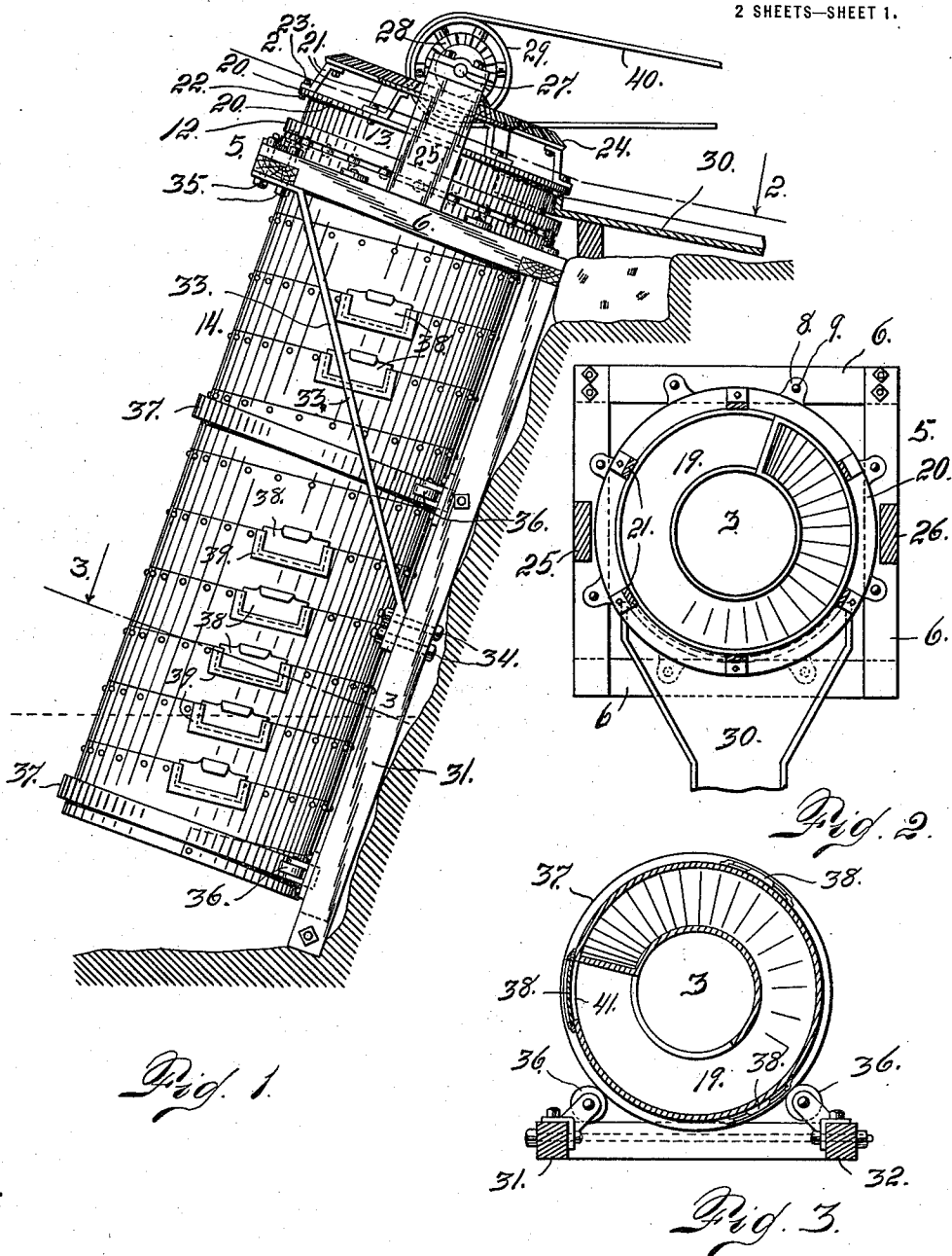


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APPLICATION FILED DEC. 20, 1913.

1,150,408.

Patented Aug. 17, 1915.

2 SHEETS—SHEET 1.



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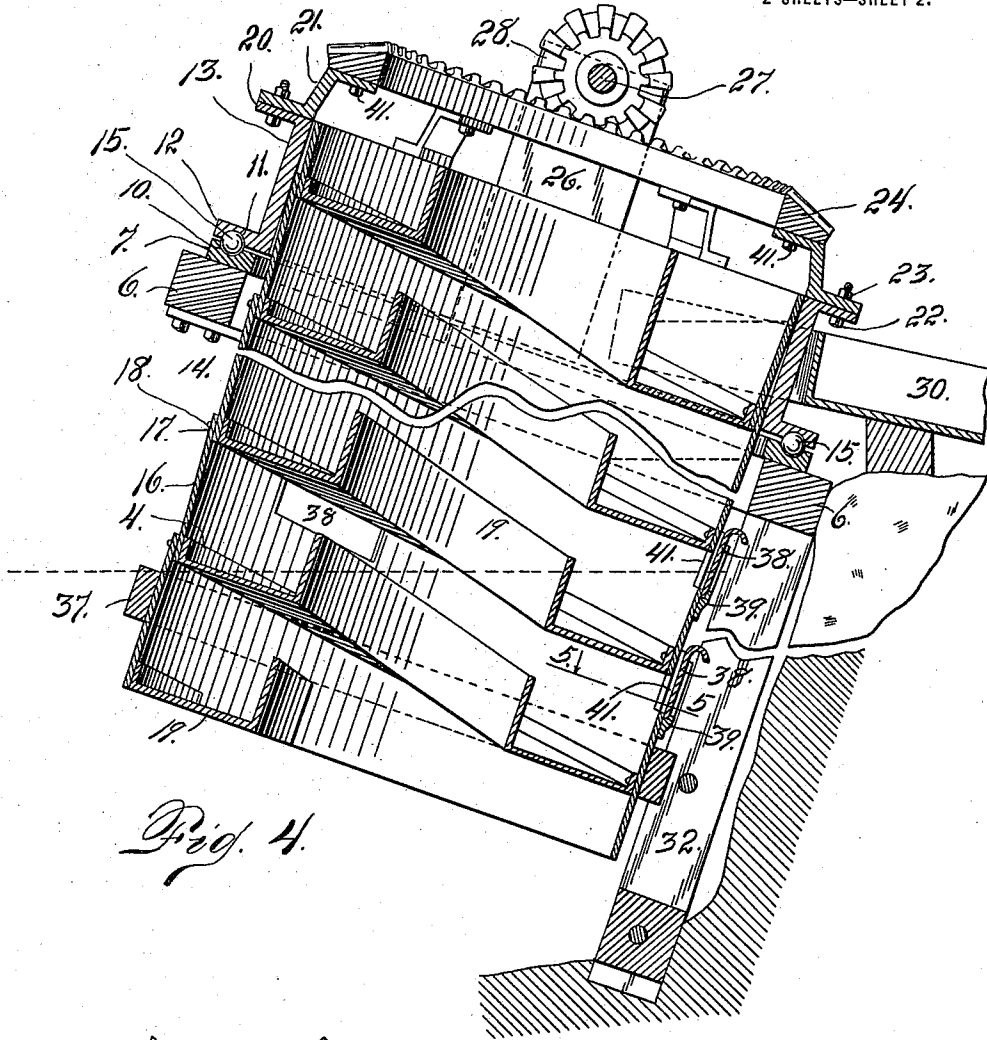


Fig. 4.

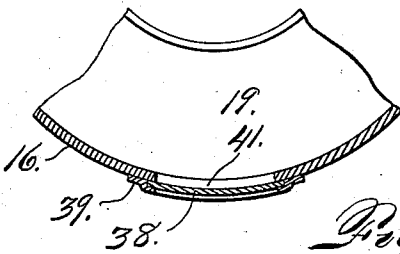


Fig. 5.

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UNITED STATES PATENT OFFICE.

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WATER-ELEVATING DEVICE.

1,150,408.

Specification of Letters Patent.

Patented Aug. 17, 1915.

Application filed December 20, 1913. Serial No. 807,331.

To all whom it may concern:

Be it known that BERT F. WILSON, citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Water-Elevating Devices; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in water elevating devices.

In my improved construction the apparatus consists of a spirally arranged trough located within and secured to a closed cylindrical casing, the axis of the structure being inclined to the horizontal during the rotary action of the apparatus, when in use. This cylindrical structure is suspended into the stream, reservoir, or other suitable water supply, upon a frame, one member of which supports a bearing for the upper extremity of said structure, while the other depending members of said frame are provided with anti-frictional rollers, which form a bearing face upon which the cylindrical casing revolves when rotated. The spiral convolutions which form the cylindrical casing and to which the spiral convolutions of the trough are attached overlap each other and are secured together in any suitable manner, whereby the said casing is entirely closed.

Another feature of my invention is that the casing at certain intervals is provided with openings normally closed by plates, but which plates may be withdrawn when desired, whereby any foreign substance that might have collected in the trough may be removed.

Still another feature of my invention is that the interior of the structure is open throughout its length, and at both extremities, and by virtue of this construction the interior of the apparatus may be entered from the top for purposes of repairing or cleaning.

Having briefly outlined my construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing.

In this drawing: Figure 1 is an elevation of the apparatus in its entirety. Fig. 2 is a section taken on the line 2—2, Fig. 1, looking in the direction of the arrow. Fig. 3 is a section taken on the line 3—3, Fig. 1, looking in the direction of the arrow. Fig. 4 is a vertical central section of the apparatus with parts broken away and on an enlarged scale. Fig. 5 is a detail sectional view showing one of the openings in the periphery of the cylindrical casing and the means by which they are normally closed.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the upper portion of a frame work which is formed of a number of members 6 arranged in the form of a square. Upon the frame member 5 is mounted a supporting ring 7, provided with lugs 8, which are secured to the members 6 by bolts 9. The ring 7 is grooved at 10, which groove registers with the groove 11 formed in an annular flange 12 of a collar 13, said collar being secured to the upper extremity of a cylindrical casing 14. These respective grooves are adapted to receive balls 15, whereby an anti-frictional bearing is formed between the collar 13 and the supporting ring 7. The cylindrical casing 14 is suspended upon this bearing and formed from a spiral plate 16, the successive convolutions of which overlap, as shown at 17, and are fastened together by rivets 18.

Within the plate 16 and adjacent thereto is located a spirally arranged trough 19, the successive convolution being secured to the respective convolutions of the plate 16, by extending the rivets 18 through an up-turned flange 4 formed on the outer periphery of the trough. This structure comprising the plate 16 and the trough 19 may be of any desired length and its lower extremity extends into the bed of the stream, reservoir, or other body of water, from which the water is to be elevated for irrigating, or other purposes.

The collar 13 is provided at its upper edge with a second annular flange 20, upon which are mounted brackets 21, said brackets being secured at one extremity to the flange 20, by bolts 22 having nuts 23 threaded upon their free extremities. The opposite extremities of these brackets support a gear ring 24 and are secured thereto by

suitable fastening means 41. Upon the frame member 5 are also mounted two supports, 25 and 26, in the upper extremities of which is journaled a shaft 27. Upon this shaft 27 is secured a pinion gear 28, which meshes with the gear ring 24. Also, rigidly mounted upon this shaft, near one extremity, is a pulley wheel 29 connected by a belt 40, with any suitable source of power.

Depending from the frame member 5 are two supports, 31 and 32, inclined at an angle of approximately 65 degrees, and forming right angles with the said frame member 5. Braces 33 tend to hold the frame member 5 in this position and are secured at one extremity to the depending supports 31 and 32 by bolts 34, and at their opposite extremities with the frame member 5 by bolts 35.

Mounted upon the supports 31 and 32 are rollers 36, which engage bands 37 surrounding the casing 14 and spaced any desired distance apart, depending entirely upon the length of the cylindrical structure. These rollers, together with the supports 31 and 32, form an anti-frictional longitudinal bearing upon which the apparatus revolves when rotated.

In certain convolutions of the plate 16, there are openings 41 approximately 20 degrees apart, which are normally closed by plates 38 inserted in U-shaped ways 39. These plates may be withdrawn from the ways 39 when desired, whereby access is gained to the interior of the trough for removing any substance that might have become lodged near said openings. To accomplish the same object, or for the purpose of repairing the apparatus, the operator may enter the interior of the structure which is open, as shown at 3, by descending through the gear ring 24. This is a most important feature of my invention, since heretofore in constructions of this character, as far as I am aware, there has been no means for clearing obstructions or making

repairs within such structure, without taking the same apart.

The apparatus is operated by imparting power to the pulley-wheel 29, by means of a belt 40, which rotates a shaft 27, and which in turn rotates the pinion gear 28, which meshes with the gear ring 24, whereby rotary movement is imparted to the cylindrical casing and trough structure, and thus the water is picked up at the lower extremity of the said apparatus and delivered at its upper extremity where it overflows into a stationary trough 30.

Having thus described my invention, what I claim is:

1. The combination with a frame inclined to the horizontal, of a cylindrical casing mounted thereon and suspended therefrom, means for rotating said casing, a spiral trough secured to the interior of the casing and arranged to leave an open space throughout the length of the structure within the convolutions of said trough for the purposes set forth.

2. The combination with a frame inclined to the horizontal, of a casing mounted thereon and suspended therefrom, means for rotating said casing, a spiral trough secured to the interior of the casing and arranged to leave an open space throughout the length of the structure within the convolutions of said trough for the purposes set forth.

3. The combination with a frame inclined to the horizontal, of a spiral trough structure mounted thereon and suspended therefrom, means for rotating said structure, the latter having an open space throughout its length within the convolutions of the trough, for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

BERT F. WILSON.

Witnesses:

L. F. HALL,

A. EBERT O'BRIEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."