(No Model.)

B. F. HALES.

SURGICAL PUMP.

No. 459,002. Patented Sept. 8, 1891.

Fig. 1.

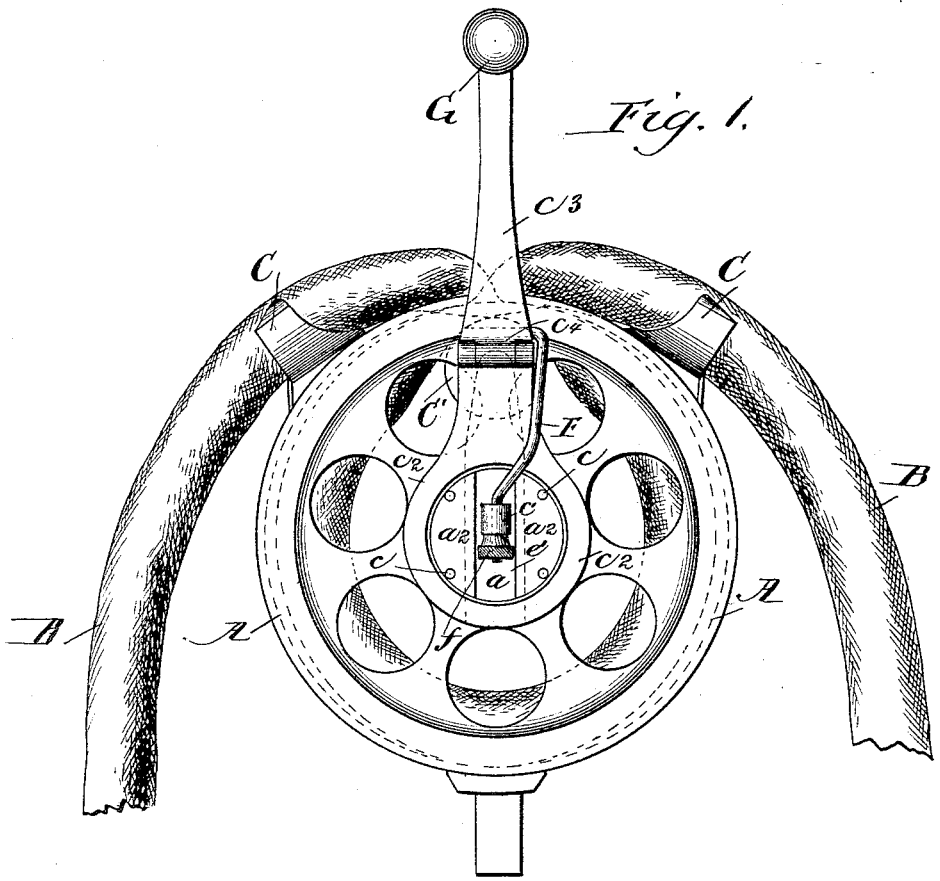
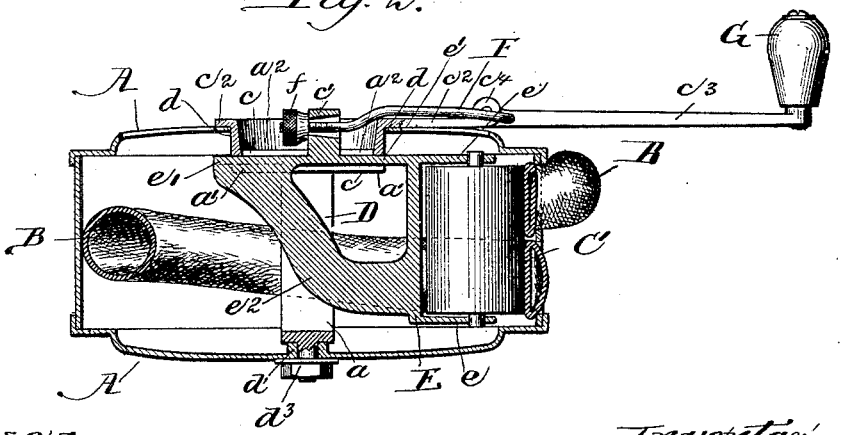


Fig. 2.



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UNITED STATES PATENT OFFICE.

BURTON F. HALES, OF CHICAGO, ILLINOIS.

SURGICAL PUMP.

SPECIFICATION forming part of Letters Patent No. 459,002, dated September 8, 1891.

Application filed July 6, 1891. Serial No. 398,617. (No model.)

To all whom it may concern:

Be it known that I, BURTON F. HALES, of Chicago, in the State of Illinois, have invented certain new and useful Improvements in Surgical Pumps, of which the following is a specification.

My invention relates to pumps in which a cylindrical casing is employed to support a flexible tube in conjunction with a traveling roller moving upon said tube for forcing liquid through it; and the objects of my improvements are to provide means for conveniently applying and relieving the pressure of the roller upon the tube and also for regulating the amount or degree of such pressure. I attain the first of these objects by means of a variable connection between the roller-support and its operating-shaft, which will permit movement of the former in a direction perpendicular to the latter and a link and lever connection between said roller-support and shaft, whereby the roller-support is thrown outward against the tube by a throw of the lever one way and inward from the tube by a reverse throw.

The second object is attained by means of a variable connection of the link, whereby the amount of movement imparted to the roller-support by a full throw of the lever may be varied.

The accompanying drawings illustrate the invention, Figure 1 being a side elevation, and Fig. 2 a central section, of a pump of the class mentioned embodying the same.

In the drawings, A designates the cylindrical casing, and B the elastic tube coiled within the same and fastened on the outside by clasps C in the usual manner.

C′ is the roller.

The operating-shaft D of the present construction is provided with a longitudinal slot *a*, in which the roller-support E plays. At one end said shaft is enlarged or extended laterally, so as to make provision for a plane surface *a′* perpendicular to the main portion, by which the roller-support can be maintained in working position at right angles to said shaft. The roller-support consists of the part E, having the extensions *e* on one side provided with the roller-bearings, and a plate-like piece *e′*, with the brace e^2 on the opposite side. The said plate-like piece rests against the surface *a′*, through which the slot *a* of the shaft is extended, and is held against the same by an outer piece a^2, secured thereto by rivets *c* in such manner as to embrace the edges of said plate-like piece and permit the same to slide between said surface *a′* and outer piece a^2 at right angles to said shaft, the brace e^2 moving in the slot *a*. To the outer side of the plate-like part *e′* a lug *c′* is secured, which works in the slot *a*, extended also through said outer piece a^2. Said outer piece a^2 is recessed on the outer side to give working space for said lug without extending it too far beyond the casing. Said outer piece also has a flange c^2, which is extended on one side and has the lever c^3 hinged thereto at c^4, so that it may be extended, as shown in the drawings, or folded over the casing. The shaft has a bearing at *d*, the periphery of the extended part of the shaft on one side of the casing and at *d′* on the other, the nut and washer d^3 bearing against the outer part of the casing on one side keeping the flange c^2 up to it on the other side.

A link F is pivoted to the lever c^3 near the hinge c^4 and connected with the lug *c′*, so that by throwing the lever outward the link, by pulling upon the lug, will move the roller-support and roller out and compress the tube, as shown in the drawings, and by throwing or folding the lever in upon the casing the link will be released and the roller-support thrust back, either by the link operating against the lug *c′* in a reverse direction or the recoil of the tube against the roller, or both together.

By means of a screw-nut *f*, adapted to shorten or lengthen the connection formed by the link between the lug and the lever, the amount of pressure of the roller upon the tube may be varied or the roller adapted to different sizes of tube.

The lever is provided with a handle G, and also employed as a crank for operating the pump, being attached to an extension of the flange c^2, which forms part of the shaft, and the connection of the link with the lever is such that the outward throw of the lever will carry such connection slightly past the hinge-center, so that it will require a little push in the opposite direction to move the lever the other way past the hinge-center to fold it on

the casing. The handle G enters one of the openings in the side of the casing in the usual manner when folded.

Having thus described my invention, what I claim is—

1. In a pump of the class mentioned, the roller-support and operating-shaft having a variable connection permitting movement of the former in a direction perpendicular to the axis of the latter, in combination with a link and lever for effecting such movement, as specified.

2. In a pump of the class mentioned, and in combination, the operating-shaft, the roller-support having a variable connection with said shaft, a lever connected with said shaft, a link connected with the lever and said roller-support, and means, substantially as shown, for varying the distance between the points of said link's connections, as specified.

3. In a pump of the class mentioned, and in combination, the cylindrical casing, a slotted shaft having a laterally-extended part at one end journaled in and projecting through the casing, a lever pivoted to said laterally-extended part outside the casing, a roller-support adapted to slide on said laterally-extended part within the casing, and a link connected with said lever and said roller-support, substantially as specified.

4. In a pump of the class mentioned, the cylindrical casing, in combination with a shaft having one end laterally extended, slotted, journaled in, and projecting through the casing for supporting the roller-support within the casing and the operating mechanism without the casing, substantially as specified.

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