and the walls of the funnel *a* for the passage of but sufficient water to fill the contracted orifice *d*, so that the pressure of the steam will be at once exerted on the small column of water in the contracted pipe.

D is the delivery-pipe, having a contracted or smaller opening, *d*, issuing from the funnel *a*, and terminating in the larger diameter of the delivery-pipe. This contracted pipe *d* should be of sufficient length to retain the body of water passing through it in close contact with the jet of steam until all the steam entering with it shall be condensed.

It is not necessary to employ a funnel, *a*, at the end of the delivery-pipe, as shown, unless the contracted pipe *d* is of the same or less diameter than the steam-pipe C.

The force of the steam issuing from the steam-pipe C expels the air through the con-

tracted pipe *d*, and its place is supplied by water through the suction-pipe B by the pressure of the atmosphere exerted thereon. When the steam and water come in contact at the mouth of the steam-pipe, a portion of the steam is condensed.

It is evident that all the steam will not be condensed at the instant of leaving the steam-pipe, but only the exterior of the jet, while the central or interior part will not be condensed until it has passed some distance into the contracted pipe; hence the necessity of continuing the contracted opening *d* until the final condensation of the jet of steam is effected, and thus utilize the entire force of the steam.

If from any cause the power of the siphon is inadequate to force the water to the end of the delivery-pipe, at the proper point in the delivery-pipe we insert another steam-jet similar in construction to that already described, except that the steam-pipe C' enters the branch of the T-shaped socket A', while its lower arm forms the suction.

The steam-pipe C' is curved in the socket, so as to present its orifice toward, and discharge the steam into, the contracted passage *d'* of the delivery-pipe D', and in the line of the flow of water, and force the same through the delivery-pipe D', in the manner already described.

It will clearly be seen that, the first siphon having raised and forced the water to a certain height or distance in the delivery-pipe, this second jet will then accelerate its passage along to the outlet E of the delivery-pipe D', or, if necessary, others in sufficient number may be inserted and employed to effect the purpose.

F is a stand-pipe, open at the top, and rising above the point of final discharge, and allowing the steam to escape freely until the vacuum is formed in the T below and the suction established, when the water, rising in the delivery-pipe D' until it reaches the horizontal outlet E, will pass into and be discharged from the same by its own gravity.

If from any cause the suction-pipe should be obstructed, the caps G and G' may be screwed onto the ends of the stand-pipe and outlet and the whole force of the steam be ex-

erted in the suction-pipe to remove the obstruction.

What we claim as our invention, and desire to secure by Letters Patent, is—

The injector consisting of the sockets A A', the suction-pipe B, the steam-pipes C C', opening into the chambers *a a*, the pipes D D', with contracted openings *d d'*, the outlet-pipe

E, the stand-pipe F, and the caps G G', when constructed and arranged as above set forth.

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Witnesses:

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