

This technical drawing illustrates a complex mechanical assembly, possibly a clock or an astronomical instrument. The central feature is a large circular dial (7) with a scalloped outer edge, mounted on a central vertical axis (4). A large, curved component (10) is positioned to the right of the dial. The entire mechanism is housed within a frame (1). At the top, a large curved arch (5) is supported by a horizontal bar. Various other components are labeled with numbers: 2 (diagonal supports at the base), 3 (small rectangular blocks), 8 (small rectangular blocks), 9 (small rectangular blocks), 12 (a small rectangular block), and 13 (three cylindrical components at the base). The drawing is a black and white line illustration with fine lines and shading to indicate depth and texture.

# UNITED STATES PATENT OFFICE.

DAVID GAY, OF BATH, MAINE.

## MODE OF WORKING PUMPS FOR PUMPING SHIPS, VESSELS, &c.

Specification of Letters Patent No. 373, dated September 8, 1837.

*To all whom it may concern:*

Be it known that I, DAVID GAY, of Bath, in the county of Lincoln and State of Maine, have invented a new and useful Machine for  
5 Pumping Vessels, which is calculated to act or operate on the pumps of itself at sea by the motion of the vessel, when the vessel is not in motion the machine may be worked so as to operate on the pumps by a lever  
10 or hand-brake; and I do hereby declare that the following is a full and exact description.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

15 In a vessel of ordinary size, No. 1 represents two perpendicular posts, five and a half feet long, and nine inches by six at the foot, and six inches square at the top, the posts to be braced with iron braces. The  
20 frame may all be made of iron of a suitable size, and with such variations as may be necessary, but the description here is wood.

No. 2, is a foot on each post, of a suitable size. Where the foot of the posts can be  
25 formed into the vessel, deck or otherwise, suitably fastened, the foot mark 2 will not be necessary.

No. 3, is a piece of wood five and a half feet long and six inches thick, by flush with  
30 the posts, which connects the posts by a tenon and a mortise in the posts eighteen inches or more from the foot.

No. 4, is a piece of wood of a suitable size, let into the posts by a tenon and mortise, parallel with the piece marked 3, about  
35 two feet apart, and swelling so as to project out a little at the center.

No. 5, is a cap piece, six feet long and six inches square put on by a mortise in  
40 each end, and a tenon on the posts.

No. 6, is an iron shaft, about one and a half inch square, with a journal turned on each end, to play in suitable metal boxes. one end in the center of the piece marked  
45 3, and the other end in the center of the cap piece. The upper box may be steadfast or movable at pleasure in any suitable manner: In the latter case, the lower end of the shaft may be half round, and the lower box  
50 to correspond; the ends of the shaft may be steel and hardened. The wheel and rollers may be made of metal of a suitable thickness, but here I shall describe them of wood.

No. 7, is a wheel, three feet or more in  
55 diameter of hard wood boards, one inch thick, and doubled crosswise and suitably

fastened—two of equal dimensions—then one eighteen inches in diameter may be made of plank, about one and a half inch thick; place this in the center between the two,  
60 which will have a space in which an odd number of rollers, one foot in diameter, of suitable thickness, are placed at equal distance, and play on pins which pass through near the surface of the wheel, and the center  
65 of the rollers; then place two pieces of iron about half an inch thick and suitable size on each side of the wheel, with a square hole in the center to fit the shaft; then fasten the whole together with two or more  
70 bolts, then place the wheel on the shaft six or eight inches from the lower end.

No. 8, is two iron pump breaks of a suitable size and length, in the form of an inverted T and elbow; the T part being about  
75 perpendicular, when the other part is horizontal. The horizontal part of the breaks may vary in form according to the number of pumps; as from one to eight pumps can be worked at one motion, by each end projecting out, and being in the form of a T.  
80 There are two pieces of thin iron in a convex, or near a half circle form, the center of which is fastened to the center of the perpendicular part of the brakes inside; these  
85 may be about six inches wide and of a suitable length.

No. 9, is an iron rod of a suitable size, which connects the perpendicular part of the brakes at the top, by a joint, so as to  
90 play above the wheel, with two parts or rollers fixed and projecting out horizontally at or near the center—a suitable space apart—the rod being crooked so as to bring the third part of the length in the center  
95 flush with the piece marked 4. The brakes are placed across the piece marked 3 with the perpendicular part in the center, about three inches from surface of the wheel, and play on axes in suitable boxes.  
100

No. 10, is a weight of cast iron or any other suitable substance, in the form of a quarter circle. It may be made in parts so as to add or diminish weight, as occasion  
105 may require. The weight is suspended from the shaft horizontally, by two or more arms or braces, of a suitable size and length for the weight to swing within their posts when it is put on under the cap piece. The arms  
110 come together at the center and form a hub, through which a square hole is made to fit in the shaft: It is immaterial whether the

shaft is square or round, if the wheel and weight be suitably fastened—now place the machine so as to bring the end of the brakes over the center of the pumps, and fasten it to the deck by four bolts through the feet, marked 2, or otherwise—now attach the pump-spires to the end of the brakes—thus the vessel being in motion, the weight will swing and move the wheel around, and bring the rollers in contact with the brakes, which puts the pumps in operation. The weight may be pulled or stopped by a piece of iron in the form of a bail, marked 11, with a hole at each end to play on staples, which are made fast in one side of the cap piece; a notch is made near the center of the bail, which catches on a part projecting up across the center of the weight when it swings on that side, by bearing or pulling down with a rope at the same time—or the weight may be stopped suitably otherwise.

No 12, is the hand brake of suitable size and length, with a hole in the center to play on a pin or bolt in the center of the piece marked 4; and a piece of iron of a suitable size, with two prongs, which are made fast each side of the center, and the other end crooks in a little, and projects down into the space between the two projecting parts or rollers, on the rod marked 9. For large vessels, two iron brakes of equal dimensions of a suitable size, and long enough to give play outside the posts, with a hole in the center to play on a bolt which passes through the piece marked 4 near the perpendicular shaft, and the part projecting down, as before described, on the wood-brake, where the two brakes are used. The piece marked 4 is equal on both sides, and each end of the brake has a socket or hole to put a pole or handle through the brakes being placed on each side, and the rod marked 9 so varied as to have both sides alike, will give a more equal bearing than a single part; thus by working the end of the brake up and down, puts the pumps in motion. When the hand-brake is used, the weight should be stopped on the opposite side, and remove one roller which bears against the perpendicular part of one brake. When the weight or wheel is in motion, the hand brake should be clear of the rod marked 9. 13 is the pumps about a foot above the deck. I make a fender, of sheet iron or any other suitable material, of a suitable width, which forms a circle for the weight to swing within, and suitably fastened to the posts. It may be made in two parts, so as to unship one or both parts as occasion may require. When the hand brake is used, as the boom on board some vessels will prevent the machine being high enough to give it play.

A wheel or roller made of cast iron made of suitable size, with a bevel on the surface so that the wheel will lean toward the center may be applied to put the machine in operation instead of the weight, by making a circular platform of plank or other suitable material, about six feet in diameter, laid on the cap piece, supported by cross pieces and iron braces, as suits the builder; then the shaft extends up through the platform so as to fit on an iron lever of a suitable size and about three feet long, with an axle or journal turned to fit on the wheel, so as to play on the end near the surface of the platform. Thus when the vessel is in motion, the wheel will roll around on the platform, which will have the same effect on the pumps as that of the weight.

To stop the wheel or roller on the platform, two chocks of wood, of suitable size, with a bevel on the inside so as to pay to the wheel, and lay parallel with each other across the platform, the ends near the center play on pins made fast in the platform, a hole is made through each chock near the wheel horizontally, then two holes down through the platform near the other hole inside the chocks, then two holes opposite within where the wheel passes; then take a line or rope of suitable size and length and reeve the ends up through the platform inside the chocks, leaving the bite of the rope outside the posts, then make a knot of a suitable space from the bite in each part of the rope, then reeve the ends through the chocks and draw the knots up, then make a knot on the outside of the chocks, then reeve the ends through the opposite holes in the platform and fasten the ends together outside the post. There may be sheaves or pulleys fixed in suitable places to make the rope render easy. Thus by drawing the rope on the opposite side will remove the chocks and let the wheel play, and when the vessel motions so as to bring the wheel on the side where the chocks are, then draw the rope on that side and draw the chocks up to the wheel and fasten the rope. The dimensions given may vary as occasion may require according to the size of the ship or vessel.

What I claim as my invention is—

The application of the weight to the shaft of the eccentric wheel for giving motion and action to the pistons of the pumps by the rolling or pitching of the ship or vessel at sea or in rough water, and combining therewith a hand lever for working the pumps by hand when the ship has not sufficient motion.

DAVID GAY.

Witnesses:

JOHN W. WILKINSON,  
NATH. GROTEN.