(No Model.) 2 Sheets—Sheet 1.

D. NOBLE.

PORTABLE PUMPING APPARATUS.

No. 494,221. Patented Mar. 28, 1893.

Fig. 2.

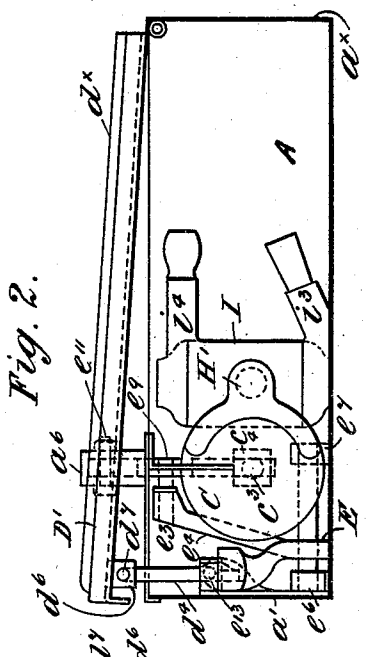


Fig. 3.

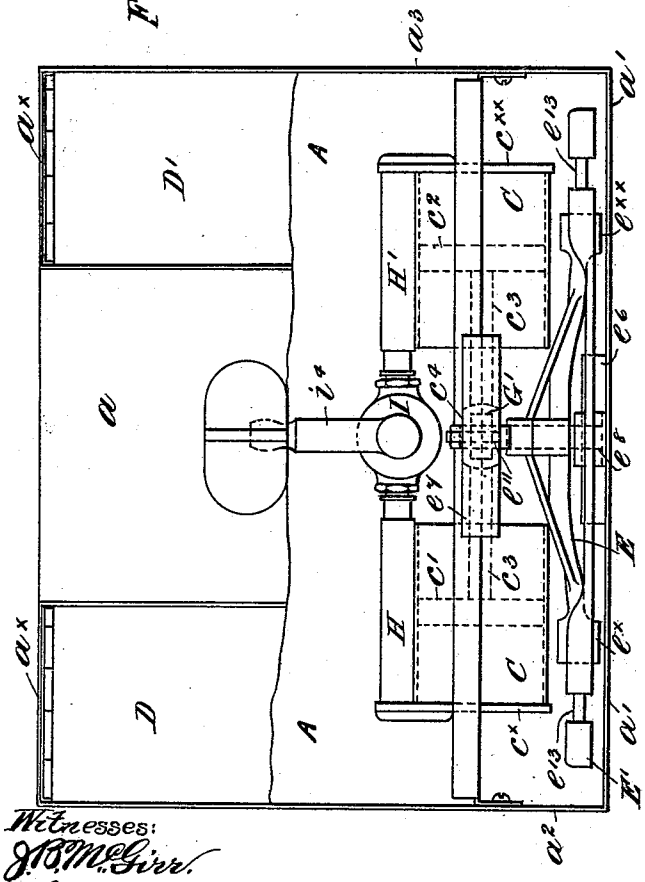
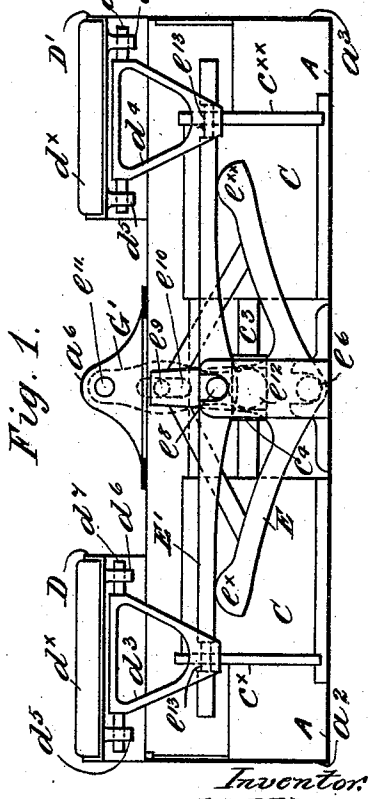


Fig. 1.



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Inventor.
Donald Noble
By Frank L. Dyer, Atty

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(No Model.) 2 Sheets—Sheet 2.

D. NOBLE.

PORTABLE PUMPING APPARATUS.

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Fig. 4.

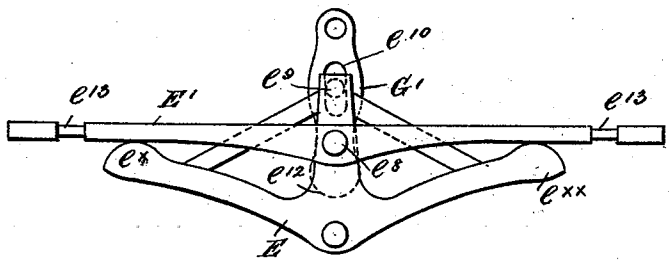


Fig. 5.

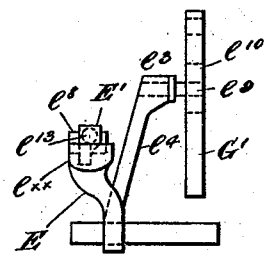


Fig. 7.

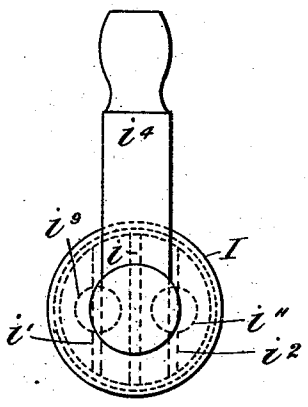


Fig. 8.

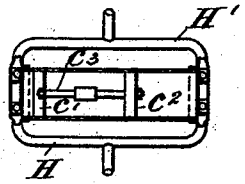
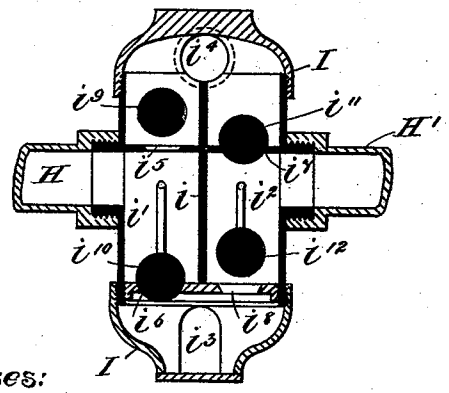


Fig. 6.



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Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DONALD NOBLE, OF LEEDS, ENGLAND.

PORTABLE PUMPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 494,221, dated March 28, 1893.

Application filed March 8, 1892. Serial No. 424,218. (No model.) Patented in England August 26, 1890, No. 13,418; in France June 16, 1891, No. 214,211; in Belgium June 16, 1891, No. 95,292; in India October 7, 1891, No. 200, and in Austria-Hungary October 10, 1891.

To all whom it may concern:

Be it known that I, DONALD NOBLE, a subject of the Queen of Great Britain, residing at Leeds, in the county of York, England, have invented new and useful Improvements in Portable Pumping Apparatus, (for which I have obtained Letters Patent in England, No. 13,418, dated August 26, 1890; in France, No. 214,211, dated June 16, 1891; in Belgium, No. 95,292, dated June 16, 1891; in Austria-Hungary, dated October 10, 1891, and in India, No. 200, dated October 7, 1891,) of which the following is a specification.

This invention has reference to that class of portable and other pumping apparatus such as is described in the specifications accompanying my applications for United States of America Letters Patent, Serial Nos. 405,852, and 424,217. Its object is to construct and arrange the pumping mechanism in as small a compass as possible in a casing provided with a divided top to act as pedals, said pedals being revolubly fitted on to the outward casing for putting the pump piston or pistons in motion by means of a suitable arrangement of levers. The casing also acts as a platform on which the operator stands for actuating the pedals with the heels of his feet. I attain these objects by mechanism illustrated in the accompanying drawings in which:—

Figures 1, 2, and 3, are respectively a side elevation (with side of platform removed), an end elevation (with end of platform removed), and a plan (with portions of the top of platform and of the pedals removed) of pumping apparatus with cylinder or pump barrel made in two portions and operated by compound levers. Figs. 4 and 5 are respectively a front and end elevation of compound levers. Figs. 6 and 7 are respectively a sectional elevation and plan of valve box; Fig. 8 an arrangement of valves applied to each end of the pump barrel.

A is a box like platform on which the bather or operator stands. The platform may be made of any desired material, such as sheet brass, copper, zinc, or the like, or of wood lined when required with thin brass, or other material, but I prefer to make it of thin sheet brass, say about one sixteenth of an inch in thickness and watertight. A convenient shape for the platform is rectangular and its size may be, say about eleven inches long by nine inches wide by three inches in depth, but these dimensions (as well as the shape) may be altered or varied as circumstances require. As for instance, when required for military purposes, the platform may be made say about eight inches long by four inches in width by two inches and three fourths of an inch in depth, that is as regards the width about one half of the size as shown at Figs. 1, 2, and 3, but at the same time possessing all the advantages (for pumping purposes) of the larger size owing to extension pieces (folding or fixed) being provided to which pedals D. D′ (hinged at the toes) may be attached for operating purposes.

The platform A is of such a size, or if preferred it may be divided into any number of compartments for receiving the double acting pump and its actuating mechanism, the valve box, the flexible tube or tubes which may be packed away without uncoupling it or them from the inlet and outlet portions of the valve box, the brush or rose and nozzle, toilet requisites, and any other necessary or desired articles.

The platform A is provided with either a hinged, sliding or removable lid *a*. In the drawings the lid is shown divided into three portions. The central portion is removable and the two outer portions may be hinged to the side $a^{\times}$ of the platform or jointed to a rod running parallel to one of the sides of the platform and mounted on bearings within the same so as to form pedals D. D′. When the portions which form the pedals are disconnected from the levers (to be hereinafter described) employed for actuating the piston c'. c^2 and are closed they complete the covering portions of the platform. The pedals may or may not be armed with pieces of wood, cork, or other suitable nonconducting material $d^{\times}$.

The pedals D. D′ are connected to levers employed for actuating the pistons c', c^2, by brackets d^3 d^4 (shaped something like an inverted triangle) mounted in bearings d^5 d^6, respectively formed on or attached to the un-

derside of each pedal as shown for purposes to be hereinafter described.

The pump barrel C. (which with the piston actuating mechanism is inclosed within the platform) may be either formed in one piece say about seven inches long by two inches in diameter or in two portions bi-partite, arranged say about two inches and three fourths of an inch apart. Each portion of the barrel may be about two inches and three fourths of an inch in length by about two inches diameter. The pump barrels are shown placed horizontally within the platform A parallel, or nearly so with the side a' but in some cases when the barrel is made in two portions it may be found advantageous to arrange the said portions at right angles to the side a' and respectively parallel or nearly so with the ends a^2, a^3. Within the barrel C, are mounted the pistons c', c^2, connected together by a single rod c^3, to form a double acting pump, but when the two portions of the barrel C are arranged parallel or nearly so with the ends a^2 a^3 then separate piston rods will be required.

The barrel C. is provided with ends or covers $c^\times$ $c^{\times\times}$ to which the tubes H. H', may be respectively attached.

A reciprocating motion is imparted to the pistons c' c^2, from the heels of the operator's feet through the pedals D. D' and brackets d^3. d^4, which are jointed by the trunnions d^7 in the bearings d^5 d^6 on the underside of the pedals, and compound vertical and horizontal levers E, E' and G' as at Figs. 1 and 4. It will be readily understood that motion may be imparted to pistons by the pedals through pendants (fixed to the underside of the pedals) and a simple horizontal lever fulcrumed at or about its center and shaped somewhat like a double bell crank lever is pivoted to the bottom of the platform with its front end raised to the level of the center of the pump barrel. In order to make the platform on which the operator stands as shallow as possible and at the same time to obtain the longest stroke of the pistons with the smallest movements of the pedals, I prefer employing the arrangement of compound vertical and horizontal levers shown in the drawings in which the triangular shaped or double bell crank lever E, is mounted vertically in suitable bearings e^6. e^7 attached to the bottom of the platform. The ends $e^\times$ $e^{\times\times}$ are enlarged and on these a horizontal lever E' carried by trunnions in bearings e^8 of the same bracket in which the bearings e^6 are formed operates, while on the enlarged end e^3 of the vertical upright e^4 is provided a pin e^9 which works in a slot e^{10} of a pendent lever G' fulcrumed on pin e^{11} carried by brackets a^6 on the top of the platform. The lower end e^{12} of the lever G' passes through a slot formed for its reception in the enlarged portion c^4 of the piston rod. At Figs. 4 and 5 I have shown a side elevation and an end elevation of levers E, E' and G'. The lower end of each bracket d^3, d^4 is bifurcated and made to work in a groove e^{13} formed for its reception in the horizontal lever E'. When it is required to disconnect the pedal or pedals from the lever E', one or both pedals may be raised until the bifurcated end or ends of the bracket or brackets is or are clear of the lever; when each bracket may be turned on its trunnions until it is parallel or nearly so with the underside of the pedal. The pedals may then be closed on the top of the platform.

By jointing the brackets d^3 d^4 to the pedals D. D' as herein described and connecting them to lever E' provision is thereby made for overcoming the friction of the working parts as much as possible and at the same time permitting of a direct (or nearly so) action being imparted to lever E' from the pedals although said lever and pedals may be arranged to work at right angles to each other.

By the above arrangement of horizontal and vertical levers a very small movement of pin e^9 (in the slot e^{10} of pendent lever G') say about three eighths of an inch, and of the outer or heel ends of the pedals, (say about seven eighths of an inch) will cause the pistons c' c^2 to travel about an inch and a quarter, or more.

To the inside of the barrel C are attached the tubes H, H' communicating at one end with the interior of the barrel (or when preferred the connection may be made in the centers of the ends or covers $c^\times$, $c^{\times\times}$) and at their other ends with a valve box I placed between them, at or about the center of the barrel. The valve box is divided at its center by a plate i to form two compartments or tubes i' i^2 communicating with a central inlet and outlet i^3 i^4 and respectively with the tubes H, H'. In each of the tubes i' i^2 are fixed two valve-seats i^5 i^6 and i^7, i^8 provided with india rubber, metal, or other suitable ball valves i^9 i^{10} i^{11} i^{12}, and a piece of perforated zinc or other metal to prevent the valves from rising too high. The communications between each of the compartments or tubes i' i^2 and tubes H. H' is midway between the valve seats as shown.

It will be readily understood that when preferred the above described fixed pipes may be dispensed with, and corresponding passages with valve seats formed therein or cast on the barrel or on the ends or covers $c^\times$ $c^{\times\times}$ as shown at Fig. 8. To the central inlet and outlet pipes i^3 i^4 is respectively attached a piece of india rubber or flexible tubing of any suitable length, that for the inlet being armed with an ordinary nozzle, and the outlet with or without a rose, or with a brush and rose combined. The flexible tube provided with a nozzle may be placed in a bucket or other receptacle containing hot or cold water and the other tube which is armed with the rose held by the operator. When pedal D is depressed the pistons will be moved to the end $c^{\times\times}$ of the barrel. At the same time a vacuum will be formed at the end $c^\times$ which opens valves i^{12}, closes i^{10} and draws water up out of the bucket into compartment i^3

along the tube H′ and from thence into the space at the right hand of the barrel C. During the motion of the piston D′ at the end $c^{\times\times}$ of the barrel, any water that has been previously drawn up into that end of the barrel is driven along tube H into compartment i' closing valve i^{10} and opening i^9 and forcing the water onto the bather, animal, or other article, or object. A similar action is obtained when the other pedal is depressed only the action of the valves is reversed.

One or more air vessels of ordinary construction (with or without ball valves) may when required be combined with the pumping apparatus for insuring a regular and constant supply of water being delivered from the pump. Any kind of self feeding brush or rose, or nozzle through which water may be forced by the herein described pumping apparatus may be employed which permits of motion for actuating the pistons being imparted to the pedals D. D′ by the heels of the operator's feet as he stands upon the platform and balances himself upon his toes.

When the above described pumping apparatus is employed for bathing or washing the human body it may be used with an ordinary bath or tray. When the bathing operations are completed the bath or tray may be emptied, (while the bather is drying himself) by reversing the position of the tubes thereby converting the outlet tube into the inlet, and the opposite tube into the outlet. But when the pumping apparatus is used for washing or bathing, horses, dogs, or other animals, carriages, windows, watering or sprinkling, gardens, flowers, plants or for like purposes, I find it advantageous to place it within a receptacle containing water whereby the pumping apparatus and its water supply may be readily removed from one place to another.

I would have it understood that although I have described the above arrangements of pumping apparatus as being applicable for pumping water yet it may also be used for pumping, raising and ejecting any other liquids that will not destroy or corrode its component. In some cases and when desired one or more vertical or horizontal pumps connected to a valve box such as I may be mounted either upon a platform such as A or within water receptacle and operated by pedals and mechanism such as herein described.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

In a portable pump the combination of the box A containing the horizontal acting pump C, the piston rod c^3 for said pump, the vertical lever G′ pivoted at its upper end and connected at its lower end with the said piston rod, the horizontal bent lever E mounted within said box A, the upright arm e^4 rigidly connected with said lever E and pivotally connected with said lever G′ at or near its center, the horizontal lever E′ bearing on the free ends of the lever E and the brackets d^3 d^4 connected to said hinged covers D, D′, and bearing at or near the ends of said lever E′, substantially as set forth.

In testimony whereof I have hereunto signed my name to this specification in presence of two subscribing witnesses.

DONALD. NOBLE.

Witnesses:

W. FAIRHAVEN HART,

ADAM C. HART.