No. 653,573. Patented July 10, 1900.

H. F. GAREY.

APPARATUS FOR MASSAGING BY VACUUM.

(Application filed Nov. 21, 1899.)

(No Model.)

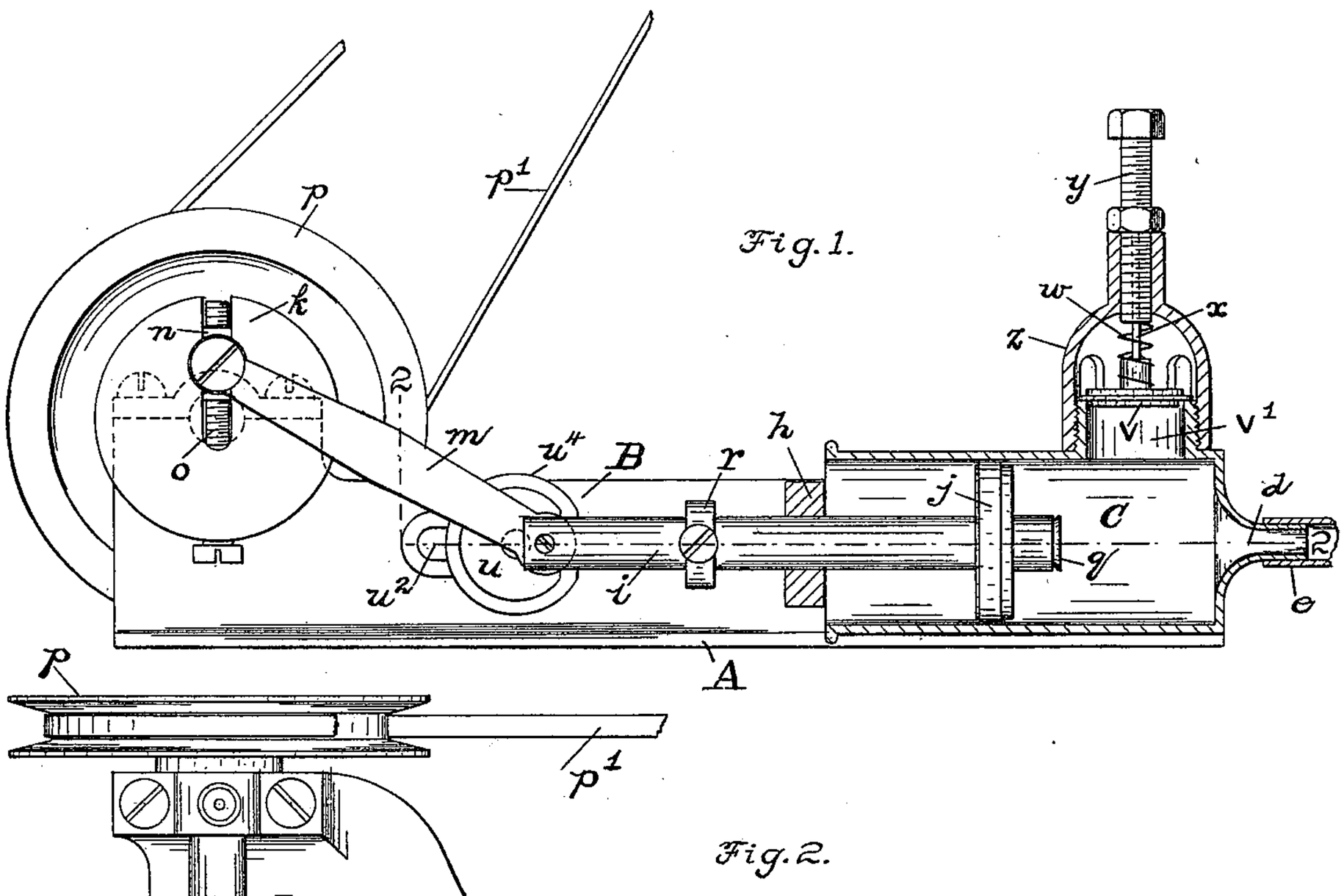

Fig. 1.

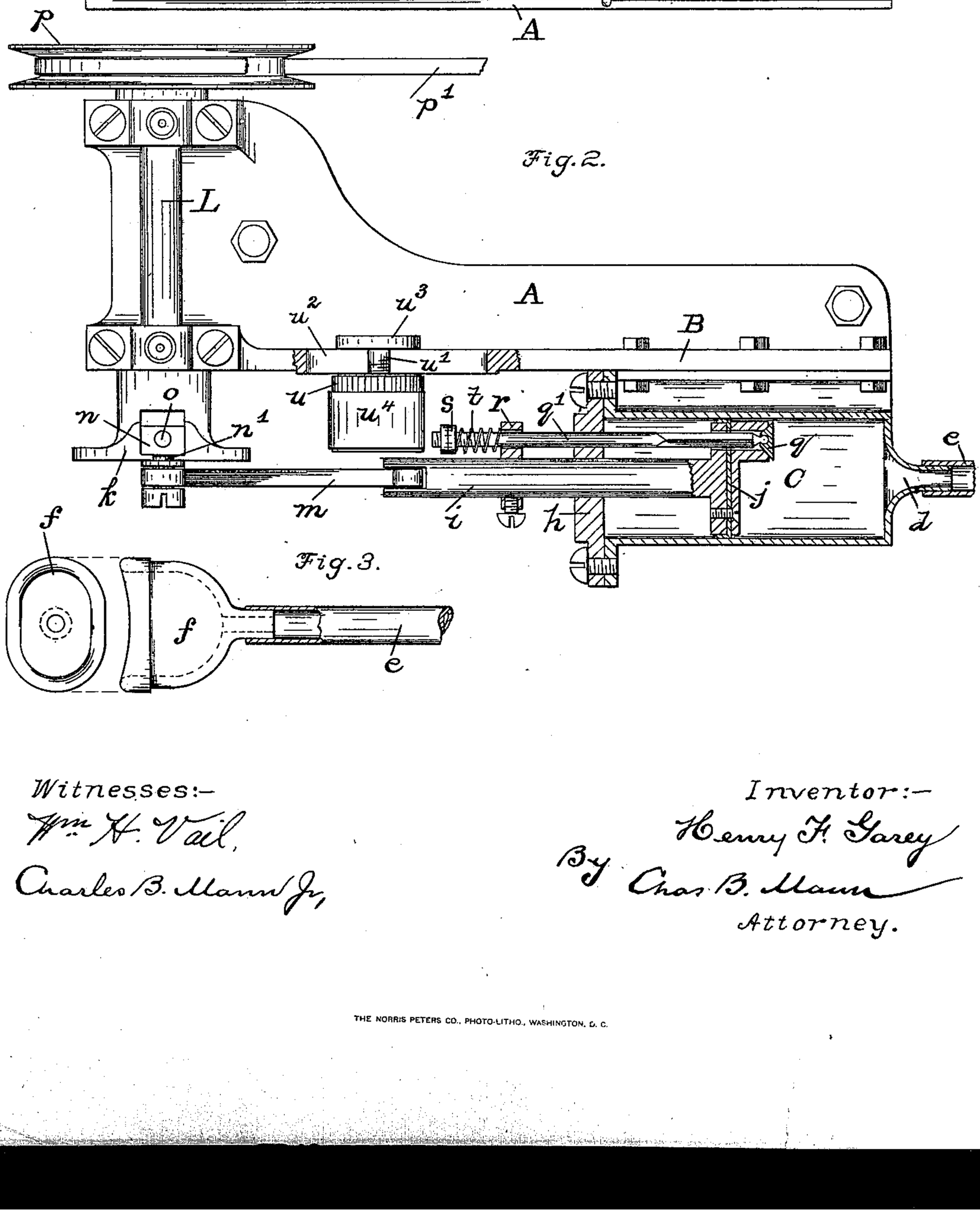

Fig. 2.

Fig. 3.

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APPARATUS FOR MASSAGING BY VACUUM.

SPECIFICATION forming part of Letters Patent No. 653,573, dated July 10, 1900.

Application filed November 21, 1899. Serial No. 737,735. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. GAREY, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Machines for Massaging by Vacuum, of which the following is a specification.

This invention relates to a machine for massaging the human eye.

The object of the invention is to provide a machine that will produce the effect of massage by successions of intermitting vacuums, which, acting through the medium of a tube and cup, will apply to the eye equally-sudden jerks and releases, as herein set forth.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of the machine, the air-cylinder and relief-valve being in vertical section. Fig. 2 is a top plan view, the air-cylinder and a portion of the frame being in horizontal section on the line 2 2 of Fig. 1. Fig. 3 is a view of the suction-cup and a portion of the tube.

The mechanical construction of the machine will first be described and then its operation and its action when applied to the human organism will be explained.

A suitable base-plate A and an upright horizontal plate B, extending along the base, comprise the frame. An air-suction cylinder C is secured to the frame and at one end has a funnel-shaped head or nozzle *d*, to which is attached a flexible tube *e* of any desired length and having at its free end a suction-cup *f*, which is to be applied to the eye when the lid is closed. The other end of the cylinder is practically open, only having a cross-bar *h*, through which the piston-rod passes, said cross-bar serving as a guide or slide way for the piston-rod *i*.

The piston-head *j*, of any suitable construction, fits within the cylinder C. The means for imparting reciprocating movement to the piston-head *j* comprises a revoluble shaft L, carrying at one end a crank-head *k*, and a rod *m*, connecting the crank-pin with the piston-rod *i*. This crank-head has a radial slot, and a block *n*, movable in the slot, carries the crank *n'*, to which the said connecting-rod *m* is attached. The block is adjusted by means of a diametrical screw *o* on the head, so as to vary the position of the crank-pin or its distance from the center, and thereby increase or diminish the traverse of the piston-head *j*. At the other end of the shaft L, in the present instance, is a pulley *p*, and a belt *p'* connects therefrom to any suitable power for driving this machine. It is obvious any other power mechanism beside the pulley may be employed to drive the shaft L and produce the reciprocating motion of the piston.

The invention provides for producing a vacuum and then suddenly breaking the vacuum, thereby to cause a quick pull to be made on the eye followed by a sudden release or let-go. These operations are repeated in quick succession. No compression of air on the eye is involved. To effect this action, my invention provides means to coact with the strokes of the piston, which produces a vacuum or suction at each movement in one direction, so as to suddenly break the said vacuum or suction at or near the end of the piston-stroke. These intermittent vacuums also are produced in rapid succession and without compressions.

In carrying out my invention I provide valve mechanism coöperating with the piston and cylinder and so constructed that when the piston has nearly completed its stroke in the direction to create vacuum or suction a valve will open and suddenly break the said vacuum or suction, and in order to avoid applying air compression to the eye under treatment when the piston commences its stroke in the reverse direction a valve will open to allow the air in the cylinder to escape to the atmosphere.

I will now particularly describe one form of valve mechanism that will operate in the manner here described and produce the desired result.

The piston-head *j* carries a valve *q* of the puppet form, whose port opens through the said head. A rod *q'* is attached to this valve and extends parallel with the piston-rod *i* and passing freely through the cross-bar *h* opens and closes the valve by an endwise movement. When the piston reciprocates, the valve-rod *q'* also reciprocates endwise by sliding through the cross-bar *h*. A suitable support *r* for the valve-rod is stationary on the piston-rod *i*. A head *s* is on the end of

the valve-rod, and a spiral spring *t* is also on the valve-rod between the said head and the support *r*. The head *s* may consist of a nut screwed onto the rod. The spring presses the rod in the direction to keep the valve seated. A bumper *u* is adjustably secured to the horizontal upright plate B in such position as to be struck by the headed end of the valve-rod when the piston has nearly completed its stroke in the direction to create vacuum or suction. The valve-rod striking the bumper *u* suddenly opens the valve *q* in the piston-head and allows atmospheric air to enter the cylinder and break the vacuum. The bumper *u* is a block of wood or metal having a screw-shank *u'*, which projects through a horizontal slot u^2 in the said upright plate B. The screw-shank has a head u^3, by turning which the bumper may be loosened or tightened to adjust it as desired along the said slot. On the exterior the said wood or metal block is covered with some suitable cushion u^4, such as leather, against which the head end of the valve-rod strikes, to prevent a metallic sound. Another valve *v* is employed to allow the air to escape from the cylinder when the piston commences its stroke in the opposite direction, and thereby avoid compression. It is immaterial whether this valve be located in piston-head or at one end of the cylinder. I have shown it in the latter location. This valve closes a port *v'* and is kept seated either by gravity or a very slight spring *w*, so as to open easily. This valve for purposes of illustration is here shown on a stem *x*, movable in a screw-bolt *y*, held in a dome *z*. It will be understood that when the piston moves toward the nozzle *d* the valve *v* will open on very slight pressure and allow the air in the cylinder to escape to the atmosphere and avoid compression on the eye.

In view of this description the operation of the machine for the purpose of massaging the eye may be briefly described.

The cup *f* here shown is especially adapted for the eye by its oval or oblong shape (see Fig. 3) and its concaved edge on the long sides of the oval. This cup is placed over the eyelid after closing the eye, and the cup bears or rests against the bone socket about the eye. The machine is started and the piston reciprocates with rapidity, and the result produced is first a sudden slight jerk on the eyeball, a drawing of the eye to the cup *f* and then as suddenly releasing it, and this action is repeated in rapid succession. No air is pressed onto or against the eye.

I have described the machine as adapted for and useful in treating the eye; but I want it understood that by simply varying the shape of the cup the same machine may be used for locally massaging any part of the human body.

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

1. A machine for massaging having in combination a cylinder and piston to produce a vacuum or suction; a tube leading from the cylinder and having at its free end a cup adapted to be applied to some part of the human body; and a valve mechanism which, when the piston has nearly completed its stroke in the direction to create vacuum or suction, will suddenly admit air to break such vacuum or suction, as set forth.

2. A machine for massaging having in combination a cylinder and piston to produce a vacuum or suction; a tube leading from the cylinder and having at its free end a cup adapted to be applied to some part of the human body; and valve mechanism which admits air to the cylinder to suddenly break the vacuum or suction, and which on the reverse stroke allows the air in the cylinder to escape to the atmosphere to avoid compression.

3. A machine for massaging having in combination a cylinder and piston to produce a vacuum or suction; a tube leading from the cylinder and having at its free end a cup adapted to be applied to some part of the human body; a valve carried by the piston and which is opened to break the vacuum when the piston has nearly completed its stroke in one direction; and a valve on the cylinder which opens when the piston moves in the opposite direction to allow air to escape to the atmosphere and avoid compression through the said tube and cup.

4. A machine for massaging having in combination a cylinder and piston to produce a vacuum or suction; a tube leading from the cylinder and having at its free end an oval cup with concave edges on the long sides and adapted to fit the eye; a valve which is opened to break the vacuum when the piston has nearly completed its stroke; and a valve which opens when the piston moves toward the said tube and cup to avoid compressing air.

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

HENRY F. GAREY.

Witnesses:

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CHARLES VIETSCH.