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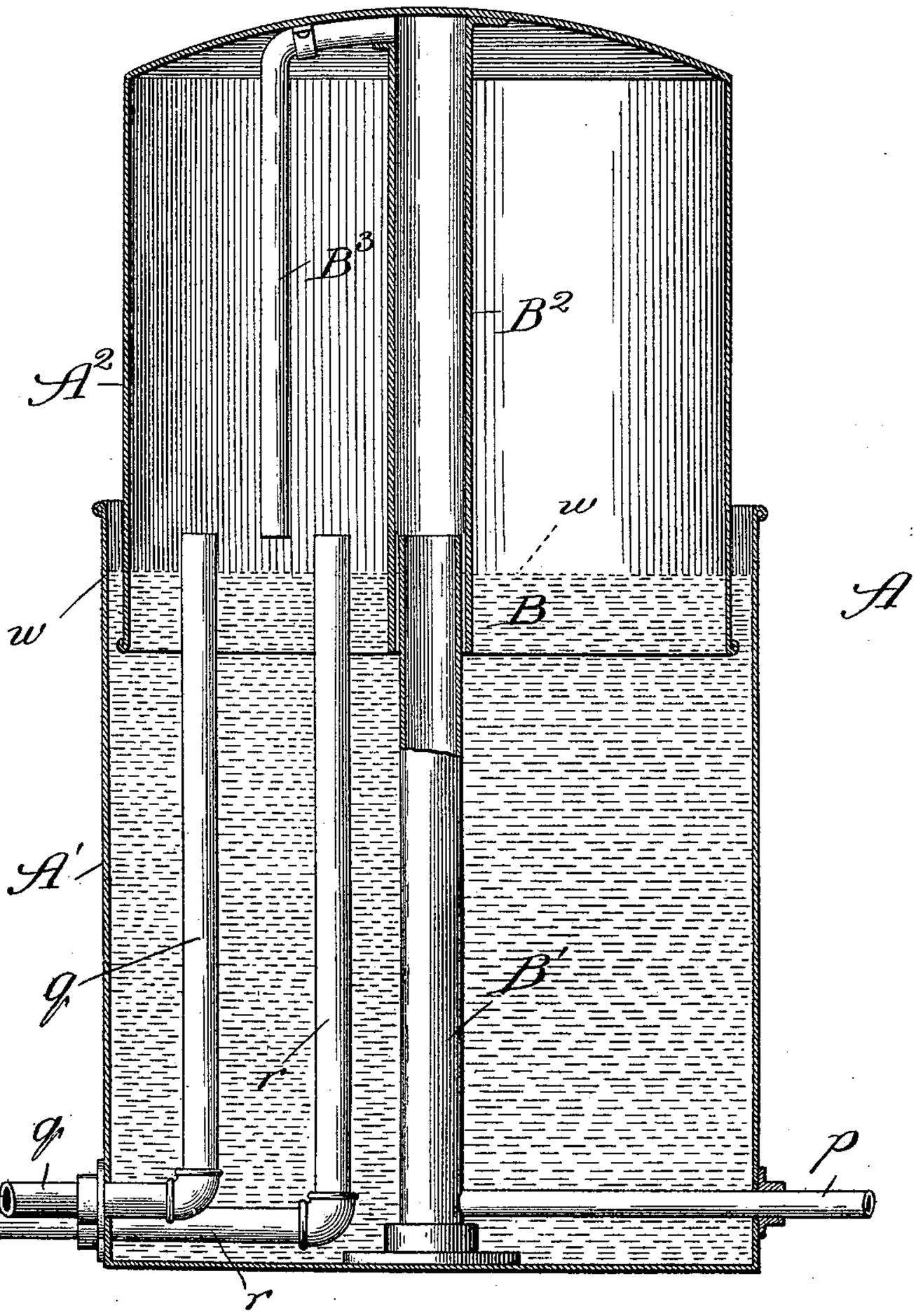
A. A. STROM.

SAFETY DEVICE FOR GAS HOLDERS.

(Application filed May 2, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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SAFETY DEVICE FOR GAS-HOLDERS.

SPECIFICATION forming part of Letters Patent No. 636,583, dated November 7, 1899.

Application filed May 2, 1898. Serial No. 679,450. (No model.)

To all whom it may concern:

Be it known that I, AXEL A. STROM, a citizen of the United States, residing at Austin, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Safety Devices for Gas-Holders, of which the following is a specification.

In a gas-holder at present in use for acetylene gas provision is made against accident from an excessive accumulation of the generated gas in the holder. This provision involves a gas-escape pipe consisting, essentially, of two telescoping pipes, one of which is stationary and forms the safety-outlet from the holder, in which it extends upward in the lower immovable section or reservoir beyond the water-line, and the other depending from the upper movable section or bell and extending over the stationary pipe normally below the water-line. With this arrangement when the accumulation of gas in the holder has produced a pressure therein sufficient to raise the bell high enough to carry the lower end of the movable pipe above the water-line the excess of gas enters it and escapes through the lower pipe until the reduction of pressure in the holder permits the bell to descend and shut off further escape by immersing the lower end of the movable pipe in the water to seal it. In practice it is found, however, that the provision referred to is not only dangerous, but practically useless. With the rise of the bell the gas rushes into the lower end of the raised pipe to enter the upper end of the companion pipe, through which it escapes, and the gas-pressure siphons the water out of the holder. If the outer discharge end of the escape-pipe, which leads out of the building to the outer air, is below the water-level in the gas-holder, so much of the water contents of the latter may be thus siphoned out as to destroy the water seal in the holder, and thereby permit the gas introduced into the gas-holder to escape from it into the room. If the discharge end of the escape-pipe extends above the water-level in the holder, the siphon action referred to fills the pipe with water and prevents the escape of gas through it, thus destroying its function of an escape-pipe, and under this last-named condition excessive pressure in the gas-holder may force the water out at the top of the lower section or reservoir, thereby destroying the water seal and permitting the gas to escape into the room.

The object of my invention is to overcome the difficulty referred to. To this end I provide a branch pipe on the movable member of the telescoping escape-pipe of a relative length adapting it to be immersed at its lower end in the water until an excessive quantity of gas is contained in the holder, but to be withdrawn beyond the water-level by the pressure of such excess in raising the bell, without, however, withdrawing from immersion the lower telescoping end of the movable member of the escape-pipe. Thus when the branch pipe is raised by the gas-pressure in the holder above the water-level therein the excess of gas escapes through the branch pipe into the telescoping escape-pipe, but without siphoning the water, as the full diameter of the pipe is presented to the gas, and the length thereof is comparatively great, and any vapor that enters the branch pipe with the gas will condense and flow back into the holder.

The accompanying drawing presents by a view in sectional elevation a gas-holder provided with my improvement.

A is the gas-holder, comprising the stationary section or reservoir A' and the movable section or bell A^2, having its open lower end sealed by the water in the reservoir, the level of which is indicated at w. The inlet-pipe for gas from the gas supply or generator is shown at r extending above the water-level, and the outlet-pipe for conducting the gas from the holder to the point of consumption is shown at q leading from above the water-level.

B is the safety or escape pipe, comprising the two telescoping members B' and B^2, the one extending upward in the holder beyond the water-level from the stationary reservoir A' and having an outlet branch p leading to any desired point out of doors, and the other depending from the bell A^2, to move with it, and overlapping the upper end of the pipe B' to an extent below the water-level greater than that to which the movable section of the

holder is permitted to raise it in operation. From the pipe B^2 there extends a branch B^3 of a length or disposition relative to the main pipe B^2 causing its lower open end to clear the water-level *w* by the rise of the holder-section A^2, while the pipe B^2 still reaches below the water-level.

Gas entering the holder through the pipe *r* is withdrawn for consumption through the pipe *q*. Pressure of the gas in the holder raises the movable section A^2 thereof, and excess of pressure requiring relief will raise it till the lower end of the branch pipe B^3 clears the water, leaving the pipe B^2 still immersed therein at its lower end. The excess of gas escapes by entering the lower open end of the branch pipe B^3, whence it passes through the pipes B^2, B′, and *p* and escapes into the open air or elsewhere, depending upon the point to which the discharge end of the escape-pipe is led. When the excess of pressure has been relieved, the bell A^2 drops again to immerse the lower end of the branch pipe B^3 in the water contained in the holder, and thus seal it against the escape of gas till the pressure thereof again becomes excessive.

As will be seen, the rush of gas into the lower end of the branch pipe B^3 will not siphon the water out of the holder, and the effects described of so siphoning the water are avoided by my improvement.

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

In a gas-holder, the combination with the tank and water-bell to rise and fall therein, with gas inlet and outlet pipes, of a safety device for the escape of an excessive supply of gas, consisting of an upright stationary pipe rising from the base of the tank and extending above the normal water-level in the tank and connected with a pipe to lead away the surplus gas, a vertical pipe depending in the bell and telescoping said upright pipe, the lower end of said vertical pipe extending down near or to the lower edge of the bell so as always to be immersed by the water in the tank, and a branch pipe opening into the said vertical pipe and extending thence downward so that its lower end is near the bottom of the bell but above the lower end of either the bell or the vertical pipe whereby its lower end is normally sealed but will become unsealed before either of said parts on an excessive elevation of said bell.

AXEL A. STROM.

In presence of—
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