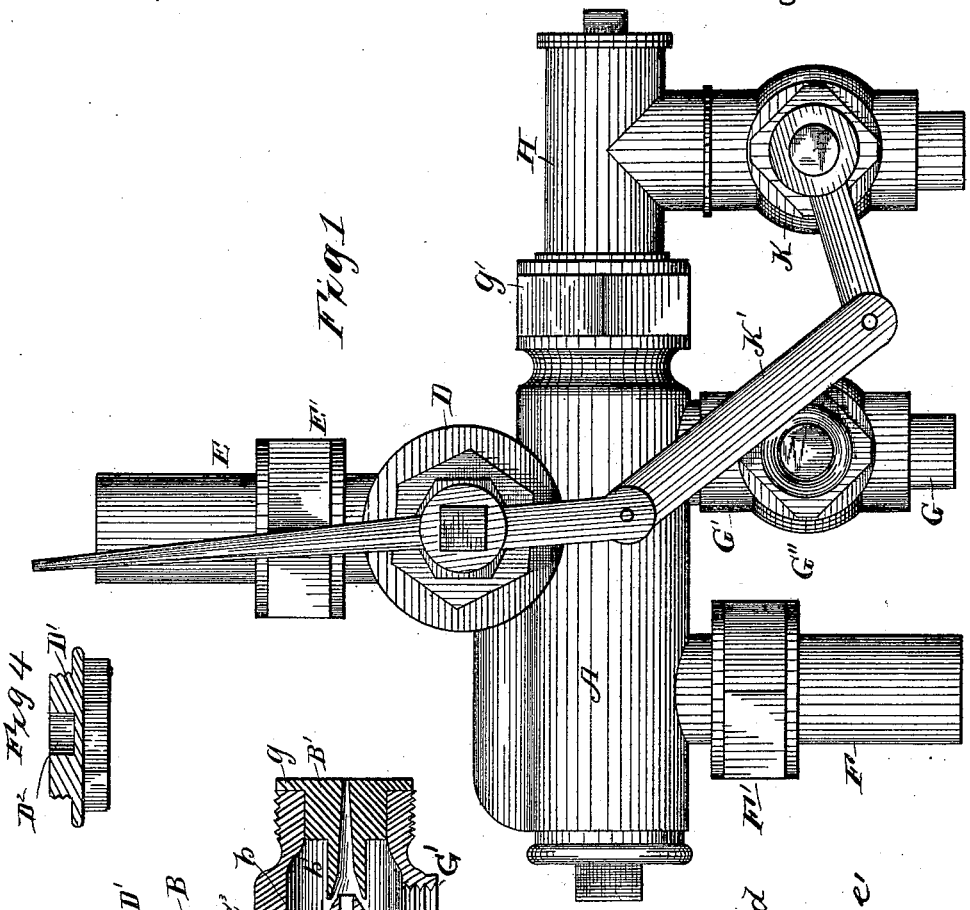
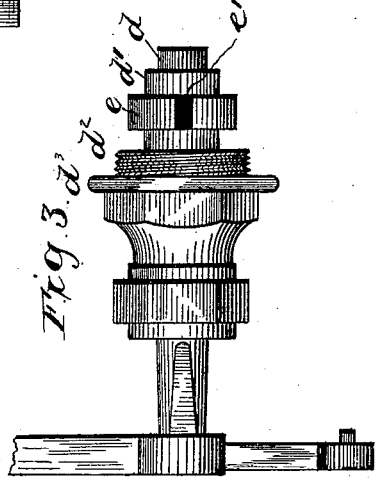
(Model.)

J. DESMOND.

STEAM INJECTOR.

No. 303,366. Patented Aug. 12, 1884.





WITNESSES

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STEAM-INJECTOR.

SPECIFICATION forming part of Letters Patent No. 303,366, dated August 12, 1884.

Application filed December 4, 1883. (Model.)

To all whom it may concern:

Be it known that I, JOHN DESMOND, a citizen of the United States of America, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Steam-Injectors, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improvement in steam-injectors; and it consists in the chamber A, cylindric valve-chamber B, steam-conduit C, chamber-tube *a*, nozzle *b*, steam-valve D, steam-pipe E, having pipe-coupling E′, connecting-tube B′, water-supply pipe F, pipe G, having pipe-coupling G′, valve G″, elbow-joint pipe H, injecting-valve K, compound lever K′, and in the combination and arrangement of the parts, substantially as hereinafter more fully shown and described.

In the drawings, Figure 1 is a perspective. Fig. 2 is an elevation in section, and Figs. 3 and 4 are detail views.

In the construction of my steam-injector I cast integral with chamber A the steam-conduit C, opening into the front part of chamber A at C′, and into the chamber B at C^2, thus connecting the front part of chamber A with the steam-valve D, and also cast integral with chamber A the steam-valve chamber D, having steam-pipe E secured thereto by means of pipe-coupling E′. Chamber A has also cast integral therewith or rigidly secured therein tube *a* in wall *a′*, and nozzle *b*, opening at one end into valve-chamber B, and from thence curved and projected to nearly connect with the nozzle *b′* of the connecting-tube B′. The water-supply pipe F, opening into chamber A, is connected therewith by means of pipe-coupling F′ and the outflow-pipe G by means of pipe-coupling G′, the latter pipe being provided with the outlet-valve G″, which is closed during the process of injecting water into the boiler. The cylindric steam-valve chamber B is closed on one side by the screw-cap D′, having recess F^2, (see Fig. 4,) which recess furnishes in part the bearings of the valve-rod *d*, having shoulder *d′*, and is closed on its opposite side by the screw-cap d^2, having flange d^3, and connects with steam-pipe E, having pipe-coupling E′. The steam-valve D consists of valve-rod *d*, having cast integral therewith the circular disk *e*, having recess *e′*, which disk is secured in the valve-chamber B by means of the screw-cap d^2, and the valve is adjustable in connection with the orifice C^2, leading into chamber B, and the orifice C^3, opening into nozzle *b*. The connecting-tube B′ is provided with the flange *g*, and it, together with pipe-coupling *g′*, Fig. 1, forms a tight joint-connection with the elbow-pipe joint H, thus preventing the possible ingress of atmospheric air. To the elbow-pipe joint H is secured the valve K, which is opened and closed simultaneously with the steam-valve D by means of the compound lever K′, thus admitting outflow of water into the boiler from chamber A at the moment of applying the steam.

The operation is as follows: The valve D is first adjusted by compound lever K′ to bring recess *e′* of circular disk *e* in line with the orifice C^2 of the steam-conduit C, whereupon water is elevated by action of the steam from supply-pipe F, and carried forward by it as it proceeds from section-chamber M through tube *a* into a section, M′, and thereupon by moving the compound lever K′ the recess *e* is brought into line with the nozzle *b*. The steam proceeding from the nozzle forces the water out through connecting-tube B′ and through valve K into the boiler, the valve being opened simultaneously with the alignment of recess *e′* with nozzle *b* by movement of the compound lever K′, which is so arranged in connection with these valves as to perform both these operations together by one and the same movement thereof. When a sufficient quantity of water has been injected into the boiler, the outlet-valve G″ is opened, and the surplus water contained in section M′ is thus permitted to flow therefrom through pipe G, thus preventing precipitation of water-sediment in said section, and its ultimate injection into the boiler with water as supplied thereto.

Having described my invention, what I claim is—

1. A steam-injector operated by means of a compound lever for simultaneously opening and closing valves for ingress of steam and egress of water to the boiler, substantially as shown and described.

2. A steam-injector, consisting of chamber A, divided into sections M M′, supply and outlet water-pipes, a steam-conduit, steam and water valves, tube *a*, nozzle *b*, connecting-tube B′, and a compound lever for admission of steam into chamber A and egress of water therefrom to the boiler simultaneously, substantially as described.

3. The combination of chamber A, having conduit C, tube *a*, nozzle *b*, connecting-tube B′, steam-valve D, injecting-valve K, supply-pipe F, emptying-pipe G, and compound lever K′, substantially as shown, and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN DESMOND.

Witnesses:

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JOHN MCDEVITT.