

(No Model.)

J. KIEFER.
TIRE HEATING FURNACE.

No. 408,349.

Patented Aug. 6, 1889.

Fig. 1.

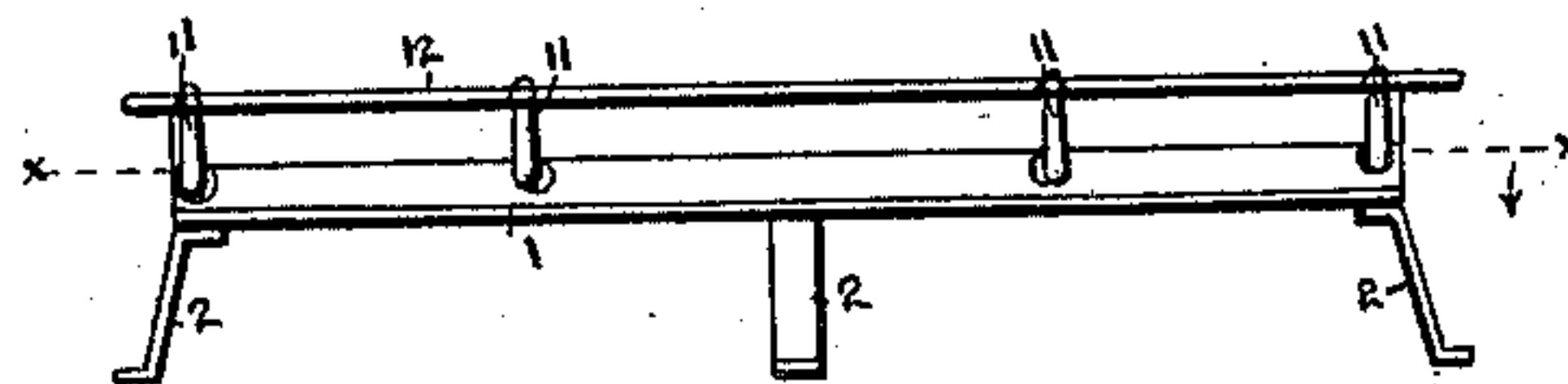
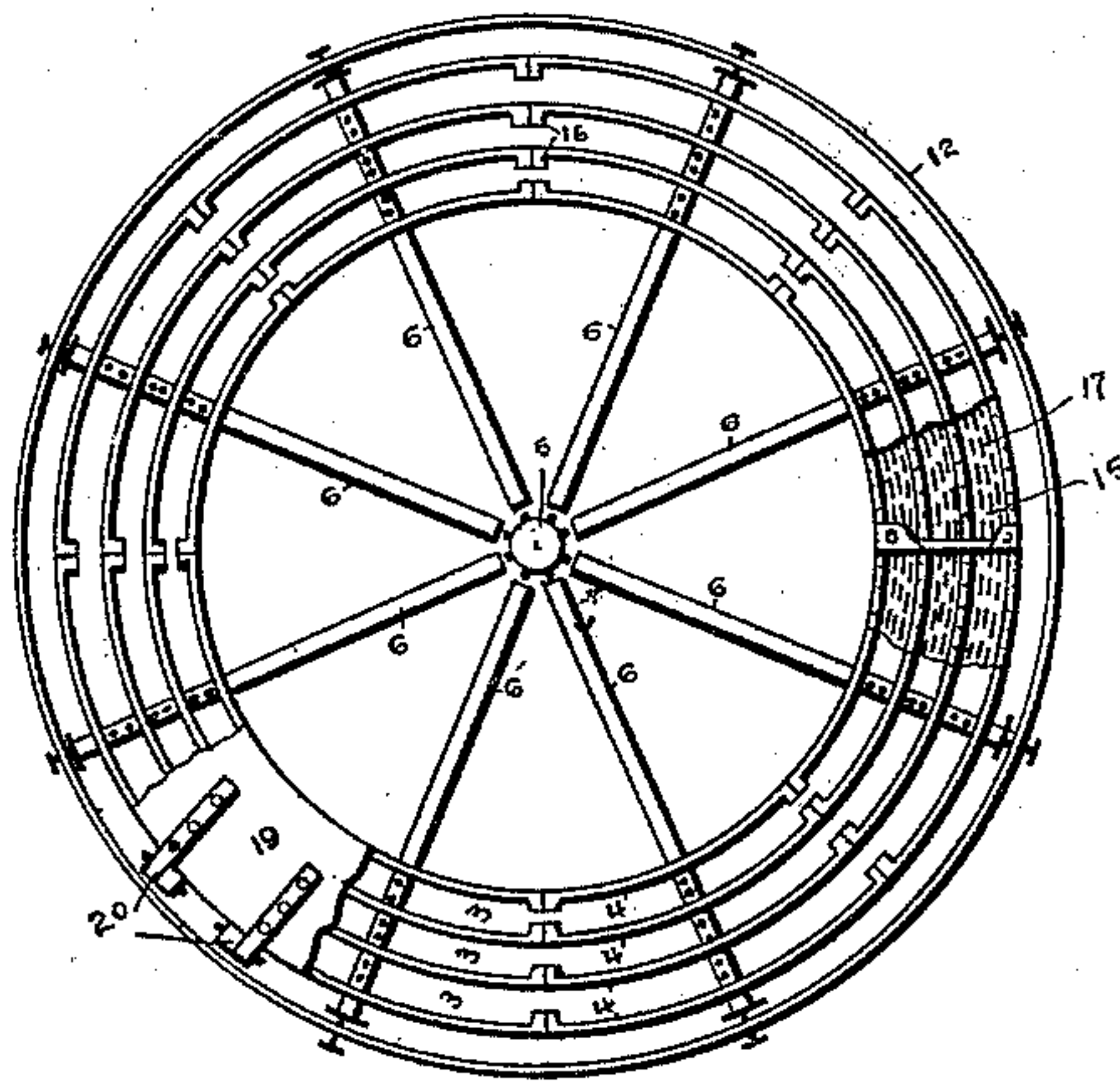


Fig. 2.

Fig. 3.

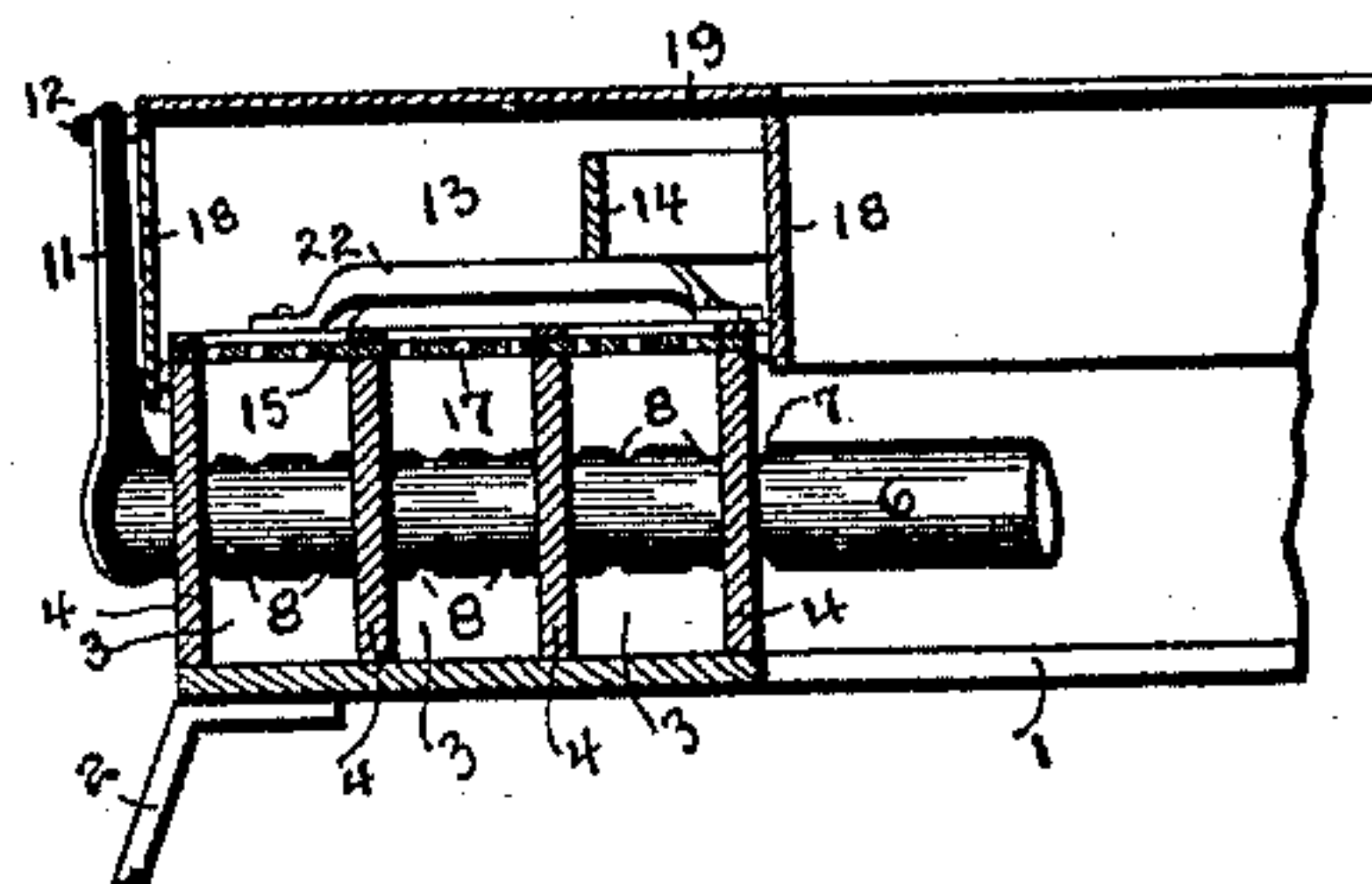
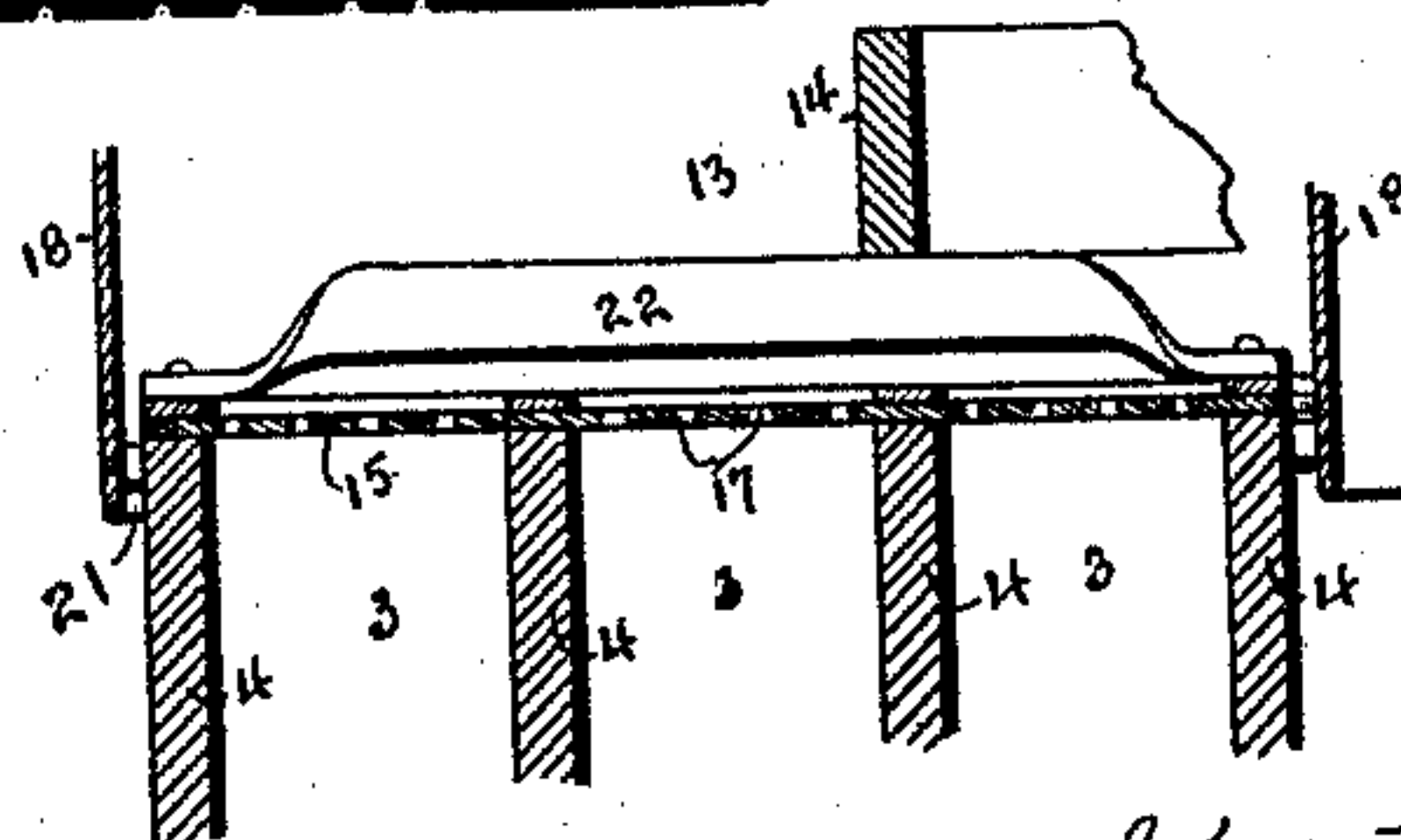


Fig. 5.

Fig. 6.



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TIRE-HEATING FURNACE.

SPECIFICATION forming part of Letters Patent No. 408,349, dated August 6, 1889.

Application filed March 18, 1889. Serial No. 303,652. (No model.)

To all whom it may concern:

Be it known that I, JOHN KIEFER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Tire-Heating Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same,

My invention relates to tire-heating furnaces; and the object of the invention is to provide a furnace in which hydrocarbon oils, as gasoline or the like, can be employed for generating the heat, and which is convenient and economical for use in cities and other places where fuel is an object, and where it is not practicable to have a stationary furnace or to heat the tire by a wood fire in the old way.

To this end the invention consists in a portable furnace provided with a vapor-generator and its attachments and a chamber for heating the tire, as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a horizontal section of my improved furnace on line $x x$, Fig. 2, except at one side to show the hinged connection of the cover. Fig. 2 is an elevation of the furnace. Fig. 3 is a section of Fig. 2, to the left of the center, on an enlarged scale. Fig. 4 is an enlarged detail of one of the switches, and Fig. 5 a detail of the outer section of one of the distributing-pipes in which the switch works. Fig. 6 is an enlarged cross-section of one side.

The plan upon which the furnace is built comprises a heating-chamber of such dimensions as will accommodate vehicle-tires of the usual size for wagons, buggies, carriages, and the like, a single vapor-generator to provide the vapor, and distributing and regulating apparatus between the generator and heating-chamber. In working out this plan to get the best effects for the utilization of the vapor in heating of the tire, and to promote simplicity and convenience of structure, I make a circular or annular furnace formed with a base-plate 1, having legs or standards 2, of suitable height, attached thereto to give the furnace convenient elevation. Above and upon

this base-plate are arranged a series of concentric compartments 3, formed by concentric plates 4, forming rings of varying diameter and set upon their edges on the base-plate. Three such compartments and four concentric wall and division plates are here shown, and these are sufficient for all ordinary purposes.

Of course if a larger furnace is desired the compartments can be increased in number and the furnace built to accommodate larger tires. In the center of the open space within the inner wall of the furnace I place a generator 5, of any desired pattern, but of sufficient size and capacity to produce the requisite quantity of vapor to supply the needs of the furnace. From this generator or burner radiate a series of vapor-distributing tubes 6, which extend through openings 7 on the same radial lines, centrally or thereabout, in the concentric plates or rings 4. All these tubes pass through the plates 4 and extend slightly beyond or through the outer wall plate 4. Each tube has two or more openings 8, preferably upon opposite sides, in each compartment 3 for the emission of vapor into said compartment, and the flow of vapor into the respective compartments is controlled by a tubular switch 9, Fig. 4, provided with openings 10, which, when the switch is turned axially around to the right position, will register with the openings 8 in the supply-pipes. It is designed in any event, in the size of furnace here shown, to use the middle compartment 3, whether a large or small tire is to be heated. I have therefore shown a double set of openings 10 to correspond with this compartment, and one or the other set will be open, according as the switch is turned to register with one or the other of the side compartments. A quarter-turn of the switch will throw it from one registration to the other with the side switches, and so an eighth-turn from registration, or thereabout, with either will cut off the supply of vapor to all the compartments.

The switches 9, of course, are closed at their outer extremity, and they are designed to fit closely in the supply pipes or tubes, so that no vapor will enter or escape between them. However, any suitable arrangement requisite for confining the switch to its place and for

preventing escape of gas about it may be adopted, if either is found necessary. The switches are each provided with a rigid arm or lever 11, extending upwardly from their outer extremity, and a ring 12, running about the upper edge of the furnace, connects the said levers, whereby all the switches may be simultaneously operated and opened and closed at will.

Having now provided for the introduction of the vapor to the compartments 3, it is next to be introduced to the heating-chamber 13, which contains the tire—shown, for example, in cross-section at 14, Fig. 3. A plate 15, corresponding substantially to the base-plate 1, covers the several compartments 3 and the concentric plates 4, and these several vertical and horizontal plates 1 4 15 are united by any suitable means to form a firm and rigid structure. The concentric plates 4, preferably, are made in sections and united, as seen at 16, Fig. 1; but this is not a material feature—that is, the plates may be made in longer or shorter pieces and any practical way of joining the ends may be adopted.

The plate 15 is provided with a series of holes or openings 17, Figs. 1 and 3, which are dotted over its entire surface above the compartments 3, and it is through these openings that the vapor escapes into the heating-chamber about the tire. The heating-chamber extends the entire width of the furnace and has walls 18 and a cover 19, hinged as shown here at 20, Fig. 1.

The walls of the heating-chamber are set to leave an open space 21 between them and the walls of compartments for the admission of air to support combustion, and the vapor is ignited at its point of escape through the openings 17 into the heating-chamber, so that the flame and heat will come directly in contact with and envelop the tire, which lies on bars or supports 22 just above openings 17, and transverse to the furnace for supporting tires of greater or less diameter. If the tire be of the smaller size, the middle and inner compartments would be supplied with vapor by a suitable movement of the switches, and if the tire be of the larger size the middle and outer compartments could be so supplied. Of course the switches could be so formed as to supply vapor to only one compartment at a time; but I find advantage in using two, which increases the volume of heat and insures better and quicker results.

The switches are designed to be opened to allow a full free flow of the vapor, so that there will be no such pressure of vapor in the pipes or tubes as would require a very tight packing of the switches therein. As usual

in vapor-generators, the pipes 6 will not be immediately connected therewith, but be in such relation or connection as to allow a certain quantity of air to be taken in with the vapor.

To allow the products of combustion to escape from the combustion or heating chamber, the cover of said chamber may be perforated, or it can be partially raised to give vent at the sides.

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

1. A tire-heating furnace having a concentric vapor-distributing compartment, and a combustion-chamber for heating the tire adjoining said compartment, with a plate between said compartment and said chamber perforated to pass the vapor to the combustion-chamber, in combination with a vapor-generator and a series of pipes extending radially therefrom into the vapor-distributing compartment, substantially as set forth.

2. In a tire-heating furnace, a walled and covered combustion-chamber in which the tire is heated, and a vapor-distributing compartment adjoining said chamber, with a perforated plate separating it from the combustion-chamber, in combination with a series of supply-pipes provided with openings, through which the vapor enters the said distributing-compartment, substantially as set forth.

3. In a vapor-burning tire-furnace, a series of vapor-distributing compartments, vapor-supply pipes passing through said compartments and provided with openings into each compartment, and a tubular switch extending into each supply-pipe and having openings out of alignment with each other to register with openings in the supply-pipe, whereby when the openings to one compartment are opened those to another compartment are closed, substantially as set forth.

4. In a tire-heating furnace, concentric vapor-distributing compartments, a series of radial pipes traversing the compartments at intervals and extending through the outer compartment, tubular switches seated in the outer extremities of said pipes and each provided with a rigid arm, and a ring extending around the furnace, to which said arms are attached, whereby all the switches may be simultaneously operated, substantially as set forth.

In testimony whereof I hereunto set my hand.

JOHN KIEFER.

Witnesses:

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H. T. FISHER.