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SAFETY APPARATUS FOR LAUNCHING LIFE BOATS.

APPLICATION FILED NOV. 9, 1917. RENEWED FEB. 8, 1919.

1,297,705.

Patented Mar. 18, 1919.

6 SHEETS—SHEET 1.

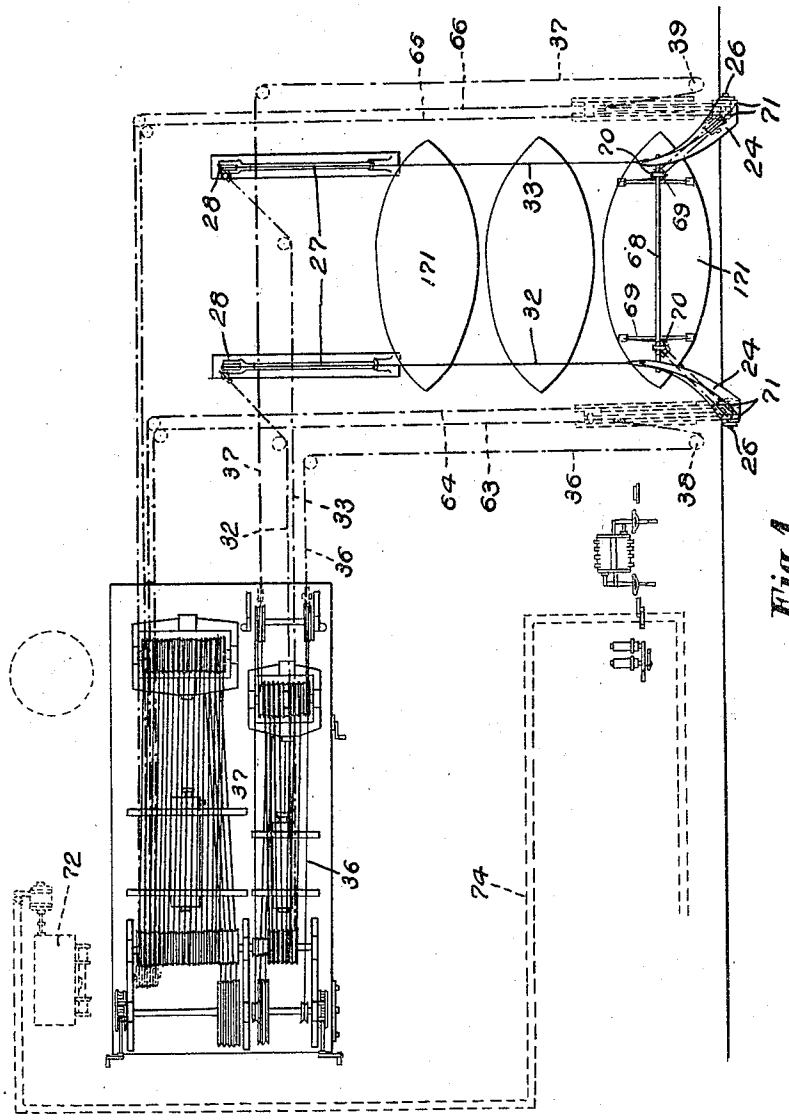


Fig. 1.

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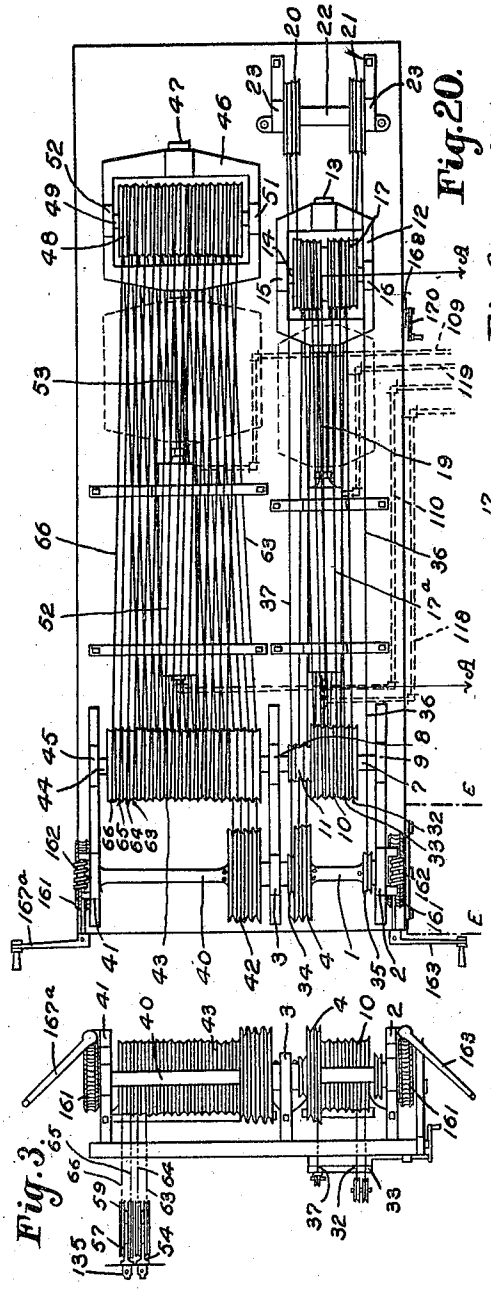


Fig. 3.

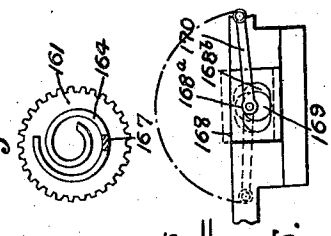


Fig. 2.

Fig. 5.

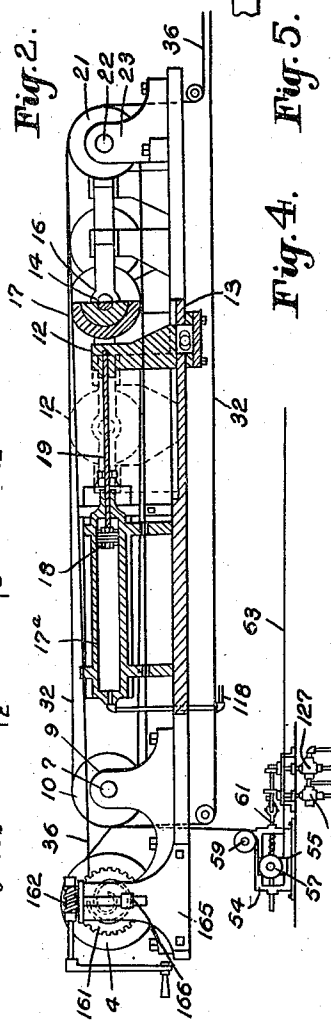


Fig. 4.

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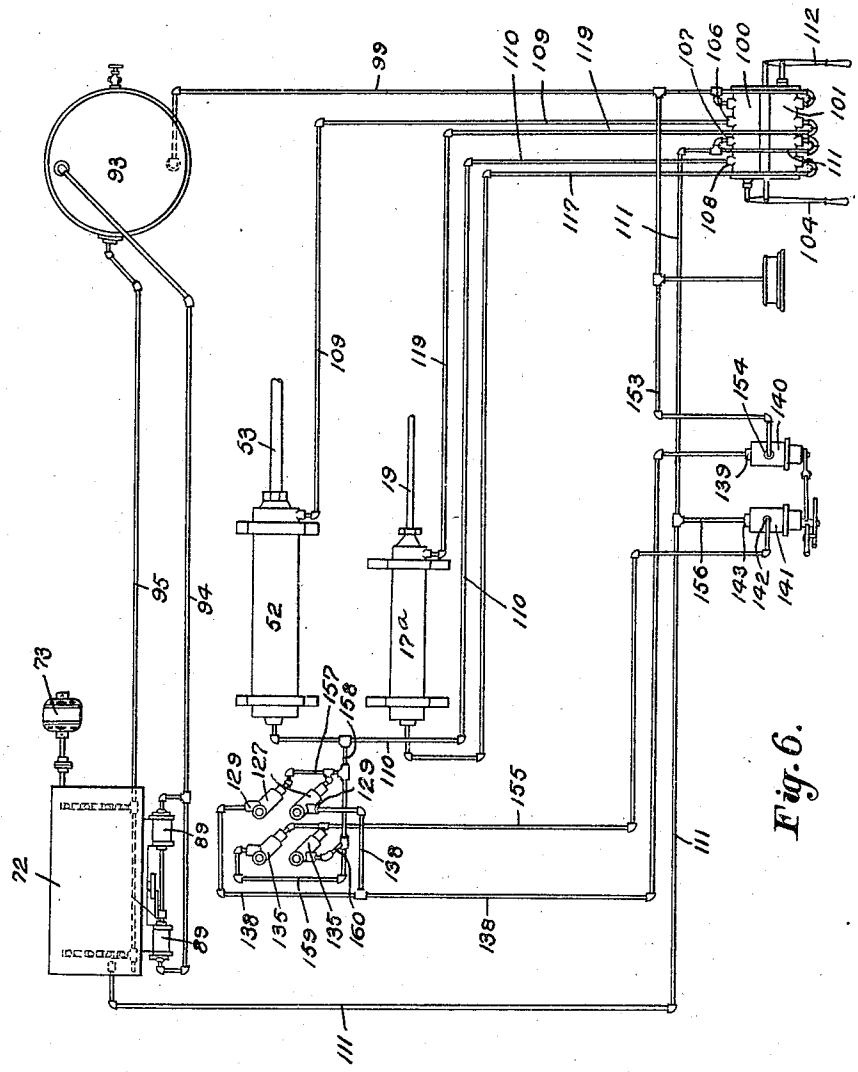


Fig. 6.

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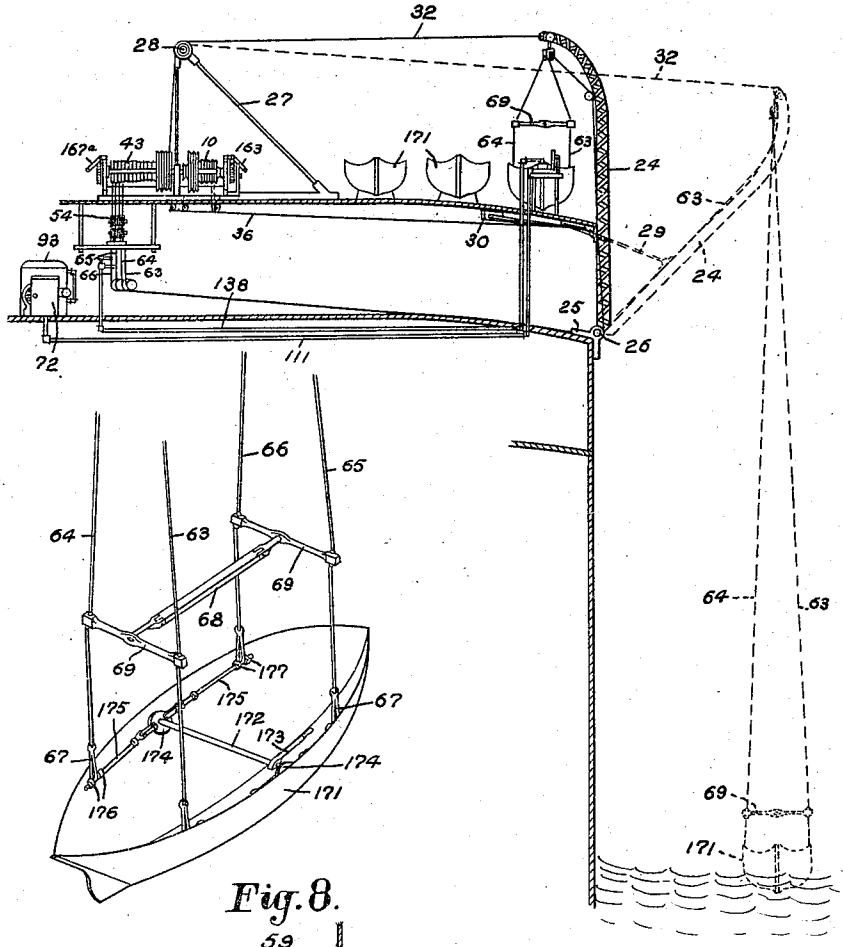


Fig. 8.

Fig. 7.

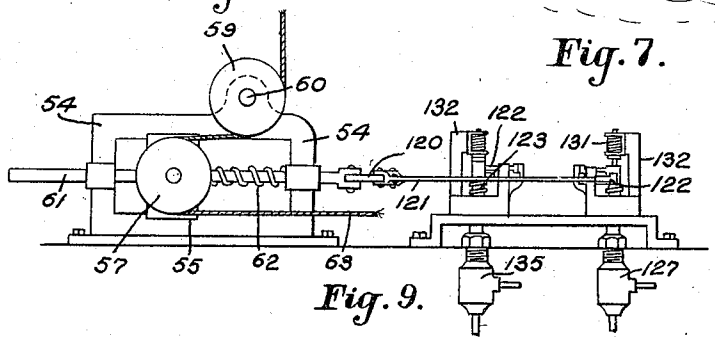


Fig. 9.

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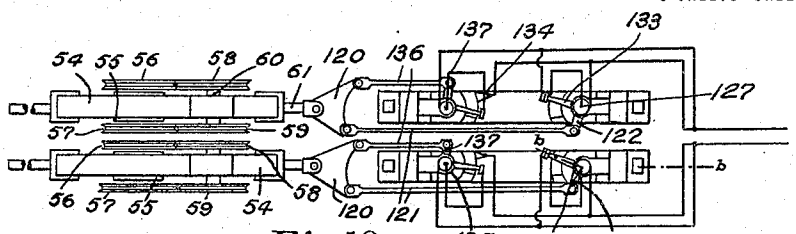


Fig.10.

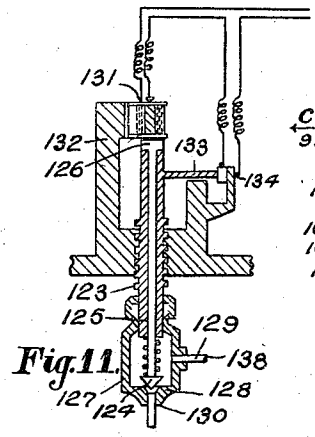


Fig.11.

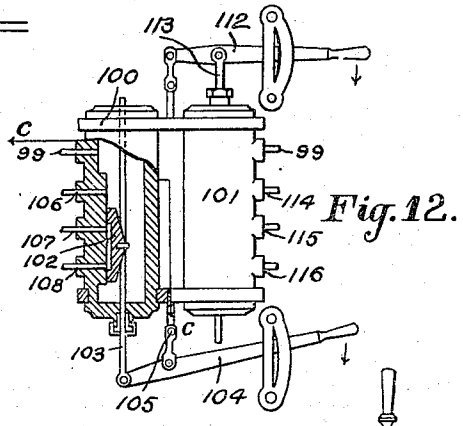


Fig.12.

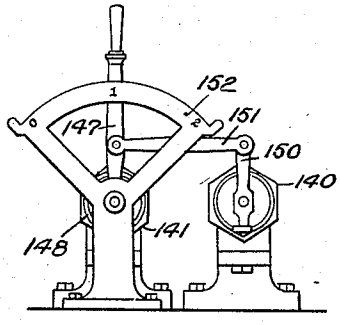


Fig.14.

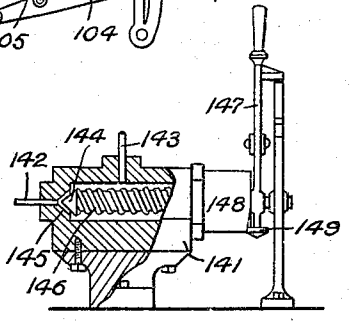
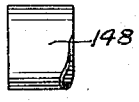


Fig.15.

Fig.16.



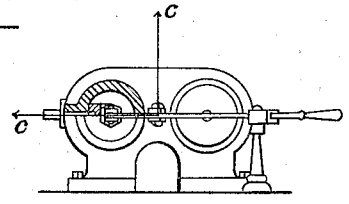


Fig.13.

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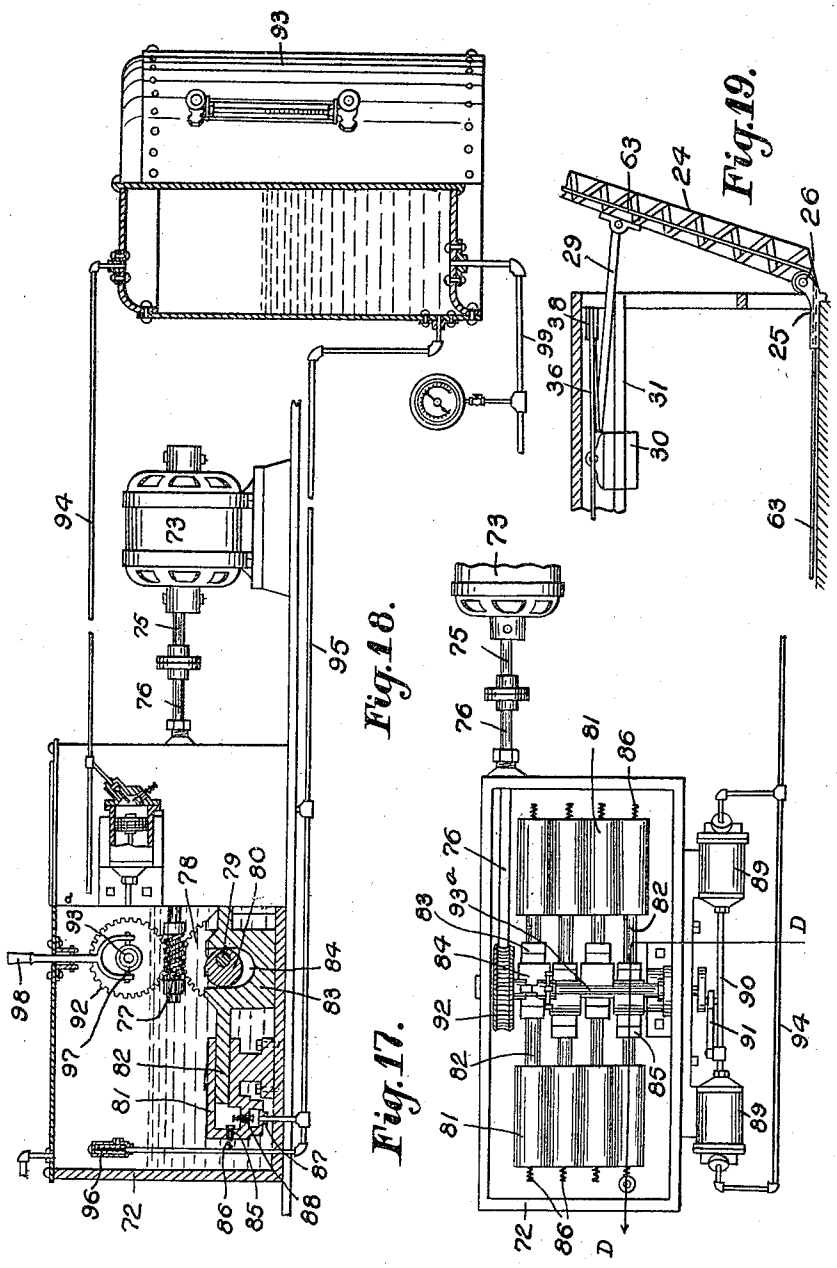
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6 SHEETS—SHEET 6.



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UNITED STATES PATENT OFFICE.

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SAFETY APPARATUS FOR LAUNCHING LIFE-BOATS.

1,297,705. Specification of Letters Patent. Patented Mar. 18, 1919.

Application filed November 9, 1917, Serial No. 201,173. Renewed February 8, 1919. Serial No. 275,730.

To all whom it may concern:

Be it known that I, LUDGER L'HEUREUX, a British subject, residing at 420 Lagauchetiere street, in the city of Montreal, in the Province of Quebec, in the Dominion of Canada, have invented certain new and useful Improvements in a Safety Apparatus for Launching Life-Boats; and I do hereby declare that the following is a full, clear, and exact description of the same.

The present invention relates to improvements in a safety apparatus for launching life boats and has for one of its objects to secure greater safety to the passengers in calm or stormy weather, by the provision of an apparatus which can be operated from the same davit and automatically preventing the boat from upsetting when it touches the water.

A further object of the invention is to provide a device of this character which may be operated by hand, hydraulic or any other power.

Another object is to device means to automatically reverse the action of the pistons, thereby pulling in the cables simultaneously when the boat is raised by a wave, and thus prevent the boat from upsetting.

One of the other objects is to provide two cables on each side of the boat in order to secure more stability in launching, and thus eliminate the possibility of upsetting.

With the above and other objects in view, the invention consists of a davit raising and lowering mechanism, and an independent emergency boat raising and lowering mechanism. The last mentioned mechanism is provided with means to automatically reverse the action of the piston and thus pull in the cables, when the boat is raised on the crest of a wave, as well as releasing the cables to lower the boat with the wave. Thus the boat in a heavy sea will follow the waves without being released from its cables.

Supplementary or emergency hand raising and lowering mechanisms are provided for the davit and boat as well as means for locking the hydraulic mechanisms when either emergency mechanism is operated.

The invention will now be fully described with the aid of the accompanying drawings in which:

Figure 1 is a general plan view of a portion of the bridge of a steamer, illustrating the raising and lowering mechanisms for the boat and davit, as well as illustrating the davit, the operating levers and the cables which are located below the bridge.

Fig. 2 is a plan view of the davit and boat raising and lowering mechanisms.

Fig. 3 is an end elevation of Fig. 2.

Fig. 4 is a side elevation of Fig. 2, with parts in section on line A—A.

Fig. 5 is an enlarged end view of the locking block and a portion of the carriage.

Fig. 6 is a diagrammatic plan view of the different mechanisms and the general arrangement of the pipes.

Fig. 7 is a cross sectional view through one corner of the ship, illustrating the launching of a boat.

Fig. 8 is a perspective view of one of the boats and the cables secured thereto.

Fig. 9 is an enlarged side elevation of the automatic reverse winding apparatus.

Fig. 10 is a plan view of Fig. 9.

Fig. 11 is an enlarged vertical section on line B—B of Fig. 10.

Fig. 12 is an enlarged plan view of the davit and boat operating valves and levers, a portion being shown in section.

Fig. 13 is an end view, a portion being shown in section taken on line C—C of Fig. 12.

Fig. 14 is an enlarged front elevation of the reverse winding valves and operating handle.

Fig. 15 is a side elevation of Fig. 14, a portion being shown in section.

Fig. 16 is an enlarged side elevation of the cam in Fig. 15.

Fig. 17 is a plan view of the main oil tank, multiple pump and air compressor, the top having been removed.

Fig. 18 is a side elevation of the compressed oil tank, motor and main oil tank, a portion of the main oil tank and pump being shown in section taken on line D—D in Fig. 17, and a portion of the compressed oil tank being shown in section.

Fig. 19 is an enlarged section through the side of the ship illustrating the pusher rod attachment and a portion of the davit.

Fig. 20 is a side elevation on line E—E in Fig. 2.

Like numerals of reference indicate corresponding parts in each figure.

Referring to the drawings, 1 is a shaft

suitably journaled in the stationary bearings 2 and 3 which are secured to the deck of a vessel or otherwise, and 4 are the davit pulleys, mounted on said shaft.

The shaft 7 is journaled in the stationary bearings 8 and 9, and 10 and 11 are pulleys mounted thereon.

12 is a movable carriage preferably disposed at a suitable distance from and in alinement with the pulleys 10 and 11, and 13 is a track on which slides said carriage. On said carriage, the shaft 14 is suitably journaled in the bearings 15 and 16, and 17 are pulleys mounted thereon.

Between the pulleys 10 and 11 and the movable carriage 12, is secured the davit cylinder 17ª, and 18 is the piston reciprocating therein from which extends the piston rod 19 through one end of said cylinder and is connected at its outer end to the carriage 12. 20 and 21 are pulleys mounted on the shaft 22 which is journaled in the stationary bearings 23, said pulleys being located behind said carriage 12 and in alinement on each side with two of the pulleys 17.

24 is the up and down swinging davit preferably formed of a pair of upwardly projecting bars pivotally connected at their lower ends to the ship's side through the medium of the brackets 25 and pivots 26. The upper ends of the bars are bent inwardly to overhang the deck of the vessel and are so distanced from one another that a boat can swing fully between the two bars.

27 are two standards secured to the deck of the vessel, in alinement with the davit bars, and each provided with a loose pulley 28.

A pusher rod 29 is pivotally connected to each bar of the davit 24 at one end and pivotally secured at its other end to a movable block 30 which is adapted to slide on the track 31.

32 and 33 are cables anchored to the upper ends of the davit bars 24 and carried first over the pulleys 28, then below the deck over suitable guiding pulleys and then over the pulleys 10 mounted on the shaft 7. Said cables are then wound around the pulleys 17 on the carriage 12, then wound around the pulleys 10, and again around the pulleys 17, and carried back under the pulleys 11 and over the pulleys 4 mounted on shaft 1 to which their free ends are attached. The cables are wound around the pulleys in the well known manner to increase the relative rate of movement of the movable ends of said cables in relation to the movement of the piston.

Secured to the shaft 1 and carried over pulleys 34 and 35, are the pusher cables 37 and 36 which are wound around the pulleys 20 and 21, then carried over the pulleys 17 and back over the aforesaid pulleys 20 and 21, then below the deck over suitable pulleys, around pulleys 38 and 39 respectively, and secured to pusher rods 29.

It will be readily understood that to lower the davit the carriage 12 is brought in the position shown in dotted lines in Fig. 2, thus reducing the length of the cables 32 and 33 between the pulleys 10 and 17, and simultaneously the pusher cables 36 and 37 will be pulled with carriage 12, causing an outward pull on the pusher rods 29 which will throw the davit away from the ship.

Here shown, adjacent to the shaft 1, is another shaft 40 suitably journaled in the stationary bearings 3 and 41, and 42 are the boat pulleys which are mounted thereon. 43 are pulleys mounted on the shaft 44 suitably journaled in the bearings 8 and 45.

A movable carriage 46 is disposed at a suitable distance from pulleys 43 and in alinement therewith, the said carriage being movable longitudinally on the track 47. The aforesaid carriage carries the pulleys 48 mounted on the shaft 49 which is journaled in the bearings 50 and 51.

Suitably secured between the pulleys 43 and 48, is the boat cylinder 52 which is provided with a piston from which extends the piston rod 53 which is connected at its outer end to the carriage 46.

Preferably below the pulleys 43 is a pair of pulley carrying frames 54, and 55 is a movable carriage or block sliding within each frame on opposite sides of which are rotatably mounted the pulleys 56 and 57, and 58 and 59 are pulleys mounted on stub shafts 60. 61 is a guide rod slidable within each frame and secured to the respective movable block 55, and 62 is a spiral spring around said rod between said block 55 and frame 54. 63, 64, 65 and 66 are the boat cables, each of their free ends being preferably provided with a loop 67 which is secured to the boat in a manner which will hereinafter be described.

At a suitable distance from the boat is provided a frame comprising a central bar 68 to which are flexibly connected two cross bars 69; the outer ends of these cross bars being secured to the cables 63, 64, 65 and 66, thus keeping said cables apart from one another and preventing them from intermingling. The cables 63, 64, 65 and 66 are carried over the swiveled pulleys 70, led down through the davit bars 24 and over the pulleys 71, then led below the deck over a number of guiding pulleys, then over the pulleys 56, 57, 58 and 59, and then up through the deck over the pulleys 43; they are next carried over and wound around the pulleys 48 and 43, then passed under the pulleys 43 and then carried over the pulleys 42, their free ends being secured to the shaft 40.

It is obvious that the operation of the

boat cables is identical with that of the davits, and the only difference is in the number of pulleys and length of the cables. The boat cables must have more length than the cables for the davit, and consequently the number of pulleys must be increased.

In Figs. 6, 17, and 18 is illustrated an oil receiving tank 72, and 73 is an electric motor which is connected to the wires shown in dotted lines in Fig. 1, which may be connected to a dynamo, storage batteries or otherwise.

To the motor spindle 75 is suitably secured a connecting rod 76 which projects into the tank, the inner end of which rod is provided with a worm screw 77 which meshes with the worm gear 78. The worm gear 78 is mounted on the shaft 79, and 80 are eccentric wheels mounted on said shaft 79. Series of cylinders 81 are provided in the bottom of said tank in which reciprocate the pistons 82 which are secured at their inner ends to the blocks 83, said blocks being provided with openings 84 in which rotate the eccentric wheels 80. In the outer end of each cylinder is provided an oil inlet 85, and 86 is a spring actuated valve. An outlet 87 is provided in the end of each cylinder, closed by a spring actuated valve 88. Preferably on one side of said tank is secured an air compressor 89, here illustrated as having two cylinders, and 90 is the piston rod to which is connected the crank 91 which is actuated simultaneously with the shaft 93^a. The air compressor cylinders 89 are connected to the top of the pressure tank 93 by the pipe 94. The outlets 87 of the cylinders 81 are connected to the tank 93 by the pipe 95. The pistons disclosed in Figs. 17 and 18 are preferably in pairs and a safety or relief valve 96 is provided in said tank 72, connected on pipe 95. A clutch 97 is secured on the shaft 93 and is actuated by the lever 98.

The operation of the oil pump and air compressor is obvious being similar to other such devices, and it may be stated that any other form of pump or compressor could be used.

From the tank 93, the oil which is under pressure, is led into the pipe 99 to the boat operating cylinder 100 and the davit operating cylinder 101.

The cylinders 100 and 101, illustrated in Figs. 12 and 13 are both similar in construction, but one operates the davit cables while the other one operates the boat cables. 102 is a slide valve mounted on the movable rod 103 which slides within said boat cylinder 100 and projects out therefrom at one end, and 104 is a hand lever fulcrumed on the lug 105. Three port holes 106, 107 and 108 are formed in the said cylinder and connected to the ports 106 and 108 are the pressure pipes 109 and 110, while the return pipe 111 is connected to the port 107 at one end and to the oil tank 72 at the other end. The pipe 109 is connected at its other end to one end of the cylinder 52 while pipe 110 is connected at the opposite end of said cylinder. It will clearly be seen that if the slide valve 102 is opposite the ports 108 and 107, the compressed oil coming from the pipe 99 will enter the cylinder and flow from it through the port 106 and the pipe 109 into the cylinder 52, pushing the piston inwardly, which will carry the carriage 46 into the dotted line position disclosed in Fig. 2 of the drawings. By operating the lever 104 to the left hand side the slide valve will be carried opposite the ports 107 and 106, and the compressed oil will flow from the cylinder through the port 108 into the pipe 110, thus pushing back the piston and carriage into their former positions. The result is that when the piston is pushed forward the boat is lowered and on the other hand when the piston is pushed back the cables 66, 65, 64 and 63 are drawn up in order to be secured to the next boat to be put to sea.

The davit operating cylinder 101 is operated in a similar manner and the hand lever 112 is pivotally connected to the slide valve rod 113. The port holes 114 and 115 and 116 are provided in said cylinder and the pipes 117, 111, and 119, and supply pipe 99 are connected thereto. The hand lever 112 as disclosed in Fig. 12, is at a neutral point or stop, and if moved to the left hand side will place the sliding valve over the ports 115 and 116, thus opening the port 114 and allowing the compressed oil to flow through the pipe 119 into one end of the cylinder 17^a, pushing the piston 18 to the other end of the cylinder and carrying with it the carriage 12. At the same time as it has already been explained, the davit pusher rods are pushed outward by the cables 36 and 37 which are shortened by the movement of the carriage 12, while the cables 32 and 33 are allowed to follow the davit into its extended position. On moving the davit hand lever 112 in the opposite direction, the cables 32 and 33 are drawn back pulling the davit into its former position.

When the boat has been lowered to the sea, supposing that the boat is dashed up by a wave, the weight will of course be relieved from the cables 63, 64, 65 and 66 and the reduced pressure will release the spiral springs 62 which will push the block 55 and pulleys 56 and 57 into the position shown in Fig. 9, simultaneously pulling the rods 61. 120 is a crank lever pivotally secured to each rod 61 and 121 is a connecting rod pivotally secured at one end to each crank lever 120 and at its other end to the outward projecting lug 122, which is secured to the screw valve stem 123. 124 is a valve and 125 is a

stem or rod secured to said valve and projecting through said screw valve stem 123, terminating in the head 126, and 127 is a valve casing provided with the valve seat 128, inlet 129 and outlet 130. A magnet 131 is secured to a bracket 132 above said head 126, and suitably connected to any electrical source of power. A second outwardly projecting lug 133 which is also secured to said screw valve stem 123 is also included in the electric circuit and 134 is a point of contact for said lug 133 which is also included in the circuit.

There are two sets of valves connected in pairs as disclosed in Figs. 9 and 10, and each pair is operated alternatively. When one pair is opened, the valves 135 are closed automatically by the connecting rods 136 which are secured to lugs 137. The construction of these valves 135 is similar to the valves 127 and it is not thought necessary to describe their specific construction.

Connected at one end to the inlet 129 in the valves 127 are the pipes 138 which are connected together and lead to the outlet opening 139 in the valve 140. This valve is identical in construction with the valve 141 both of which are illustrated in Fig. 14, and a section of a portion of said valve 141 being shown in Fig. 15. The valve 141 is provided with an inlet 142 and outlet 143. 144 is a horizontally movable valve fitting in the seat 145, and 146 is a spiral spring around the stem of said valve which projects outward from the valve casing and on which is secured the hand operating lever 147. Between the lever 147 and the valve casing is an eccentric collar 148 with which contacts the roller 149 on the lower projecting end of the lever 147. It will be readily understood that the valve is closed when the roller 149 engages the deepest portion of the eccentric and it is gradually opened by throwing the lever from left to right. In Fig. 14 it is shown half opened. The valve 140 is operated simultaneously by means of a similar lever 150 which is connected to the lever 147, by the rod 151, and 152 is an indicating quadrant.

The inlet 154 of the valve 140 is connected with the supply pipe 99 by the pipe 153, while the outlet 139 is connected to the pipe 138 as above described. In valve 141, the inlet 142 is connected to the outlet 130 of the valves 135 by means of the pipe 155 while the outlet 143 is connected to the return pipe 111 by the pipe 156. The outlets 130 of the valves 127 are connected to the pipe 110 by means of the pipes 157 and 158 and the inlets 129 of the valves 135 are connected to said pipe 158 by the pipes 159 and 160. Thus when the lever 104 for controlling the boat cylinder 100 has been operated to let down the boat, the hand lever 147 is thrown open from left to right, thereby opening the valve 144. While the boat is descending, that is while there is pressure on the boat cables, the valves 127 are automatically closed and the valves 135 are opened in order that the fluid in the cylinder 52, which is pressed out by the piston may return by means of the pipes 110, 158, 159 and 160 through the opened valves 135, the pipe 155, the operating valve 141, the pipe 156 and the return pipe 111.

As soon as a wave lifts the boat and releases the pressure on the cables 63, 64, 65 and 66 the spring 62 carries the block 55 into the position illustrated in Fig. 9, thereby closing the valves 135 and opening the valves 127. These valves are operated by the screws 123 which on being revolved lift the valves 124 off their seats. As the movement is rather slow, the magnets 131 are provided and the lugs 133 in contacting with the points of contact, 134, establish a circuit which will operate the magnets, which will draw the stems 125 upward and open the valves. Should the magnet fail however, the screw will operate the valve, but more slowly. By automatically opening the valves 127 and closing the aforesaid valves 135, the compressed oil will flow through the pressure or main pipe 99, the pipe 153, through the valve 140, the pipe 138, through the valves 129, and the pipes 157, 158, 110 into the cylinder 52. It will be readily seen that the pressure entering the cylinder from that end will push the piston back, winding what cable is slack or "without pressure". By so doing, the swamping or upsetting of a boat will be obviated. This mechanism is of the utmost importance and it is operated automatically.

In case the electrical power should miss, as would undoubtedly happen, if a ship was sinking, the davits and cable mechanisms could put to sea a number of boats on the pressure stored in the tank 93 or in another tank if found more suitable.

Besides this a hand operating davit and boat lifting mechanism has been provided. This emergency mechanism consists of a worm gear 161 which is mounted on shaft 1, and 162 is a worm operated by the hand lever 163. On the face of the gear 161 is provided a spiral groove or channel 164, and 165 is a plate fitting over said gear and provided with an elongated slot 166. 167 is a lug or pin sliding in said slot 166 and engaging said spiral groove 164. The object of this pin 167 is to stop the gear 161 after a predetermined number of revolutions. On the shaft 40 is mounted a similar attachment which operates the boat cables and 167^a is the hand lever.

Should any of the pressure pipes leading to the davit cylinder 17^a, burst or on account of a defective connection, it should not receive its necessary pressure, the carriage 12

must be carried in the position indicated in dotted lines in Figs. 2 and 4, and locked by means of a movable block 168 which is provided with a central elongated slot or opening 168[b] and 169 is an eccentric mounted on a shaft 168[a] which is operated by the handle 170. This block is preferably secured below the davit carriage and so arranged as to engage the rear of the carriage. As illustrated, in dotted lines in Fig. 5, it will be seen that when the handle 170 is thrown from right to left, the block 168 will be lifted by the eccentric as disclosed in dotted lines and lock the davit carriage.

The boat 171 is provided with quick detaching means and is released as soon as it is properly placed in the water, and in Fig. 8 it will be seen that a shaft 172 extends across and is journaled at its ends on the sides of the boat, and 173 is a rigid operating hand lever. 174 are draw plates rigidly mounted adjacent the ends of said shaft 172, and 175 are pairs of connecting rods extending outwardly from opposite sides of the draw plates 174 toward the bow and stern of the boat and pivotally connected to the draw plates at their one end and at the other ends sliding respectively in blocks 176 and 177 which are secured to the inner side of the boat. The connecting rods 175 are drawn simultaneously from the blocks 176 and 177, by a single movement of the lever 173, and the loops 67 on the ends of the cables 63, 64, 65 and 66 are then placed between said blocks and the rods 175 pushed forward by the lever 173, thereby locking the boat to the cables.

When the boat is at sea, and before it is released from the cables, undoubtedly a wave will rock the boat from one side to the other, and would upset it, but to avoid this, four cables, two on each side of the boat have been provided. If the boat is lifted on one side by a wave the two cables on that side will be released from their pressure, which will immediately open or close their controlling and reverse valves and simultaneously the other two opposite cables will be pulled, thereby straightening the boat.

It is obvious that the precise construction of the parts herein described and shown in the drawings may be modified to a certain extent without departing from the invention as set forth in the following claims for novelty.

What I claim is:

1. An apparatus for launching ships' boats comprising an up and down moving davit, cables secured to said davit, pusher rods pivotally secured to said davit, cables secured to said pusher rods, a davit cable winding and unwinding mechanism, means whereby the pusher rod cables will be wound simultaneously with the unwinding of said davit cables, boat cables running over the ends of said davit, and a boat cable winding and unwinding mechanism mounted on the ship substantially as described.

2. An apparatus for launching ships' boats comprising a rising and falling davit, cables secured to said davit, means to push said davit into its down position, cables secured to said pushing means, a davit cable winding and unwinding mechanism, means on said mechanism to actuate the cables secured to said pushing means, boat cables running over said davit, a boat cable winding and unwinding mechanism mounted on the ship, and automatic means whereby said mechanism is caused to reverse and wind-in the boat cables, when said cables are relieved from pressure, substantially as described.

3. An apparatus for launching ships' boats comprising a rising and falling davit, cables secured to said davit, means to push said davit into its down position, cables secured to said pushing means, a davit cable winding and unwinding mechanism, means on said mechanism to actuate the cables secured to said pushing means, boat cables running over said davit, a boat cable winding and unwinding mechanism mounted on the ship, and spring actuated means adapted to reverse and wind-in the boat cables, when they are relieved from the pressure, substantially as described.

4. An apparatus for launching ships' boats comprising a davit, cables running over the ends of said davit, a cable winding and unwinding mechanism, fluid pressure means for actuating said cable mechanism, controlling means for said fluid pressure means, and automatic means to reverse said controlling means so as to cause said cable mechanism to wind-in the said cables, substantially as described.

5. An apparatus for launching ships' boats comprising a davit, cables running over the ends of said davit, a cable winding and unwinding mechanism, a cylinder having a piston reciprocating therein, said piston being secured to and actuating said cable mechanism, fluid supply pipes leading to said cylinder and connected to a fluid supply tank, controlling means for said fluid supply pipes, and automatic means to reverse said controlling means so as to cause the cable mechanism to wind in the said cables, substantially as described.

6. An apparatus for launching ships' boats comprising a rising and falling davit, cables secured to said davit, a cable winding and unwinding mechanism mounted on the ship, a cylinder having a reciprocating piston therein adapted to actuate said winding and unwinding mechanism, a pushing rod secured to said davit, cables secured to said pushing rod and actuated by said winding and unwinding mechanism, fluid supply pipes leading from a fluid pressure tank to

said cylinder, means to control said supply pipes, and a device operable to automatically reverse the action of said controlling means, so as to cause said winding and unwinding mechanism to wind in one set of cables and unwind the other set.

7. An apparatus for launching ships' boats comprising a rising and falling davit, cables secured to said davit, a cable winding and unwinding mechanism mounted on the ship, a cylinder having a reciprocating piston therein secured to said winding and unwinding mechanism, a slidable pushing rod secured to said davit, cables secured to said pushing rod and actuated by said winding and unwinding mechanism, a fluid pressure tank, fluid supply pipes connected to said pressure tank and leading to each end of said cylinder, controlling valves connected to said supply pipes, and means whereby the action of said valves may be automatically reversed so as to cause the winding and unwinding mechanism to wind in the cables secured to the davit and simultaneously unwind the cables secured to said pushing rod.

8. An apparatus for launching ships' boats comprising cables, cable winding and unwinding mechanism, a cylinder secured to the ship having a piston reciprocating therein, said piston being connected to said cable mechanism, a fluid pressure tank, pipes leading from said tank to each end of said cylinder, pressure controlling means for said pipes, spring held pulleys secured to the ship, valves, pipes connecting said pressure tank and said valves, and pipes connecting said valves to said cylinder, said spring held pulleys adapted to control said valves, substantially as described.

9. An apparatus for launching ships' boats, comprising a davit, boat cables running over the ends of said davit, a boat cable winding and unwinding mechanism, a cylinder secured to said ship having a piston reciprocating therein, said piston being connected to said mechanism, a fluid pressure tank, pipes leading from said tank to each end of said cylinder, means to control said pipes, spring held pulleys secured to the ship, winding and unwinding valves adjacent said pulleys, pipes connecting said pressure tank and valves, pipes connecting said valves to said cylinder, and rods connecting said valves and said pulleys whereby when the pressure is released on said cables the spring held pulleys will be pushed out and simultaneously close one of said valves and open the other, substantially as described.

10. An apparatus for launching ships' boats comprising a davit, boat cables running over the ends of said davit, a boat cable winding and unwinding mechanism, a cylinder secured to the ship having a piston reciprocating therein, said piston being connected to said mechanism, a fluid pressure tank, pipes leading from said tank to each end of said cylinder, means to control said fluid pipes, spring held pulleys engaging said cables secured to said ship, winding and unwinding valves for each of said cables arranged in pairs, pipes connecting said pressure tank to one pair of said valves, pipes connecting said valves to said cylinder, rods connecting said spring held pulleys and said valves whereby when the pressure is released on said cables the spring held pulleys will be pushed out pulling said rods and automatically opening one pair of valves and closing the other pair of valves, and means to control the pressure fluid in said valves, substantially as described.

11. An apparatus for launching ships' boats comprising a davit, two pairs of boat cables running over the ends of said davit, a boat cable winding and unwinding mechanism, a cylinder secured to the ship having a piston reciprocating therein, said piston being connected to said mechanism, a fluid pressure tank, pipes leading from said tank to each end of said cylinder, means to control said fluid pipes, a plurality of slidable spring held pulleys engaging said cables secured to said ship, a pair of winding valves connected to said cylinder, a pair of unwinding valves connected to said cylinder, rods connecting said winding and unwinding valves to said spring held pulleys whereby, on releasing the pressure on the cables, the said pulleys will be pressed outward actuating the said rods and simultaneously automatically closing said unwinding valves and opening said winding valves, pipes leading from said tank to said valves, a fluid receiving tank, connected to said valves and cylinder, means to compress and pump the fluid from said receiving tank into said fluid pressure tank, and manual controlling means for said pipe leading to said valves, substantially as described.

12. An apparatus for launching ships' boats comprising a rising and falling davit, cables secured to said davit, a plurality of pulleys mounted on a shaft journaled in bearings secured on the ship, a movable carriage, pulleys mounted on said carriage, a cylinder secured on said ship having a piston reciprocating therein, said piston being connected to said movable carriage, means to lock said movable carriage, a pushing rod secured to said davit, loose pulleys mounted on said ship, cables secured to said pushing rod engaging said loose pulleys and the pulleys on said movable carriage, a fluid pressure tank, fluid pressure pipes leading from said tank to said cylinder, and means to control said pressure pipes.

13. An apparatus for launching ships' boats comprising a rising and falling davit, cables secured to said davit, a plurality of

loose pulleys mounted on a shaft journaled in bearings secured on the ship, a movable carriage, loose pulleys mounted on said carriage, a cylinder secured on said ship having a piston reciprocating therein, said piston being rigidly connected to said carriage, a pushing rod secured to said davit, loose pulleys mounted on said ship adjacent said movable carriage, cables secured to said pushing rod engaging said loose pulleys and the pulleys on said movable carriage, a fluid pressure tank, pipes leading from said tank to said cylinder, controlling means for said pipes, and a manual lifting and lowering mechanism connected to said cables for operating said davit.

14. An apparatus for launching ships' boats comprising a davit, boat cables running over the ends of said davit, a plurality of pulleys mounted on a shaft suitably journaled on the ship, a movable carriage, a plurality of pulleys mounted on said carriage, a cylinder secured on said ship having a piston reciprocating therein, said piston being connected to said carriage, a fluid pressure tank, pipes leading from said tank to said cylinder, controlling means for said pipes, means to automatically reverse said cables when the pressure on the cables is removed, a manual lifting and lowering mechanism connected to said boat cables, boat suspension means on said cables, and means to hold said cables apart, substantially as described.

15. An apparatus for launching ships' boats comprising a rising and falling davit, cables secured to said davit, a davit winding and unwinding mechanism, a davit cylinder secured to the ship having a reciprocating piston therein, said piston being connected to said mechanism, a fluid receiving tank, a fluid pressure tank, means in said receiving tank to pump the fluid into said pressure tank, an air compressor connected to said pressure tank, means to actuate said pump and compressor, a controlling davit valve casing having a plurality of ports, a pipe leading from said pressure tank and connected to one of said ports, a pipe connected to one end of said davit cylinder leading from one of said ports, a pipe leading from another port connected to the other end of said cylinder, a pipe leading from one of the other ports and connected to said receiving tank, a sliding valve within said valve casing, a handle for operating said sliding valve, and boat cables running over said davit, substantially as described.

16. An apparatus for launching ships' boats comprising a davit, cables running over the ends of said davit, a boat winding and unwinding mechanism, a boat cylinder secured to the ship having reciprocating therein a piston connected to said mechanism, a fluid receiving tank, a fluid pressure tank, means to pump the fluid from said receiving tank, to said pressure tank, an air compressor connected to said pressure tank, means to actuate said pump and compressor, a controlling boat valve casing having a plurality of ports, a pipe leading from said pressure tank and connected to one of said ports, a pipe leading from one of said ports connected to one end of said cylinder, a pipe leading from the other end of said cylinder connected to one of the other ports, a pipe leading from one of said ports connected to said receiving tank, a sliding valve within said valve casing, means to operate said sliding valve, a plurality of automatic valves adjacent said cylinder, means to operate said valves, each of said automatic valves being provided with an outlet and an inlet opening, manually operated controlling valve casings provided with inlet and outlet openings, a pipe connecting one of said inlets with the pipe leading from the pressure tank, a pipe leading from one of said outlets and connected to the inlets of two of the automatic valves, a pipe connecting the outlets of two of said automatic valves with said cylinder, a pipe connecting the inlet of two of the automatic valves, a pipe leading from two of the outlets of said automatic valves and connected to the inlet of said manually operated controlling valve, and a pipe leading from the outlet of said controlling valve casing and connected to a pipe leading to the receiving tank, substantially as described.

Signed at Montreal, Quebec, Canada, this 22nd day of October, 1917.

LUDGER L'HEUREUX.

Witnesses:
A. P. DEAL,
C. PATENAUCLE.

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