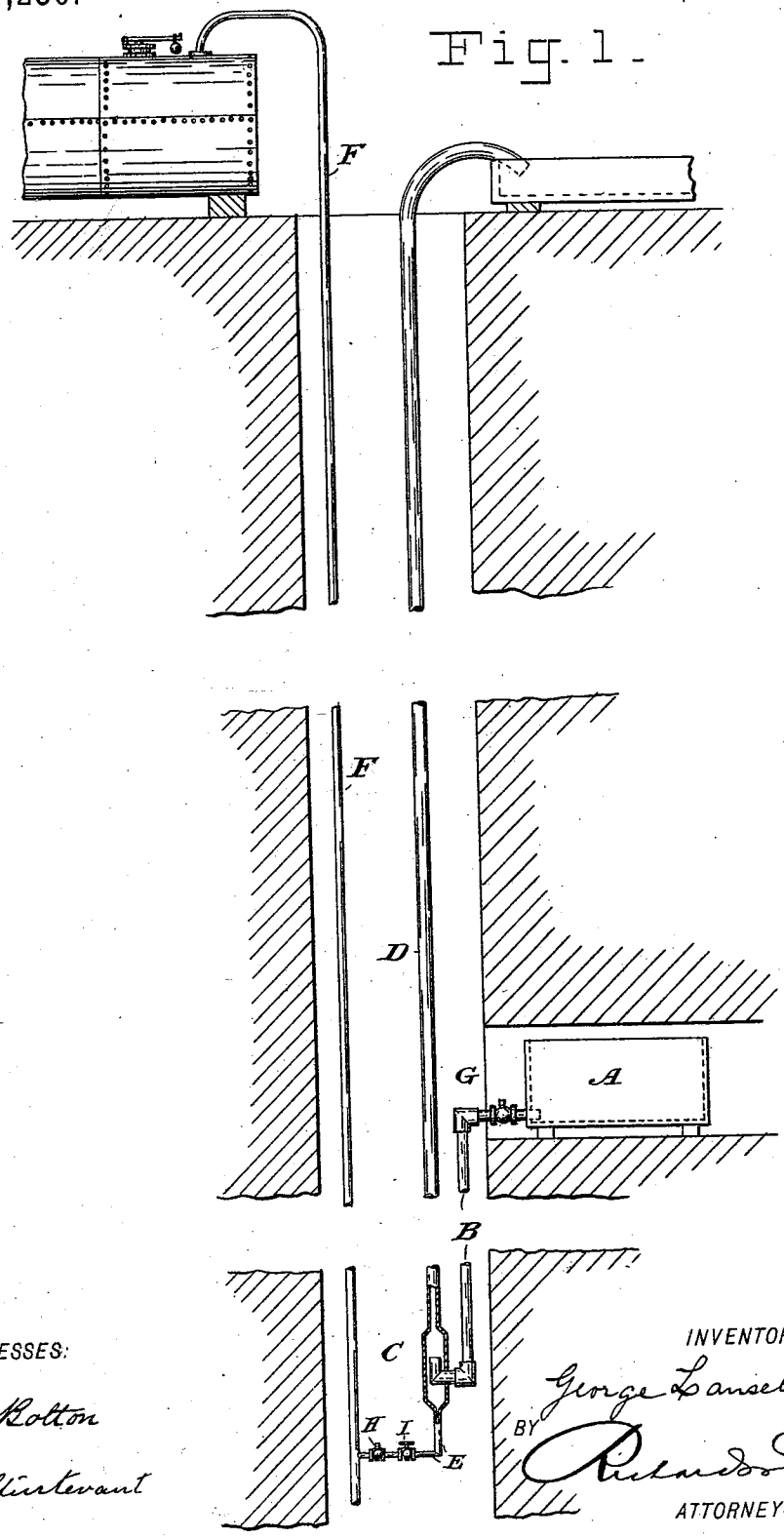
(No Model.) 2 Sheets—Sheet 1.

G. LANSELL.

COMPRESSED AIR WATER ELEVATOR.

No. 561,230. Patented June 2, 1896.

Fig. 1.



WITNESSES:

E. B. Bolton

E. H. Sturtevant

INVENTOR

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ATTORNEYS

(No Model.) 2 Sheets—Sheet 2.

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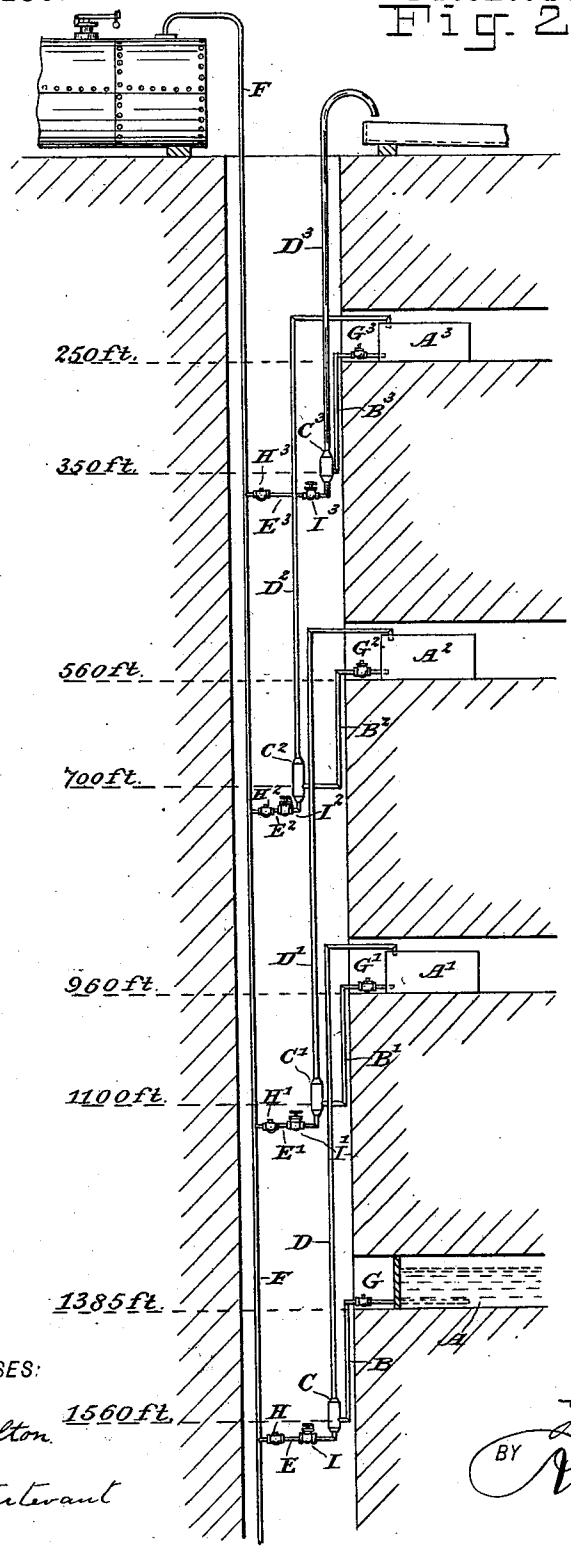
Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE LANSELL, OF BENDIGO, VICTORIA.

COMPRESSED-AIR WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 561,230, dated June 2, 1896.

Application filed July 13, 1895. Serial No. 555,913. (No model.)

To all whom it may concern:

Be it known that I, GEORGE LANSELL, quartz-miner, a subject of the Queen of Great Britain, residing at the Fortuna Crushing Works, Bendigo, in the British Colony of Victoria, have invented an Improved Method of and Appliance for Raising Water from Mines or Elsewhere by Means of Compressed Air, of which the following is a specification.

This invention has been devised for the purpose of raising water from mines or elsewhere without having to use the expensive and cumbrous pumping appliances hitherto necessary.

Referring to the accompanying drawings, Figure 1 is a diagrammatic view illustrating the application of my invention to the raising of water from a mine, while Fig. 2 is a similar view illustrating a series of lifts such as would be used in a deep mine.

The same letters of reference indicate the same or corresponding parts in both the figures.

Referring first to Fig. 1, A represents a tank or other receptacle containing water which is to be raised to the surface, while B represents one leg of an inverted siphon, which is in communication with said tank and extends down for a certain distance, (say one hundred feet,) where it enters an enlarged part C of the main water-delivery pipe D, whose lower part, corresponding with the pipe B, forms the second leg of said inverted siphon, while its upper part extends upward for over four hundred feet, if required. The lower end of this enlarged part C of said water-delivery pipe is connected by the branch pipe E with a compressed-air-supply pipe F—such, for instance, as that used for supplying compressed air to the rock-drills, &c., in a mine. The pipe B, leading from the tank A, dam, or other place whence the water is to be pumped, is provided with a check, retention, or back-pressure valve G to prevent either the water or the compressed air from passing back into such tank or other receptacle, while the branch pipe E is also fitted with a check, retention, or back-pressure valve H to prevent any compressed air or water being forced back into the air-supply pipe. It is also fitted with a stop-cock I to enable the supply of air to be regulated according to requirements.

The arrangement illustrated in Fig. 2 is one that has been found to answer very well for raising water from a level of thirteen hundred and eighty-five feet below the surface, and is given by way of example, it being, moreover, understood that the drawing is merely a diagrammatic one and not drawn to scale. The water is in a dam A at the thirteen-hundred-and-eighty-five-feet level, and is carried down a pipe B to the fifteen-hundred-and-sixty-feet level, where it passes into the lower end of the delivery-pipe D, extending up to the nine-hundred-and-sixty-feet level and discharging into a tank or other receptacle A′, compressed air being led through the pipe E into the lower end of said delivery-pipe D below the point of entrance of the pipe B, as described with reference to Fig. 1. The water in the tank A′ at the nine-hundred-and-sixty-feet level is carried down to the eleven-hundred-feet level, enters the lower end of a second delivery-pipe D′ up which it is raised by gravity to the nine-hundred-and-sixty-feet level, and by compressed air entering through the supply-pipe E′ to the five-hundred-and-sixty-feet level, where it is discharged into a tank or other receptacle A^2. In the same way the water is led from thence down to the seven-hundred-feet level and afterward raised to the two-hundred-and-fifty-feet level, and, finally, after being carried down to the three-hundred-and-fifty-feet level, it is raised to the surface. It will thus be seen that by a succession of four lifts I am enabled to raise water thirteen hundred and eighty-five feet, the air-pressure used being such as is required for driving rock-drills, &c.—viz., about sixty pounds to the inch.

I am aware that contrivances worked either with compressed air or steam on the principle of an injector have been used for raising water short distances; but for such work as pumping water out of deep mines these contrivances are useless, because they can only raise the water a comparatively short distance.

Having now particularly described and ascertained the nature of my said invention and

in what manner the same is to be performed, I declare that what I claim is—

In combination, the tank, the discharge-pipe B extending down therefrom, the pipe D extending upwardly, said pipe having an enlarged lower end into the side of which the pipe B projects and the air-pipe connecting with the extreme lower end of the enlargement and below the pipe B, substantially as described.

GEORGE LANSELL.

Witnesses:
EDWARD WATERS,
EDWARD WATERS, Junr.