

1,103,596.

FIG. 5

FIG. 1

FIG. 2

FIG. 3

FIG. 4

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FRANKLIN LOTTER, OF ELKTON, MICHIGAN.

DECARBONIZING-TOOL FOR PISTONS OF GAS-ENGINES.

1,103,596.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANKLIN LOTTER, a citizen of the United States, residing at Elkton, in the county of Huron and State of Michigan, have invented certain new and useful Improvements in Decarbonizing-Tools for Pistons of Gas-Engines; and I 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 devices for cleaning surfaces which are not readily accessible to ordinary tools, and is especially applicable to the decarbonizing of piston heads of internal combustion engines without necessitating the dismounting of the cylinders.

The object of the invention is to provide a simple and cheap device of this character constructed for ready entrance through a spark plug or other small aperture, and having reinforcing means for stiffening it after its insertion, to provide for its efficient operation.

With this and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings:—Figure 1 represents a side elevation of this scraping tool in the act of being inserted through a small opening for use in decarbonizing a piston head, the engine sleeve and piston being shown in section. Fig. 2 is a similar view showing the reinforcing or stiffening means in position for use. Fig. 3 is a front elevation on an enlarged scale of the tool. Fig. 4 is an edge view partially in section. Fig. 5 is a transverse section on line 5—5 of Fig. 4.

In the embodiment illustrated, a cleaning tool or scraping implement 1 is shown composed of a plurality of superimposed flat flexible strips, three being here shown, and numbered 2, 3, and 4. These strips are preferably constructed of spring steel and slidable longitudinally relative to each other. The main or scraping strip 2 is slightly longer than the others and has a scraper 5 at one end, shown in the form of a hook. This strip 2 is also equipped with a plurality of longitudinally spaced keepers 6, 7, and 8, two of which are preferably arranged

at opposite ends of said strip on one face thereof and the other intermediately of the ends of the strip. The keepers 7 and 8 disposed respectively at the middle and at the rear end of the strip 2 are designed to guide the strips 3 and 4 in their movement back and forth. The keeper 6 at the front end of the strip 2 extends in a direction opposite to that of the hook 5 and is designed to receive one end of the strips 3 and 4, as shown in Fig. 2. The strips 3 and 4 are approximately the same length and the inner end of each is preferably pointed as shown at 9 to facilitate their ready passage into the loop or keeper 6. These pointed ends are also provided with laterally extending lugs 10 for limiting the insertion of said ends in said keeper 6. The rear ends of the strips 3 and 4 are outturned as shown at 11 extending in a direction opposite to that of the hook 5 on the strip 2 and are designed as handles or thumb pieces for actuating the strips. These strips 3 and 4 are also provided on their opposite edges at a point intermediately of their ends with extensions or stops 12, which are designed to engage the inner edge of the keeper 8 to limit the outward movement of said strips 3 and 4 and which also engage the outer edge of the keeper 7 for limiting the inward movement of said strips should the pointed ends thereof not be engaged with the keeper 6.

In the use of this device, the strips 3 and 4 are moved outwardly into position shown in Fig. 1, the strip 3 projecting at its rear end beyond the strip 4. When in this position the hooked end of strip 2 extends some distance in advance of the pointed ends of strips 3 and 4, and being very flexible may be readily inserted through a small aperture, such as a spark plug aperture shown in Fig. 1. After this flexible hooked end of the strip 2 has been inserted through the aperture in the cylinder head, the outturned end of the strip 4 is engaged by the right hand of the operator and forced inwardly until its pointed end enters the keeper 6 and until the stops thereon abut against the rear edge of said keeper. Then the spring strip 3 is forced inwardly until the pointed end thereof also enters the keeper 6. When the parts are in this position as shown in Fig. 2, the tool will be stiffened or reinforced throughout its entire length and it may then be readily forced back and

forth over the piston head to remove the carbon therefrom by the scraping implement 5 which comes in contact therewith.

To remove the implement, the strips 3 and 4 may be drawn outwardly to their extreme limit and the flexible portion of the strip 2 will then conform to the restricted space through which it must enter, and permit it to be readily removed.

10 The outer end of the strip 2 is preferably left straight so that it may be used when desired for scraping purposes, should occasion demand.

The keeper 7 which is arranged intermediately of the ends of the strip 2 is made considerably longer than the other two keepers for the purpose of affording a hand hold or grip, which may be grasped in the left hand of the operator, and his right 20 hand used to slide the strips 3 and 4 back and forth.

While this tool has been described as especially applicable for cleaning piston heads of internal combustion engines, it is to be 25 understood that it may be used for other surfaces than those above mentioned, such as the cleaning of tubes.

I claim as my invention:—

1. A longitudinally extensible decarbonizing tool comprising a plurality of superimposed flexible strips mounted to slide longitudinally on each other, a scraping element on one of said strips, and cooperating elements on said strips to limit their movement in opposite directions whereby when 35

said strips are extended the tool is rendered flexible and when contracted it is rigid.

2. A scraping tool comprising a plurality of superimposed flexible metal strips, one of said strips having a scraping element at one end and a plurality of longitudinally disposed keepers, the other strips having one end pointed and their other end bent laterally to form finger grips, and stops on said sliding strips spaced from the pointed ends thereof. 45

3. A cleaning tool comprising a plurality of superimposed flexible metal strips, one of said strips being provided with a scraping element extending laterally therefrom in one direction, a keeper extending in an opposite direction adjacent said element, an elongated keeper arranged on said strip intermediately of its ends and another keeper at the other end of said strip, the other strips 55 being slidably mounted in said keepers and having one end pointed and equipped with lateral shoulders and the other end bent laterally, said sliding strips being also provided with stops arranged intermediately of their ends for limiting their outward movement. 60

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANKLIN LOTTER.

Witnesses:

M. L. ACKERMANN,
O. B. SOELMER.