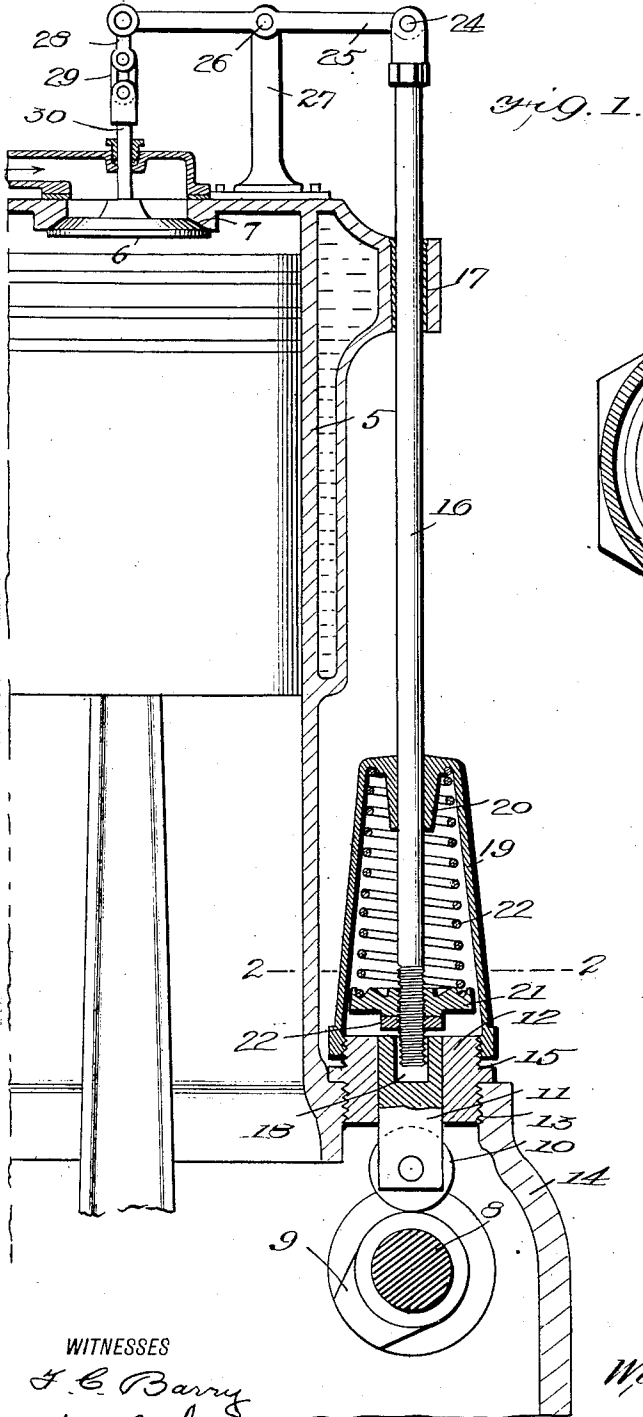
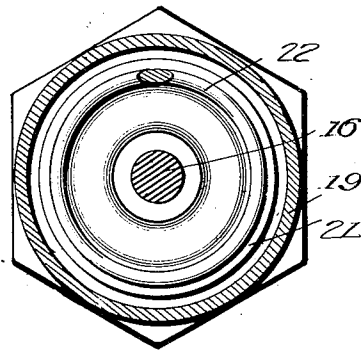


W. J. SNADECKI.
VALVE LIFTING MECHANISM.
APPLICATION FILED NOV. 22, 1916.

1,246,343.

Patented Nov. 13, 1917.



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VALVE-LIFTING MECHANISM.

1,246,343.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM J. SNADECKI, a citizen of the United States, and a resident of South Boston, in the county of Halifax and State of Virginia, have invented a certain new and useful Improvement in Valve-Lifting Mechanism, of which the following is a specification.

One of the principal objects of my invention is to provide an improved arrangement of valve lifts for valve-in-head motors, in which the spring control is arranged on the rock arm lift rod and is connected with the tappet guide at the side of the cylinder, whereby the total height of the engine is materially decreased, noise is minimized, and efficient bearings and guides for the lift rod are provided.

Another object of the invention is to provide an improved valve lift in which a casing is connected with the tappet guide, in which casing is arranged the spring which controls the lift rod, whereby advantages of an improved bearing and guide for the rod are obtained and whereby protection for the control spring from dust and other foreign matter is acquired.

Still another object of the invention is to provide an improved device of the class described, which will be extremely simple, durable, efficient in operation and inexpensive to manufacture.

With these and other objects in view, which will become apparent as the description proceeds, the invention resides in the construction, combination, and arrangement of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which like characters indicate like or corresponding parts throughout the several views; and in which:—

Figure 1 represents a view in section taken vertically and transversely through an engine cylinder, showing the arrangement of the valve lift thereon;

Fig. 2 represents a detail sectional view taken horizontally on the plane indicated by the line 2—2 of Fig. 1.

Referring more particularly to the drawing, 5 indicates one of the engine cylinders having an inlet valve 6 in its head, which valve seats on the valve seat 7. The cam shaft is indicated at 8 and is operated in the usual manner, and carries a cam 9 co-acting with a roller 10 arranged on the tap-

pet 11 for intermittently lifting this tappet as the cam shaft rotates. The tappet 11 reciprocates through a guide 12 which is screwed down as at 13 into an opening provided in the engine casing 14, alongside of the cylinder. The tappet guide 12 is provided with a peripheral flange 15 which abuts against the upper surface of the casing adjacent the opening into which the tappet guide is screwed.

The lift rod 16 is arranged alongside of the cylinder as is usual, extends through a bearing 17 on the cylinder casing, and at its lower end projects into a socket 18 provided in the tappet 11. Surrounding the lower portion of the lift rod is a cone shaped metallic casing 19 internally threaded at its lower end whereby to be screwed in place upon the upper externally threaded end of the tappet guide 12, as clearly shown. The upper portion of the casing 19 is provided with an enlargement or boss 20, through a bore in which the lift rod 16 slidably extends. A good bearing and guide is thus provided for the lower portion of the lift rod.

The lower end of the rod 16 is threaded and has screwed upon it an annular spring seat 21, which on its upper face is provided with a circular groove receiving the lower end of a spiral spring 22. The upper end of this spring seats in a groove provided in the upper end of the casing 19 around the base of the bearing 20. A jam nut is turned onto the rod 16 below the spring seat 21 into engagement therewith and locks the seat in position. This nut also forms a seat against which the tappet 11 strikes in order to lift the rod 16 when the engine is running. It will be noticed that normally a space occurs between the nut 22 and the upper end of the tappet so that when the tappet engages the nut upon being lifted by the cam 9, the rod will be suddenly and quickly lifted and will be as quickly released when the cam will have passed from beneath the tappet. The spring 22 exerts a tension downwardly on the left rod 16 for normally retaining the valve 6 in closed position. It will be understood that in assembling the parts, when the casing 19 is screwed down, the upper end of the spring will be engaged thereby and the spring will be compressed as the casing is screwed on, so that it will continuously exert a tension downwardly upon

the rod. The tension of the spring may be varied by turning the casing 19 in one direction or another so as to lift or lower the same to the desired degree, and any wear occurring between the tappet and rod may be taken up by adjusting the jam nut and lower spring holder up or down.

The arrangement which I have provided does away with the necessity of mounting the spring control on the top of the cylinder, and hence allows of a material reduction in the total height of the engine. Furthermore, the casing 19 provides for an oil tight cap over the tappet so that loss of oil from the engine casing through the tappet bearing is done away with. Furthermore the spring is housed and protected against dust and grime, or other foreign matter, and also a material reduction in noise is attained.

The upper end of the lift rod 16 is pivotally connected as at 24 with the outer end of a rocker arm 25, which arm is pivotally mounted at 26 on a post 27 carried on the cylinder head. The inner end of the rock arm 25 is connected by means of the links 28 and 29 with the valve stem 30, and this link connection allows of the oscillation of the arm 25 in opening and closing the valve 6 without any tendency for a lateral pull against the valve so that no friction will result from this account, but the valve will be opened and closed along a straight line, so as to always seat properly when in closed position.

Although I have described the preferred embodiment of my invention, I may desire to make such changes in the construction, combination and arrangement of parts thereof as do not depart from the spirit of the invention and the scope of the appended claims.

The arrangement whereby the lower end of the lift rod projects into the socket provided in the tappet, affords a guide for the lower end of the rod, which will prevent the lower portion of the rod from becoming bent or warped.

I claim:

1. An engine valve lift, including a lift rod, a tappet guide, a conical casing adjustably connected with the tappet guide and surrounding the lift rod and having a bearing at its upper end through which the lift rod plays, an annular spring seat threaded onto the lift rod within the casing, a jam nut threaded onto the rod into engagement with the spring seat, and a coil spring compressed between said spring seat and the opposed end of the casing.

2. An engine valve lift, including a lift rod, a tappet guide, a casing adjustably connected with the tappet guide and surrounding the lift rod, a spring seat adjustably mounted on the lift rod within the casing, and a coil spring compressed between the valve seat and the opposed end of said casing.

3. The combination with an engine, including a valve lift rod, of a casing surrounding the lift rod, and adjustably connected with the engine for adjustment longitudinally of the rod, a spring seat adjustably mounted on the rod within the casing, and a compressed spring interposed between the spring seat and the opposed end of the casing.

4. An engine valve lift including a lift rod, a tappet guide, a casing adjustably connected with the tappet guide, means on the casing forming a bearing for the lift rod, a spring seat mounted on the lift rod within the casing, and a spring interposed between the spring seat and bearing.

5. The combination with an engine including a valve lift rod, a tappet for actuating the same in one direction and a guide for the tappet; of a casing adjustably connected with the guide and surrounding the rod, and means mounted within the casing exerting a tension against the rod in a direction opposed to the direction in which the tappet actuates the rod.

6. The combination with a motor including a cylinder, a lift rod and a tappet guide, of means for spring tensioning the lift rod, and means mounted beside the cylinder on the tappet guide for controlling the spring tension.

7. An engine valve lift, including a tappet having a socket in one end, a lift rod projecting at one end into the socket, and spring tension means associated with the lift rod including a jam nut mounted on the lift rod in spaced relation with the socketed end of the tappet when the latter is in normal position, said jam nut forming a bearing against which the tappet strikes.

8. The combination with a valve lift rod, and tappet guide, of a casing surrounding the lift rod and adjustably connected with the tappet guide, a spring seat adjustably mounted on the lift rod, and tensioning means interposed between the spring seat and the casing.

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Witnesses:

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