

(No Model.)

C. J. HOFLUND.
Combined Underground Drain and Hydraulic Water
Supply.

No. 239,784.

Patented April 5, 1881.

Fig. 1.

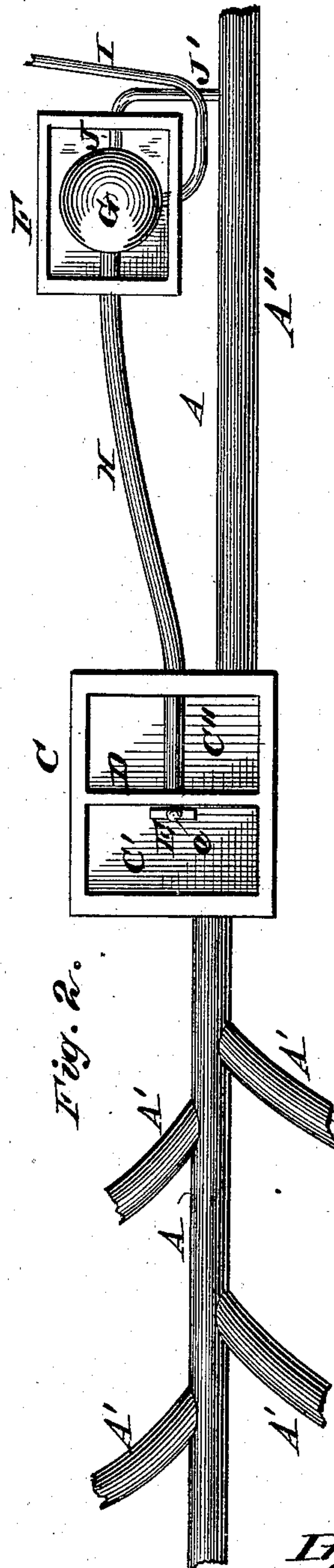
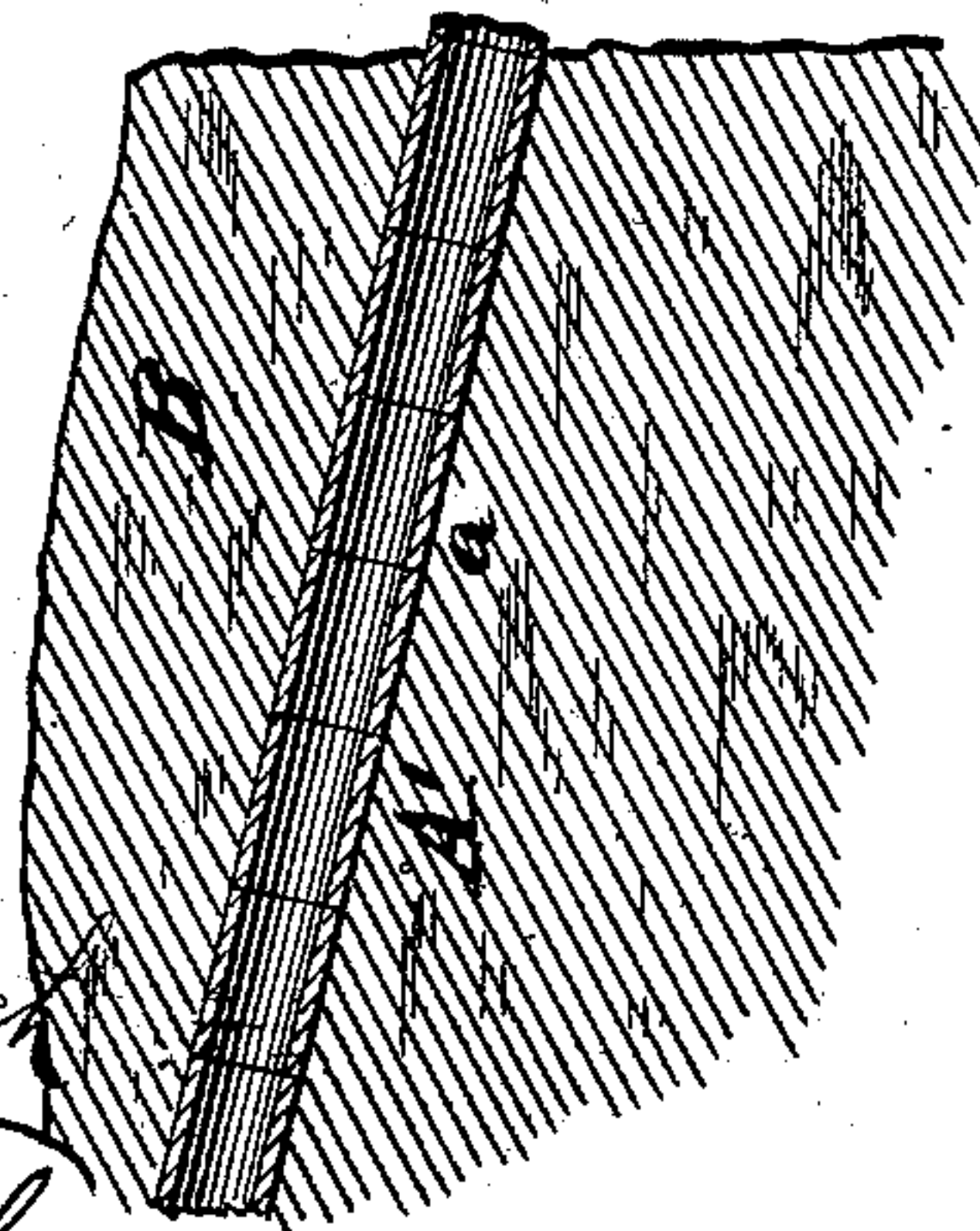
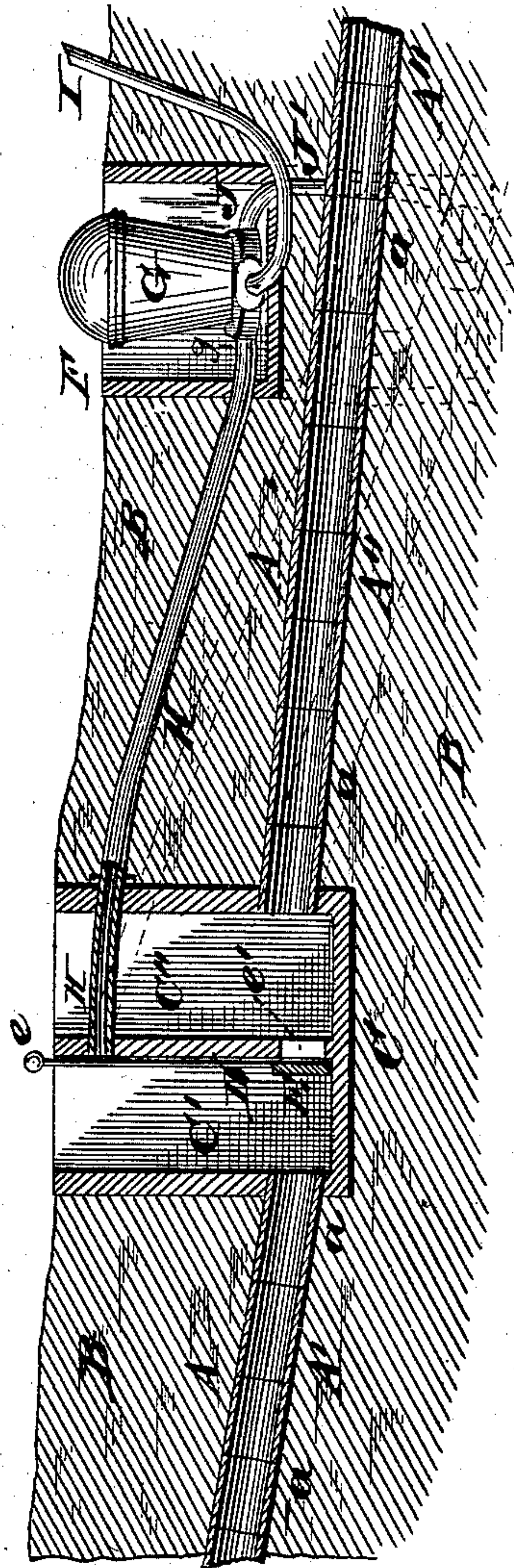


Fig. 2.

Witnesses:
Fred G. Dieterich
P. Dieterich

Inventor:
Charles J. Hoflund
By W. D. Richards
Attorney

UNITED STATES PATENT OFFICE.

CHARLES J. HOFLUND, OF OSCO, ILLINOIS.

COMBINED UNDERGROUND DRAIN AND HYDRAULIC WATER-SUPPLY.

SPECIFICATION forming part of Letters Patent No. 239,784, dated April 5, 1881.

Application filed August 14, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. HOFLUND, a citizen of the United States, residing at Osco, in the county of Henry and State of Illinois, have invented certain new and useful Improvements in Combined Underground Drain and Hydraulic-Ram Water-Supply; and I do hereby 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a side elevation, partly in section, showing my invention. Fig. 2 is a top plan, partly in section.

This invention relates to means of delivering running water to elevated positions from a supply furnished by underground drains for wet lands; and the invention consists in combinations and constructions hereinafter described, and set forth in the claims hereto annexed.

Referring to the drawings by letters, letter A represents a tile-drain formed by laying tile *a* in the earth B in any ordinary manner, or the drain may be formed in any other manner of forming or making underground drains for draining wet lands, and may consist of a single drain, or of any number of converging branches, as shown at Fig. 2. If converging branches are used, then the main drain should be large enough to carry the water of all of the branches in a wet season and when the branches run about full of water. The drain A may be laid at any desired depth, and is generally laid with a fall about the same as the land to be drained, as shown by full lines at Fig. 1; but the fall may be varied for purposes hereinafter described.

C is a water-tight reservoir, located some distance from the head of the drain, and is divided by a vertical wall or partition, D, into two compartments or chambers, C' C''. The upper end of the reservoir C may extend to or above the surface of the ground, and its lower end extend downward, so that the upper portion of the drain (designated by the letter A') may enter the chamber C' a short distance

above the bottom of said chamber, as shown at Fig. 1. The lower end of the drain (designated by the letter A'') communicates with the interior of the chamber C'', preferably somewhat above its bottom, as shown also at Fig. 1.

E is a valve, which may be raised by a stem, *e*, to open a passage, *e'*, in the wall D, and may be lowered to close it.

F is a reservoir, located a short distance down the drain from the reservoir C, and preferably so that the drain A'' passes through one side of it, or near to it, and in nearly a horizontal plane below the bottom of the reservoir.

G is an ordinary hydraulic ram, located in the reservoir F.

H is a water-tight tube or drive-pipe, connected at its lower end with the entrance *g* to the ram G, and its upper end communicating with the upper end of the chamber C', preferably below the surface of the ground at that point. The pipe H may be made adjustable at higher and lower elevations at its upper end by a series of holes in the wall D, or by a vertically-sliding part of the wall or otherwise. The ram G has an ordinary delivery-pipe, I, about one-half of the size of the drive-pipe H, and has an ordinary waste-water opening or pipe, J, which discharges into the bottom of the reservoir F, from which the same waste-water enters the drain A'' by a branch pipe, J'.

The reservoir C may be located at any point on the drain sufficiently below its head to keep the chamber C' full of water above the mouth of the pipe H in an ordinarily dry time, and thus supply the pipe H with sufficient water to keep the ram in continuous operation, and delivering a constant supply through the delivery-pipe I to elevated positions, where it may be desired.

The drain-tile in ordinary use in the main drain is seldom less than six inches in diameter, so that it may be sufficient to carry off the water in wet seasons or times. The amount of water passing through the drain varies greatly at different times. Drains of any considerable extent, and of, say, six inches in diameter, in such lands as are usually drained, will supply a sufficient amount of water to keep the chamber C' full, so as to supply a drive-pipe, H, of, say, two inches in diameter,

during the dry parts of each season, and thus keep the ram continually in operation, and when any greater quantity is supplied by the drain or drains A' than passes through the pipe H to the ram the surplus or waste water will pass into the chamber C'' over the wall D, or through an opening therein, at a proper height for such purpose. From the chamber C'' the waste water of the chamber C' will be carried away through the drain A'', which drain A'' also serves to drain the land between the reservoirs C and F, and below the reservoir F, to any ordinary discharge. If a single drain is not sufficient to drain the land between the reservoirs C and F and below the reservoir F, other drains may be put in, as required, and may communicate with the drain A' or not, as desired.

The reservoir F may be lowered to lower the ram G, as shown by dotted lines at Fig. 1, so that a higher head or greater fall may be given the drive-pipe H to increase the power of the ram, or so that the head of the drive-pipe may be lowered, as shown by dotted lines at same figure, so as to be considerably below the surface of the ground and permit of more effectually draining the ground at and adjacent to the reservoir C and up the drain from said reservoir.

The valve E may be raised to allow the water to pass out of the drains A' rapidly through the chamber C'' and drain A'', and thus carry the accumulated soil out of the drains A' into the chambers C' C'', where a greater portion of it will be deposited, and from which it may be removed by hand.

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

1. The combination, with an underground drain, of a hydraulic ram and drive-pipe, H, adapted to receive water from a reservoir, C', in the upper part of the drain and to deliver it at elevated positions.

2. The combination, with an underground drain, of a hydraulic ram and a drive-pipe, H, adapted to receive water from a reservoir, C', in the upper part of the drain, to deliver it at elevated positions and to discharge the waste water of the ram into the continuation of the drain.

3. In combination with an underground drain and with a hydraulic ram, a reservoir,

C', from the upper part of which a drive-pipe, H, extends to the ram, and from near which the drain-tile A'' extends past the ram and receives the waste water from the ram.

4. In combination with an underground drain and with a hydraulic ram, a reservoir, C', from the upper part of which a drive-pipe, H, extends to the ram, and from near which the drain-tile A'' extends past the ram and receives the waste water from the reservoir C' and from the ram.

5. In combination with an underground drain and with a hydraulic ram and a reservoir, C', which delivers a supply of water to the drive-pipe H, a reservoir, C'', which receives the waste water from the reservoir C' and returns it to the drain, substantially as and for the purpose specified.

6. A water-receptacle consisting of a water-tight box having a partition to divide it into compartments, one of which has an opening at or near the surface of the ground, and provided with inlet and outlet pipes, whereby drainage or waste water may be accumulated, raised to the surface of the ground in said box, and then conducted off, substantially as described, and for the purposes set forth.

7. In combination with the drain or drains A' A'', the reservoir C, constructed in two parts or chambers, C' C'', substantially as described, drive-pipe H, and ram G, located in reservoir F, from which a pipe, J', extends to the drain A'', substantially as and for the purpose specified.

8. In combination with the underground drain, ram G, drive-pipe H, and reservoirs C' C'', separated by a wall, D, the valve E, whereby the water may be allowed to escape from the reservoir C' for the removal of the dirt and soil, substantially as and for the purpose specified.

9. The combination of the water-receptacle, having a partition, with aperture and inlet and outlet pipes, with a pit, drive-pipe, hydraulic ram, and drain-tile from the ram-pit, substantially as described.

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

CHARLES J. HOF LUND.

Witnesses:

THOMAS MCKEE,
AUGUST ANDERSON.