

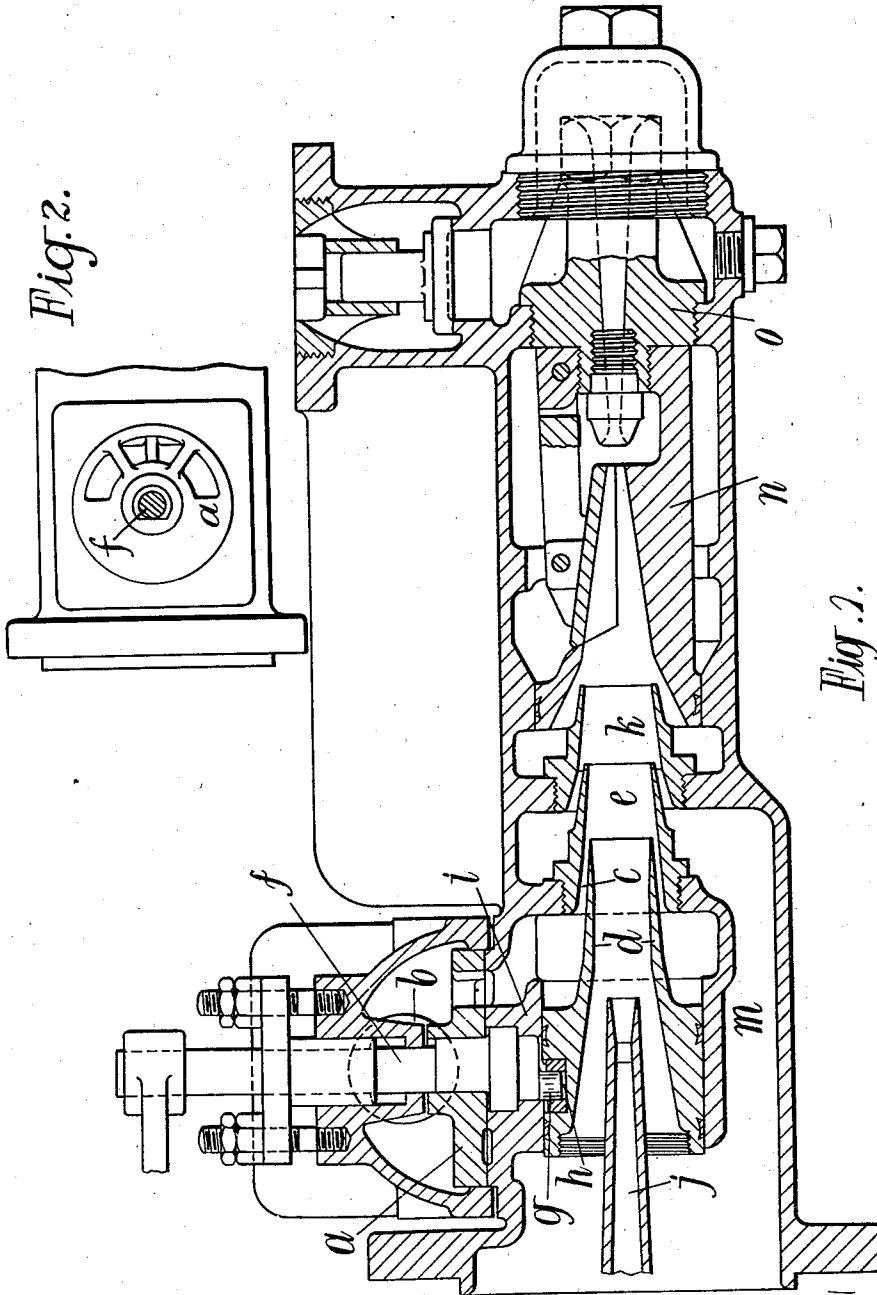
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EXHAUST STEAM INJECTOR

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EXHAUST STEAM INJECTOR

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2 Claims. (Cl. 103—270)

This invention relates to exhaust steam injectors and has for its object to simplify the construction of the injector whilst maintaining its efficiency of operation.

In existing exhaust steam injectors, the method of regulating the water supply is by adjusting the area between the outside diameter of the outlet end of the steam cone and the surrounding envelope of the draft tube or water cone. When the injector is not working, the water supply has to be cut off by a separate valve on the water supply pipe or branch.

In accordance with our present invention, we provide that the means which effect the adjustment movements of the steam nozzle for the purpose of controlling the water supply to the injector, also effect the cut-off of the water supply when the steam nozzle is moved out of its normal working range.

The invention further comprises the provision upon the spindle which actuates the steam nozzle to regulate the water supply of a valve which cuts off such supply when the steam nozzle is moved out of its normal working range.

Referring to the accompanying sheet of explanatory drawings—

Figure 1 is a longitudinal sectional elevation of an exhaust steam injector constructed and arranged in one convenient form in accordance with this invention.

Figure 2 is a plan view of part of Figure 1 showing the water cut-off valve with its cover removed.

In Figures 1 and 2, we employ a disc type valve *a* to control the inflow of water from the water branch *b* to the annular space *c* between the steam nozzle *d* and water cone *e* of the injector, the said valve being upon a spindle *f* (by which it is turned) which has a crank pin *g* or an eccentric at its end which enters a hole *h* in a bush in the steam nozzle *d* and serves to move the latter back and forth as it turns the disc valve *a* to bring ports therein and in the valve seat *i* more or less into or out of coincidence.

j is a supplementary live steam nozzle, *k* an additional steam nozzle receiving exhaust steam from the passage *m*, *n* the combining nozzle and *o* the delivery nozzle.

In operation, the steam nozzle *d* has what may be termed a working range which gives the requisite opening for the passage of water between the steam nozzle *d* and water cone *e*, but when the control spindle *f* is moved beyond this

working range, the water supply is cut off by the disc valve *a*. At starting, the first movement of the control handle upon the spindle *f* is to turn the latter to put the steam nozzle *d* in the working range. This results in the turning of the disc valve *a* to open the water supply. The injector is now in condition to function properly and any regulation of the water supply, which then becomes necessary, is effected primarily by the movement of the steam nozzle *d* which varies the annular space *c*, though the disc valve *a* is moving simultaneously.

With the arrangement described and illustrated, we not only ensure the efficient functioning of the injector by the accurate control of the water supply to suit operating conditions, but we prevent flooding of the injector when it is put out of service, without the use of extraneous fittings and controls.

We claim:

1. An exhaust steam injector comprising, in combination, a casing, an exhaust steam inlet nozzle, a live steam inlet nozzle at the inlet to said exhaust steam nozzle, a water cone at the outlet side of said exhaust steam nozzle, a combining nozzle, a delivery nozzle, a spindle moving said exhaust steam nozzle axially relatively to said water cone, a water inlet in said casing to pass water to the annular space between the exhaust steam nozzle and the water cone, and a valve upon and moved by said spindle to control the aforesaid inlet and thereby the supply of water to the injector simultaneously with the control of said space.

2. An exhaust steam injector comprising, in combination, a casing, an exhaust steam inlet nozzle, a live steam inlet nozzle at the inlet to said exhaust steam nozzle, a water cone at the outlet side of said exhaust steam nozzle, a combining nozzle, a delivery nozzle, a spindle journaled in said casing, a part upon said spindle engaging a hole in the side of the exhaust steam nozzle in order to move the nozzle axially relatively to said water cone, ports in said casing to pass water to the annular space between the exhaust steam nozzle and the water cone, and a ported disc valve secured upon said spindle which controls the aforesaid ports in said casing and thereby the supply of water to the injector simultaneously with the control of said space.

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