

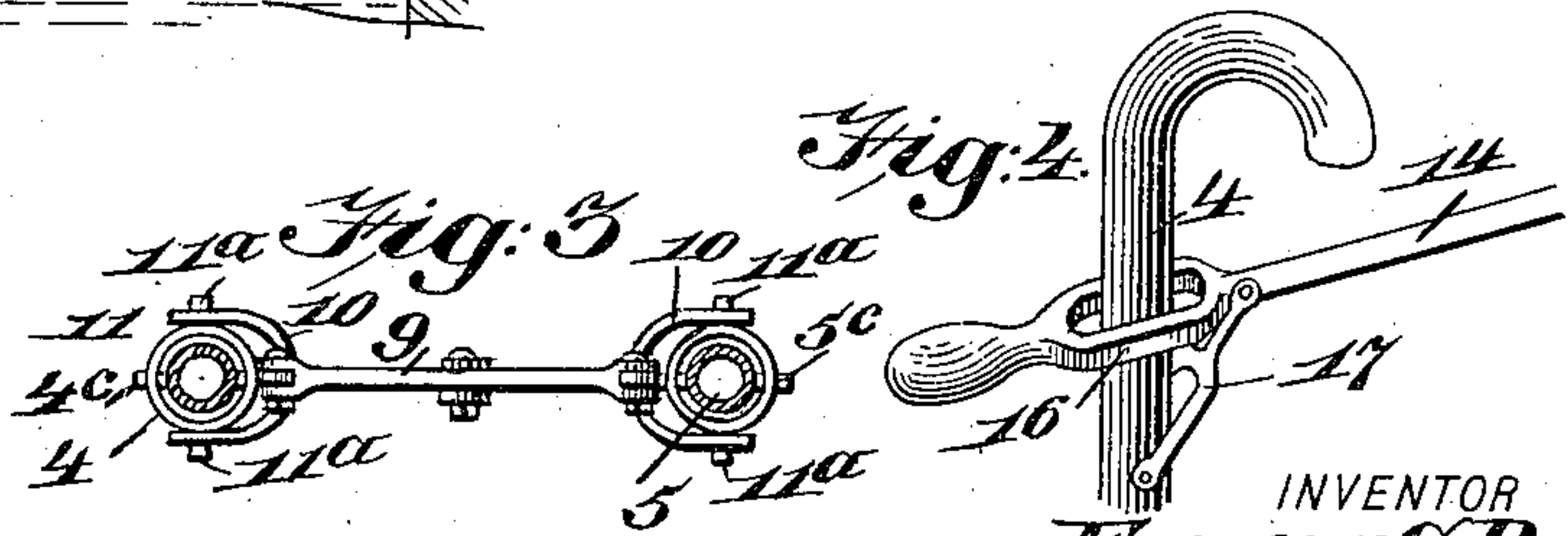
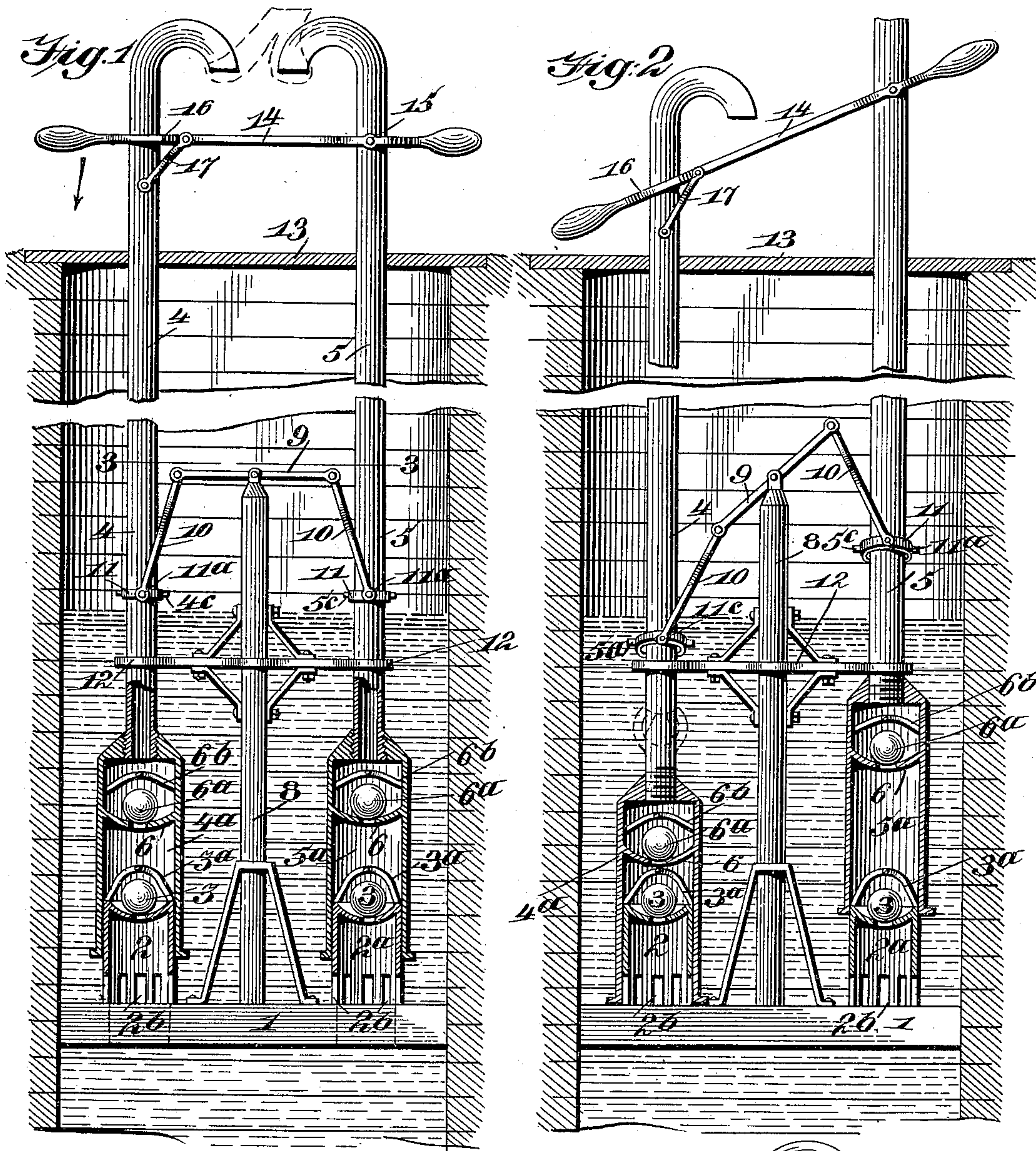
No. 616,819.

Patented Dec. 27, 1898.

E. S. BARZEE.
DOUBLE ACTING PUMP.

(Application filed Jan. 28, 1898.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

EMERY S. BARZEE, OF MINTO, OREGON, ASSIGNOR OF ONE-HALF TO DAVID E. SWANK, OF AUMSVILLE, OREGON.

DOUBLE-ACTING PUMP.

SPECIFICATION forming part of Letters Patent No. 616,819, dated December 27, 1898.

Application filed January 28, 1898. Serial No. 668,322. (No model.)

To all whom it may concern:

Be it known that I, EMERY S. BARZEE, residing at Minto, in the county of Marion and State of Oregon, have invented a new and Improved Double-Acting Pump, of which the following is a specification.

This invention relates to improvements in that class of pumps having two alternately-operated plungers, in which one is operating to lift the water into one discharge-section as the other forces out the fluid from the other section; and such invention primarily has for its object to provide a pump of this character of a very simple and economical construction, which can be easily manipulated, used as a force-pump, and effectively serve for its intended purposes.

The invention also has for its object to provide a double-acting-pump mechanism in which the plungers are held stationary and the pump-stock movably held to engage the plungers and adapted to operate in such manner that the use of air-chambers is dispensed with, in which the pump stocks or pipes at all times are evenly balanced, and the operation of the pump rendered easy with a minimum amount of crank or lever power.

The invention also has other objects in view, which will hereinafter appear, and it comprehends a pump structure in which a pair of pump-stocks are guided for vertical movement in suitable supports at the top of the well and within the well at any desired depth, which have suction or lift chambers at the lower end held for vertical reciprocation over a pair of plungers fixedly held on the lower support within the well.

In its subordinate features this invention consists in such novel features of construction and peculiar combination of parts, such as will be first described in detail and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of my improved double-acting pump, the parts being shown at their rest position. Fig. 2 is a similar view illustrating the stationary plungers and the reciprocating suction or lift members in a pumping action. Fig. 3 is a horizontal section on the line 3 3 of Fig. 1, and Fig. 4 is

a detail view illustrating the lever-operating devices for the pump.

In its practical construction my invention comprises a suitable rest-piece 1, which is set in the well at any suitable point below the water-level, on which is mounted a pair of stationary plungers 2 2^a, which are hollow and have suitable inlets 2^b at the bottom, as shown, or they may be open direct through the piece 1, if desired. The top of the plungers are held closed by the downwardly-closing ball-valve 3, the upward movement of which is limited by the cage 3^a.

4 and 5 indicate a pair of independent pump-stocks, which in practice are preferably of galvanized-iron pipe, the lower end of each of which has attached thereto a suction or lift chamber 4^a 5^a, which snugly fits over and is held to reciprocate over its coincident plunger 2 2^a, each of such chambers having an internal horizontal-apertured division 6, closed by a gravity ball-valve 6^a, limited in its upward movement by the cage 6^b.

While I have shown ball-valves for the plungers and suction-chambers, it is manifest a flap or other suitable form of valve may be employed.

As the entire pump-stocks are moved vertically during the operation of the pump it is essential that they do so in a true vertical line to hold their lift ends in a proper relation to the stationary plungers to prevent friction by unnecessary lateral movement. For this purpose a bearing-post 8 is extended up between the pump-sections mounted and suitably braced on the base-support 1. On the upper end of this support is held a rocker-bar 9, having pivoted pendent hanger-rods 10, the lower ends of which are pivotally connected to lift-rings 11, encircling the pump-stocks 4 and 5 and connected to the horizontal studs 4^c 5^c, projected therefrom at right angles to the pivots 11^a, with which the arms 11 connect. The stocks 4 and 5 are also held steady in the horizontal guide-arms 12, secured to the post 8 and the top boards or frame 13 of the well.

To further provide for a proper vertical movement of the stocks 4 and 5, I connect the operating-lever 14 at one end to horizontal studs 15, projected from one of the stocks,

and provide the other end with a loop 16, encircling the other stock, such end being fulcrumed on the upper end of a link-arm 17, pivoted at the lower end to the adjacent pump-stock, as shown.

The manner in which my improved pump operates will be clearly understood from the foregoing and reference to the drawings. It will be noticed that when the lever 14 is pressed down in the direction indicated by the arrow it will force the stock 4 down, and at the same time it will rock on its fulcrum and lift the other stock up, reverse conditions being effected when the said lever is swung upward. Thus an alternate reciprocating action of the pump-stocks is effected in a proper vertical line. It is obvious that as the chamber of stock 4 descends the stationary plunger-valve will be held closed and water held in the said chamber forced up past its lift-valve into the stock 4 and discharged, while in the reverse movement of the stock 5 the valve of its lift-chamber will be held closed by the water above it, while the valve of the coincident plunger will be raised by the influx of water from the well to the said lift-chamber.

Among the advantages obtained in a pump of this construction is that it at all times stands on a complete balance. The plungers being stationary there is no weight of plungers to lift and the use of plunger-rods avoided, and as there is but a small amount of friction of water makes the pump work light and easy. Furthermore, my form of pump

may be used in shallow or deep wells with equal advantage. It is of a very simple but strong construction and has the several parts so arranged that they are not liable to get out of order and may be used in gritty or muddy water without danger to its parts or becoming choked up.

By attaching a hose having laterals (see dotted lines, Fig. 1) the pump can be used as an ordinary force-pump.

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

A double-acting pump comprising a pair of stationary hollow plungers provided with valves, the vertically-reciprocating pump-stocks having valves and fitting over the plungers, a central post mounted between the pump-stocks, and having a horizontal guide receiving the same, the rocker-bar fulcrumed on the guide-post and connected by links with the pump-stocks, the operating-lever 14, pivoted to one of the pump-stocks and provided with an opening receiving the other pump-stock, and the inclined link pivoted at its upper end to the operating-lever 14, adjacent to the opening and similarly secured at its lower end to the adjacent pump-stock at a point below the lever 14, substantially as described.

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Witnesses:

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