To all whom it may concern:

Be it known that I, Einar L. M. Sivard, a citizen of the United States, and a resident of Amityville, in the county of Queens and State of New York, have invented certain new and useful Improvements in Winch Mechanism for Raising and Lowering Life-Boats, of which the following is a specification.

This invention relates to improvements in winch mechanism for raising and lowering lifeboats.

By the use of my invention I am enabled quickly and with great facility, and without affecting the operative readiness or preparedness either of the lowering means or the manually-operable hoisting means, to hitch up to and make use of a steam winch or other rope-reeling power-driven device to hoist a lifeboat and furthermore am enabled, either in lowering or in raising a lifeboat, readily and quickly and at any desired point during the hoisting or lowering operation, to brake and retain stationary either one of the falls which are secured at opposite ends of the lifeboat, thus permitting the adjustment of the length of the falls secured to either end of the lifeboat, and enabling such lifeboat to be hoisted or lowered, or deposited either at the checks or in the water on an even keel or in a true horizontal position.

I will now describe my preferred embodiment of the invention and then point out the novel features in claims.

In the accompanying drawings in which similar reference characters designate corresponding parts throughout the several views, Figure 1 is a side elevation of a device embodying my invention;

Fig. 2 is a top or plan view of the device illustrated in Fig. 1, the lower portion of the mechanism being omitted for the purpose of clearness;

Fig. 3 is a sectional view of the brake drum and pawl mechanism therefor taken on the line A—A of Fig. 2; and

Fig. 4 is a section on the line B—B of Fig. 1.

Referring now to these drawings, which illustrate a preferred embodiment of my invention, I indicates a drum-shaft suitably mounted in a supporting frame 12 which may be secured to the deck of a vessel in any suitable manner, 2—2a are drums independently mounted on said shaft to rotate freely thereon and carry ropes 26—26a wound on said drums in the same direction and adapted to be secured to the opposite ends of a lifeboat and to cooperate with davits or like devices in the raising and lowering thereof. 3—3a indicate spur gears which are respectively fixed in relation to the drums 2—2a and may respectively, if desired, be formed integrally with said drums. The spur gears 3—3a respectively mesh with pinions 4—4a, loose on the shaft 5, and mounted independent of each other. These pinions 4—4a respectively have fixed in relation thereto or integrally cast therewith spur gears 6—6a and ratchet wheels 7—7a.

A brake drum 8 also loose on the shaft 5 has an independent connection with each of the ratchet-wheels 7—7a, preferably by means of pawls 9—9a pivoted on opposite sides of the brake-drum and engaging independently with the respective ratchet wheels 7—7a, said pawls being normally retained in engagement with the teeth of the ratchet 80 wheels 7—7a by flat springs 10 or other suitable devices.

From the above it will be apparent that I provide two independently mounted rope drums each of which is operatively and independently connected by means of separate pawls and ratchet wheels with a common brake-drum 8 and this brake-drum may by any suitable mechanism be so controlled as to retain both the rope-drum in normally locked or stationary position. As shown, I provide for this purpose, a brake band 14 operatively connected to an actuating lever 15 which normally retains the brake band frictionally locked and in stationary position by means of a helical spring 16 connected to the lever at one end and to the frame 12 at the other end, a turn-buckle 16 preferably being inserted to regulate the tension of the spring 16. Obviously a lifting of lever 15 against the restraining action of the spring 16 or other suitable device will disengage the brake band from the brake drum and permit the same to rotate for the purpose of unreeling the ropes 26—26a to lower a lifeboat or the like, and furthermore the releasing by the hand of the operator of the lever 15 will cause the immediate application of the brake to stop the unreeling and consequent lowering of the boat.

It is, however, frequently necessary or desirable to adjust the length of the falls at
one end or the other of the boat, as for example when the ship is down by the head or the stern and it is desired to deposit the boat in the water on an even or level keel, or when under certain other conditions, it is desired to deposit the boat with the bow higher than the stern. For this purpose, I provide a separate stop independent of the braking mechanism for each of the rope drums, so that either one of the said drums may, without affecting the action of the other, be locked against rotation. To accomplish this end, and to permit the drums to remain under the control of a common instantly-applicable brake drum, I provide means whereby the movement of the respective ratchet wheels 7—7* and connected mechanisms, which include the rope drums, are respectively independently or separately controlled by pawls 11—11* which are formed on the ends of levers 13—13* and which, as shown, are pivoted respectively at 11* and 11* to extensions 11*—11* respectively of the supporting frame 12. The respective levers 13—13* are provided with suitable operating handles and are normally retained in inoperative position or out of engagement with the respective ratchet wheels 7—7*. It is obvious that either one or the other of said pawls may be readily and quickly thrown into or out of engagement with its respective ratchet wheel for the purpose of stopping or locking independently of the brake drum the ratchet wheel and connected mechanisms which it is adapted to engage.

In order to provide my improved winch mechanism with means for readily and quickly hitching up the rope drums to a steam or electric winch without in any way affecting the preparedness or readiness of the lowering means or hand-operating devices and also to permit adjustment of the falls during hoisting, I provide what I shall term a "driving drum" 19 also loose on the shaft 1, preferably mounted outside the frame 12 carrying a rope 27 normally retained in reeled up position on the drum and preferably terminating in an eye 28 which may be fastened to the drum in any suitable manner as by lashing to a cleat. Said drum 19 is operatively connected or geared with the rope drums 2—2*. Preferably said drum 19 has fixed in relation thereto or cast integrally therewith a spur gear 20 which meshes with a pinion 21 which may be fast in the shaft 22, and if desired may be keyed thereto to have sliding side-wise movement in order to permit the throwing of the same into and out of mesh with the gear 20. Also keyed to the shaft 22 and movable or sliding side-wise thereon are pinions 23—28* which respectively are adapted to be thrown into and out of mesh with the respective drum gears 3—3* by means of coupling levers 24—24*, pivoted on the frame intermediate their ends as at 24*—24*, and having handles 24*—24* at one of their ends and their other ends pivoted as at 24*—24* to coupling boxes 30—30* formed integrally with the respective pinions 23—23*.

It will be seen, therefore, that I have provided means for permitting the driving of both rope drums 2—2* simultaneously through the driving drum 19 and for disengaging either one of said drums which when so disengaged will be controlled by and held stationary by the brake drum and that in this way the falls on said drums may be adjusted during hoisting.

The connecting one of the shafts 22 are also preferably fitted with handles 25—25* to permit quick manual rotation of the drums for the purpose of recovering the falls in case power is not available and it is desired to employ the same for lowering a second boat. Of course one or both of the actuating handles 25—25* may be employed to reel up the rope 27 on drum 19 after a boat has been hoisted thereby to place the device in readiness for the hoisting of another boat. For this purpose the coupling levers may be moved to disengage the pinions 23—28* from the spur gears 3—3* so as not to affect the rope-drums 2—2*.

In the arrangement here shown it is desirable that the pinions 23—28* should be disengaged from the gears 3—3* respectively to permit independent locking by the pawls 11—11* of the rope drums 2—2* respectively and I therefore preferably provide an interlocking engagement between the levers 13—13* of the pawls 11—11* on the one hand and the coupling levers 24—24* of the pinions on the other hand, whereby the actuation of the respective pawl levers to their stopping positions will in the respective movements of such levers engage and preferably shift or throw out automatically the pinion actuated by the coupling lever so engaged. I preferably procure such interlocking engagement by providing on the pinion coupling levers 24—24* projections 26—26* which respectively project into the path of movement of the levers 13—13* so that when either lever is moved into operative position it will first engage the projection on the coupling lever and move the pinion out of engagement with the spur gear with which it is meshed. For example, if the handle of the lever 13* be engaged and moved upwardly it will first strike the projection 29* and cause the coupling lever 24* to move the pinion 23* out of engagement with the spur gear 3*.

In order to hoist the lifeboats by hand, I provide pinions 16—16* fixed on short shafts 17—17* mounted in the frame 12 and extending without the same, which shafts are respectively fitted with handles 18—18*.
Pinnions 16—16 mesh respectively with the spur gears 6—6 which as aforesaid are preferably formed integrally with the spur gears 4—4 and ratchet wheels hereinabove described.

The operation of the device is as follows:

To hoist the boat cranks 18—18 may be manipulated if desired, but with a large lifeboat this is an extremely slow process and under many conditions, such as during rescue work at sea, is so slow that it may endanger life. Power for hoisting is, therefore, desirable. Owing to the cost and to some extent the added weight of special electric motors and like devices for supplying power, it is desirable to employ for hoisting purposes the usual winches, such as the cargo winches, at present on board a ship, and I therefore preferably hitch up any driving drum to any such winch by carrying the rope 27 therefrom over suitable snatch-blocks and fair-leads to such a steam or electric winch, the eye 28 of said rope 27 being used for the purpose of attaching the same to a suitable rope adapted to be actuated by the winch. Obviously when the winch is operated the rope 27 will be unreeled from the drum 19, the boat falls will be reeled up on the drums 2—2 and the boat will be hoisted.

Furthermore, the brake drum 8 will be in its normally locked or frictionally-gripping position during the hoisting of the boat so as to insure perfect safety during this operation. In view of this normally locked condition of the brake drum it will be seen that either of the two rope drums may be safely disengaged from the action of the driving drum by actuation of either of the coupling levers 24—24 and so soon as disengaged will remain stationary, thus permitting any adjustment to compensate for stretching of the falls, uneven coiling of the rope or the like.

When it is desired to lower a boat the coupling levers should be shifted to disengage the pinions 23—23 and the brake lever 15 raised whereupon both falls, which as above stated are positively controlled by the same brake drum, will be paid out at the same rate of speed. In order to stop the paying out of rope from both drums the brake lever is simply released by the operator whereupon the spring will cause the brake to become operative and the drums will be automatically stopped. It is frequently, however, necessary or advisable to pay out more rope on one drum than on the other in order to adjust the falls and in such event, for example, the lever 13 may be actuated to engage the pawl 11 to the ratchet wheel 7, in which case the motion of the drum 2 will be stopped while the drum 2 will continue to pay out the opposite fall.

When the lifeboat has reached the desired position the lever 13 may be moved back to disengage the pawl 11 and both falls will be again paid out at the same rate of speed. Obviously the pawl 11 will stop the drum 2 if desired, upon similar actuation. In case, however, the operator neglects to shift the coupling levers before starting to lower, the lowering operation may be continued without interference until it is desired to adjust by the actuation of the stopping pawl levers. Such actuation will, because of the interengagement of these levers with the coupling levers, automatically shift the latter to permit adjustment. It will, of course, be understood that the only effect of a failure to disengage one or the other of the coupling levers will be to couple the rope drums together and thus prevent independent adjustment, the drums, however, always remaining under the control of the brake drum.

Assuming that it is desired to handle more than one lifeboat by a single set of davits, it may be necessary to recover the tackles quickly after launching the first boat and as power may not be available in case of accident provision must be made for doing this work by hand, and for this purpose I provide on the opposite ends of shaft 22 handles 25—25.

Having described my invention, I claim:
1. Winch mechanism for raising and lowering lifeboats embodying therein two rope drums, ropes on said drums adapted to be connected at opposite ends of the lifeboat, a common braking mechanism for both drums and means for independently engaging each rope drum to stop paying out of rope therefrom.
2. Winch mechanism for raising and lowering lifeboats embodying therein two rope drums, a brake drum operatively connected with and controlling said rope drums, controlling means for locking the brake drum against movement and permitting releasing thereof to permit the simultaneous unreeling of rope from both drums and means for locking either one of said drums against rotation independently of the other.
3. Winch mechanism for raising and lowering lifeboats embodying therein two rope drums, a brake drum operatively connected with and controlling said rope drums, controlling means for locking the brake drum against movement and permitting releasing thereof to permit the simultaneous unreeling of rope from both drums, means for locking either one of said drums against rotation independently of the other, means for driving the rope drums to hoist the lifeboat and means for engaging or disengaging one of said drums with the driving means.
4. Winch mechanism for raising and lowering lifeboats comprising two rope drums, ropes on said drums adapted to be
connected at opposite ends of the lifeboat, a common brake drum for said two rope drums, means embodying separate ratchet wheels and pawls normally retained in engagement therewith for operatively and independently connecting said rope drums with said brake drum, means for releasing the brake drum to permit simultaneous unreeeling of rope on both drums and a pair of independently operable pawls normally retained in inoperative positions and adapted respectively to be moved to engage said ratchet wheels respectively to permit independent stopping of either one of the rope drums during lowering of the boat.

5. Winch mechanism for raising and lowering lifeboats comprising two rope drums, ropes on said drums adapted to be connected at opposite ends of the lifeboat, a common brake drum for said two rope drums, means embodying separate ratchet wheels and pawls normally retained in engagement therewith for operatively and independently connecting said rope drums with said brake drum, means for releasing the brake drum to permit simultaneous unreeeling of rope on both drums, levers pivoted to the frame and a pair of independently operable pawls mounted on the ends of said levers, said pawls being normally retained in disengaged positions and operating handles for swinging the respective pawls into engagement with the respective ratchet wheels to independently lock either one of the rope drums against movement, whereby the length of the falls at either end of a lifeboat may be adjusted during the lowering of the boat.

6. Winch mechanism embodying therein two rope drums, a separate rope on each of said rope drums, said ropes being wound up in a common direction and adapted to be attached to opposite ends of a lifeboat, a driving drum having a rope thereon wound up in a direction opposite to the ropes on said two drums, the said driving-drum rope being normally retained on said drum in wound up position, whereby the unreeeling of the normally wound up rope on the driving drum will cause the reeling up of the rope on the two rope drums first mentioned, a common braking mechanism for both drums and means for causing one of said drums to be driven or braked independently of the other.

7. Winch mechanism embodying therein two rope drums mounted independently of each other, ropes thereon wound up in a common direction and adapted to be attached to opposite ends of a lifeboat, braking means for both drums, a driving drum operatively connected with said rope drums and having rope thereon wound up in a direction opposite to the said two drums, the said rope being normally retained on said drum in wound up position, whereby the unreeeling of the normally wound up rope on the driving drum will cause the reeling up of the rope on the two drums first mentioned and means for independently engaging and disengaging either one of said two rope drums with the driving drum to adjust the falls at either end of the boat during hoisting.

8. Winch mechanism for raising and lowering lifeboats embodying therein two rope drums, ropes on said drums adapted to be connected at opposite ends of a lifeboat, a common braking mechanism for controlling both drums simultaneously, an independent lowering stop for each drum, levers for moving each stop into and out of operative position, driving means for said rope drums, independent coupling levers for engaging and disengaging the driving means to the respective rope drums and interengaging means between the stop controlling levers and the coupling levers.

9. Winch mechanism for raising and lowering lifeboats embodying therein two rope drums, ropes on said drums adapted to be connected at opposite ends of a lifeboat, a common braking mechanism for controlling both drums simultaneously, an independent lowering stop for each drum, levers for moving each stop into and out of operative position, driving means for said rope drums, independent coupling levers for engaging and disengaging the driving means to the respective rope drums and a projection on said coupling levers projecting into the path of movement of the stop levers.

In witness whereof, I have signed my name to the foregoing specification in the presence of two subscribing witnesses.

EINAR L. M. SIVARD.

Witnesses:
HELEN V. HOLMES,
FREDERICK P. RANDOLPH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."