

[54] ROTARY CLOTHES HOISTS	2,368,345	1/1945	Clark	74/424.8
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	3,599,499	8/1971	Steiner	74/89.15
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	2,369,910	2/1945	Morgan	74/89.15

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[58] Field of Search 74/89.13, 89.14, 89.15, 74/423, 424.8, 424.8 B, 459, 20

[56] **References Cited**
UNITED STATES PATENTS

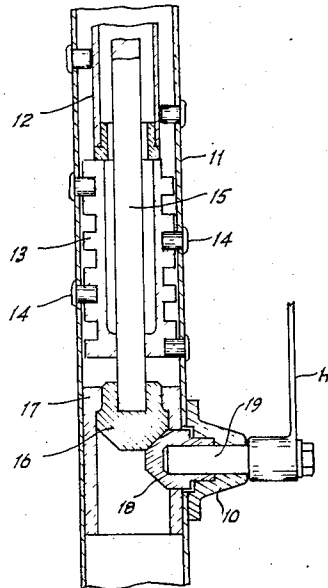
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[57] **ABSTRACT**

The invention relates to a rotary clothes hoist wherein a clothes receiving head comprising a series of radial arms is carried on the upper end of an inner standard rotatably and slidably mounted in the upper end of a main vertical standard and coupled to elevating means, said elevating means being substantially housed within the main standard.

4 Claims, 2 Drawing Figures



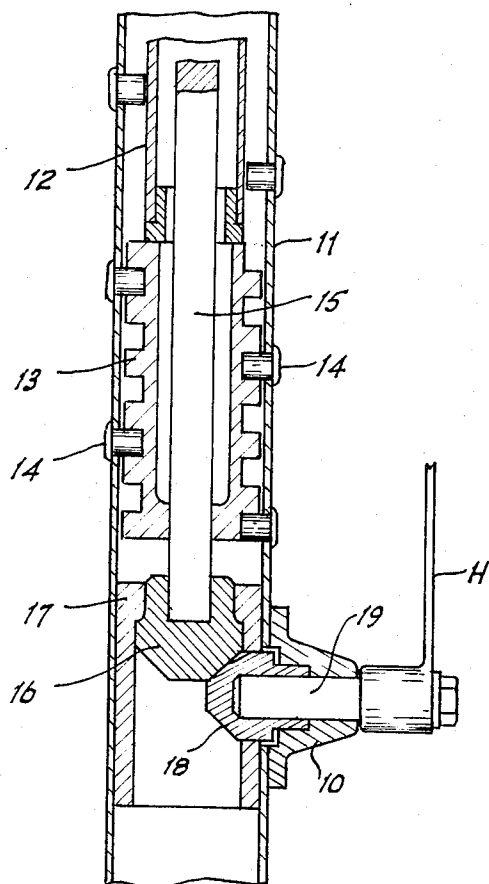


Fig. 1.

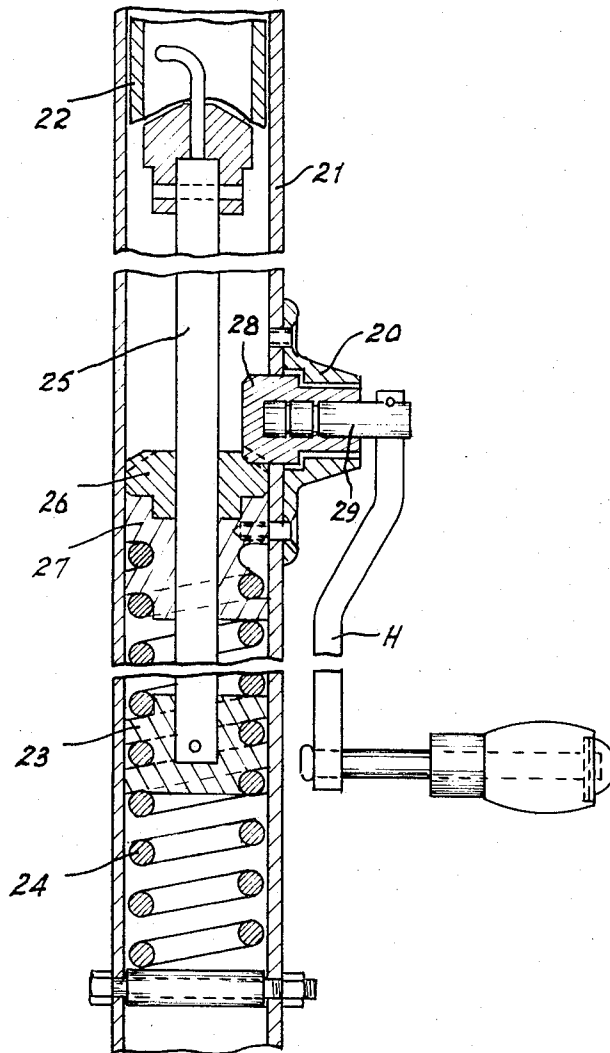


Fig. 2

ROTARY CLOTHES HOISTS

This Invention relates to improvements in rotary clothes hoists and more particularly in the elevating mechanism of such hoists.

It is common for rotary clothes hoists to include a lower stem and an upper stem which are connected together within a gear box housing, the gear box housing containing a crown wheel journaled therein, the crown wheel having an internal thread which engages over a worm, the worm urging an inner elevating stem upwardly or downwardly dependent upon the rotation of the crown wheel, the crown wheel being rotated by a pinion which itself is rotated by a handle.

The hoists constructed as above have generally had a bulky appearance at the region of the gear box, and the worm has of necessity been of a length corresponding to the distance between the highest and lowest levels of the hoist.

The object of the present invention is therefore to provide a clothes hoist which is simply and economically constructed and which does not suffer from the above mentioned disadvantages.

Accordingly the present invention resides in a clothes hoist having a main standard, an elevating element within the main standard, an operating handle journaled in a bearing fixed to the main standard and drive means coupling the handle to the elevating element, said drive means including a gear in mesh with a complementary toothed member, and an inner spindle mounted for rotation with said complementary toothed member, said elevating element being arranged for rotation with said inner spindle.

The elevating element may also be mounted on said inner spindle for sliding movement relative to the spindle simultaneously to its rotation with the spindle.

Preferably the elevating element has a helical groove formed on its surface, the main standard being provided with guide means engaging the helical groove, the guide means co-operating with the helical groove to allow the elevating element to move upwardly or downwardly within the main standard.

The guide means may be a plurality of spaced studs extending inwardly of the interior surface of the main standard, or alternatively the guide means may be a helically wound spring located in a fixed position within the main standard.

The elevating element, said gear and said complementary toothed member are preferably formed from a synthetic plastics material.

The operation of the hoist may be improved by locating the helical spring in the main standard below the complementary toothed member, passing the inner spindle through the complementary toothed member and fixing the grooved or threaded elevating element to the lower end of the inner spindle so as to allow the groove to mesh with the coils of the helical spring to allow the elevating element to move up and down thereon.

In order however that the invention may be better understood it will now be described with reference to the accompanying drawings, but it will be appreciated that the invention is not intended to be limited to the particular embodiments shown therein.

In the drawings:

FIG. 1 is a fragmentary sectional elevation of one form of drive arrangement used in the hoist; and

FIG. 2 is a fragmentary sectional elevation of a further form of drive arrangement for the hoist.

In the embodiment shown in FIG. 1 of the drawings, the rotary clothes hoist has a main standard 11 and an inner elevating standard 12 slidably and rotationally disposed within the main standard 11, the inner standard carrying on its upper end the head (not shown) of the rotary hoist. The lower end of the inner standard 12 is located on a stepped portion of the upper end of an elevating element 13 which is in the form of a worm gear formed preferably of a synthetic plastics material. A plurality of studs 14 pass through the main standard 11 and enter into the helical thread formed on the surface of the worm gear, the worm gear rising or falling within the main standard 11 on the studs 14 upon rotation of the gear. If desired the studs 14 may be replaced by a helically wound spring mounted within the main standard 11 so that the spring engages the thread formed on the outer surface of the worm gear 13. A centrally located spindle 15 passes down through the worm gear 13 the worm gear being mounted on the spindle for sliding movement relative thereto in a vertical direction but held for rotation with the spindle 15. Preferably the spindle 15 is of square cross section. The lower end of the spindle 15 is provided with a bevel gear or crown gear 16 journaled in a bearing 17 within the main standard 11. A further bevel gear or pinion 18 meshes with the bevel gear or crown gear 16 within the main standard 11, the bevel gear or pinion 18 being carried at one end of a shaft 19 journaled in a bearing 10 on the main standard 11, the other end of the shaft 19 having a handle H fixed, or if desired pivoted thereon. The bevel gears 16 and 18 are preferably formed of a synthetic plastics material.

In use, rotation of the shaft 19 by the handle H results in rotation of the bevel gear 16 by the bevel gear 18 and as a consequence, rotation of the spindle 15. Rotation of the spindle 15 causes rotation of the worm 13 which as a result slides on the spindle 15 and rises or falls on the studs 14 which engage the helical thread of the worm. As a result, vertical movement is transmitted to the elevating standard 12.

In the embodiment shown in FIG. 2 the hoist is generally of the same construction as that described above with reference to FIG. 1 that is, it has a main standard 21 and an inner elevating standard 22 slidably and rotationally disposed within the main standard 21. The inner standard 22 is fitted at its upper end with conventional line carrying radial arms on which the line is supported. The lower end of the inner standard is coupled to the upper end of a centrally located spindle 25 which is square in cross-section. The spindle 25 passes through a correspondingly square hole in a bevel or crown gear 26 journaled in a bearing 27 within the main standard 11. The bevel gear 26 meshes with a second bevel gear or pinion 28 within the main standard 21 and mounted on the inner end of a shaft 29 journaled in a bearing 20 on the main standard 21, the shaft 29 having an operating handle H fitted to the outer end thereof. The lower end of the spindle 25 is fixed to the elevating element 23 which is in the form of a worm made of synthetic plastics material, the helical thread on the outer surface of the worm 23 being in sliding engagement with the coils of a loosely coiled helical spring 24 positioned in the main standard immediately beneath the bevel gear 26. The spring 24 is fixed to prevent rotation thereof with the main standard, the

upper end of the spring preferably being held by the bearing 27.

In use as the operating handle H is rotated the gears 26 and 28 rotate and cause the spindle 25 to rotate. This in turn rotates the worm 23 fixed to its lower end, causing it to move up or down the coiled spring 24 thus raising or lowering the elevating standard 22.

It is seen that with the construction described above, the complete drive mechanism can be located within the main standard of the clothes hoist, and that the elevating element which is in effect in the form of a worm, need only be of a relatively short length.

I claim:

1. A clothes hoist comprising a main tubular standard, an elevating element located within said standard, an operating handle journaled in a bearing fixed to the main standard and drive means coupling the handle to the elevating element, said drive means including a gear meshing with a complementary toothed member and an inner spindle mounted for rotation with said complementary toothed member said elevating element being mounted on said inner spindle for sliding movement relative to the spindle simultaneously to its rotation with the spindle and said elevating element having a helical groove or thread formed on its surface,

the main standard being provided with inwardly projecting guide means engaging the helical groove or thread to allow the elevating element to move upwardly or downwardly within the main standard upon rotation of the spindle and a inner standard carrying a clothes mounting head at its upper end slidably and rotatably mounted within said main standard and having its lower end coupled to said elevating element.

2. A clothes hoist as claimed in claim 1 wherein the guide means comprises a plurality of spaced studs extending inwardly of the interior of the main standard.

3. A clothes hoist as claimed in claim 1 wherein the guide means comprises a helically wound spring located in a fixed position within the main standard.

4. A clothes hoist as claimed in claim 1 wherein the guide means comprises a helically wound spring located in a fixed position within the main standard below the complementary toothed member, the inner spindle passing through the complementary toothed member and having its lower end fixed to the elevating element so as to allow the helical groove or thread of the elevating element to mesh with the coils of the helical spring.

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