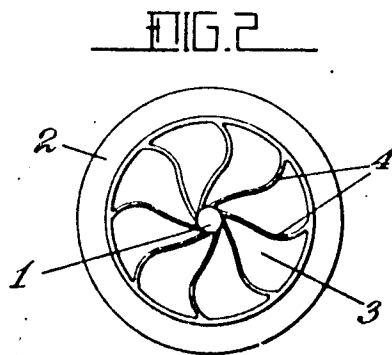
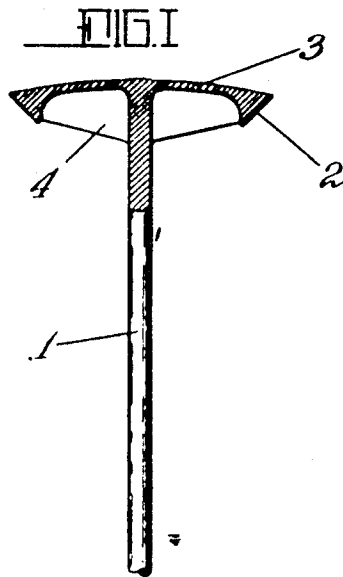


L. G. NILSON.
PUPPET VALVE FOR HEAT ENGINES.
APPLICATION FILED MAR. 16, 1907.

958,759.

Patented May 24, 1910.



Witnesses:

Edmund O. Duborg.
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UNITED STATES PATENT OFFICE.

LARS G. NILSON, OF HOBOKEN, NEW JERSEY, ASSIGNOR OF ONE-HALF TO WILLIAM B. STRANG, OF NEW YORK, N. Y.

PUPPET-VALVE FOR HEAT-ENGINES.

958,759.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed March 16, 1907. Serial No. 362,658.

To all whom it may concern:

Be it known that I, LARS G. NILSON, a citizen of the United States, residing at Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Puppet-Valves for Heat-Engines, of which the following is a full, clear, and exact specification.

This invention relates to puppet valves for internal combustion engines, and has particular reference to improvements in the mechanical construction whereby the weight is reduced and the strength increased, and at the same time the radiating surface increased so that the valve will be kept cool and damage by overheating prevented.

By reason of the large number of sudden shocks to which gas engine valves are subjected, the metal in time becomes crystallized and the stem breaks. To avoid this it has heretofore been customary to make such valves heavier than is desirable for best operation. This increase in the weight has a further disadvantage in addition to increasing the shock of accumulating heat and becoming very hot, so that in some instances it has been found necessary to provide a water circulation for keeping the valve cool so as to prevent corrosion or pitting by reason of the excessive heat.

The object of this invention is to provide a valve having increased strength in proportion to its weight and at the same time having increased radiating surface so that it is prevented from becoming overheated, this construction also being somewhat resilient so that the shocks due to the sudden seating of the valve are cushioned by the valve itself. To attain this object, I have provided a valve wherein the head is preferably curved or dished and the under side is provided with ribs which perform the double function of making the valve strong, and at the same time provide such larger radiating surfaces as to prevent overheating of the valve.

The invention is shown in the accompanying drawing, wherein—

Figure 1 is an elevation partly in section, and Fig. 2 is an under plan view.

1 is the valve stem, 2 the seat, and 3 the curved or dished top having the ribs 4 on the underside thereof. These ribs 4 are preferably curved as shown in order to provide an increased radiating surface, and also will be explained, to enable the valve

head to be resilient to a certain extent when unequally heated. The head 3 is made considerably thinner than is the ordinary practice, and it is stiffened by the ribs 4, the latter extending between the stem and the outside rim which forms the seat. The ribs are also disposed so as to brace the body and stem to maintain alignment. It is well known that the side of the valve opening into the combustion chamber of the engine is subject to the greatest heat, and is consequently not as strong when hot as it is when cold. But by reason of the thinness of the head, this heat can very quickly conduct through to the ribs 4 and be radiated from them. The lower edge of the ribs being coolest will be more rigid than the hotter portions of the valve including the head, and when the valve seats, the lower edges of the ribs are under tension while the head itself will be subject to compression. By curving the ribs as shown herein the elastic or cushioning effect upon the seat of the valve is considerably increased so that there will be such a cushioning effect as to prevent crystallization of the metal when the valve suddenly seats. Ordinarily it will be understood that these valves are mechanically operated so as to be seated by springs or other quick-acting devices, and the motion is always very suddenly arrested. By lightening the valve construction and making it so thin as to be somewhat resilient the action of the valve is improved and its life prolonged, while the ribs provide the increased radiating surface and brace the relatively light head.

It will be understood that the ribs can of course, be straight and secure the same result, but it is preferable to increase the cushioning effect by curving the ribs as shown herein.

Having thus described my invention, I declare that what I claim as new and desire to secure by Letters Patent, is,—

1. A valve for an explosion engine comprising a stem, a relatively thin curved head having a thickened outside edge forming a seating surface, and elongated resilient ribs integral with said thin curved head and thickened flange extending between the flange and the stem.

2. A valve for an explosion engine comprising a stem, a relatively thin head having a thickened flange on one side forming a

seating surface, and ribs integral with the head and flange on the same side as the flange, said ribs extending in other than a radial direction between the flange and the stem.

3. A valve for an explosion engine having a relatively thin head, a thickened peripheral flange on one side of said head, and heat radiating resilient ribs integral with

said flange and head, said ribs being elongated and extending between the stem and flange in other than a radial direction. 10

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

LARS G. NILSON.

Witnesses:

JULIAN S. WOOSTER,
GEO. A. HOFFMAN.