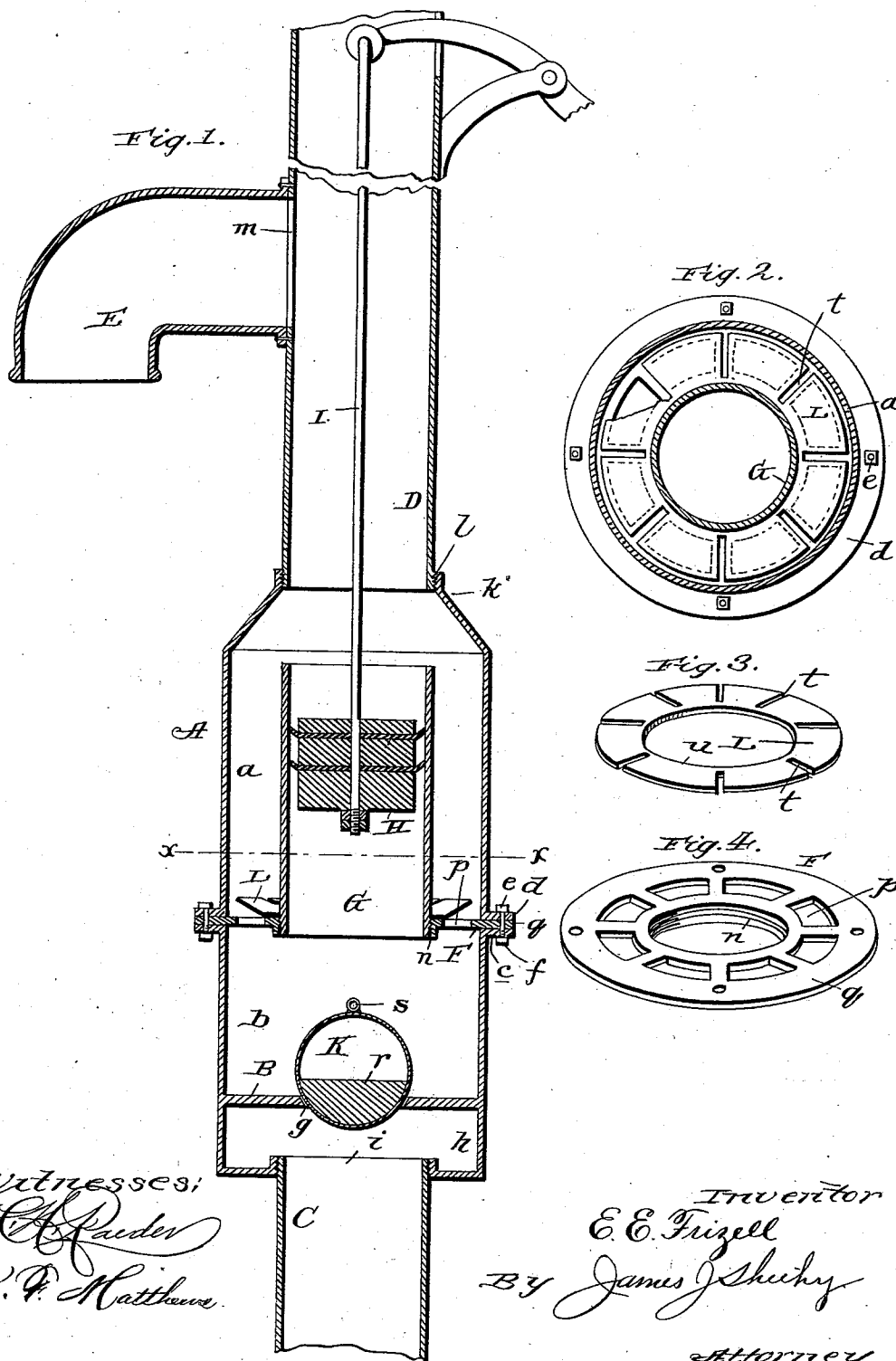


(No Model.)

E. E. FRIZELL.
PUMP.

No. 531,175.

Patented Dec. 18, 1894.



UNITED STATES PATENT OFFICE.

EDWARD E. FRIZELL, OF LARNED, KANSAS.

PUMP.

SPECIFICATION forming part of Letters Patent No. 531,175, dated December 18, 1894.

Application filed April 27, 1894. Serial No. 509,259. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. FRIZELL, a citizen of the United States, residing at Larned, in the county of Pawnee and State of Kansas, have invented certain new and useful Improvements in Pumps; 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.

My invention relates to improvements in that class of lift and force pumps which comprise an outer casing, a barrel or cylinder arranged within the casing, upwardly-opening valves arranged in the space between the cylinder or barrel and the casing, a valve arranged over the induction opening, and a reciprocatory plunger movable in the barrel or cylinder; and it consists in the peculiar construction, novel combination and adaptation of parts hereinafter described and specifically pointed out in the claim appended.

In the accompanying drawings Figure 1, is a vertical, central, sectional view of my improved pump with parts at top and bottom broken away. Fig. 2, is a cross sectional view taken in the plane indicated by the dotted line *x, x*, on Fig. 1. Fig. 3, is a perspective view of the valves removed from their seats, and Fig. 4, is a similar view of the valved seating disk or plate removed.

Referring by letter to said drawings:—A, indicates the stock or casing. This casing may be made of metal or other suitable material, and comprises an upper section *a*, and a lower section *b*. Each section is provided at its contiguous end with a lateral flange *c*, and *d*, having suitable apertures for the reception of connecting bolts *e*, threaded to receive nuts *f*, or other suitable fastening devices, so that while the sections are firmly connected, they may be readily taken apart when desired. The lower section *b*, of this casing is provided with an internal, horizontal wall or fixed plate B, having a central, vertical aperture *g*, of a diameter which will be presently described. Below this apertured wall B, is a chamber *h*, and in the bottom of the chamber is a central, vertical aperture *i*, of a diameter greater than the aperture *g*, of the wall above, and this aperture *i*, is screw tapped as shown, to receive the upper screw

threaded end of a suction pipe C. The upper section *a*, of this upper casing, is of a diameter corresponding to that of the lower section, and its upper end is contracted as shown at *k*, and is screw tapped as shown at *l*, to receive the lower screw threaded end of the pipe D. This pipe or section D, may be suitably provided with means to receive and support an operating handle, and is also provided in one side with a discharge aperture *m*, to which is secured a discharge spout or nozzle E. The discharge aperture is of a diameter as large or approximately as large as the cylinder or pipe D, and the discharge nozzle has a bore of a diameter as large as the discharge aperture which is larger than the valve K, presently described.

It will thus be seen that a valve or other part of the internal mechanism which may be drawn through the cylinder or pipe D, can be removed to the discharge nozzle without disconnecting the parts, and this is very desirable in removing the ball valve, as will be presently described.

F, indicates a metallic plate or disk which is of a form and construction better shown in Fig. 4, of the drawings. This plate has a central, internally-threaded aperture *n*. Surrounding this central aperture are radial apertures *p*, and surrounding these radial apertures is a flange *q*, which is designed to be interposed between the two lateral flanges *c*, and *d*, of the casing section, and receive the bolts which connect said sections. This valve plate or disk F, is thus firmly secured to the casing but may be readily removed when desired. Said plate receives and supports the vertically-disposed plunger cylinder G. This plunger cylinder is externally threaded at its lower end to engage the threads in the eye or aperture of the plate F, and is of a diameter the same or about the same as the cylinder D, and is arranged directly below the latter.

H, indicates the plunger, which may be of a suitable construction and is placed within the cylinder G, on the lower end of the plunger rod I, as shown.

K, indicates a ball valve. This valve is designed to close the aperture *g*, in the horizontal wall B, and in order to insure its proper seating, it may carry an internal weight *r*. This valve may also be provided with an eye

s, to receive a hook, string, or other means by which it may be drawn up through the plunger cylinder G, through the cylinder D, and out through the discharge nozzle, when desired.

Closing the apertures *p*, of the plate F, are valves L, and for the sake of cheapness in manufacture, these valves are cut from a single piece of leather, rubber, or other suitable flexible material, and may be made by taking a circular piece of material, cutting a circular hole in the middle to be placed over the plunger cylinder, and then slitting the material radially, as shown at *t*, so as to form the segmental valves L, and leave an annular portion *u*, to be seated upon and secured to the upper side of the threaded ring or apertured portion *n*, of the plate F, so that said valves may be allowed a lifting movement. The flange *q*, of the plate extends sufficiently within the casing A, as to also furnish a seat or bearing for the free edges of the valves L.

Although the several valves L, are formed by one piece of rubber or the like, it will be seen that each valve is capable of moving independent of the others and is consequently adapted to give upwardly when subjected to a slight pressure of water. It will furthermore be perceived that the valves L, being independent of each other, the choking or other impairment of one or more will not interfere with the successful operation of the others.

By the provision of the chamber *h*, below the ball valve it is obvious that a number of small supply pipes connected to drive wells may be led thereto so that the water can be taken from the well while the large central suction pipe may be used in drawing water from open wells, lakes, reservoirs, and the like.

From the construction described, it will be seen that I have a pump which may be manufactured at a comparatively small expense,

one in which the parts are not liable to get out of order, and should any of the parts become impaired or injured, they can be readily removed and replaced by others.

Having described my invention, what I claim is—

The herein described pump consisting essentially of the casing A, formed in two sections *a*, *b*, and having the contiguous ends of said sections flanged, the horizontal wall B, in the lower casing section having a central aperture, a valve K, seated in said aperture, the suction pipe detachably connected to the said lower casing section, the pipe D, larger in diameter than the valve K, and detachably connected at its lower end to the upper casing section *a*, and also having the discharge spout E, which is larger in diameter than said valve K, the plate or disk F, interposed and secured between the flanges of the casing sections *a*, *b*, and having the central, internally threaded aperture *n*, and the circular series of apertures *p*, surrounding said aperture *n*, the plunger cylinder G, larger in diameter than the valve K, and about the same size as the pipe, D and threaded at its lower end and screwed into the aperture *n*, of the plate F, a piece of rubber or other suitable material surrounding the plunger cylinder and having the annular portion secured to the upper side of the disk or plate F, and the several, independently-movable segmental valves L, arranged over the apertures *p*, of said disk or plate F, and the plunger adapted to move in the plunger cylinder, all substantially as and for the purpose specified.

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

EDWARD E. FRIZELL.

Witnesses:

JACOB W. RUSH,
HARRY L. ROSE.