

(No Model.)

J. E. TRYON.  
APPARATUS FOR OPENING SHUTTERS.

No. 422,665.

Patented Mar. 4, 1890.

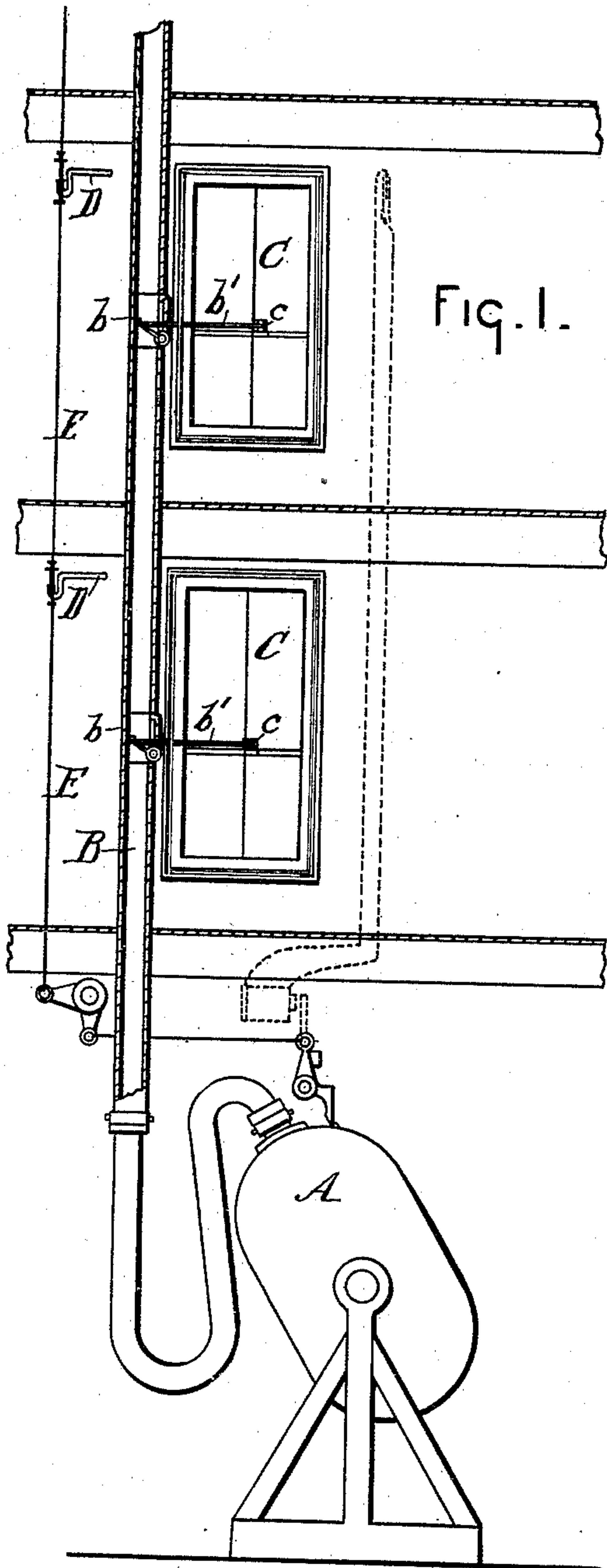


Fig. 1.

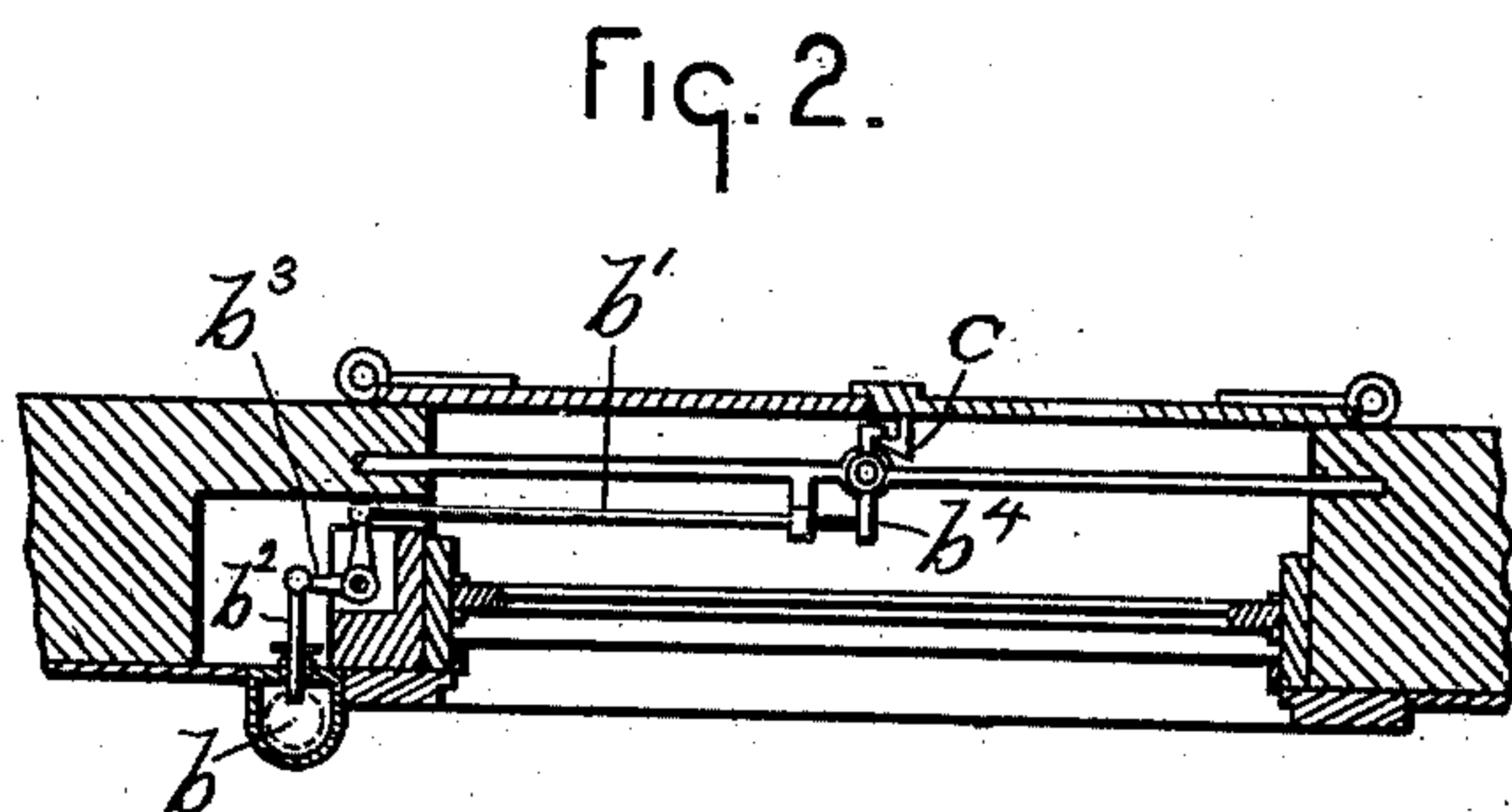


Fig. 2.

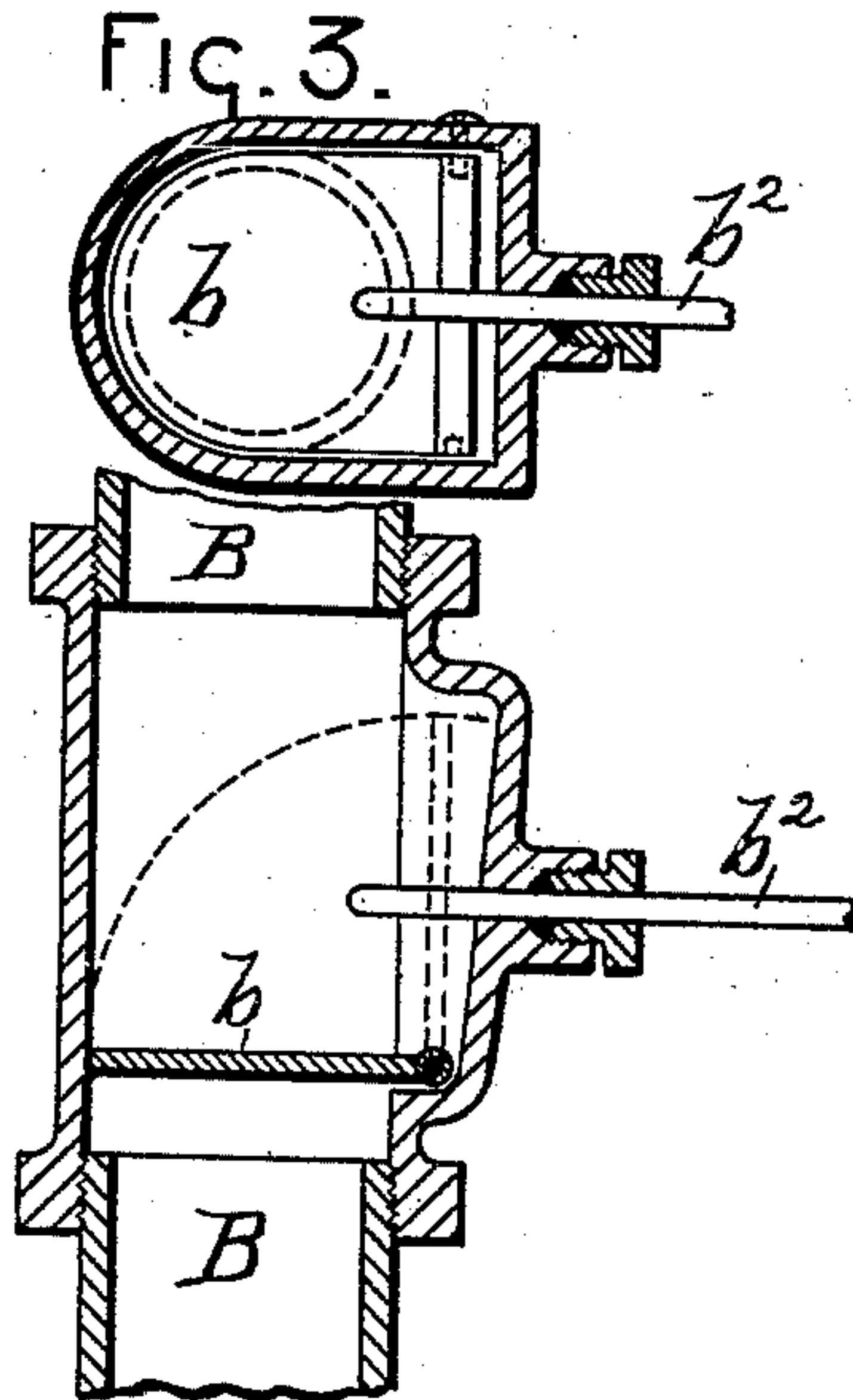


Fig. 3.

Fig. 4.

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR OPENING SHUTTERS.

SPECIFICATION forming part of Letters Patent No. 422,665, dated March 4, 1890.

Application filed December 13, 1889. Serial No. 333,609. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES E. TRYON, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Apparatus for Opening Shutters; and I 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

In the drawings, Figure 1 is a diagrammatic view showing the general arrangement of the parts of my apparatus. Fig. 2 is a detail view showing the mechanism adjacent to the shutter. Fig. 3 is a horizontal section through the valve mechanism. Fig. 4 is a vertical section of the same.

My invention is designed to produce an apparatus which will automatically open the iron shutters at present in use on most large buildings and warehouses in cities. As is well known, these shutters are generally provided on buildings for two purposes—first, to prevent burglars from entering the building through the windows, and, second, to protect the wood-work around the window from taking fire from an adjacent building, either by radiation from an adjacent burning building or from direct contact with the flames. These shutters, while they perform these services, have always been a source of annoyance and delay to firemen when a fire starts in a building which is provided with the shutters, since the fireman has no way of opening them from the outside and thus gain access to the building to extinguish the fire.

By my present invention I have produced an apparatus in which the shutters can be securely locked from the outside, but which will automatically open the shutters from the inside in case of fire.

In carrying out my invention I have used the ordinary carbonic-acid-gas generator, (represented in the drawings by A.) This is the well-known form of generator in which there is a tank filled with the proper alkaline water, and in which the dumping of the tank operates to throw the acid into the water,

whereby the carbonic-acid gas is generated and sufficient pressure obtained to force the water under pressure from the tank.

B is a pipe leading from the tank up through the various stories of the building and adjacent to a line of windows C. In this pipe, at each window and adjacent to the shutter, is located a hinged valve *b*, which, through the rod *b*<sup>2</sup>, bell-crank *b*<sup>3</sup>, rod *b*<sup>4</sup>, and latch *b*<sup>4</sup>, operates on the catch *c* on the shutter. As will now be seen, when the tank is dumped and the carbonic-acid gas formed, the water will be forced under pressure up through the pipe B, and this pressure will act to open the valves *b*, and thus through the above-described mechanism act to unlatch the shutters, so that they may be easily thrown open. The tank may be dumped in various ways and by means of various different kinds of mechanism, that shown being simply one manner of accomplishing my object.

D are thermostats located at the desired points and preferably adjacent to the ceiling. These thermostats are connected by the wire E with the catch which retains the tank in its upright position. Thus, should a fire start on any floor of the building, the thermostat will act through the wire to release the catch and the tank will be dumped; or, if desired, an electrical thermostat may be provided—such as that ordinarily used at present in large buildings—and the thermostat operate to close an electrical circuit, which, through the magnet shown in dotted lines, operates to dump the tank. By this means, as will be seen, if a fire starts in any part of the building, it will act through my apparatus to automatically open one pair of shutters on each floor of the building. The firemen can then run their ladders up to the desired floor and have ready access thereto. Another advantage of thus opening the shutters as soon as the fire is started is that the opening of these iron shutters prevents many of the explosions which are at present due to the air becoming heated and greatly expanded, and because of the iron shutters being closed and there being no escape for this heated air. So also, if desired, a door on the lower or ground floor may be provided which shall be opened



automatically by my apparatus, and a draft be thus created which shall carry the smoke and gases away from this entrance, and thus permit the firemen to enter without so much difficulty.

The water which has been forced up through the pipe can be carried up to the roof and discharged there, or it may be disposed of in any suitable manner.

10 What I claim is—

1. An apparatus for opening the shutters at a window of a building, consisting of a tank from which water is forced by the pressure of gas, a pipe leading from said tank to the shutters of the window to be opened, and a valve located in said pipe and adapted to be operated by the pressure of the water, said valve connected with the shutters in such a manner that a movement of the valve operates to unlock the shutters, substantially as described.

2. An apparatus for simultaneously opening a series of shutters in a building, consisting of a tank from which water is forced by the pressure of gas, a pipe leading from said tank to the various shutters to be opened, valves located in said pipe adjacent to the shutters and adapted to be operated by the pressure of the water in the pipe, and mechanism connecting said valves with the shutters, whereby a movement of the valves op-

erates to unlock the shutters, substantially as described.

3. An apparatus for automatically opening the shutters of a building, consisting of a tank from which water is forced by the pressure of gas, thermostats located at the desired points in the building and connected with the tank for automatically generating said gas, a pipe leading from said tank to the shutters, and a valve mechanism, substantially as described, connected with the shutters, whereby the pressure of water from the tank operates to unlock the shutters, substantially as described.

4. In an apparatus for opening the shutters of buildings, the combination, with a tank from which water is forced by the pressure of gas, of a pipe leading from said tank to the shutters, said pipe extending from floor to floor inside of the building, valves in said pipe adapted to be operated by the pressure of the water, and rods  $b^2$ , bell-cranks  $b^3$ , rods  $b'$ , and latches  $b^4$ , connecting the valves with the shutters to unlock them, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

JAMES E. TRYON.

Witnesses:

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