No. 643,197. Patented Feb. 13, 1900.

J. W. McKINNON.

SHIP'S DAVIT.

(Application filed Apr. 24, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 2

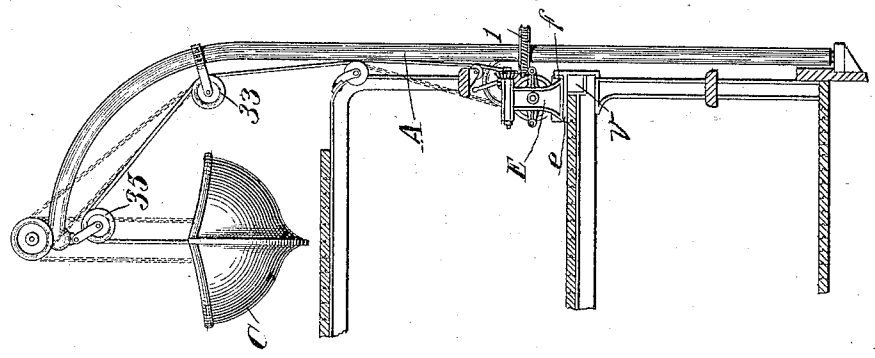
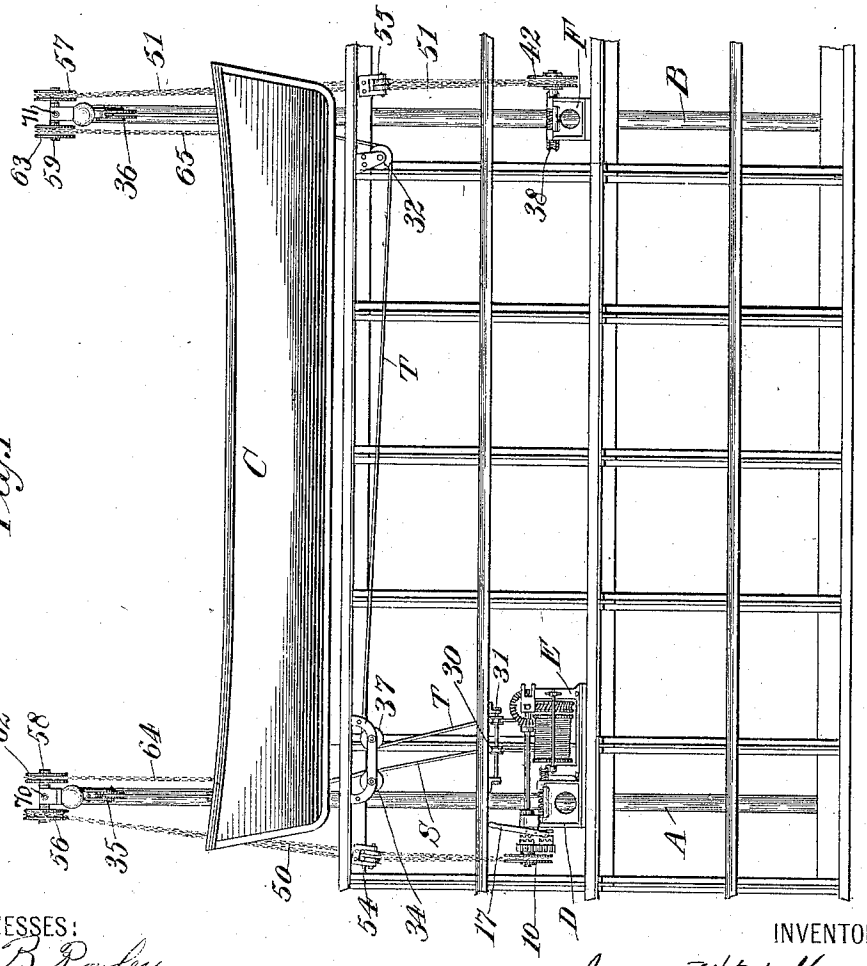


Fig. 1



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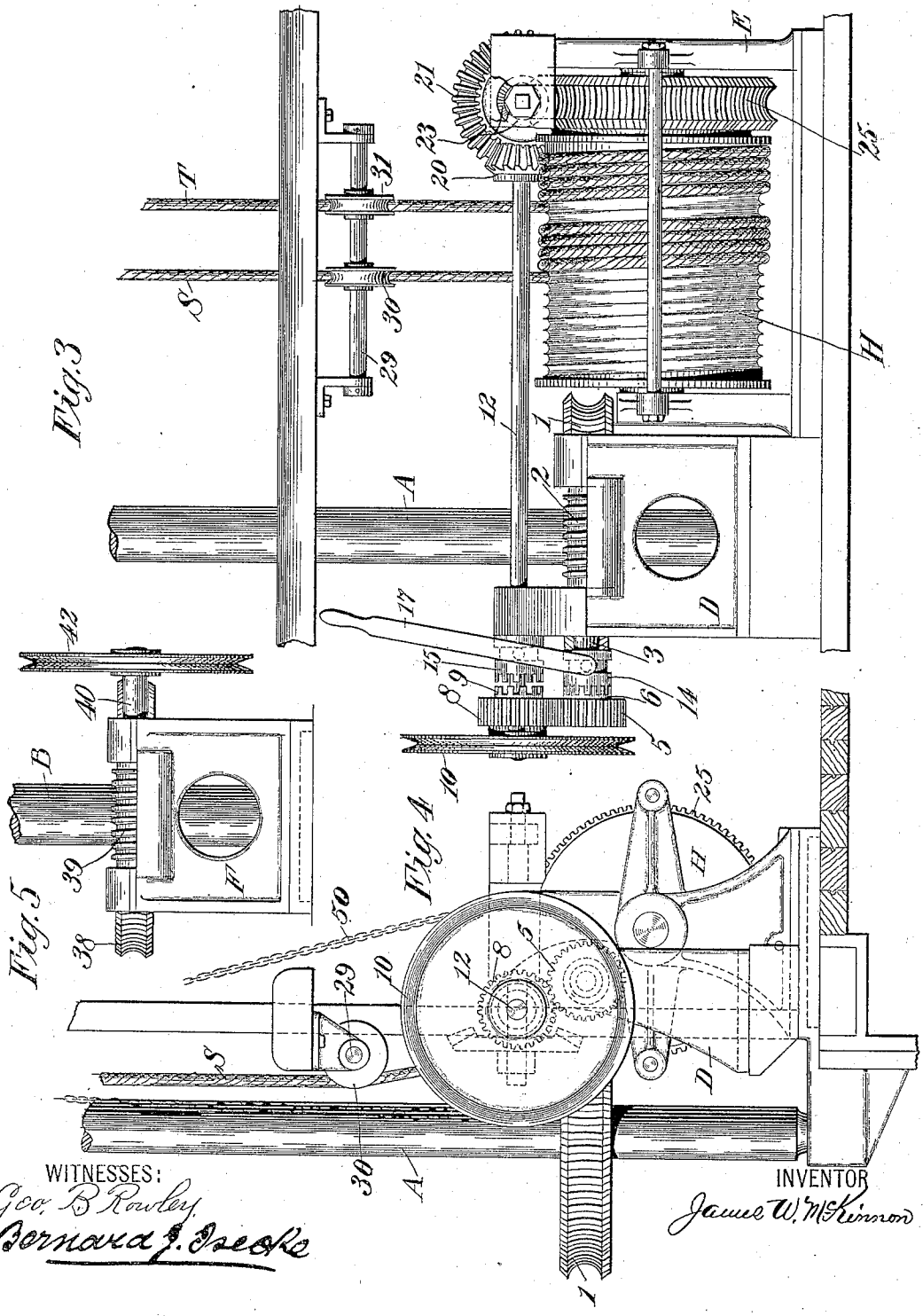
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UNITED STATES PATENT OFFICE.

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SHIP'S DAVIT.

SPECIFICATION forming part of Letters Patent No. 643,197, dated February 13, 1900.

Application filed April 24, 1899. Serial No. 714,191. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. McKINNON, a citizen of the United States, residing at the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Ship's-Davit Apparatus, of which the following is a specification.

This invention relates to improvements in ships' davits and apparatus therefor.

It is the purpose of the invention to provide simple and easily-operated mechanism to turn the davits for carrying the boats outboard and inboard and for operating the drum which pays the boat-hoisting tackles in and out.

By this invention the time for getting a life-boat outboard and lowering it in case of emergency is greatly reduced below what is required with present devices, and the danger of capsizing the boat or dropping the passengers into the sea is reduced to a minimum, because the drum always lowers the boat on an even keel, and in no circumstances can the boat suddenly fall to the sea, the apparatus being so designed that if the sailors who are lowering away should cease their attention to the apparatus the boat will hang suspended from the davits until some one manipulates the operating-chains, which can be easily done by a passenger without previous experience.

Referring to the drawings which accompany the specification to aid the description, Figure 1 is a longitudinal elevation of the apparatus with life-boat, and Fig. 2 is an elevation of the left-hand davit as seen from the right. Fig. 3 is an elevation, on large scale, of the drum and clutches, the latter being in the positions for revolving the left davit and leaving the drum stationary. Fig. 4 is an elevation from the left of Fig. 3. Fig. 5 is an elevation of the worm-gear for revolving the right-hand davit.

A and B are the davits, C the life-boat, and D, E, and F the framing. With the worm-gear 1, which is keyed on davit A, meshes the worm 2, fixed on shaft 3, on which is the loose pinion 5, provided with the clutch-face 6 and meshing with pinion 8, which is formed integral with or secured to the chain wheel or sprocket 10, which is loose on shaft 12, 9 being a clutch-face on pinion 8. Clutches 14 15, respectively sliding on and turning with shafts 3 and 12, are connected in any usual manner with lever 17. When said clutches 14 15 are in the position of Fig. 3, the operation of sprocket-wheel 10, as hereinafter described, will revolve worm 2 and turn davit A; but when lever 17 is thrown to the other position said sprocket-wheel 10 will revolve shaft 12 and that the drum H, which operates the fall-and-tackle of the life-boat, the gearing between shaft 12 and said drum H being hereinafter described. Bevel-gear 20 on said shaft 12 meshes with bevel-gear 21 on the shaft of the worm 23, which worm meshes with worm-gear 25 on drum H. The periphery of drum H is preferably grooved in the usual manner and has wound on it two tackles S T, one for each end of the life-boat, so that in raising or lowering the boat both ends necessarily remain at the same level, and the capsizing of the boat or the dropping of the passengers into the sea through the sudden descent of one end is averted. Said tackles S T are guided by suitable sheaves, as 30 31 32 33 34 37, to and partly around blocks 35 36, respectively, on davits A B, and to the ends of the boat, where they are secured in the usual manner. On davit B is the worm-gear 38, with which meshes worm 39, fixed on the shaft 40, on which is also fixed the chain or sprocket wheel 42. Sheaves 30 31 are preferably arranged to slide on their shaft, as seen in Fig. 3. Endless sprocket-chains 50 51, respectively going partly around said sprocket-wheels 10 and 42, are guided by suitable sheaves 54 55 up to and partly around sprocket-wheels 56 57, respectively fixed on the outer ends of shafts 58 59, which are respectively carried by davits A B. Respectively fixed on the inner ends of said shafts 58 59 are sprocket-wheels 62 63, provided, respectively, with endless chains 64 65, which descend into the boat, and chain 64 is long enough to admit of being operated from the boat when at the level of the sea. Chain 65 need, however, only be long enough to reach down into the boat, as it is used only in turning davit B. Said shafts 58 59 are preferably carried in boxes, which are respectively pivoted on the davits at 70 71, so that the strain of chains 64 65 will raise the outer ends of said shafts

and tighten chains 50 51 on sprockets 10 and 42.

The operation is as follows: Suppose it is desired to lower the boats from the position of Fig. 1, all the passengers and crew, except one sailor for each pair of davits, go into the boats. Now the sailors left on the ship throw levers 17 to the position of Fig. 1, (if, indeed, the apparatus is not normally left in that position,) and the sailors in the end of the boat which is suspended from davit B begin pulling on chain 65 in the direction for moving davit B outboard. Shaft 59, with sprocket 57, being thus revolved, sprocket 42 and worm 39 are also revolved, causing davit B to turn outboard. At the same time the sailors in the other end of the boat may pull sprocket-chain 64 to turn davit A a little to the left to ease the strain on the boat-tackles. When davit B is at the quarter, the sailors at said other end of the boat reverse their pull on chain 64, thereby ultimately revolving sprocket 10, pinions 8 5, worm 2, and davit A in the reverse direction. Both davits are now continued to be revolved until davit B comes full outboard, when the sailors at chain 65 cease pulling and davit B stops at the outboard position. The sailors at chain 64 continue pulling until davit A is outboard. At this position the sailor on the ship throws lever 17 so as to engage clutch 15 with clutch-face 8 and then gets into the boat. Now the sailors continue pulling chain 64 as before, and drum H revolves in such direction as to lower the boat evenly to the water. When at the sea-level, the tackles are disconnected in the usual manner.

To raise the boat, lever 17 is first thrown to the same position by sailors on the ship as for lowering away, and then sailors by pulling chain 64 in the reverse direction to that for lowering revolve drum H, so as to wind up the tackles and raise the boat steadily and evenly to the position of Fig. 1. Now a sailor on the ship throws clutch-lever 17 to the position of Fig. 1, disconnecting the drum and connecting worm 2, and the sailors at chain 64, pulling as for raising the boat, revolve davit A back to the inboard position. When davit A is at the quarter, the sailors at chain 65 begin pulling the reverse of what they did before and revolve davit B inboard, returning the boat to the position of Fig. 1.

The pitch of worm 23 is so flat that the loaded boat will hang without revolving the drum H, so that there is no danger of the boat falling suddenly to the water, and the friction between the gear 25 and the worm 23 is increased by making the threads of the worm and teeth of the gear very deep, thereby increasing the frictional surface.

The aforesaid frames D E, which carry the drum, worms, gears, clutches, and other parts for raising and lowering the boat and operating the left-hand davit, are preferably formed as one or so fastened together to constitute one frame, and the base *e* thereof is of such size and shape and so provided with a flange *f* that it will fit against the ship's sides above the channel *v* and be readily bolted to said sides, and the frame F for worm and other parts which operate the right-hand davit is similarly provided with base and flange to fit against the ship's sides above the channel *v*. This construction by which all the mechanism for each davit is arranged on a single frame adapted to the ship has great practical advantages, in that it allows all the parts to be assembled on the frames in the shop, brought to the ship ready, and put up with a minimum of work at the ship.

Now, having described my improvements, I claim as my invention—

1. The combination in a ship's-davit apparatus, of a davit, worm-gearing for turning the davit, a drum for operating the boat-tackles, a wheel adapted to be operated from the life-boat, and clutches adapted to put either said worm-gearing or said drum in operative connection with said wheel, substantially as described.

2. The combination in a ship's-davit apparatus, of a davit, a shaft carrying a sprocket adapted to be operated by a chain from the life-boat, and also a sprocket adapted to drive a chain leading to the ship, a sprocket driven by said last-named chain, worm-gearing for turning the davit, a drum for the boat-tackles, worm-gearing for driving the drum, and clutches for placing the worm-gearing for the davit or the worm-gearing for drum in operative connection with said last-named sprocket, substantially as described.

3. In ship's-davit apparatus, the combination at one davit of means operated from the boat for turning that davit and operating the drum which actuates the boat-tackles, and independent means at the other davit also operated from the boat for turning the said other davit, substantially as and for the purpose described.

4. The combination in ship's-davit apparatus, of a sprocket adapted to be driven by chains from the boat, a sprocket adapted to drive a chain for actuating davit-turning and boat-raising devices, and a shaft on which said sprockets are fixed arranged to oscillate about a point between said sprockets, substantially as and for the purpose described.

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