

No. 755,241.

PATENTED MAR. 22, 1904.

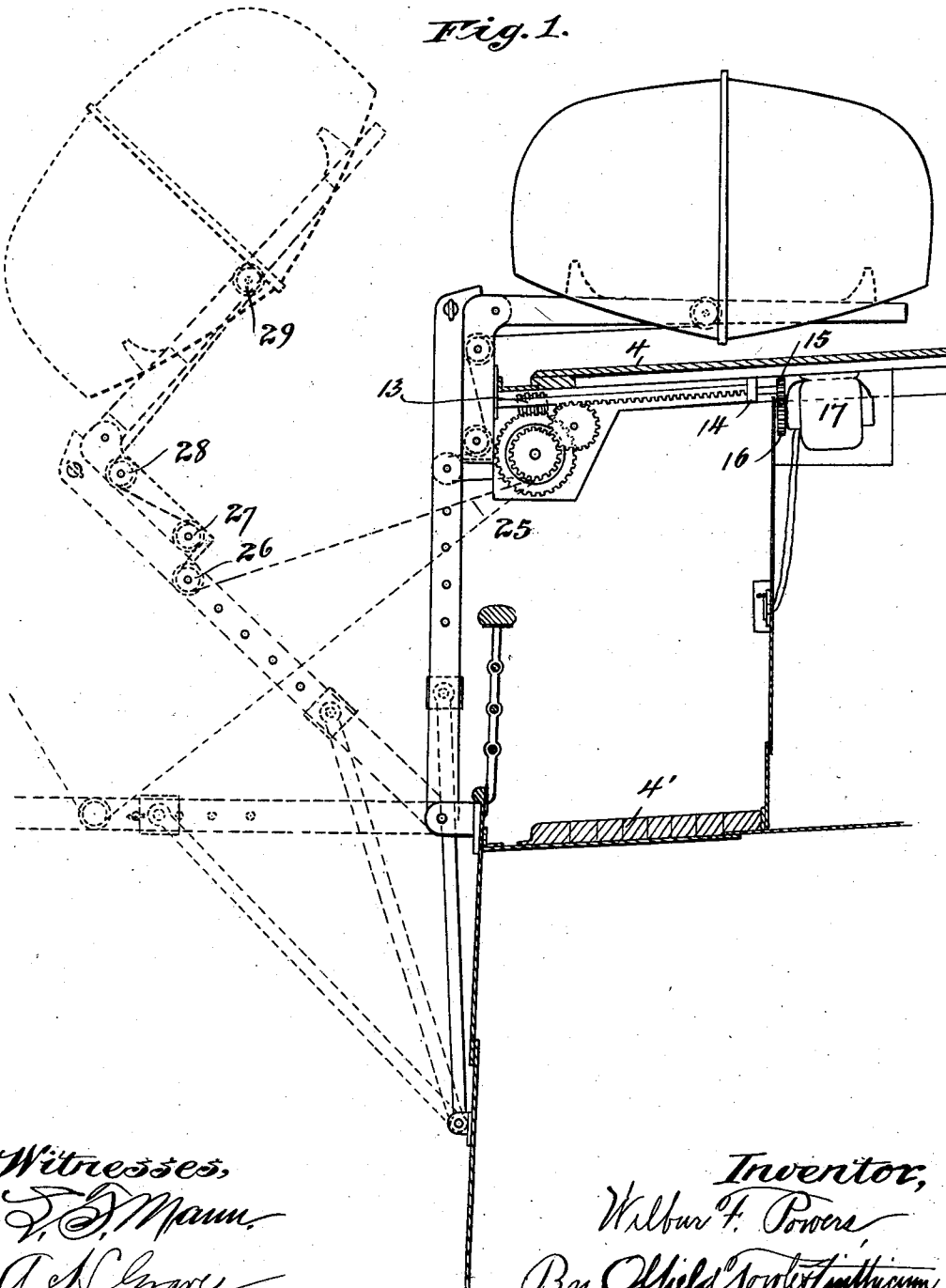
W. F. POWERS.
LIFE BOAT LAUNCHING APPARATUS.

APPLICATION FILED APR. 13, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS--SHEET 2.

Fig. 2.

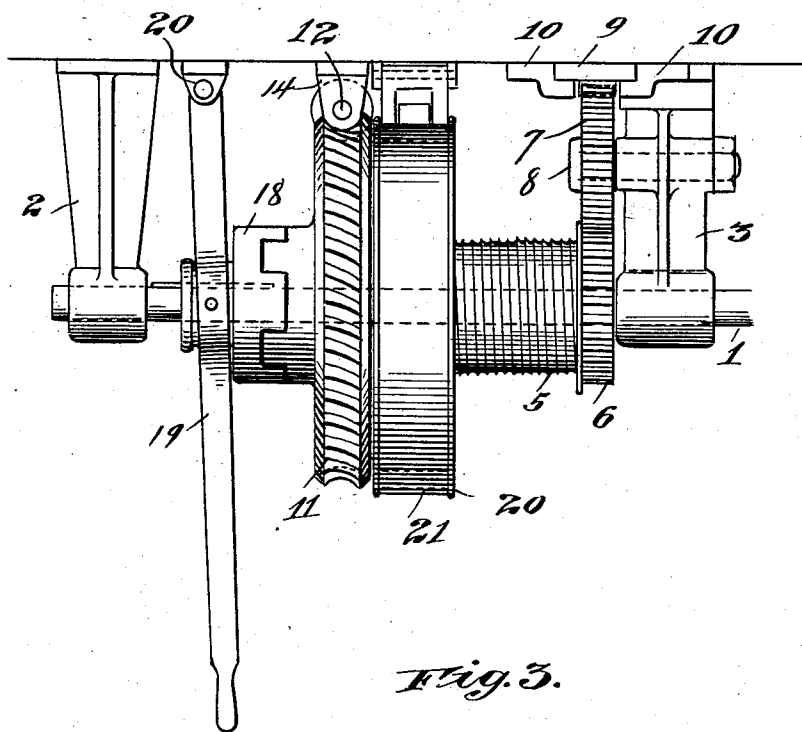
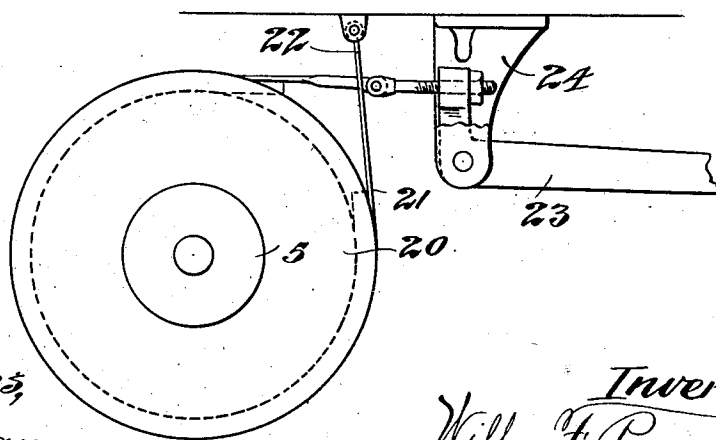


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILBUR F. POWERS, OF CAMDEN, NEW JERSEY.

LIFE-BOAT-LAUNCHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 755,241, dated March 22, 1904.

Application filed April 13, 1903. Serial No. 152,422. (No model.)

To all whom it may concern:

Be it known that I, WILBUR F. POWERS, a resident of Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Life-Boat-Launching Apparatus, of which the following is a specification.

This invention relates to improvements in apparatus for launching life-boats, and refers more specifically to a mechanism for actuating the davits of that general type which are hinged at their lower ends to swing outwardly in planes transverse to the side of the ship, an apparatus of this kind being shown in a patent granted to me March 5, 1901, No. 669,179.

Among the salient objects of the present invention are to provide improved means for mechanically actuating davits of the general character referred to, which mechanism is so constructed as to permit of the davits being actuated manually as alternative when preferred or necessary, to provide a mechanism which may be controlled and operated from various parts of the vessel, to provide a construction in which the mechanism may be brought into operation instantly and of such nature that its operation is both positive and reliable, to provide a mechanism which is not only capable of lowering the davits, but is equally available for returning them to their uplifted or normal positions, to provide a construction which is capable of being controlled manually with ease and convenience, and in general to provide a simple and improved mechanism of the character referred to by means of which life-boats may be launched with the utmost expedition and with great safety and reliability.

To the above ends the invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims, and the invention will be readily understood by reference to the accompanying drawings, forming a part of the description, and in which—

Figure 1 is a view in side elevation of my improved mechanism applied to an ordinary passenger-boat, a fragmentary portion of the latter being shown in transverse vertical sec-

tion. Fig. 2 is a front elevation showing the mechanism as viewed from the side of the vessel, looking inboard. Fig. 3 is a fragmentary detail showing the construction of the brake mechanism.

The construction and arrangement of the davits and the manner in which the boat is supported thereon is substantially identical with that shown and described in my prior patent, No. 669,179, and inasmuch as these features form no part of the present invention reference is made to said prior patents for a detailed description of the same.

In the present invention transversely-disposed rack-bars are so mounted and actuated that the outer ends thereof serve to thrust the davits outwardly during the launching operation and cables which control the movements of the davits and boat supported thereby are simultaneously payed out at a rate corresponding to the rate of outward movement of the davits. Vice versa, during the raising or restoring operation the cables are wound up upon drums and at the same time the rack-bars are retracted.

Describing said mechanism in detail, 1 designates a shaft journaled in suitable shaft-hangers 2 and 3, so as to extend longitudinally of the ship at a point beneath the upper deck 4 and near the outer edge of the same. Upon the shaft 1 are keyed two cable-drums 5, one approximately opposite each davit, (one only being shown in the drawings,) and upon said shaft 1 are also rigidly mounted two spur-gears 6, which respectively intermesh with other gears 7, which are conveniently mounted upon subshafts 8, seated in the hangers 3. Upon the under side of the upper deck 4 in vertical register with the gear 7 are mounted transversely-extending rack-bars 9, which are mounted to slide between suitable way-pieces 10, secured to the deck, as shown clearly in Fig. 2, said rack-bars 9 being arranged to intermesh with the respective gears 7.

At a suitable point upon the main shaft 1 is loosely mounted a worm-gear 11, the periphery of which intermeshes with and is engaged by the worm 13 of a worm-shaft 12, which is mounted in suitable brackets 14 upon the un-

der side of the upper deck 4 to extend transversely or parallel with the racks 9. The inner end of the worm-shaft is provided with a spur-gear 15, which intermeshes with a corresponding pinion 16 upon the armature-shaft of an electric motor (designated as a whole by 17) and suitably supported adjacent to the under side of the upper deck.

18 designates a clutch having splined connection with the main shaft 1 and shiftable upon said main shaft by means of a hand-lever 19, having its upper end pivoted in a bracket 20 upon the under side of the main deck and its lower end depending in easy reach of an operator standing upon the main or lower deck 4. The clutch 18 is toothed to interfit with and positively engage the worm-wheel 11 when shifted into operative position and to be carried out of range of said worm-gear 20 when shifted to its opposite position.

In order to manually control the rotation of the main shaft, a friction brake-wheel 20 is rigidly mounted upon said shaft and around said brake-wheel is trained a brake-band 21, (see Fig. 3,) one end of which is suitably secured to the under side of the upper deck, as indicated at 22, while the opposite end is adjustably connected with a bell-crank lever 23, pivoted at its angle upon the depending bracket 24, also supported on the under side of the upper deck. The longer arm of the bell-crank is extended to form a handle whereby the tension of the brake-band upon the brake-wheel may be regulated manually in the usual manner.

The pitch-diameters of the gears 6 and 7 are equal and said pitch-diameters are also equal to the pitch-diameters of the drums 5 with their cables wound thereon—that is to say, the relative diameters of these parts is such that when the main shaft is rotated the cables will be unwound from the drums at the same rate of speed at which the rack-bars 9 are moved outwardly.

25 designates the cables which, as best shown in Fig. 1, extend from the drums 5 to and around guide-pulleys 26, 27, 28, and 29 upon the davits, which pulleys are so arranged as to effect the unfolding and the lowering of the davits and reversing of the boat carried thereby as the cables are payed out, as clearly described in said prior patent.

The operation of the mechanism constructed and arranged as described is as follows: Assuming the davits to be in their normal position (shown in full lines in Fig. 1) and that it be desired to lower the same by means of the motor-driven mechanism, the operator through the medium of a suitable switch controlling the current through the motor 17 will turn on the current and rotate the motor in the proper direction, whereupon the worm-shaft 12, driven by said motor, will in turn actuate the main shaft 1 through the medium of the worm-wheel 11, thereby turning the

drums 5 in the proper direction to unwind the cables 25 and at the same time turning the gears 6 and 7 in the proper direction to force the racks 9 outwardly. The ends of the racks 9, engaging the inner sides of the upper ends of the davit-standards, will force the latter outwardly until they have reached positions in which their centers of gravity fall outside of the pivotal connections of the lower ends of the davits, whereupon they will thereafter move outwardly principally by their own weight, but will, nevertheless, be positively moved outwardly by the rack-bars should their weight be insufficient to cause such movement. When the davits have been lowered to a horizontal position, the boat having been meantime reversed into upright position, the passengers will take their place in the boat and be thereafter lowered in the manner fully set forth in said prior patent. The return of the davits to their normal positions is accomplished in precisely the same manner by simply reversing the direction of rotation of the motor through the means of a suitable switch mechanism. In this connection it will be understood that the electric switch, by means of which the motor is controlled, may be located at any desired point in the ship, or, in fact, a plurality of such switches may be provided at different locations upon the ship—as, for example, on the main deck and upon the bridge, either one of which may be employed to control the current which operates the motor. In this manner the officer in charge may have absolute control of the handling of the life-boats without interference on the part of the passengers, a matter of the utmost importance in cases of emergency.

If it be desired to lower the boats manually, this may be accomplished by throwing the clutch 18 out of gear with the worm-wheel, so as to free the main shaft, whereupon the davits may be forced outwardly by hand until they reach positions from which they descend by gravity, the operator meantime controlling the davits by means of the friction-brake, which is operated by the hand-lever 23. Obviously, also, the motor mechanism may be employed for partially lowering the boats and the remainder of the operation controlled manually. It is not to be overlooked that the driving connections between the motor and the main shaft are such that the operation of the main shaft from the motor both in raising and lowering the davits is positive and is substantially unaffected by the resistance of the davits in one part of their movements and their weight during the remaining part of their movements.

While I have herein shown and described the preferred embodiment of my invention, yet it will be understood that the details of construction and arrangement may be modified without departing from the spirit of the invention, and I do not, therefore, limit myself

to these details except to the extent that they are made the subject of specific claims.

I claim as my invention—

1. In a life-boat-launching apparatus, the combination with davits hinged to swing outwardly, of a pair of racks mounted to reciprocate in suitable ways parallel with the planes of oscillation of the davits, motor mechanism for positively actuating said racks, cooperating cables and paying-out mechanism automatically and positively operated simultaneously with the movement of the racks.

2. In a life-boat-launching apparatus, the combination with a pair of davits hinged to swing outwardly and provided at their swinging ends with folding and supporting arms, of means for operating said davits comprising a pair of reciprocatory rack-bars mounted to reciprocate in alinement with the planes of movement of the respective davits and adapted to respectively engage the latter, outer driven gear mechanism for simultaneously actuating said rack-bars, a pair of cable-drums intergeared with the rack-bars and operable at a peripheral speed coequal with the speed of movement of the rack-bars, cables operatively connected with said drums extending thence to the davits and operatively connected with the latter in such manner as to control the movements of the davits and the folding arms thereof, and brake mechanism for manually controlling the movements of said drums, substantially as described.

3. In an apparatus of the character referred to, the combination of the main shaft, a pair of cable-drums mounted rigidly thereon, driving-gears mounted upon the main shaft, rack-bars mounted upon a suitable support and arranged to reciprocate transversely of the main shaft, intermediate gears interposed between the driving-gears of the main shaft and the rack-bars and having driving connection with each, a worm-gear loosely mounted upon the main shaft, a clutch mechanism for at will operatively connecting said worm-gear to the main drive-shaft, a worm-shaft operatively engaging said worm-wheel, an electric motor having driving connections with said worm-shaft, and means for controlling the motor, substantially as described.

4. In an apparatus of the character referred to, the combination of the main shaft, a pair of cable-drums mounted rigidly thereon, driving-gears mounted upon the main shaft, rack-bars mounted upon a suitable support and arranged to reciprocate transversely of the main shaft, intermediate gears interposed between the driving-gears of the main shaft and the rack-bars and having driving connection with each, a worm-gear loosely mounted upon the main shaft, a clutch mechanism for at will operatively connecting said worm-gear to the main drive-shaft, a worm-shaft operatively engaging said worm-wheel, an electric motor having driving connections with said worm-shaft and means for controlling the motor, a friction brake-wheel rigidly mounted upon the main shaft, a brake-band operatively engaging said brake-wheel, and a hand-lever for actuating said brake-band, substantially as described.

5. In an apparatus of the character referred to, the combination of a ship and the upper deck thereof, of a pair of davits hinged to the side of the vessel to oscillate in planes transverse to said side, a pair of rack-bars mounted in suitable ways upon the under side of said upper deck and in alinement with the respective davits, a main shaft mounted to extend transversely of the rack-bars and below the same, gears forming driving connections between said main shaft and rack-bars, drums mounted upon said main shaft, cables operatively connected with the respective drums and with the davits, a worm-gear loosely mounted upon the main shaft, a clutch mechanism for throwing said worm-gear into and out of driving connection with the main shaft, a worm-shaft operatively engaging said worm-gear, an electric motor geared to said worm-shaft, circuit connections and a switch mechanism for controlling the motor and a brake mechanism for controlling the rotation of the main shaft when the worm-gear is disconnected from driving engagement therewith.

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