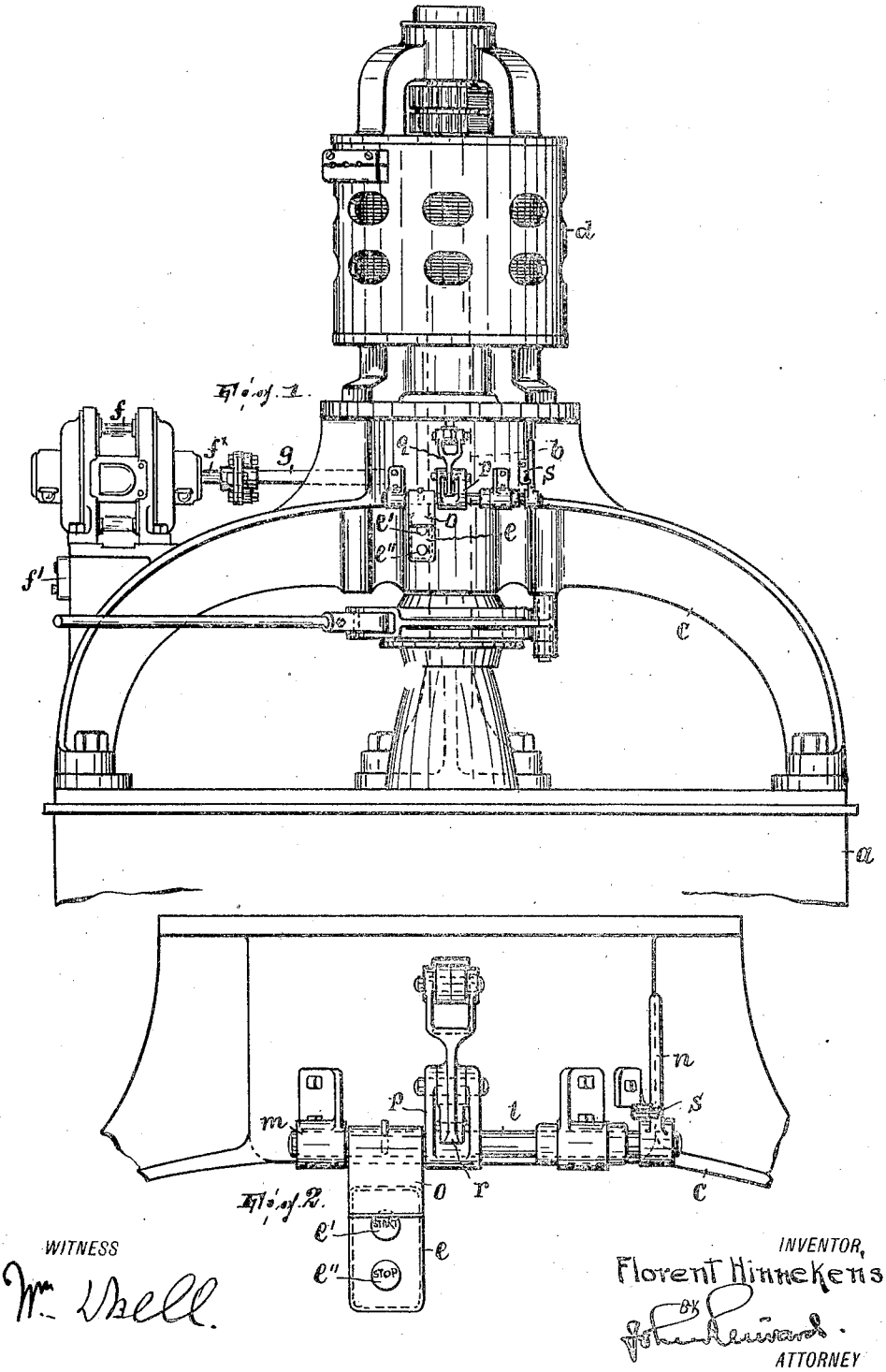
July 20, 1926. 1,593,259

F. HINNEKENS

DRIVING MEANS FOR HYDRO EXTRACTORS

Filed April 11, 1925 2 Sheets-Sheet 1



WITNESS

Wm. Bell.

INVENTOR,

Florent Hinnekens,

BY

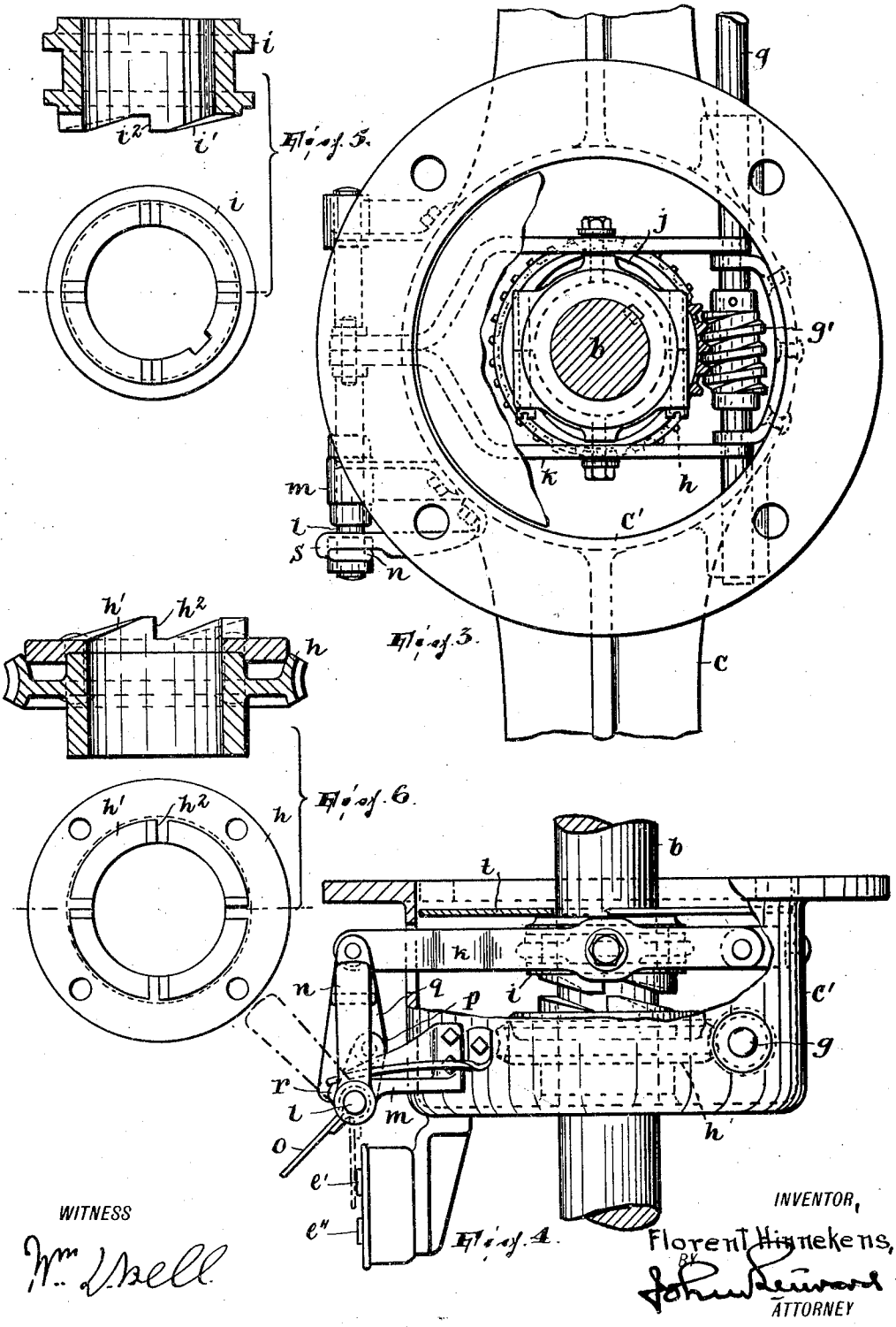
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DRIVING MEANS FOR HYDRO EXTRACTORS

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Patented July 20, 1926. 1,593,259

UNITED STATES PATENT OFFICE.

FLORENT HINNEKENS, OF PATERSON, NEW JERSEY.

DRIVING MEANS FOR HYDRO-EXTRACTORS.

Application filed April 11, 1925. Serial No. 22,260.

This invention relates to control means for machines which have to be driven at different speeds from different sources of power, as in the case of rotary machines provided with baskets or foraminous receptacles in which fabrics and the like to be treated with liquids (as in dyeing) are submerged in the liquid in another receptacle containing the basket and the basket first rotated at a relatively slow speed, to agitate the liquid during the soaking of the material, and then, the liquid being meanwhile drawn off, rotated at high speed so as to remove the liquid from the material by centrifugal force. The principal object of the invention is to provide means whereby when the machine is in driven connection with the slower speed driving means the operator cannot cause it to receive the driving influence of the higher speed driving means without incidentally disconnecting the first driving means, thereby to avoid injury to the mechanism which would otherwise follow.

In the drawings,

Fig. 1 is a front view of a centrifugal machine having my invention applied thereto;

Fig. 2 is a similar view of a fragment of Fig. 1, enlarged;

Fig. 3 is a plan partly in section, with the upper or high-speed motor structure removed;

Fig. 4 is a side elevation, partly in section, of what appears in Fig. 3;

Fig. 5 is an underneath plan and vertical section of the upper or splined clutch member or coupler; and

Fig. 6 is a top plan and vertical section of the lower or free clutch member or driver.

In the particular case of a centrifugal machine, as shown, let a represent the outer or main receptacle in which is contained the structure or means to be driven including a basket (not shown) to receive the material to be treated and the shaft b journaled in an arch c upstanding from the receptacle a. The arch supports, suitably fixed thereto, the high speed electric motor d having b as its armature shaft. This motor, with its source of electrical energy and the necessary conductor therebetween (both unnecessary to show) forms in the present case the means to drive said structure at high speed, and for that purpose there is a manually operated starting device herein in the form of an electrical switch e which it will be understood is arranged in the conductor, e' being the starting button of the switch and e'' its cut-out button.

The means to drive the said structure at slow speed is as follows; f is an electric motor mounted on the arch and having a source of electric energy and the necessary conductor connecting it therewith (both not shown) and a starting device f' similar to device e, its armature shaft f^x being coupled to an extension shaft g which is journaled in the arch and has thereon a worm g' in mesh with a worm-wheel h freely rotative on the shaft b and contained in and supported by a cup-like portion c' of the arch; this worm-wheel forms the aforesaid lower or free clutch member or driver, being provided on its top surface with teeth having each an inclined or cam-face h' and a vertical or driving face h^2, Fig. 6.

Mechanism shielding the starting device e' (so that it cannot be manipulated to start the high-speed motor) and coupling together the low-speed driving means and said structure (whereby to drive the latter from the former), said mechanism being shiftable to simultaneously uncouple said low-speed driving means and structure and unshield the starting device, is provided as follows: Splined on shaft b is the upper clutch member i having teeth on its lower surface to engage the teeth of the lower clutch member, each such tooth having an inclined or cam face i' and a vertical or driving face i^2. This member is peripherally grooved (Fig. 5) to receive a collar j (Fig. 3) whereby to shift the clutch member vertically by means of a lever k straddling the collar and pivotally connected therewith. A rock-shaft l journaled in bearings m at the front of the arch c has at one end a handle n and is equipped with a projecting shield o in the form of a blade arranged to swing down into shielding relation to the starting button e' or up to unshield the same. This shaft is preferably connected with the lever by a toggle connection which will insure against accidental

fall of the lever, and consequently of clutch member i, when elevated; this is afforded by a crank p on the rock-shaft and a link q connecting the crank with the lever and having a depending stop r to bear against the member formed by the rock-shaft and the other mentioned parts thereon and limit their motion in one direction past their dead-center relation relatively close to their dead-center position when, the shaft having been rocked to raise the lever, the pivot between the crank and link passes the dead center. There may also be a spring catch s to engage handle n and thus hold the lever elevated.

When the mentioned mechanism is in the position where the shield is in shielding position or down (dotted lines, Fig. 4) the upper clutch member or coupler is depressed. The high-speed motor, which has been previously stopped after a preceding operation of the machine, cannot now be started because the starting button e' is shielded, but the low-speed motor can be started by operating its starting device f' and when this is done the basket of the machine is rotated through the coupler i which is now in engagement with clutch member h, its teeth faces i^2 engaging the teeth faces h^2 of the latter clutch member. When the machine is to be operated at high speed the rock-shaft l is by means of its handle shifted to the full-line position of Fig. 4, so as to unshield the starting button; but this uncouples the basket-including structure from the low-speed driving means, permitting the starting of the high-speed driving means now to be effected without interference. Later the attendant stops the high-speed motor by pressing the button e'', and at that time resets the mentioned mechanism including the rock-shaft so as again to shield button e' and recouple the basket-including structure with the low-speed driving means.

If the parts including clutch member i should be inadvertently shifted to depress said clutch member while it is rotating relatively to or faster than clutch member h no smash can occur because then the cam faces i' will wipe idly over cam faces h', the clutch members being in effect rachet members. The construction is in fact such that in the stated event member h would elevate member i to such an extent that it would become dogged and held again in elevated position by the toggle connection.

t is simply a disk which rests on the clutch member i and forms a cover for the housing c', thus to prevent oil or grease from being thrown out of said receptacle.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is:

1. The combination of a rotary means to be driven, means to drive said driven means at one speed having a manually operated starting device, means from which to drive said driven means at another speed, and mechanism positioned to render the starting device manually inoperative and coupling together the second driving means and the driven means, whereby to drive the latter from the former, said mechanism being shiftable to simultaneously uncouple said second driving means and driven means and leave the starting device operative.

2. The combination of a rotary means to be driven, means to drive said driven means at one speed having a manually operated starting device, means from which to drive said driven means at another speed, and mechanism shielding the starting device and coupling together the second driving means and the driven means, whereby to drive the latter from the former, said mechanism being shiftable to simultaneously uncouple said second driving means and driven means and unshield the starting device.

3. The combination of rotary means to be driven, means to drive the driven means at one speed having a manually operated starting device, rotary means from which to drive the driven means at another speed having a rotary driver member revoluble concentrically on a part of said driven means, a coupler member on said part, said members being positioned in coupled engagement with each other and one being movable to clear the other, means positioned to render the starting device inoperative and movable to render the same operative, and means operatively connecting the movable member and last-named means for movement simultaneously from their stated positions.

4. In combination, an upright revoluble driven structure, clutch members thereon one of which is a driver therefor revoluble on said structure and the other of which is fixed to rotate with said structure and one of said members being shiftable vertically on said structure into and out of clutching engagement with the other member, a support in which said structure is journaled, and means connecting the shiftable member and support and including pivoted toggle members pivoted together and movable in each direction past the dead-center relation to each other and having means to limit their movement in one direction relatively close to their dead-center position.

5. In combination, a revoluble driven structure, clutch members thereon one of which is a driver therefor revoluble thereon and the other of which is fixed to rotate with said structure and one of said members being movable axially of said structure and normally held in clutching engagement with the other, said structure being adapted to be driven in the same direction as it is

driven by but independently of and relatively to the driver, and said members having rachet clutch-engagement portions arranged to positively interlock said members when the driver is driving said structure and to coact to cam the movable member clear of the other member when said structure rotates in said direction relatively to the driver, and means to lock the movable member on such camming thereof clear of the other member.

In testimony whereof I affix my signature.

FLORENT HINNEKENS.