

(No Model.)

C. E. BENSEL.
CUT-OFF FOR STEAM FIRE ENGINES.

No. 504,654.

Patented Sept. 5, 1893.

Fig. 1.

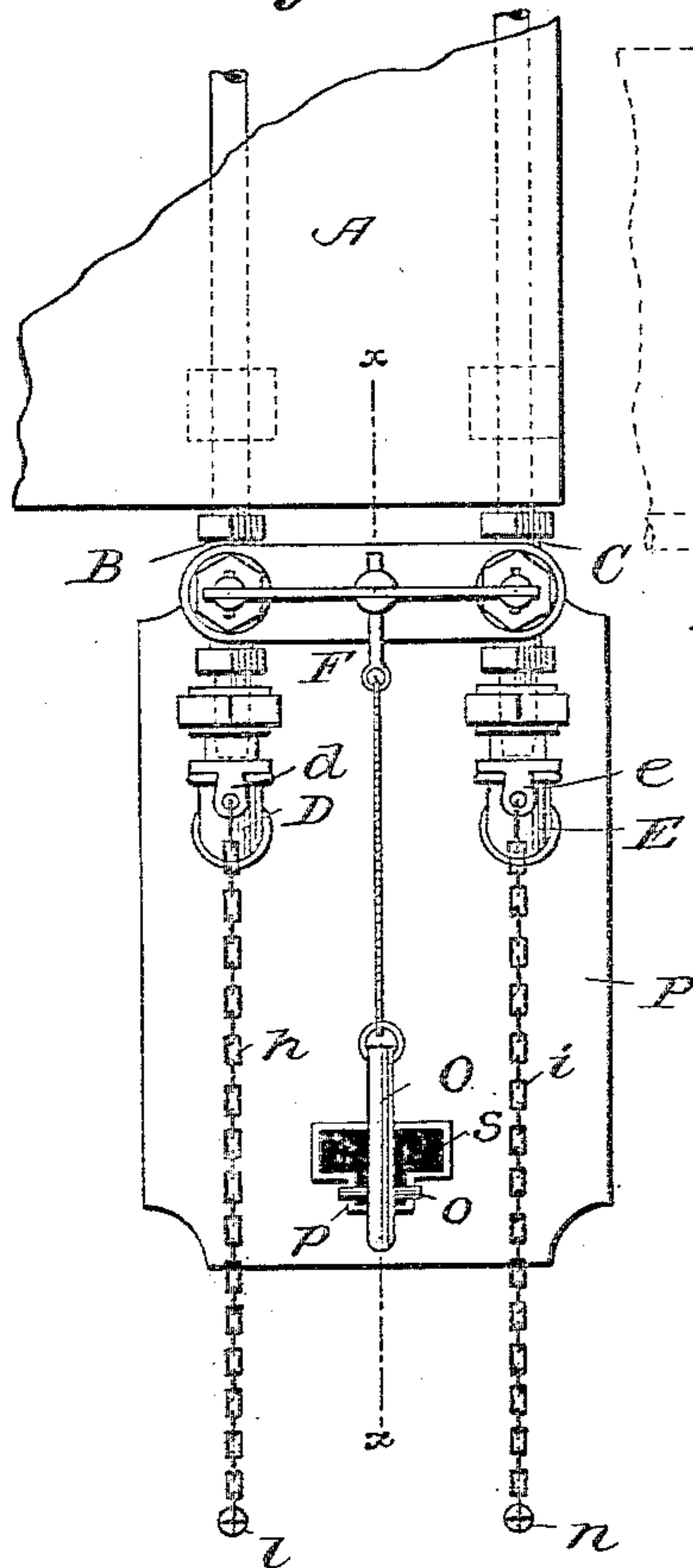


Fig. 2.

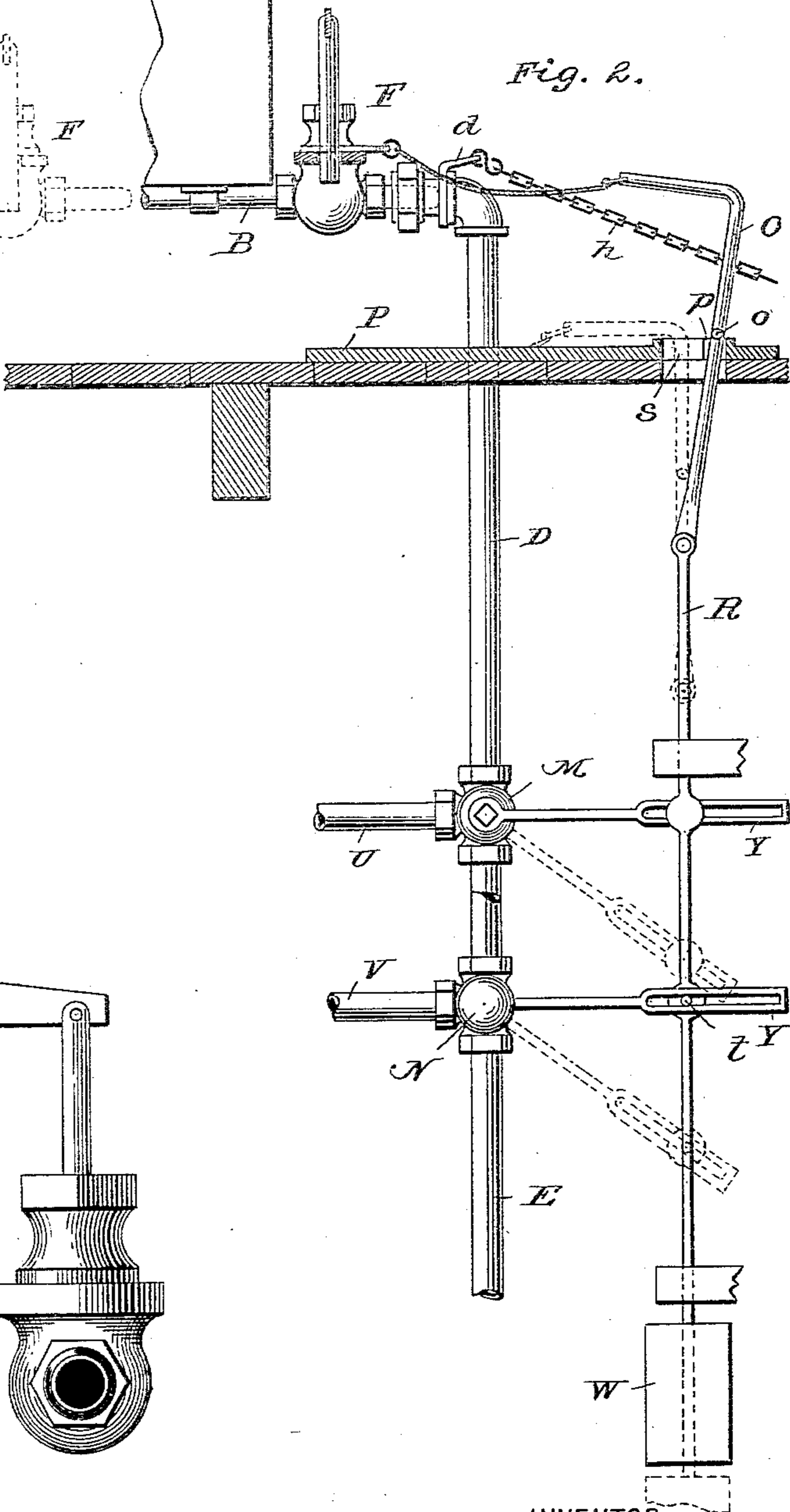
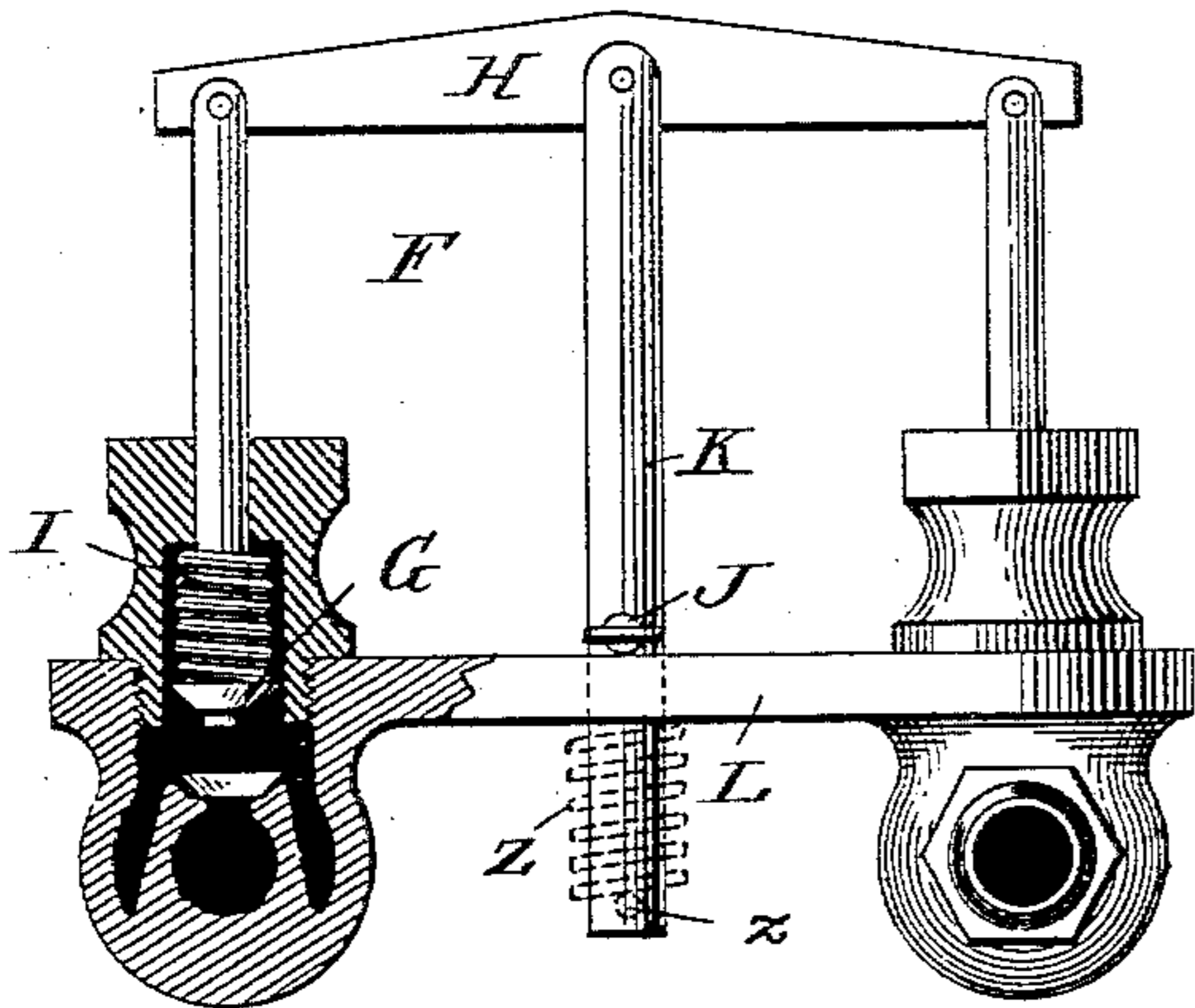


Fig. 3.



WITNESSES:

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CUT-OFF FOR STEAM FIRE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 504,654, dated September 5, 1893.

Application filed April 27, 1892. Serial No. 430,854. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. BENSEL, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Cut-Offs for Steam Fire-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in cut-offs for steam fire engines, and it consists in providing means for shutting off automatically the steam and water both from the boiler of the engine itself and from the stationary boiler or coil which are located in the basement of the engine house. It is now customary to cut off the steam and water from the boiler, that is, to prevent the escape of steam and water from the engine boiler by operating a hand lever which is attached to the fire engine. In order to accomplish this, it is necessary that one of the firemen should attend to this particular duty before the engine leaves the engine house. Consequently, a considerable amount of time is employed in this operation which might be devoted to other purposes provided there were any way of accomplishing the cut-off operation automatically.

In connection with the devices which I have invented for the automatic operation of the cut-off, I have invented others which are designed to cut off, also automatically, the steam and water which enters from pipes connected with the boiler or coils in the basement. My whole apparatus, then, is intended to prevent the escape of steam and water either from the engine boiler or from the sources of supply which are ordinarily stationary, as above stated.

By means of my invention, the starting of the engine alone is sufficient to accomplish the results aimed at, and there is no necessity for any fireman to give any time or attention to manipulating the cut-off.

My invention will be understood by reference to the accompanying drawings, in which—

Figure 1 is a plan of that portion of my cut-off apparatus which is above the floor of the engine house. Fig. 2 is an elevation of my

cut-off apparatus, and Fig. 3 is a detail view of that part of my apparatus which is designed to cut off the steam from the engine boiler. 55

In the drawings, A is a portion of a steam fire-engine, to which are attached pipes B and C, for conveying steam to and from the engine boiler. To the pipes mentioned, I attach a spring valve apparatus, as shown in Fig. 3. 60 The said valve apparatus is attached to the ends of the pipes B and C, and is arranged to allow free passage from the said pipes to the pipes D and E, when the spring valve is in its raised position, as shown in Fig. 3 and to shut 65 off a communication between the pipes when the spring valve is pressed to its seat. The valve, as a whole, I have designated by the letter F, and it consists of a pair of pistons, one of which is shown at G, connected by a frame H, 70 as clearly shown in the drawings. The piston G is pressed downward by a spring I, which, however, in the position shown in Fig. 3, is prevented from pressing the piston to its seat by means of a pin J acting in co-operation with 75 a rod K connected to the frame H and also acting in co-operation with a bar L which joins the two piston boxes. It will be seen that the parts last mentioned, namely, the bar L, and the pin inserted above it in the rod K 80 hold the piston G in a raised position compressing the spring at the same time. The same action takes place at the other piston which does not appear in detail in the drawings. As soon as the pin J is removed, how- 85 ever, the springs within the piston boxes will act and press the valve on both sides to its seat, thereby shutting off the escape of steam and water from the engine boiler. Now the valve F is permanently connected, as already 90 stated, to the pipes B and C. By reference to Fig. 2, it will be seen that the said pipes project a little beyond the valve, and are adapted to enter and communicate with an ordinary sliding connection with the pipes D 95 and E. Now the latter pipes proceed from the sources of steam and water supply whatever they may be, in the basement of the engine house. We will assume that the pipe D is the exit pipe from the stationary boiler, 100 and that the pipe E is the return pipe. When the engine is brought back into the engine house, it is put into position in such a way as to make communication between the pipes

B and C, and the pipes D and E, and the valve F is brought into the position illustrated in Fig. 3, thus allowing free communication from the stationary boiler to the engine boiler. At the same time, the valves M and N in the pipes D and E, are in the position illustrated in Fig. 2, in which position the steam and water is passing freely from the stationary boiler through the said pipes.

Now the pin J is connected by a suitable chain or cord to a link O, which projects above the floor of the engine house. This link is provided with a transverse pin *o* which rests upon an elevation *p* in a plate P, fixed to the engine-house floor. The elevation referred to marks the outer limit of an irregular slot *s* in the plate P, which slot extends also through the floor. The slot is of such shape that the pin *o* will bridge it when the link O is in its rear position, but will drop through it when the said link is pulled forward. The link O is connected below the floor with a rod R, and this rod carries at its lower end a weight W. From the rod project pins, one of which is shown at *t*, which pins co-operate with slotted projections Y from the valves M and N. The said valves, when turned, into the position shown in dotted lines in Fig. 2, cut off the steam and water from the upper portions of the pipes D and E and turn it into the pipes U and V. It will be seen that the pipes D and E are provided with collars *d e* and that these are connected by chains *h i* with staples *l m* in the floor of the engine house. This prevents the said pipes from being wrenched or moved out of place when the engine starts.

The operation of the parts is as follows: The engine being in place and an alarm being sent in, the firemen are at liberty to disregard the shutting off of the steam and water and can make ready to start the engine in the quickest possible time. As the engine begins to move, the ends of the pipes B and C are drawn out from the end of the pipes D and E, as shown in Fig. 2, in dotted lines, and at the same time, the latter pipes are held in place by the chains *h i*. The chain or cord connecting the pin J with the link O pulls the latter forward and afterward withdraws the pin from the rod in which it is normally located. The latter action causes the valve F to be released and the springs do their work and shut off the escape of steam and water from the engine boiler. At the same time, the link O, having been brought forward to the wider opening in the slot *s*, the weight W acts to draw the whole structure downward and thereby operate the valves M and N. Obviously, this cuts off the steam and water of the stationary boiler and turns it into other channels through the pipes U and V, preventing all waste at the mouths of the pipes D and E.

I have shown in dotted lines at Z a spring, and at *z*, a pin, the latter of which passes through the rod K below the bar L, and the former of which bears against both the bar

and the pin with a tendency to carry the movable parts downward when the pin J is removed. The spring Z and the pin *z* are designed either to replace or to supplement the springs I and their corresponding pistons. In some cases, I may dispense with all other valve closing springs except Z.

My improvement possesses the following advantages, viz.: The boiler for heating the water to be supplied to the fire-engine boiler and the greater part of the automatic mechanism by which the flow of the water to and from the fire-engine boiler is regulated and controlled are located below the floor of the engine house, and are, hence, out of the way, and further the mechanism which operates to close the pipes of the stationary boiler which supplies hot water or steam to the engine boiler also operates to automatically close the pipes leading to the engine boiler after being disconnected from the pipes leading from the stationary boiler.

Having now described my invention, what I claim is—

1. In a cut-off for steam fire engines, steam pipes attached to the engine, a spring valve controlling the said steam pipe and also attached to the engine, the controlling portion of the said spring valve being attached to a device in the engine-house, as and for the purpose set forth.
2. In a cut-off for steam fire engines, steam pipes attached to the engine, a spring valve controlling the said steam pipes and also attached to the engine, a retaining device controlling the operation of the said spring valve, the said retaining device being attached to a support remaining in the engine-house, as and for the purpose set forth.
3. In a cut-off for steam fire-engines, steam pipes attached to the engine, a spring valve controlling the said steam pipes and also attached to the engine, stationary pipes located permanently in the engine house and connected with the steam pipes on the engine, valves in the said stationary steam pipes, and a flexible connection between the said spring valves and the said valves in the stationary pipes, whereby on the moving of the engine, both sets of valves are operated, as and for the purpose set forth.
4. In a cut-off for steam fire engines, steam pipes attached to the engine, a spring valve controlling the said steam pipes and also attached to the engine, stationary pipes located permanently in the engine house and connected with the steam pipes on the engine, valves in the said stationary steam pipes, a pin controlling the action of the said spring valve and a link provided with a weight controlling the action of the said valves in the stationary pipes, the said pin and the said link being connected together, as and for the purpose set forth.
5. In a steam cut-off, a pair of steam pipes constituting the outgoing and return connections of a stationary boiler, and adapted to be

connected with the movable pipes attached to
and adapted to supply steam and water from
the stationary boiler to the boiler of a fire
engine, of a pair of valves in said stationary
5 pipes and a weighted link connected to the
operating arms thereof, the said link being
detachably connected to the fire engine so
that when the weighted link is tripped and
dropped both of the valves will be positively
10 and simultaneously operated by the weighted
link, substantially as described.

6. In a steam cut-off, a pair of stationary
pipes passing vertically through the floor of
an engine house, a pair of valves in the said
15 pipes, a weighted link controlling the said

valves, the said link being provided with a
pin above the floor, the said pin co-operating
with a slot in a plate secured to the floor to
permit the link either to be retained in an
elevated position or to drop into a lower po- 20
sition for operating the valves, as and for the
purpose set forth.

In testimony whereof I have signed my
name, in the presence of two witnesses, this
22d day of April, A. D. 1892.

CHARLES E. BENSEL.

Witnesses:

J. B. JOHNSON,

CHARLES E. BENSEL, Jr.