E. C. McGRAW.

VULCANIZER.

APPLICATION FILED JUNE 29, 1912.

1,039,308. Patented Sept. 24, 1912.

Fig. 1.

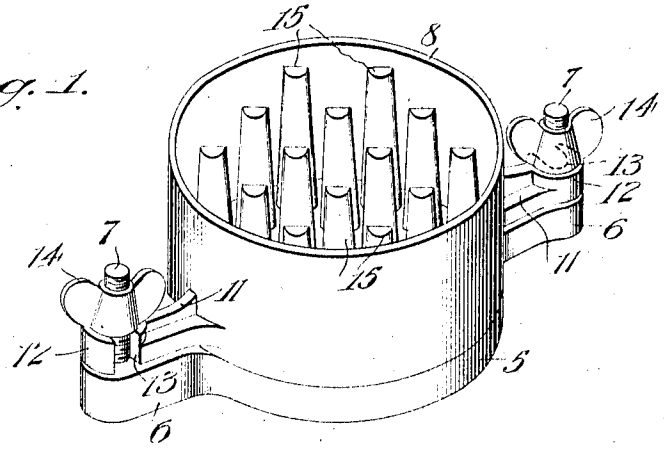


Fig. 2.

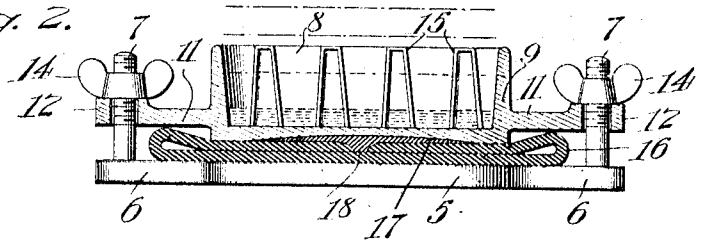
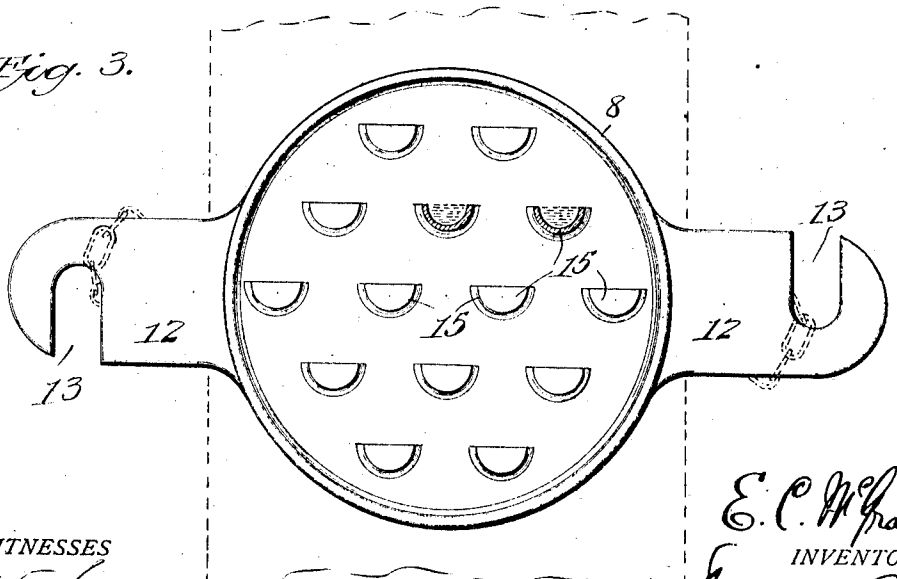


Fig. 3.



WITNESSES

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VULCANIZER.

1,039,308. Specification of Letters Patent. Patented Sept. 24, 1912.

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To all whom it may concern:

Be it known that I, EDWIN C. McGRAW, a citizen of the United States, residing at East Palestine, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Vulcanizers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a vulcanizing apparatus especially adapted for applying patches to rubber tires and tubes. Its object is to provide a simple and cheap apparatus suitable either for the road or shop, and which will require no skill to use and involve no regulation beyond the simple indication of the amount of fuel to be consumed. To accomplish this object I have invented an open self-regulated fluent fuel heater which may be used in either vertical, horizontal or intermediate positions.

In the accompanying drawings,—Figure 1 is a perspective view of my vulcanizer in the form adapted to repair a puncture or small tears or cuts in a tube or tire; Fig. 2 is a substantially central vertical section with the tube and patch in place being repaired; and Fig. 3 is a slightly enlarged front elevation indicating the vulcanizer attached to a wheel for repairing a tire.

In the drawings 5 represents a base, in the form illustrated a circular-shaped plate with extending wings 6 on each side. From each of these wings rises a threaded post 7.

8 is a receptacle preferably somewhat heavier at the bottom of the outer wall than at the top, as indicated at 9, in Fig. 2, and having the bottom slightly concaved on the lower surface for the purpose of fitting a patch, as illustrated in Fig. 2.

11 represents a web-strengthened wing extending from each side of the receptacle 8, each wing having at the end a knuckle 12 with a recess 13 which permits each knuckle to embrace a post 7, the receptacle being clamped upon the base in an obvious manner by means of thumb-nuts 14. In the form illustrated I have shown the knuckles reversed on opposite sides so that the receptacle may be swung about readily on the base. This and other details of construction are, however, merely preferred forms, it being obvious that there may be many variations in the form, shape and size of such incidental parts. Within the receptacle 8 and secured to or integral with the bottom 10 of the receptacle are a series of conical radiator pins 15. These radiator pins are substantially semicircular and are hollow and open except at the top where they are closed by a cap. That is to say, when the vulcanizer is turned on its side these radiating members are substantially conical troughs. These pins constitute a preferred form of a heat distributing member which in the vertical position of the vulcanizer provide for the uniform distribution through the bottom of the receptacle of the heat imparted by the flames of the fluent or liquid fuel, which is indicated by dotted lines on the bottom of the receptacle 8 as shown in Fig. 2. The heat distributing members also themselves constitute fuel receptacles when the apparatus is applied as indicated, for example, in Fig. 3, where the fuel is shown in the two heat distributing members which for convenience are illustrated in section.

16 represents a rubber tube clamped against the bottom of the receptacle 8.

17 represents a rubber patch in place and 18 represents the puncture or center of a cut in the tire. In this case an additional amount of soft or quick-curing rubber, such as is used in this repair work, is indicated at the point 18.

In Fig. 3, as before stated, I illustrate the vulcanizer as applied, for example, to the tread of a tire in place on a wheel, a chain for the purpose of holding the vulcanizer in place being also indicated. It is obvious, however, that any suitable securing device may be employed.

In using the apparatus in the vertical position, as illustrated in Figs. 1 and 2, I put a certain quantity of fuel, preferably gasolene, in the bottom of the receptacle. When the fuel is ignited the flames will heat not only the walls of the receptacle but also the heat distributing members and while the bottom of the receptacle 8 is protected from too great direct heat being applied, these members conduct the heat of the flames down through the gasolene and the bottom of the receptacle and distribute it uniformly throughout the bottom and to all the parts of the patch and a constant determined temperature is maintained which cannot in any instance injure the already vulcanized ar-

ticle, but will serve to properly vulcanize the rubber patch compounded to vulcanize at a lower temperature and in quicker time than would be possible with articles being repaired or with an article already vulcanized.

When the vulcanizer is being used in the position illustrated in Fig. 3 the fuel may be applied in various ways. It may be poured into the several receptacles or it may be poured into the top receptacles thence running over into the lower receptacles. It will be seen that the trough pins 15 are arranged in staggered relation, that is so that the liquid from an upper trough would overflow into lower troughs. This arrangement provides also for a freer action of the flames. My preferred mode of using the vulcanizer in the position illustrated in Fig. 3 is to pour in the gasolene as in Fig. 2, a somewhat larger quantity, and then turn the vulcanizer sidewise. A part of the gasolene will run out the bottom of the receptacle 8 and may be caught, if desired. The remainder will flow over the bottom of the troughs throughout the length of each trough so that each trough will be supplied with the liquid fuel. Then when this fuel is burned it will heat the pins 15 and distribute the heat as before to the bottom of the receptacle. The regulation of the heat will be substantially as in the use in Fig. 2 because the gasolene lies throughout the surface of the trough and prevents it from too quickly attaining that degree of heat which would be the result of applying the flame to an empty member or trough.

In Fig. 2 I have shown two dotted lines above the vulcanizer to indicate the manner in which the heat is regulated. When the gasolene is first ignited the flames will rise higher and higher as the heat increases and by permitting the inflow of ascending air or gas and by raising the zone of combustion above the heat conducting members will serve to automatically lower the temperature until this lowered temperature permits the flame to again sink to a lower level and again more thoroughly heat the conducting members, thereby maintaining a constant temperature throughout the bottom of the receptacle until all the liquid fuel is consumed. The two dotted lines above Fig. 2 indicate the rise and fall of the flames under this action. The same principle applies in the application of the vulcanizer in the position illustrated in Fig. 3.

While I have illustrated the heat distributing members 15 as substantially semi-circular in cross section and open and hollow, I do not mean to limit myself to that precise form because it is obvious that other forms may be employed, it being sufficient that provision is made for the fluent fuel to flow into the heat distributing members and that they shall serve as receptacles in certain positions of the vulcanizer.

I claim:—

1. In a vulcanizer, a receptacle for a fluent fuel and heat distributing members within the receptacle in the form of troughs.

2. In a vulcanizer, an open receptacle, a series of trough-like pins connected with the bottom of the receptacle and closed at the top.

3. In a vulcanizer, an open receptacle for fluent fuel having heat-distributing members passing through the fuel to communicate the flame heat of the fuel to the bottom of the receptacle, the heat-distributing members being substantially trough-like in form to hold fuel when the receptacle is turned sidewise for application to the object to be treated.

4. In a vulcanizer, a receptacle for fluent fuel containing a series of hollow heat-distributing members adapted to permit the fuel to flow into them, from the bottom of the receptacle and to retain the fuel when the receptacle is turned sidewise.

5. In a vulcanizer, a receptacle for fluent fuel containing a series of heat-distributing members capable of serving as receptacles for the fuel and arranged in substantially staggered relation.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EDWIN C. McGRAW.

Witnesses:
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JOHN MORGAN.