A. FAY.

FUEL ELEMENT FOR VULCANIZERS.

APPLICATION FILED AUG. 10, 1918.

1,285,087. Patented Nov. 19, 1918.

Fig. 1.

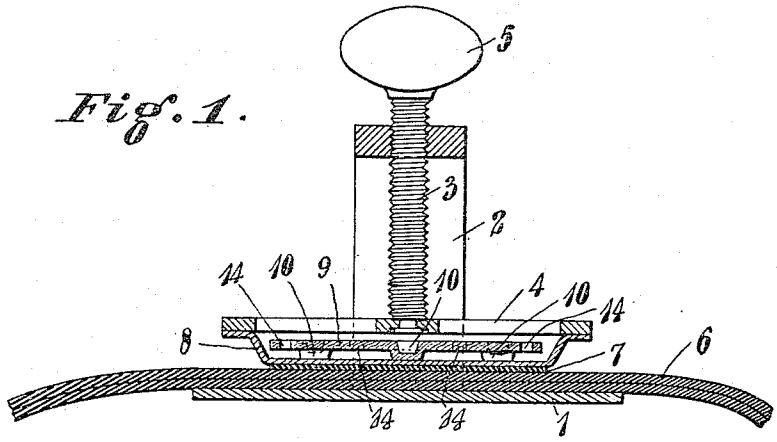


Fig. 2.

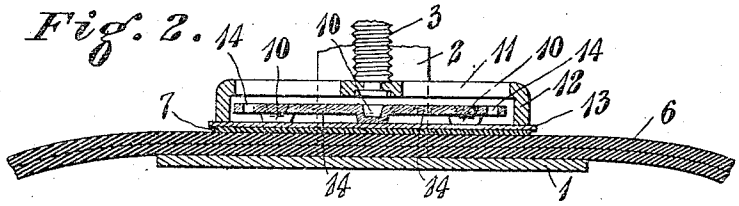


Fig. 3.

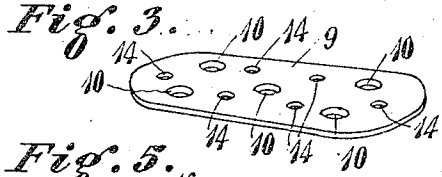


Fig. 4.

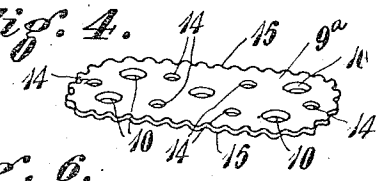


Fig. 5.



Fig. 6.

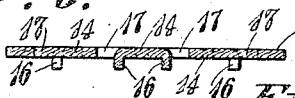


Fig. 7.

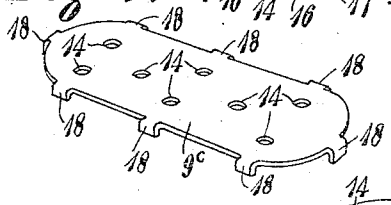


Fig. 8.

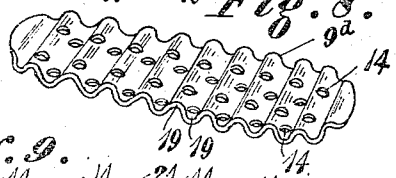


Fig. 9.

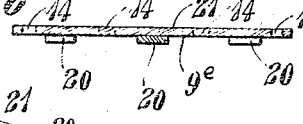
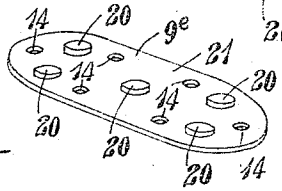


Fig. 10.



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FUEL ELEMENT FOR VULCANIZERS.

1,285,087. Specification of Letters Patent. Patented Nov. 19, 1918.

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To all whom it may concern:

Be it known that I, ALPHEUS FAY, a citizen of the United States, and a resident of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Fuel Elements for Vulcanizers, of which the following is a specification.

My invention relates to portable vulcanizing apparatus for application of patches to the inner tubes of pneumatic tires, or to similar articles which may be patched in such manner, and more especially to such vulcanizing apparatus employing a solid combustible generally of fibrous material impregnated with some highly combustible substance.

The object of my invention is to provide the fuel or combustible in such a manner that it may be conveniently used with various apparatus of this character, and whereby the combustion may be more effective and may more rapidly heat the patch, thereby economizing in the time and in the combustible used, as well as performing the vulcanizing operation more effectively and thus producing a somewhat better attachment of the patch.

My invention consists in the new and improved article of manufacture for the purposes just stated, and which article will hereinafter be more fully described and claimed.

In the drawing:

Figure 1 is a vertical cross-section of a vulcanizer having a pan and means to clamp the pan to the patch, and showing my improved combustible or fuel element used therewith;

Fig. 2 is a partial similar view of apparatus employing merely a flat plate with a special clamping yoke having a depending rim engaging the plate to clamp it to the patch, and showing how my improved combustible or fuel element is used therewith;

Fig. 3 is a perspective view of the element shown in section in Figs. 1 and 2;

Fig. 4 shows a modification of the element of Figs. 1, 2 and 3 in which the edges are serrated;

Fig. 5 is another modification;

Fig. 6 is a longitudinal vertical section on a plane corresponding to the line 6—6 of Fig. 5;

Figs. 7, 8 and 9 are further modifications; and

Fig. 10 is a perspective view of the modification of Fig. 9 inverted, and also an approximately correct similar view of the element of Figs. 1, 2 and 3.

It will be understood that my improved combustible or fuel element may be used with any of the various vulcanizing apparatus designed to employ such solid combustible usually made of heavy paste-board or straw-board impregnated with some highly combustible substance or composition. As representing any of these apparatus, I have illustrated a rather conventional form in which there is the flat base-plate 1, a suitable standard 2 spanning the base-plate, and having a screw 3 threaded to run up and down in its middle part over the base-plate, and which screw carries, swiveled to its lower end, a clamping yoke 4, and is conveniently turned by a thumb-piece 5 on the upper end of the screw above the standard 2. As is well known, the inner tube 6 or other article to be patched is laid across the base-plate under the standard 2, which standard in various kinds of apparatus is properly designed to admit the article 6 to the base-plate 1, and the patch 7 placed in the desired position on the article 6, has, as shown in Fig. 1, the pan 8 placed upon it to be clamped tightly thereagainst and thereby clamp the patch 7 tightly against the article 6 by the engagement of the yoke 4 when the screw 3 is screwed down through the standard 2. The pan 8 holds the fuel or combustible, which is then lighted, and by its combustion generates the heat to vulcanize the patch 7 to the article 6.

The combustible or fuel, as ordinarily used, is merely placed on the bottom of the pan 8 in such a condition that it burns practically only upon its upper side. These pans are suitable for the use of fluid or powdered combustible, and these, of course, rest on the bottoms of the pans and are held in by the sides of the pans. Solid combustible elements have been made of fibrous material, such as paste-board or the like, suitably treated to make them highly inflammable and left merely flat and designed to lie upon the bottom of the pan practically in continuous contact therewith throughout the extent of the element. If any departure

from this relation of the fuel element to the pan took place, it was incident to some special construction of the apparatus.

In my present invention, I provide a combustible or fuel element of the general character just alluded to, but make it so that it sustains its lower surface a material distance away from the bottom of the pan 8. Thus, as shown in Fig. 1, the combustible or fuel element 9, which is mainly flat, has pressed down from its main part, cupped protuberances 10 at suitable intervals. Merely the bottoms of these protuberances 10 engage with the pan bottom, and by far the major extent of the area of the lower side of the element is raised a distance above the bottom of the pan approximately that of the thickness of the element.

In the apparatus shown in Fig. 2, the parts are the same except that the clamping yoke 11 has a depending rim 12 which engages the flat plate 13 around near the periphery of the plate, and which plate 13 takes the place of the pan 8 resting directly upon the patch 7 and holding it to the article 6 under the pressure of the yoke 11 as pressed down by the screw 3 in the manner described in connection with Fig. 1. My improved combustible or fuel element 9, with its protuberances 10 resting upon the upper surface of the plate 13 and holding the lower surface of the element 9 up away from the upper surface of the plate 13, thus bears substantially the same relation to the parts as it does in the previous example.

This fuel element 9 is more fully shown in Fig. 3 where it is seen to be provided with perforations 14 interspersed between the protuberances 10 to facilitate the passage of air down to or up from the space between the fuel element and the heat-transmitting element, such as the pan 8 and the plate 13.

The modified element 9^a in Fig. 4 is like that of Figs. 1 to 3, inclusive, but has serrations 15 around its edges. With these, even if the element is placed too far over to one side of the pan 8 or plate 13, so that it engages with one side of the pan 8 or of the rim 12 of the yoke 11, there will still be spaces in the serrations 15 for the circulation of air at that side. Also, even if the patch is of practically the same extent in all directions as the interior of the pan 8 or of the yoke 11, it may yet be forced into the space and its serrations 14 will yield sufficiently for this and also leave air circulating spaces around the edges, in addition to the spaces afforded by the perforations 14.

In Figs. 5 and 6 the element 9^b has modified protuberances in the form of short tongues 16, pressed down from openings 17, which thus provide air spaces in addition to those provided by the perforations 14, and by virtue of which these perforations 14 may, if desired, be dispensed with.

In Fig. 7, the element 9^c has lugs formed at intervals around its edges which are turned down to form the protuberances 18. The element has the perforations 14 distributed throughout its interior.

In Fig. 8, the element 9^d is simply transversely corrugated throughout its length and has the perforations 14 suitably distributed. The alternate corrugations 19 thus form the protuberances that support the intervening surfaces away from the plate or pan upon which the combustible or heating element rests.

The element 9^e of Fig. 9 has its protuberances 20 formed as separate pieces and suitably secured to the flat main part 21 which has the perforations 14. The appearance of the under side of this flat main part 21 with its attached protuberances 20 is indicated in Fig. 10. It will also be understood that where the protuberances are pressed down in the form of cups, as the protuberances 10 of Figs. 1 to 4, their bottoms will appear substantially as the protuberances 20 shown in Fig. 10.

All of the examples are shown as provided with the perforations 14; but it will be understood that these are not essential elements of my invention. They are preferable because they permit of more thorough combustion of the entire element. They are of use even though the lower side of the element rested directly upon the pan or plate that conducts the heat to the patch. When the lower side of the combustible element is elevated so that there can be substantial combustion on the lower side, these perforations permit of a better draft in adjacent parts of the combustion space and a more thorough distribution of the combustion throughout the body of the combustible. But the important object of my invention is to insure this combustion on the lower side of the element by means embodied in the element itself, so that this kind of vulcanizing operation may be employed even though the apparatus available is not particularly designed for any but the ordinary use of the combustible element lying flat upon the upper surface of the heat-conducting element. Where the combustible element is used in this ordinary way without permitting the proper combustion on the lower side, but relying upon the combustion taking place on the upper side of the element, the heat transmission to the patch is very indirect, and it may be said that there is direct transmission of heat from the combustible or fuel through the plate or pan from the patch only during the last stages of combustion. The use of means permitting ready combustion on the lower side, so that there is direct transmission from the burning fuel through the plate or pan bottom to the patch throughout practically all of the operation, is far more effec-

tive and economical and saves considerable time; and by providing a fuel element which is adapted to assume this relation toward the parts of practically any kind of apparatus of this general character without any special attention on the part of the operator, the advantages alluded to are further increased. With the corrugated element 9^d of Fig. 8 it is not even necessary to observe which side is placed downward, as it has the protuberances 19 extending in both directions. The other examples may also have oppositely extended protuberances if desired.

Various kind of protuberances are illustrated, and it will be understood that any of these, or others which are equivalent, may be used singly or in combination in the same element; and that my invention is otherwise susceptible to considerable modification as may be dictated by requirements. Accordingly, while certain constructional details are deemed preferable in connection with my invention, and I have shown and described these rather specifically in elucidating the construction and use of my invention, as is required, I do not wish to be understood as being limited to such precise showing and description, but having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. As a new and improved article of manufacture, a fuel element for use in a vulcanizer, comprising a main part with a relatively widely extended lower surface, and a plurality of protuberances extended from said main part to bear upon a suitable object to be heated and support said element thereon with said main part exposed a suitable distance away from said object to permit adequate combustion of said element on its side adjacent to said object.

2. As a new and improved article of manufacture, a fuel element for use in a vulcanizer, comprising a main part with its upper and lower surfaces relatively widely extended, and a plurality of protuberances in said upper and lower surfaces extended from said main part to bear upon a suitable object to be heated and support said element thereon with said main part exposed a suitable distance away from said object to permit adequate combustion of said element on its side adjacent to said object.

ALPHEUS FAY.

Witnesses:
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IRENE PARKER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."