Oct. 29, 1957 J. G. GOKEY 2,810,984

HOIST MECHANISM FOR TOYS

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Fig. 1

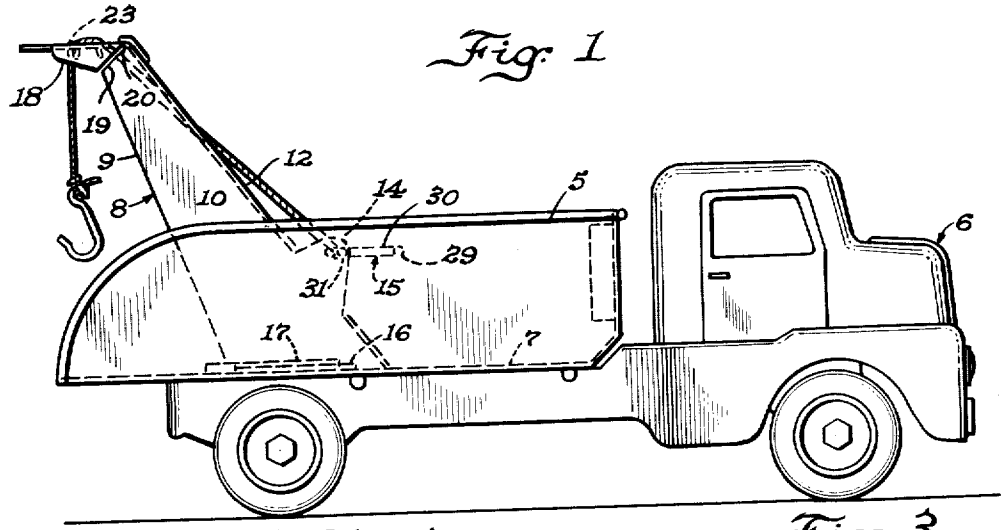


Fig. 2

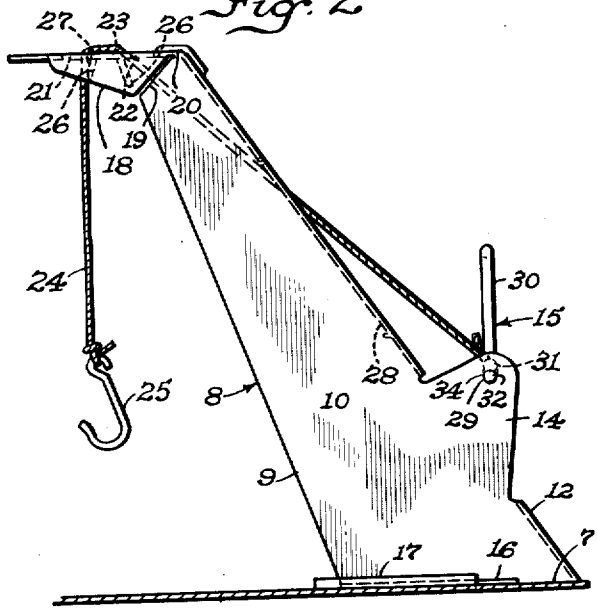


Fig. 3

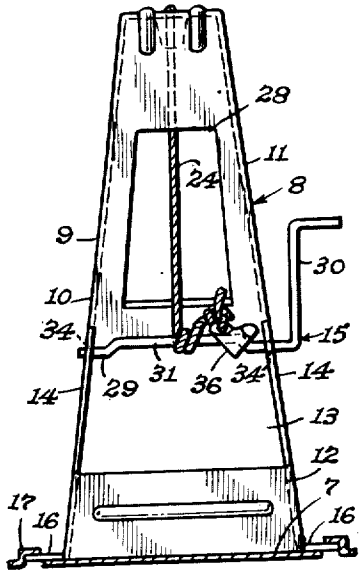
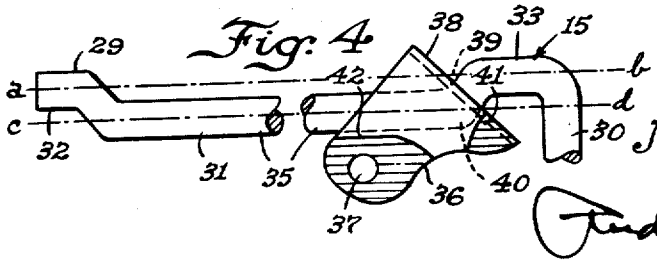


Fig. 4



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HOIST MECHANISM FOR TOYS

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2 Claims. (Cl. 46—40)

This invention relates to a new and improved hoist mechanism for toys.

The principal object is to provide a hoist mechanism of simple and economical construction, the salient feature of which is the provision of a windlass made from a single length of fairly heavy wire bent to provide an operating crank portion together with the winding drum portion in the one piece, the winding drum portion being bent into the form of a crankshaft, which, when the cord attached to the load being lifted is under tension, makes the windlass self-locking by reason of the eccentricity of the wrist-pin portion of the crankshaft onto which the cord is wound, and hence a ratchet wheel and cooperating pawl that would otherwise be necessary are not needed, the resulting simpler and much cheaper windlass structure being also minus the only parts that would be apt to get out of order, so that it will easily last as long as the toy.

The invention is illustrated in the accompanying drawing, in which—

Fig. 1 is a side view of a toy tow truck having a hoist made in accordance with my invention;

Figs. 2 and 3 are a side view and front view, respectively, of the hoist, showing the same full size, and

Fig. 4 is an isolated view of the crankshaft-shaped winding drum portion of the windlass, an intermediate portion of the length of the wrist-pin portion being broken away to permit showing this part on a larger scale, the sheet metal bracket for connecting the cord to the windlass being also shown correspondingly enlarged.

The same reference numerals are applied to corresponding parts throughout the views.

Referring to the drawing, the reference numeral 5 designates the body of a tow truck 6 on the floor 7 of which a hoist 8 is mounted having incorporated therein the improvements provided in accordance with my invention.

The upright frame or boom 9 of the hoist 8 is made from a single piece of sheet metal bent to channel shaped section to provide side walls 10 and 11 connected by a front wall 12. The latter is cut away at 13 and some of the metal of the front wall at this point is utilized to provide a pair of forwardly projecting ears 14 for support of the improved windlass indicated generally by numeral 15. At the lower end of the frame 9 there are outwardly bent flanges 16 on the side walls 10 and 11 which are snugly received under upwardly and inwardly bent lugs 17 struck from the sheet metal of the floor 7 to support the hoist 8 in rigid relation to the body 5 of the truck. The frame 9 of the hoist is inclined to the rear as appears in Figs. 1 and 2 and its upper end portion 18 projects horizontally to the rear, the side walls 10 and 11 having pie-shaped portions cut out at 19 and the front wall 12 being bent at 20 to close the gaps at 19 and define the bracket extension 18. In the web of this channel-shaped portion 18 openings 21 and 22 are punched leaving therebetween a cross-portion 23 to serve as a guide for the cord 24 carrying the load attaching hook 25 on its free end. Part of the metal from the openings 21 and 22 is bent downwardly to define reinforcing flanges 26 and at the same time provide rounded edges 27 on the cross-bar 23 so that the cord will slide more easily over the cross-bar and with less wear. The cord 24 is extended upwardly from the windlass 15 through an opening 28 in the front wall 12 over the top of the cross-bar 18 and down to support the load. The load is raised and lowered with hook 25 by winding up and paying out the cord 24 with windlass 15.

The windlass or winch 15 is made from a single piece of fairly heavy wire 29 bent to provide an operating crank portion 30, together with the winding drum portion 31 in the one piece, the winding drum portion 31 being bent into the form of a crank-shaft having coaxially arranged trunnion portions 32 and 33 located on the center line *ab* (Fig. 4) and received in bearings 34 provided in the ears 14, and a wrist pin portion 35 on the center line *cd* (Fig. 4) in eccentric relation to the trunnions to the small extent appearing in Fig. 4 and adapted to have the cord 24 wound thereon in the manner shown in Figs. 2 and 3. As seen in Fig. 4, the eccentricity of wrist pin portion 35 with respect to the trunnions 32 and 33 is approximately equivalent to the diameter of the wire 29. Due to the slight eccentricity of the wrist pin portion 35 the windlass 15 operates almost as smoothly as one having no eccentricity and yet it is self-locking and will not turn when the cord 24 is placed under tension as a result of a load being carried on hook 25. Consequently, the child in playing with the toy can have the fun of lifting another toy by its front end using the hoist and does not have to remember to operate a catch of some kind to lock the hoist holding the hoisted vehicle in the towing position, because the usual ratchet wheel and cooperating pawl that would otherwise be necessary in a situation of this kind are omitted and are not needed with the present construction. The resulting simpler and much cheaper windlass construction has only the one moving part made of the one piece of wire 29, and, of course, there is nothing about it that is apt to get out of order, whereas smaller and less serviceable parts like those of a ratchet mechanism would be quite apt to fail sooner or later with the rough usage most children give their toys.

While a portion of the wire 29 could perhaps be flattened and the wider flat portion pierced to provide a place for attaching the inner end of the cord 24, I prefer to provide a generally triangular-shaped sheet metal bracket 36 secured to the windlass and having a hole 37 provided therein into which the inner end of the cord 24 may be threaded and then knotted to fasten the cord to the windlass. The bracket 36 is of double thickness, being made from an elongated piece of sheet metal folded across the middle, as indicated at 38, and having a hole 39 in the middle of the folded portion through which one elbow 40 of the crankshaft shaped winding drum portion of the windlass is entered, after which corner portions 41 and 42 of the bracket are pressed together to clinch the bracket in place and make it a rigid part of the winding drum portion 31. With this construction there is no weakening of the windlass as there might be if the wire was flattened and pierced to provide the hole 37 for attachment of the cord.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn to cover all legitimate modifications and adaptations.

I claim:

1. As an article of manufacture, a combination toy winding drum and operating crank therefor consisting of a single piece of fairly heavy stiff wire bent to crank form at one end and having the rest of the piece bent to

elongated crankshaft form providing coaxially arranged spaced trunnion portions and between them, at a small radial distance, an eccentrically arranged wrist pin portion adapted to serve as a winding drum onto which a hoist cord may be wound, and a folded sheet metal bracket member adapted to be secured to said winding drum for attaching one end of the hoist cord having a hole provided in the folded portion through which the radially extending portion of the wire at one end of the wrist pin portion is entered so as to dispose the bracket member diagonally with respect to the wrist pin portion, said bracket member being compressed to clinch the said radially extending portion therein to secure the bracket rigidly and non-rotatably on said crankshaft portion, said bracket having a hole provided therein through which one end of a hoist cord may be passed for fastening.

2. A toy hoist comprising an upright boom made from a single elongated piece of sheet metal bent to form an elongated channel providing side walls and a connecting web portion therebetween forming the front wall of the boom, two portions of the web being cut away to provide a lower opening and an upper opening, some of the metal from the lower opening being in the form of outwardly

extending ears integral with the side walls at opposite sides of said lower opening, a winding drum mounted in bearing holes provided in said ears and rotatable by a crank extending from one side of the boom, the upper end portion of the boom being bent horizontally to provide a bracket extension of channel section in which two portions of the web in fore and aft spaced relation are cut away to define therebetween a cross-bar and the front and rear edge portions of said bar being bent downwardly to define rounded edges on the bar, and a cord attached at one end to and wound on said drum and extending upwardly through the aforesaid upper opening in the boom and over said bar and down for connection with a load to be hoisted.

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