UNITED STATES PATENT OFFICE.

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RATION OF NEW YORK.

DRIVING MECHANISM FOR TWO PUMP-PLUNGERS.

No. 805,000.


To all whom it may concern:

Be it known that I, WILLIAM E. BLAIR, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Driving Mechanism for Two Pump-Plungers or other Reciprocating Parts, of which the following is a specification.

This invention relates to a driving mechanism which is more particularly designed for operating two reciprocating parts, such as the air and water pumps of a hydrocarbon or gasoline motor, but which is also applicable for other purposes.

The object of my invention is the production of a driving mechanism which permits two pump-plungers or similar reciprocating parts to be arranged very compactly and to be operated from the same source in a simple and inexpensive manner.

In the accompanying drawings, consisting of two sheets, Figure 1 is an end elevation, partly in section, showing my improved driving mechanism employed for operating the air and water pumps of a gasoline marine motor. Fig. 2 is a vertical longitudinal section thereof.

Similar letters of reference indicate corresponding parts in both views.

The marine gasoline engine or motor which is shown in the drawings and to which my improved driving mechanism is shown applied consists, essentially, of a base A, a cylinder B, a piston b sliding in the cylinder and connected by a pitman or rod a with a crankshaft b', journaladed in the base, fuel inlet and exhaust valves C D controlling the inlet and outlet of the cylinder, a time or counter shaft E journaladed in the base and provided with a cam d for operating the exhaust-valve, and an intermediate gear-wheel F, mounted on a stud f on the base and meshing with a piston f' on the crankshaft and a gear-wheel f'' on the counter-shaft.

G represents the barrel, and g the plunger, of a water-pump whereby water is forced into the water-jacket H, which surrounds the engine-cylinder for cooling the latter. This water-pump barrel is preferably secured in a horizontal position to the end of the engine-base and is connected at one end with a water-supply pipe I, containing an inlet check-valve i and a delivery-pipe J, leading to the water-jacket H and containing an outlet check-valve j. The plunger g reciprocates in the opposite size end of the barrel and is operated from the counter-shaft by means of an eccentric K turning with the counter-shaft and the gear-wheel f'', and an eccentric-strap k' surrounding the eccentric and having a rod or pitman l k, which is pivotally connected with the outer end of the plunger g.

L represents the barrel, and l the plunger, of an air-pump whereby air is compressed in a reservoir M, to be subsequently used either for starting the engine or for sounding a signal-whistle when the engine is used for propelling a motor boat or carriage. The air-pump barrel is preferably arranged vertically above the counter-shaft or in a position at right angles to the water-pump and is secured to the adjacent part of the engine-frame. At its upper end the air-pump barrel is provided with an air-inlet check-valve n and also with an air-outlet check-valve n', which controls the passage of the air from the barrel L to a pipe o leading to the air-reservoir. The air-pump plunger reciprocates vertically in the lower end of its barrel and is operated from the eccentric by the following means: P represents a shifting head or lateral extension arranged on the upper side of the eccentric-strap and provided with a slot p. This head projects upwardly between two lugs q, arranged on the lower or outer bifurcated end of the air-pump plunger, and its slot receives a roller or abutment Q, supported by a pivot-pin which connects said lugs. The general direction of the slot p is parallel with the direction of movement of the water-pump plunger and at right angles to the movement of the air-pump plunger. As the eccentric rotates and moves the strap, pitman, and water-pump plunger horizontally back and forth the strap is also moved up and down in a well-known manner.

During the horizontal part of this movement of the eccentric the head P slides with its slot on the roller of the air-pump plunger, and during the vertical part of this movement of the eccentric the air-pump plunger rises and falls with the eccentric. For the purpose of causing the air-pump plunger to be moved uniformly during every part of its stroke the slot in the shifting head is made concentric.
with the axis of the eccentric and its strap, as shown in Fig. 1.

This means of operating two pumps from the same eccentric reduces the number of parts usually employed for this purpose, and the pumps can be arranged more compactly, thus rendering the same especially desirable for use on gasoline-motors for boats in which the available space is limited.

I claim as my invention—

1. A driving mechanism for operating two reciprocating parts which move at an angle to each other, comprising an eccentric, a strap surrounding the eccentric and pivotally connected with one of said parts, a head arranged on said strap and having a slot which is substantially parallel with the movement of the part to which said eccentric is pivotally connected, and an abutment arranged on the other part and engaging with said slot, substantially as set forth.

2. A driving mechanism for operating two reciprocating parts which move at an angle to each other, comprising an eccentric, a strap surrounding the eccentric and pivotally connected with one of said parts, a head arranged on said strap and having a slot which is concentric with the eccentric and which extends generally in a direction parallel with the movement of the part to which the eccentric is pivotally connected, and an abutment arranged on the other part and engaging with said slot, substantially as set forth.

3. A driving mechanism for operating two reciprocating parts which move at an angle to each other, comprising an eccentric, a strap surrounding the eccentric and pivotally connected with one of said parts, a head arranged on said strap and having a slot, a pair of lugs arranged on the other part and receiving the head between them, and a roller pivoted on said lugs and engaging with said slot, substantially as set forth.

4. A driving mechanism for operating two reciprocating parts which reciprocate at right angles to each other, comprising a rotary eccentric, an eccentric-strap surrounding said eccentric and having a pitman which is pivotally connected with one of said parts, a head arranged on said strap and provided with a slot which is concentric with said eccentric and extends generally in the same direction as the line of movement of the part with which said pitman is connected, and an abutment or roller arranged on the other part and engaging with said slot, substantially as set forth.

Witness my hand this 26th day of January, 1905.

WILLIAM E. BLAIR.

Witnesses:

A. SNYDER,
THEO. L. POPP.