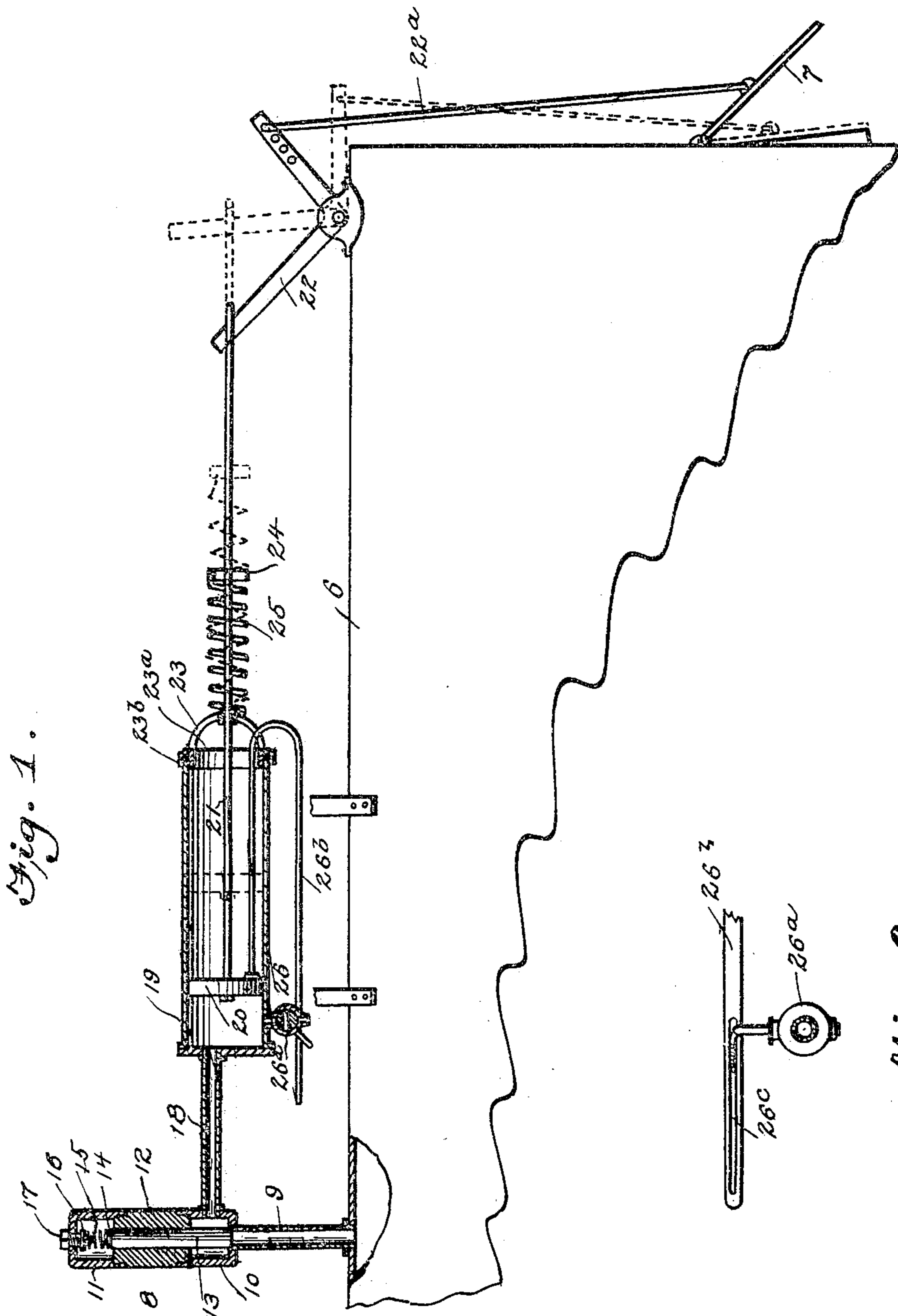


No. 793,258.

PATENTED JUNE 27, 1905.

A. E. WILKERSON.
AUTOMATIC DRAFT REGULATOR.

APPLICATION FILED AUG. 6, 1904.



Witnesses

E. F. Lamp
M. A. Schmidt

Arthur E. Wilkerson, Inventor
By Milo H. Stevens & Co. Attorneys.

UNITED STATES PATENT OFFICE.

ARTHUR E. WILKERSON, OF DENVER, OKLAHOMA TERRITORY.

AUTOMATIC DRAFT-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 793,258, dated June 27, 1905.

Application filed August 6, 1904. Serial No. 219,732.

To all whom it may concern:

Be it known that I, ARTHUR E. WILKERSON, a citizen of the United States, residing at Denver, in the county of Cleveland and Territory of Oklahoma, have invented new and useful Improvements in Automatic Draft-Regulators, of which the following is a specification.

My invention relates to an automatic draft-regulator for steam-boiler furnaces, and has for its object a closing of the draft-door when the boiler-pressure becomes excessive, and thus reduce the fire and the generation of steam, the door being opened again when the pressure drops sufficiently.

With this object in view the invention comprises, broadly speaking, a cylinder carrying a piston, a connection between the piston and the draft-door, a safety-valve on the boiler which discharges into the cylinder and supplies steam thereto to move the piston to close the door, and means for returning the piston to open the door.

In the accompanying drawings, Figure 1 is a sectional side elevation of the apparatus.

Fig. 2 is a detail view of the vent or exhaust.

Referring specifically to the drawings, 6 denotes a steam-boiler, and 7 the draft-door thereof. A safety-valve 8 is connected by a pipe 9 with the steam-space of the boiler.

The valve comprises a casing which is in two parts, 10 and 11, respectively, which are screwed on the opposite ends of a cylindrical block 12, which forms a partition. The part 10 screws on the pipe 9, which has a seat for the valve 13. The said valve is in the form of a plunger and extends through a bore in the block 12, whereby its movement is guided. The upper end of the plunger is reduced, as at 14, and extends into the chamber formed

by the part 11 of the valve-casing. The reduced end of the plunger forms a shoulder to hold a coiled spring 15, the other end of the spring being held by a plug 16. The tension of this spring can be adjusted by a screw 17, which extends through the top of the casing against the plug 16. The chamber formed by the part 10 of the valve-casing receives steam from the boiler when the valve 13 opens and is tapped by a pipe 18, which connects with a cylinder 19, said cylinder being

secured to the boiler or other suitable place in any convenient manner. The cylinder contains a piston 20, which has a rod 21, said rod being connected to one arm of a bell-crank lever 22. The other arm of said lever is connected to a rod 22^a, which extends and is fastened to the draft-door 7. The lever is fulcrumed on the boiler or other suitable place. The front end of the cylinder is preferably open and has two or more radial arms 23, which are provided with a bearing through which the piston-rod extends and which guides its movement. The arms 23 extend from a sleeve 23^a, which is fastened to the inside of the cylinder by set-screws 23^b. The piston-rod also carries a pin 24, to which one end of the coiled spring 25 is fastened, the other end of the spring being fastened to the arms 23. The cylinder has a suitable vent-opening or exhaust 26, which is controlled by a valve 26^a. Said valve is operated by a rod 26^b, attached to the piston and extending through the front end of the cylinder and around to said valve. The latter may be an ordinary plug-valve, the handle of which extends into a slot 26^c in the rod. When the piston is at the end of its travel, the valve will be opened, while the return of the piston will close it.

The operation of the apparatus is as follows:

When the steam-pressure in the boiler rises sufficiently to open the valve 13, steam will flow through the pipe 18 into the cylinder 19. The pressure behind the piston 20 will move it forwardly, and by reason of the connections above described the door will be closed. At the end of the stroke the vent or exhaust opening will be opened to permit the escape of the steam, as already described. After the boiler-pressure has decreased the valve 13 will be closed by its spring 15, and the spring 25 will pull the piston back and open the door, and the vent will be closed.

The apparatus is automatic in operation and economical, as it utilizes the waste steam from the safety-valve. It also saves fuel and water, as the closing of the draft-door lowers the fire and reduces the amount of steam generated. It can be readily applied to any ordinary boiler, and the connection between the piston and draft-door can be readily arranged

or changed to suit the particular construction and location of these parts. To permit the proper adjustment of the rod 22^a, the bell-crank lever has a number of perforations, as
5 shown, in one of which the said rod is fastened.

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

10 The combination with a boiler, the draft-door thereof, a pipe communicating with the steam-space of the boiler, a cylinder carrying a piston, and a connection between the piston and the draft-door for opening and
15 closing the latter; of a safety-valve comprising a block having a central bore; casings

screwed on opposite ends of the block, one of said casings being connected to the cylinder and screwed on the pipe communicating with the steam-space of the boiler, and containing
20 a valve adapted to seat on the pipe, said valve fitting in the bore in the block and extending into the opposite casing; and an adjustable spring for normally seating the valve.

In testimony whereof I have signed my name to this specification in the presence of two sub-
25 scribing witnesses.

ARTHUR E. WILKERSON.

Witnesses:

J. F. WILKERSON,

O. F. WILKERSON.