(No Model.)

W. & W. W. CRAWFORD.

APPARATUS FOR RACKING LIQUIDS, &c.

No. 547,627. Patented Oct. 8, 1895.

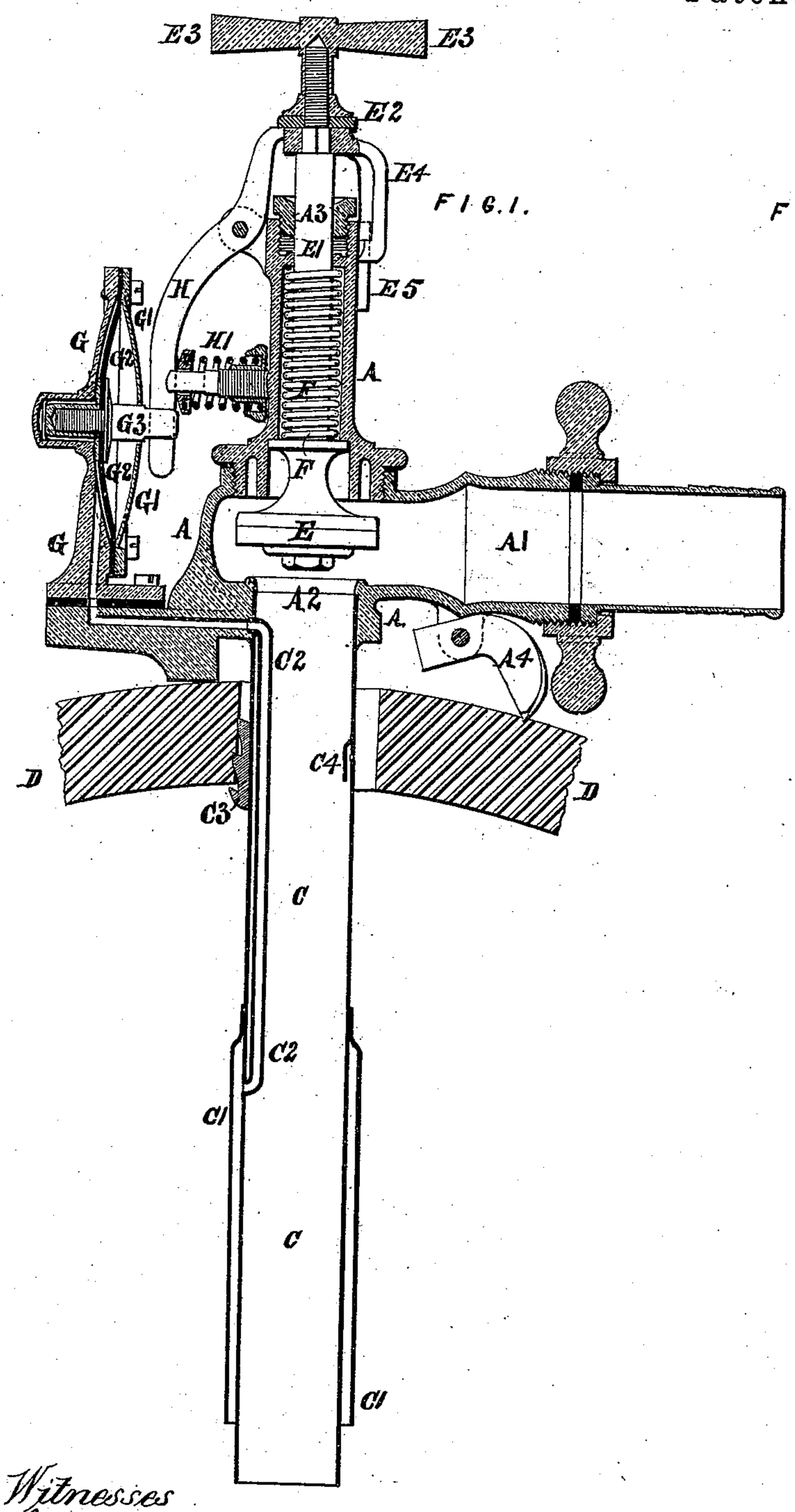

FIG. 1.

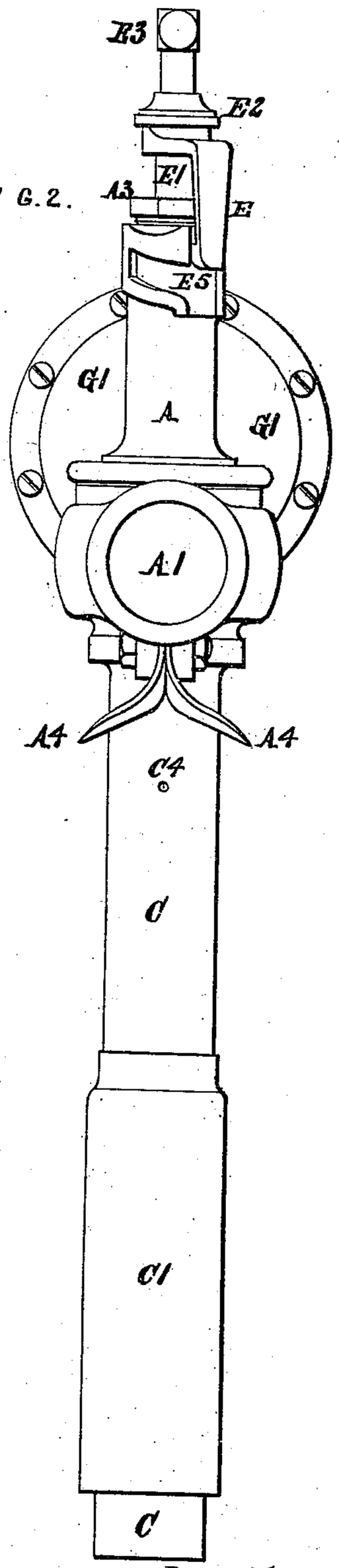

FIG. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM CRAWFORD AND WILLIAM W. CRAWFORD, OF GLASGOW, SCOTLAND.

APPARATUS FOR RACKING LIQUIDS, &c.

SPECIFICATION forming part of Letters Patent No. 547,627, dated October 8, 1895.

Application filed October 1, 1894. Serial No. 524,647. (No model.) Patented in England January 12, 1892, No. 605; in France June 21, 1893, No. 231,023, and in Germany June 25, 1893, No. 72,918.

To all whom it may concern:

Be it known that we, WILLIAM CRAWFORD and WILLIAM WHITSON CRAWFORD, subjects of the Queen of Great Britain and Ireland, and residents in the city of Glasgow, Scotland, have invented certain Improved Apparatus for Racking Liquids or Filling Casks or Vessels with Liquids, (for parts of which we have obtained a British patent, No. 605, dated January 12, 1892; a French patent, No. 231,023, dated June 21, 1893, and a German patent, No. 72,918, dated June 25; 1893,) of which the following is a specification.

This invention has for its object to provide improved apparatus for racking liquids or filling casks or vessels with liquids, the improved apparatus being convenient and economical in use and preventing waste by automatically stopping the supply on a cask or vessel becoming full. The improved apparatus is suitable for racking various kinds of liquids, such as beverages and oils.

In carrying out the invention a supply-valve is employed, which is arranged to be closed by a spring (or it might be by a weight) when a detent or catch-lever, which holds the valve open, is released. The detent or catch-lever is acted on by a diaphragm, which is subjected to air-pressure in a passage or tube extending down into the cask or vessel receiving the liquid, the bottom end of the passage or tube being open, so that the liquid as it increases in depth causes an increase of air-pressure, which, acting on the diaphragm, makes it release the detent or catch-lever on the cask or vessel becoming full, or as full as the parts are adjusted for. If the valve is closed by the air-pressure before the cask is quite full, the valve may be opened slightly to let more liquid into the cask by turning the valve-spindle, which is provided with a projecting piece arranged to act on an incline in a manner to raise the valve sufficiently for the purpose.

Figures 1 and 2 of the accompanying drawings are respectively a vertical section and an elevation, as at right angles to each other, of the improved apparatus.

The valve-box A is made with a supply-inlet nozzle A′, to which, when in use, a flexible supply-pipe (not shown) is attached for the purpose of delivering the liquid from a tank or other large vessel. A port A^2 in the valve-box A communicates with a tube C, which, when in use, projects down into the cask or vessel D. The port A^2 is closed by a disk-valve E on the bottom end of a spindle E′, which extends up through a stuffing-box A^3 and has a collar E^2 and handle E^3 fixed on its upper end, and the valve is pressed downward by a helical spring F, inclosed in the upper part of the valve-box A. To the lower part of the tube C there is fixed an outer tube C′, surrounding it and with it extending down into the cask or vessel D when in use, and the upper end of the space between the two tubes C and C′ communicates by a small tube C^2 with a casing G, fixed on the valve-box A and having fixed in it by means of a cover G′ a flexible diaphragm G^2. This diaphragm G^2 has fixed to its center a spindle G^3, the outer end of which is forked or grooved, so as to embrace and act on one end of a catch-lever or detent H, the other end of which engages under the collar E^2 of the valve-spindle E′ when the valve is raised to the open position. The catch-lever H is acted on by an adjustable helical spring H′ on a stud fixed in the valve-box A, the spring H′ moving the catch-lever so as to engage under the spindle-collar E^2 when the spindle E′ is raised. The valve-spindle E′ has also fixed to it below the collar E^2 a downwardly-projecting arm E^4, the bottom end of which, when the spindle is in its lowest position and is turned, bears on a projecting incline E^5 on the side of the valve-piece box A in a manner to raise the valve E slightly for the purpose of, if necessary, supplementing the supply of liquid after the automatic closing of the valve. The valve-box A has jointed to it a piece A^4 with pointed prongs for supporting it steadily on the cask D when used without other support, and to retain the valve-piece A in the bunghole or inlet of the cask or vessel D there is fixed to the tube C at the side opposite to that at which the piece A^4 is fitted a piece C^3, having inclined pointed teeth, which engage in the edge of the bunghole or inlet.

When a cask or vessel is being filled, and

when the level of the liquid therein reaches the bottoms of the tubes C′ and C, the liquid confines the air in the space between these tubes, and as the liquid rises it compresses the confined air, and ultimately, when the cask or vessel D is full or nearly so, the pressure of the confined air becomes sufficient to move the diaphragm G^2, so as to release the catch-lever H, whereupon the spring F closes the valve E. A small air-hole C^4 is provided to admit air when the apparatus is lifted out of the cask or vessel D, so that the liquid in the tube C may at once run out, the inner part of this air-hole being guarded by a strip of metal.

What we claim as our invention is—

1. The herein described device for racking liquids or filling casks or vessels with liquids, comprising a valve and valve box having an inlet and a discharge pipe for the liquid to extend down into the cask or vessel, an annular air tube around the lower part of said discharge pipe, a lever controlling the closing of the valve, a diaphragm to act on said lever and tubing connecting the aforesaid air tube with the diaphragm chamber, substantially as described.

2. The herein described device for racking liquids or filling casks or vessels with liquids, comprising a valve and valve box having an inlet and a discharge pipe to extend down into the cask or vessel, means for automatically closing the valve when the cask or vessel is nearly full, an arm on the valve spindle and an incline on the valve box on which said arm can bear, when the valve is closed, whereby on turning the valve stem by hand the valve may be re-opened to a small extent to complete the filling of the cask or vessel, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM CRAWFORD.
WILLIAM W. CRAWFORD.

Witnesses:
EDMUND HUNT,
GEORGE PATTERSON.