

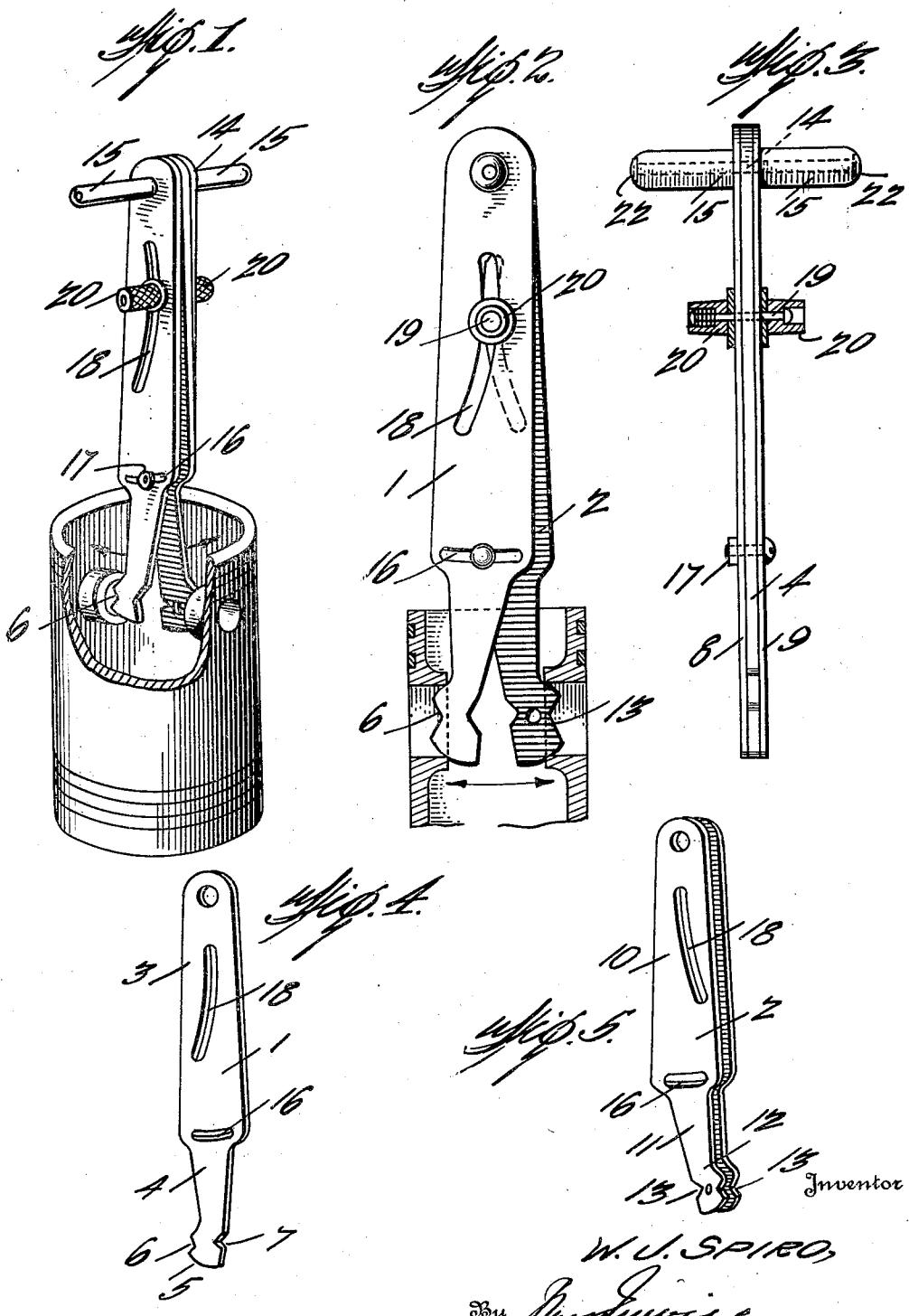
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PISTON HANDLING IMPLEMENT

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PISTON HANDLING IMPLEMENT

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This invention is directed to an improvement in implements designed to be used in connection with pistons of an automobile engine, and is particularly constructed to place in the hands of the workman a tool which may be simply and conveniently manipulated to interlock with the piston and provide a handle extension by which the piston may be manipulated in the cylinder in fitting or other manipulation.

The primary object of the present invention is the provision of an implement of this character providing a reliable and efficient accessory for the automobile mechanic, and in the use of which the piston may be conveniently grasped either through the wrist pin or through the wrist pin bearing lugs whereby all necessary operations of the piston in fitting, regrinding, placing or withdrawing the piston may be conveniently and expeditiously carried out.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a perspective view showing the implement in use;

Figure 2 is a view in elevation of the implement;

Figure 3 is an edge view of the implement; Figure 4 is an elevation of one arm;

Figure 5 is a perspective view of the other arm.

The improved implement is made up of two arms 1 and 2, the former of which is of single thickness, while the latter is made up of two relatively spaced sections, between which the arm 1 is guided in operation and substantially housed in inoperative position. The arm 1 constitutes a single thickness of metal comprising a main length or body 3 having uniform width and of appropriate length. The body 3 extends in one direction in the form of a neck 4 which is of materially less width than that of the body and is arranged at an angle to the body, that is, the median longitudinal line of the neck is coincident with the longitudinal median line of the body at one end but extends therefrom at an angle so that the neck, while in the plane of the body, is arranged at an angle to such body.

The relatively outer side of the free terminal of the neck is enlarged to form a jaw 5, the outer edge of which is rounded, with the rounded contour including the free terminal of the neck. Transversely of the neck the respective edges of the jaw are each formed with a V-shaped depression 6 and in the neck in line with and between these depressions is formed a countersunk opening 7.

The double-arm member is made up of two parts identical with each other and with the single arm, that is, such double arm includes upper and lower sections 8 and 9, each including a body portion 10 and a neck 11 arranged at an angle to the body portion but with such angle opposite that of the angle of the neck 4 with relation to the body portion 3 of the single arm 1. The terminals of the necks 11 of the upper and lower sections 8 and 9 are laterally enlarged to provide jaws 12, the opposing edges of which are formed with V-shaped recesses 13.

The arms 1 and 2 are of the same length and the sections 8 and 9 of the double arm 2 are spaced apart to slidably receive between them the single arm 1. At the ends remote from the jaws, the respective arms are connected by a pivot pin 14 through which the arms are pivotally united, the pivot pin being extended in both directions beyond the arms to provide handles 15. Both sections of the double arm and the single arm are formed in their body portions adjacent the respective necks with transverse slots 16 in which is loosely mounted a pin 17 headed in both directions beyond the slots to thus guide and limit the opening movement of the jaws.

The body portions of the single arm and of both sections of the double arm are formed with longitudinally ranging slots 18 which from their initial points adjacent the handles 15 curve toward one edge of the respective arms. The curvature of the slots in the single and double arms is in opposite directions, and a positioning pin 19 is passed through all slots 18 and is provided beyond the respective sections 8 and 9 of the double arm with sleeves 20 which have a diameter exceeding the width of the slots and which bear at their inner ends more or less snugly

against the surfaces of the upper and lower sections of the double arm.

The pin 19 is terminally seated in axial openings in the sleeves 20, the respective ends of the pins being headed at 20° to prevent separation of the sleeves and a spring 21 being interposed between the head at one end of the pin 19 and the bottom of an enlarged portion of the axial recess in one of the sleeves 20. Incident to the contact of the sleeves with the respective sections 8 and 9 of the double arm, it is apparent that in the movement of the pin by appropriate pressure on the sleeves, the pin and sleeve rotate to facilitate the adjustment. The outer surfaces of the sleeves may, if desired, be roughened or knurled for convenience in operation.

From the construction described, it is apparent that as the pin 19 is moved toward the jaws, the respective arms incident to the opposite curvature of the slots 18 are moved toward each other, the arrangement being such that in the final position of the pin 19, the jaws of the respective arms are in registry. As the pin 19 is moved in the opposite direction, that is, toward the pivot 14, the jaws 5 and 12 will be moved outward and the extent of this movement is controlled within the limits of the particular implement by the position of the pin 19 in the slots 18.

In use, particularly in connection with pistons, the implement is inserted into the open end of the piston, and in the absence of a wrist pin therein or any equivalent transverse pin, the jaws are spread until the rounded portion of the jaws is forced into the openings in the wrist pin bearings, in which position it is apparent that the tool is locked to the piston and the piston may be manipulated in the cylinder through use of the handles 15. If the wrist pin openings in the interior of the piston are too small to receive the rounded edge of the jaws, the edges of such openings may be engaged in the outer V-shaped slots 6 and 13 of the respective jaws to thereby lock the implement to the piston. If the wrist pin is in place, or if a temporary pin has been inserted, the jaws may be spread by operation of the pin 19 and positioned on opposite sides of the wrist pin and then contracted so that the wrist pin is in effect gripped between the relatively inner V-shaped depressions 6 and 13 of the jaws. Thus the implement may be connected to the piston directly or to the wrist pin and the piston conveniently manipulated for any usual or desired purpose without possibility of disconnection and with the utmost convenience.

The implement as a whole is for material utility in connection with the handling of pistons, providing a means by which the mechanic may grasp and readily handle the piston throughout the full length of the cylinder, turning or reciprocating the piston or both, or in the event of a broken piston ring

or a piston difficult of removal, the implement provides a convenient way for grasping the piston through the use of the inner V-shaped depressions of the jaws for conveniently withdrawing the piston.

While obviously designed for use in connection with pistons, it is apparent that the implement has other advantageous uses, particularly when it is desired to grip an element to be manipulated in an inconvenient position or to recover a part dropped into a cylinder or other opening by inadvertence. The implement is thus an all-round grappling tool, providing for a gripping of a particular object either through a spreading or contracting action of the jaws as may be found desirable in the particular instance, though it is to be understood that its primary use is in connection with the gripping and interlocking with pistons for the convenient manipulation of the piston within the cylinder for any and all purposes.

It is apparent that, if contemplated and as preferred, the pivot pin 14 arranged to provide the handles may be passed through wooden sleeves, beyond the ends of which the pivot pin is headed to provide more comfortable grip during the manipulation of the piston through the connection of the implement. These handles are indicated at 22 in Fig. 3.

The implement is preferably constructed entirely of metal and the respective arms are relatively thin, though it is, of course, to be understood that any appropriate material and any thickness of arms as well as any appropriate overall length of the implement is contemplated with due regard to the particular use for which the special formed implement may be desired.

I claim:—

1. An implement for the handling of pistons including two arms pivotally connected at their upper ends, jaws at the opposite ends of the arms, each jaw being formed with means on the outer lower edge to engage a cylinder, and means intermediate the pivoted ends of the arms and the jaws cooperating with both arms whereby the free ends of the arms may be spread or contracted at will.

2. A piston handling implement including two arms, means for pivotally connecting the arms at one end, the opposite ends of the arms being formed with jaws, each arm being formed with a curved slot, with the curvature of the slots of the respective arms in opposite directions, and an operating pin passing through the slots to provide for moving the free ends of the arms relatively in the movement of the pin longitudinally of the slot.

3. A piston handling implement including two arms, means for pivotally connecting the arms at one end, the opposite ends of the arms being formed with jaws, each arm being formed with a slot, with the angle of the slots of the respective arms in opposite directions,

and an operating pin passing through the slots to provide for moving the free ends of the arms relatively in the movement of the pin longitudinally of the slot, the pivot point of the arms being extended in both directions beyond the arms to provide operating handles.

4. A piston handling implement including two arms, one of said arms being formed of spaced sections to receive the other arm between them, a pivot pin uniting the arms at one end, the opposite ends of the arms being formed as relatively inclined necks terminally formed with jaws, each of the arms being formed with longitudinally ranging slots, with the angle of the slots of one arm being opposite that of the other arm, a pin passing through the slots of all arms, and sleeves fixed on the pin beyond the sections of one arm and bearing against said sections.

5. A piston handling implement including two arms, one of said arms being formed of spaced sections to receive the other arm between them, a pivot pin uniting the arms at one end, the opposite ends of the arms being formed as relatively inclined necks terminally formed with jaws, each of the arms being formed with longitudinally ranging slots curved longitudinally of the arms, with the curvature of the slots of one arm being opposite that of the other arm, a pin passing through said curved slots of all arms, and sleeves fixed on the pin beyond the sections of one arm and bearing against said sections, the jaws at the terminals of the necks being formed with V-shaped depressions.

6. A piston handling implement including two arms, one of said arms being formed of spaced sections to receive the other arm between them, a pivot pin uniting the arms at one end, the opposite ends of the arms being formed as relatively inclined necks terminally formed with jaws, each of the arms being formed with longitudinally ranging slots curved longitudinally of the arms, with the curvature of the slots of one arm being opposite that of the other arm, a pin passing through said curved slots of all arms, sleeves fixed on the pin beyond the sections of one arm and bearing against said sections, the respective arms being formed with transverse registering slots, and a pin passed through said slots for limiting the spreading movement of the arms and preventing separation thereof.

7. A piston handling implement including an arm having a body portion of uniform width, a neck extending from one end of the body portion and at an angle thereto, the free terminal of the neck being formed with a jaw, a second arm including spaced sections, each including a body portion and reduced neck extending from one end thereof, with the necks terminally formed to provide jaws, the first mentioned arm being movable between

the sections of the second mentioned arm, a pivot pin uniting the arms at one end, oppositely directed curved slots formed in the respective arms, a pin slidable longitudinally of the slots to move the free ends of the arms in relatively opposite directions, the angular relation of the necks of each arm with respect to the body portion of that arm being reversed with respect to the angular inclination of the neck of the other arm with respect to the body portion of that arm whereby the free terminals of the necks open and close in angular relation.

In testimony whereof I affix my signature.
WALTER J. SPIRO. [L. S.]

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