May 17, 1927. 1,628,899

M. MURPHY

ELECTRIC VULCANIZER

Filed Oct. 8, 1926

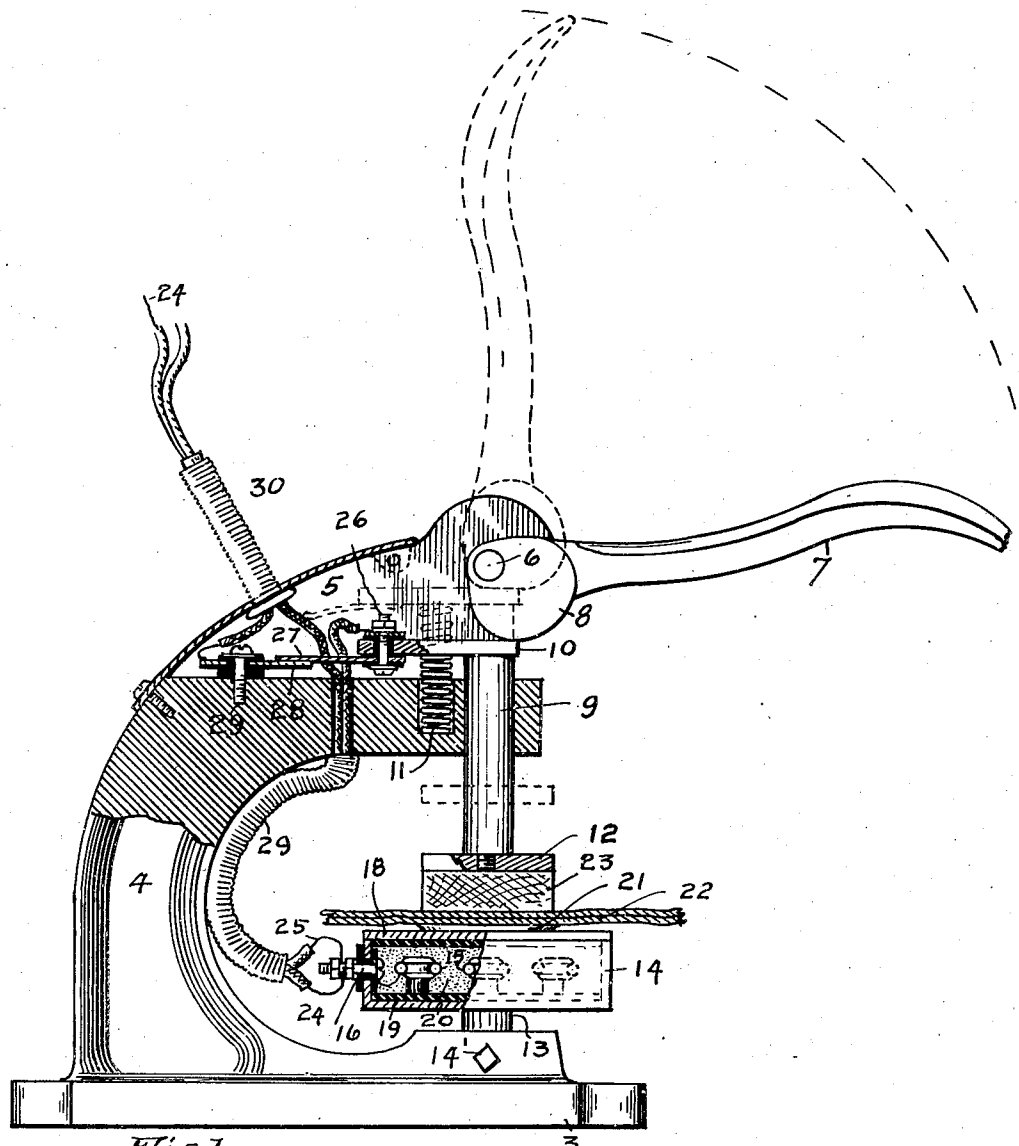



Fig. 1.

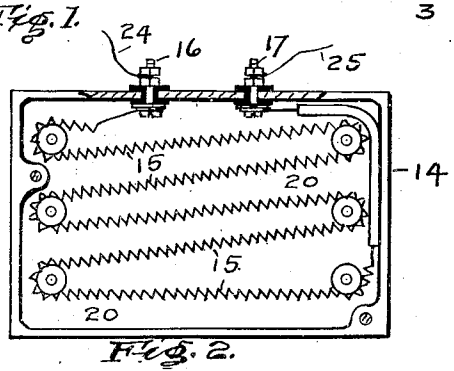



Fig. 2.

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Patented May 17, 1927. 1,628,899

# UNITED STATES PATENT OFFICE.

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## ELECTRIC VULCANIZER.

Application filed October 8, 1926. Serial No. 140,395.

This invention relates to machines for vulcanizing rubber patches on articles such as inner tubes and casings of automobile tires, rubber water bags, and the like, and the object of the invention is to utilize an electric heater for supplying the requisite heat; to provide a lever-operated cam-means for applying the pressure to the patch area during the vulcanizing period, and a particular and important object of my invention is to provide means for making the circuit to the heating element of the vulcanizer by the movement of the lever for applying said pressure, and for breaking the circuit so as not to continue to heat and thereby overheat the heating element, and also to economize in current consumption by such automatic breaking of the circuit.

I accomplish all of the above, and other minor objects which will hereinafter appear, by the means illustrated in the accompanying drawing, in which—

Fig. 1, is a view in side elevation and part vertical section of a vulcanizing press embodying my invention, and

Fig. 2, is a top plan view of the member containing the resistance coils, with the top removed.

Referring to Fig. 1, the base 3 of the press has an integral standard 4, bent as shown to avoid interference with the work under its terminal portion. The top part of the standard has a longitudinal slot 5 which has holes in which a shafts 6 is journaled. The shaft 6 is the fulcrum for a hand lever 7 having a cam-shaped inner end 8 with a hole through it for the passage of the shaft 6. Through the unslotted portion of the standard, under shaft 6, is a vertical hole in which is a shaft 9. A horizontal plate 10 is fixed to the upper end of shaft 9, and is the member against which the cam 8 has its bearing.

Under the plate 10, and seated in a socket in the standard 4, is a spring 11, which raises the plate and shaft 8 and keeps the plate in constant contact with the cam.

On the lower end of shaft 8 is a removable top pressure plate 12.

Seated in the base 3, in alinement with the shaft 8, is a shaft 13, held by a set screw 14'. Attached to the upper end of the shaft 13 is a metal box 14 in which are a series of turns of wire resistance coils 15, that are heated by an electric current entering through binding post 16 and leaving through post 17. Above and below the coils are mica insulation plates 18 and 19, and the interior space of the box around the coils is filled with a cement mixture 20, to make the box as a whole, sufficiently solid and unyielding against pressure to be applied to hold a rubber patch 21 on a layer of rubber 22 while the rubber patch is being vulcanized and the layer of rubber is being mended. A block of wood 23 is placed over the patch to localize the pressure.

A conducting wire 24 is attached to the post 16, and a like wire 25 to the post 17.

The wire 24 is broken and one end connected with a binding post 26 mounted in the inner end of the plate 10. This post also attaches a spring contact plate 27 to the plate 10. The post and plate 27 are insulated from plate 10, as shown. A lower contact plate 28 is attached by a screw 29 to the standard 4, and is insulated from the standard, as shown. The other end of the broken wire 24 is attached to the outer end of the plate 28 and is carried thence to the source of energy. The plate 28 is in the path of the plate 27, and is contacted by the latter to complete the circuit, when the plate 10 is lowered by the cam lever, and conversely the circuit is broken when the cam lever is raised.

Preferably the wires from standard 4 to the coil box are protected by a flexible wire tube 29, and a similar tube 30, protects the wires leaving the standard 4, for the source of energy. A housing plate 31 is removably secured to standard 4, by screws. It protects the wires, and circuit make and break mechanism, and also provides a support for the tube 30.

The operation of my invention is apparent from the drawing and foregoing description. By lowering the hand lever 7, the cam 8 forces down the plate 10 and shaft 9, and presses the goods to be patched, and the patch against the top of the coil box 14. The electric circuit is closed by the contact of plate 27 with plate 28, and the resistance in the coils in box 14 heats the box and the patch to vulcanization of the patch. When the vulcanization is completed a release of the hand lever enables spring 11 to raise plate 10 and shaft 9, thereby releasing the work, and at the same time, it breaks the electric circuit by lifting plate 27 out of contact with plate 28.

Having thus fully described my invention

what I claim as new and wish to secure by Letters Patent, is—

1. In a vulcanizing machine, a box upon which the article to be patched and the patch are placed during vulcanization, resistance coils in the box to heat the box, an electric circuit connecting the resistance coils with a source of electric energy, a shaft movable endwise toward and from that part of the box on which the patch is vulcanized to press the patch and article together during vulcanization, a cam for moving the shaft toward the box, means for operating the cam, means for moving the shaft away from the box, and a circuit make-and-break means operated by the movement of the shaft.

2. In a vulcanizing machine, a box upon which the article to be patched and the patch are placed during vulcanization, resistance coils in the box, to heat the box, an electric circuit connecting the resistance coils with a source of electric energy, a shaft movable endwise toward and from that part of the box on which the vulcanization is done, to press the article and patch together during vulcanization, a cam for moving the shaft toward the box, a lever for manually operating the cam, a pressure plate on the end of the shaft next to the box, spring means for moving the shaft away from the box, and a circuit make-and-break means operated by the movement of the shaft.

3. In a vulcanizing machine, a box upon which the article to be patched and the patch are placed during vulcanization; resistance coils in the box, to heat the box; an electric circuit connecting the resistance coils with a source of electric energy; a shaft movable endwise toward and from that part of the box on which the vulcanization is done, to press the article and patch together during vulcanization; a cam for moving the shaft toward the box; a lever for manually operating the cam; a pressure plate on the end of the shaft next to the box; a second plate on the outer end of the shaft; a spring pressing against the second plate to normally move and hold the shaft away from the box; a spring plate attached to the second plate but electrically insulated therefrom, one of the wires of the electric circuit being severed, and an end electrically connected with the insulated spring plate; a third plate supported in the path of the second plate and insulated from its support, to which third plate the other end of the severed circuit wire is connected.

In testimony whereof I affix my signature.

MORTON MURPHY.