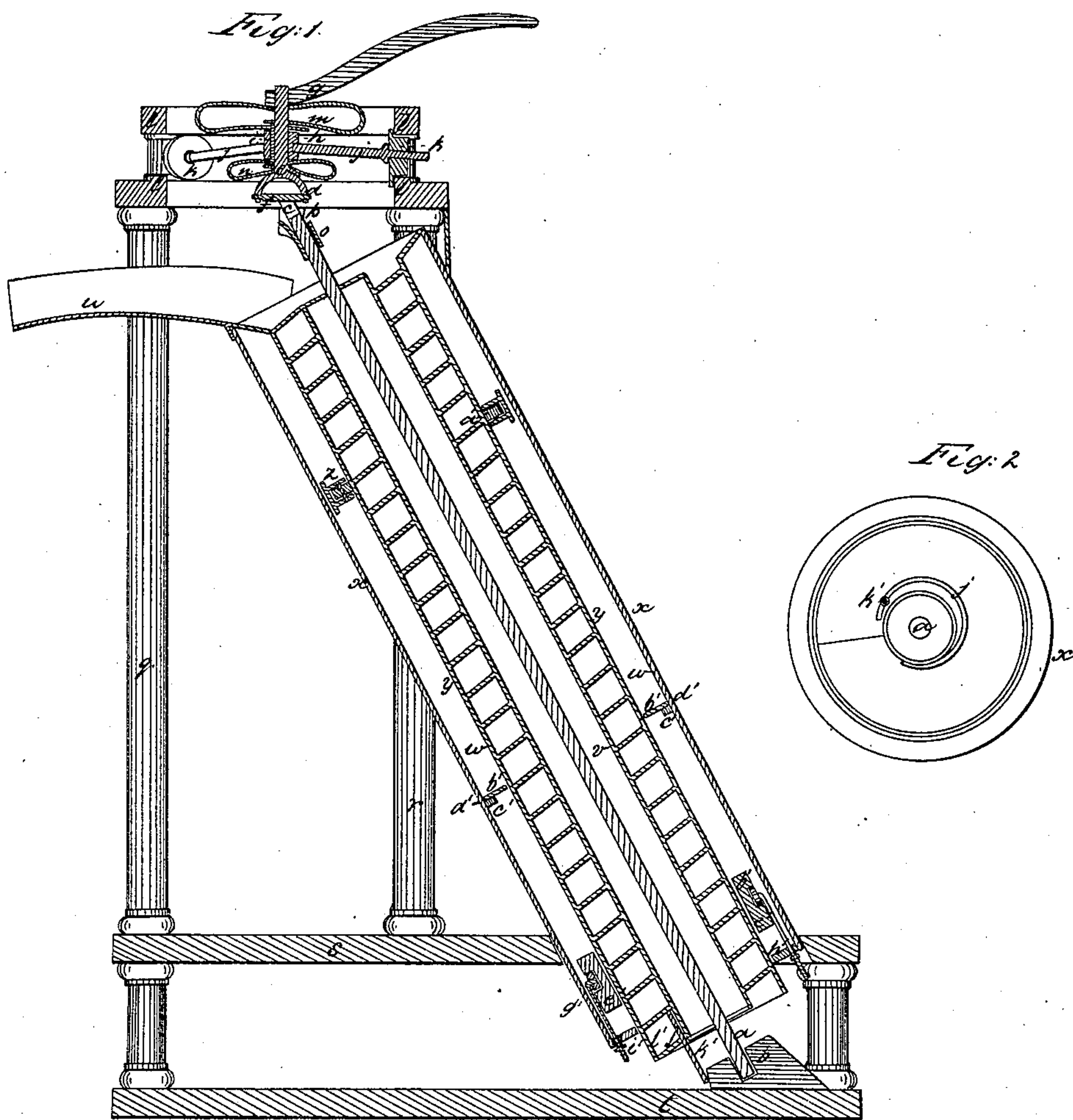


M. WAPPICH.
WATER ELEVATOR.

No. 28,526.

Patented May 29, 1860.



Witnesses.
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WATER-ELEVATOR.

Specification of Letters Patent No. 28,526, dated May 29, 1860.

To all whom it may concern:

Be it known that I, MAXIMILIAN WAPPICH, of the city of Sacramento, in the State of California, have invented a new and useful Improved Buoyant Water-Elevator; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters and marks thereon.

In general my invention has for its object elevating water, by the well known elevating screw, to any desired point, without the resistance arising from friction to which this class of elevators have heretofore been subjected.

The leading feature of my invention consists in making the screw-elevator buoyant; while there are under the improvement and involved in it certain minor features which contribute to the successful carrying out of the invention.

Of the drawings forming part of this specification Figure 1 is a vertical section of the screw-elevator, its frame, and the several parts connected therewith; Fig. 2 being an underneath or bottom view of the lower end of the elevator and its attachments.

In each of these figures like letters are used to indicate like parts.

By the drawings the lower end of the shaft (a) of the screw is represented as resting in a bearing (b) which has a conical surface. The shaft is shown as passing entirely through the elevator; but in some instances short shafts, the one attached to the bottom and the other to the top of the elevator, will answer. The upper end of the shaft terminates in a fork or section of a ring (c), which, in connection with a like fork (d) in the end of short shaft (e), and the cross (f), make the universal joint. To the upper end of the short shaft (e) is affixed the crank-arm (g) for the attachment of the connecting rod of the motive power.

Around the short shaft (e) is a hub (h) which, by a feather (i) fitting into a groove in the shaft, is attached to the shaft and moves with it. To this hub are connected radial arms (j) the outer ends of which are in wheels (k), the wheels having above and below them a rail (l) for their track and which make the upper bearing of the shafts of the elevator. A spring (m) lies between

the crank-arm and the hub, and a like spring (n) between the hub and the fork (d) of the short shaft. The upper end of the shafts thus has elastic bearings, these being between the two rails (l) and (l) sufficient space to allow play to the wheels under the rising and falling of the elevator as the quantity of water being raised by it varies. The upper end of the shaft (a) is steadied by a cross-bar (o) through which it passes, the bar at each end being attached to the frame (p) of the elevator. (q) (r) (s) (t) mark the different parts of the frame of the elevator and (u) its shute or outlet.

The central portion of the elevator (v),—the interior cylinder, to the outer surface of which the inner edges of the screw will be attached—is designed to be in most cases an air tight cylinder. It is shown air-tight by the drawings, and when air-tight will increase the buoyancy of the elevator. The space (w) between the shell (x) of the elevator and the exterior cylinder (y) of the screw forms a water chamber, which may be filled, or only a portion of it occupied with water,—the water being supplied from the screw as it is elevated through inlets at the top, or by any convenient means. The screw or elevator proper will, therefore, float in the water contained in the space (w), and this water will not act as a lubricating material to the elevator.

Frames (z) having rollers (a') can be placed in the space (w) to act as guides and to steady the elevator in its revolutions. Other frames (b') may be placed in space (w), and made water tight, at such points above the lower end of the elevator as may be desirable so that in case it should be necessary to enter the lower portion of this space to repair, or arrange, or for any purpose the water above the frames (b') would not have to be removed. The frames (b') I construct of annular pieces, the exterior piece having a supporting bar (c'), as indicated by Fig. 1, and the interior piece having a beveled edge to fit a beveled seat of the exterior piece. This beveled edge and seat are indicated on the drawing by a heavy line. It may be preferable to make the inner piece of two sections instead of one entire piece. Screws (d') passing through the sides of the shell will hold the pieces in place and serve as means for tightening the pieces,

which may be packed if necessary. Rods or other means extending from the top or bottom of the space may be used in the place of the side screws.

5 Near the bottom of the space (w) is a packing ring (e'), which may be used in connection with any kind of packing. In this ring is a groove (f') in which fit rollers (g') having stems passing through the bot-
10 tom (h'), on their ends being nuts (i') for adjusting and tightening the ring and packing. These rods and the adjusting means may be pressed down from the top if preferred.

15 When this elevator is in rotation the quantity of water within the spaces of its screw threads will vary with its velocity. If the quantity of water be large the tendency of the elevator will be downward the rollers
20 (k) traversing upon the lower rail, and if the quantity of water be small the elevator will be higher up, the rollers traveling against the upper rail. It is desirable to have some means for regulating the quantity
25 of water admitted, to answer which I have this provision:

From the side of the cylinder which constitutes the air-tight chamber I extend an elastic plate in the nature of a lip (j'),
30 which is of the height of the space between the two threads or plates of the screw at this point. The inner end of the lip (j') is attached to the cylinder. As its outer end it has a rod (k') extending downward its pins
35 resting upon the conical surface of the base (b). The lip (j') can play across the inlet of the screw (l') and will diminish this inlet or not as the rod (k') may have its end higher up or lower down on the conical sur-
40 face of the base piece. When therefore the elevator has the largest quantity of water in it and is the lowest down, the lip (j') will be nearest the plate (y) of the external cylinder of the screw, diminishing the inlet, and
45 when there is the least quantity of water in the elevator and is at its highest point the lip will be near to the plate of the inner, or air cylinder, with the inlet unobstructed. Instead of relying upon the upward and
50 downward motions of the elevator to regulate and control the position of the lip, it may be controlled by the ball or any other governor deriving its movements from the

rotation of the elevator and being geared with it as is usual with governors.

This elevator may be used without the air chamber, and instead of having the air chamber as shown, between the shaft and the plate of the screw, it may be exterior to the screw and between the screw plate (y) and
60 another plate, the screw then lying nearer the center than as shown.

Through the shell or plate (x) faucets may pass into the space (w) at such points as may be desirable to let water out. In-
65 stead of the springs (m) and (n) being placed as shown, as is evident, they may be placed in other positions and produce the same effect.

This elevator may be used in the position
70 in which it is represented or in any position between a vertical and horizontal line desirable, and one only may be used for elevating the water to the point required, or a series with reservoir intervening may be used
75 as may be preferred. It may have the motive power applied at its lower end instead of at the upper end. It may be employed for elevating other fluids than water, and is susceptible of being used advantageously under
80 all circumstances and to the raising or conveying of any material or substance to which a screw elevator may be applied.

What I claim as new and desire to secure
85 by Letters Patent is—

1. Sustaining and buoying the screw-elevator by a water chamber exterior to the shell of the screw either in connection with the air chamber or without it, substantially
90 as described.

2. Regulating the admission of the water by the lip (j') constructed and operated as described.

3. The arrangement of means for suspending the upper end of the elevator herein set
95 forth.

4. The ring (e') and the means connected with it for packing and guiding the lower end of the cylinders as described.

5. The former (b') as constructed and
100 arranged and for the purposes set forth.

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Witnesses:

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