This invention relates to fuel pumps and more particularly has been designed to facilitate the hand priming of such a pump.

An object of the invention is to provide an inexpensive hand priming instrumentality, and it also provides for such a modification of conventional pump structure as to adapt it for the association of a hand priming handle.

Other objects and advantages will be understood from the following specification and accompanying drawings.

In the drawings—

Fig. 1 is a view in vertical section showing one specific embodiment of the invention.

Fig. 2 is a sectional view on line 2—2 of Fig. 1. Fig. 3 is a perspective of the priming handle.

Fig. 4 shows in side elevation, partly in section, a pump of somewhat different construction, this pump having the similarly formed priming handle associated therewith.

Fig. 5 is a section on line 5—5 of Fig. 4. Fig. 6 shows in vertical section a third form of pump with the hand priming handle associated therewith.

Fig. 7 is a section on line 7—7 of Fig. 6.

Fig. 8 is a perspective of a portion of the pump, this figure intending to illustrate the pivotal supporting arrangement for the priming handle.

Referring to Figs. 1 to 3 inclusive, numeral 9 represents the main body of the pump which is preferably formed by the process of die casting. Numeral 11 represents the pump cover. This cover is also integral with the cover or cap for the filter cup 13, the cup being held to the cap by fastening means 15. The cover 11 has an opening 17 for admitting fuel which is to pass through the opening 19 to that region of the cup 13 below the filtering member 21, this filtering member being located at the top of the cup.

The fuel then passes through the filter 21 and through a pump inlet valve 23 and the passage 25 to the pump chamber 27. From the pump chamber 27 the fuel passes by way of valve 29 to the outlet 31. This outlet is intended to be connected by a conduit as usual with the carburetor.

The pump chamber 27 is closed by a diaphragm 33 held in position between the adjoining parts of the body 9 and the cover 11. To the diaphragm with its discs 35 and 37 is secured a plunger 39 which extends through an opening 41 in a wall 43 which divides the body 9 into two chambers, an upper chamber 45 and a lower chamber 47. The pump body has an opening 49 registering with an opening 51 in the engine crankcase, a part of which is represented by numeral 50 in Fig. 1.

A lever 53 is pivoted at 55 to the pump body. The lever projects through the two openings 49 and 51, and is held in contact with a cam 57 of the camshaft 59 by a spring 61 engaging its end. A suitable closure member 63 covers the bottom portion of body 9 and is held in position by fastening means 65. A portion 62 of the closure member 63 is bent inwardly to serve as a centering means and retainer for spring 61, the other end of which spring is seated in a 10 disc 67 engaging the end of the lever 53. The lower end of plunger 39 seats within a depression of a similar disc 69 which latter disc serves as an abutment for a spring 71, which latter spring is also positioned by an indented portion 73 of closure 63. Spring 71 serves in an obvious manner to operate through the plunger and diaphragm to make a discharge stroke.

Cooperating with the lever 53 and the pump plunger 39 to make the suction stroke, there is a double link 75. The two links 75 are pivotally connected by a rivet 76 to the flat sides of the plunger 39. The two links are also pivoted on the pin 55. To provide suitable lost motion between the lever 53 and the double link 75 the lever is shaped as shown in dotted lines in Fig. 1, and is arranged to at times engage a pin 60 carried by the links 75. The two links then move together with the lever, and the plunger 39 is drawn down to make a suction stroke. It will be seen that owing to this lost motion connection the lever 53 is free to operate under the influence of the cam 57 and the spring 61 without producing movement of the plunger when the plunger is already in the position corresponding with the high pressure condition at the outlet valve. This action is well known in variable stroke pumps of this kind, and no invention is being claimed for the same in this application.

At its edges the wall of the body 9 is recessed at two points as shown by numeral 77 in Figs. 1 and 2. Pivoted in these recesses is the hand primer handle illustrated in perspective in Fig. 3. This primer, represented as a whole by numeral 70, may be formed from a single length of stiff wire or the like bent at its mid portion to form two symmetrical arms. Each arm is bent to form an angular portion 79. These angular portions are the parts which are pivoted in the recesses 77. Beyond the angular portion 79 each arm is extended as at 81 and then terminates in an inward end 83. These ends 83 closely approach each other and overlie the upper edges of the links 75. The portions 81 lie along the sides of the plunger as shown in Fig. 2. This
hand priming handle is so dimensioned that the weight of the part outside the body 9 holds it in the position shown such that the inner end is not in engagement with links 75 during the normal action of the pump. It will be understood that the closure 63 when secured in position holds the priming member in operative position with the portions 79 in the recesses 77. Should it be necessary to prime the pump the operator grasps the end or right portion of the handle and rocks it about its pivot, thereby engaging the ends 83 with the links 75. The plunger is thereby depressed to make a suction stroke. The spring 71 upon the release of pressure on the handle makes a discharge stroke. This action is repeated to whatever extent may be necessary.

Figs. 4 and 5 show a slight modification. In these figures the body 19 differs from the body 9 of Fig. 1 in that the slots to receive the priming handle are omitted. The closure 63 is like its counterpart 63 except that it is provided with slots 177 for the pivotal support of the priming handle. In other respects this form corresponds with that shown by Fig. 1, and similar reference characters are used to designate the similar parts.

In Figs. 6, 7, and 8 is shown a form of pump wherein the body is cast integrally with the counterpart of the bottom closure member of the other forms of the invention. This necessitates a somewhat modified provision for adding the priming handle. In this form of the invention the body 209 is formed with an integral tubular portion 211 for the passage of the plunger 213 which is connected to the diaphragm as in the forms already described. The parts above the diaphragm may be the same as before. A spring 217 at the diaphragm end of the plunger. This spring also surrounds the part 211 and seats on the flange 219 surrounding the tubular member. Adjacent the base of the member 211 is an angularly located positioning lug 221 for a spring 223. The other end of the spring engages the operating lever 225 being held in position by a lug 227. The lever 225, it will be understood, is to be operated by the engine cam as usual against the action of the spring 223. In so moving, the extremity of the lever 229 beyond the pivot 231 is adapted to engage a link 233 having a forked end rotatable on pivot 231. This link also has an interlocking connection as shown at 242 with the lower end of the plunger 213. A slot 237 is formed in the body as shown in Fig. 8. The manually operable priming lever is the same as before. Its pivotal regions are received within the slot, the longer end projecting downwardly on the outside while the shorter arm extends inwardly through slot 237 where it is positioned to at times engage and depress the link 233, and thereby produce a suction pump stroke through the instrumentality of the plunger rod 213. In order to hold the primer handle in position a plate 239 is secured over the slot by fastening means 241.

In each of these forms the simple priming handle or lever remains out of contact with the pump operating mechanism owing to the relatively greater weight of its outside arm. In each case the work arm is positioned to engage the member or link between the cam operated lever and the plunger. In each case the assembly and removal is extremely simple. The slight differences are merely slight modifications, or are made to accommodate pumps of slightly different form. In Figs. 1 and 4 the optional design of pivoting the priming handle to the body or other bottom closure is to be observed. In Fig. 6 where the pump body is made as an integral whole the primer is pivotally supported in a slot, and a separate but inexpensive plate is used to cover the slot and hold the primer in position.

I claim:
In a pump, a casing, pump-operating mechanism in said casing, a manually operable priming member having an inner arm to engage said mechanism and an outer heavier arm to act by gravity to hold said inner arm from contact with said mechanism, said member being of U-shape with its arms bent into parts angularly related to each other, there being pivot portions between said parts and said casing formed with slots to receive said pivot portions.

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