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New Force Pump.

The figures in the accompanying engravings represent the improved force pump for which a patent was granted to D. W. Clark and S. H. Gray, of Bridgeport, Conn., on the 19th of last December.

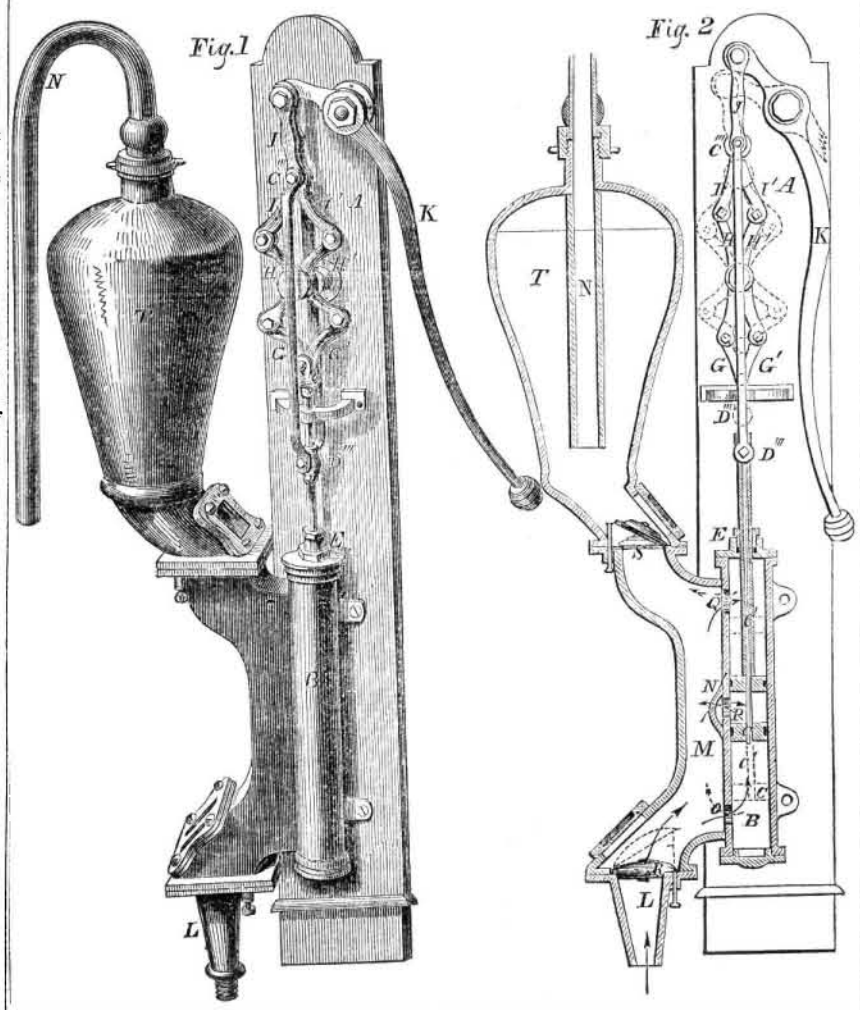
Fig. 1 is a side elevation of the pump, and fig. 2 is a side vertical section.

The nature of the invention consists in combining two pistons and piston rods with one pump barrel or cylinder, and one brake or lever, when one of the rods is made to pass through the interior of the other, and when both rods are connected with the brake by connecting links and cross levers.

A represents the frame to which the pump is secured. B is the pump cylinder, C the lower piston—the upper piston is shown above it. C' is the rod of the lower piston which passes through the hollow rod of the upper piston.—E is a stuffing box, through which the hollow piston rod passes, the inner piston rod also works through a stuffing box. G G' are connecting links which unite the head, D''', of the upper piston rod with the cross levers, H H'. I I', are the connecting links which unite the head, C''', of the lower piston rod, C', with the levers, H H', and connecting links, J unite the head, C''', with the lever handle or brake, K. L is the supply pipe, and M N' represent supply and discharge chambers, having appropriate valves and placed side by side. O P and Q are the orifices in the pump barrel. R is the valve of the supply pipe, and S that of the air chamber, T. N is the discharge pipe. The cross levers work on a center pin. This is a description of the various parts of this pump; mechanics will observe that the links are of the character known by the name or "lazy tongs." The two chambers, M N', placed side by side, receive water at their junction from the supply pipe, L. Each chamber is provided with an inlet valve, R, but only one of them is shown—that belonging to chamber M. Both chambers empty into the air chamber, T, at their junction, each being furnished with an outlet valve—the one, S, of chamber, M, is only shown. By the act of pushing down the lever, K, the lower piston, C, is raised towards the center of the cylinder and the upper piston is correspondingly depressed; the upper piston traverses the upper half, and the lower one the lower half of the cylinder. The chamber M supplies and conveys away the water that enters and leaves the cylinder through the orifices, O Q; the chamber N' supplies and conveys away the water which passes through the orifice P. When the brake, K, is pressed down the two pistons in the cylinder approach one another towards the center, and by raising the brake, they recede from one another. A vacuum is produced under the lower and above the upper piston, as they approach one another, consequently the water follows the pistons, as shown by the arrows, to fill the two parts of the cylinder. The water in the intermediate space between the pistons, is then being discharged through the opening, P, into the chamber N', and rises through it into chamber T, the ingress valve at the bottom of chamber N' being closed. When the brake is raised, the water is forced through the openings O Q, and passes through chamber M into the air chamber, T. While the water is being discharged above the upper piston, and below piston C, a vacuum is formed between the two pistons which is filled from the chamber N', which is also connected with the supply and discharge pipes. The dotted lines show the pistons and links in different positions. The object of this invention is to combine a double acting force pump with the working of one brake, and in a very compact form. This is clearly shown in fig. 1. It will be understood that there is a vertical division separating the chambers, M N', they are placed side by side, and have each the appropriate valves, for the inlet and discharge of the water from under and above both pistons. A plate covered with glass is placed above the inlet and discharge valves of the two chambers, M N', so that their working can be observed, and easy access to them obtained. All the parts are strong and durable, and easily constructed.

More information may be obtained by letter addressed to D. W. Clark, agent of the Clark and Gray Pump Co., Bridgeport, Ct.

CLARK AND GRAY'S PATENT FORCE PUMP.



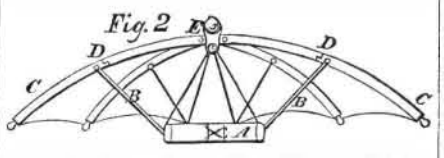
CAMPBELL'S PATENT HEAD SHADE.

The accompanying engravings illustrate the improved head shade of S. N. Campbell, of Elgin, Ill., for which a patent was granted on the 10th of July last.

The perspective view exhibits a farmer under the noonday sun with one of the shades on his head, making the harvest bend beneath the sturdy sweeps of his cradle; also a lady and gentleman equestrian gracefully wearing the shade while they are enjoying a rapid and exciting recreation. Fig. 2 is a vertical section of the shade in a distended state.

The nature of the invention consists in having a covering of silk, muslin, or other suitable material stretched over a frame similar to the ordinary shades and umbrellas, and having said frame so modified or arranged that it may be permanently secured to a band or cap which may be placed upon the head, thereby not only forming a sun shade, but also an article of wearing apparel, protecting the wearer from the rays of the sun, and also, if necessary, forming a covering for the head.

The frame of the implement is formed of a series of curved rods, C, of whalebone, rattan, or the usual material. The inner ends of these rods are connected as usual by pivots to a button, E, which forms the center of the frame. The rods project at equal distances apart from the button. To each rod there is attached by pivots, D, metallic rods, B, the lower ends of which are connected to a band, A. This band has strings attached to its upper edge, and the upper ends of the strings attached to a hook at the under side of the button, E. The band, A, is intended to fit the head of the person using the shade, and it may be enlarged or contracted by a buckle or by strings. When the band is applied to the head, the rods, C, will be distended as shown, and as the rods are covered with silk or other material similar to ordinary sun shades, the neck, head, and face will be perfectly protected from the sun. Instead of the band, A, a cap may be used such as are commonly termed "skull caps," the top of the cap being attached to the under side of the button. The rods, C, are also provided with joints, by which their lower ends may be turned or folded back when the shade is not in use.



This head sun shade is very simple and useful for sheltering the head from the sun's rays, while persons are exposed during labor of any kind, or when walking or riding for pleasure and recreation. It keeps the head cool, does not require to be supported by the hand when worn, like common sun shades, and it can be carried folded up in the hand when not used, so that it is as convenient as it is useful.

More information respecting it may be obtained by letter addressed to Mr. Campbell, at Elgin, Ill.

Lifting Pump Without a Piston.

E. Bonnet, of this city, has sent us a drawing of a pump without a piston, published in *l'Industriel* in 1825—30 years ago. The upper part of the cylinder extending into the well, is stationary, but a lower section is movable, answering the purposes of a piston, and is moved up and down by a rod attached to a lever. It embraces the same principle of action, although it is somewhat different in construction, as the pump of M. Malbeck, described in No. 49 of our last volume.

The Burlington Railroad Accident.

The coroner's Jury appointed to investigate the causes of the above named fatal accident—noticed by us last week—have returned a verdict censuring the railroad Company and Doctor Henigen, whose horses were the immediate cause of the disaster. The Company will no doubt have to pay very heavy damages to the unfortunate passengers who have been wounded, and the relatives of those who were killed. The State of New Jersey should compel the Company to build a double track forthwith.