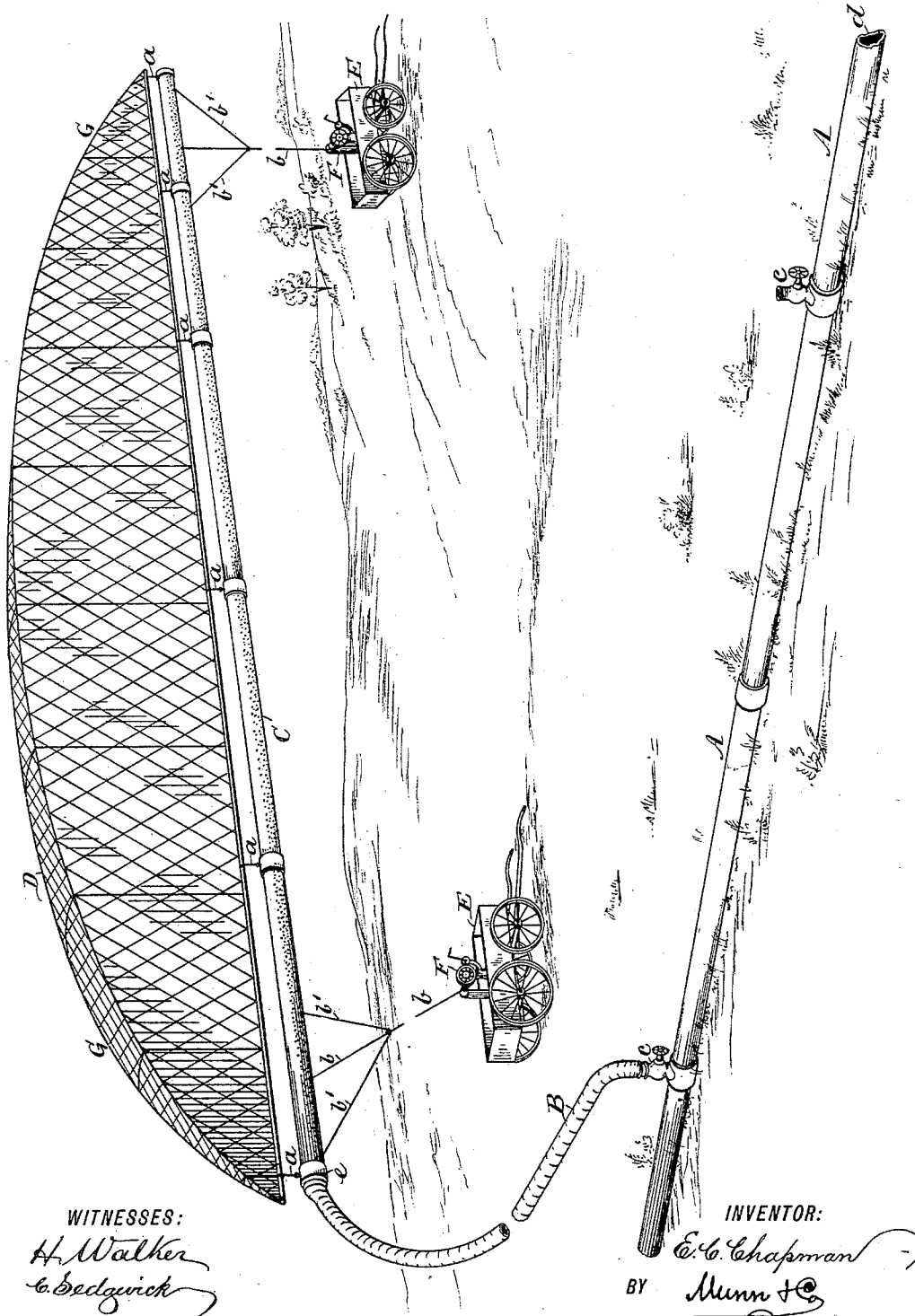


(No Model.)

E. C. CHAPMAN.
IRRIGATING APPARATUS.

No. 426,169.

Patented Apr. 22, 1890.



UNITED STATES PATENT OFFICE.

EDWARD C. CHAPMAN, OF LEADVILLE, ASSIGNOR OF ONE-HALF TO LOUIS GREENWALD, OF LAKE COUNTY, COLORADO.

IRRIGATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 426,169, dated April 22, 1890.

Application filed August 1, 1889. Serial No. 319,379. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. CHAPMAN, of Leadville, in the county of Lake and State of Colorado, have invented a new and Improved Irrigating Apparatus, of which the following is a full, clear, and exact description.

My invention relates to an improvement in irrigating apparatus; and the object to be obtained by my invention is the provision of a simple device whereby water from a low level may be elevated and distributed in a shower of fine streams or drops copiously upon more elevated portions of land surface.

With this object in view my invention consists in the construction of parts and their combination, as will be hereinafter set forth.

Reference is to be had to the accompanying drawing, forming a part of this specification, in which the figure displays the improved irrigator in position ready to connect with a source of water-supply.

In some portions of the Western States and Territories a scarcity of rain-fall prevails at certain seasons of the year, owing to which the soil which otherwise would be productive fails to yield good crops of grass or cereals. The dearth of moisture in the soil just mentioned is more prevalent on elevations or hill-sides, while in the intervening valleys water-streams may frequently be found, which with adequate means may be artificially distributed over the dry sections and render them productive.

It is desirable that the irrigating operation be conducted in a manner to require the least labor manually and effect extensive distribution of water in equal volume, preferably in fine streams or a shower of drops, thus simulating natural rain-fall.

The device which is the subject of my present invention has been designed to meet the want hereinbefore indicated and will now be described.

A represents a main conduit for water, which is extended from a source of water-supply, to which its end *d* should be attached. There should be some means for producing adequate water-pressure in the main conduit A, which may be afforded by a pump operated by a water-wheel, or if the stream is not of

such volume as to drive a water-wheel a steam-engine may be employed. It should be understood that the main conduit A is of such a relative length as to convey water as far as the irrigating operation is to be conducted. At different points along the line of pipe mentioned outlet-valves *c* are secured in the same to discharge water under pressure into a flexible hose B, which may be adjusted by screw-connection to any of said outlet-valves. The hose or flexible tubing B is of proper length to transport water from the main conduit A to the area of land it is designed to irrigate. Upon the end *e* or other terminal of the flexible hose B an extended water-conductor C is attached, as shown. The water-conductor is perforated throughout its length, which latter is proportioned to the capacity of the apparatus. The perforations are upon the lower semi-circumference of the conductor, so that water introduced therein under proper pressure will escape from the foraminated surface in a multitude of fine streams, or if the conductor is sufficiently elevated these streams will be broken up into drops. An elongated light chamber D is provided, which may be filled with any gas lighter than the atmosphere, and thus adapt the chamber to raise a weight. The preferred form of the chamber is shown in the drawing; but other shapes may be employed, if preferred. Upon the under side of the chamber D the water-conductor C is suspended by the hangers *a*, so as to distribute the weight of water introduced into the conductor lengthwise of the gas-chamber D, which, from its buoyancy when filled with gas or rarefied air, will raise the water-conductor above the surface of the earth.

To afford means for controlling the gas-chamber D, it is enveloped with a netting G. To this netting the tubular conductor C is suspended, as just stated, and to the conductor a series of guy ropes or chains *b'* are attached, which laterally sustain the main cables *b*, that are also secured to the conductor C. The lower ends of the cables *b* are wound around the drums of the winches F, which are mounted upon the wagons E, said wagons being properly loaded with any heavy body as

ballast to serve to anchor the gas-chamber and suspend the water-conductor at any point above the surface of the ground.

When the device is to be put into service, the parts being adjusted as shown, and the main conduit A supplied with water under pressure, the inflated gas-chamber D will support the water-conductor C above the ground surface and an artificial rain-fall be produced, which will be distributed over the surface by attachment of draft-animals to the wagons E. The movement of these wagons simultaneously, or of the one farthest from the flexible hose B, will swing the suspended conductor laterally, and in an evident manner cause an even distribution of the copious water-spray or rain over a certain area of ground. After one section of ground surface is properly saturated with water the hose B may be moved to another outlet-valve c, and from this advanced point the irrigating process may be resumed to supply water to other portions of the field undergoing irrigation.

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

1. In an irrigating apparatus, the combination, with a main water-conduit, of a perforated water-conductor connected therewith, and an elevating-chamber containing gas or rarefied air and adapted to suspend the water-conductor above the surface of the ground, substantially as shown and described.

2. In an irrigating apparatus, the combination, with a main water-conduit, of a perforated water-conductor connected with said conduit, a gas-chamber from which the conductor is suspended, and a movable anchoring device for said chamber, substantially as shown and described.

3. In an irrigating apparatus, the combination, with a main water-conduit, of a perforated water-conductor connected with said conduit, a gas-chamber from which the conductor is suspended, wagons provided with winches, and flexible connections between said winches and the gas-chamber, substantially as shown and described.

EDWARD C. CHAPMAN.

Witnesses:

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