

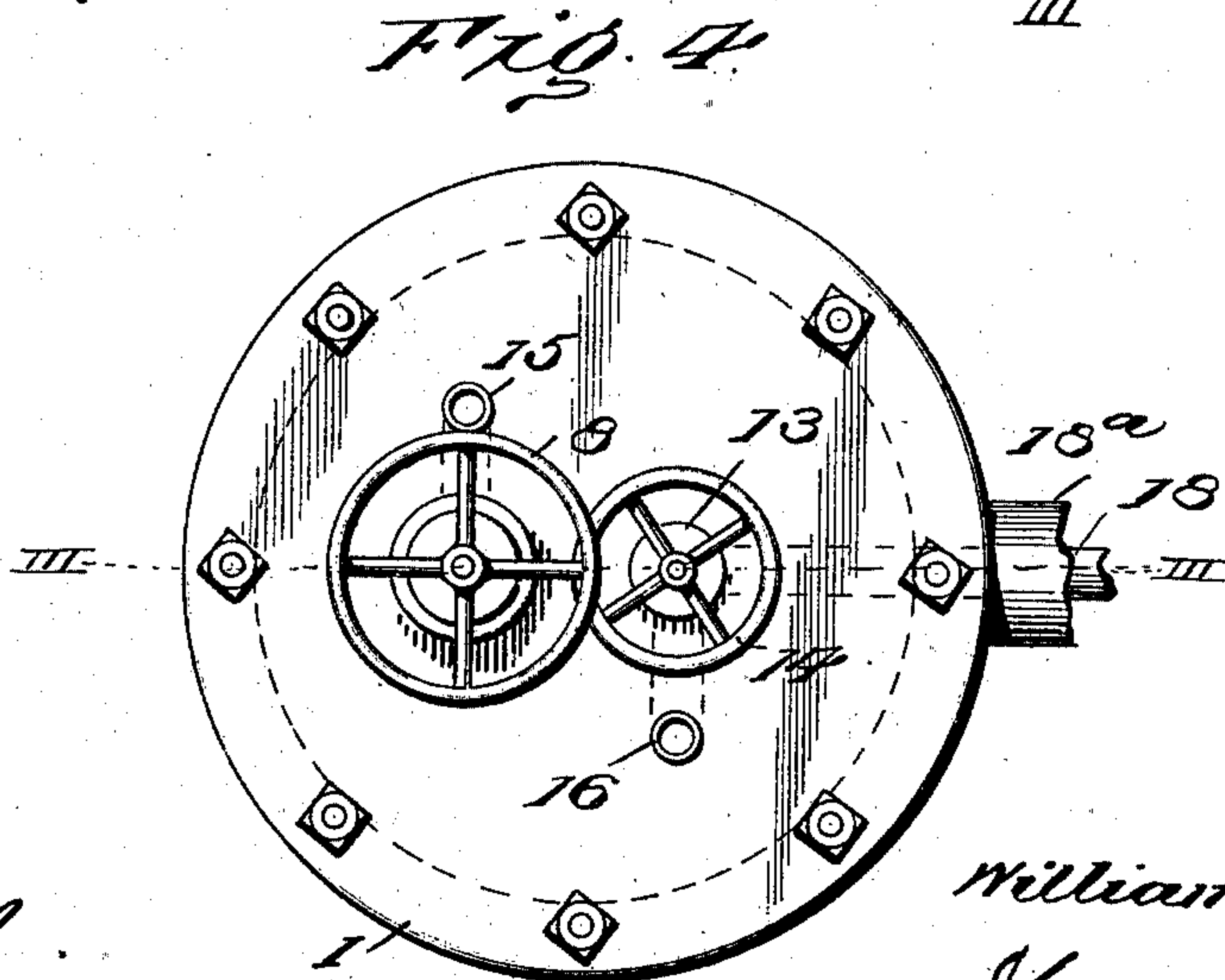
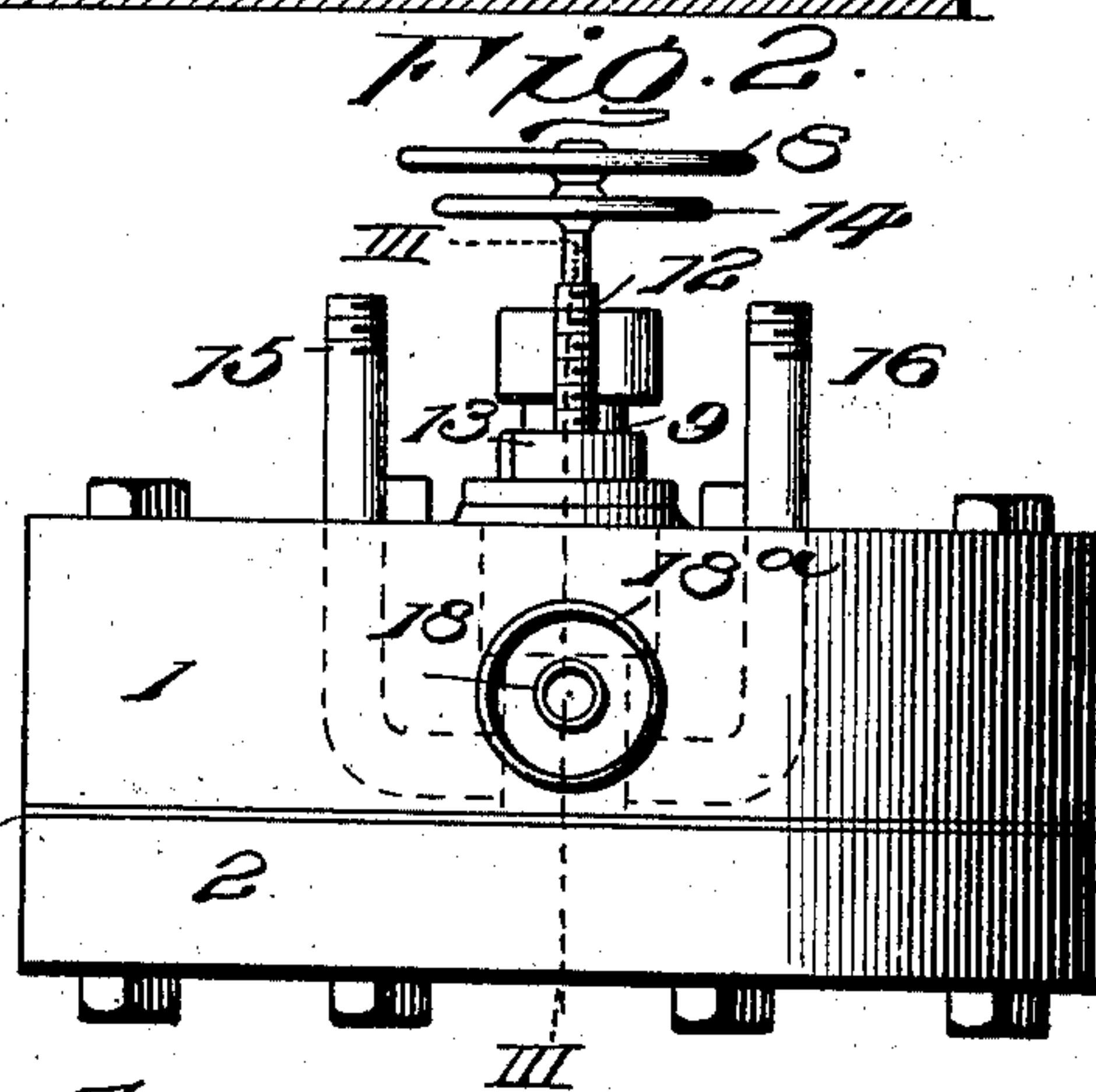
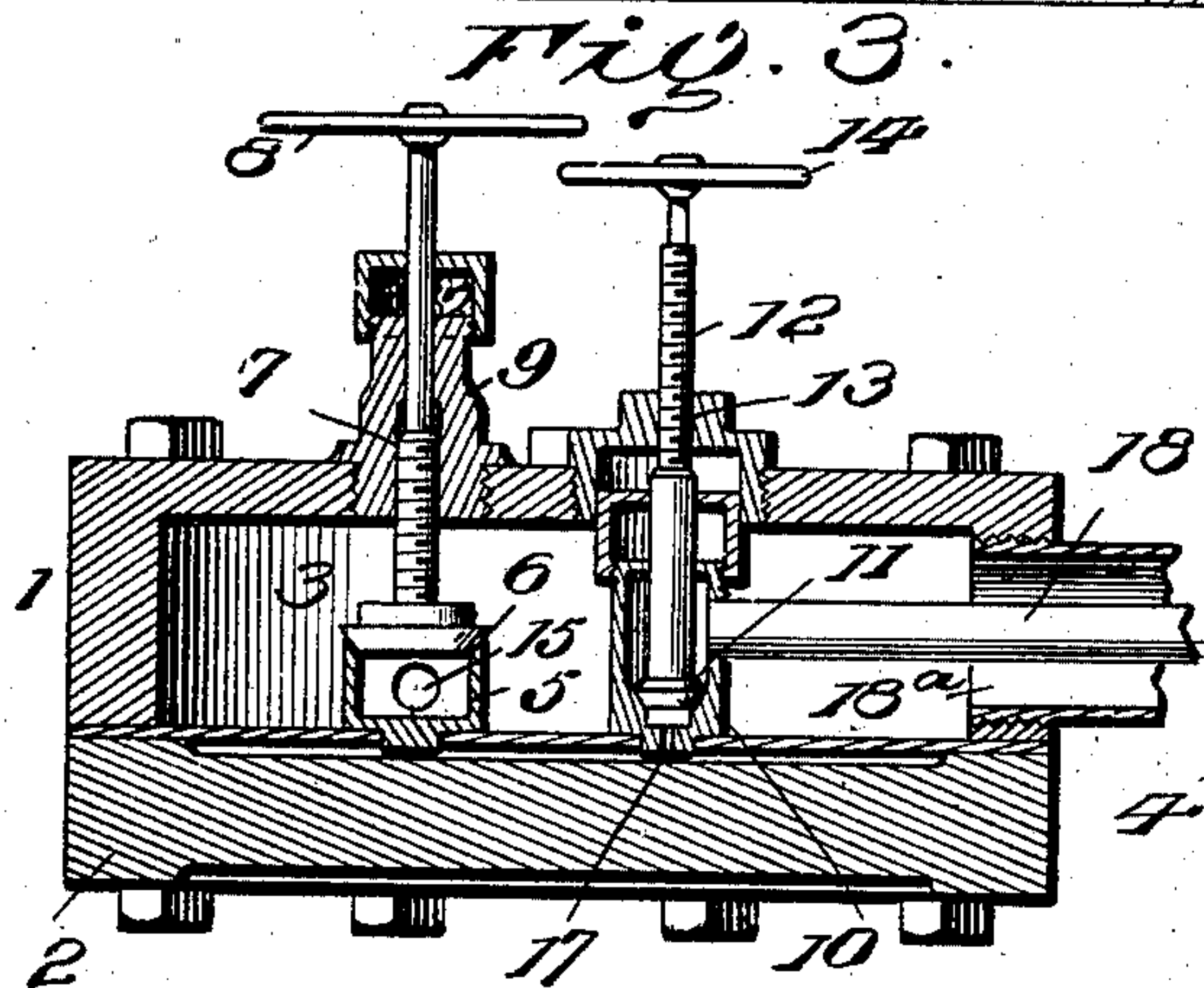
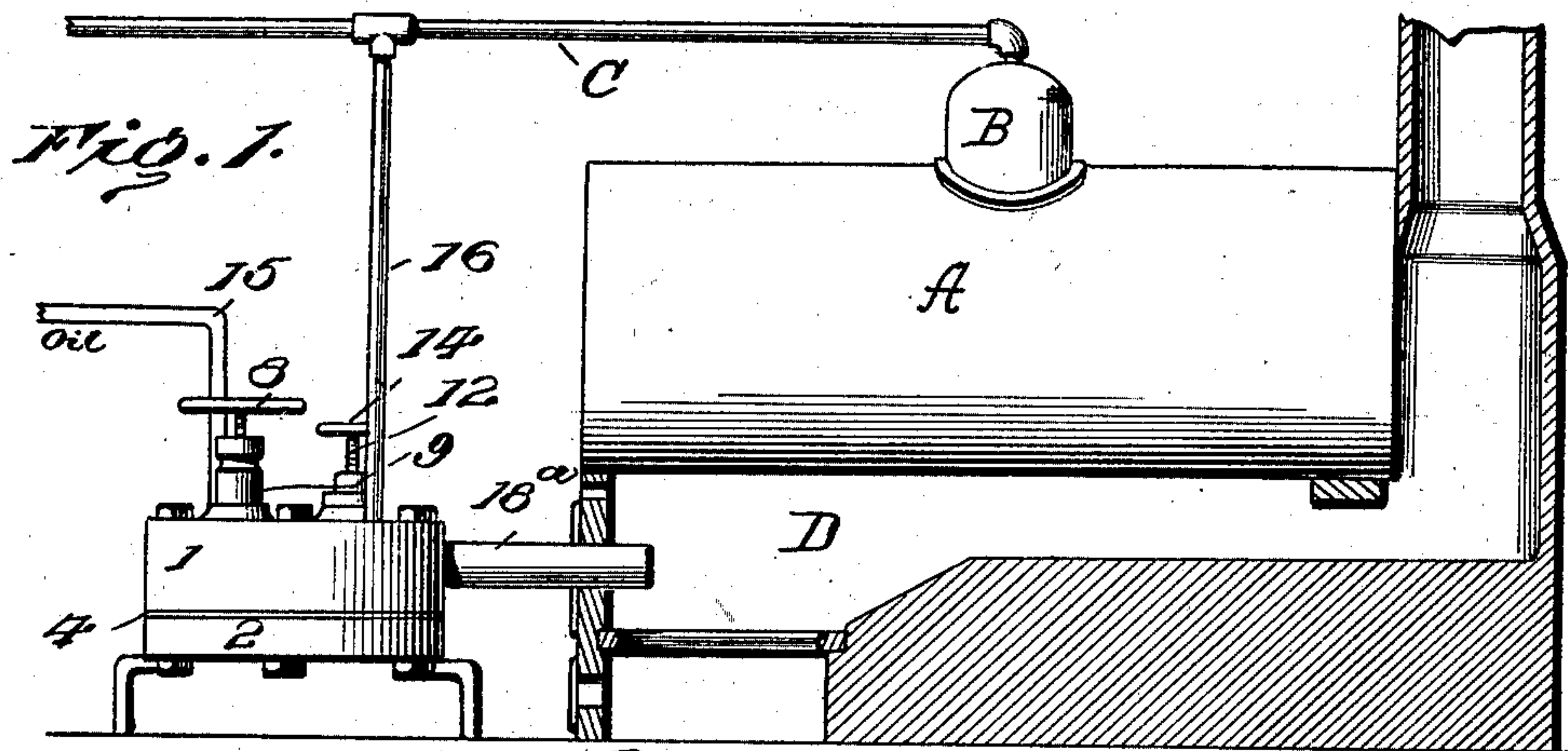
No. 698,553.

Patented Apr. 29, 1902.

W. PLOTTS.
INJECTOR BURNER.

(Application filed Dec. 14, 1900.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM PLOTTS, OF WHITTIER, CALIFORNIA.

INJECTOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 698,553, dated April 29, 1902.

Application filed December 14, 1900. Serial No. 39,907. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM PLOTTS, a citizen of the United States, residing at Whittier, in the county of Los Angeles, State of California, have invented certain new and useful Improvements in Injector-Burners, of which the following is a full, clear, and exact description.

This invention relates to an injector-burner for hydrocarbon fuel which is so constructed that when connected up with the steam-pipe of a furnace for supplying to the burner the necessary steam to inject the fuel and support the combustion thereof the pressure of the steam will so regulate the valves through which the steam and liquid fuel enter that the amount of fuel will be automatically regulated by the steam-pressure of the boiler—that is to say, the burner may be so regulated that it will maintain a given pressure of steam in the boiler by opening or increasing the supply of fuel as the pressure is lowered and reducing or cutting off the supply of fuel as the pressure reaches or exceeds the desired degree.

The invention consists in certain novel features of construction and a novel arrangement of the parts, hereinafter fully described, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a conventional representation of a steam-boiler, showing my new burner applied thereto. Fig. 2 is a front elevation of the burner. Fig. 3 is a vertical section of the burner on the line III III, Figs. 2 and 4. Fig. 4 is a plan of the burner.

A represents a steam-boiler, B the steam-dome thereof, and C the main steam-pipe.

D represents the combustion-chamber beneath the boiler.

1 designates the casing, which, with the base 2, forms a compartment or chamber 3.

4 indicates an elastic steel disk which extends horizontally through the entire chamber and just above the floor thereof. Mounted on the disk 4 is a valve-seat 5 of a valve 6, which has a threaded stem 7, provided with a hand-wheel 8, said stem extending through a bushing 9 in the upper part of the casing 1, as shown. Another valve-seat 10 is mount-

ed on the disk 4 and receives a valve 11, which has a threaded stem 12 extending upward through the bushing 13 in the upper part of the casing and provided with a hand-wheel 14. A pipe 15 enters the casing and is connected with the seat 5 of the valve 6, this pipe being for the supply of oil or other hydrocarbon liquid. A steam-inlet pipe 16 enters the casing and is connected with the seat 10 of the valve 11. A small hole 17 is made in the valve-seat 10, through which steam may be allowed to enter the narrow space under the disk 4 during operation.

18 indicates a small pipe extending horizontally from the steam-valve seat 10 to the discharge-opening in the casing.

In operation the two regulating-valves 6 and 11 are opened by turning the hand-wheels 8 and 14, and fuel from the inlet-pipe 15 passes through the valve-seat 5 into the chamber 3, then to the burner 18^a. Steam enters the valve-seat 10 through the inlet-pipe 16 and passes out through the pipe 18 to the burner, where it is mixed with fuel. A portion of the steam, however, enters behind the diaphragm 4 through the hole 17 and forces the diaphragm away from the walls of casing whenever the pressure of steam in the boiler becomes excessive. The valve-seats being carried by the diaphragm are moved simultaneously toward the regulating-valves 6 and 11, whereby the supply of fuel and steam is reduced or cut off, depending upon the positions of said regulating-valves.

The varying pressure of the steam actuates the valves, so that the device is self-adjusting. The valves are also subject to the control of the operator, who can readily subject the flow to whatever pressure he desires. A saving of fuel is thus effected by producing a uniform flow of liquid and of steam, and the operation requiring less attention of the firemen a saving of labor is also effected.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a device of the class described, the combination of a plurality of valves, each having a movable member, and means having all of said valve members mounted on one side thereof, said means being operated by the

pressure of steam from a boiler to control the flow through the valves.

2. In a device of the class described, the combination of a plurality of valves, each having a movable valve member, and a diaphragm having all of said valve members mounted on one side thereof, said diaphragm being operated by the pressure of steam from a boiler to control the flow through the valves.

3. In a device of the class described, the combination of a steam-supply pipe, a fuel-supply pipe, a diaphragm, a valve having a valve-seat communicating with the steam-supply pipe and mounted upon one side of the diaphragm, a second valve having a valve-seat communicating with the fuel-supply pipe and mounted upon the same side of the diaphragm and means admitting steam to the opposite side of the diaphragm.

4. In a device of the class described, the combination of a casing having a compartment, a steam-supply pipe, a fuel-supply pipe, a diaphragm secured within the compartment, a valve having a movable member communicating with the fuel-supply pipe and secured to the diaphragm, a second valve having a movable member communicating with the fuel-supply pipe and secured on that side of the diaphragm upon which the steam-supply valve member is mounted, said movable member of the steam-supply valve being provided with an opening communicating with the

other side of the diaphragm to move the valve members simultaneously.

5. In a burner for hydrocarbon liquids, the combination with a compartment of an elastic diaphragm extending through said compartment, a liquid-supply pipe having a valve and a valve-seat, the latter being mounted on said disk, a steam-pipe having a valve and a valve-seat, the latter being mounted on said disk and adapted to admit steam to the space under said disk, valve-stems connected with said valves, and a steam-discharge pipe adapted to mingle steam with said fluids, substantially as set forth and described.

6. The combination of a casing, a diaphragm mounted within the casing and adapted to be moved by steam-pressure, and a plurality of valves also mounted within the casing, each valve having a movable member secured to the diaphragm.

7. The combination of a casing, a diaphragm mounted within the casing and adapted to be moved by steam-pressure, a steam-supply valve and a fuel-supply valve both of which are mounted within the casing, and a movable valve-seat for each of said valves, secured to the diaphragm.

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