Oct. 20, 1953 F. LOCK 2,656,150

HOIST CONSTRUCTION

Filed Dec. 6, 1951

Fig. 1.

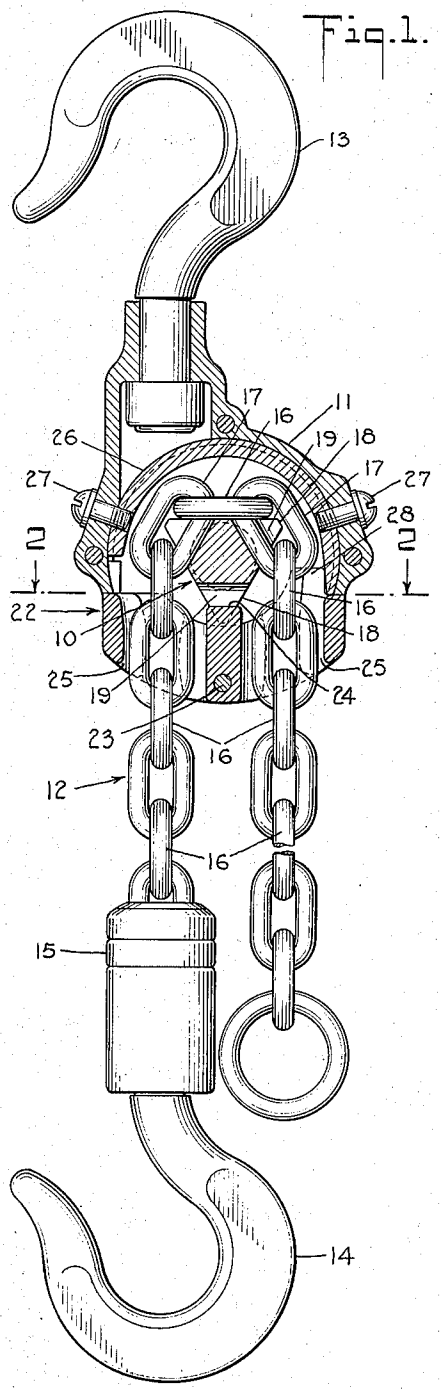


Fig. 2.

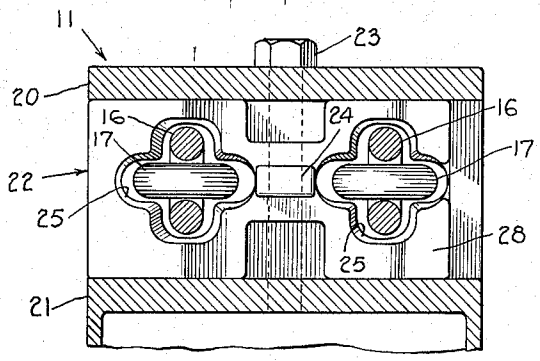
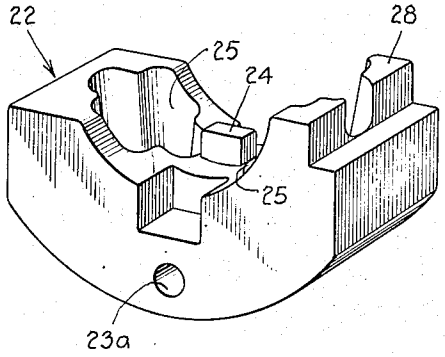


Fig. 3.



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Patented Oct. 20, 1953

2,656,150

UNITED STATES PATENT OFFICE

2,656,150

HOIST CONSTRUCTION

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Application December 6, 1951, Serial No. 260,200

1 Claim. (Cl. 254—167)

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This invention relates to that class of hoists in which a rotating load wheel has a chain engaged over it for lifting the load. More particularly, my invention relates to the means that is provided at the bottom of such hoists for guiding the load chain relatively to the wheel. In order to assure smooth and reliable operation in hoists of this class, the guiding means must hold the chain aligned in particular positions while approaching and leaving the wheel, and this involves also stripping the chain links from the wheel as it rotates. Hoists have utilized for this purpose at least one bottom guide member in addition to the housing of the hoist, and in some cases several parts were required to perform the stripping and guiding functions so that each of these parts was a separate factor to be considered in the manufacture and assembly of the hoist.

As one feature of my invention, I utilize for guiding the load chain at the bottom of the hoist a novel unitary guide member that forms a part of the housing. All of the surfaces that guide the chain to and from the load wheel and that strip the chain from the wheel are presented by integral parts of this guide member, and therefore the bottom guide means is complete in the housing itself and no additional parts are required for the purpose. Preferably, the guide member is secured between the side plates of the housing, thereby serving also as the bottom closure of the housing.

As another feature of the invention, I so combine the bottom guide member with the guide means in the upper part of the housing as to offer a substantially continuous surface for guiding the chain from the upper to the lower part of the housing. This I accomplish by forming the bottom guide member to lap the upper guide means at the location of one of the guide apertures in the guide member.

I have thus outlined rather broadly the more important features of my invention in order that the detailed description thereof that follows may be better understood, and in order that my contribution to the art may be better appreciated. There are, of course, additional features of my invention that will be described hereinafter and which will form the subject of the claim appended hereto. Those skilled in the art will appreciate that the conception on which my disclosure is based may readily be utilized as a basis for the designing of other structures for carrying out the several purposes of my invention.

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Referring now to the drawings:

Fig. 1 is a side view, partly in section, showing a hoist that embodies a preferred form of my novel guide means.

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a perspective view showing my novel bottom guide member apart from the hoist.

In order to illustrate my invention, I have shown in the drawing a hoist of that class in which a load wheel 10 rotates in a housing 11 to operate a load chain 12 that is trained over the wheel. The hoist is adapted to be anchored through a hook 13 that is pivoted to the top of the housing 11, so that upon rotation of the load wheel 10 the chain 12 will lift or pull a load carried by a load hook 14 that is attached to one end of the chain. The load hook 14 preferably has a swivel 15 to relieve any incidental twisting of the chain. As is usual in hoists of the particular class, the load chain 12 is of the type having links 16, 17 that alternate in transverse planes, and the load wheel 10 is interengaged with the chain through teeth 18 that, in the example shown, are three in number. The arrangement is such that the links 16 engage flatwise against the periphery of the load wheel 10 as the wheel rotates, while the teeth 18 become engaged between successive links 16 and receive parts of the transversely related alternating links 17 in grooves 19 formed in said teeth. Thus, when the load wheel 10 is rotated by the means that is provided for the purpose, the load chain 12 is positively moved in a corresponding direction in the housing.

The prior art has resorted to various expedients for the purpose of causing the chain links to approach the load wheel in properly oriented positions, and also to leave the wheel at the proper point. By my invention, I have contributed an extremely novel construction of the housing 11 for guiding the load chain 12 to and from the load wheel 10, as will now be described. The housing 11 includes a pair of side plates 20, 21 between which the load wheel 10 is located, and below the load wheel the housing has as a part thereof a bottom closure 22 that is secured between the side plates 20, 21 by a pin 23 engaged through a transverse aperture 23a in the closure. The closure part 22 preferably is a casting and, because this part provides the guide means for the chain, it may also be termed a guide member.

An upper part 24 of the guide member 22 is so located as to enter the grooves 19 in the teeth

18 as the load wheel 10 rotates, thereby serving as a stripper to remove the chain links 16, 17 positively from the load wheel 10 as this point. Around the stripper 24, the upper surface of the guide member 22 is concave to provide clearance for the teeth 18. At opposite sides of the stripper 24, and aligned with opposite parts of the load wheel 10, are a pair of apertures 25 that afford passage for the chain 12 through the closure member 22 to and from the load wheel 10. These apertures 25 are cross-shaped in horizontal section and provide a nominal clearance for the load chain 12, thereby causing the links 16 and 17 to be guided in their transverse relation and in a predetermined alignment relatively to the wheel 10 as they move near the wheel. It will therefore be seen that, as the chain moves, the links 16, 17 will always come into proper engagement with the load wheel 10.

In order to prevent any accidental disengagement of the chain from the load wheel 10 as the links 16, 17 pass over the wheel, the housing 11 has an inner surface that operates in the usual way to prevent outward movement of the links away from the wheel. In my invention, I form this surface upon a curved upper guide member 26 that is secured by screws 27 and that laps the bottom guide member 22 at least at one end adjacent the unloaded free portion of the chain 12. This construction is particularly useful because the free portion of the chain 12 normally is relatively slack and may have a tendency to become disarranged relatively to the load wheel 10. In order to accomplish this arrangement, I form the corresponding end of the bottom guide member 22 with an upward extension 28 that laps inwardly of the end of the upper guide member 26. The cross-shaped aperture 25 in this end of the bottom guide member is continued through the extension 28 in such a way that a part of the guiding surface of this aperture joins the guiding surface of the upper guide member 26. These surfaces thereby afford means for guiding the outer

edges of the links 17 continuously between the upper part of the housing 11 and the lower end of the aperture 25, so that no jamming of the chain can occur.

It is believed that the operation and the advantages of my novel hoist will now be apparent from the foregoing description.

I now claim:

In a hoist of the class described, a housing, a pair of side plates forming part of said housing, a load wheel rotating in said housing between said side plates, a load chain comprising interlocking transversely related links trained over said load wheel whereby rotation of said load wheel lifts and lowers a load through said load chain, a cast member forming a part of the bottom and ends of said housing between said side plates and closing the bottom of said housing below said load wheel, a transverse pin holding said cast member in assembled position between said side plates, said cast member having spaced cross-shaped apertures through which said load chain enters and leaves said housing whereby said load chain is maintained in predetermined alignment relatively to said load wheel, upper guide means for guiding said load chain in said housing, said upper guide means overlapping a portion of said cast member whereby to guide said load chain relatively to one of said cross-shaped apertures, and integral means on said cast member above and between said apertures for stripping said chain from said load wheel.

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