Nov. 6, 1934. H. BÉNIT 1,979,439

HYDRAULIC ROTATORY AND TRANSLATORY DEVICE

Filed June 3, 1932

Fig. 1.

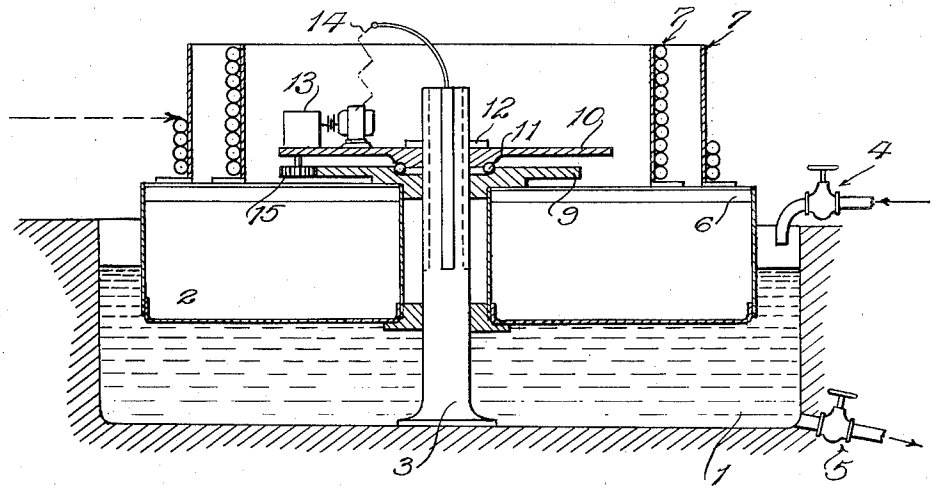
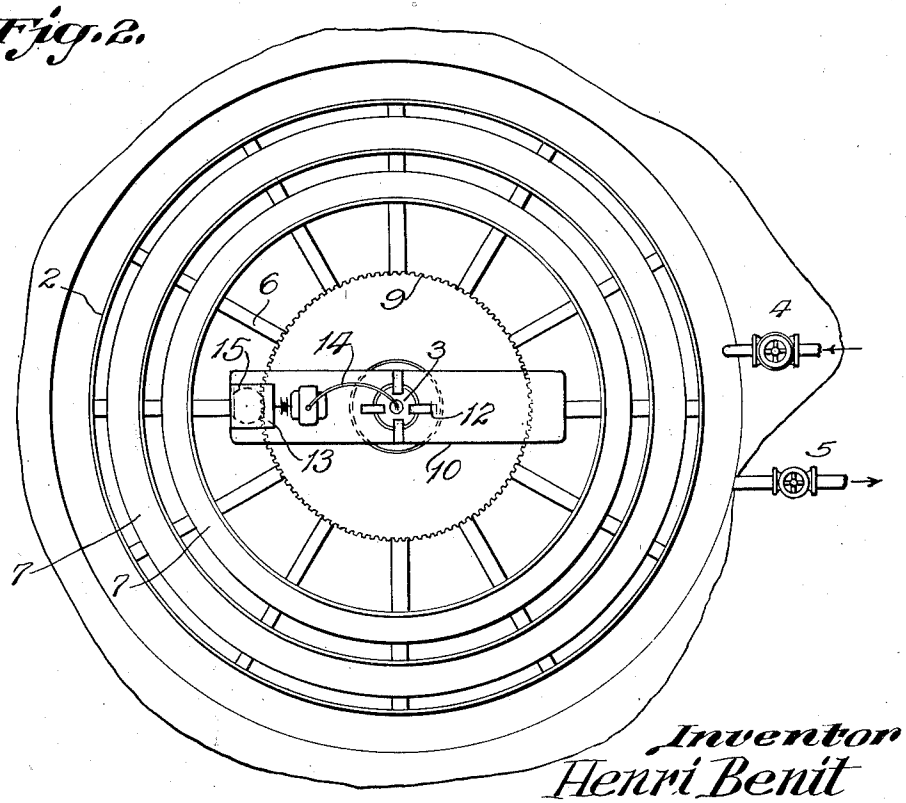


Fig. 2.



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HYDRAULIC ROTATORY AND TRANSLATORY DEVICE

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1 Claim. (Cl. 242—54)

For the handling of certain loads, such as drums for coiling long and heavy cables, means are generally provided to rotate these drums as well as move the same vertically for the purpose of winding or unwinding the cable. These means ordinarily comprise devices of turntable and screw-jack arrangements coupled together to obtain a helicoidal movement.

However, when it is necessary to design turntables having very important dimensions and vertical displacements of great amplitude, the mechanical problem presents great difficulties owing to the considerable masses to be displaced, the lack of precision in the construction of very large diameter roller-tracks, and the difficulty of raising important loads conveniently guided.

According to the present invention a circular tank is made to float in a reservoir filled with water or any other liquid, the said tank supporting the weight of the cable drum or other body to be simultaneously rotated and raised, and being guided by a central axis, and the said reservoir being capable of being filled or emptied to obtain the required upward or downward displacement.

The annexed drawing shows an embodiment of the invention, 1 is the reservoir filled with water or other liquid, 2 is the circular tank floating in the reservoir, 3 is the central axis formed by a fixed vertical tube about which the tank 2 can rotate and be displaced vertically. The taps 4 and 5 enable the reservoir to be filled or emptied to obtain the upward or downward displacement of the load. The floating tank 2 comprises radius members 6 enabling the carrying of one or more movable drums 7 upon which a cable is wound according to the fixed direction 8.

As an example, an elevational view is shown representing two drums 7, the smaller drum having already received a determined quantity of cable, and the larger drum, after filling of the first, being disposed to receive also a cable.

The vertical translatory movement of the tank 2 is effectuated by the operation of the taps 4 and 5; the inlet tap 4 enabling the raising of water in the reservoir, and the water outlet 5 permitting the lowering thereof.

During this translatory movement, the tank 2 is centered on the vertical tube 3 by means of bearings integral with the tank, the upper bearing comprising a gear 9.

Upon the gear 9 a platform 10 is disposed through the intermediary of a ball thrust bearing 11. To limit the movement of the platform to vertical translatory movement only, teeth 12 engage splines provided on the tube 3, thereby preventing rotation of the platform with the tank 2.

The platform 10 comprises driving means 13 actuated by an electric motor fed by a flexible cable 14; these driving means further include a driving pinion 15 meshing with the gear 9, to rotate the tank integral with the gear, while permitting the free vertical translation of said tank.

The device herein described ensures through the interposition of the float a perfectly uniform distribution of the load on the liquid, and a great freedom of rotation, the power needed for this rotation being reduced to that necessary to overcome the friction of the float on the liquid. The upward and downward displacements of the float are obtained by the mere operation of the inlet and outlet cocks for the liquid. The device is free from hydraulic joints and necessitates no maintenance.

This invention is not only applicable to cable factory material for the winding of heavy large section cables on large diameter drums, but also for the handling of any heavy large diameter material in view of winding or unwinding operations.

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 a device for producing an helicoidal movement constituted by a vertical translatory movement combined with a rotary movement and adapted to the winding of cable on large diameter drums and including a liquid reservoir, a float adapted to support the drum to be wound, a vertical shaft secured to the bottom of the reservoir and along which the float is adapted to be displaced, means to rotate the said float around the said shaft, and means to regulate the hydraulic lift exerted on the float to obtain the required helicoidal movement of the cable drum.

HENRI BÉNIT.