April 14, 1959 H. R. MARGETTS ET AL 2,882,013

WALL WINCH WITH RESTRICTED BASE

Filed Aug. 30, 1954 2 Sheets-Sheet 1

FIG. 2.

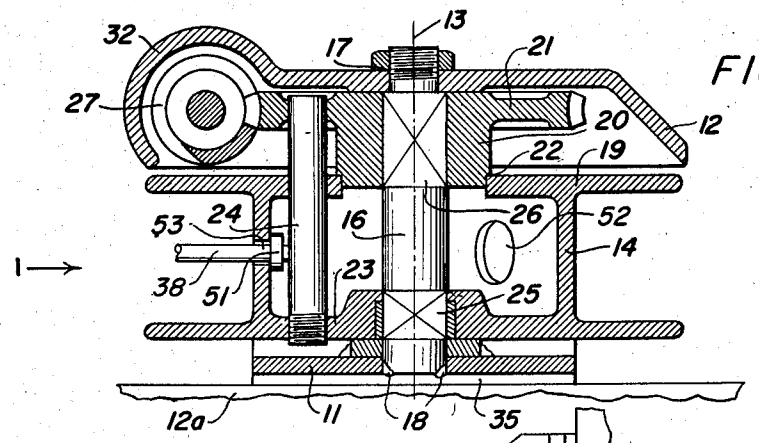
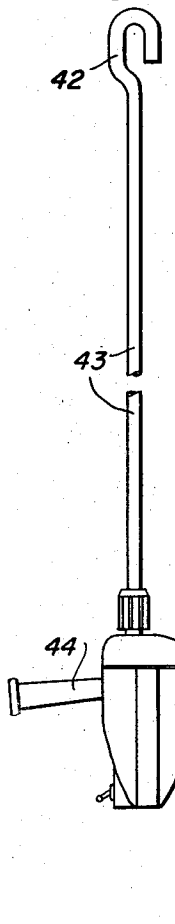


FIG. 3.



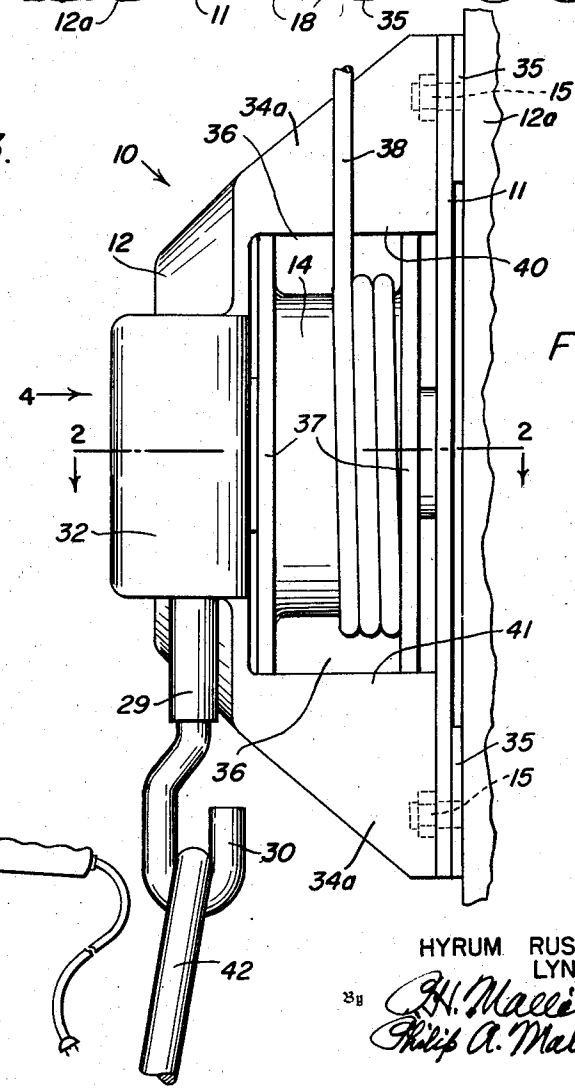


FIG. 1.

Inventors:
HYRUM RUSSELL MARGETTS,
LYNN F. MARGETTS,
By H. Mallinckrodt and Philip A. Mallinckrodt.
Attorneys.

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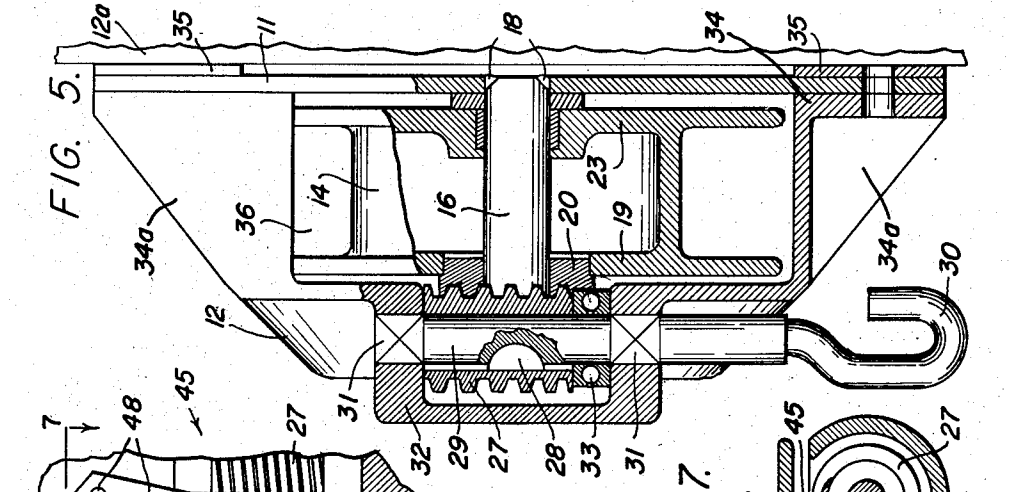


FIG. 5.

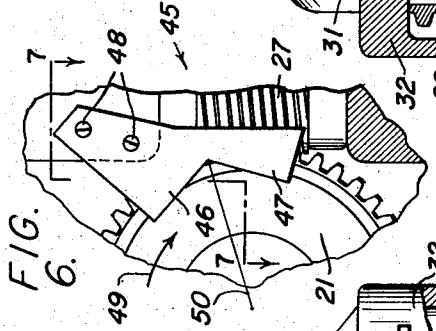


FIG. 6.

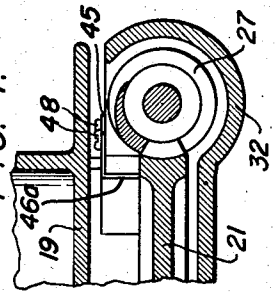


FIG. 7.

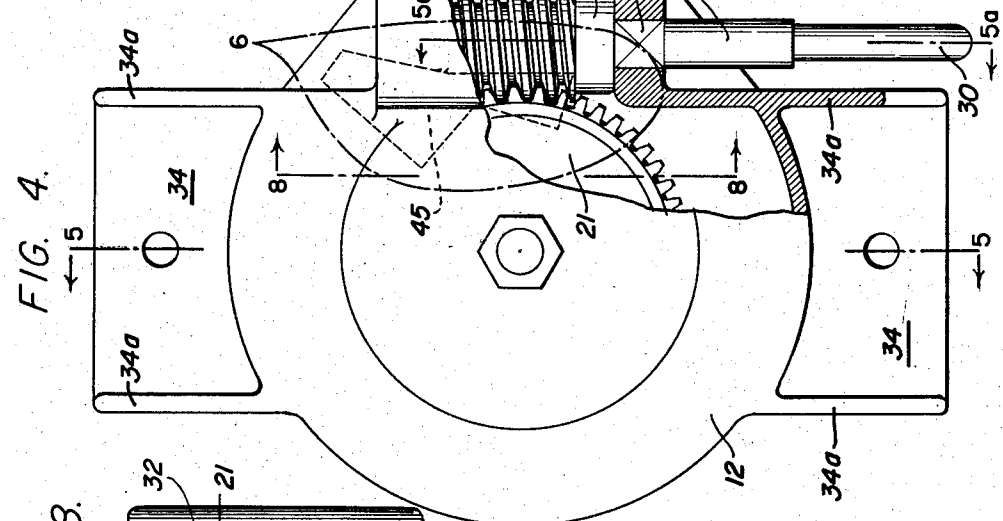


FIG. 4.

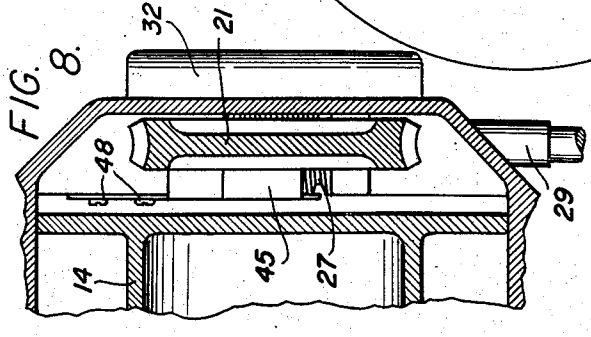


FIG. 8.

Inventors:
HYRUM RUSSELL MARGETTS,
LYNN F. MARGETTS,
Mallinckrodt and Mallinckrodt.
Attorneys.

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2,882,013

WALL WINCH WITH RESTRICTED BASE

Hyrum Russell Margetts and Lynn F. Margetts, Salt Lake City, Utah, assignors to The Brunswick-Balke-Collender Company, Chicago, Ill., a corporation of Delaware

Application August 30, 1954, Serial No. 452,770

6 Claims. (Cl. 254—186)

This invention relates to a wall winch with a restricted base, the winch being particularly adapted for use in conjunction with the basketball folding backstop for which we are making application for Letters Patent of the United States filed under even date herewith, Serial No. 452,958.

Principal objects of the invention are to provide a winch that is of simplified, cleancut, rugged construction adapted for widely diversified requirements for use under restricted conditions. This means that the hoisting stresses transmitted from the drum and its driving worm to the points where the base of the winch is attached to its support, are reduced to a minimum.

A feature of the invention is that the drum of the winch has its winding plane substantially parallel to a wall surface against which the winch is fastened. Accordingly, the base plane of the winch frame and the rotative axis of the worm are also substantially parallel to the wall surface.

Another feature is that the plane of winding of the hoisting cable on the drum may be kept close to a wall surface to which the winch frame is fastened, as well as to keep the line of the hoisting cable as near as possible to the same wall surface. This enables an operator to stand in a convenient position that is neither obstructed nor obstructing when winding or unwinding the cable that extends to the operating member of the aforementioned basketball folding backstop.

A winch of any kind should be well greased, and where it is used in connection with indoor sports, such as the playing of basketball, it is important to prevent the lubricating grease from reaching the outside of the winch casing and therefore to keep the grease from spreading onto the playing floor. The device of the invention includes means for accomplishing that result.

In the accompanying drawings, which illustrate an excellent embodiment of the invention,

Fig. 1 represents a front elevation, in the normal position, of the winch on a wall, viewed as indicated by arrow 1 in Fig. 2;

Fig. 2, a horizontal section taken on a line 2—2 in Fig. 1;

Fig. 3, a winding tool for engaging the depending coupling hook of the winch, drawn to a reduced scale;

Fig. 4, a side elevation as seen in the direction of the arrow 4 in Fig. 1, a portion of the casing being broken away to reveal a fragmentary view of the interior parts;

Fig. 5, partially a fragmentary portion of Fig. 1, and partially fragmentary vertical sections taken respectively along lines 5—5 and 5*a*—5*a* in Fig. 4;

Fig. 6, a fragmentary, rear elevation of certain interior parts included approximately within the broken line 6, in Fig. 4, and reflected from a mirror plane;

Fig. 7, a fragmentary, horizontal section taken along the line 7—7 in Fig. 6;

Fig. 8, a fragmentary vertical section taken along the line 8—8 in Fig. 4.

Referring to the drawing, the numeral 10 denotes an

assembly showing the complete winch. Here, it includes a base plate 11 and an elongate housing or frame superstructure 12, the base being in the plane of a building wall 12*a* when installed. Extending transversely of the plane of the base plate 11 is the winding axis 13 of the winding drum 14. It is to be particularly noted that the winding plane of the drum 14 is substantially parallel and closely adjacent to the plane of the base plate 11 and to the surface of the wall 12*a*. An advantage gained by this relation between the winding plane and the wall plane is that the force moment along the fastenings 15 for the housing or frame 12 is reduced to a minimum.

The drum 14 is rotatably mounted on a shaft, presently in the form of a pin 16, advantageously welded at 18 to the base 11. The upper part of the pin 16 is held fast at 17 in the frame 12. One head, for illustration, 19, of the drum 14 is fixed on the hub 20 of a worm wheel 21 by means of a machined joint 22, the other head 23 of the drum being connected to the body of the worm wheel 21 by means of one or more threaded pins 24.

Rotation of the drum and the worm wheel assembly on the shaft pin 16 is provided for in any suitable manner, for illustration, by the journals 25 and 26, Fig. 2. In mesh with the worm wheel 21 is a worm 27, this worm being fixed, for example, by means of the Woodruff key 28 on a depending operating shaft 29, the latter being advantageously provided with a coupling portion, for illustration, a hook 30. The operating shaft is journalled at 31 in the barrel-like enclosure 32 of the housing 12. One or more thrust bearings for the worm may be provided, one being shown at 33 in Figs. 4 and 5.

The housing 12 is integrally provided with a base in the form of oppositely extending, end pedestals 34 for attachment purposes. In attaching the winch to a wall, such as 12*a*, it is advantageous that shims 35 be interposed between base plate 11 and such wall.

At 36, best shown in Figs. 1 and 5, are open windows through which peripheral portions of the body 37 of the drum 14 project so that a hoisting cable 38, in winding tangentially onto or off the body 37, clears the adjacent portions 40 and 41 of the housing 12.

In operation, the hook 30 may be engaged by an eyelet 42 at the end of a rod 43 of suitable length, extending downwardly to a convenient point for the operator to grasp and manipulate the brace portion 44 in a manner that is well known, preferably electrically as indicated. The position of the worm, as described, provides for convenient engagement and manipulation of the hook 30, while permitting the structurally advantageous relationship between drum and base, as heretofore pointed out.

During the rotation of the worm wheel 21, the tendency is to cause the lubricating grease to be exuded from between the teeth of the worm wheel and the threads of the worm. By means of a double-acting, two-bladed scraper 45, Figs. 4, 6, 7 and 8, the exudation of the grease is anticipated and substantially prevented. The scraper with its integral blades or wings 46 and 47 is fastened by any suitable means, such as screws 48, to a suitable part of the stationary structure of the winch so that the blades in their double action scrape off and then return any grease that tends to exude. This double action can easily be visualized from Fig. 6. If the worm wheel rotates in the direction of the arrow 49, the wiping portion 46*a* (Fig. 7) of blade 46 scrapes any oncoming grease and smoothly feeds the same back into the teeth. If the worm wheel is rotating in the direction counter to the arrow 49, the blade 47 performs a similar action. Obviously, the blade structure 45 should have its operating edges symmetrical with respect to a radius 50 of the worm wheel.

It is to be observed that the housing 12 of the winch may advantageously be made of cast metal relatively

light in structure, the necessary strength to resist the hoisting stress being largely supplied by the wrought metal base plate **11** which extends longitudinally of the housing. The housing itself is braced longitudinally by means of structural ribs **34***a* integral with the base **34**, thereby providing the necessary structural strength and rigidity. The supporting shaft **16** for the winding drum being fixed in the base plate **11** and the free end of the shaft being supported in spaced relation to the base plate by means of the housing **12** in the form of a longitudinally extending bridge surmounted by a dome within which the worm wheel is rotatably disposed, all serve to make the component parts of the winch easily and quickly accessible.

A novel method of securing the hoisting cable **38** to the body of the drum **14** is illustrated in Fig. 2. This method consists in attaching an enlargement **51** to the cable **38** by any suitable means such as making the enlargement a separate collar, slipping the same onto the cable, and subjecting the collar to considerable compressive stress diametrically thereof. Thereupon the forward end of the cable is entered through an opening **52** of sufficient size to also admit the enlargement **51**. Afterwards the free end of the cable is pulled through a smaller hole **53**. The cable is now ready for winding on the drum, which results in pulling the enlargement into approximately the position shown in Fig. 2, securely anchored.

What is claimed is:

1. A wall which comprising an elongate frame having spaced end pedestals and a dome bridging the space between the pedestals; a base having a superficial surface coextensive with the bottom plane of the frame and separable therefrom to support the end pedestals; a drum shaft fixed normal to said base; a winding drum having a head journaled on the shaft outwardly of the base; a worm wheel having a hub fixed to and in axial alignment with the drum, the hub being journaled on the shaft in spaced axial relation to the base; a worm in mesh with the worm wheel; means for imparting rotative motion to said worm; and a scraper in full contact with and across a side face of the worm wheel for the purpose of scraping lubricating grease away from the worm wheel side face when moving in a given direction, and immediately thereafter, to guide the rejected lubricating grease into a lubricating location.

2. A wall winch comprising a bridge frame having spaced-apart pedestals; a base plate extending across the spaced pedestals; a journal pin fixed in the base; a drum journaled on the pin; a worm wheel secured to said drum in axial alignment therewith; a worm in mesh with the worm wheel; a dome enclosing the worm wheel; and a cylindrically shaped housing portion for the worm extending from the dome, the cylindrically shaped housing portion and the dome being open in a plane substantially coincident with a rotative side face of the drum; and a double-acting scraper having scraping portions in full contact, radially, with the side of the rim of the worm wheel.

3. In a wall winch which includes a winding drum, a worm wheel and worm for driving the drum, and means operatively mounting the drum, worm wheel, and worm, the improvement comprising a grease scraper secured in contact with and across that side face portion of the toothed rim of the worm wheel which is located adjacent the worm, said grease scraper having portions extending along and directed toward said worm so as to scrape lubricating grease away from the side face of the worm wheel and guide such grease into said worm.

4. The improvemement of claim 3, wherein the grease scraper has oppositely directed wings to accommodate rotation of the worm wheel in opposite directions.

5. A wall winch, comprising, a frame structure including a base plate and an elongate frame having end pedestals on the base plate and a bridge spanning the space between the pedestals; means for securing the frame structure on an upright wall surface with said base plate parallel and immediately adjacent the wall surface and with said bridge in an upright position; a drum shaft having one end supported on said base plate and the other end supported on said bridge; a winding drum having axially spaced hubs one supported on the shaft closely adjacent the base plate and the other supported on the shaft adjacent the bridge; a worm wheel supported on said shaft outwardly of said other hub and connected to drive said drum; and a worm journalled on said frame and meshing with said worm wheel to drive the latter.

6. A wall winch, comprising, a base plate mountable against an upright wall surface; an elongate housing frame having spaced end pedestals and a bridge spanning the space between the pedestals; means for securing the pedestals to the base plate and the base plate to the wall surface with said bridge in an upright position; a drum shaft having one end secured in the base plate and the other end secured in the bridge; a winding drum having axially spaced hubs one journalled on the shaft closely adjacent the base plate and the other journalled on the shaft adjacent the bridge; a worm wheel journalled on the shaft outwardly of said other hub and secured to said drum; a worm journalled on said frame in mesh with said worm wheel and having drive means therefor projecting downwardly for imparting rotation to the worm; and said frame having openings facing laterally radially outwardly from said shaft and drum permitting ingress and egress of a cable on said drum.

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