

A. C. DANVER.

PACKING.

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1,019,607.

Patented Mar. 5, 1912.

Fig. 1.

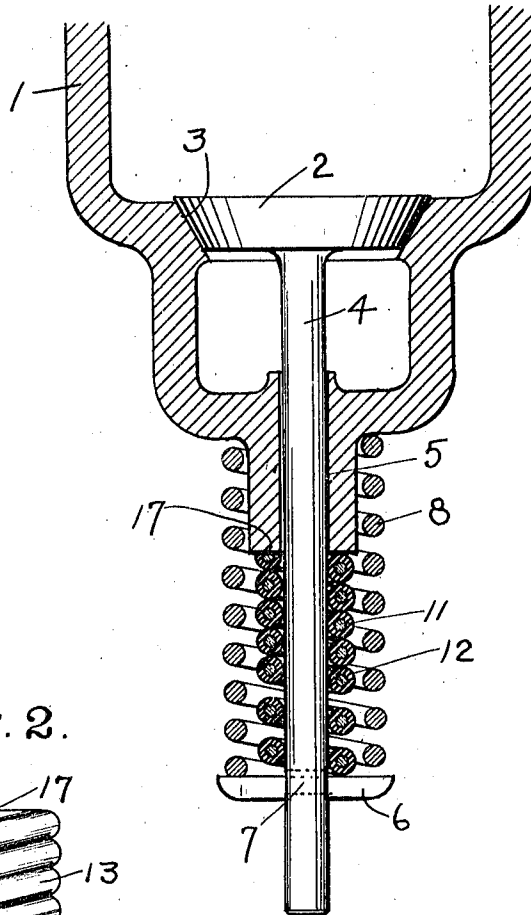


Fig. 2.

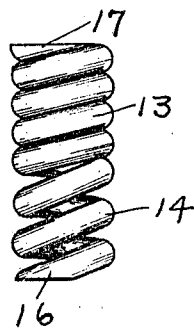


Fig. 3.



Fig. 4.



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PACKING.

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To all whom it may concern:

Be it known that I, ANDREW C. DANVER, a citizen of the United States, residing at the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Packing, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a valve stem packing and has for its object to provide a packing constructed of a helically wound spring wire covered with a heavy coating of suitable anti-friction and heat resisting material, said packing being particularly adapted to be readily applied to a valve stem of internal combustion engines, and to automatically support itself in position thereon compensating for the reciprocating action of the valve.

Another object of the invention is to provide this packing with a number of open coils at its lower or outer end, the end of said open coils being arranged to rest against the cross bar or transverse key in the valve stem whereby the upper portion of the packing is yieldingly held in position against the lower end of the outer valve stem bearing to render this bearing tight after having been worn by the action of the valve stem therein.

It is found in practice that by winding the packing in a helical form, each time the valve is opened by the raising of the stem, the packing has a tendency (due to the spring action of the helically wound wire), to automatically engage the stem and also to press against the end of the bearing a little closer and so give to the packing its maximum effectiveness at the time it is needed the most.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1— is a sectional side elevation showing a portion of an engine cylinder and a valve in position therein and my improved packing in section applied to the valve stem. Fig. 2— is a detail side elevation of my packing. Fig. 3— is a top view of said packing. Fig. 4— is a section of the packing wire and covering.

Referring to the drawings 1 designates a portion of the valve casing of any internal combustion engine, a portion of which casing is shown in section, and 2 the valve which is of the usual bevel seated type which finds its seat at 3 in said casing. The stem 4 in this class of valves is usually formed integral with the valve disk proper and projects downward through the elongated bearing 5, said stem being provided with a key or cross bar 6 which is adapted to be readily inserted or removed from the slot 7 in the stem through which it extends. The valve is normally held to its seat by means of the large coil spring 8, one end of which rests against the casing at 9 while the opposite end 10 rests against the said stem key 6 whereby the valve is returned quickly to its seat after having been raised by the cam (not shown.)

It is found in practice that owing to the continual and rapid reciprocations of the valve stem through its bearing 5 that this bearing wears and when the valve is raised permits a quantity of air to be sucked in therethrough together with the explosive mixture flowing in through the carbureter thereby weakening the explosive mixture to such an extent that oftentimes the charge will not ignite, thus causing much trouble and greatly reducing the efficiency of the engine. As some of the bearings wear more than others it is impossible to adjust the carbureter to suit the different conditions under which each cylinder may be operating. To obviate this difficulty I have provided a simple and effective packing the same being constructed in a rope form and having a core 11 of piano wire, or other suitable spring wire, said wire being covered as at 12 with a thick coating of asbestos and graphite, or other suitable anti-friction and heat resisting material. This coated wire is then wound in a helical form about a center arbor leaving a hole there-through a little smaller than the valve stem to which the packing is to be subsequently applied, the coils at one end are closely laid as at 13, while those at the other end are wound apart or open as at 14, the open laid coils forming a spring to hold the other coils in position. In applying this packing to the stem it is only necessary to remove the key 6 from the valve stem. This spiral packing is then readily applied to the valve

stem by turning the same on backward or in the opposite direction to that in which the packing was originally wound. This turning of the packing has a tendency to open the coils slightly and make the center hole 15 a little larger thereby enabling it to be readily pressed into place. The key 6 is then re-inserted and the lower end 16 of the coil rests upon this key and exerts a spring action upon the upper coils 17 to firmly press them against the lower end of the bearing 5 closing any opening that may exist by reason of any looseness of the stem in its bearing. By this construction when the valve is raised, which is the time when the mixture is being sucked into the cylinder, the open or spring portion of the coil 14 contracts, which contraction has a tendency not only to cause the upper portion 13 of the coil to hug a little closer to the stem, but also has a tendency to press the upper end 17 of the coil more closely against the lower end of bearing 5, thereby causing this packing to more completely close any opening which may exist between the stem 4 and its bearing at the time when it is most necessary for the valve chamber to be tight.

The device is extremely simple and inexpensive in construction, may be very readily applied to any engine and is most effective in its operation rendering tight the worn valve stem bearing.

I claim:

1. As a new article of manufacture, a packing having a central opening adapted

to fit closely about a reciprocating valve stem, and a coil spring also about said stem acting on said packing to hold it in position one end of said spring resting against a member carried by said stem to reciprocate therewith and adapted to tighten the packing when the valve stem moves inward.

2. As a new article of manufacture, a packing having a comparatively soft outer covering and a core of spring wire the same being wound into a helical coil of close formation at one end and open formation at the opposite end whereby the latter end is adapted to rest against and move with the reciprocations of the stem inclosed within the coil.

3. As a new article of manufacture, a packing having a comparatively soft outer covering and a core of spring wire, the same being wound into a helical coil to fit around a reciprocating valve stem, the coils at one end of the packing being wound in close formation and the coils at the opposite end in open formation whereby the latter coils may serve as a spring to rest against a member carried by said stem to reciprocate therewith and yet retain the other coils in a fixed position.

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

ANDREW C. DANVER.

Witnesses:

JOHN J. REILLY,
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