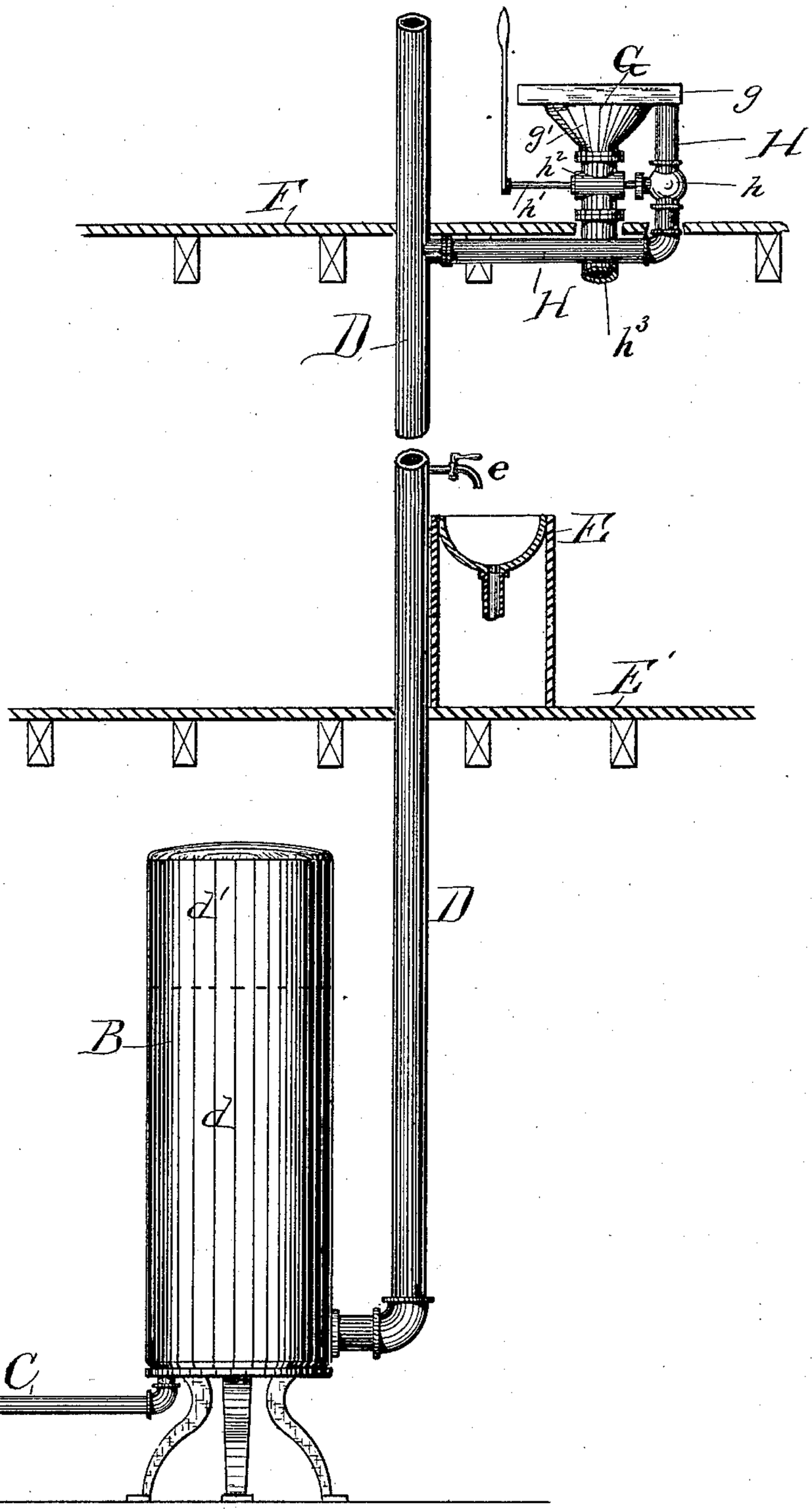
(No Model.)

E. NORTON.

WATER SUPPLY APPARATUS.

No. 308,625. Patented Dec. 2, 1884.



Witnesses:

Lewis E. Curtis.

Taylor E. Brown.

Inventor:

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UNITED STATES PATENT OFFICE.

EDWIN NORTON, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND OLIVER W. NORTON, OF SAME PLACE.

WATER-SUPPLY APPARATUS.

SPECIFICATION forming part of Letters Patent No. 308,625, dated December 2, 1884.

Application filed April 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDWIN NORTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Water-Supply Apparatus, of which the following is a specification.

In cities where houses and other buildings are supplied with water from a street water main or pipe through a system of water-works it often happens that when one or more faucets in the lower part of the buildings are open no water can be drawn on the upper stories of the building, owing principally to the fact that the supply-pipe connecting the building with the water-main in the street is too small to afford the requisite amount of water and pressure in the water-pipes of the buildings; and here it should be remarked that the size of the supply-pipe connecting with the main is necessarily limited by the proper authorities, in order that the pressure may be maintained in the mains or street-pipes throughout the whole city or district. For an ordinary dwelling this supply-pipe in many cities is limited to from one-half to an inch interior diameter, and, consequently, when water is being drawn from one or more cocks on the lower floors of the building, it will be found that there is not sufficient pressure in the pipes to enable water to be drawn from the faucets on the upper stories until the former have been closed, thus occasioning great inconvenience to the occupants of the upper floors, especially in flats or apartment-houses, where the occupants of the upper stories have no control over those of the lower; and especially is it difficult under this old system to obtain a sufficient pressure and supply of water to properly flush water-closets located on the upper stories, even when all the cocks on the lower floors are closed, owing to the limited size of the supply-pipe, and for this reason, where water-closets have been located on the upper stories at all, it has been customary to employ supplemental tanks, located usually some feet above the water-closet, for the purpose of affording a supply of water to flush the same.

It is the object of the present invention to overcome these difficulties; and this I do—and herein my invention consists—by employing a closed or air-compression tank located in the basement of the building, or on as near a level with the street-main as the circumstances of building will permit, into which tank the supply-pipe from the street-main is led. The service-pipe, which is made of larger size, is connected to this air-compression tank near its bottom. As this air-compression tank is located in the lower part of the building, or near the level of the street-main, where the water-pressure is always good, the air in the tank will be compressed to the full or to near the full extent due to the street-pressure, and this compressed air in the tank will by its expansion afford a supplemental supply of water from the tank to the large service-pipe, and thus operate to maintain a sufficient pressure therein to cause the water to flow freely on the upper stories, though several cocks may be open at the same time on the lower stories of the building; and though the supply-pipe connecting the street-main may be too small to afford a proper flush of water for a water-closet on the upper stories, the expansion of the compressed air in the tank when the water-closet valve is raised will maintain the pressure in the large service-pipe leading from the tank to the water-closet, and thus afford a sudden and ample flush of water in the water-closet, and this, too, when the water-closet is located on the upper story, so that the usual water-closet flush-tanks may all be dispensed with. In this way the supply-pipe from the street-main is constantly furnishing all the water and affording all the pressure it can, and at the same time the expansion of the air in the tank affords an ample supplemental supply from the water in the tank, so that the full capacity of the large pipe is utilized whenever the water-closet or other valves are opened and a large supply needed. After the valves are closed the water will continue to flow into the tank from the supply-pipe until the tank is again partially filled with water and the air again compressed, so that its tension equals the street-pressure. The tanks should of course

be made strong enough to resist the street-pressure, and they should be, for example, from six to eight feet long and from a foot to eighteen inches in diameter, so as to hold as great a supply of water as with the quantity furnished by the supply-pipe during the interval would ordinarily be drawn or required at one time. By locating the tank in the basement or cellar, as near the level of the street-main as possible, where the pressure is good, the air will always be compressed in the tank, so that there is sure to be a supplemental supply of water in the tank to maintain the pressure in the large service-pipe whenever any of the cocks or valves are opened, and the water in the tank will also be kept comparatively cool when the tank is located in the cellar or basement of the house, and it is also out of the way, and for this reason much more convenient than if located on upper stories or where a separate flush-tank is employed for each water-closet, and located in the cellar there is no danger of injury to the building from leakage of the tank.

The accompanying drawing, which forms a part of this specification, shows a device embodying my invention.

In said drawing, A represents the street-main or water-pipe; B, the closed or air-compression tank; C, the usual supply-pipe, of limited size, leading from the street-main to said tank, preferably entering the same at the bottom; and D is the service-pipe, leading from near the bottom of said tank to the various stories or parts of the building, and to which the various water cocks and valves in the building are connected either directly or through suitable branch pipes.

The dotted line on the tank B denotes the height of the water in the tank. Below this line is the water, *d*, and above it is the compressed air, *d'*.

E represents a wash-bowl, located, for example, on the first floor, E', and to which water is supplied from the service-pipe D through a cock or faucet, *e*.

F represents one of the upper floors of the building—for example, the fourth—and G is a water-closet located thereon, to which water is supplied from the service-pipe D through a branch pipe, H, leading directly into the after wash tank or recess *g*, which surrounds or forms the upper part of the bowl *g'*. This branch pipe H is provided with a cock, *h*, which is connected to or operated by the shaft *h'* of the cock h^2, which closes the soil-pipe h^3. The construction and operation of this water-closet are shown and described in a previous patent granted to me and Le Grand M. Norton under date of September 20, 1881, and numbered 247,210, and to this patent I would refer for a more full description of the same. The proper size of the service-pipe D, as well as of the tank B, will of course depend largely upon the number of water cocks or valves in the building to which water is to be furnished, and also somewhat upon the size of the supply-pipe C. For an ordinary building I usually employ an inch-and-a-half or two-inch pipe for the service-pipe D; but in many buildings it may be smaller, and in others a larger pipe will answer better. With an inch-and-a-half service-pipe and an air-compression tank of, say, forty or eighty gallons capacity, a very copious and sudden flush of water will be afforded to a water-closet located on the top floor when the supply-pipe C to the building is a half-inch or even less in interior diameter. Of course it will be understood that one or more service-pipes may be led from the tank B, in which case their combined capacity must exceed that of the supply-pipe.

I do not claim, broadly, an air-compression tank and water-reservoir in connection with a water-closet or a water-supply pipe, as I am aware that such has been used before—as, for example, in the patent before referred to; but

What I claim is—

1. The combination of a closed or air-compression tank, B, located in the cellar or basement of a building, or near the level of the street-main, where the water-pressure is good, for containing a supplemental supply of water and air under pressure, with a water-supply pipe, C, and service-pipe D, of larger diameter than said supply-pipe, leading to faucets above the level of said tank, substantially as specified.

2. The combination of a closed or air-compression tank located in the lower part of the building, where the water-pressure is good, for containing a supplemental supply of water and air under pressure, with a water-supply pipe connected to said tank and a water-service pipe of larger diameter leading from said tank and provided with a number of water-cocks at different heights above said tank, substantially as specified.

3. The combination of a closed or air-compression tank, B, located in the lower part of the building, with a water-supply pipe leading into said tank, a water-closet located above said tank, and a service-pipe leading from said tank to said water-closet, of a larger diameter than said supply-pipe, whereby a sudden and ample flush of water is supplied to said closet through said large service-pipe by the expansion of the compressed air in said tank, substantially as specified.

EDWIN NORTON.

Witnesses:
EDMUND ADCOCK,
H. M. MUNDAY.