Sept. 10, 1940. C. V. KOONS 2,214,466

WINCH

Filed Feb. 13, 1937

2 Sheets-Sheet 1

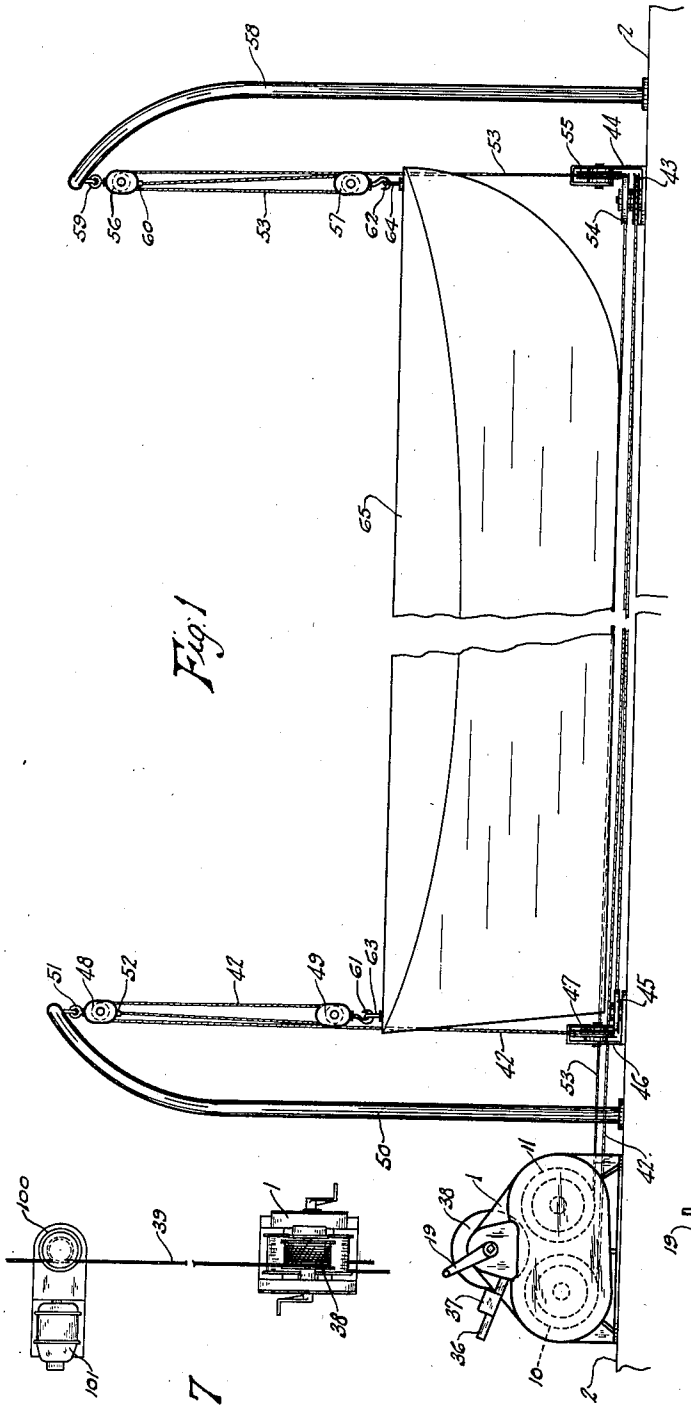


Fig. 1

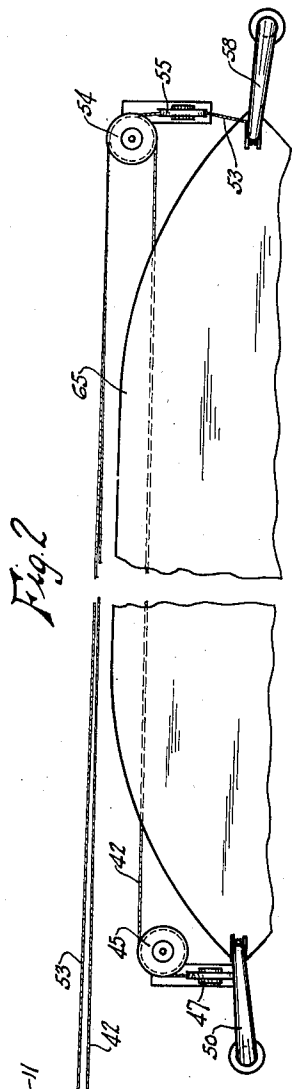


Fig. 2

Fig. 7

Inventor
Charles V. Koons
By Carl O. Gibbs
Attorney

Sept. 10, 1940. C. V. KOONS 2,214,466

WINCH

Filed Feb. 13, 1937 2 Sheets-Sheet 2

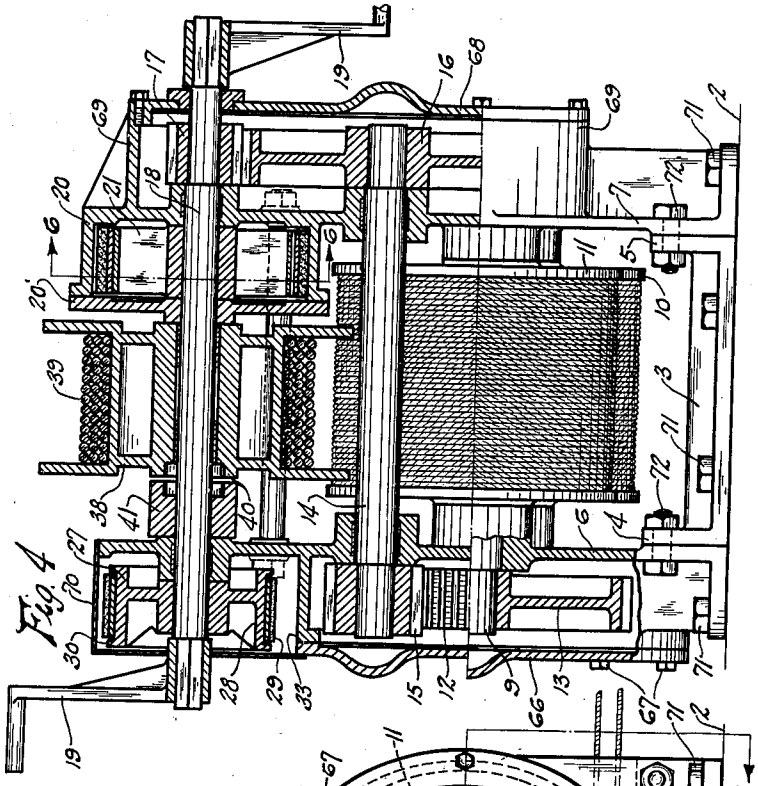


Fig. 4

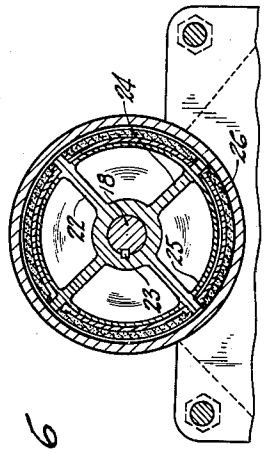


Fig. 6

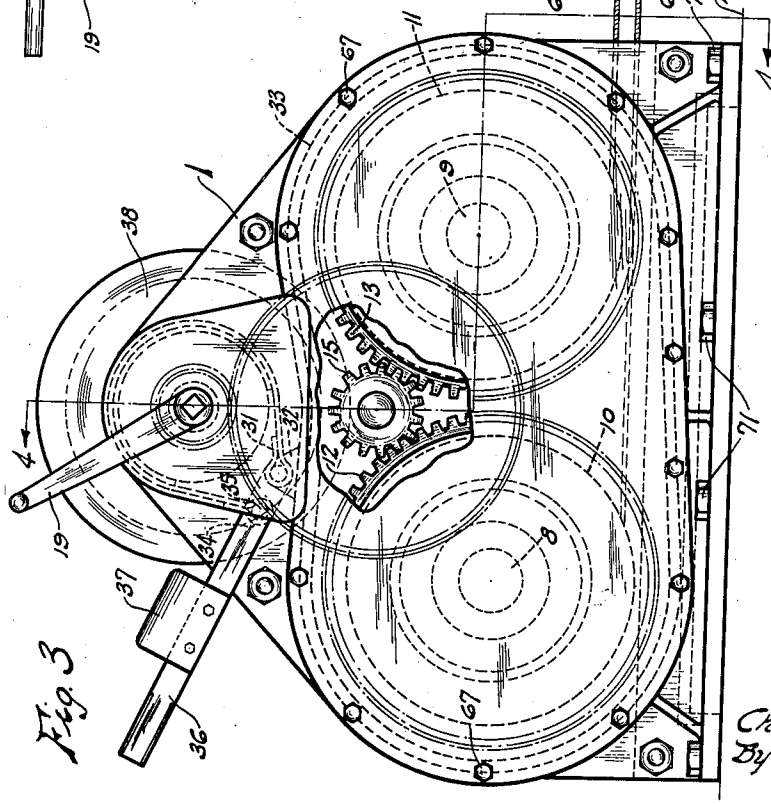


Fig. 3

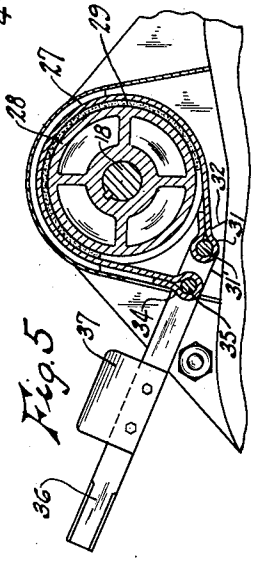


Fig. 5

Inventor
Charles V. Koons
By Earl V. Libbe
Attorney

Patented Sept. 10, 1940 2,214,466

UNITED STATES PATENT OFFICE

2,214,466

WINCH

Charles V. Koons, Philadelphia, Pa., assignor to American Engineering Company, Philadelphia, Pa., a corporation of Pennsylvania

Application February 13, 1937, Serial No. 125,560

2 Claims. (Cl. 254—185)

This invention relates to winches, and more particularly to winches of the type employed in the handling of life boats, tenders, and the like.

One object of the present invention is to provide a generally improved winch of the stated character which is simple in construction and efficient in operation.

Another object is to provide a winch having safety braking devices associated therewith which insure the safe lowering of life boats.

A further object is to provide a winch of the stated character which is adapted for power, as well as manual operation.

Other and further objects will become apparent as the description of the invention progresses.

Of the drawings:

Fig. 1 is a side elevational view showing the winch operatively connected to a life boat.

Fig. 2 is a plan view of the apparatus shown in Fig. 1.

Fig. 3 is an enlarged side view of the winch with a portion of the casing broken away to show the gearing for actuating the drums thereof.

Fig. 4 is a sectional view taken substantially along line 4—4 of Fig. 3.

Fig. 5 is a detail view partly in section, showing the manual braking device associated with the winch.

Fig. 6 is a sectional view of the centrifugal brake associated with the winch, taken substantially along line 6—6 of Fig. 4, and

Fig. 7 is a plan view showing the boat winch connected to a power winch.

Referring to the drawings, the numeral 1 designates generally a winch secured in the present instance by bolts 71 to the boat deck 2 of a ship. Winch 1 consists of a base frame member 3, having a pair of vertical flanges 4 and 5 at the sides thereof, to which are respectively secured by bolts 72 a pair of side frames 6 and 7. Side frames 6 and 7 have journaled in suitable bearings provided therein a pair of shafts 8 and 9 to which are respectively secured winding drums 10 and 11. A pair of spur gears 12 and 13 are secured to the left hand ends (Fig. 4) of shafts 8 and 9 respectively. Also mounted in suitable bearings provided in side frames 6 and 7 is a third shaft 14. As shown more particularly in Figs. 3 and 4, shaft 14 is disposed above and substantially midway between shafts 8 and 9, and has secured to the left hand end thereof a pinion 15, which meshes with gears 12 and 13. The right hand end of shaft 14 has secured thereto a relatively large spur gear 16 which meshes with a smaller gear 17, secured to the right hand end of a drive shaft 18. Drive shaft 18 is also mounted for rotation in suitable bearings provided in side frames 6 and 7, and to each end thereof is detachably secured a hand crank 19. Mounted within an annular flange 20, projecting inwardly from the upper end of side frame 7, is a centrifugal brake 21. This brake may be of any suitable construction, but for the purpose of illustration the type shown herein consists of a spider 22 secured to shaft 18 in any suitable manner, such as by a key 23. Spider 22 comprises four spokes 24 connected near the upper ends thereof by arcuate supporting members 25 for correspondingly shaped braking shoes 26. Shoes 26 are loosely mounted on spider 22 and extend between the spokes thereof as shown in Fig. 6. Upon rotation of shaft 18, shoes 26 tend to move radially into engagement with the inner surface of annular flange 20. It therefore is seen that the speed of rotation of shaft 18, as well as of the drums 10 and 11 driven thereby is effectively controlled. A cover plate 20' is secured in any suitable manner to the open end of flange 20 which protects brake 21 from moisture.

A manual brake 27 is also provided on shaft 18 near the left hand end thereof. This brake consists of a drum 28 secured to shaft 18, and a friction band 29 engaging a portion of the periphery of said drum between the retaining flanges 30 provided at either side thereof. The lower end 31 of brake band 29 is secured in any suitable manner to a stud 31' projecting laterally from a bracket 32 secured to and extending upwardly from an outwardly extending flange 33 provided on side frame 6. The other end 34 of brake band 29 is secured to a stud 35 extending laterally from a lever 36, pivotally mounted on stud 31'. A weight 37 is secured to lever 36, and normally holds the brake band in effective position against the drum 28. Thus, in order to release brake 27, the operator simply actuates lever 36 in a clockwise direction.

Loosely mounted on shaft 18 intermediate the ends thereof is a drum or pulley 38 having a supply of rope or cable 39 wound thereon. The left hand end of pulley 38 is provided with a clutch element 40 adapted to engage a corresponding clutch element 41 secured to shaft 18, and disposed near the inner side of frame 6. Thus, in order to connect drum 38 to the drive shaft 18 it is simply moved toward the left until clutch elements 40 and 41 interlock. Drum 38 may then be connected to a second winch or capstan 100 driven in the present instance by an electric motor 101, or to any other suitable operating

mechanism disposed at some remote point. The driving connection between the drum 38 and this operating mechanism may be made by means of the rope or cable 39 provided on said drum. By such an arrangement a single winch or capstan 100 may be employed to operate several of the boat winches 1, and consequently the necessity of providing a separate power means for each of the winches 1 is eliminated.

A cover plate 66 secured to the flange 33 on side frame 6 by bolts 67 protects gears 12, 13 and 15 from moisture. A similar cover plate 68 secured to a flange 69 projecting outwardly from side frame 7 encases gears 16 and 17. A casing 70 may also be provided to protect brake 27.

From the foregoing description, it is seen that upon rotation of drive shaft 18 by means of cranks 19, or by drum 38, drums 10 and 11 will be simultaneously driven in the same direction to wind in or pay out cable, as the case may be.

As shown more particularly in Figs. 1, 2 and 3, the cable or rope 42 wound on drum 10 extends around a horizontally disposed pulley 43 mounted in a bracket 44, secured to boat deck 2. This cable then extends around a second horizontally disposed pulley 45 mounted in spaced relation with pulley 43 in a second bracket 46, also mounted on deck 2. Cable 42 then extends under a vertically disposed pulley 47, also mounted in bracket 46, and thence is trained around pulleys provided in the upper and lower blocks 48 and 49 respectively of a block and tackle mechanism secured to and depending from the upper end of a davit 50, as shown at 51. The end of the cable 42 is then secured to the lower end of block 48, as shown at 52.

The cable or rope 53 wound on drum 11 extends around a second horizontally disposed pulley 54, mounted in the bracket 44, and thence under a vertically disposed pulley 55, also mounted in said bracket. Cable 53 then extends around pulleys provided in the upper and lower blocks 56 and 57, of a block and tackle secured to and depending from a second davit 58, as shown at 59. The end of cable 53 is then secured to the upper block 56, as shown at 60. The lower ends of blocks 49 and 57 have respectively secured thereto hooks 61 and 62, which engage in eyes 63 and 64, secured to and extending upwardly from the opposite ends of a life boat 65.

From the foregoing description it is seen that to lower boat 65 brake 27 is first released to enable operation of the winch by cranks 19 to elevate the boat slightly above the boat deck so as to clear any obstructions thereon. The davits 50 and 58 are then swung so as to place the boat in outboard position. The operator of the winch then simply moves lever 36 upwardly to release brake 27 whereupon the weight of the boat 65 will actuate the drums 10 and 11 to pay out cable. The descent of the boat is controlled by centrifugal brake 21, which, when shaft 18 rotates beyond a predetermined safe speed, the shoes 24 therein will move radially into frictional engagement with the inner surface of flange 20. The speed at which the boat descends may also be governed by the brake 27 by manipulation of hand lever 36. In the event of accident to the attendant, or for any other reason, upon release of lever 36 weight 37 will actuate the same downwardly to apply brake 27, and thereby halt the descent of boat 65. Boat 65 may be raised by manipulation of hand cranks 19, or by attaching drum 38 to any suitable power mechanism 100. When the boat has been elevated sufficiently, lever 36 is released and brake 27 then holds the boat against descent. The davits 50 and 58 are then swung inboard to properly position boat 65 on deck 2. Brake 27 is then released to permit the boat 65 to descend to its supports on deck 2. It therefore is seen that a very effective winch has been provided which insures utmost safety in the lowering of life boats or other craft, and thereby prevents serious accidents at sea.

While the embodiment herein shown and described is admirably adapted to fulfill the object primarily stated, it is to be understood that the invention is not to be limited thereto, since it may be embodied in other forms, all coming within the scope of the claims which follow.

What is claimed is:

1. A winch comprising a framework, including a pair of spaced side supporting members, a pair of shafts journaled in said supporting members, a cable winding drum secured to each of said shafts, a pair of gears, one secured to one end of each of said shafts, a third shaft journaled in said supporting members, a pinion secured to one end of said shaft and meshing with each of said first mentioned gears, a gear secured to the other end of said third shaft, a drive shaft also journaled in said supporting members, a pinion secured to said drive shaft and meshing with said last mentioned gear, whereby any rotary movement imparted to said drive shaft causes simultaneous rotation of said winding drums, manual means detachably connected to said drive shaft for operating the same, braking means for said drive shaft to normally prevent operation thereof whereby said winding drums are normally held against movement, means for releasing said brake, additional means mounted on said drive shaft for governing the speed of rotation thereof, means normally disconnected from said drive shaft for operating the same, and clutch means for operatively connecting said last mentioned means to said drive shaft.

2. A winch comprising a framework, including a pair of spaced side supporting members, a pair of shafts journaled in said supporting members, a cable winding drum secured to each of said shafts, a pair of gears, one secured to one end of each of said shafts, a third shaft journaled in said supporting members, a pinion secured to one end of said shaft and meshing with each of said first mentioned gears, a gear secured to the other end of said third shaft, a drive shaft also journaled in said supporting members, a pinion secured to said drive shaft and meshing with said last mentioned gear, whereby any rotary movement imparted to said drive shaft causes simultaneous rotation of said winding drums, manual means detachably connected to said drive shaft for operating the same, braking means for said drive shaft to normally prevent operation thereof whereby said winding drums are normally held against movement, means for releasing said brake, a driving drum loosely mounted on said drive shaft having a supply of rope wound thereon adapted for connection with power means to drive said shaft, and clutch means for operatively connecting said driving drum to said shaft.

CHARLES V. KOONS.