

(No Model.)

R. K. PELTON.

INVALID BED INFLATING AND HEATING APPARATUS COMBINED.

No. 384,274.

Patented June 12, 1888.

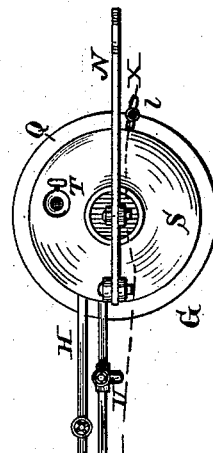
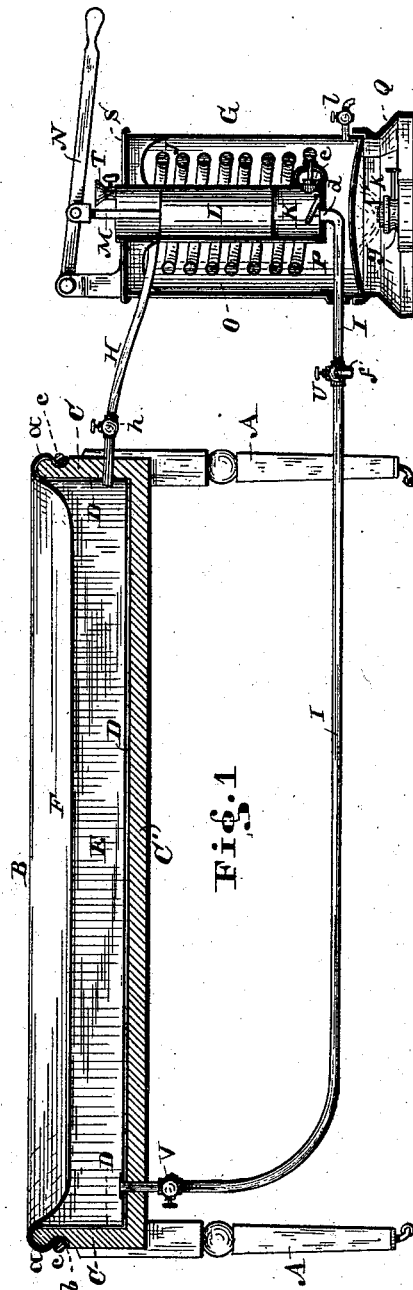
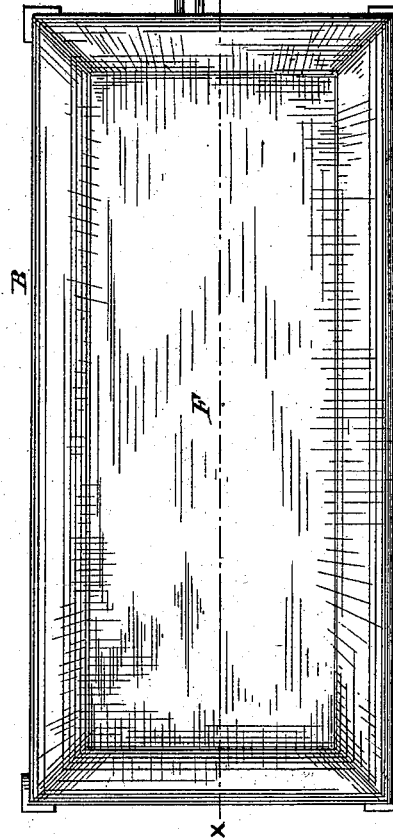


FIG. 2.



WITNESSES

Charles Hubbard
V. O. Hickerson.

INVENTOR.

R. K. Pelton.
W. H. Burnings
Attor.

UNITED STATES PATENT OFFICE.

RUSSELL K. PELTON, OF CLEVELAND, OHIO.

INVALID-BED INFLATING AND HEATING APPARATUS COMBINED.

SPECIFICATION forming part of Letters Patent No. 384,274, dated June 12, 1888.

Application filed January 23, 1888. Serial No. 261,606. (No model.)

To all whom it may concern:

Be it known that I, RUSSELL K. PELTON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Invalid-Bed Inflating and Heating Apparatus Combined; and I do hereby declare the following to be a full, clear, and complete description thereof.

The nature of my invention relates to an air or water chamber arranged below a flexible stretcher, also air and water tight, upon which the patient lies. Connected with the said chamber by means of induction and education pipes is an apparatus for forcing warm or cold water, or warm or cold air, which air and water may be used interchangeably, as the condition of the invalid may require.

Figure 1 is a longitudinal vertical section in the line *x x*, Fig. 2, of the invention above referred to. Fig. 2 is a top or plan view of the same. Figs. 3, 4, and 5 are enlarged views of detached sections of the three-part cock.

Like letters of reference refer to like parts in the drawings and specification.

The bed is supported by legs A, Fig. 1, or by other suitable means at the corners. Said bed or couch B consists, preferably, of a rectangular frame, C, composed of two sides and ends, with a bottom, C', so constructed and connected together as to form an entirety. The inner face of the frame and its bottom is covered or lined over with water-proof canvas D, or other suitable fabric, or sheet metal, to render the chamber E, Fig. 1, air and water tight. Above the chamber E is a water-tight stretcher or sacking, F, Figs. 1 and 2, which extends over the edges of the sides and ends of the bed-frame C, overlying the lining D, which also laps over the edges, sides, and ends of the bed-frame C, as seen at *a*, Fig. 1. The ends of the lining D and sacking F are fastened in the groove *b* by means of a cleat, *c*, with screws or nails passing through the cleat, lining, and sacking into the frame. The groove and cleat extend around in the sides and ends of the frame.

The inflating, heating, and cooling apparatus G is provided with a pump and arranged in operative connection with the bed or couch B by means of the induction-pipe H and education-pipe I, Figs. 1 and 2. One end of the pipe

H is in open relation with the chamber E, while the other end is in connection with the upper terminal of the pipe-coil J, Fig. 1. One end of the education-pipe I opens into the chamber E and its lower end into the pump K, which pump is provided with a plunger, L, having a connecting-rod, M, jointed to the pivoted lever N.

The cylinder of the pump is encircled by the coil of pipe J, which coil and pump are enclosed within the exterior casing, O, Fig. 1, forming an annular chamber, P, between the pump K and casing O, in which chamber is arranged the pipe-coil J.

The apparatus is mounted upon the base Q. Within this base is an oil or gas burner, *g*, for the purpose of heating the water or air in the annular chamber P and coil of pipe J prior to its transmission to the chamber E, as hereinafter shown. At the lower end of the pump K is a valve, *d*, for the closing and opening of the pipe I in its connection with the pump. There is also a valve, *e*, between the pump and the lower terminal of the pipe-coil J, Fig. 1. This valve *e* opens and closes the passage between the pump and the said coil. The pump and coil are supported in the annular chamber P by any suitable device.

Connected with the cap or cover S of the casing O is a funnel, T, having a faucet, Figs. 1 and 2, by means of which the chamber P is charged with hot or cold water when needed for the immediate cooling or heating of the coil J, as may be required by the patient upon the bed.

The cover S may be removed and ice placed in the annular chamber P for cooling the air or water passing through the coil J to the chamber E. For ordinary purposes hot or cold water is conveyed into the pump by attaching one end of an elastic pipe to the nozzle *f* of the three-part cock U, while the other end is in the water.

On operating the plunger L, by raising the lever N water will pass up the said elastic pipe (not shown) and through the three-part cock U into the pump-cylinder through the valve *d*, when the plug or key *j* of the cock is turned so that the passages *i* in the plug will be in open relation with the nozzle *f* and

pipe I, as seen in Fig. 3. By this means water is drawn into the lower end of the pump-cylinder, opening the valve *d*. On the downward stroke of the plunger L, Fig. 1, the valve *d* is closed, the pressure of the water opening the valve *e*. The said water is forced out of the pump through the valve-opening into the lower end of the coil J. From this coil the water is transmitted to the chamber E through the induction-pipe H on opening the faucet *h* and closing the faucet V to prevent its escape. Thus by the upward and downward strokes of the pump-plunger operating conjointly with the valves *d* and *e* water is received through the cock U (as set forth) into the pump and discharged therefrom into the chamber E through the coil J and induction-pipe H continuously until the supply is sufficient, which is indicated by the motion of the sacking F in contact with the water below it. After the chamber E is supplied with water the faucet V is opened and the key *j* of the three-part cock U is so turned that the passage *i* of the key *j* is in open relation with the pipe I, as indicated in Fig. 4, which allows the water to flow through the pipe I from the chamber E to the pump K. By this means a constant circulation of water is caused to pass through the chamber E, for as the water is withdrawn through the pipe I to the pump the pump forces it as fast as it is received back into the chamber through the coil J and pipe H.

In case hot or warm water is required, it may be obtained by firing the lamp or burner *g*, which will heat the annular chamber P, (and the water within it, if needed,) whereby the heat is also transmitted to coil J, and the water therein, while in this heated condition, is forced into the chamber E by the pump, causing a continuous circulation, as before described, with a constant and uniform degree of heat, (more or less,) as may be required for the patient, which heat can be regulated by the burner *g* within the base Q. In the base is a door, *k*, Fig. 1, for conveniently controlling the burner.

On withdrawing the water from the chamber E through the pipe I, the cock V, Fig. 1, is opened, and the key *j* of the three-part cock U should be so turned that the passages *i* will be open to the nozzle and discharge from the pipe I, as indicated in Fig. 5, which will cause the water from the said chamber to be discharged through the nozzle *f*, as this position of the key *j* cuts off the passage to the pump. The water in the pump and coil may be forced out by turning the key *j* back to the position Fig. 3. On operating the pump air will be drawn in through the nozzle *f* and valves *d* and *e* into the coil J, thereby forcing out the water therein into the chamber E, to be discharged therefrom through the cock U, as be-

fore described, or the water may escape by a three-part cock at *h*, essentially the same as that shown in Fig. 3. Water is drawn off from the annular chamber P by means of the faucet *l*.

A current of either hot or cold air can be circulated through the pump, pipe-coil J, pipe H, chamber E, and pipe I, back to the pump essentially in the same way as that described for the induction and circulation of water, and the same means for heating and cooling the air may be used as that described for heating and cooling the water, as the pump with its valves and cocks will operate essentially in the same way for either water or air.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of an annular chamber P, having a coiled pipe therein, and a pump within the said coil surrounded by an external casing, the lower terminal of the coil being in open connection with said pump, and its upper end connected with the induction-pipe H, and a pipe, I, with its lower terminal in the cylinder of the pump, with valves *d* and *e*, intermediate between the inlet of the pipe I and outlet to the coil, arranged in conjoint relation to the chamber E and bed B, substantially in the manner as described, and for the purposes set forth.

2. The combination, with the bed connected with a frame forming an air and water chamber below the sacking, of pipes H and I, in open connection with said chamber, provided with faucets, and a three-part cock, U, arranged in connection with the pump and coil J around the pump within the annular chamber P, substantially as described, for the purposes set forth.

3. The pump encircled by a pipe-coil within the annular chamber P, pipes H and I, respectively in connection with the coil, pump, and chamber E, in combination with the faucets and three-part cock, with a base provided with a burner below the said chamber P, arranged to operate conjointly in the manner and for the purposes set forth.

4. The combination, with the pump having operant mechanism connected therewith, a pipe, I, leading from the valve *d*, opening to the chamber E, with a three-part cock forming a connection in said pipe between the pump and chamber E, of a pipe-coil, J, terminating at one end with the valve *e*, opening into the pump, and its upper end with the pipe H, extending into the chamber E, arranged substantially as described, for the purpose set forth.

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

RUSSELL K. PELTON.

Witnesses:

W. H. BURRIDGE,
B. F. EIBLER.