

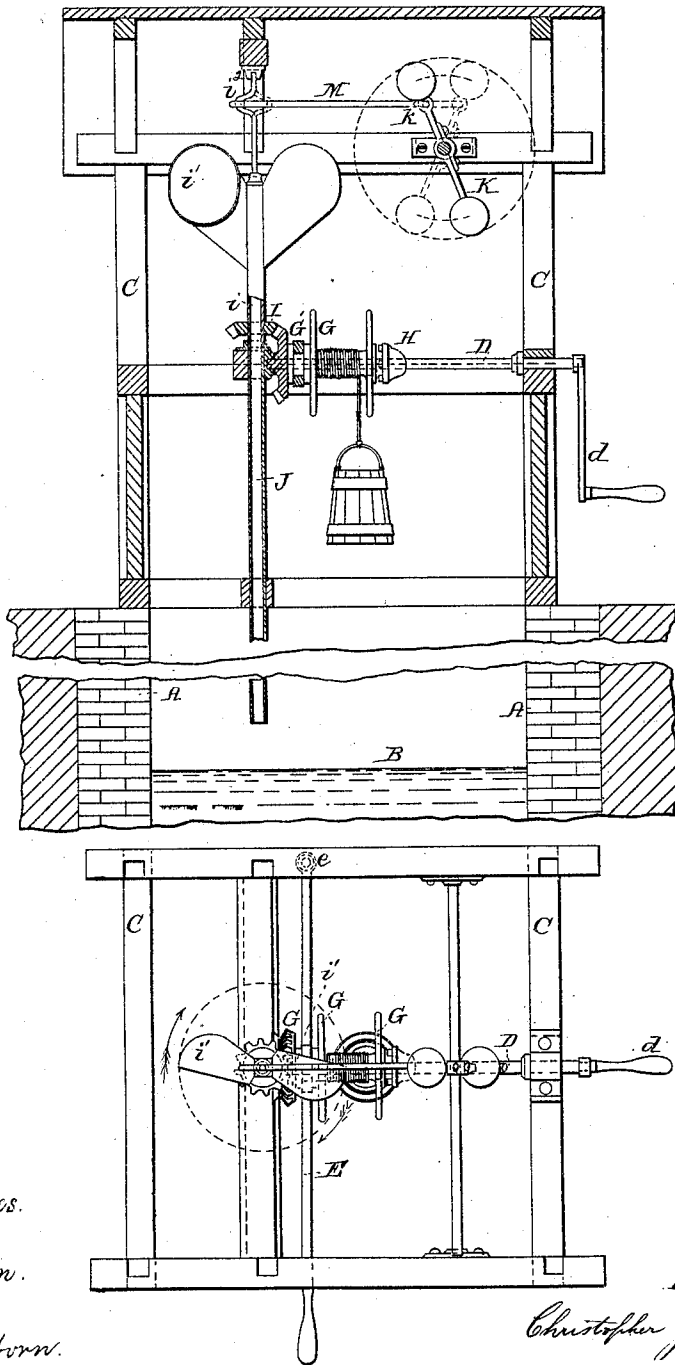
C. Gullmann,

Windlass Water Elevator,

N^o 56,553,

Patented July 24, 1866.

Fig. 2.



Witnesses.

D. W. Sutton.

D. L. Freiborn.

Inventor.

Christopher Gullmann.

UNITED STATES PATENT OFFICE.

CHRISTOPHER GULLMANN, OF POUGHKEEPSIE, NEW YORK.

IMPROVEMENT IN WATER-ELEVATORS FOR WELLS.

Specification forming part of Letters Patent No. 56,553, dated July 24, 1866.

To all whom it may concern:

Be it known that I, CHRISTOPHER GULLMANN, of Poughkeepsie, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Well Apparatus; and I do hereby declare that the following is a full and exact description thereof.

My invention relates to the means for operating and controlling the motion of the bucket and for ventilating the well. The water is raised by a bucket, which latter, after being emptied according to any approved method, is allowed to return by gravity at a considerable velocity; but the velocity is checked by my apparatus so as to not become destructive. A portion or the whole of the power developed by the descent of the bucket may be employed to exchange the air in the well, substituting fresh air from above for that previously stagnant.

I will proceed, first, to describe what I consider the best means of carrying out my invention, and will afterward designate the points which I claim as new.

The accompanying drawings form a part of this specification.

Figure 1 is a plan view of my apparatus. Fig. 2 is a side view of the same, partly in section, showing the well and its relation thereto.

Similar letters of reference indicate corresponding parts in all the figures.

The tints are employed merely to distinguish the parts, and do not necessarily imply difference in material.

The material may be of hard wood and wrought and cast iron, galvanized, painted, or otherwise preserved from oxidation.

A A are the walls of the well, and B the surface of the water therein. C is a fixed framing of wood, forming a curb of any approved style, which will afford sufficient height and stability to support my apparatus. D is a shaft, and *d* an ordinary handle or winch by which the shaft D may be turned. E is a lever pivoted to the curb at the point *e*, and adapted to be easily shifted by hand within the limits required. G is a sleeve, which is operated by the lever E axially. It loosely surrounds the shaft D.

H is a clutch fixed on the shaft D at the point represented, and provided with teeth which lock into a corresponding notch on the

end of the sleeve G whenever the said sleeve is moved toward the winch *d*. G' is a beveled gear-wheel fixed on the opposite end of the sleeve G, and arranged to mesh into a gear-wheel, I, whenever the sleeve G is moved from the winch *d*.

The bevel-gear wheel I is fixed on the hollow spindle *i*, which is mounted in a perpendicular position, as represented, immediately over and so that its interior shall communicate with the pipe J, which leads down into the well.

The hollow spindle *i* above the shaft D is branched, and provided with mouths which open tangentially, as indicated by *i'*. Above this point the spindle I is solid instead of hollow, and is cranked, as represented by *i*².

M is a connection extending from this crank *i*² to a suitable crank-pin or connecting-pivot, *k*, on a wheel K.

The distance of the pivot *k* from the center or shaft of the wheel K is greater than the diameter of the crank *i*², consequently the complete revolutions of the crank *i*² result in imparting a vibrating or oscillating motion of the wheel K.

To operate my invention the bucket, after being emptied, is released by moving the lever E, and thus shifting the sleeve G axially on the shaft D, so as to disconnect it from the coupling H, and connect it, by means of the beveled gear-wheels G' and I, with the hollow spindle *i*. In this position the bucket is free from the control of the shaft D, and commences to descend by gravity, thus unwinding the rope which is coiled around the sleeve G, as represented, and giving a rapid rotary motion to the sleeve G and the hollow spindle *i*. The revolution of the latter revolves the open mouths *i'* in the atmosphere so as to eject the air from the hollow spindle *i*; and its place being supplied by air drawn up through the tube J from the interior of the well, fresh air descends into the well to supply its place, and thus the well is ventilated by the abstraction of some of the old and the introduction of new air at each descent of the bucket, while the resistance offered by the broad mouths *i'* retards the revolution of the hollow spindle *i*, and consequently retards the descent of the bucket, so as to avoid a too high velocity in the parts. The oscillating motion of the wheel K exerts

a corresponding retarding effect on the descent of the bucket.

The wheel K and the means by which it is operated may be dispensed with by making the mouths *i'* sufficiently extended to act with great force upon the air; or the vibrating part K may be relied upon to form the main or the only resistance, if preferred, by dispensing with the mouths *i'*, as, for example, in case they should be broken off by any accident; but I prefer to use the whole in combination, as represented.

Each revolution of the hollow spindle *i*, by rotating the crank *i*², and thus giving one complete reciprocation to the connection M, gives a partial revolution to the wheel K, first in one direction, and then in the other.

The wheel K may be constructed roughly, and its bearings should be large, so as to induce much rather than little friction. The surfaces it presents to the air may also be very extended, so as to act like fans. Attention to these features increases the resistance which will inevitably result from the rapid partial revolutions of this wheel in opposite directions.

I can, obviously, connect my mechanism so that the revolving mouths *i* shall receive and force down the air into the well through the pipe J, instead of exhaust it from the well

through such pipe. The effect will be substantially the same in either case.

Having now fully described my invention, what I claim as new in well apparatus, and desire to secure by Letters Patent, is as follows:

1. The mouths *i'* on the hollow shaft *i*, arranged relatively to the bucket and to the rope or its equivalent, and to the loose sleeve G, connected by a clutch to the shaft D, so as to perform the double function of retarding the descent of the bucket and ventilating the well, substantially in the manner herein specified.

2. The oscillating part K, so mounted and arranged relatively to the bucket and its connection, liberated for descent, as described, that it shall retard the descent of the latter, substantially in the manner herein specified.

3. The well-bucket arranged to descend automatically, the revolving mouths *i'*, and the oscillating part K, and the several connecting members of the mechanism, combined and arranged to effect the retardation of the descent of the bucket and the ventilation of the well, substantially as herein specified.

CHRISTOPHER GULLMANN.

Witnesses:

D. W. STETSON,
D. L. FREEBORN.