

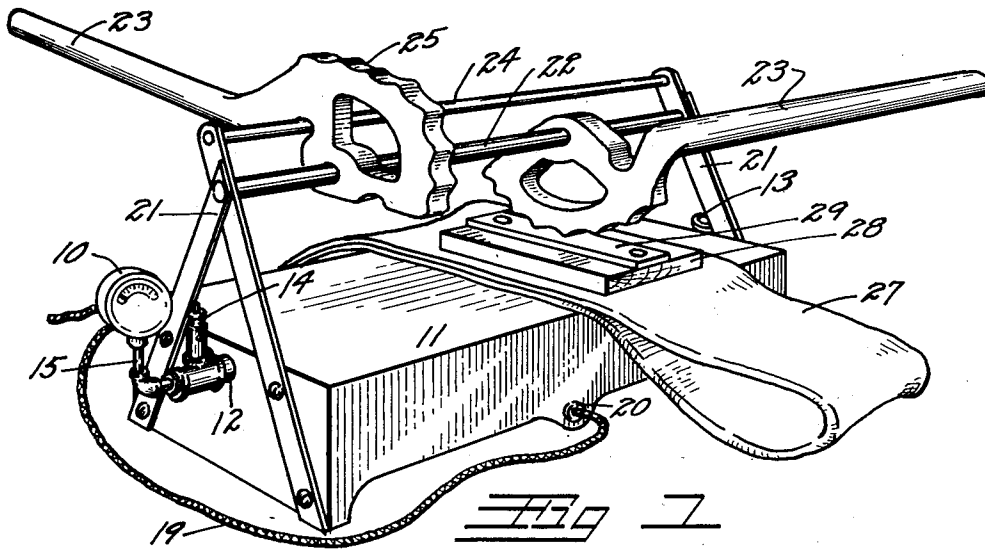
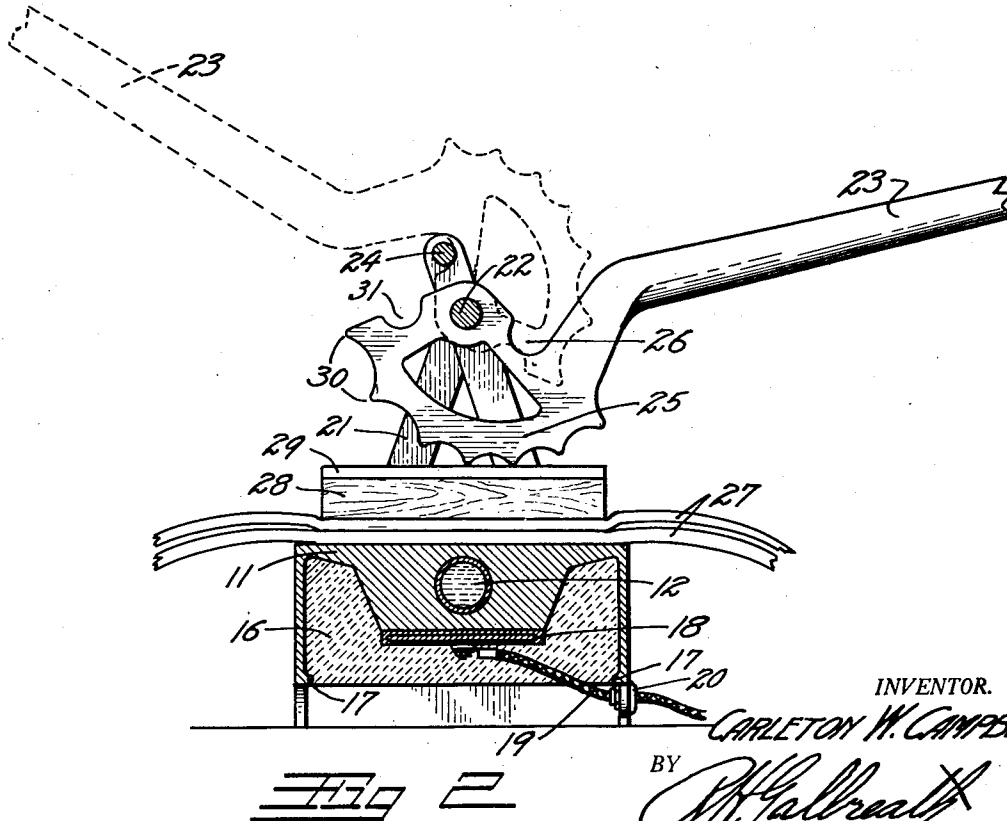
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C. W. CAMPBELL

TUBE PLATE VULCANIZER

Filed Sept. 15. 1924



INVENTOR.

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TUBE-PLATE VULCANIZER.

Application filed September 15, 1924. Serial No. 737,819.

To all whom it may concern:

Be it known that I, CARLETON, W. CAMPBELL, a citizen of the United States of America, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Tube-Plate Vulcanizers, of which the following is a specification.

This invention relates to vulcanizing devices and, while more particularly applicable to a machine for applying patches to the tubes of pneumatic tires, will be found valuable in any installation where it is desired to apply a uniform heat to an article under mechanical pressure.

The principal object of the invention is to provide a novel and efficient heating device in combination with a simple, quick-acting clamp for use in clamping articles to the heating device.

It is desirable in a device of this character that the hot plate, upon which the articles to be vulcanized are placed, have a uniform temperature over its entire surface. Such a uniform temperature can be efficiently obtained if the metal of the plate is such that it has a relatively high thermal conductivity, such as copper or aluminum. Since the hot plate is usually a part of a boiler under steam pressure, however, it has heretofore been impractical to use such a metal, owing to the fact that metals of high thermal value are low in tensile strength and the strength of the boiler would be so impaired as to make its use impractical. A further object of this invention is to so design the hot plate or boiler that a metal of high thermal value may be employed. By the use of such a metal I obtain, not only a more uniform plate temperature at a lower cost per heat unit, but also, a hot plate which will not rust or corrode in use.

A still further object of the invention is to so design a clamp, for an article of this character, that only one operation is necessary in use and one in which all bolts, nuts, screws, washers, etc., have been entirely eliminated.

Other objects and advantages reside in the detail construction of the invention, which result in simplicity, economy, and efficiency, and which will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accom-

panying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a perspective view of my improved tube plate vulcanizer in use.

Fig. 2 is a vertical cross section through the same.

To regulate and control the heat of the hot plate of the device, I employ a combination pressure gauge and pressure operated, electric circuit-breaker 10. The details and operation of the gauge 10 are more fully illustrated, described, and claimed in a pending application for patent on improvements in vulcanizing machines, Serial No. 709,425, filed April 28, 1924, by J. A. Cross, and which has been assigned to the assignee of the present invention. It will suffice in this application that the gauge 10 acts to break the electric supply to the vulcanizer at a predetermined pressure.

Let the numeral 11 indicate the hot plate of the vulcanizer, which is a casting of some relatively high thermal conductive metal such as aluminum. Aluminum is the preferred metal, since, owing to its practically non-oxidizing and non-corrosive nature, it presents an excellent clean surface to the article being cured.

In order that a steam pressure will be developed in the hot plate, by means of which the gauge 10 may be actuated, I cast into the plate itself a section of wrought iron pipe 12. The pipe 12 is placed into the mold before the plate 11 is cast so that it will be in intimate contact with the plate and all transmission of heat will be by direct conduction.

The pipe 12 projects at both extremities of the plate 11 and is provided at one extremity with a filling nipple 13, and at its other extremity with a safety valve 14, and connection 15 to the gauge 10. Since the increase in pressure in the pipe 12 acts to cut off the source of heat to the plate, through the medium of the gauge 10, the safety valve 14 is not essential.

The under side of the plate 11 is hollowed out, as shown in Fig. 2, for the reception of a heat insulating packing 16. I prefer to employ a cement made of a mixture of asbestos fiber and fire clay for the packing 16, since in addition to its insulating qualities,

it may be cast in place and, when hard, will retain its place and shape. Beads 17 are formed along the inner edge to hold the packing 16 in place.

- 5 Heat is applied to the plate 11 by means of an electrical heating unit 18, which is in contact with the bottom of the plate 11. The heating unit 18 is held in place by being cast into the packing 16, as shown in Fig. 10
2. Electrical conductors 19 pass through an insulator 20 in the plate 11 and connect the unit 18 with the gauge 10.

Secured to each extremity of the plate 11, is a bracket 21, which support a pair of 15 parallel bars over the plate 11. One of the bars, 22, acts as a bearing shaft for a plurality of novel clamping levers 23. The other of the bars, 24, acts as a rest or support for the levers 23 when in the released 20 position.

The levers 23 are longitudinally slidable on the shaft 22, and carry serrated, eccentric, contacting, cam faces 25. When not in use, the levers 23 are placed back in the 25 dotted line position of Fig. 2, supported by the bar 24, a notch 26 being provided for engagement with said bar.

In use, the article to be vulcanized, illustrated at 27 as a tire tube, is placed on the 30 hot plate 11. A wooden block 28, carrying a metal contact plate 29, is placed on the article. One of the levers 23 is now brought over the block and depressed. Since the cam face 25 of the lever is eccentric with the shaft 22 it will act to force the block 35 28 tightly against the article to be vulcanized.

The face 25 carries a series of points 30, which are believed to be new and novel and, 40 which act to lock the lever 23 at any desired position. The radii of the curves between these points 30 increases from the toe to the heel of the face 25. As will be noted from Fig. 2, the lever always comes to rest 45 with two of the points 30 in contact with the contact plate 29. This effectively locks the lever in position since the contacting points must pass the high point of their arcs and depress the tube 27 before the lever 50 can be moved in either direction. This can be done only by external force on the lever. A notch 31 is provided in the clamping levers to allow them to clear the bar 24 when in the fully depressed position.

55 While a specific form of the improvement has been described and illustrated herein, it is desired and understood that the same may be varied, within the scope of the ap-

ended claims, without departing from the spirit of the invention.

Having thus described the invention, what I claim and desire secured by Letters Patent is:—

1. A hot plate for vulcanizers having its body portion made of aluminum and its pressure containing portion formed of iron imbedded in said aluminum.

2. A hot plate for vulcanizers having its body portion formed of a metal having relatively high thermal conductivity and low tensile strength, and a pressure tube imbedded in and surrounded by said body portion, said tube being made of a metal having a relatively low thermal conductivity and high tensile strength.

3. A vulcanizing machine comprising a hot plate; a clamp block arranged to hold an article against said hot plate; a lever pivoted over said block; and a cam face operated by said lever so as to engage and hold said block against said article; and means for locking said levers at any desired point; said means comprising a series of contact points on said cam face arranged to engage said block.

4. A vulcanizing machine comprising a hot plate; a pair of longitudinal bars mounted above said plate; a series of cam faced levers slidably and rotatably mounted on one of said bars and arranged to clamp articles to said plate when in one position and rest on the other of said bars when in another position.

5. Means for clamping an article to the hot plate of a vulcanizing machine comprising a block and a lever operated cam, said cam having a series of arcuate indentations in its contacting surface, the radii of said indentations decreasing from toe to heel of said cam.

6. A clamp comprising a lever operated cam, the contacting face of said cam being provided with a series of contact points and a clamp block, said cam arranged to contact with said clamp block at said contact points only.

7. A clamp comprising a lever operated cam, the contacting face of said cam being provided with a series of contact points and a clamp block, said cam arranged to contact with said clamp block at said contact points only, the spacing of said contact points decreasing from toe to heel of said cam.

In testimony whereof I affix my signature.
CARLETON W. CAMPBELL.