Aug. 11, 1942. A. D. SLATKIN 2,292,485

VULCANIZER

Filed May 29, 1941

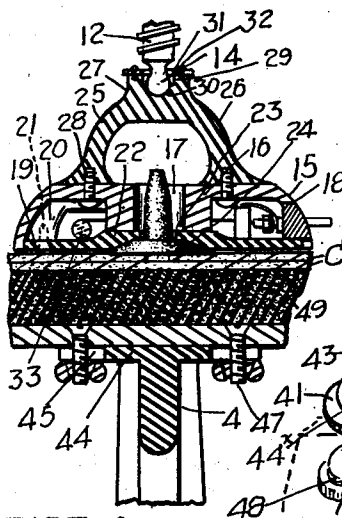


FIG. 4

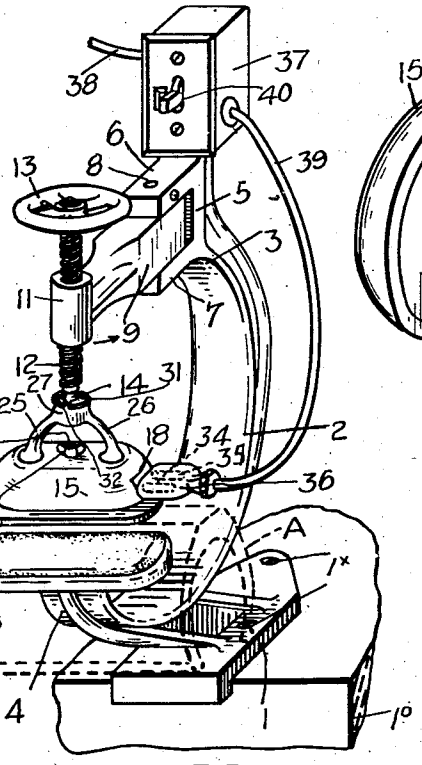


FIG. 1

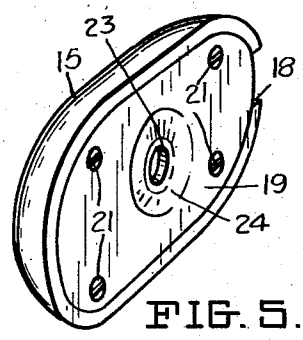


FIG. 5

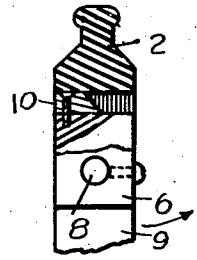


FIG. 6

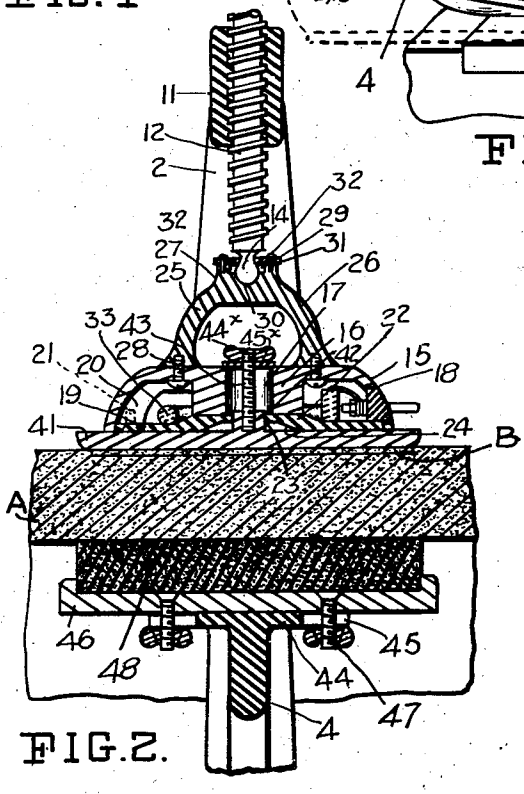


FIG. 2

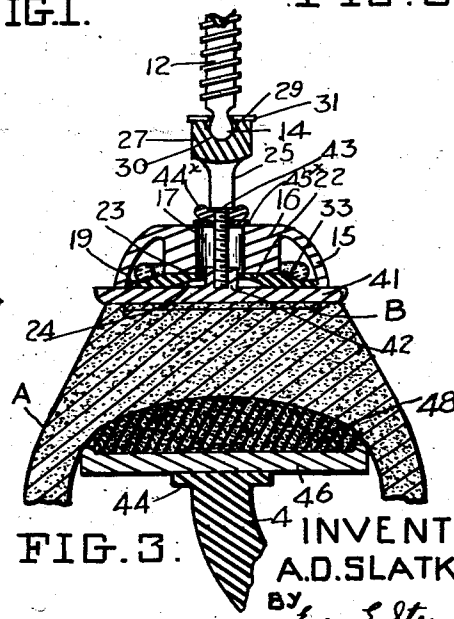


FIG. 3

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VULCANIZER

Alfred Daniel Slatkin, Toronto, Ontario, Canada

Application May 29, 1941, Serial No. 395,876

1 Claim. (Cl. 18—18)

My invention relates to improvements in vulcanizers and the object of the invention is to devise a simple, compact, cheap, efficient and readily portable machine in which the pressure is readily applied, and evenly distributed over the surface of the patch or other article to be vulcanized, in which the device is readily adaptable for use on surfaces varying in configuration and which is also readily adaptable for not only vulcanizing patches but the mushrooms of valves to inner tubes and it consists essentially in the arrangement and construction of parts as hereafter described.

Figure 1 is a perspective view of my vulcanizer.

Figure 2 is an enlarged longitudinal sectional view through the main parts of the vulcanizer as used in vulcanizing patches to tires and similar articles.

Figure 3 is a transverse sectional view through the parts shown in Figure 2.

Figure 4 is a similar view to Figure 2, showing the device adapted for vulcanizing a valve mushroom to an inner tube.

Figure 5 is an enlarged perspective detail of the combined pressure plate and heating element casing and looking at the under side.

Figure 6 is an enlarged sectional plan detail of the hinged joint between the pressure plate carrier and main frame.

In the drawing like characters of reference indicate corresponding parts in each figure.

A foot plate 1 is secured by screws 1^x or other means to the top of a work bench or other suitable support 1^0. A main frame 2 somewhat oval in form having an open front forming opposing ends 3 and 4 extends from the plate 1. The end 3 is formed with a forwardly extending jaw 5 through the arms 6 and 7 of which extends a hinge pin 8.

An arm 9 is swung upon the pin 8 between the jaw arms 6 and 7, its swinging movement being limited by a block or projection 10 (see Fig. 6) which extends from or is secured to the arm 9 and engages the base of the jaw 5 when swung into a position parallel to the arms of the jaw. By this means the arm 9 is held so as to be capable of swinging in one direction only on the pin 8 and is therefore correctly centred over the supporting pad 47 hereafter described when in the operative position.

The outer end of the arm 9 carries a vertical internally threaded sleeve 11 in which is screwed a pressure screw 12 having a hand wheel 13 at its upper end and a ball joint 14 at its lower end. The threads of the screw 12 and sleeve 11 are deep square threads so as to provide a maximum amount of leverage when the spindle is turned and therefore create a maximum pressure. An element casing 15 preferably oval in form is provided with a central internal boss 16 having a central orifice 17 and a cut out portion 18 extending through the wall of the casing at one end thereof.

The casing 15 is provided with a bottom wall 19 fitting within the casing and resting on a plurality of internal bosses 20, one only of which is shown, being secured thereto by screws 21. The centre of the plate 19 is formed on its upper face into a shallow boss 22, the top of which abuts against the bottom of the boss 16 and is provided with a central orifice 23, the lower face of the plate being formed with a tapered recess 24, the taper of which corresponds to the taper of a mushroom valve base.

A fork member formed by arms 25 and 26 and an upper connecting boss 27 is secured by screws 28 to the top of the casing 15 and on diametrically opposite sides of the orifice 17. The boss 27 is formed with a central recess 29, the base of which is provided with a semi-cylindrical socket 30 in which the ball 14 turnably fits. The ball 14 is retained in the socket by a divided washers 31 secured to the top of the boss 27 by screws 32. By this means the combined pressure and heating element formed by the casing 15, fork member 25, 26, 27, and plate 19 swings on the ball 14 so that the lower face of the plate 19 adjusts itself automatically to fit against the surface towards which it presses.

An electric element 33 is contained within casing 15 and connected to the plug terminals 34 and 35 engaged by the socket 36.

A casing 37 is carried by the standard 2 containing a time clock of usual construction. 38 is the circuit connection to the current source and 39 is a cable containing the leads connecting the time clock to the terminals 35 and 36 of the heating element. 40 is the setting device by which the time clock is adjusted to automatically open the circuit at any predetermined interval of time according to the work required to be done.

I do not describe or illustrate the time clock in detail as it is of ordinary standard construction and in itself forms no part of the invention but only as it is connected with the other parts of my device. A supplemental pressure plate 41 fits against the pressure plate 19 and is provided with a central boss 42 extending through the orifice 23 so as to fit the same and

from which extends a threaded stem 43 which projects upwardly through the orifice 17. A butterfly nut 44x is screwed onto the upper end of the stem 43 against the washer 45x covering the orifice 17.

The lower face of the plate 41 is formed to fit the configuration of the tire which may be flat, rounded or recessed in any of the various ways to form the traction surface. The end 4 of the main frame 2 is formed into a horizontal plate portion 44 having an open ended slot 45 at each end. 46 is a recessed plate secured by the bolts 47 to the portion 44 and into which is filled a soft rubber pad 48, the upper face of which is curved transversely to fit the interior of a tire casing as clearly indicated in Figure 3.

The tire casing is indicated by the letter A. In performing the operation of vulcanizing a patch B over a ruptured tire, the tire, if the rupture is in the tread, is placed in the dotted line position shown in Figure 1 and in the full line position shown in Figures 2 and 3, resting on the pad 48. The hand wheel 13 is then turned rotating the threaded spindle 12 so as to lower the pressure member and contact plate against the patch. The operation is continued until the desired pressure is exerted.

The circuit through the time clock 37 and element 33 is then closed, the time clock being set in the usual manner to open the circuit after a predetermined lapse of time to effect the vulcanizing of the patch so that it becomes an integral part of the tire.

The hand wheel is then turned in the opposite direction to that previously described to raise the element and contact plate clear of the tire to release the same. The arm 9 carrying these parts is then swung in the direction of arrow leaving the tire free to be raised from the supporting pad and removed.

If it is desired to vulcanize a valve mushroom to the inner tube, the pad 48 is removed and a perfectly flat pad 49 substituted as in Fig. 4, the flattened inner tube C being laid thereon as indicated in this figure with the base of the mushroom cemented thereto according to the usual practice. The contact plate 41 is removed by unscrewing the nut 44x. The arm carrying the pressure plate is then swung over the tube and valve and then lowered so that the base of the mushroom fits into the recess 24 as shown in Figure 4, the stem of the mushroom passing through the orifices 23 and 17. Pressure is then exerted and heat applied as before to effect the vulcanization of the parts.

If the rupture is in one of the side walls of the casing such casing may be turned so that the ruptured part rests on the pad 48, the top of which may be curved as in Fig. 3 or in the case of a ruptured inner tube on a pad having a flat top as at 49 in Fig. 4. The oval shape of the frame 2 allows for either side wall resting freely on the pad.

From this description it will be seen that I have devised a vulcanizing machine which may be used to repair a tire casing which has been ruptured either in the tread or either side wall and which may readily be adapted for vulcanizing a mushroom of a valve to the inner tube of a tire, which is simple, cheap and readily portable, and by which great pressure can manually be applied and a maximum heat provided and the heat controlled to suit the particular job.

Although I have described my device as applied to tires it will, of course, be understood that it may be employed for many other purposes where it is desired to vulcanize two parts together as in the repair of rubber blankets and canvas hose pipes, etc.

What I claim as my invention is:

In a vulcanizer, a pad on which the article to be vulcanized rests, a vertical internally threaded sleeve supported above and in spaced relation with the pad, a threaded spindle engaging the thread of the sleeve, means at one end of the spindle for manually operating the same, a casing forming a hollow pressure plate and including a cover member having a central internal boss having a central orifice, a plate forming the bottom of the casing and bearing on the boss and having an orifice aligned with the orifice of the boss, a supplemental pressure plate having a threaded stem extending from the supplemental plate through the orifice to project upwardly therefrom, a nut and washer on the projecting end and said washer bearing against the top of the casing around said orifice, a fork member secured to the casing top at each side of the orifice, and a universal connection between the fork member and spindle.

ALFRED DANIEL SLATKIN.