

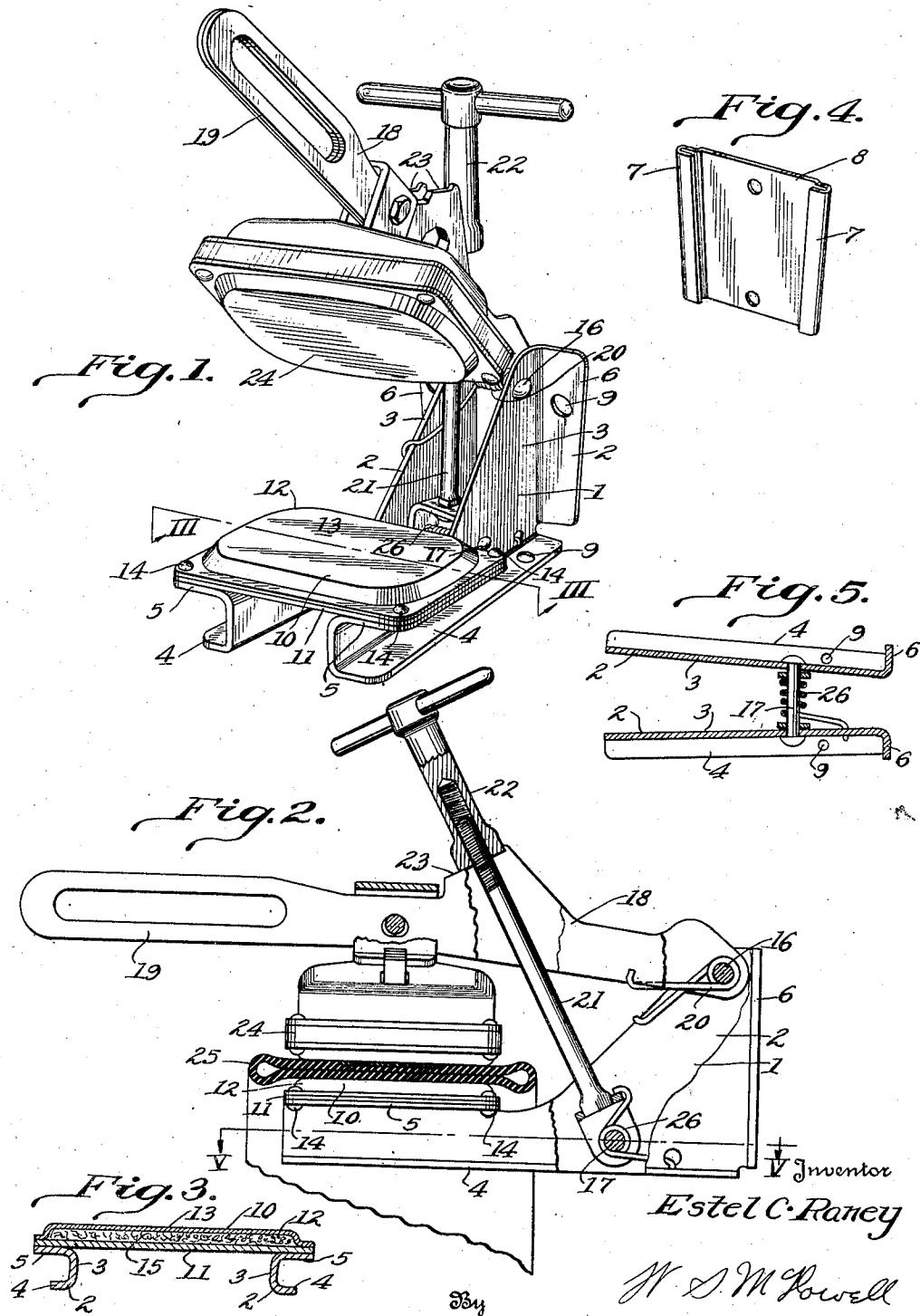
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E. C. RANEY

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ELECTRIC VULCANIZER

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Inventor

Estel C. Raney

W. S. M. Powell

Attorney

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ELECTRIC VULCANIZER

Estel C. Raney, Columbus, Ohio, assignor to
Ranco Incorporated, a corporation of Ohio

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This invention relates to an improved electrically heated vulcanizer for use in the repair of rents, tears or openings in rubber or rubber-containing objects, for instance, motor vehicle tires, tubes and the like.

It is a primary object of the invention to provide an improved electric vulcanizer of compact and sturdy construction, simple, rapid and economical to operate and adapted for the ready reception of tire tubes and other objects possessing varying shapes, thicknesses and other physical characteristics.

For a further understanding of the invention, reference is to be had to the following description and the accompanying drawing, wherein:

Fig. 1 is a perspective view of an electric vulcanizer constructed in accordance with the present invention, the stationary and movable shoes of the vulcanizer being shown in their separated or open positions;

Fig. 2 is a view in side elevation of the vulcanizer, parts thereof being broken away and shown in section to disclose interior structure. In this figure, the stationary and movable shoes of the vulcanizer are disclosed in closed order and in engagement with a rubber article undergoing vulcanization.

Fig. 3 is a detail view taken through the base section of the vulcanizer and the stationary shoe supported in connection therewith, the plane of the view being indicated by the line III—III of Fig. 1.

Fig. 4 is a detail perspective view of a mounting plate which may be employed for cooperation with the base section of the vulcanizer to permit of its ready connection with or removal from a cooperative support.

Fig. 5 is a horizontal sectional view taken through the base section of the vulcanizer on the plane indicated by the line V—V of Fig. 2.

This invention is a division of the disclosures contained in my Patent No. 2,082,551, issued June 1, 1937.

My improved vulcanizer, as illustrated in the accompanying drawing, comprises a base section 1, which may consist of a pair of duplicate, reversely arranged steel stampings 2, the latter being formed to comprise vertical side walls 3 of substantially triangular configuration, the latter being provided along their lower edges with outwardly directed substantially horizontally disposed base flanges 4 and along a portion of their upper edges with outwardly directed horizontally disposed supporting flanges 5. The rear vertical

edges of the walls 3 terminate in outturned vertical flanges 6, which possess a somewhat wedge-shaped configuration, which enables the flanges 6 to be received, for instance, in the converging flanged guides 7 of a fastening bracket 8. This plate may be secured to a vertical wall, bench or other convenient support and the vulcanizer as a whole removably connected therewith by inserting the flanges 6 of the base section 1 into the guides 7. The wedge shaped formation of the flanges 6 and the guides 7 results in securely retaining the vulcanizer in connection with the base plate for all practical purposes. Likewise the base plate 8 may be secured on a horizontally disposed supporting surface for association with the flanges 4 of the base section.

As shown in Fig. 5, the steel stampings 2 of the base section converge in a tapering manner toward the rear of the base section, thereby adapting the flanges 4 to the configuration of the guides 7. It will be understood, however, that the attaching plate 8 may be omitted if desired, and to that end the flanges 4 and 6 are provided with openings 9 for the reception of fastening devices such as screws or bolts, by which the base section may be directly and rigidly attached to any suitable support.

The vulcanizer is provided with a stationary shoe 10 upon which the work to be vulcanized is adapted to be placed. This stationary shoe, as disclosed in Figs. 1, 2 and 3 particularly, comprises a rectangular horizontally disposed bottom plate 11 and an inverted dished upper plate 12 provided with a flat work engaging surface 13. As shown in Fig. 1, the plates 11 and 12 are riveted or otherwise secured at their corners, as at 14, to the supporting flanges 5 of the side plates 2. A suitable insulating material, such as asbestos wool, indicated at 15, is disposed in the pocket formed between the dished upper plate 12 and the flat bottom plate 11. However, any other suitable heat insulating material may be used in this location.

Uniting the side plates 2 of the base section 1 are transversely extending upper and lower shoulder pins 16 and 17 respectively, which pins in addition to the plate 11 serve to maintain the stamped sheet metal plates 2 in properly spaced vertical order and in rigid unitary relationship. Additionally, the pin 16 serves as a fulcrum upon which is mounted the inner end of a swinging arm 18. This arm may also be formed from a pair of duplicate blanked metal sections, the outer portions of which terminate in a slotted

handle 19. A coil spring 20 has its helical con-
volutions situated to surround the pin 16 and
the opposite ends thereof engage respectively with
the under edge portion of the arm 18 and with
5 the upper edge portion of one of the plates 2, the
said spring normally serving to hold the arm 18
in its open or elevated position disclosed in Fig. 1.

Arranged to be positioned between the bifur-
cated pivotal end of the arm 18 is a movable stem
10 21 which has its lower end pivotally mounted on
the pin 17. The upper end of the stem 21 is
threaded for the reception of an internally
threaded spindle nut 22, which is adapted to be
manually rotated. The lower end of the nut 22,
15 as shown in Fig. 2, is adapted for engagement
with the edge surfaces 23 formed in connection
with the arm 18. The surfaces 23, when the
arm 18 is lowered, lie in planes substantially per-
pendicular to the radius of an arc of which the
20 pin 17 forms the center so that when the spindle
nut is tightened, as disclosed in Fig. 2, the mov-
able shoe 24 of the vulcanizer, which contains
the electric heating element and which is mov-
ably suspended from the intermediate portion of
25 the arm 18, may be forced into firm clamping
engagement with, for instance, a rubber tire tube
25 to clamp the latter between the adjacent flat
surfaces of the stationary and movable shoes 19
and 24 respectively. The pin 17 is also sur-
30 rounded by the coils of a spring 26, the normal
tendency of which is to rock the stem 21 in a
downward direction, as opposed to the vertical
lifting action of the spring 20 of the arm 18.

By this construction, it will be seen that a
35 rubber tire tube to be repaired may be readily
placed on the upper surface of the stationary
shoe with the rent or tear in the tire tube ex-
posed to the view of the operator. The handle
portion of the arm 18 is then grasped and the
40 arm moved downwardly toward the tire tube,
against the resistance of the spring 20, until the
electrically heated movable shoe of the vulcan-
izer contacts with the upper surface of the tire
tube, after the manner disclosed in Fig. 2. The
45 nut 22 on the stem 21 is then tightened by be-
ing manually rotated so that a firm, positive,
clamping pressure may be imparted to the work
clamped between the stationary and movable
shoes, so that the necessary degree of heat em-
50 ployed in vulcanizing operations of this char-
acter, may be readily applied to the work. When
the vulcanizing operation is completed, the spin-
dle nut is loosened, which allows the stem 21
to be rocked against the resistance of its spring
55 26 so that the spindle nut may clear the edge
surfaces 23 of the arm 18. This allows the arm
to respond to the influence of the spring 20, caus-
ing the elevation of said arm and the movable
shoe carried thereby, thus providing for the ready
60 removal of a tire tube, or other rubber object,
from the vulcanizer.

In view of the foregoing, it will be seen that
the present invention provides a novel and im-
65 proved electric vulcanizer for effecting quickly
and economically vulcanized repair of injured
or damaged rubber or rubber containing objects.
While the drawing illustrates shoes particularly
designed for the repair of automobile tire tubes,
70 nevertheless it will be appreciated that it is with-
in the range of the invention to vary the curva-
ture of these shoes so that they may be adapted
for the repair of tire casings as well as tubes. It
will be noted that the vulcanizer embodies a
75 frame by which rubber bodies may be readily

clamped in a secure and firmly retained rela-
tionship between the relatively movable shoes of
the vulcanizer, and that the developed heat will
be concentrated upon articles so clamped so that
it may be used effectively and economically. In
5 making the repair, it is merely necessary to prop-
erly clean the cut or rent in the tube, place an
uncured patch over the rent, insert the tube
between the relatively movable shoes of the vul-
canizer and then clamp the movable shoe so
10 that it will cover the damaged region to be vul-
canized. This can be done by the tightening of
the spindle nut on the threaded stem.

The construction has the advantage of being
15 simple, light in weight, and of exceptionally
sturdy design so that it will readily withstand the
relatively severe service to which devices of this
kind are placed in actual operation.

While I have described in considerable detail
20 the constructional features of my improved vul-
canizer as it is manufactured for commercial
use, nevertheless, it will be appreciated that I
do not desire to be limited to such details, but
reserve the right to employ all such modifications
and equivalents thereof that may be said to fall
25 fairly within the scope of the following claims.

What is claimed is:

1. An electric vulcanizer comprising a base sec-
tion, a lever pivoted at one end to said base sec-
30 tion, said lever having a shouldered surface,
a stationary shoe carried in connection with said
base section, a movable shoe pivotally suspended
from an intermediate portion of said lever, a
stem pivotally connected at one end with said
35 base section and having its opposite end threaded,
a nut carried by the threaded end of said stem
and arranged for cooperation with said should-
ered surface whereby to positively maintain
said shoes in firm clamping engagement with a
40 rubber article held therebetween, and means con-
nected to the stem for biasing the stem toward
a position in which the nut is in cooperative re-
lation with the lever when the movable shoe is
moved to cooperative relation with the stationary
45 shoe.

2. An electric vulcanizer comprising a base sec-
tion, a lever pivoted at one end to said base sec-
50 tion, a stationary shoe carried in connection with
said base section, a movable shoe pivotally car-
ried by said lever, a clamping device comprising a
member associated at one end with said base sec-
tion, said member having means forming a shoul-
55 der disposed adjacent its opposite end, means for
adjustably moving said shoulder with respect to
the base for causing said shoulder to bear against
said lever intermediate the pivotal connection
of the lever with the base and the pivotal con-
60 nection of the lever with the shoe, and means
normally tending to bias the clamping device in
a position in which the shoulder is in coopera-
tive relation with the lever when the movable
shoe is moved to its cooperative position with the
stationary shoe.

3. An electric vulcanizer comprising a base sec-
65 tion, a lever pivoted at one end of said base sec-
tion, a stationary shoe carried in connection with
said base section, a movable shoe pivotally car-
ried by said lever and movable by said lever to
cooperative position with the stationary shoe, a
70 clamping device comprising a member pivotally
mounted on the base section and having means
forming an adjustable shoulder adjacent its free
end, said shoulder being adapted to bear against
said lever intermediate the pivotal connection of
75

the lever with the base and the pivotal connection of the lever with the shoe when the shoes are in cooperating position; means normally tending to bias said pivoted clamping device in a position in which the shoulder is in cooperative relation with the lever when the movable shoe is moved to its cooperative position with the stationary shoe.

4. An electric vulcanizer comprising a base section, a lever pivoted at one end of said base section, a stationary shoe carried in connection with said base section, a movable shoe pivotally carried by said lever and movable by said lever to cooperative position with the stationary shoe, a clamping device comprising a member pivotally

mounted on the base section and having means forming an adjustable shoulder adjacent its free end, means for adjusting the shoulder with respect to the base said shoulder being adapted to bear against said lever intermediate the pivotal connection of the lever with the base and the pivotal connection of the lever with the shoe, when the shoes are in cooperative position, and a spring connected to the clamping device for moving the clamping device to a position in which the shoulder is in cooperative relation with the lever when the movable shoe is moved to its cooperative position with the stationary shoe.

ESTEL C. RANEY. 15