

May 11, 1937.

N. VAN CLEEF
VULCANIZING APPARATUS

2,079,826

Filed Dec. 9, 1935

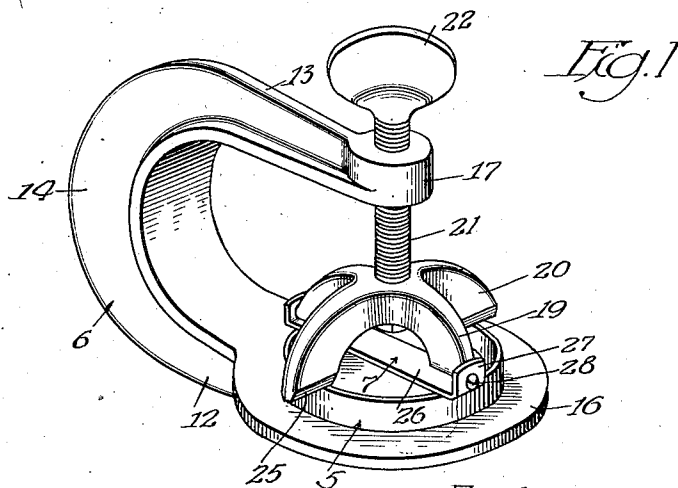


Fig. 2

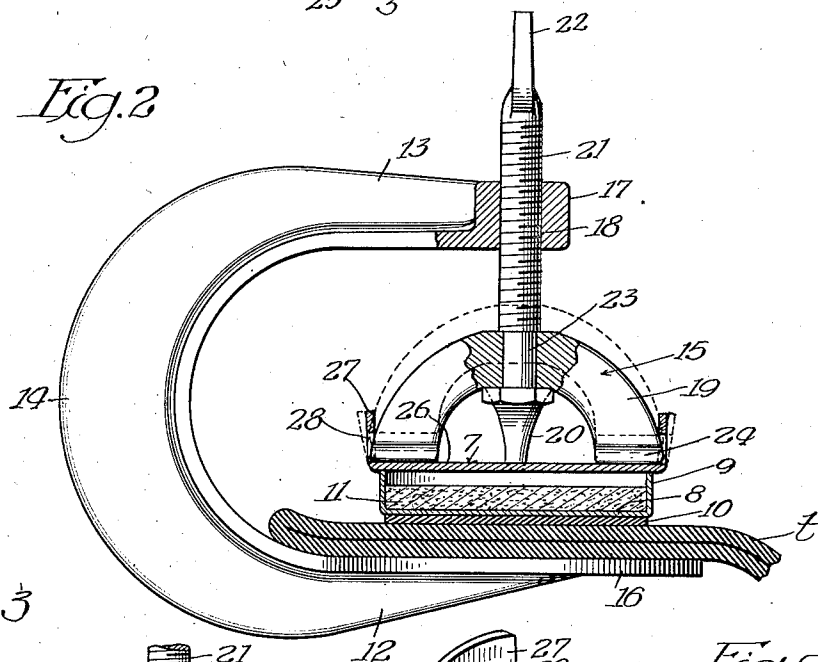


Fig. 3

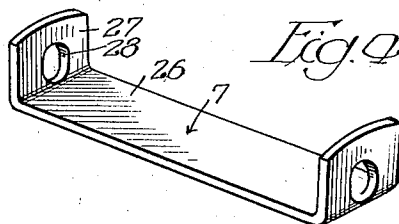
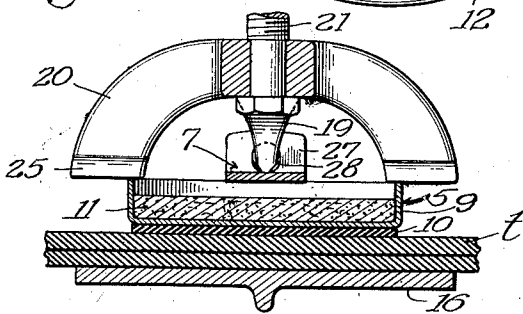


Fig. 4

Inventor:-
Noah Van Cleef
By Fred Clark, his Atty

UNITED STATES PATENT OFFICE

2,079,826

VULCANIZING APPARATUS

Noah Van Cleef, Chicago, Ill., assignor to Van Cleef Bros., Chicago, Ill., a partnership consisting of Noah Van Cleef, Felix Van Cleef, Maxime Van Cleef, and Paul Van Cleef

Application December 9, 1935, Serial No. 53,492

2 Claims. (Cl. 18—18)

The present invention relates generally to apparatus for use in vulcanizing patches on punctured tubes for pneumatic tires. More particularly the invention relates to that type of vulcanizing apparatus which is portable and comprises (1) a cup-shaped platen which is formed of metal and has on the bottom thereof an uncured rubber patch with a vulcanizing agent therein and also has a fuel disk above the bottom and within its side wall for providing heat for patch vulcanizing purposes; (2) a C-shaped clamp which is provided on the lower arm thereof with a tube supporting part and has on its upper arm a screw supported clamping spider which serves to force the platen downwardly towards the tube supporting part and thus hold the rubber patch in clamped relation between the platen and the tube and embodies four outwardly and downwardly extending platen engaging legs two of which extend at right angles to, and are slightly longer than, the other legs and permit the clamp to be used with a platen having a pair of diametrically opposite V-shaped notches in the side wall thereof; and (3) a crossbar type adapter which when the clamp is used in connection with a platen having an unnotched side wall is adapted to fit between the short legs of the clamping spider and the side wall of the platen and serves to lengthen the short legs to the proper extent so that they are capable of exerting clamping pressure on the platen.

One object of the invention is to provide a vulcanizing apparatus of the aforementioned type which is an improvement upon previously designed apparatus of the same general character and for the same purpose by reason of the fact that the crossbar type adapter is provided with means whereby it may be attached directly to the short legs of the clamping spider in such manner that it is not necessary to position or hold it in place with respect to the short legs when the spider is clamped down against a platen having an unnotched side wall.

Another object of the invention is to provide a vulcanizing apparatus of the last mentioned character in which the means for directly attaching the adapter to the short legs of the clamping spider consists of a pair of apertured ears which are formed by perforating and bending upwards the ends of the crossbar and are adapted to snap and hook onto the outer end portions of the shorter legs of the spider.

A further object of the invention is to provide a vulcanizing apparatus of the type and character under consideration which is an improve-

ment upon that shown in Letters Patent of the United States No. 2,051,504 granted to me August 18, 1936.

Other objects of the invention and the various advantages and characteristics of the present vulcanizing apparatus will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawing which accompanies and forms a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a perspective of a vulcanizing apparatus involving the invention;

Figure 2 is a view partly in side elevation and partly in section showing the manner in which the adapter serves to lengthen the short legs of the screw supported clamping spider so that the spider is adapted for use with a platen having an unnotched side wall;

Figure 3 is a sectional view on the line 3—3 of Figure 2; and

Figure 4 is a perspective view of the adapter.

The vulcanizing apparatus which forms the subject matter of the invention is designed for use in connection with repairing a punctured inner tube *t* for a pneumatic tire. It is essentially of the portable type or variety and comprises a cup-shaped metallic platen 5, a clamp 6, and an adapter 7.

The platen 5 is cup-shaped and consists of a circular bottom 8 and a cylindrical side wall 9 which is formed integrally with, and extends upwards from, the marginal part of the bottom 8. As shown in Figures 2 and 3 of the drawing, the platen has a patch 10 on the under face of the bottom 8 and a combustible fuel disk 11 on the top face of the bottom and within the side wall 9. The patch 10 is formed of uncured rubber and has a vulcanizing agent therein for vulcanizing purposes. It is adapted to be placed against the puncture in the tube *t*, as shown in the drawing, and prior to the vulcanizing step or operation and placement against the tube is covered and protected by a circular piece of Holland cloth or like material. This piece, as well understood in the art, is removed from the rubber patch immediately before the vulcanizing operation and serves to prevent the patch from adhering to surfaces against which it is brought into contact. The fuel disk 11 fits within the platen and when

ignited produces sufficient heat to cause the patch 10 to be vulcanized into adhering relation with the tube *t*. The side wall 9 of the platen surrounds the edge of the fuel disk and has a smooth 5 or flat upper edge.

The clamp 6 is C-shaped. It consists of a lower arm 12, an upper arm 13, and a connecting piece 14 and has a clamping spider 15. The lower arm underlies the upper arm 13 and is shaped to form 10 a circular tube supporting part 16. This part is flat and is adapted to have the portion of the tube *t* with the puncture or hole placed over it. The connecting piece 14 extends between and is formed integrally with the two arms 12 and 13. 15 The upper arm 13 has a circular enlargement 17 at its outer end and this enlargement, as shown in the drawing, has a vertically extending, internally threaded hole 18 extending there-through. The spider 15 serves, as hereinafter 20 described, to force the platen 9 downwardly towards the tube supporting part 16 of the clamp and operates to hold the rubber patch 10 in clamped relation between the platen and the tube. It consists of a pair of arcuate legs 19 and 25 a pair of arcuate legs 20, and is supported from the upper arm 13 of the clamp by a screw 21. This screw extends through and interfits with the internally threaded hole 18 in the enlargement 17 at the outer end of the upper arm of the 30 clamp and embodies a thumb-piece 22 at its upper end for turning purposes. The lower end of the screw is connected by a swivel 23 to the central portion of the spider 15. When the screw is turned in one direction the clamping spider is 35 forced downwards and through the medium of the platen 6 operates to clamp the rubber patch 10 against the tire tube *t*. When the screw is turned in the opposite direction the clamping spider is moved upwards with respect to the tube 40 supporting part 16 of the C-shaped clamp 6 and releases the platen. The legs 19 extend outwards and downwards in opposite directions and have V-shaped extremities 24. The legs 20 extend 45 outwards and downwards in opposite directions and are disposed at right angles to the legs 19. They have V-shaped extremities 25 and are slightly longer than the legs 19 so that the spider is usable with a platen (not shown) having an 50 upstanding side wall with diametrically opposite notches (see for example the platen shown and described in United States Patent No. 1,970,698). When the clamping spider is applied to a platen of the last mentioned type the V-shaped extremities 24 of the legs 19 engage diametrically oppo- 55 site portions of the edge of the side wall of the platen and the V-shaped extremities 25 fit within the diametrically opposite notches in the side wall of the platen and engage and hold against the bottom of the fuel disk. The outer end portions of the V-shaped extremities 24 and 25 are 60 more or less pointed, as shown in Figure 3, due to the curved or arcuate construction of the legs of the spider.

The adapter 7 consists of a bar 26 of metal and 65 serves to adapt the clamping spider 15 of the C-shaped clamp 6 for use with the platen 5, that is, a platen having a smooth or unnotched side wall. The bar 26 is adapted to extend across the upper edge of the side wall 9 of the platen and 70 embodies at its ends a pair of upwardly extending ears 27. The latter are formed by bending upwardly the ends of the bar 26 and have apertures 28 for receiving the outer ends of the V-shaped extremities 24 of the short legs 19 of the clamp- 75 ing spider. As shown in Figure 2 the ears 27

extend upwards at substantially right angles to the bar 26 and the apertures 28 are so spaced or positioned with respect to the bar that when the V-shaped extremities 24 of the legs 19 are 5 disposed therein and the V-shaped extremities of the legs 20 engage the upper edge of the side wall of the platen 5 the bar 26 engages the platen side wall and operates in response to downward 10 movement of the clamping spider to transmit clamping pressure to the platen. In applying the adapter to the clamping spider the bar 26 is 15 placed across the platen in such manner that it underlies the short legs 19 of the clamping spider. After the bar is so positioned the screw 21 is 20 turned so as to move the clamping spider downwards toward the platen. During downward movement of the spider the outer ends of the V-shaped extremities 24 bear against and ride 25 downwards on the inner faces of the upstanding ears 27 and wedge or force the ears outwards until the apertures 28 are encountered. As soon as the outer ends of the V-shaped extremities 24 encounter or pass into the apertures 28 the 30 ears snap inwards and hook onto the lower ends of the short legs 19 in such a manner that the adapter is attached to and forms a part of said short legs of the clamping spider. The aper- 35 tured ears 27 constitute simple means for attaching the adapter to the clamping spider. By providing means of this character the adapter when 40 in connected relation with the short legs of the clamping spider does not have to be held or positioned relatively to the side wall of the platen 5 during a platen clamping operation. When it is 45 desired to remove the adapter from the clamping spider so as to adapt the spider for use with a platen having a pair of diametrically opposite V-shaped notches in the side wall thereof, it is 50 only necessary to force the ears 27 outwards so as to unhook with respect to the outer ends of the V-shaped extremities 24 the lower ends of the short legs 19 of the spider.

In repairing the tire tube *t* by way of the platen 5, the clamp 6 and the adapter 7, the punctured portion of the tube is first placed on the 45 circular supporting part 16 on the lower arm 12 of the clamp. Thereafter the platen is positioned over the tube and the rubber patch 10 is brought into contact with the punctured tube. After 50 proper centering or positioning of the platen the screw 21 is turned so as to feed or move the clamping spider toward the platen. During downward movement of the spider the bar 26 55 of the adapter and the V-shaped extremities 25 of the long legs 20 of the spider are first brought into contact with the upper edge of the side wall 9 of the platen. Thereafter the bar and said extremities 25 force the platen downwards and clamp the platen against the tube. After 60 the patch has been placed under the proper or desired clamping pressure the fuel disk is ignited and the vulcanizing operation is commenced as well understood in the art. At the 65 conclusion of the vulcanizing operation the screw is turned in the reverse or opposite direction so as to raise the clamping spider and release the platen. While the adapter 7 is in connected relation with the clamping spider the spider is 70 adapted for use with a platen having an unnotched side wall and to exert clamping pressure at four points. When used without the adapter the clamping spider is designed or adapted for use with a platen having a pair of diametrically 75 opposite V-shaped notches for receiving the V-shaped extremities 25 of the long legs 20 as here-

inbefore pointed out. The adapter is preferably formed as a stamping and may be manufactured at a low and reasonable cost.

5 The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

10 Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

15 1. A vulcanizing apparatus comprising in combination a clamp having a part for supporting a tire tube and also having a clamping spider disposed above, and movable to and from, said part and embodying a long leg and a short leg, a fuel retaining platen adapted to clamp a patch against the portion of the tube on said supporting part and having an upstanding side wall adapted
20 to be engaged by, and receive clamping pressure from, the long leg of the spider, and an adapter having a part thereof positioned beneath the short leg of the spider and arranged and adapted to engage the side wall of the platen and to transmit clamping pressure from said short leg to
25 said side wall of the platen and having another part extending upwards from the first mentioned part and both interlocked with and fastened to

said short leg of the spider so that the adapter forms a part of said short leg and is connected for conjoint movement with the spider.

2. A vulcanizing apparatus comprising in combination a clamp having a part for supporting a
5 tire tube and also having a clamping spider disposed above, and movable to and from, the tube supporting part and embodying a pair of oppositely extending long legs and a pair of oppositely extending short legs at substantially right
10 angles to the long legs, a fuel retaining platen adapted to clamp a patch against the portion of the tube on said supporting part and having a continuous upstanding side wall adapted to be engaged at opposite points thereof by, and to receive
15 clamping pressure from, the long legs of the spider, and a bar type adapter beneath the short legs of the spider, adapted to engage and extend across the side wall of the platen and to transmit clamping pressure from the short legs to
20 different points on the side wall of the platen and having the ends thereof bent upwards and apertured to receive and interlock with the outer end portions of said short legs of the spider and forming a connection whereby the adapter is fastened
25 directly to and is movable conjointly with the spider.

NOAH VAN CLEEF.