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A. J. WEST.

OIL PUMP MOTOR.

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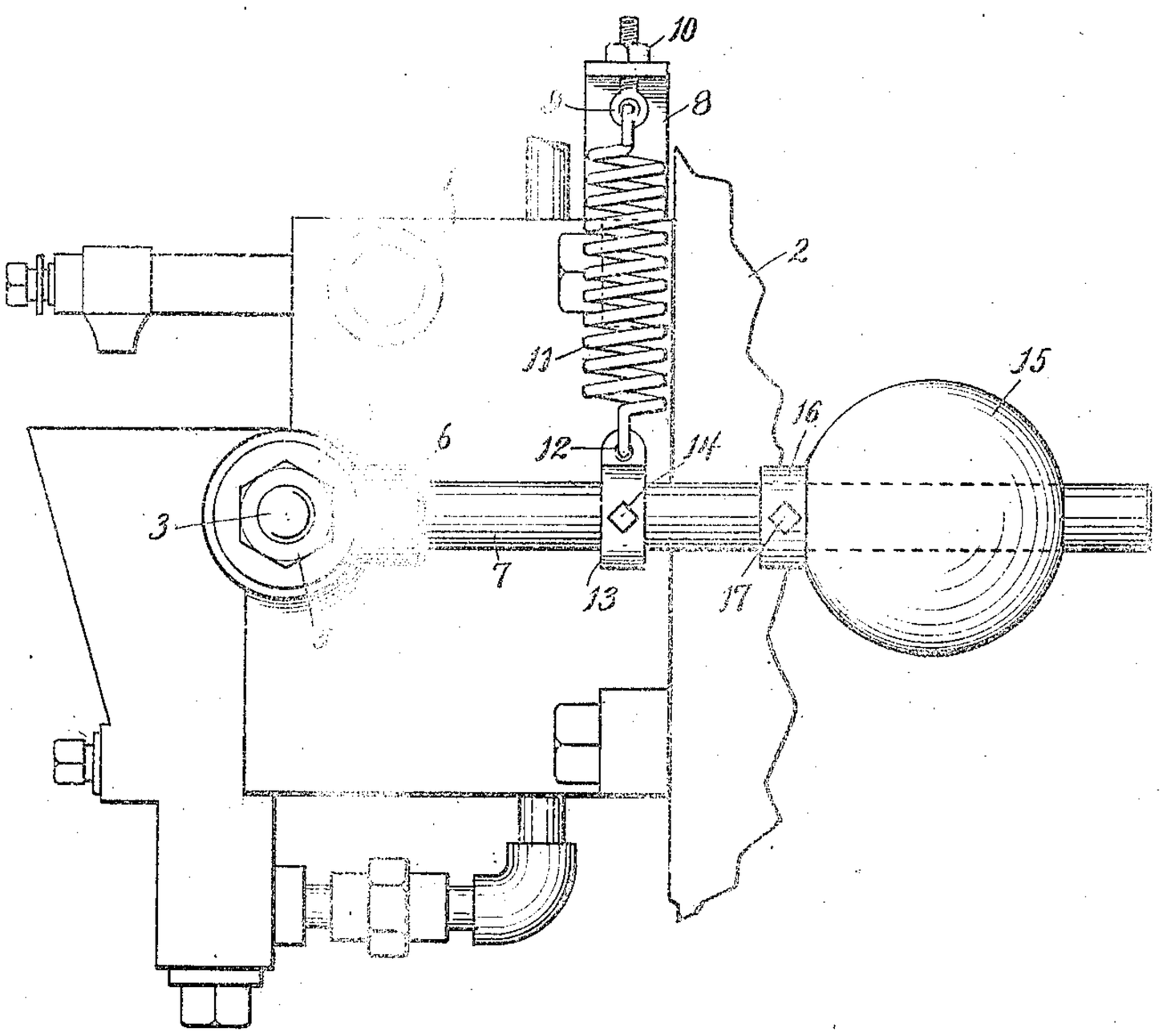

Witnesses.
C. A. Keeney.
R. S. C. Caldwell.

Inventor.
Arthur J. West.
By Benedict and Monsell
Attorneys.

UNITED STATES PATENT OFFICE.

ARTHUR J. WEST, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO SIGHT FEED OIL PUMP COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

OIL-PUMP MOTOR.

No. 821,147. Specification of Letters Patent. Patented May 22, 1906.

Application filed February 15, 1904. Serial No. 193,518.

To all whom it may concern:

Be it known that I, ARTHUR J. WEST, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Oil-Pump Motors, of which the following is a description, reference being had to the accompanying drawing, which is a part of this specification.

This invention relates particularly to certain new and useful improvements in oil-pump motors, but broadly covers improvements in motors for any purpose, and has for its object to provide operating means having movable support from a moving body and capable of imparting motion to an operated means by reason of the difference in the effect produced by the movements of the body on the support and on the operating means, such difference, in effect, being due to the inertia of the operating means.

Another object of this invention is to provide a moving body carrying an actuating means mounted to be movable with relation to the moving body and means connecting the body and the said actuating means adapted to receive motion as the result of the inertia of the actuating means during the movements of the body.

Another object of this invention is to provide a machine oil-feed pump or the like with an automatic operating means adapted to impart motion to such oil-feed pump or similar device during the movements of the machine only and receiving its impulse from such movements of the machine.

A further object of this invention is to accomplish the above results by means of a movable weight, the inertia of which renders it less susceptible to the influence of the movements of the machine than its support and the difference in the effects produced by such movements on the weight and on its support being utilized to operate the pump.

With the above primary and other incidental objects in view the invention consists of the devices and parts and their equivalents, as hereinafter set forth.

In the accompanying drawing the figure represents a side elevation of an oil-pump motor embodying the principles of this invention and applied to a sight-feed oil-pump such as is shown and described in Letters Patent to Wilber E. Richardson, No. 661,323, dated November 6, 1900.

In this drawing, 1 represents the oil-pump, which may be of any desirable type and which is bolted or otherwise rigidly secured to a supporting means 2, such as the cab of a locomotive or any other body, preferably receiving motion from the mechanism supplied with oil by the pump, and 3 is the shaft of said oil-pump, which is capable of operating the pump mechanism when given slight oscillations. A sleeve 4 is fixed on the shaft 3 and held rigid therewith by means of the nut 5, threaded on said shaft and preferably binding the sleeve upon a shouldered squared portion of the shaft. A socket 6 is provided on said sleeve, in which a lever-arm 7 is secured in any suitable manner.

An angular bracket 8 is given rigid support with the moving body, either, as here shown, upon the pump 1 or in any other manner, and in a perforation of its projecting upper end, which overhangs the lever-arm 7, is loosely mounted an eyebolt 9, with its eye portion lowermost and its nut 10 resting upon the upper surface of the bracket.

A coil-spring 11 has its hooked upper end engaged in the eye of the eyebolt 9 and its hooked lower end engaged in a perforated ear 12 of the sleeve 13, which is mounted upon the lever-arm 7 directly beneath the eyebolt 9 and is fastened in position by a set-screw 14, threading through said sleeve and engaging the lever-arm 7. The bracket 8 may be placed at any desired distance from the vertical plane of the shaft 3.

Near the outer end of the lever 7 is a weight 15, preferably a solid ball of metal with a bore therethrough having a sliding fit upon the lever-arm 7, and a collar 16, rigid therewith or secured thereto, carries a set-screw 17 to engage the lever-arm 7, so that the ball-weight may be adjusted on the lever-arm nearer to or farther from the shaft 3.

The eyebolt 9 is adjusted by turning its nut 10 to a position where the coil-spring 11 normally supports the lever-arm 7 in a horizontal position, as shown. Then when the supporting means 2 is given quick vertical motions, such as the motions of a locomotive-cab when under way, the inertia of the ball-weight 15 tends to prevent its participating in such movements and, as the pump follows

the movements of the support, results in an oscillation of the shaft 3 and produces the operation of the pumping mechanism 1. The movement of the weight 15 with relation to the other parts increases or diminishes the tension given thereby to the coil-spring 11, so that should the movement of the supporting means be followed by a comparative immovable period the weight will continue to swing and operate the oil-pump, due to its spring-support, the spring recoiling during the upward course of the weight to lift it above the horizontal line of the lever-arm 7 and then the gravity of the weight serving to carry it below such horizontal line on its downward course and repeating this operation until the weight reaches its equilibrium.

When it is found that the motions of the supporting means are not sufficient to produce a desired operation of the oil-pump, the ball-weight 15 may be adjusted nearer to the shaft 3 by means of its set-screw 17, when the limited degree of movement of the supporting means with respect to the comparative immovable ball-weight correspondingly increases the arc of movement of the lever-arm 7, and so increases the operation of the pump. This action can best be followed by considering the ball-weight 15 a stationary fulcrum, upon which the lever-arm 7 swings as the shaft 3 moves vertically with the support. The vertical movements of the shaft then clearly produce an oscillation of said shaft in its bearings, and the extent of such oscillation depends upon the angle of swing of the lever-arm, which is determined by the extent of vertical movement of the shaft. Now with a given vertical movement of the shaft it is obvious that the angle of movement of the lever-arm, and therefore the degree of oscillation of the shaft, will vary inversely as the distance between the ball-weight and the shaft. Consequently as the ball-weight is adjusted nearer to the shaft the angle of swing of the lever-arm enlarges, and the arc of oscillation of the shaft increases to give the pumping mechanism a greater output.

While the part 2 has been referred to herein as the "movable support or body," it is obvious that the bracket 8 and pump 1, which are intended to have a rigid connection therewith, and therefore partake of the movements, may be considered as movable bodies or movable supports, and it is with the understanding that these terms "movable support" and "movable body" are sufficiently broad to cover any body or support capable of movement or designed to receive movement that they are employed in the following claims. Such terms are not intended to render the combinations incomplete without the presence of a moving engine-cab or other body by which the parts may be carried.

What I claim as my invention is—

1. A suitably-journaled operating-shaft, a lever-arm mounted thereon, a weight carried by the lever-arm, a bracket, an eyebolt adjustable through an opening of the bracket, a nut threaded on the eyebolt and bearing on the bracket, and a spring connecting the lever-arm with the eyebolt.

2. A pump-operating shaft, a sleeve fixed thereon, a lever-arm carried by the sleeve, a weight adjustable on the lever-arm, a collar mounted on the lever-arm, and having a perforated ear, a coil-spring engaging the perforation thereof, a bracket rigidly supported above the lever-arm and an eyebolt adjustable therethrough and having its eye engaged by the other end of the coil-spring.

3. A pump-operating shaft, a sleeve fixed thereon, a lever-arm carried by the sleeve, a weight adjustable on the lever-arm, a collar adjustably mounted on the lever-arm and having a perforated ear, a coil-spring engaging the perforation thereof and means for giving the coil-spring a support from a movable body.

4. In combination, an oil-pump having an oscillating operating-shaft, a sleeve secured thereto, a lever-arm mounted in said sleeve and extending in an approximately horizontal position, a weight adjustably slidable on the lever-arm, a sleeve also adjustably slidable on the lever-arm, a coil-spring engaging the sleeve, a bracket mounted on the pump, and an eyebolt adjustably supported by the bracket and engaged by the coil-spring and serving as a means for adjusting the normal position of the lever-arm, the adjustment of the sleeve on the lever-arm serving to vary the normal tension on the coil-spring and the adjustment of the weight on the lever-arm serving to vary the degree of oscillation of said lever-arm which results from the inertia of said weight during a movement of the pump.

5. A movable body, an arm pivotally mounted thereon, a weight carried by the arm, and a spring means for supporting the weight having an adjustable connection with the arm.

6. A movable body, an arm pivotally mounted thereon, a weight carried by the arm and adjustable thereon, and a spring means for supporting the weight having an adjustable connection with the arm.

7. A movable body, an arm pivotally mounted thereon, a weight carried by the arm and adjustable thereon, a spring means for supporting the weight having an adjustable connection with the arm, and a support to which the spring means is adjustably connected.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR J. WEST.

Witnesses:
R. S. C. CALDWELL,
ANNA F. SCHMIDTBAUER.