

(No Model.)

S. MANSFIELD.
TIRE HEATER.

No. 441,431.

Patented Nov. 25, 1890.

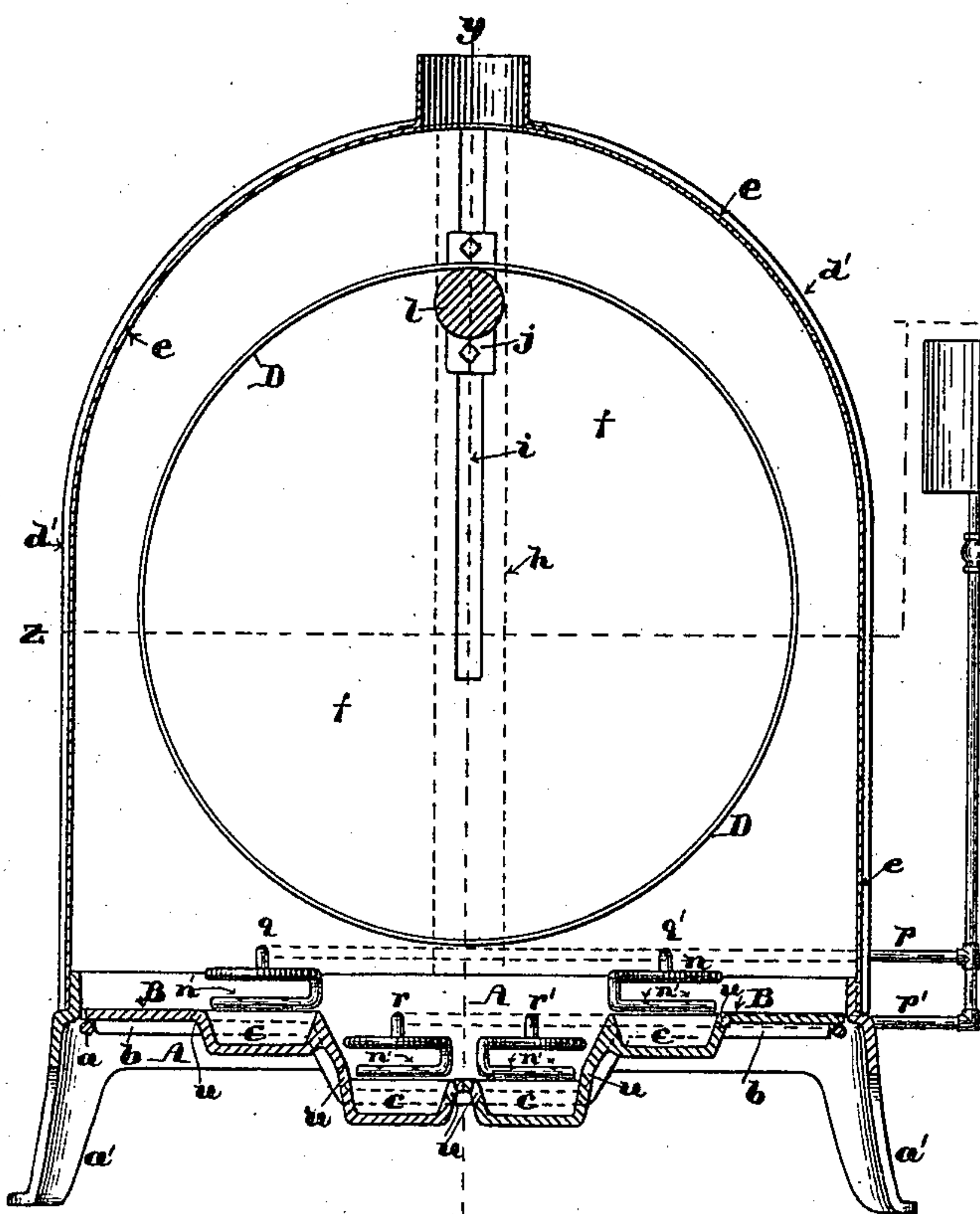


Fig. 1.

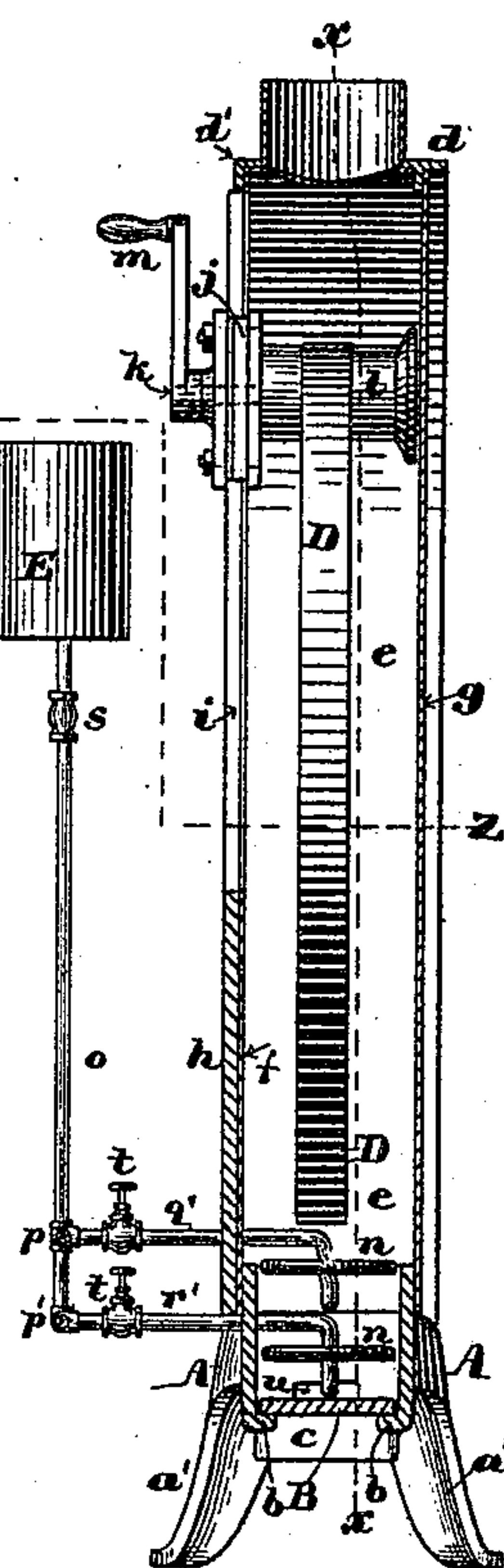


Fig. 2.

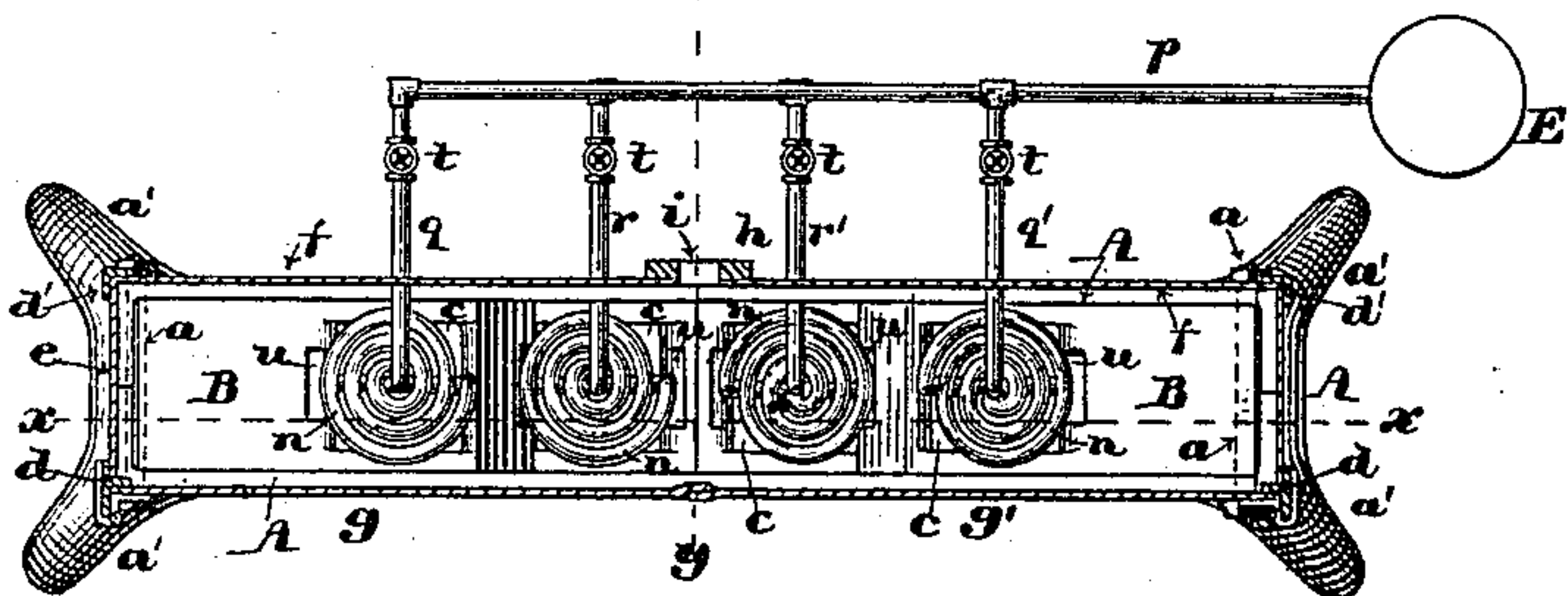


Fig. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

SYLVESTER MANSFIELD, OF LYNN, MASSACHUSETTS.

TIRE-HEATER.

SPECIFICATION forming part of Letters Patent No. 441,431, dated November 25, 1890.

Application filed August 23, 1890. Serial No. 362,871. (No model.)

To all whom it may concern:

Be it known that I, SYLVESTER MANSFIELD, of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Tire-Heaters, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to tire-heaters for expanding tires preparatory to shrinking them upon the wheels; and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the drawings, and to the claims hereinafter given, and in which my invention is clearly pointed out.

Figure 1 of the drawings is a sectional elevation of a tire-heating furnace, illustrating my invention, the cutting-plane being on line xx on Figs. 2 and 3. Fig. 2 is a vertical section on line yy on Figs. 1 and 3; and Fig. 3 is a sectional plan, the cutting-plane being on line zz on Figs. 1 and 2.

In the drawings, A is the base of the furnace, made, preferably, in two parts, of cast-iron and secured together by the bolts aa , each of said parts being provided with two legs $a' a'$ and a ledge or inwardly-projecting lip b to receive and support the removable plate or plates B, having formed therein the pan-like recesses cc , as shown in Figs. 1 and 3.

C is the heating-chamber, formed of the bent angle-irons d and d' , the side and top plate e , the back plate f , and the doors g and g' , the whole being firmly secured to the base A by suitable screws or bolts. The back plate f has secured thereto the metal bar h , which extends from the base A to the top of the back plate at the center of its width, and a vertical slot i is cut through said back plate f and the bar h for about two-thirds of the distance, more or less, from the top of said back plate to the base A, as shown in Fig. 1.

The slot i has fitted thereto so as to be movable vertically therein the block j in a bearing, in which is mounted a short horizontal shaft k , having on its inner end the drum or pulley l , upon which the tire D is suspended while it is being heated, as shown in Figs. 1 and 2. The outer end of the shaft k has se-

cured thereon the crank m , by means of which the tire D may be slowly rotated, so as to bring all parts thereof into position to be acted upon successively by the flames from the burners nn , one of which is placed just above each of the recesses cc . These burners are arranged on different levels, or so as to be about equidistant from the lower portion of the tire D when suspended upon the drum l , and are supplied with oil from the elevated reservoir E through the pipes o , p , p' , q , q' , r , and r' .

The burners nn are of that class termed "vapor-burners," and are so constructed that a considerable quantity of oil is held in an inclosure in position to be subjected to the action of the flame, and is thereby vaporized before it escapes through the orifices provided for the purpose. One form of such a burner is shown in the drawings, in which the body of the vaporizer consists of a pipe of suitable size bent into a scroll form, which scroll is connected at its center with one of the supply-pipes q , q' , r , or r' , and a portion of the pipe of which the scroll is formed is bent downward from the terminus of the last coil and then inward to a position beneath and parallel to the under surface of said coil and at a suitable distance therefrom, said portion of the pipe so bent under said scroll having formed in its upper side suitable perforations $n' n'$, as shown in Fig. 1.

The operation of my invention is as follows: The cocks s and $t t$ being closed, the reservoir E is filled with oil. A small quantity of asbestos fiber is placed in each of the recesses cc . The cock s is then opened, and the pipes o , p , and p' are allowed to fill with oil, and then the valves $t t$, which permit the supply of oil to the particular burners which it is desired to light, are opened, and the oil, escaping through the orifices $n' n'$, falls upon the asbestos fiber in the recesses cc and is immediately ignited, the flames from which impinge upon and surround the scroll or other oil-holding receptacle just above the orifices $n' n'$, the heat from which very soon transforms the oil into gas or vapor, which then burns as it escapes from the perforations, thus supplying a very efficient heat for expanding the tire D, which has previously been

suspended on the drum *l*, and the doors *g* being closed as soon as the burners have been lighted the operator slowly turns the crank *m*, so as to rotate the tire and present its entire periphery to the action of the flame from the burners, whether one or all be lighted. The necessary air for keeping up the combustion is supplied through openings *u u* in the sides of the recesses *c c*, as shown in Figs. 1, 2, and 3.

When the tire is sufficiently heated, the cocks or valves *t t* are closed to stop the flow of oil, the doors *g* and *g'* are opened, and the tire is removed from the drum *l* and placed upon the wheel for which it was intended. If several tires are to be heated, two may be placed on the drum *l* at the same time, and when they are removed others may be placed on the drum without closing the valves *t* until the last tire is heated.

My invention is a great improvement upon any and all devices for the purpose known to me.

A greater or less number of burners may be used without affecting the principles of my invention; but I prefer to use four burners, as shown, as giving the best results for the outlay.

The plates *B*, which form the bottom of the heating-chamber, may be made in two pieces, as shown, or, if preferred, in a single plate, but are so fitted to the base-frame *A* as to be readily removable therefrom for cleaning. The hot gases generated in the heating-chamber pass therefrom through the pipe at the top of said chamber.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a tire-heater, the combination of a tire inclosing and heating chamber provided with hinged doors at its front side and a vertical slot in its back side, an adjustable bearing-box fitted to said slot and constructed and arranged to be clamped therein at any desired height, a revoluble shaft mounted in said bearing-box, a tire-supporting and revolving drum formed upon or secured to the inner end of said shaft, a crank secured to the outer end of said shaft as a means of revolving the same, and a plurality of oil or vapor burners located in the base or lower portion of said chamber in positions for the several flames therefrom to impinge upon the tire when suspended above said burners from said drum.

2. In a tire-heater, the combination of a plurality of oil or vapor burners arranged in the base of a heating-chamber at points about equidistant from the center of said chamber, a revoluble tire-supporting drum arranged in position to suspend the tire to be heated above said burners, and a removable base plate or plates arranged beneath said burners and provided with pan-like recesses corresponding in number to the number of burners and with suitable air-supplying perforations, substantially as described.

3. A tire-heating furnace composed of the cast-metal base *A*, the removable base plate or plates *B*, provided with the recesses *c c*, the angle-irons *d* and *d'*, the plates *e* and *f*, the bar *h*, the slot *i*, cut through the plate *f* and bar *h*, the vertically-adjusting bearing-block *j*, the revoluble shaft *k* and drum *l*, and the doors *g* and *g'*, all constructed and arranged to operate substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 21st day of August, A. D. 1890.

S. MANSFIELD.

Witnesses:

N. C. LOMBARD,

WALTER E. LOMBARD.