Oct. 27, 1936. C. ZIMMER 2,058,936

AUTOMOBILE FUEL PUMP

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FIG. 1

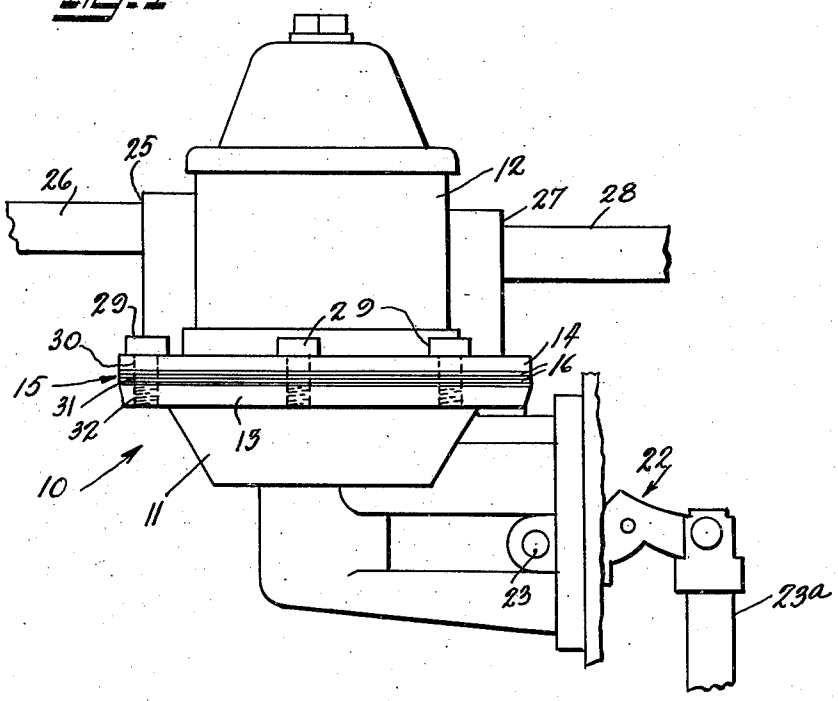
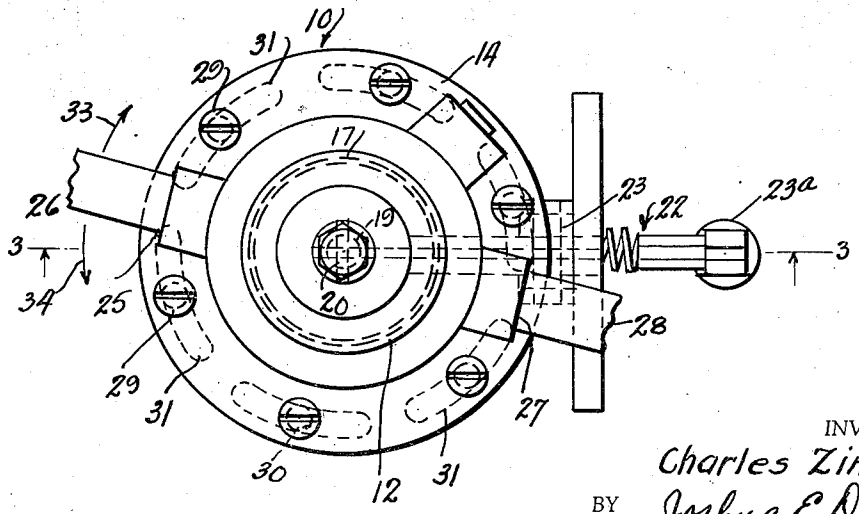



FIG. 2




INVENTOR.
Charles Zimmer
BY Joshua E. Davidson
ATTORNEY.

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Fig. 3

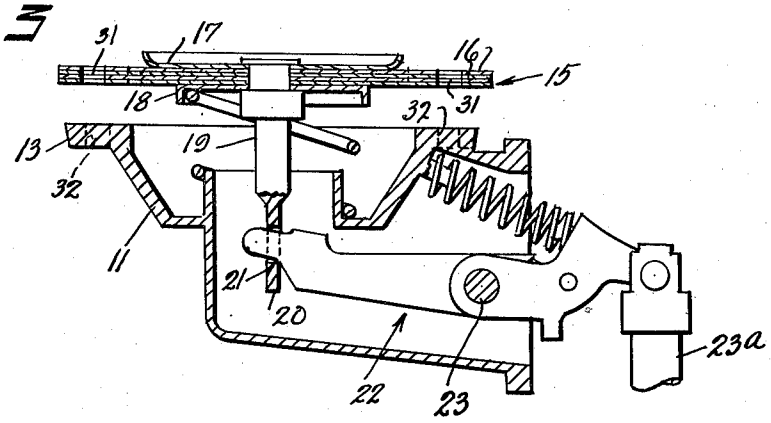



Fig. 4

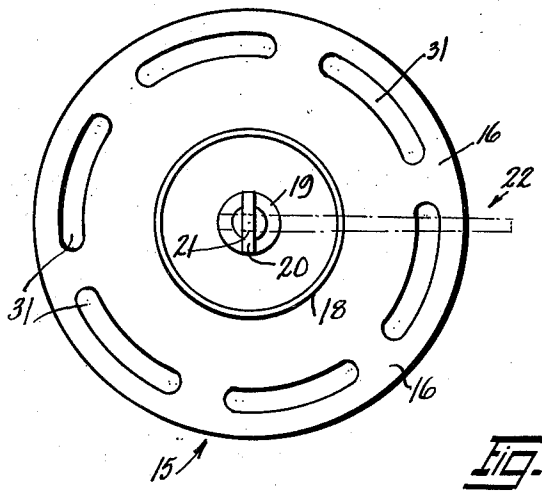
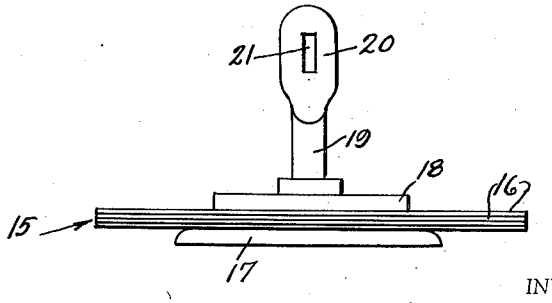



Fig. 5




INVENTOR.
Charles Zimmer
BY Joshua E. Davidson
ATTORNEY.

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# UNITED STATES PATENT OFFICE

2,058,936

## AUTOMOBILE FUEL PUMP

Charles Zimmer, Brooklyn, N. Y.

Application March 18, 1936, Serial No. 69,458

2 Claims. (Cl. 103—150)

This invention relates to automobile fuel pumps and more particularly to the diaphragms used in connection with such pumps.

The fuel pumps now commonly used in automobiles comprise an upper body portion, a lower body portion and a diaphragm held in place between the said body portions by screws which pass through flanges on the upper and lower body portions and diaphragm.

The upper body portion of the pump is provided with pipe lines one of which is connected to the gas tank and the other line is connected to the carburetor. The diaphragm is provided with a pull rod having a slot therein in engagement with a link pivotally mounted in the lower body portion and operated from the cam shaft of the motor. The relative angular position of the pull rod slot, link and cam shaft connection is fixed, but due to the fact that relative positions of the gas tank and carburetor vary in different cars the angular position of the upper body portion of the pump has to be adjusted to accommodate the particular arrangement of the gas tank and carburetor to suit the particular make of car for which it is intended.

Inasmuch as the holes in the upper body portion through which the securing screws pass are drilled in a definite or fixed position, it becomes necessary to drill the corresponding screw holes in the lower body portion so that they will be in alinement with the holes in the upper body portion, thus necessitating a different relative angular position between the holes in the diaphragm and the slotted pull rod for each position of the upper body portion. It will therefore be seen that with the foregoing arrangement it is necessary to carry a large variety of diaphragms in stock to be able to supply the various needs.

It is an object of this invention to eliminate this undesirable feature and to provide a diaphragm which may be universally used with the variously adjusted pumps.

Another object of the invention is to provide a pump diaphragm having slots near the periphery thereof to accommodate the securing screws no matter what the angular position of the upper pump casing or body portion assumes within given limits.

Another object is to produce a device of the character described in which the maximum simplicity of construction and operation is secured.

Other objects and advantages will appear as the nature of the improvements is better understood, the invention consisting substantially in the novel arrangement and co-relation of parts herein fully described, and illustrated in the accompanying drawings, wherein similar reference characters are used to describe corresponding parts throughout the several views, and then finally pointed out and specifically defined and indicated in the appended claims.

The disclosure made the basis of exemplifying the present inventive concept suggests a practical embodiment thereof, but the invention is not to be restricted to the exact details of this disclosure, and the latter, therefore, is to be understood from an illustrative, rather than a restrictive standpoint.

The inventive idea involved is capable of receiving a variety of mechanical expressions, one of which, for the purpose of illustration, is shown in the accompanying drawings, in which—

Figure 1 is a side view in elevation of a motor vehicle pump embodying my invention;

Figure 2 is a top plan view thereof;

Figure 3 is a sectional view of the lower portion of the pump, taken on line 3—3, Figure 2;

Figure 4 is a bottom plan view of the diaphragm and pull rod assembly; and

Figure 5 is a side view thereof looking from the right of Figure 4.

Referring now to the drawings in detail 10 indicates a motor vehicle fuel pump having a lower casing or body portion 11 and an upper casing or body portion 12 each of the said sections being provided with a flange numbered 13 and 14 respectively. Located and clamped between the said flanges 13 and 14 is a diaphragm 15 made of a plurality of disks 16 of leather or other suitable material held between an upper metal disk 17 and a lower metal disk 18 which are riveted together by means of a pull rod 19 which terminates at its lower end in a flattened portion 20 having a slot 21 therein. A link arrangement 22 pivoted at 23 in the lower casing 11 is in engagement at one end with the slot 21 and carrying at its opposite end a connection $23^a$ leading to the motor cam shaft (not shown).

The upper casing 12 is provided with an inlet 25 to which is connected a pipe line 26 leading to the gas tank (not shown) and is further provided with an outlet 27 having a pipe line 28 leading to the carburetor (not shown). The said upper casing 12 is secured to the lower casing 11 by means of screws 29 which pass through clearance holes 30 in the flange 14, the said screws also passing through slots 31 in the diaphragm and are screwed into threaded holes 32 in the flange 13 of the lower casing 11. Thus it will be seen by referring to Fig. 2 of the drawings that

the upper casing 12 may be adjusted in the direction of either the arrow 33 or arrow 34 within certain limits and yet the securing screws 29 will pass through the slots 31 and requiring but a single type of diaphragm and pull rod assembly to permit of proper alinement of the slot 21 in the pull rod with respect to the link connection 22. I find that with the slots 31 as shown in Figs. 2 and 4 the top casing 12 may be positioned to accommodate all of the present arrangements of gas tanks and carburetors in the various makes of automobiles employing this type of pump.

From the foregoing it will be seen that I have provided simple and efficient means for adapting the automobile pump diaphragm for universal use with the variously adjusted pumps.

It will further be seen that due to my improved diaphragm construction no great number of them need be carried in stock at one time, since, but a single diaphragm will meet the needs of any prospective purchaser, while with the old type of diaphragms a great many of them might be on hand and yet none of them would meet the instant requirements.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a motor vehicle fuel pump having a lower casing and an upper casing secured together by a circular row of screws, a diaphragm and pull rod assembly held between the said casings, the said diaphragm having elongated slots therein to permit of relative angular adjustment between the upper and lower casings.

2. A motor vehicle fuel pump, comprising a lower casing, an upper casing, a diaphragm held between the said casings, a pull rod secured to the diaphragm, the said rod having a slot therein, a link pivotally mounted in the lower casing and in engagement with the slot for operating the diaphragm, screws for securing the casings and diaphragm together, and elongated slots in the diaphragm through which the securing screws pass, as and for the purpose specified.

CHAS. ZIMMER.