

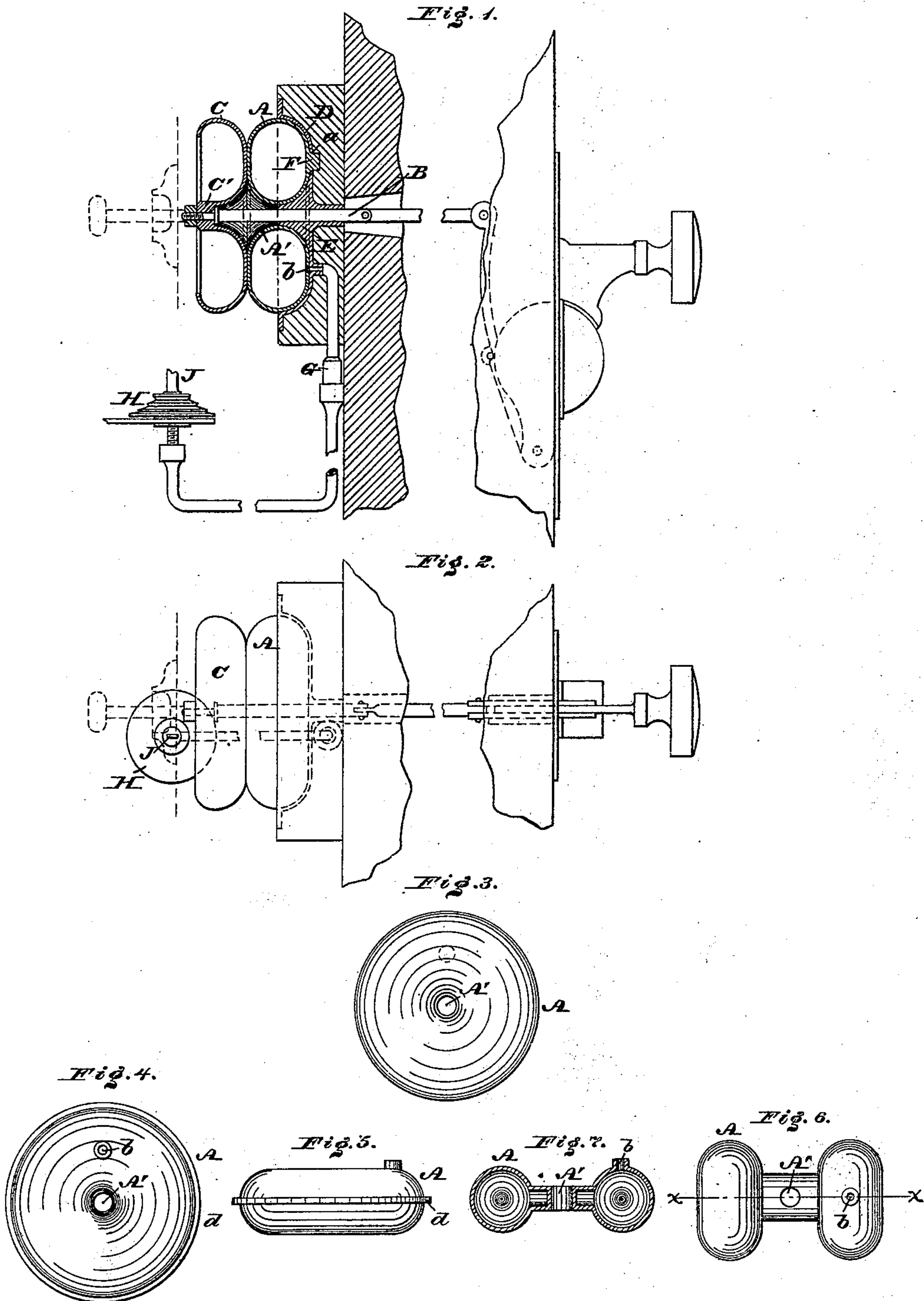
(No Model.)

R. P. GARSED.

PUMP.

No. 297,376.

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WITNESSES:
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PUMP.

SPECIFICATION forming part of Letters Patent No. 297,376, dated April 22, 1884.

Application filed September 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, ROBERT P. GARSED, a citizen of the United States, residing at Norristown, in the county of Montgomery, State of Pennsylvania, have invented a new and useful Improvement in Pumps, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a partial side elevation and vertical section of a pump embodying my invention. Fig. 2 is a top or plan view thereof. Figs. 3 and 4 are views of opposite faces of a detached portion thereof. Figs. 5 and 6 are side elevations of modifications thereof. Fig. 7 is a section in line *xx*, Fig. 6.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of the construction of the body of a pump of elastic material of the form of an annulus, with inner and outer walls, thus rendering the same light, strong, and inexpensive, and adapting it for the storage of air or other fluid which may be quickly and easily directed to a place of service by the action of a plunger on the outside of said body.

It also consists of a plunger of novel form.

It further consists of an inflatable body of novel form, the same communicating with the pump-body.

It also consists of other details of construction, as will be hereinafter set forth.

Referring to the drawings, A represents the body or barrel of the pump, constructed hollow, of elastic material, preferably of soft rubber, and of the form of an annulus, thus having inner and outer peripheries or walls closed on all sides excepting at the place of passage of the fluid, the inner wall being tubular, providing an opening, A', for the passage of the stem B of the plunger or head C, said opening, however, being closed to the interior of the body, and as the stem B passes through the same there is no escape of fluid around the stem, and packing is avoided.

D represents a casing or cup, to which the body A is secured, the body being set into the same to a limited extent, said cup having a boss, E, which coincides with the opening A' of the body for the passage of the stem of the plunger, and an opening, *a*, to receive a stud, F, which projects from the back of the pump-

body A, at a point between the center and circumference, whereby the body and cup are interlocked, and the body is prevented from rotation or shifting in the cup. In the body is a duct or port, *b*, which communicates with a pipe, G, the latter leading to an inflatable body, H, whereby, by the operation of the pump-body A, said body H may be expanded and contracted, and advancing and returning motions imparted to a rod or bar, J, attached to the movable head of the body H, said motions being utilized for various purposes. In the present case the cup D is shown secured to a door-frame, and the plunger-stem attached to a bell-pull as a handle, so that the pump is serviceable for ringing a bell or sounding an alarm, to which, however, my invention is not limited. The cup D, while holding the pump-body in position, also serves to limit the spreading of the same, whereby said body is prevented from bursting and the durability of the pump is increased.

It is evident that when the plunger is operated by pulling it outwardly the body A is compressed or contracted, and the air stored therein forced through the pipe G into the body H, the effect whereof is to expand said body H and impart motion in one direction to the rod or bar J. When the handle of the plunger is let go or relieved, the body A is permitted to expand, and the weight of the folds of the body H, and the rod or bar, or that of the mechanism attached to said rod or bar of the bell-ringing or alarm devices, &c., for which the pump is employed, cause said body H to contract, whereby the air returns through the pipe G and inflates or expands the body A, the parts thus assuming their normal positions, the rod or bar J receiving motion in the opposite direction to that above stated.

In order to render the plunger or head C light and durable, it may be formed of sheet metal struck up, stamped, or spun so as to present a convex or dishing face to the pump-body, and its center is raised, forming a boss, C', to which the end of the plunger stem or rod B is attached, the attachment being accomplished by threading the boss and stem, or the employment of a nut and collar on the opposite ends of the boss, or a nut at each end, or by riveting or other suitable means. This

boss C', being hollow, allows the fold of the rubber body (which forms as the body is collapsed) to find room within it. It will be seen that the plunger need not be actuated by pressure upon its center; but this center may be an open space, and the plunger be pushed by bearing around this space.

The body H is of conical or tapering form from end to end, whereby it will not swerve during inflation and collapsion, and the gradually-decreasing bellows-like folds present increased strength, and are adapted to collapse or contract in a shorter vertical space than when the folds are comparatively of the same diameter throughout.

If desired, the body may be inverted, so that the smaller head is below or adjacent to the place of entrance of air, so that greater force may be imparted to the body, owing to the increased surface presented by the larger head, which is movable.

In Fig. 5 the body A has on its outer wall a circumferential flange or rim, *d*, for attaching and holding the same in position. In Figs. 6 and 7 the annular form of the body is preserved, the shape, however, being somewhat different from that presented by the concentric inner and outer walls of the other figures, and the stud F as such is dispensed with, a short pipe or nozzle being substituted therefor as means of connection with the pipe G, and retaining the pump-body in position in the cup D.

In Fig. 1 a handle for the plunger-stem is shown on the side opposite to the bell-pull, so that the plunger may be pressed against the pump-body, without, however, producing different result from those hereinbefore stated.

A very important advantage of the annulus-shaped pump over that of a sphere is that it takes but one-half the stroke to collapse it that a sphere does with the same space of storage-room in both.

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

1. A hollow flexible body with central walled opening, and having a hole for the

passage of air, communicating with the interior of said body, in combination with a plunger with central opening, whereby the flexible fold in said body finds room for its distention upon the collapsion of said body, substantially as and for the purposes set forth.

2. A hollow body of flexible material with hole for the passage of air, and a walled opening passing through said body, in combination with a plunger of dishing form with upwardly-extending hollow boss adapted to overhang the walled opening in said body, whereby by the pressure of the plunger the fold around the inner periphery of said body (which forms during its collapsion) finds storage within the boss on the plunger.

3. A hollow flexible body with walled opening having a hole for the passage of air, communicating with the interior of said body, in combination with an operative plunger adapted to collapse said body and force air therefrom, substantially as and for the purposes set forth.

4. A hollow body rounded upon its surface, with central circular walled opening, and having a hole for the passage of air, communicating with the interior of said body, in combination with an operative plunger and an air-conveying pipe, substantially as and for the purpose set forth.

5. A hollow body rounded upon its surface, with central circular walled opening, and having a hole for the passage of air, communicating with the interior of said body, in combination with an operative plunger, an air-conveying pipe, and an inflatable bellows, substantially as and for the purpose set forth.

6. A pump having a body of the form of an annulus, with inner and outer walls, a plunger adapted to bear against said body, and a plunger-stem passed through the opening formed by the inner wall of said body, substantially as and for the purpose set forth.

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Witnesses:

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