S. PARIS.

ELEVATING CONVEYER.

APPLICATION FILED MAR. 12, 1915.

1,178,408.

Patented Apr. 4, 1916.

3 SHEETS—SHEET 1.

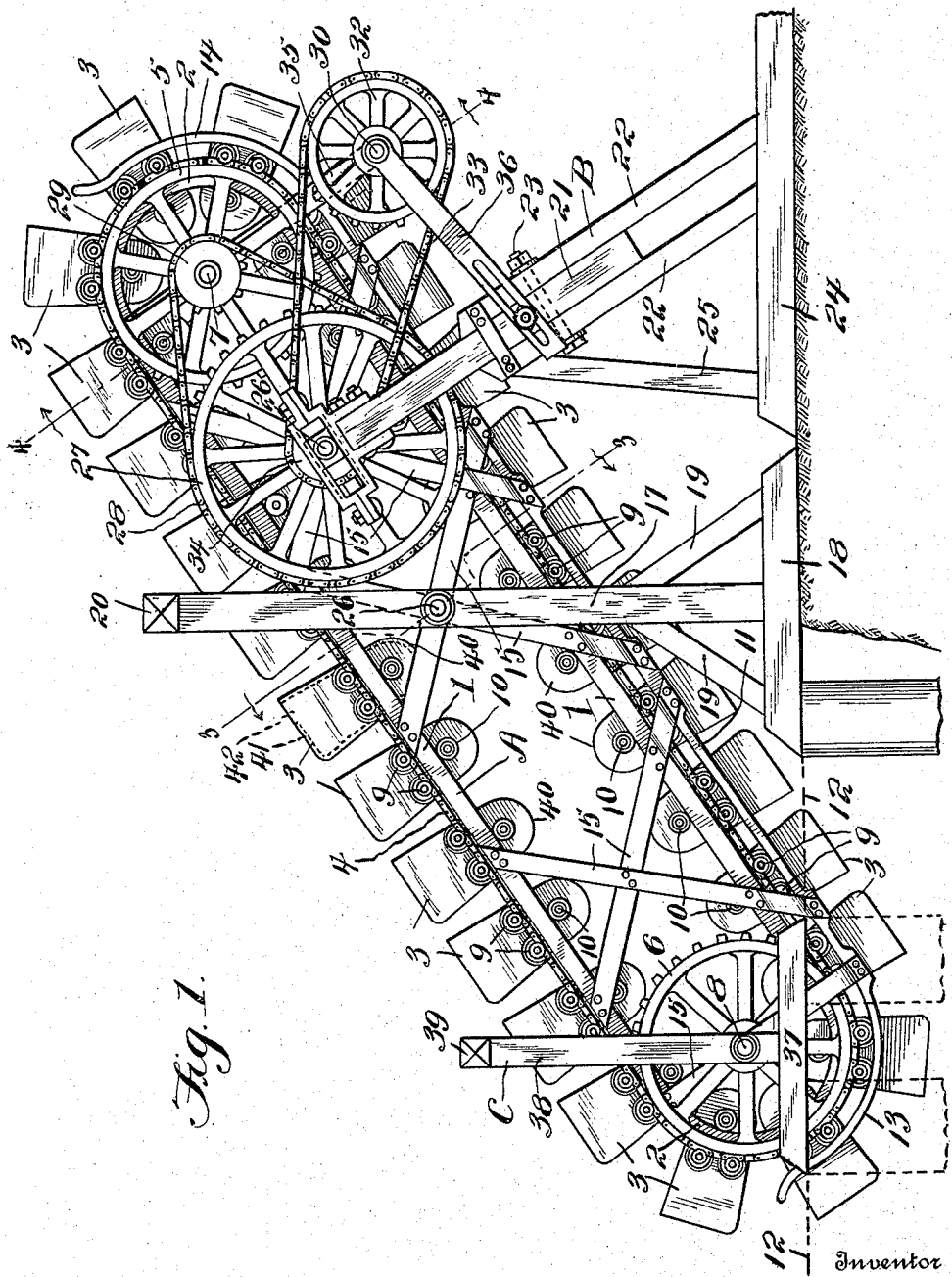

Fig. 1.

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Witnesses

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3 SHEETS—SHEET 2.

Fig. 3.

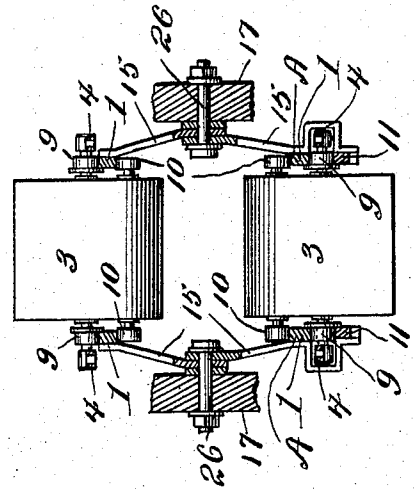
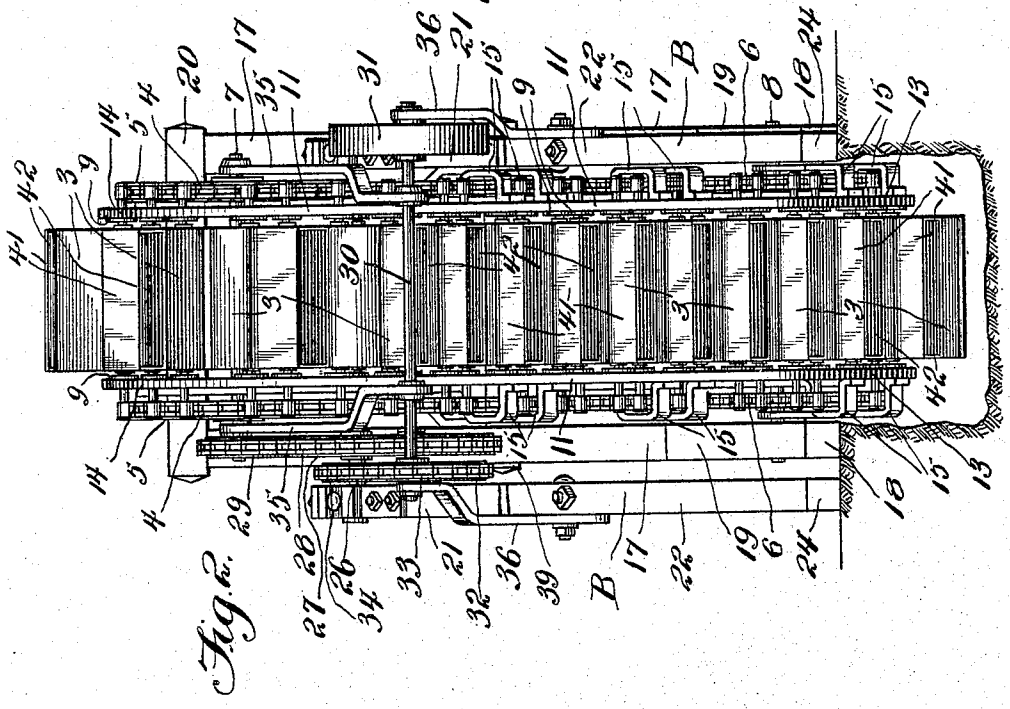


Fig. 2.



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3 SHEETS—SHEET 3.

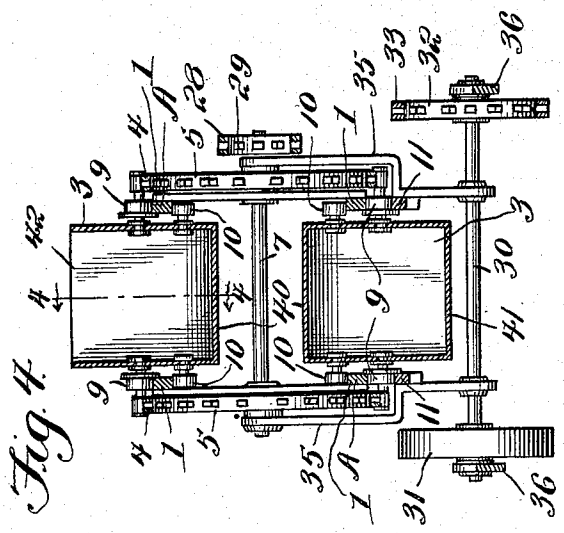

Fig. 4.

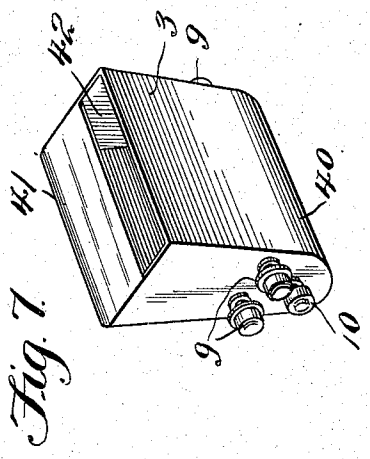

Fig. 7.

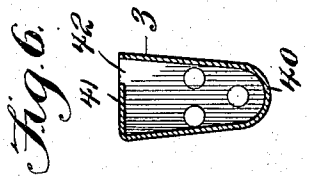

Fig. 6.

Fig. 5.

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UNITED STATES PATENT OFFICE.

SAMUEL PARIS, OF CHEYENNE, WYOMING.

ELEVATING-CONVEYER.

1,178,408. Specification of Letters Patent. Patented Apr. 4, 1916.

Application filed March 12, 1915. Serial No. 13,910.

To all whom it may concern:

Be it known that I, SAMUEL PARIS, a citizen of the United States, residing at Cheyenne, in the county of Laramie and State of Wyoming, have invented new and useful Improvements in Elevating-Conveyers, of which the following is a specification.

This invention relates to elevating conveyers, the object in view being to produce a continuously operating conveyer of the class referred to particularly adapted for elevating water for irrigation purposes.

One object of the present invention is to provide means for supporting and adjusting the main body of the elevator including an endless series of buckets and a guiding track therefor, whereby the elevator as a whole may be adjusted in accordance with the depth of the body of water from which the supply is being taken and whereby also the submerged portion of the elevator may be raised sufficiently to clear the water in freezing weather.

A further object of the invention is to provide a novel construction and arrangement of buckets with relation to the guiding and supporting track, whereby each of the buckets is properly positioned, balanced and guided throughout the entire extent of travel thereof, relieving the driving chain or chains from transverse strains and thereby reducing friction to a minimum and correspondingly increasing the capacity of the elevator as a whole.

With the above and other objects in view, the invention consists in the novel construction, combination and arrangement of parts, as herein described, illustrated and claimed.

In the accompanying drawings: Figure 1 is a side elevation of an elevator embodying the present invention. Fig. 2 is an end elevation of the same. Fig. 3 is a fragmentary section taken on the line 3—3 of Fig. 1. Fig. 4 is a section on the line 4—4 of Fig. 1. Fig. 5 is a detail view of one of the braces. Fig. 6 is a sectional view of one of the buckets. Fig. 7 is a perspective view of the same.

The elevating conveyer contemplated in this invention comprises an endless track rail designated generally at A and comprising the substantially parallel longitudinal runs 1 and the substantially semi-circular end portions 2. The track rail is of uniform width throughout the entire length thereof and is adapted to support and guide an endless series of buckets 3, all of said buckets being connected to and driven by a pair of parallel chains 4 which travel around sprocket wheels 5 and 6 on shafts 7 and 8 adjacent to the opposite ends of the elevator frame, the end portions 2 of the track rails 1 being concentric with the respective shafts 7 and 8 as clearly shown in Fig. 1. Two of such rails 1 are employed, the same being spaced a suitable distance apart in accordance with the width of the buckets 3, said buckets extending outwardly beyond and inwardly within the track rails as shown in Fig. 1 and being provided at each side thereof with a plurality of rollers which move along the rails 1. Three of such rollers are shown at each side of each bucket, there being two rollers 9 which move in contact with the outer face of the adjacent rail 1, and a single roller 10 which moves along the inner face of said rail. These rollers 9 and 10 are arranged in triangular relation to each other so that a three-point contact is obtained with each rail by each bucket, the inner roller 10 being located at a point midway between the outer rollers 9 and thereby preventing any tendency of the buckets 3 to tilt in either direction. Under the lower run of the rails 1 there are supporting guard rails 11 parallel to each other and to the rails 1 against the upper sides of which the outside rollers 9 travel as the buckets move downwardly to their receiving or filling position.

The water line is indicated at 12 in Fig. 1 showing that the buckets are wholly submerged as they pass under the lowermost portions of the rails 1, at which time they rest upon the curved lower end portion 13 of the supporting or guard rail 11. The opposite end of the rail 11 is also curved as shown at 14 in concentric relation to the shaft 7 and serves to guide the rollers of the buckets properly around the adjacent portions 2 of the track rails.

The straight parallel runs 1 of the track rails are connected by cross braces 15, any

number of which may be used in accordance with the length of the elevator frame and about centrally of its length, said frame is pivotally supported at 16 between the opposite parallel uprights 17 of a main support, comprising in addition to the uprights 17, bases 18, braces 19 and a top cross bar 20. The pivot 16 may consist of a bolt passing through both of the uprights 17 and through the intersecting portions of the adjacent pair of cross braces 15 as indicated in Fig. 1.

B designates generally a longitudinally extensible brace consisting of the members 21 and 22 which bear an overlapping relation to each other as shown and which are also capable of a relative sliding movement. In the preferred embodiment of this feature of the invention, the member 22 consists of parallel bars spaced sufficiently apart to receive the member 21 between them, the member 21 being formed with a series of holes or a slot to receive one or more clamping bolts 23 by means of which the members 21 and 22 may be clamped in their adjusted position. The member 22 is connected at its lower end to a broad base 24 from which one or more braces 25 extend to the upper end portion of the member 22. It will be understood that two of such braces B are employed arranged at opposite sides of the frame of the elevator and the upper ends of said braces are provided with bearings for the shaft 26 of a sprocket wheel 27 from which a chain 28 extends around a sprocket pinion 29 on the shaft 7 of the upper pair of sprocket wheels 5 which drive the chains 4.

30 designates the driving shaft of the elevator which is provided at one end with a belt pulley 31 to receive a belt from any suitable motor, the shaft 30 being provided on its opposite end with a sprocket wheel 32 from which a chain 33 extends around a sprocket pinion 34 on the shaft 26 of the sprocket wheel 27 above referred to. Connecting bars 35 are interposed between the shafts 7 and 30 and other bars 36 are interposed between the shaft 30 and the upper slidable member 21 of the longitudinally extensible brace B. Therefore, when the member 21 is adjusted lengthwise of the brace B, all of the driving mechanism above described is simultaneously shifted therewith. An additional support designated generally at C is provided for the lower end of the elevator, the same being shown as comprising a pair of horizontally extending base members 37 and upright members 38 connected by a top cross bar 39. The base members 37 are adapted to be supported by piers (shown in dotted lines in Fig. 1) or any suitable foundation submerged in the body of water from which the elevator obtains its supply. The corresponding base members 18 and 24 above described may be supported in the same manner upon piers located either in the water or on the adjacent shore. Each of the buckets 3 embodies parallel sides, a substantially semi-cylindrical inner end portion 40 and has its outer end partially closed by means of a flange or web 41, leaving an opening 42 for the admission and discharge of water, said opening being arranged on that side of the mouth of the bucket which travels in advance.

From the foregoing description, taken in connection with the accompanying drawings, the operation of the elevator will now be understood. By means of the driving connections described, motion is imparted continuously to the endless series of buckets which are successively submerged in the water, obtaining their supply as they travel around the lower sprocket wheels 6 and discharging the water as they travel around the upper pair of sprocket wheels 5. The rollers 9 and 10 under the arrangement set forth travel along opposite faces of the endless track rails 1 and by providing a three-point bearing or suspension, each bucket is prevented from tilting even though the driving chains are slack and have a tendency to sag. Thus any lateral or twisting strain is removed from the chains 4, the only function of which is therefore to propel or drive the buckets, the chains not being required to be sufficiently taut to prevent the buckets from tilting. The buckets in traveling around the track are self-inverting, self-filling and self-emptying.

Where the elevator is used in tide water, the submerged portion thereof may be raised and lowered by adjusting the members 21 in relation to the members 22 of the braces B. This enables the receiving portion of the elevator to be submerged to the proper depth to enable the elevator to operate with a minimum resistance while obtaining the proper filling of each bucket. In bodies of water of constant level the frame C may rest or piers as shown by dotted lines in Fig. 1 and, in freezing weather, the submerged portion of the elevator may be raised clear of the water so that it will not become clogged with or injured by ice.

It will, of course, be understood that the water elevated by the machine hereinabove described may be received in and carried to any desirable point by means of a suitable trough, gutter, pipe or other device suited for that purpose.

What I claim is:—

The combination with a main support, of a water elevating conveyer pivotally sustained intermediate of its ends thereon adapting it to be turned on a horizontal axis, and adjusting mechanism associated with the upper part of the conveyer and

embodying a longitudinally extensible brace fastened at its lower end to a fixed point and provided at its upper end with a guide way extending substantially at a right angle to the brace, and conveyer driving mechanism located adjacent to the upper end of the conveyer and embodying a power transmitting shaft slidable in said guide way to compensate for the lengthening or shortening of said braces.

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

SAML. PARIS.

Witnesses:
G. L. SHUMWAY,
E. C. DUNCAN.

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