(No Model.)

G. E. DIXON.

STEAM SAFETY VALVE.

No. 393,748. Patented Dec. 4, 1888.

Fig. II.

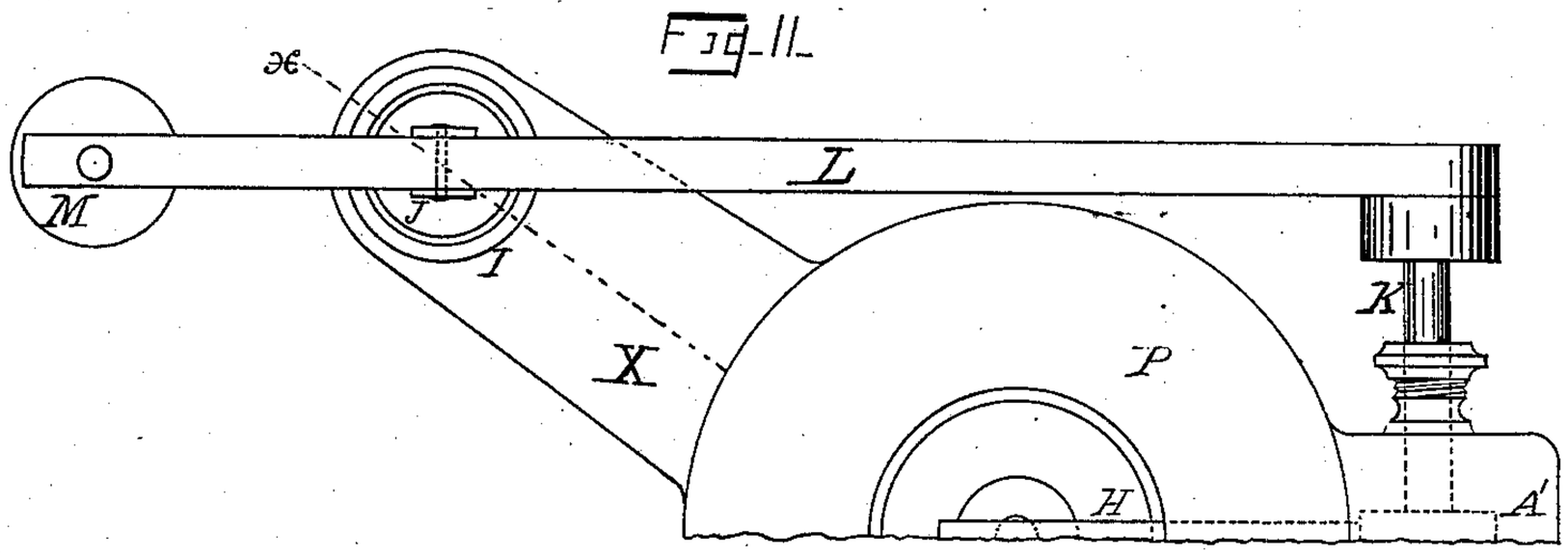


Fig. I.

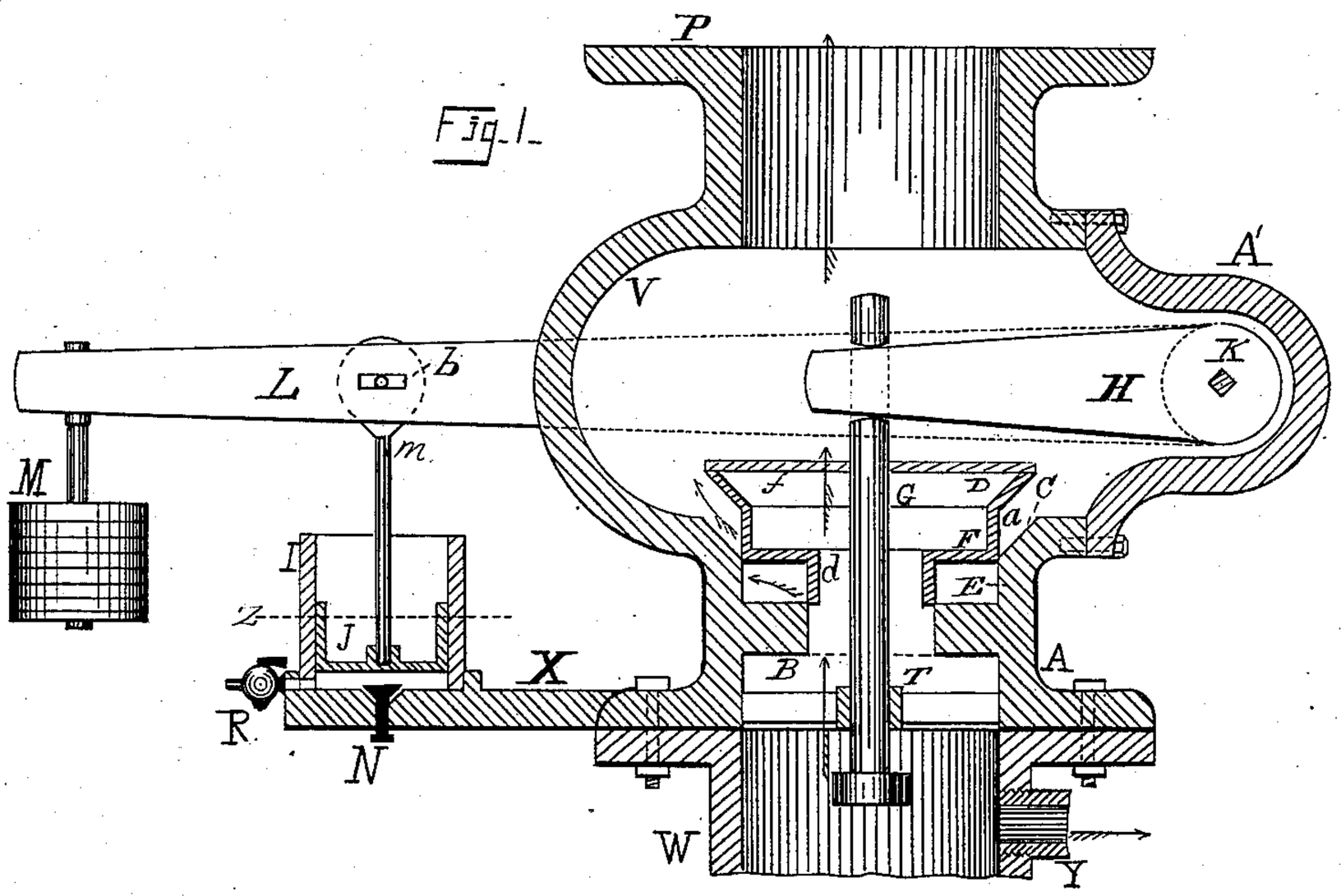


Fig. III.

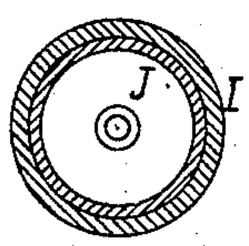
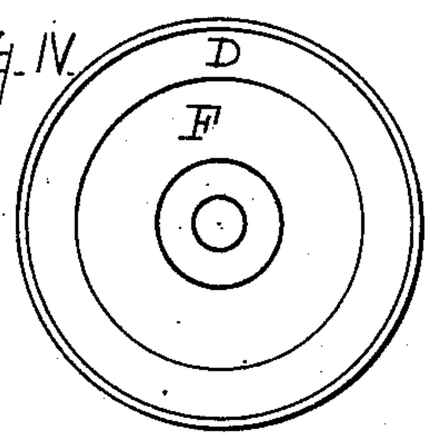


Fig. IV.



WITNESSES:
Charles Wynn.
H. A. Smith.

INVENTOR.
George E. Dixon.
BY G. L. Chapin,
ATTORNEY,

UNITED STATES PATENT OFFICE.

GEORGE E. DIXON, OF CHICAGO, ILLINOIS.

STEAM SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 393,748, dated December 4, 1888.

Application filed October 22, 1887. Serial No. 253,063. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. DIXON, a subject of the Queen of Great Britain, a citizen of England, and a resident of Chicago, county of Cook, and State of Illinois, having declared my intention to become a citizen of the United States, have invented new and useful Improvements in Steam Safety-Valves, of which the following is a specification, reference being had to the accompanying drawings, illustrating the invention, in which—

Figure I is a vertical longitudinal sectional elevation taken centrally through the steam-cushioned valve, and a vertical section on line X through the frame supporting the air-valve; Fig. II, a top view of all that portion which lies back of the section shown at Fig. I, and a full plan of the frame which supports the air-valve; Fig. III, a section of the dash-pot on line Z; Fig. IV, a plan of the steam-valve with top removed.

The purpose of this invention is so to construct a back-pressure valve that it may be connected with the exhaust-pipe of a steam-engine, in order that the exhaust-steam may be utilized for heating apparatus. Should there be more exhaust-steam than is necessary to fill the apparatus, my back-pressure valve will operate automatically to discharge the same into the atmosphere. I attain, substantially, a noiseless valve device which will operate without a pounding movement and without the destruction of parts. I find in such valves that a very nice adjustment is required that the exhaust-steam may be utilized without interfering with the operation of the steam-boiler; and to this end I combine an air dash-pot to operate simultaneously with the steam-valve, especially when there is a surplus of exhaust-steam, whereby there can be no back action in the movement of the mechanism.

A′ A V P represent a metal case somewhat enlarged in its middle portion and provided with an opening at each end. The part A′ is an enlargement necessary to provide space for attaching the lever H inside of the case, the case being steam-tight except the openings named. Projecting inward from the lower part, A, of the case and into the lower opening, is the lower annular seat, B, of the steam-valve, and on the inner top part of the case over A is formed an inclined seat, C, whereby when the valve is closed it has two seats. The steam-valve consists of the inclined part D, to be seated on the inclined part C, a vertical part, *a*, to fit the vertical part E of the case, a horizontal part, F, to fit the seat B, a vertical part, *d*, to fit the hole through the seat, and a top part, *f*, which is rigidly secured to a stem, G, whose lower portion has a proper guide in a bearing, T, secured to the lower part, A, of the case. This construction is such that steam coming in at pipe W in excess of what is required to pass out at pipe Y will raise the valve F *a d f* D and pass out of the case above, and the steam remaining between the seat B and valve part F will cushion the valve in its descent. To attain in addition the benefit of the air-cushioning of the dash-pot I J, a short lever, H, is affixed to a shaft, K, which extends into the case A′ A P V, and is supported by the part A′. The inner end of the lever is slotted to engage the reduced portion of the valve-stem G, so that when the steam-valve is raised its stem will raise the inner end of the lever and turn the shaft K in its bearing in A′. To the outer end of the shaft K is rigidly affixed a long lever, L, by which, by means of a stem, *m b*, the piston J in the dash-pot I will be elevated. This will cause the air to enter at the valve N and serve as an additional cushion to the steam-valve, so as to secure a delicate adjustment till it comes down to the position it is shown at Fig. I.

R is a petcock to regulate the escape of air, and M are weights to regulate the pressure of steam coming in at pipe W. The device is adapted to prevent excessive back-pressure in exhaust-steam pipes of engines, and constitutes what is known as a "back-pressure valve;" but it is also adapted by suitable pipe-connections to control the escape of steam from various devices without noise, concussion, or abrasion of the working parts.

I claim as new—

In automatic steam-valves, the case A′ A V P, open at its upper and lower ends and provided with the inclined seat C, horizontal seat B, in combination with a steam-valve consisting of the closed top part *f*, vertical parts *a d*, level part F, and inclined part D to fit the seats of the case, and the stem and guide G T, as specified.

GEORGE E. DIXON.

Witnesses:

G. L. CHAPIN,

ANNA D. JOHNSON.