

(No Model.)

C. P. K. KAHLER.
SURFACE WATER DRAINAGE CONNECTION.

No. 428,342.

Patented May 20, 1890.

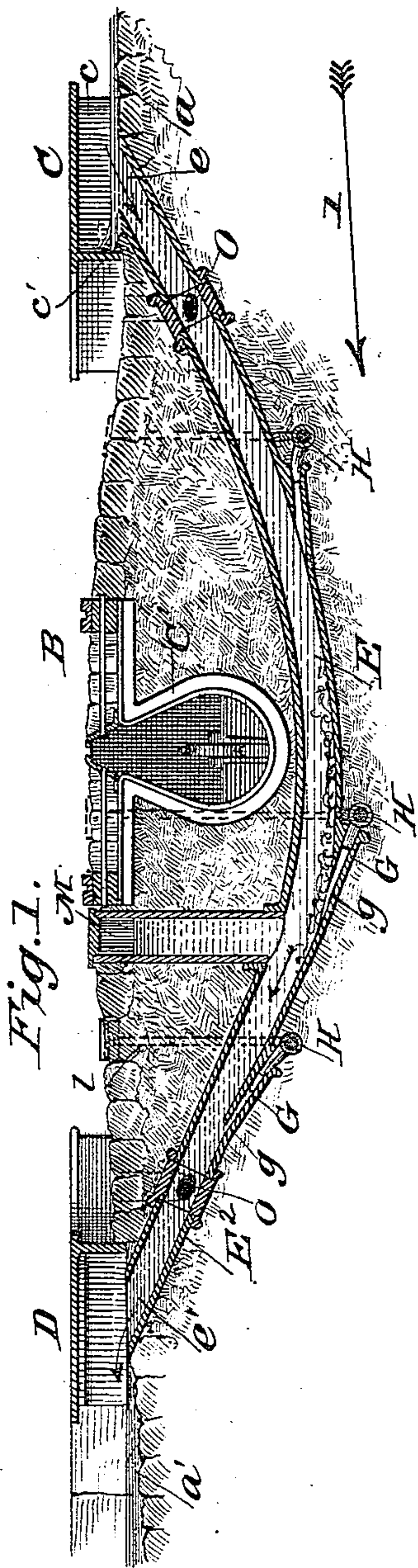
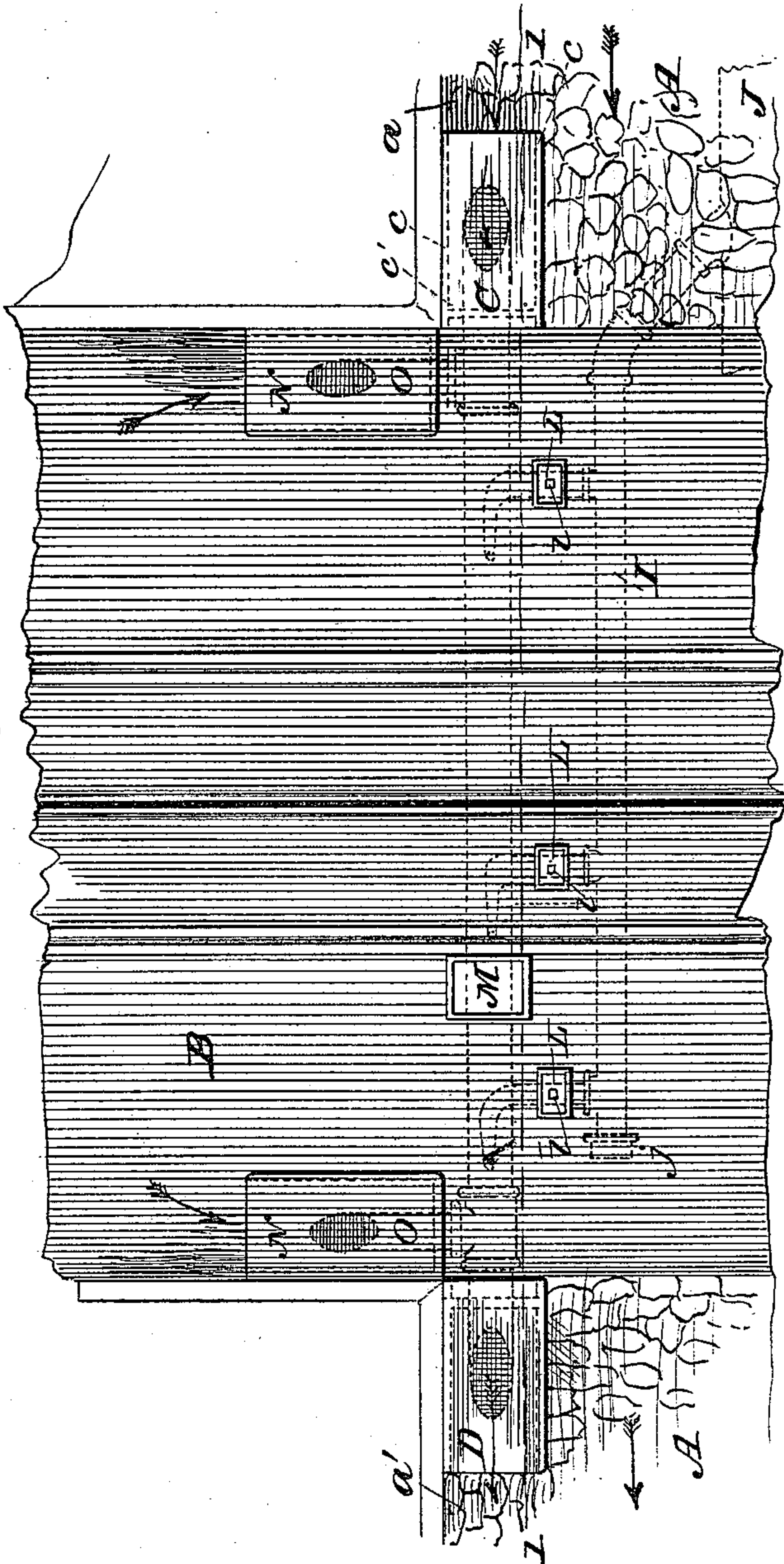


Fig. 2.



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SURFACE-WATER-DRAINAGE CONNECTION.

SPECIFICATION forming part of Letters Patent No. 428,342, dated May 20, 1890.

Application filed March 4, 1890. Serial No. 342,604. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. K. KAHLER, residing in the city of Baltimore and State of Maryland, have invented certain new and useful Improvements in Surface - Water-Drainage Connections, of which the following is a specification.

My invention has for its object to provide suitable means whereby the waste water of the surface-drainage system may be connected in such a manner as to avoid the necessity of providing gutter-ways at street-crossings, and also to provide means whereby the water may be carried from one side of the street under cable-conduits and the like to the opposite side.

To this end my invention consists in providing a suitably-arranged pipe or conduit, which is bent under the transverse road-bed to a point below the cable-conduit, (when used on a street provided with a cable-line,) one end of which opens from an inlet and basin arranged at the higher side of the said transverse roadway, so that the surface-water running down the main street into said inlet and basin will enter the said pipe or conduit at one end and be again discharged into the gutter at its opposite end.

It further consists in arranging with said pipe or conduit lateral connections, whereby the waste water of the cross-street will also enter said pipe or conduit and be conveyed into the gutter of the other street, and connecting with the said water or gutter connection pipe or conduit suitably arranged branch pipes with valves adapted to be operated from the street-surface, whereby water under great pressure may be injected into the gutter connection pipe or conduit to clean and empty the water and sediment from it when required.

Finally, my invention consists in the sundry novel arrangement and combination of parts all of which will hereinafter be fully described in the annexed specification, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section of my improvements, taken on line 1 1, Fig. 2, showing the same in an operative condition, and Fig. 2 is a plan view thereof.

In the accompanying drawings, A indicates what I will term a "main roadway or street," and B a street which crosses the main street at right angles, and which, for example, I show provided with a cable-conduit for traction-roads.

The main street A, which is adapted for surface-drainage in the direction indicated by the arrow marked 1, is provided with the usual gutter or water way $a a'$, which is interrupted at the intersection of the two streets A and B, the section a of the gutter-way ending at an inlet-basin C, formed with the closed sides and ends $c c'$, while the section a' of the gutter begins at an outlet and hood D, as most clearly shown in Fig. 2 of the drawings.

E indicates an underground connection between the two gutter-sections $a a'$, which consists of a pipe bowed or bent down to pass under the conduit C' or other obstruction, the deepest portion of said pipe being at a point beyond the center of the cross-street B, toward the discharge end thereof, said end being formed with a direct incline, as shown at E². By reference to Fig. 1 of the drawings it will be seen that the waste water will enter the end e of the pipe E and soon fill up the said pipe, and in reaching its level will discharge at its end e' into the gutter-section a' .

To form a convenient means for quickly and effectually cleaning the pipe or conduit E of any deposits which might collect in the bottom of said pipe and to empty the water therefrom, I provide said pipe with openings G, having contracted inner ends g , which open into said pipe centrally thereof flush with the bottom, and into which project the ends of short branch pipes H, connected with a pipe-section I, connected at one end to water-main J and closed at its opposite end, as at j . Cut-off valves are disposed in each of the branches H, which are arranged to be operated from the street-surface in any well-known manner. By this construction it will be seen I provide an automatic cleaning and emptying apparatus, whereby, when any of the valves L are opened by turning its stem l by a suitable wrench, water under full head through said branch pipe in which the valve is located will enter the pipe or conduit E in

the direction of its discharge and thoroughly and quickly wash therefrom and force out into the gutter *a'* any sedimentary or foul deposits which may have lodged in said pipe, as well as the water contained therein.

M denotes a man-hole, which connects with the pipe near its lowest point, whereby the condition of the pipe may be observed or access thereto obtained.

N denotes outlets or basins located at the intersection of the street B with the street A, which are connected by means of short pipes O O with the pipe or conduit E, as shown, whereby the water from street B, in case the drain thereof is in the direction of street A, will be discharged through the pipes O and conduit E into the gutter *a'*.

While my invention is especially adapted for use in connection with streets having cable-conduits, it is manifest that the same is readily adapted for the more general use of dispensing with the obnoxious gutter-ways located at street-crossings. It also affords a simple means for carrying the water of an unpaved or roughly-paved street under a smoothly-paved street—such as asphalt blocks, &c.—so as to allow of constructing such smooth street with a continuous smooth surface at the street-crossings.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a natural drainage system, the combination, with a surface gutter formed in sections, inlets and outlets located at the ends of such sections, having the sides and one end closed, of an underground pipe or conduit opening at its ends into said inlets and outlets, whereby a continuous gutter-way is formed, substantially as and for the purpose described.

2. In a natural drainage system, the combination, with a surface gutter terminating at street-crossings, of an underground pipe or conduit connecting the gutter on opposite sides of the crossing street, said pipe or conduit formed with openings in its lower face, valved pipes connected with said openings, and with a pipe containing water under pressure, whereby the said conduit-pipe may be automatically cleaned and emptied, substantially as and for the purpose described.

3. In a natural drainage system, the combination, with the gutter-sections *a a'*, the inlets and outlets C D, located at the ends of said sections, of the underground conduit or pipe connecting said gutter-sections, said pipe formed with a bent portion, the lowest por-

tion of which is nearer the discharge than the receiving end of such pipe, and a man-hole connected with such lowest portion, substantially as and for the purpose described.

4. In a natural drainage system, the combination, with a surface gutter formed in sections terminating at the street-crossings, and inlets and outlets formed at the ends of each gutter-section, of an underground conduit or pipe E, connecting the gutter on opposite sides of the street, said pipe formed of a downwardly-bent portion extended for more than half its length, and an upwardly-inclined portion, and cleaning and emptying pipes projected within the lower face of said pipe or conduit in the direction of its discharge, and means for forcing water under pressure into said cleaning and emptying pipes, substantially as and for the purpose described.

5. In a natural drainage system, the combination, with a surface gutter formed in sections terminating at the street-crossings, inlets and outlets formed at the ends of said sections to receive the water, and an underground conduit or pipe E, opening at its ends into said inlets and outlets, whereby a continuous gutter-way is formed, of the natural gutters of the crossing street formed with inlets and outlets N at the juncture of the streets, and the lateral branch pipes O, opening at one end into said basins and at the other end into the conduit or pipe E, whereby the water of the cross-street is carried off into the gutter-way of the main street, substantially as and for the purpose described.

6. In a natural drainage system, the combination, with a surface gutter formed of sections terminating at street-crossings, and inlets and outlets C D, provided at each end of such gutter-sections, of an underground conduit or pipe E, opening at its ends into the adjacent inlets and outlets, said pipe or conduit formed with openings in its lower wall, said openings contracted in the direction of the discharge end of said pipe, a series of branch pipes H, projected at one end into said openings, provided with valves adapted to be operated from the street-surface, a main or pipe adapted to hold water under pressure, and a supplemental pipe I, connected at one end to said main, its opposite end closed, said supplemental pipe connected with the branch pipes, all arranged substantially as and for the purpose described.

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