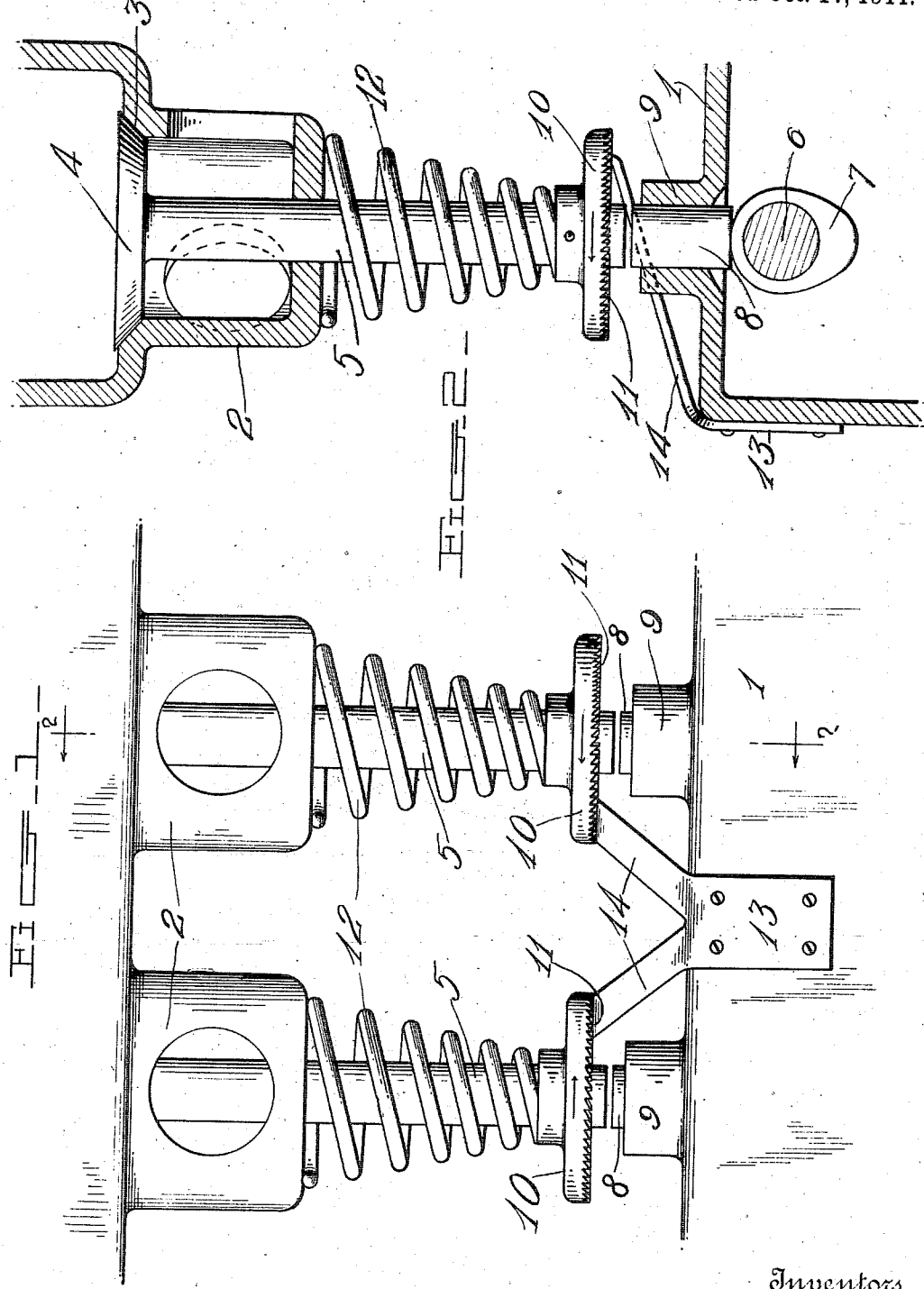


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 MECHANICAL MOVEMENT FOR ENGINE VALVES.
 APPLICATION FILED NOV. 7, 1910.

1,005,897.

Patented Oct. 17, 1911.



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UNITED STATES PATENT OFFICE.

JOHN S. SHIELDS AND WILLIAM LAMB, OF DETROIT, MICHIGAN.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN S. SHIELDS and WILLIAM LAMB, citizens of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Mechanical Movements for Engine-Valves; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in mechanical movements for engine valves.

One object of the invention is to provide a mechanical movement adapted to be applied to a valve whereby the same will be rotated a slight distance each time it is opened and closed.

With the foregoing and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claim.

In the accompanying drawings: Figure 1 is a side view of a portion of an engine showing the application of the invention for simultaneously operating two valves; Fig. 2 is a vertical sectional view on the line 2-2 of Fig. 1.

Referring more particularly to the drawing, 1 denotes a portion of an engine, 2 denotes two valve casings in which are arranged valve seats 3 with which are engaged valves 4 having stems 5 which project through and to a considerable distance beyond the casings 2 as shown.

Revolubly mounted in the engine frame or casing 1 is a valve operating shaft 6 on which is fixedly mounted valve operating cams 7 which are adapted to engage and project valve operating plungers 8 slidably mounted in bosses 9 formed on the frame or casing of the engine as shown. The outer ends of the valve stems 5 terminate a short distance from the outer ends of the plungers 8 and are adapted to be engaged and operated by said plungers to open the valve when said plungers are forced outwardly by the revolving cams 7.

Fixedly secured to the valve stems 5 near their outer ends are valve rotating disks 10 having on their outer sides an annular series of ratchet teeth 11. The disks 10 also form spaces between which and the outer

ends of the valve casings are arranged coiled springs 12 the pressure of which close and normally hold the valves in closed position. The valves 4 are opened against the tension of the spring 12 by means of the cams 7 as hereinbefore described.

Secured to the engine frame or casing between the disks 10 is a double spring pawl comprising a fastening plate 13 the outer end of which is forked or bifurcated to form bearing pawls 14 which are arranged at an angle and have their outer end in operative engagement with the ratchet teeth 11 of the disks 10 whereby when the valves are raised by the cams 7 and the disks thus also elevated the pawls will play loosely over the teeth of the disks 10 and when the valve stems and disks are again forced downwardly by the pressure of the spring the pawls will operatively engage the teeth 11 of the disks and turn the latter and the valve stems and valves attached thereto to a distance of one tooth, thus revolving the valves and causing the same to seat in a different position each time the same are closed.

While we have herein shown and described the valve turning pawl of double form for simultaneously turning two valves, it is obvious that the same may be constructed in single form and employed with equal advantage for operating or turning a single valve. By operating or turning the valves in the manner described it will be seen that the valves will be caused to wear evenly and thus maintain an absolutely fluid tight engagement with their seats.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claim.

Having thus described our invention, what we claim is:

In a mechanical movement for engine valves, the combination with a plurality of valves and their operating mechanism, ratchet disks fixedly mounted on the stems of said valves, springs for normally holding the valves in a closed position, a forked

spring pawl intermediately disposed between the valves, the arms of which are angularly arranged and have their free ends in engagement with the ratchet surfaces of
5 the disks, whereby said valves are rotated during the longitudinal movement of the valve stems.

In testimony whereof we have hereunto

set our hands in presence of two subscribing witnesses.

JOHN S. SHIELDS.
WILLIAM LAMB.

Witnesses:

JAMES RULE,
ALEXR. CLARK.