Sept. 7, 1926. 1,599,158

F. W. WOOD

WHISTLE ALARM

Filed July 17, 1923

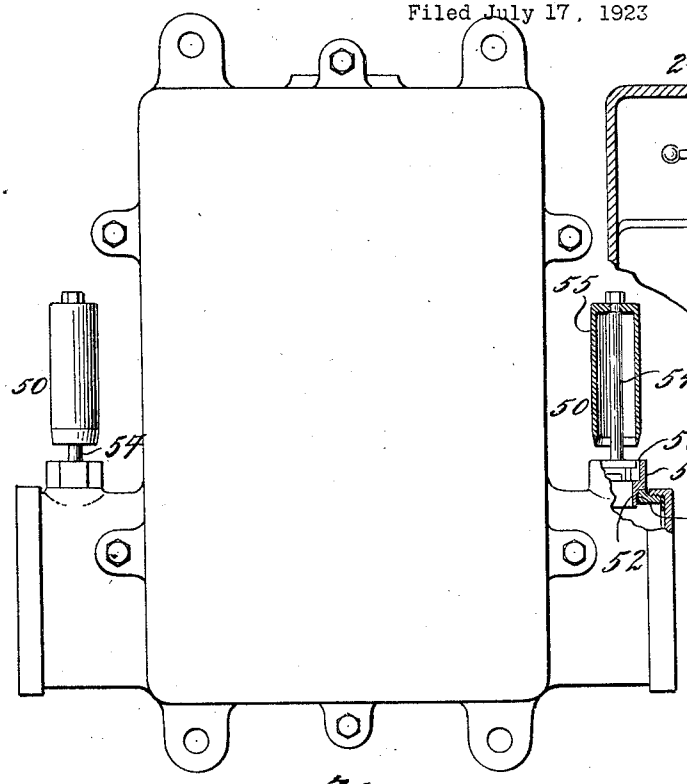


Fig. 1.

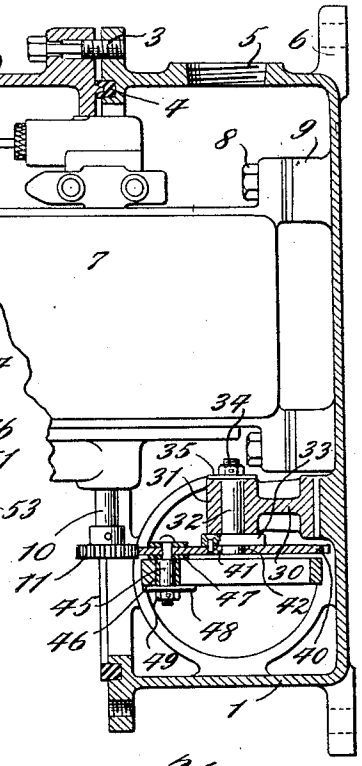


Fig. 2.

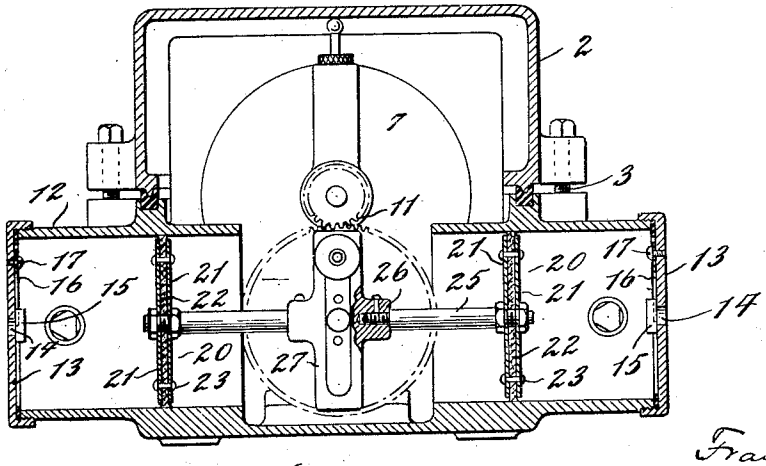


Fig. 3.

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UNITED STATES PATENT OFFICE.

FRANK W. WOOD, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO CHAS. CORY & SON, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

WHISTLE ALARM.

Application filed July 17, 1923. Serial No. 652,204.

My invention relates to an alarm or signal whistle, which is especially well adapted for giving warning of gas attacks on naval vessels, although, of course, the invention is not limited to any particular use.

An important object of the invention is to provide a whistle mechanism which may be arranged as a substantially or completely self-contained unit, and which dispenses with any air storage tank or other outside source of gas under pressure for operation of the whistle.

Another object is to provide simple, economical, and durable whistle mechanism which is driven by an electric motor and which can be energized or controlled from a distant point.

To realize the foregoing and other objects, the invention comprises, in a preferred embodiment, as herein shown, a frame or casing containing or including one or more cylinders with pistons and simple valve mechanism, a whistle or whistles which may be directly connected to the cylinders, and which may be dismounted and enclosed as units in the casing for shipping when such an arrangement is desired, an electric motor, and simple gear or other mechanical connections between the motor and the pistons to operate the same.

The characteristics and advantages of the invention are further sufficiently explained in connection with the following detail description of the accompanying drawings, which show one exemplifying embodiment of the invention. After considering this embodiment, persons skilled in the art will understand that many variations may be made within the principles of the invention, and I contemplate the employment of any structures that are properly within the scope of the appended claim.

Figure 1 is a front elevation of mechanism embodying the invention in one form.

Figure 2 is a vertical longitudinal section in a plane perpendicular to that of Figure 1.

Figure 3 is a horizontal section substantially in the plane of the cylinder axis, looking upward.

The alarm whistle is preferably, although not necessarily in all cases, arranged as a self-contained unit on a suitable frame or base and particularly, as in the present example, its elements are enclosed in or formed as parts of a housing which consists of a main or base section 1 and a cover section 2, secured detachably to the base section by screws 3, and usually with an interposed gasket 4 to provide a tight cover joint. One wall of the main casing is provided with a threaded hole 5 for the connection of an electric conduit in which circuit wires are inclosed for connection to the motor. The base casing section is provided with ears 6 for connection to a bulkhead or other convenient support.

Any suitable electric motor 7 is secured by screws or bolts 8 to lugs 9 in casing section 1. On the motor armature 10 is a pinion 11.

One or more cylinders 12 are provided, and while these might be separate parts, they are desirably formed as integral parts of the main casing section and are preferably arranged opposite to each other with a common axis. Parts of the cylinders extend within the casing and parts outside, for the sake of compactness. Heads 13 are screwed upon the outer ends of the cylinders, and at the centers of these heads are valve holes 14 controlled by disc valves 15 on the inner faces of the heads. These valves are carried by springs 16 secured to the cylinder heads 17.

In each cylinder is a piston 20 which may be of any suitable construction, but desirably consists, as shown, of two metal plates 21 with interposed felt discs 22, the whole piston structure being secured together by screws or rivets 23. The metal discs have a considerable clearance from the cylinder bore and the felt discs extend beyond the edges of the metal discs and bear against the bore to provide a tight, lubricant-retaining packing.

Piston rods 25 are secured to the centers of the pistons and the inward ends of the rods are screwed and pinned or otherwise secured in lugs 26 formed on a Scotch yoke 27.

Suitably supported within the casing, conveniently upon a bracket 30 integrally formed or secured therein, is a bearing sleeve 31 in which is mounted a gear shaft 32 having at one end a flange 33 and secured at the other end against axial displacement by a nut 34 and washer 35. A gear 40, which is usually of considerably larger diameter than pinion 11, is secured to shaft flange 33 by

screws or rivets 41, and the gear may be centered by a stud 42 on the end of the shaft and fitting in a hole in the center of the gear. The gear engages pinion 11, and is provided with a crank pin 45 on which is rotatably mounted a bushing 46 located in the slot of yoke 27. A washer 47 is placed between the bushing and the gear and serves to locate the bushing at one end and also to provide a clearance between the gear face and the face of the yoke, and a washer 48 of ample diameter is also secured on the outer end of the crank pin, overlying the outer face of the yoke, and secured by a nut 49. The described construction provides in an obvious way for the driving of the pistons to and fro whenever the motor is energized, the drive gearing being usually arranged with a reduction ratio as described, to provide reasonable piston speed with a fairly high-speed motor. The described construction also provides for the proper maintenance of the yoke in proper position parallel to the gear wheel without any elaborate devices for that purpose, this alignment being maintained by the ample bearing faces of washers 47 and 48 at opposite sides of the yokes in all positions of the crank pin.

One or more whistles may be provided, and they may be arranged in any suitable position and properly connected with the cylinders, but conveniently, and preferably in most cases, as in the present embodiment of the invention, the whistles 50 are arranged as units on bases 51 which are connected directly with the outer parts of the cylinders. Specifically, as here shown, the whistle bases are in the form of hollow nuts with threaded extensions 52, which are screwed into suitably threaded holes 53 in outward portions of the cylinders near the outer ends thereof. The whistle units are of any known or suitable type, and each includes a stem 54 supporting the whistle tube 55 and air nozzles 56 are arranged to direct air jets against the "open" edge of the tube.

At every inward piston stroke air is drawn into the outer part of the cylinder either through the valve hole 14 or through the air passage in the whistle base, or both, and on each outward stroke the valve 15 closes and air is compressed and driven forcibly out, producing a sharp whistle blast which is readily audible in the midst of the other noises, including the noise of battle, and these blasts are rapidly repeated, two blasts occuring with each rotation of gear 40 when two whistles are provided.

The whistle bases may be unscrewed and the whistles enclosed as units within the casing for shipment, and may be easily remounted in an obvious way when the apparatus is set up for use.

One or more of the complete appliances may be included in one circuit or a plurality of the appliances may be played in different circuits, and however, the circuits may be arranged, the alarm is sounded merely by closing the circuit at a suitable switch, which may, if desired, be arranged so that the motor runs to sound the alarm for any designated time and is then automatically cut off; or any other desired control arrangement may be provided.

I claim:

A unitary, self-contained signal or alarm comprising a housing including base and cover portions, an electric motor secured to the base within the housing, opposite cylinders on a common axis formed as parts of the base section of the casing, heads secured on outward ends of the cylinders, check valves cooperating with valve holes in the heads, a piston in each cylinder, a gear rotatably mounted in the casing, a pinion on the motor shaft engaging the gear, means including a crank connecting the gear to the piston, and a whistle unit mounted on each cylinder and in communication with the interior thereof.

Signed at New York city, in the county of New York and State of New York this 21st day of June A. D. 1923.

FRANK W. WOOD.