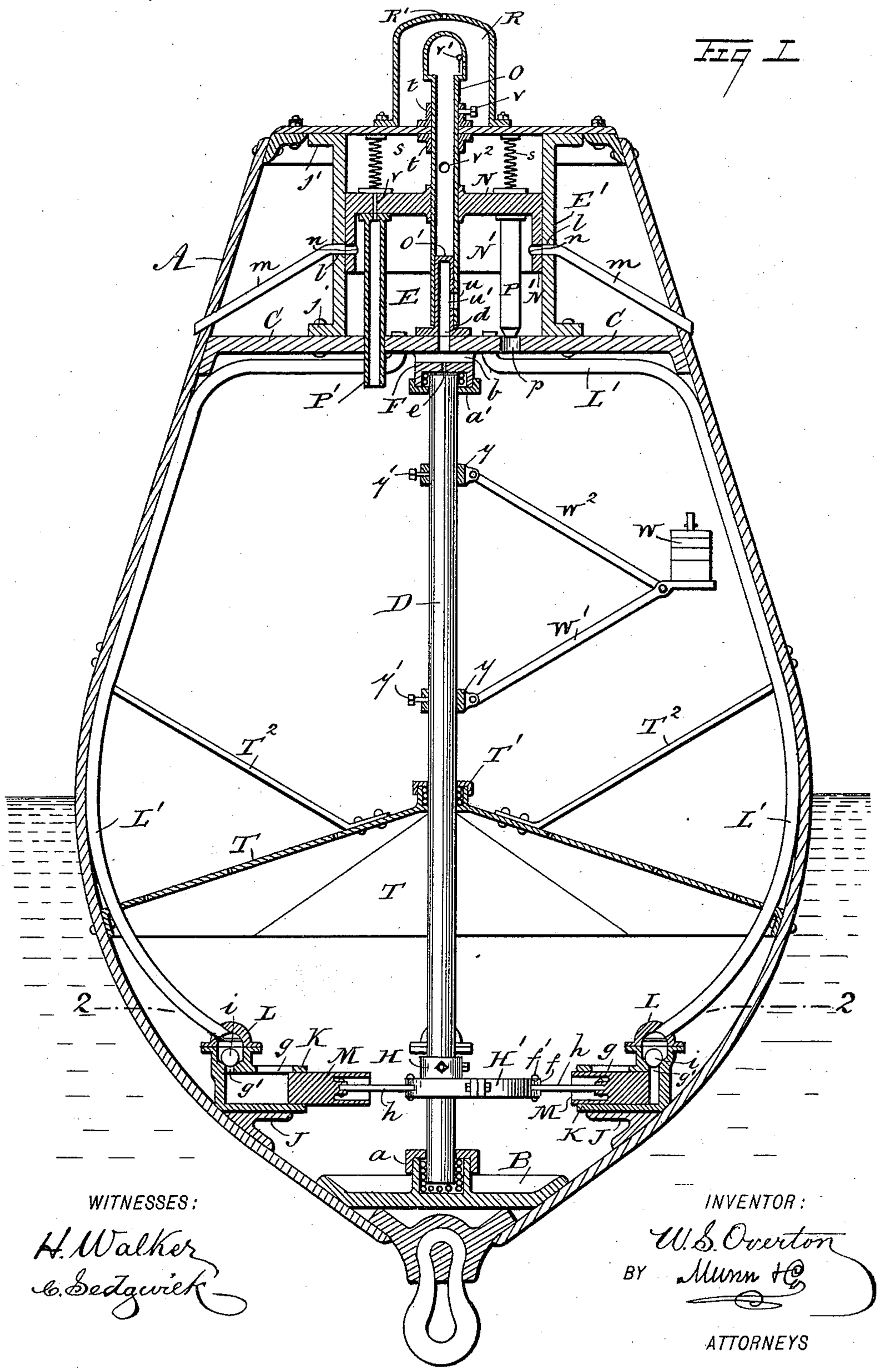
(No Model.) 2 Sheets—Sheet 1.

W. S. OVERTON.

PUMPING ATTACHMENT FOR BUOYS OR VESSELS.

No. 434,354. Patented Aug. 12, 1890.

Fig 1.



WITNESSES:

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C. Sedgwick

INVENTOR:

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ATTORNEYS

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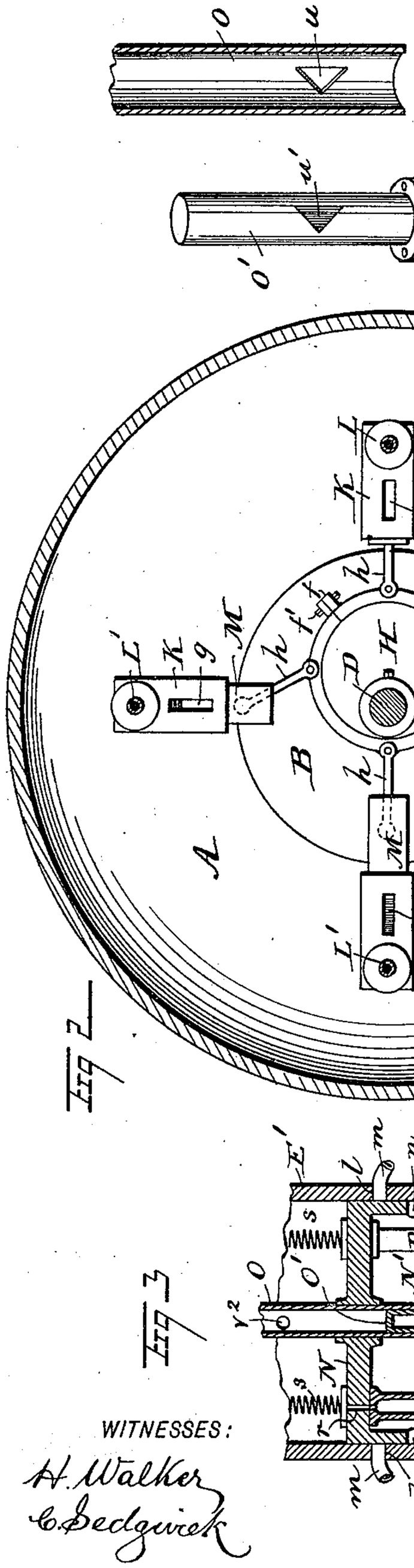

Fig 2.

Fig 3.

Fig 4.

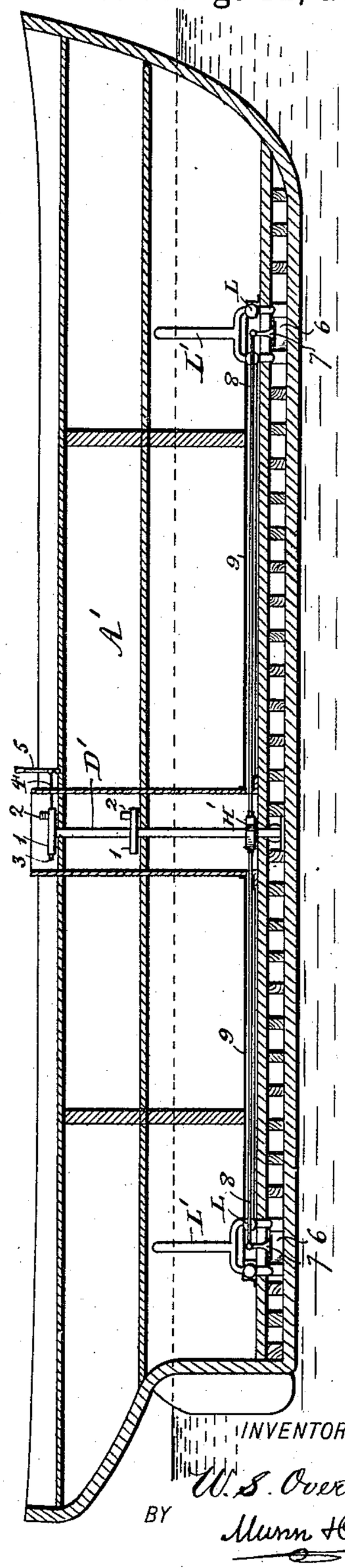

Fig 5.

Fig 6.

WITNESSES:

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UNITED STATES PATENT OFFICE.

WINFIELD S. OVERTON, OF WHITESTONE, NEW YORK.

PUMPING ATTACHMENT FOR BUOYS OR VESSELS.

SPECIFICATION forming part of Letters Patent No. 434,354, dated August 12, 1890.

Application filed February 6, 1890. Serial No. 339,487. (No model.)

To all whom it may concern:

Be it known that I, WINFIELD S. OVERTON, of Whitestone, in the county of Queens and State of New York, have invented a new and Improved Pumping Attachment for Buoys or Vessels, of which the following is a full, clear, and exact description.

My invention relates to improvements in oil pumping and distributing attachments for buoys and water-pumping attachments for vessels.

It is a well-established fact that oil diffused upon the surface of rough and heavy seas will clam or smooth them; and the object of my invention is to provide an automatic pumping attachment which may be applied to an ordinary government buoy or to a vessel, and which will be operated by the movement of the buoy or vessel as it rides upon the waves. The object as applied to a buoy is to distribute the oil, which may be introduced into the same, upon the water in such quantities as may be deemed desirable, and as applied to a vessel it is to keep the same free from water, especially in rough weather, when the exigency is greatest.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter fully described, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a vertical section of my invention as applied to a government buoy; Fig. 2, a broken horizontal section of the same on the line 2 2 of Fig. 1; Fig. 3, a detail sectional view of the oil receiving and distributing chamber with the outlet closed; Fig. 4, a detail perspective view of the hollow shaft through which the oil flows to the lower part of the buoy. Fig. 5 is a broken vertical section of the shaft inclosing the same, and Fig. 6 is a longitudinal section of a vessel with the pumping attachment applied thereto.

The buoy A is of ordinary construction, being such as is used by the government, and the machinery which it contains and which I shall describe is made in sections and introduced through the man-hole at the top. The buoy is provided at the bottom with a suitable floor or base-plate B, which supports a suitable box *a*, provided with ball-bearings, as shown, to insure the easy operation of the vertical shaft D, one end of which turns therein. In the upper portion of the buoy is another floor C, which is suitably supported upon the sides of the buoy, and upon which rests the walls of the oil-chamber E. Depending from the lower side of the floor C is a bracket F, having a lateral opening *b*, through which the oil may flow to the lower part of the buoy as it descends through the opening *d* from above, and having at its lower extremity a ball-bearing box *a'*, which receives the upper end of the vertical shaft D, said bearing being lubricated through the perforation *e* in the upper part of the box. The lower box *a* will be lubricated by the oil with which the buoy is filled.

Attached to the shaft D, near the lower end thereof, is an eccentric H, which turns in an eccentric-strap H' so that as the eccentric turns the strap will oscillate. The eccentric-strap is made in two parts, having projecting ears *f*, which are united by bolts *f'*, thus fastening the parts of the strap together. The eccentric H and eccentric-strap H' are constructed and operate like the same parts of a steam-engine and need no detailed description.

Suitably supported by brackets J in the lower part of the buoy and arranged at equal distances around its outer edge are four pumps, which should be of the simplest construction, so that they will not get out of repair. The pumps shown in the drawings consist of a cylinder K, which is firmly attached to a bracket J, having a slot *g* in the top, through which oil flows into the cylinder, a vent *g'* at the end, through which oil is forced into valves L and pipes L', and a plunger M, which forces the oil from the cylinder. The plungers M of the pump are pivotally connected to the eccentric-strap H' by the connecting-rods *h*, so that as the shaft D and eccentric H revolve they will actuate the eccentric-strap H' and cause the rods *h* and plungers M to move backward and forward

and operate the pumps. The valves L are simple ball-valves, having a ball *i*, which falls into the lower opening of the valve when the oil is not flowing through, thus closing the valve, and which will be forced upwardly by the action of the pumps and allow the oil to flow through. I do not confine myself to this form of valve, however, as any simple check-valve may be used. The valves L communicate with the pipes L′, which extend up the sides of the buoy and through the floor C into the oil-chamber E, which is inclosed by the wall E′. The wall E′ is provided at top and bottom with a laterally-projecting flange *j*, the lower flange resting upon the floor C and the upper flange bearing against the top of the buoy, to which it may be bolted. The wall E′ of the chamber E is provided with openings *l*, in which are fitted pipes *m*, which project outwardly through the sides of the buoy, so that oil from the chamber E may flow through said pipes and be diffused upon the surrounding water.

Within the chamber E is a vertically-movable piston N, which slides upon the hollow shaft O, and which is provided with a depending annular flange N′, having openings *n* therein in vertical line with the openings *l* of the walls E′, so that when the openings *n* and *l* are opposite the oil may flow through the same into the pipes *m*, and when they are not opposite the openings to the pipes *m* will be closed. Upon the under side of the piston N is a depending plug P, which fits a hole *p* in the floor C, and which will enter said hole when the piston is depressed and be raised therefrom when the piston is elevated. The lower side of the piston N is also provided with a hollow guide-shaft P′, which projects through the floor C, being vertically movable therein, and which prevents the piston from turning. The shaft P′ also serves to conduct air to the lower part of the buoy, thus preventing a vacuum, the air being admitted through the vent *r* in the piston.

The upper side of the piston N is provided with spiral springs *s*, which press against the top of the piston and against the top of the buoy, so that when the piston is raised the springs will be compressed, and when the oil-pressure is removed from the lower side of the piston they will quickly depress the same.

The hollow shaft O extends upwardly through the top of the buoy and is retained in a fixed vertical position by the collars *t* upon each side of the top. The shaft is provided near the top with a suitable air-valve *r′*, through which air may be admitted to the interior of the shaft, with a vent r^2 through which the air may pass to the chamber E, and thence through the vent *r* and shaft P′ to the lower part of the buoy, and with a triangular opening *u* near the lower end thereof, through which the oil may flow to the hollow shaft O′, which is inclosed by the shaft O, and which opens into the lower part of the buoy by means of the openings *d* and *b*, as described. The lower end of the shaft O′ is provided with a lateral flange, which rests upon the floor C and may be bolted thereto, and in the side of the shaft is a triangular opening *u′* of the same size and shape as the opening *u* of the shaft O, so that when said openings are opposite the oil in the chamber E will flow through the same. The openings being triangular, they may be fixed in relation to each other in such a manner that the oil will flow through them at any desired rate. To do this, the set-screw *v* near the upper end of the shaft O′ is loosened and the shaft turned so as to bring the openings *u* and *u′* in a desired position in relation to each other. The set-screw is then tightened, thus holding them in position.

Bolted to the top of the buoy, so as to cover the top of the shaft O and protect the same from the elements, is a cap R, having an air-hole R′ in the top thereof, through which air is admitted to the buoy. The lower portion of the buoy is provided with a perforated diaphragm T, which is bolted to the sides thereof, is provided with a suitable bearing T′ for the shaft D, with suitable braces T^2, and which prevents the oil in the buoy from rushing violently from side to side thereof.

The shaft D is turned and the pumping mechanism operated by means of the weights W, which are supported upon the laterally-extending frame composed of the arms W′ and W^2, which are pivoted together near the ends and which are pivoted to the collars *y*, said collars being fixed to the shaft by means of set-screws *y′*, so that by adjusting the collars the weight W may be fixed at any desired distance from the shaft.

The buoy is filled with oil by removing the top and the shaft O adjusted in a desired position, and the pumping and distributing mechanism is operated as follows: As the buoy moves upon the waves, it will cause the weights W to swing either partially or entirely around therein, and this motion will cause the shaft D to turn by means of the connecting or laterally-extending frame W′ W^2, thus oscillating the eccentric H and eccentric-strap H′, reciprocating the rods *h* and plungers M and operating the pumps. The oil from the buoy will flow through the slot *g* into the pump-cylinder K, and the plunger M will force it through the valves L and pipe L′ into the chamber E, the ball *i* of the valves preventing it from flowing back into the cylinder. If the pumps work slowly, as they will in moderate weather, the oil forced into the chamber E will all flow back through the openings *u*, *u′*, *d*, and *b* into the lower part of the buoy and no oil will be wasted; but if the pumps work rapidly, as they will in rough weather, as the weights W will be swung violently back and forth, the oil will enter the chamber E faster than it can flow through the openings *u u′*. Consequently the piston N will be raised till the openings *l* and *n* are in line, when the oil will flow through said

openings and through the pipes *m* to the surrounding water. When the piston N is raised sufficiently to allow the oil to escape through the pipes *m*, the plug P will be raised from the hole *p*, and the oil will flow back through said hole to the lower part of the buoy. This will relieve the pressure upon the under side of the piston N, and the springs S will immediately depress the same and close the openings to the pipes *m*. It will thus be seen that the device will only work when needed, and that only a limited quantity of oil will escape, the amount being determined by the adjustment of the openings *u u'*. It will be found in practice that a small quantity of oil will have the desired effect, and the exact amount required may be determined by experiments.

I do not confine myself to the precise construction of parts set forth in this specification, as similar operating parts may be substituted, if desired.

In Fig. 6 I have shown my invention as applied to a vessel, in which case it is intended to pump water instead of oil. The vessel A' is provided with a vertical shaft D', which extends from deck to keel, and is mounted in suitable bearings. It is provided near the bottom with an eccentric and eccentric-strap like those of the shaft D, already described, and is provided at the upper end and between decks with a pulley 1, having a weight 2 upon one side thereof, said pulley and weight operating like the weights W and frame W' W², already described, the pulleys being turned by the motion of the vessel, and in turn actuating the shaft D' and the eccentric and strap thereon. One of the pulleys or wheels 1 may be provided with a suitable brake, so that it may be held in a stationary position when there is no water in the hold, and it is not necessary to operate the pumps. I have shown the upper wheel partially encircled by a brake-shoe 3, which is connected by a rod 4 with a vertical lever 5, to which said rod is pivoted, so that by throwing back the lever 5 the brake-shoe 3 may be forced against the wheel 1, thus holding it in a stationary position.

Suitable pumps 6, which are preferably double-acting, are fastened to the bottom of the vessel between the keel and the keelson, the plunger of the pumps having a vertical arm 7 extending through the top thereof and connecting by means of a rod 8 with the eccentric-strap H', so that when the eccentric-strap is oscillated the pumps will be worked. The connecting-rod 8 is incased in a metal tube 9 to prevent it from being injured or obstructed. The ends of the pumps 6 are connected by valves L with pipes L', which extend through the side of the vessel above the water-line, so that when the pumps are set in motion the water in the hold will be forced through the pipe and out of the vessel. The pumps 6 will be operated by the motion of the eccentric-strap H' and connecting-rod 8 in the same manner that the pumps in the buoy are operated.

I have not described in detail the construction and operation of the pumps 6, as they may be of any suitable construction; so, also, may the buoy-pumps, and any desired number of pumps may be used in the buoy or vessel.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A pumping attachment for buoys and vessels, consisting, essentially, of a vertical shaft mounted in said buoy or vessel, having a laterally-extending weight attached thereto, and an eccentric and strap attached to said shaft and connected with suitable pumps and pipes, so that the motion of the waves will swing the weight, turn the shaft, and operate the pumps, substantially as described.

2. A pumping attachment for buoys and vessels, consisting, essentially, of a vertical shaft provided with a laterally-extending weight mounted between two floors of a buoy, an eccentric and strap attached to said shaft and connected with suitable pumps, so that the motion of the shaft will operate the pumps, and pipes leading from said pumps to a discharging-chamber in the upper part of the buoy, said discharging-chamber having suitable pipes opening outside the buoy, and a valve in the lower part thereof opening into the lower part of the buoy, so that the surplus oil may be saved, substantially as described.

3. In a pumping attachment for buoys and vessels, the combination, with a vertical shaft provided with a laterally-extending weight mounted in said buoy, an eccentric and eccentric-strap attached to said shaft, and suitable pumps connected with said eccentric-strap, so as to be operated by the same, of an oil-discharging chamber in the upper part of the buoy, having connection by pipes with said pumps and having pipes opening outwardly through the side of the buoy and a valve in the bottom opening into the lower part of the buoy, and a piston vertically movable in said discharging-chamber and adapted to open and close the outlet-pipes by pressure from the inflowing oil, substantially as described.

4. The combination, with a buoy having pumps arranged in the lower part thereof and having means, as shown, for operating said pumps, of a perforated diaphragm attached to the inner sides of the buoy above the pumps, adapted to prevent the oil from rushing from side to side of the buoy, substantially as described.

5. A pumping attachment for buoys and vessels, consisting, essentially, of a vertical shaft D, having a laterally-extending weight W attached thereto, an eccentric H, and eccentric-strap H', attached to the lower part of said shaft, suitable pumps arranged in the lower part of the buoy and connected with the eccentric-strap by the rods *h*, pipes L', connecting said pumps with a discharging-

chamber E in the upper part of the buoy, said discharging-chamber having pipes *m* opening outside the buoy and a suitable valve opening into the lower part of the buoy, and a piston N, adapted to move vertically in the chamber E upon the hollow shaft O and open and close the outlet-pipes *m*, said piston having a hollow guide-shaft P′ and plug P extending through the floor of the chamber E and having its upper side provided with springs S to depress the piston when the pressure is removed from beneath, substantially as described.

6. The combination, with the buoy A and chamber E, having means, as shown, for pumping oil into said chamber, of the hollow shafts O O′, having openings *u u′* therein, through which the oil may flow to the lower part of the buoy, said shafts having means (set-screw *v*) for fixing the openings therein in a desired position, substantially as described.

7. The combination, with the piston N and hollow guide-shaft P′, having a vent *r* opening through said piston into the guide-shaft, of the shaft O, having valve *r′* and opening r^2 therein, whereby air may be admitted to the lower part of the buoy, substantially as described.

WINFIELD S. OVERTON.

Witnesses:
WARREN B. HUTCHINSON,
EDGAR TATE.