July 28, 1959 R. H. STONE 2,896,908

FLUORESCENT FIXTURE HOIST

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FIG. 1

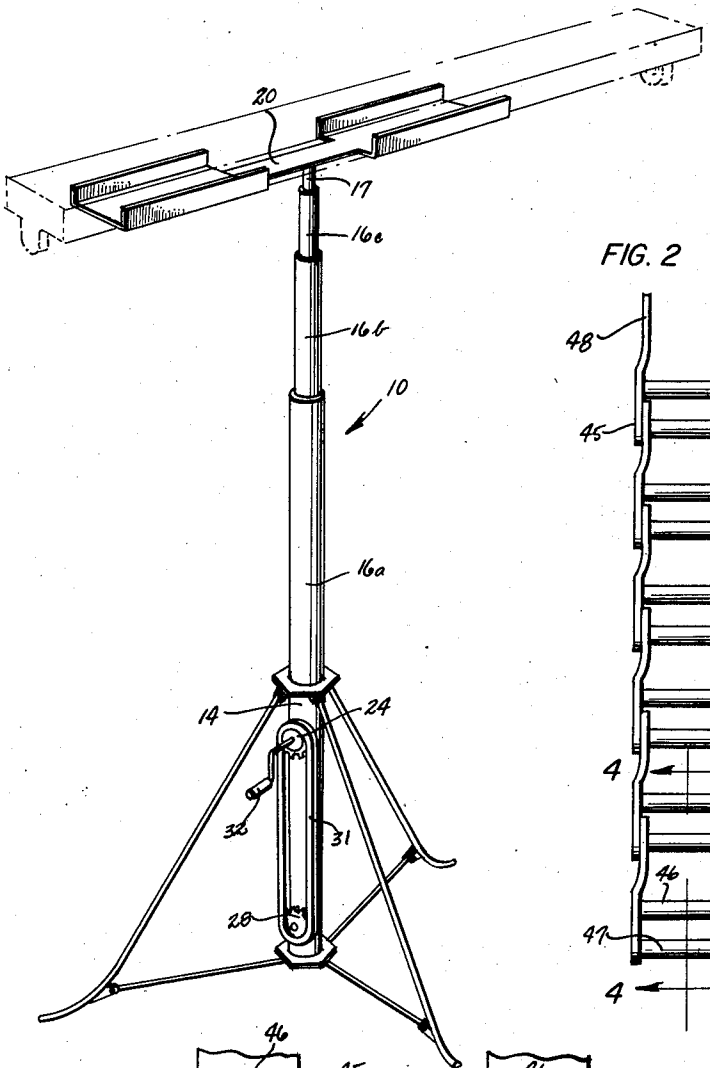



FIG. 2




FIG. 3

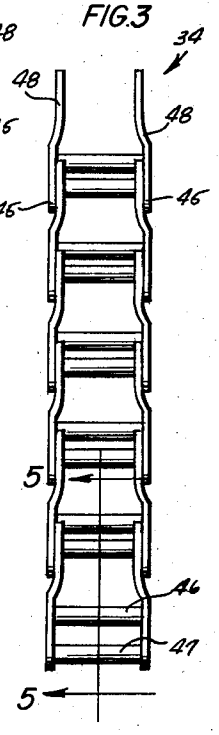
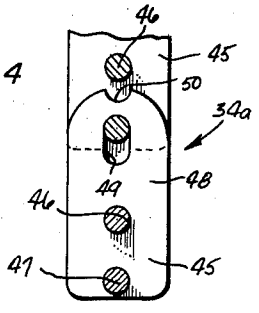



FIG. 4



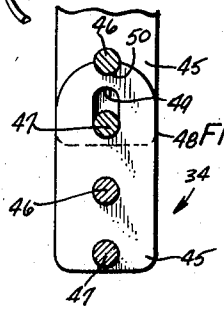




FIG. 5

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FIG. 6

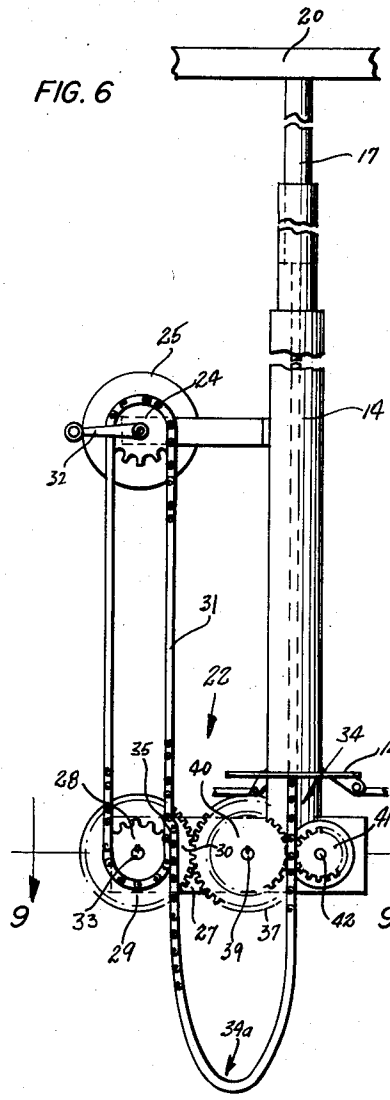



FIG. 7

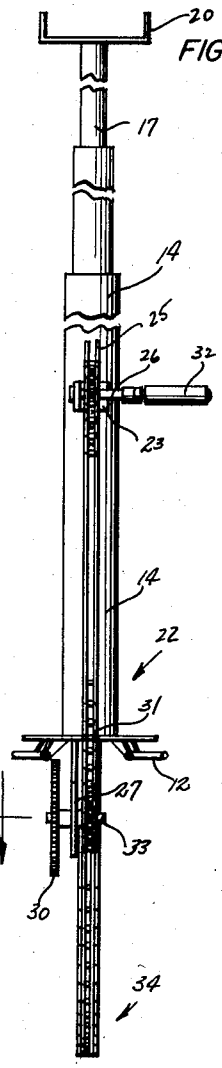



FIG. 8

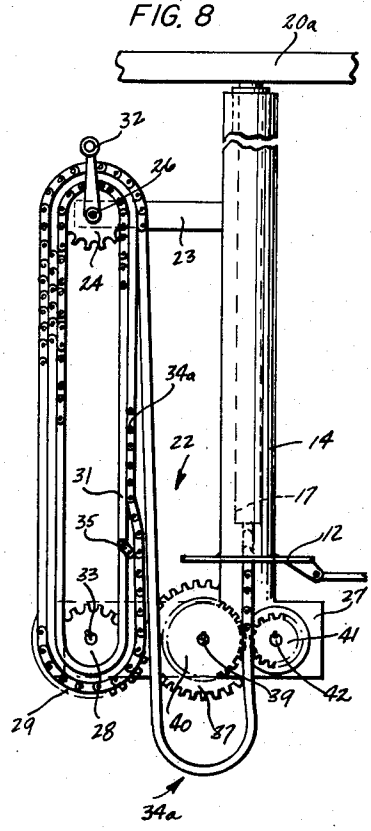
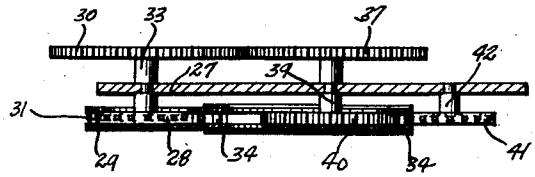



FIG. 9




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# FLUORESCENT FIXTURE HOIST

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5 Claims. (Cl. 254—1)

This invention relates to hoist devices and more particularly to a device for positioning fluorescent fixtures.

It is an object of the present invention to provide a portable hoist having self contained bracket means for positioning any desired object, such as fluorescent fixtures for installation purposes.

It is another object of the present invention to provide a novel lift device having a plurality of telescoping members and manually operated means for effecting a selective extension and retraction of such members.

It is a further object of the present invention to provide a lift device of the above type in which a normally flexible chain assembly has means for effecting an axial compressive force so as to effect the raising of the telescoping lift members.

Other objects of the invention are to provide a fixture hoist bearing the above objects in mind which is of simple construction, has a minimum number of parts, is inexpensive to manufacture and efficient in operation.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in conjunction with the accompanying drawing, in which:

Figure 1 is a perspective view of a fluorescent fixture hoist made in accordance with the present invention;

Figure 2 is a fragmentary view of a chain link assembly used for effecting the operation of the lift assembly shown in Figure 1, in a flexible condition;

Figure 3 is a view similar to Figure 2, showing the link chain in an axial compressive force transmitting position;

Figure 4 is an enlarged fragmentary cross sectional view taken along line 4—4 of Figure 2;

Figure 5 is a transverse cross sectional view taken along line 5—5 of Figure 3;

Figure 6 is an enlarged fragmentary cross sectional view of the manually operated means for effecting operation of the hoist shown in Figure 1;

Figure 7 is an end view of the apparatus shown in Figure 6;

Figure 8 is a view similar to Figure 6, showing the lift in a collapsed position; and

Figure 9 is an enlarged transverse cross sectional view taken along line 9—9 of Figure 6.

Referring now more in detail to the drawing, a hoist device **10** made in accordance with the present invention is shown to include a collapsible tripod type base **12** which supports a main cylinder **14** in an erect position. A plurality of associated telescoping cylinders **16***a, b, c* are arranged for movement within the main cylinder **14** between an extended and a collapsed position in order to effect the raising and lowering of any desired type of bracket **20** having a depending ram or plunger **17**. As is more clearly shown in Figures 6 to 9, the manually operated means **22** for selectively effecting the raising and lowering of the bracket **20** is shown to include an outwardly extending support bracket **23** adjacent to the upper extremity of the main cylinder **14** upon which a first drive sprocket **24** and associated sheave are secured to



a transverse rotatably supported shaft **26**. A substantially parallel base bracket **27** is also provided with a rotatable shaft **33** upon which a driven sprocket **28** and sheave **29** are secured, together with a drive pinion **30**. A sprocket chain **31** is in meshing engagement with the respective sprockets **24, 28**, and is adapted to transmit rotation therebetween in response to rotation of the handle **32** that is also secured to the transverse shaft **26** of the upper bracket **23**.

A lift chain **34** is connected at one end by means of a link **35** to the drive chain **31** and at the other end is connected to the lower end of the ram **17**. As will be hereinafter described, this lift chain **34** is so constructed that in response to upward movement thereof, the links become rigidly connected so as to be able to transmit an axial lifting force to raise a plunger **17** and associated telescoping members and brackets therewith. This chain **34** is guided for movement between a pair of associated drive sprockets **40, 41** each of which is rotatably supported upon a separate shaft **39, 42**, respectively. A driven pinion **37** secured to a shaft **39** of the drive sprocket **40** is in meshing engagement with the drive pinion **30** carried by the sprocket shaft **33** so that the lift chain **34** is positively driven between the associated drive sprocket **40, 41**, in response to rotation of the driven sprocket **28** and the drive pinion **30**, as effected through the rotation of the manually operated handle **32**. With the lift in a collapsed position, as shown in Figure 8, the lift chain **34***a* is trained about the sheaves **25, 29** of the actuating assembly under the guiding action of the connecting link **35**. Upon rotating the handle **32**, the drive chain **31** not only effects the aforementioned rotation of the operating parts, but also dispenses the required amount of lifting chain **34** for raising the ram **17** to the desired height.

As is more clearly shown in Figures 2 to 5, the lifting chain **34** includes a plurality of identical links, all pivotally connected together. More specifically, each link includes a pair of spaced sides **45** that are rigidly connected together by a pair of longitudinally spaced parallel rods or pins **46, 47**. The opposite ends **48** of the sides **45** are inwardly offset so as to be received between the spaced sides **45** of the next adjacent link. Each of the inwardly offset side portions **48** is provided with a longitudinal slot **49** which rotatably and longitudinally slidably receives the outermost pin **47** of the next adjacent link and a terminal recess **50** which releasably receives the innermost pin **46** when the adjacent links are disposed in a single plane and are being urged towards engagement with each other, as shown in Figures 3 and 5.

It will be noted that in the extended position, the lifting chain **34***a* is completely flexible in that there is only a single pivotal point of connection between each adjacent link. However, when the links are disposed in a single plane and a compressive force is exerted between any number of adjacent links, the innermost pin **46** of each link will be urged into the terminal recess **50** of the next adjacent link, whereby all of these adjacent links acting together constitute a single rigid link **34** for the purpose of effecting a compressive axial force. Thus, as shown in Figures 6 to 8, as the flexible link **34***a* is fed between the associated drive sprockets **40, 41**, of the lifting apparatus, the adjacent links are aligned with each other and a compressive force exerted therebetween so that they become rigidified as at **34** to effectively raise the ram **17**. Actually, all of the links between the drive sprockets **40, 41**, and the bottom of the ram **17** are maintained in this interlocked position until they are withdrawn downwardly between the drive sprockets during the lowering of the hoist. During such lowering operation, all of the links beneath the drive sprockets **40, 41** are permitted by gravity to separate from each other sufficiently to disen-

gage the innermost pins **46** from the recesses **50** of the adjacent links, whereby the lift chain **34***a* may then be trained about the respective sheaves **25, 29** as the handle **32** is rotated.

While this invention has been described in connection with the raising and lowering of fluorescent fixtures, it will be recognized that this lift may be applicable to substantially any structure where a lifting and lowering operation is required.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. A lifting hoist comprising, in combination, a base, a main cylinder secured to said base, a plurality of telescoping members adjustably supported upon said base for movement between a retracted and an extended position, manually operated means for selectively effecting said movement of said telescoping members, said manually operated means comprising a lift chain having a plurality of pivotally connected links, one end of said lift chain being connected to the inner one of said telescoping members, drive means for effecting longitudinal movement of the opposite end of said lift chain, and means associated with adjacent ones of said links intermediate said one end of said lift chain and said drive means for rigidifying said pivotally connected links for exerting a compressive axial force therethrough, each of said links comprising a pair of identical sides each having a base and an inwardly offset end portion, an outermost and an innermost pin extending through the bases of each pair of sides, each said offset end portion defining a longitudinal slot and a terminal recess, said outermost pin being slidably and pivotally received within the longitudinal slots of the inwardly offset portions of the next adjacent link, and said terminal recesses displaceably receiving the innermost pin of said next adjacent link.



2. The combination according to claim 1, wherein movement of each adjacent pair of links in opposite directions away from each other is operative to effect the release of said innermost pin of each next adjacent link from said terminal recesses of said one link.

3. The combination according to claim 2, wherein movement of each adjacent pair of links in opposite directions toward each other in a single plane is operative to effect the engagement of said innermost pin of each next adjacent link within said terminal recesses of said one link.

4. The combination according to claim 3, further comprising sprocket means for controlling the direction of movement of said links, said sprocket means selectively guiding said links in said single plane.

5. The combination according to claim 4, further comprising manually operated crank means for operating said sprocket means.

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