(No Model.)

E. E. ALLEN.

SURGICAL PUMP FOR TRANSFUSION OF BLOOD.

No. 409,000. Patented Aug. 13, 1889.

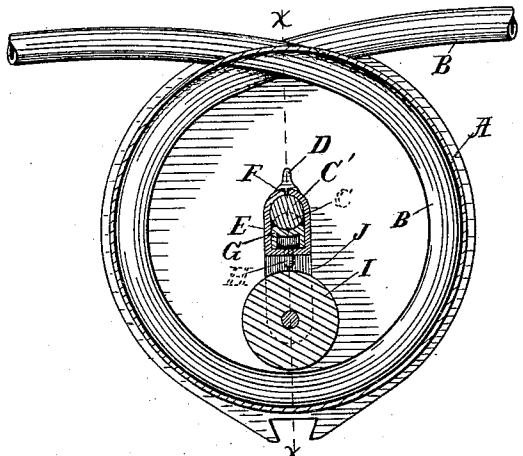


FIG. 1.

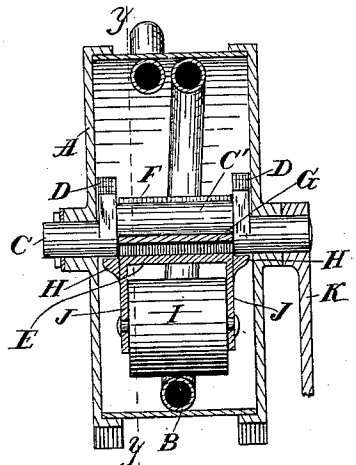


FIG. 2.

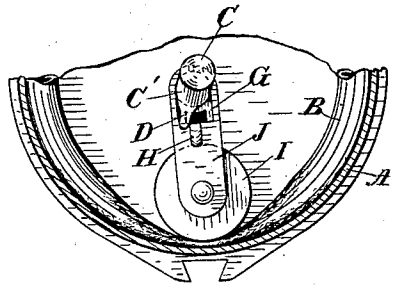


FIG. 3.



FIG. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

EUGENE E. ALLEN, OF GRAND RAPIDS, MICHIGAN.

SURGICAL PUMP FOR TRANSFUSION OF BLOOD.

SPECIFICATION forming part of Letters Patent No. 409,000, dated August 13, 1889.

Application filed April 27, 1889. Serial No. 308,856. (No model.)

To all whom it may concern:

Be it known that I, EUGENE E. ALLEN, a citizen of the United States, residing at the city of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Surgical Pumps, of which the following is a specification.

This invention relates to the surgeon's pump described in Letters Patent No. 365,327, issued to me June 21, 1887, and in the application for patent filed by me February 8, 1889, Serial No. 299,164.

The object of my present invention is to provide means for automatically applying the pressure of the roller to and removing it from the elastic tube by the simple rotation of the crank-shaft, which causes the roller to travel along the tube. This object I accomplish in the manner and by the means hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a sectional view of my invention on line *y y* of Fig. 2. Fig. 2 is a sectional view of the same on line *x x* of Fig. 1. Fig. 3 is an elevation of the machine with the end casing removed in order to show the internal construction of the machine; and Fig. 4 is a perspective view of an intermediate bearing-plate for the cam which moves the pressure-roller.

Similar letters refer to similar parts throughout the several views.

A is an outer case or shell cylindrical in form and constructed of any suitable material. Within this shell A is an elastic tube coiled, with the ends passing each other, as shown in the drawings by B. Passing through the longitudinal center of the shell A is a shaft C, which is bent or enlarged so as to form the cam C′. Mounted upon the shaft C is a pressure-roller I, supported by a suitable frame, consisting, in the example shown in the drawings, of the ears J J, which support the journals of the roller I, and the part E F, which surrounds the shaft and eccentric. Upon the shaft C, I provide projections, shown in the drawings by D D. One of these projections may be dispensed with.

H H are two stops on the supporting-frame E F.

In the drawings I have shown two stops, but one of them may be dispensed with.

G is an intermediate bearing-plate placed between the cam C′ and the outer end of the cavity which receives such cam. This plate receives the pressure from the cam when the roller I is pressed in contact with the elastic tube. This bearing-plate G, however, may be dispensed with, as it is not an essential feature of the invention.

The operation of my invention is as follows: First, turn the shaft C by means of the crank K until the cam C′ is moved from the position shown in Fig. 1 to the position shown in Fig. 3, at which point the cam has pressed the roller I outwardly and compressed the elastic tube, as shown. The projection D has reached the stop H, and the further movement of the crank in the same direction revolves the roller-frame and roller, giving a continuous movable pressure upon the tube, and the air or liquid will be drawn in at one end of the tube and forced out at the other. By reversing the movement of the crank the pressure of the roller upon the tube is relieved, and by continuing the reverse motion of the crank and roller the part D will strike the opposite side of stop H, when the pressure-roller will have again compressed the tube, and a continuation of the crank movement in the direction last named will move the pressure-roller and reverse the action of the machine. The form of the case may be such that the pressure upon the elastic tube will cease as soon as the crank shall have been released from pressure.

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

1. In a surgeon's pump of the class described, the combination of a cylindrical case, an elastic tube coiled within the case with the ends crossing each other and passing out of the case near its longitudinal center, a shaft having a cam, a pressure-roller mounted upon the shaft, and a crank to revolve the shaft, said cam automatically forcing the roller upon and withdrawing it from the elastic tube by the rotation of the crank-shaft, substantially as described.

2. In a surgeon's pump, the combination of a cylindrical case, an elastic tube coiled within

the case, a pressure-roller adapted to give continuous moving pressure upon said tube, a frame supporting said pressure-roller and provided with a stop, as H, a supporting-shaft provided with a pin, as D, to engage the stop H and revolve the frame, roller, and cam together, and the cam C′, adapted to press the roller in contact with the tube, substantially as described.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

EUGENE E. ALLEN. [L. S.]

Witnesses:
J. W. GRANT,
HENRY M. MCGILL.