June 24, 1930. J. C. THOMAS ET AL 1,768,345

DEVICE FOR REPAIRING INNER TUBES OR THE LIKE

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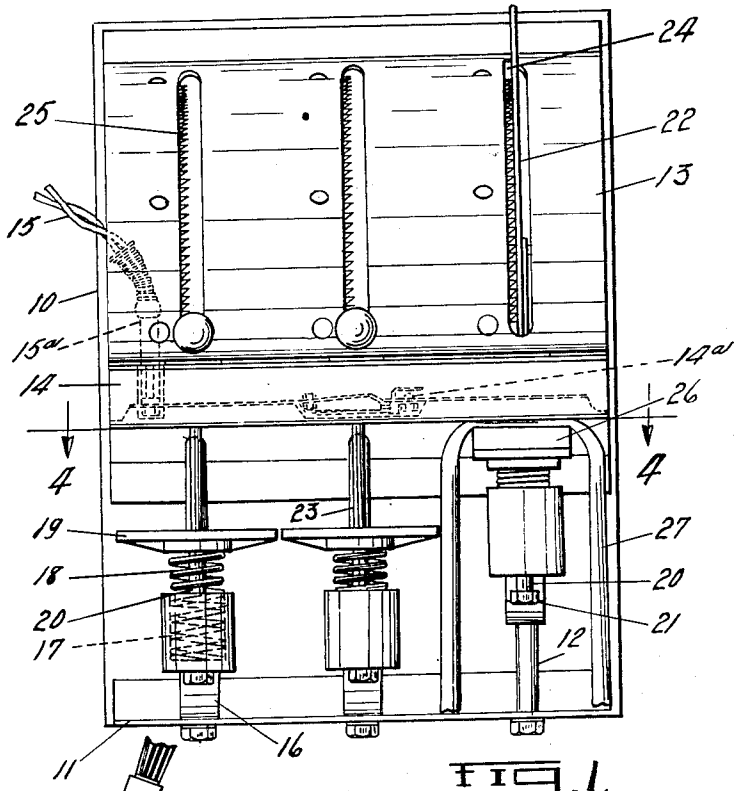


Fig. 1.

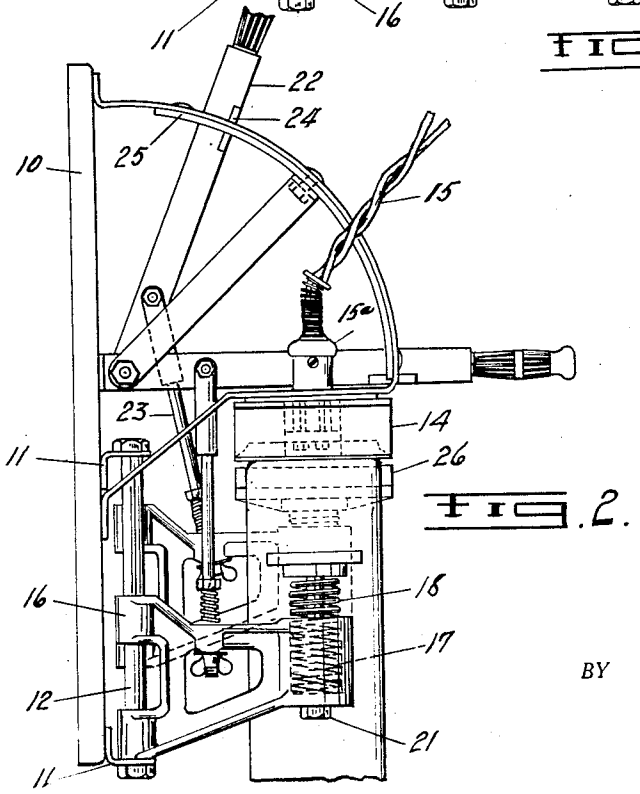


Fig. 2.

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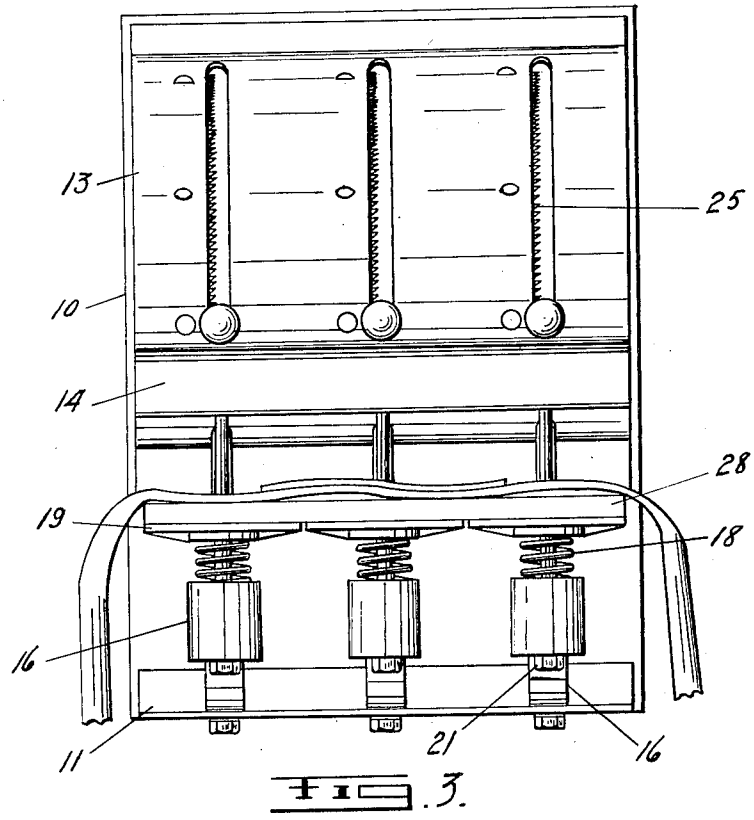


FIG. 3.

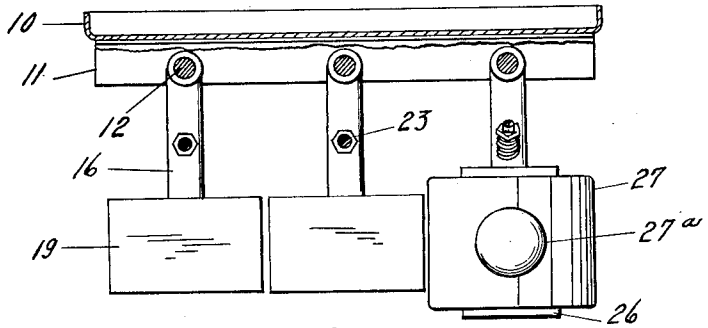


FIG. 4.

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UNITED STATES PATENT OFFICE

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DEVICE FOR REPAIRING INNER TUBES OR THE LIKE

Application filed January 16, 1928. Serial No. 247,123.

This invention relates to repairing or vulcanizing devices for patches or repairs on inner tubes and other rubber articles.

One object of the invention is to provide a press unit for making any size repair from a nail hole to a long tear, and in which the heat can be localized at the repair.

Another object is to provide an electrically heated and controlled curing plate as one member, preferably the upper member, of the press, and to provide a series of presser plates, preferably as lower members of the press, which are arranged to be independently pressed against the heated plate under determinate pressures.

A further object of the invention is to provide lower plates of generally rectangular shape and swiveled on their mountings so that they may be used in positions either transversely or longitudinally of the unit to vulcanize short and long repairs.

Still another object is to provide operating levers and retaining ratchets capable of being safely and effectively actuated by one hand of the operator to apply or release pressure on the article to be repaired.

The foregoing and other objects are obtained by the construction illustrated in the accompanying drawings and described below. It is to be understood that the invention is not limited to the specific form thereof shown and described.

Of the accompanying drawings,

Figure 1 is a front elevation of a unit embodying the invention, showing its use in making a short repair;

Figure 2 is a left end elevation thereof;

Figure 3 is a front elevation of the device as used in vulcanizing a long repair; and

Figure 4 is a sectional view of said device taken on the line 4—4 of Figure 1.

Referring to the drawings, the numeral 10 represents a wall bracket or base provided with supports 11, 11 for posts 12 mounted therein at their upper and lower ends. To the upper portion of the base is attached a curved apron 13 having a lower horizontal portion which supports an electrically heated plate 14 to which electricity may be supplied by a service cord 15 and plug 15a. A thermostatic control 14a of any desired type may be employed in plate 14 to accurately regulate the temperature thereof.

Independently slidable on posts 12 are brackets 16, extending forwardly under plate 14 and each formed with a socket 17 on its outer end in which is mounted a compression spring 18 supporting a presser plate 19 of generally rectangular shape and which is mounted so as to be vertically shiftable and angularly adjustable on bracket 16 by means of a supporting rod 20 extending through an aperture in the bottom of socket 17 and having nuts 21 threaded onto the lower end thereof to retain plate 19 on the bracket against the expansive force of spring 18, nuts 21 being adjustable, of course, to obtain determinate compressions in spring 18.

Arranged to actuate each plate 19 upwardly against plate 14 is a lever 22 pivoted upon base 10 with its free end projecting through an elongated aperture formed in apron 13, the lever being connected by a connecting rod 23 to a bracket 16. By this arrangement each plate 19 can be drawn up against plate 14 with sufficient force to compress a spring 18 to any desired degree. To maintain each lever 22 in a raised position and hold each plate 19 under compression against plate 14 throughout a vulcanizing period, a ratchet pawl 24 is fixed upon each lever 22 to engage an arcuate ratchet plate 25 affixed to apron 13 adjacent the elongated apertures therein, so that the pawl may engage the ratchet at any point of its swing.

When used for making short repairs, only one plate 19 is employed. A block of resilient material 26, preferably rubber, of an area somewhat greater than the repair, is mounted on a plate 19 which is turned transversely of the unit (Figure 1). An inner tube 27, to be repaired, is laid over the block 26 with the repair or patch 27a (Figure 4) uppermost. It is to be noted that the tube 27 is suspended naturally on the block so that it is not in any way distorted during the cure. Attention is directed also to the fact that the repair is always visible until the plate 19 is moved into engagement with plate

14, thus facilitating proper placement of the repair in the press. The lever 22 is then actuated with one hand to move the repair up against the plate 14 and to press it against said plate with the desired pressure while the operator holds the tube 27 in proper position with his other hand. It will be understood that plate 14 is brought to the desired temperature of vulcanization before pressing the repair thereagainst. The pawl 24 latches the plate 19 against heater plate 14 and maintains the pressure throughout the cure. The compression of spring 18 serves to maintain a constant pressure on the repair during the cure and to follow up any movement of plate 19 due to flowing of the material in patch 27^a. Upon completion of the cure, the pawl is disengaged from the ratchet and is then lowered by a one-hand operation, sliding bracket 16 downwardly and lowering plate 19 with the repaired tube thereon. Since the ratchet is released and the lever lowered in a single manipulation, there is no danger of the lever striking the operator as the ratchet is released.

In the making of long repairs, the unit is employed as shown in Figure 3, two or more of the plates 19 being employed. The center plate of plates 19 is first moved into cooperation with heater plate 14, then the end plates are moved against said heater plate, a long resilient block 28 being employed on plates 19 over which the repair is laid.

It will appear from the foregoing that a single unit may have capacity for any desired number of tubes and also for any type of repair, the heat being maintained uniformly and evenly distributed over any size repair and the pressure regulated as desired. No floor space is required for the unit since it can be mounted upon a wall at any convenient place. Accordingly, this vulcanizing unit is highly advantageous over prior devices in many respects.

Modifications of the invention may be resorted to without departing from the spirit thereof or the scope of the appended claims.

What is claimed is:

1. A device for vulcanizing repairs in rubber articles, said device including a wall bracket, an upper, electrically heated and controlled curing plate supported upon said bracket, a series of lower, generally rectangular, presser plates movable toward and from said curing plate, brackets on which said presser plates are swiveled, said brackets being vertically shiftable on said wall bracket, springs for yieldingly supporting said plates on said brackets, lever means above the curing plate for vertically shifting each of the brackets, and means for releasably latching the brackets in positions with the presser plates yieldingly urged against the curing plate.

2. A device for vulcanizing repairs in rubber articles said device including a wall bracket, an upper, electrically heated and controlled curing plate supported upon said bracket, a lower, generally rectangular, presser plate movable toward and from said curing plate, a bracket on which said presser plate is swiveled, said bracket being vertically shiftable on said wall bracket, a spring for yieldingly supporting said plate on said bracket, lever means above the curing plate for vertically shifting the bracket, and means for releasably latching the bracket in position with the pressure plate yieldingly urged against the curing plate.

3. A device for vulcanizing repairs in rubber articles, said device including an upper, electrically heated and controlled curing plate, a series of lower, generally rectangular, presser plates movable toward and from said curing plate, brackets on which said presser plates are swiveled, said brackets being vertically shiftable, springs for yieldingly supporting said plates on said brackets, lever means above the curing plate for vertically shifting each of the brackets, and means for releasably latching the brackets in positions with the presser plates yieldingly urged against the curing plate.

4. A device for vulcanizing repairs in rubber articles, said device including an upper, electrically heated and controlled curing plate, a lower, generally rectangular, presser plate movable toward and from said curing plate, a bracket on which said presser plate is swiveled, said bracket being vertically shiftable, a spring for yieldingly supporting said plate on said bracket, lever means above the curing plate for vertically shifting the bracket, and means for releasably latching the bracket in position with the presser plate yieldingly urged against the curing plate.

5. A device for vulcanizing repairs in rubber articles, said device including a wall bracket, an upper, electrically heated and controlled curing plate supported upon upon said bracket, a series of lower presser plates movable toward and from said curing plate, brackets on which said presser plates are mounted, said brackets being vertically shiftable on said wall bracket, springs for yieldingly supporting said plates on said brackets, lever means above the curing plate for vertically shifting each of the brackets, and means for releasably latching the brackets in positions with the presser plates yieldingly urged against the curing plate.

6. A device for vulcanizing repairs in rubber articles, said device including a wall bracket, an upper, electrically heated and controlled curing plate supported upon said bracket, a lower presser plate movable toward and from said curing plate, a bracket on which said presser plate is mounted, said bracket being vertically shiftable on said wall bracket, a spring for yieldingly sup-

porting said plate on said bracket, lever means above the curing plate for vertically shifting the bracket, and means for releasably latching the bracket in position with the presser plate yieldingly urged against the curing plate.

7. A device for vulcanizing repairs in rubber articles, said device including an upper, electrically heated and controlled curing plate, a series of lower presser plates movable toward and from said curing plate, brackets on which said presser plates are mounted, said brackets being vertically shiftable, springs for yieldingly supporting said plates on said brackets, lever means above the curing plate for vertically shifting each of the brackets, and means for releasably latching the brackets in positions with the presser plates yieldingly urged against the curing plate.

8. A device for vulcanizing repairs in rubber articles, said device including an upper, electrically heated and controlled curing plate, a lower presser plate movable toward and from said curing plate, a bracket on which said presser plate is mounted, said bracket being vertically shiftable, a spring for yieldingly supporting said plate on said bracket, lever means above the curing plate for vertically shifting the bracket, and means for releasably latching the bracket in position with the presser plate yieldingly urged against the curing plate.

9. A device for vulcanizing repairs comprising a heated plate, presser plates movable into cooperation therewith, and means for independently moving the presser plates against said heated plate, said presser plates being pivoted as to be used either independently in spaced relation for small repairs or two or more in substantial abutment to form a continuous surface for larger repairs.

10. A device for vulcanizing repairs in rubber articles, said device including a heated plate and a series of substantially rectangular presser plates, means carrying said plates on which the plates are swiveled, and means for urging each presser plate against the heated plate, whereby the presser plates may be turned transversely of the heated plate for small repairs and may be turned longitudinally of the heated plate and used in combination for large repairs.

11. A vulcanizing device comprising an upper heated plate, a lower presser plate to receive the article to be vulcanized, said presser plate being movable toward and from the heated plate, means for moving the presser plate including a lever arranged above the presser plate, yielding means supporting the presser plate to exert yielding pressure on the article being vulcanized, and a ratchet to engage the lever at any point of its swing for holding the presser plate in cooperation with the heated plate during the period of vulcanization.

12. A vulcanizing device comprising an upper heated plate, a lower presser plate to receive the article to be vulcanized, said presser plate being movable toward and from the heated plate, a hand lever for moving the presser plate, yielding means supporting the presser plate to exert yielding pressure on the article being vulcanized, and a ratchet operable by lateral shifting of said lever to hold the presser plate at any desired compression in cooperation with the heated plate during the period of vulcanization.

13. A vulcanizing device comprising an upper heated plate, a lower presser plate to receive the article to be vulcanized, said presser plate being movable toward and from the heated plate, a hand lever mounted above said heated plate and adapted to be swung upwardly for moving the presser plate toward said heated plate to exert pressure on the article being vulcanized, and a ratchet engageable with said lever at any point of its swing to maintain the presser plate under compression, said ratchet and lever being releasable to lower the presser plate by means of a single manipulation of said lever.

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