

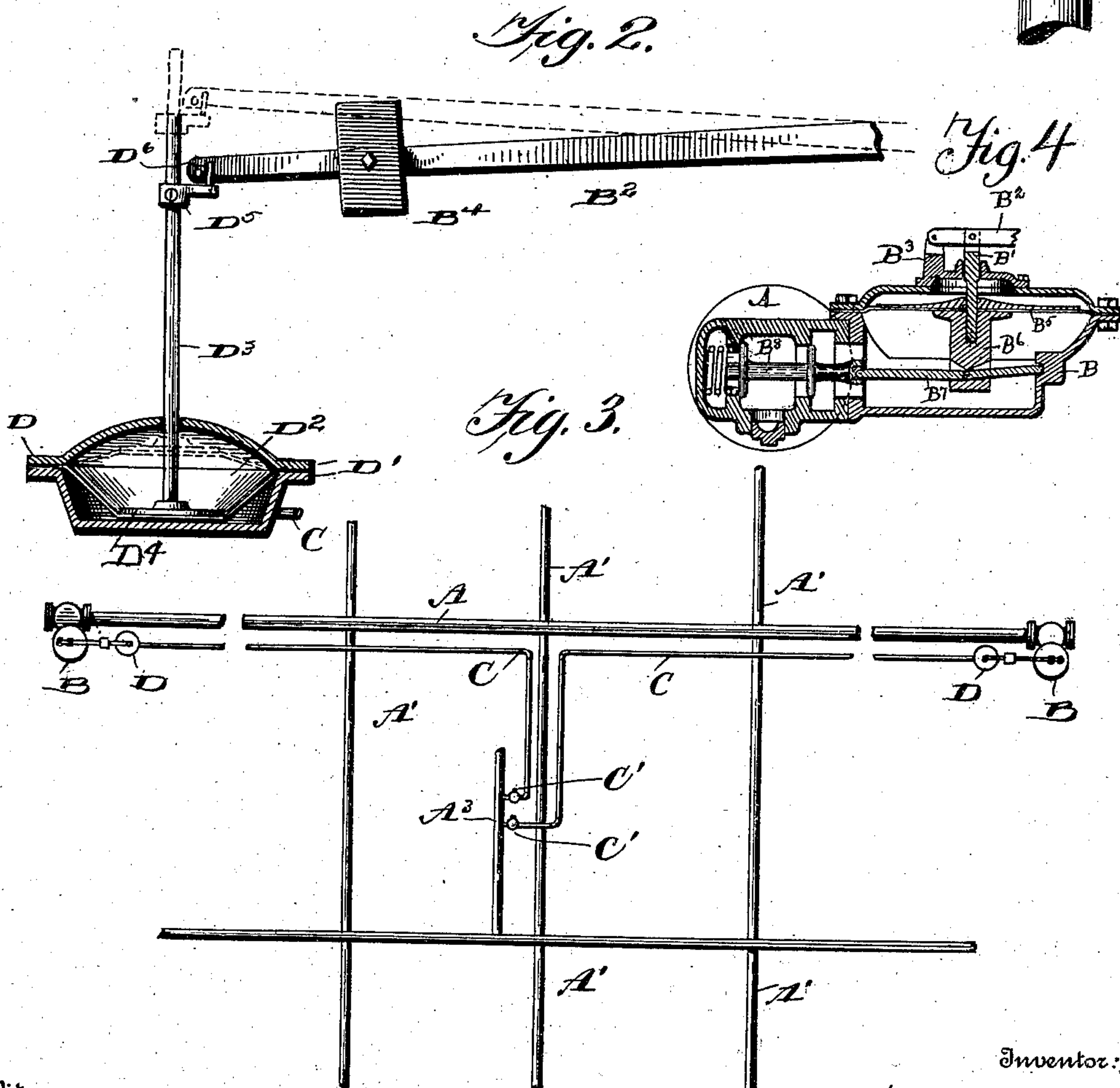
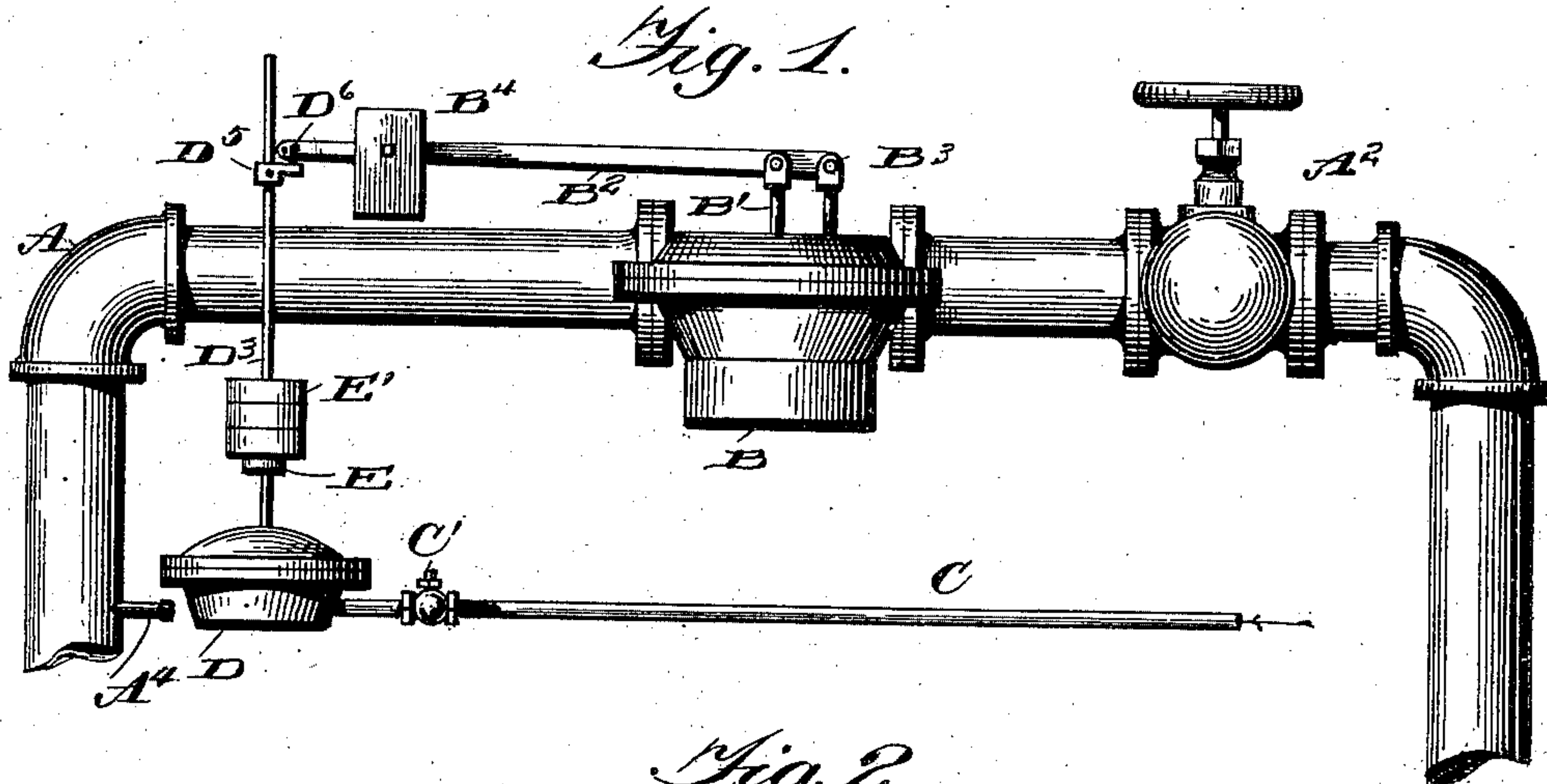
No. 662,550.

Patented Nov. 27, 1900.

H. C. SISCO.
FLUID PRESSURE REGULATOR.

(Application filed Nov. 8, 1897.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY C. SISCO, OF ANDERSON, INDIANA.

FLUID-PRESSURE REGULATOR.

SPECIFICATION forming part of Letters Patent No. 662,550, dated November 27, 1900.

Application filed November 8, 1897. Serial No. 657,862. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SISCO, a citizen of the United States, residing at Anderson, in the county of Madison, State of Indiana, have
5 invented certain new and useful Improvements in Fluid-Pressure Regulators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to fluid for pressure-regulators, and has for one object to produce
10 an improved form of apparatus for actuating the main regulator used in fluid-pressure systems of various characters, whereby the necessary pressure may be maintained in the pipe-
15 lines under varying conditions of use.

It has further for its object to arrange the auxiliary device so that the same will be operated by the decrease or increase of pressure upon the pipe-lines at a point distant from
20 the main regulator of the system—for instance, at the point in the system where the fluid pressure will be the lowest.

A further object is to improve the device for actuating the regulator so that the same
25 will operate without friction and will not be affected by changes in temperature to which the main regulator may be subjected.

Other objects and advantages of the invention will hereinafter appear in the following
30 description and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 represents a side elevation of the main pressure-regulator and the auxiliary device applied thereto. Fig. 2
35 is a vertical section of the auxiliary device with the lever of the main regulator and other parts in elevation. Fig. 3 is a diagrammatic view of the pipe-line system, showing the location of the main regulators and the auxiliary
40 device for actuating the same; and Fig. 4 is a central section through a preferred form of main regulator used with my auxiliary device.

Like letters of reference indicate like parts
45 throughout the several figures of the drawings.

The letter A designates the main pipe of a fluid-pressure system, in communication with which are a number of distributing pipe-lines
50 A'. The main pipe is provided with any preferred form of regulating device B, which has been illustrated in this case as provided with

a stem B', extending upward from the regulator-diaphragm, with the lever B² pivotally mounted upon the support B³ and pivotally
55 connected with the stem B'. At the other end of this lever a suitable weight B⁴ is provided, which may be adjusted to regulate the amount of fluid to pass through the regulator under ordinary conditions of use. A suitable shut-
60 off cock or valve A² may be applied to the pipe-line adjacent to the regulator, if desired.

The parts just described may be of any desired form and such as are ordinarily used in
65 an apparatus of this character.

An illustration of the preferred form of main regulator B is shown in Fig. 4, wherein the stem B' is connected with a diaphragm B⁵ within the regulator, which diaphragm by means of an extension B⁶ and connecting-lever
70 B⁷ operates the regulating-valve B⁸. The weight B⁴ is properly adjusted to permit the diaphragm B⁵ to operate the valve for the purpose of maintaining the proper normal pressure within the system.
75

The system provided with a regulator just described will admit a certain pressure of fluid into the main, which pressure will be gradually diminished by the use of the fluid
80 from the mains until at a point distant from the main supply of the system the pressure will be at its lowest. For instance, at a central point, as indicated at A³, the pressure of fluid will be very much lower than at any other point. For the purpose of maintaining
85 the pressure throughout the system equal, or, in other words, to supply an equal amount of fluid at the point A³ as at other points in the system, I have applied a return-pipe C, which extends toward the regulator B and is con-
90 nected with the auxiliary device D.

The device comprises a closed chamber formed of two parts D', having secured between the same a diaphragm of flexible material D², and upon which diaphragm rests an
95 operating-rod D³, provided at its lower end with a plate D⁴. The upper end of this rod has secured thereto an adjustable lug D⁵, which is connected with the outer end of the lever B² by means of a pivot-link D⁶, engaged
100 in an eye or other suitable portion of the said lever. The rod D³ may, if desired, be provided with a collar E, upon which will rest a series of weights E' when it is found necessary

to apply further weight to the main lever of the regulator B, and when these weights are so applied a greater pressure of gas will be permitted at the point A³ in the system. The
 5 return-pipe C of the system may be provided with any suitable cock or valve C' for the purpose of reducing the amount of fluid passing through this pipe or for shutting the pipe off entirely. The valve C' may be applied either
 10 adjacent to the point A³, as shown in Fig. 3, or adjacent to the auxiliary device, as shown in Fig. 1. If desired, connections may be made between the main pipe A and the auxiliary device before the fluid reaches the regu-
 15 lator by means of a pipe A⁴; but this pipe is not shown as connected with the regulator or auxiliary device in its present application for use.

From the foregoing description it will be
 20 observed that the lowest pressure of fluid in the mains will be at the point A³, which is at the greatest distance from the source of supply, and that the small return-pipe will convey to the auxiliary device the pressure of
 25 fluid at the point A³. If this pressure be less than the proper amount determined upon for the mains, the diaphragm-rod of the auxiliary device will fall and in its movement operate the valve of the main regulator to ad-
 30 mit more fluid into the system, while, on the other hand, after the pressure reaches the predetermined amount at the point A³ the same pressure will be communicated to the diaphragm and through its connections operate
 35 the regulator B to close the valve thereof and admit less fluid into the system. It will be observed that by this means a uniform pressure is automatically maintained at the point
 40 of lowest pressure in the system, and the auxiliary device for the main regulator is so constructed that no stuffing-boxes are necessary, and as no liquid is contained therein all danger of freezing is avoided. The device is
 45 thus very sensitive in operation and accommodates itself and the main regulator to all differences in pressure caused by the use of varying amounts of fluids carried in the system. It will be understood that in Fig. 3
 50 the return-pipes C extend to opposite ends of the system, as it is customary in systems of this character to supply the fluid from each end of the main pipe, so as to maintain as far as possible an equal pressure therein. After the main regulator B is weighted for
 55 the proper pressure of fluid ordinarily required in the system this auxiliary device will control any excess or decrease of the pres-

sure, which will be most prominently felt at the point A³ in the system, which is usually in the center of the city or town and where
 60 the usual pressure-gages are located for determining the supply provided for the system. In the event that more fluid should be required for the main than that for which the
 65 regulator B is set the pressure can be increased at the central office A³ by means of the stop cocks or valves C' in the return-pipes, which will reduce the pressure therein and cause the auxiliary device to open the valve
 70 of the main regulator B.

It is obvious that numerous changes may be made in the construction and arrangement of the several parts without departing from the spirit of this invention as defined by the appended claims. 75

Having described my invention and set forth its merits, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a supply-pipe provided with a main pressure-regulator having
 80 an operating-lever under tension connected therewith, of an independent auxiliary regulating device under tension and comprising a chamber having therein a diaphragm, a rod carried by said diaphragm and extending
 85 therefrom, means detachably connecting said rod to the outer end of said regulator-lever to increase a fluid-supply, and a return-pipe extending from the supply-pipe from the regu-
 90 lator on the service side thereof at a low-pressure point of the same into communication with the diaphragm of said auxiliary device; substantially as specified.

2. The combination with a supply-pipe provided with a main pressure-regulator and hav-
 95 ing a weighted lever connected therewith, of an independent auxiliary regulating device comprising a chamber having therein a diaphragm, an upwardly-extending rod from said diaphragm, an adjustable tension device car-
 100 ried by said rod, an adjustable lug on said rod removably connected with the outer end of said lever to increase a fluid-supply through
 105 said regulator, and a return-pipe extending from the supply-pipe at a low-pressure point of the same into communication with the lower portion of said auxiliary device; substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY C. SISCO.

Witnesses:

BURCHARD M. JOHNSON
 GEO. S. TREHER.