B. F. WHITE.

VULCANIZING PRESS.

APPLICATION FILED NOV. 18, 1916.

1,234,431. Patented July 24, 1917.

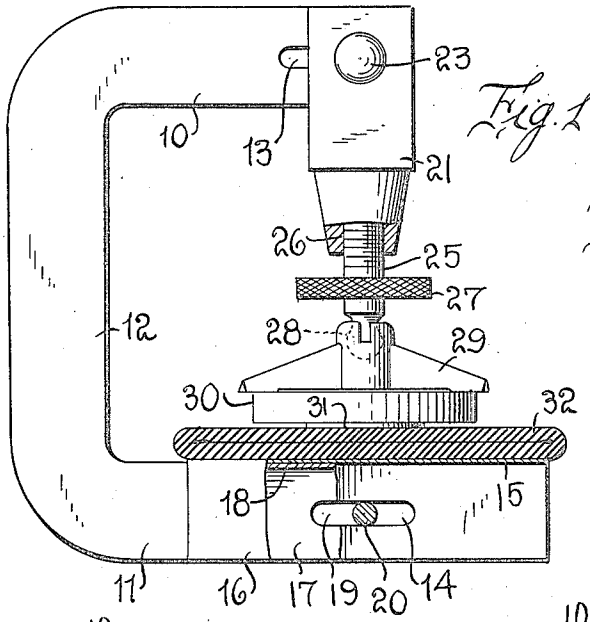


Fig. 1

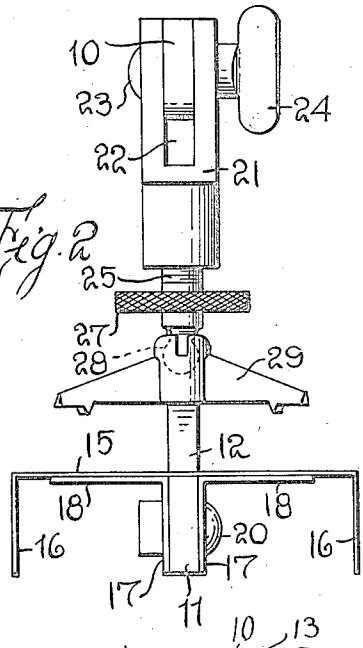


Fig. 2

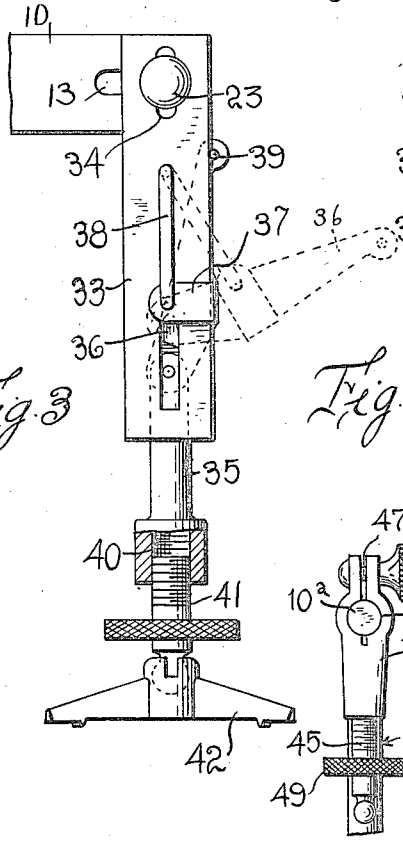


Fig. 3

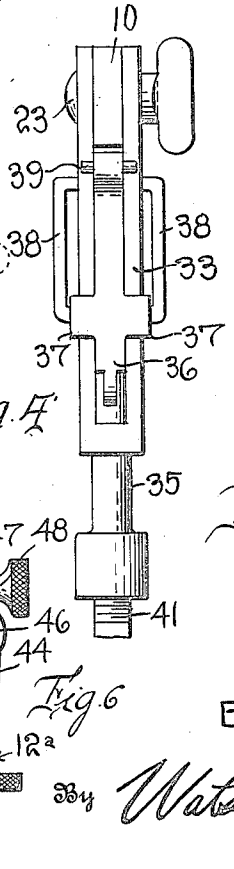


Fig. 4

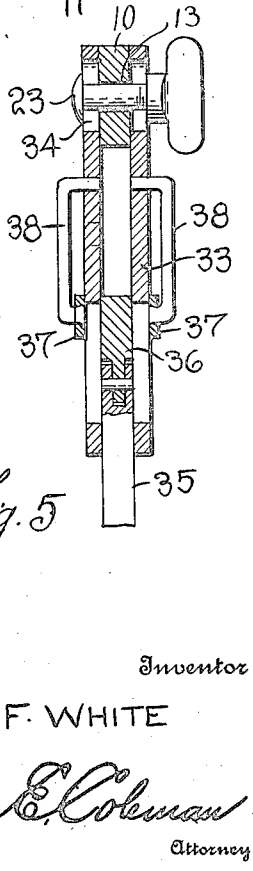


Fig. 5

Fig. 6

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VULCANIZING-PRESS.

1,234,431. Specification of Letters Patent. Patented July 24, 1917.

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To all whom it may concern:

Be it known that I, BENJAMIN F. WHITE, a citizen of the United States, residing at Rock Island, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Vulcanizing-Presses, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to devices for vulcanizing tires and like articles and particularly to that class of devices in which a clamp is used, the tire or other article disposed over the base of the clamp, a patch placed against the face of the article, and a heating device disposed on top of the patch, the heating device and the patch being forced against the rubber by a presser foot or other clamping member.

The general object of my invention is the provision of a clamp for work of this sort so constructed that the presser foot and its shank may be readily swung vertically out of the way without the necessity of vertically adjusting the presser shank, thus permitting the article to be more rapidly put in position or removed therefrom and adding greatly to the convenience of operation.

A further object of the invention is the provision of means whereby the shank of the presser foot may be swung in a vertical plane into and out of position over the base and whereby the presser foot may be shifted downward into clamping position relative to the base by a screw or like means so as to secure the proper clamping action upon the presser foot.

Still another object of the invention is to provide in a clamp of this character an adjustable and removable base and a shank which is adjustable in a direction parallel to the plane of the base and in which the presser foot is removable from the shank so as to permit larger or smaller presser feet to be applied to the same shank.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of one form of my device, the shank being partly broken away, the figure showing a sectional view of a tire;

Fig. 2 is a front elevation of the construction shown in Fig. 1;

Fig. 3 is a side elevation of another form of presser arm or shank partly broken away;

Fig. 4 is a front elevation of the construction shown in Fig. 3;

Fig. 5 is a fragmentary vertical section through the shank illustrated in Fig. 3: and

Fig. 6 is a front elevation of a modified form of presser shank and supporting clamp therefor.

Referring to Figs. 1 and 2 it will be seen that one form of my invention comprises an upper arm 10, and a lower parallel arm 11, the arms 10 and 11 being connected by a member 12. The arms 10 and 11 and the member 12 are integral and constitute the ordinary body of the clamp. The arm 10 is longitudinally slotted adjacent its extremity as at 13 and mounted upon the arm 11 is a detachable and adjustable base. The arm 11 is longitudinally slotted as at 14 and the base consists of a plate 15 having depending side walls 16, this plate resting upon the upper edge face of the arm 11, and the inner face of the plate 15 being provided with downwardly depending spaced flanges 17 adapted to embrace between them the arm 11. Preferably these flanges 17 are formed with horizontal flanges 18 which are disposed beneath and attached to the plate 15 so as to strengthen this plate and brace it against deflection. The flanges 17 are longitudinally slotted as at 19 and this base is attached to the arm 11 by means of a bolt 20 passing through the flanges 17 and having at one end a head and at the other a nut. It will be seen that not only may the base be readily removed from the arm 11 but that it may be adjusted longitudinally on the arm and that by making the base removable I provide for the use of different sizes or shapes of base with the arm 11. Further it is pointed out that the flanges 16 extending downward as they do to the level of the lower edge of the arm 11 provide for the firm support of the vulcanizing clamp. It will be obvious that the plate 15 with its flanges 16 and 17 might be of cast metal of a relatively great thickness so as to be adequately strong to resist any desired pressure.

The arm 10 as previously stated is longitudinally slotted as at 13 and coacting with this arm is a presser shank or clamping arm designated 21, the upper end of this shank being bifurcated as at 22 to embrace the arm

10 and being perforated for the passage of a bolt 23 engaged by a wing nut 24. By this means the presser shank 21 may be shifted longitudinally along the slot 13 and clamped in any desired position so that the presser foot may be centered with relation to the base 15. The presser shank is formed in two sections having telescopic engagement with each other and one of these sections, which is designated 25, has screw threaded engagement with the bore 26 of the section 21. This section 25 carries upon it the knurled or notched head 27 whereby the section may be rotated and at its lower end the section 25 is formed with the globular terminal 28 which has swiveled engagement with the presser foot 29. This presser foot, as illustrated in Fig. 1, is formed with a central hub and radiating arms and its swivel engagement with the extremity of the section 25 permits it to adjust itself to the work in the usual and ordinary manner.

In the operation of this form of the device the presser arm or shank 21 is first elevated or thrown over on the back of the arm 10, thus leaving all the space between the arm 10 and the base free and unobstructed. The tire or other article to be patched is then disposed upon the base 15, the patch is placed upon the tire, the package of combustible material which, in Fig. 1, is designated 30 is then placed in position upon the patch and then the presser shank is swung around to a depending position and the screw threaded section 25 is rotated to force the presser foot down against the combustible package to thereby press the patch 31 against the tire 32. By providing a screw threaded engagement between the section 25 and the section 21 I secure a very effective clamping action and full pressure against the patch which pressure is easily regulated by rotating the screw threaded member 25. When the patch has been vulcanized to the tire, a turn or so of the screw threaded member 25 will shift the presser foot upward and then the presser foot shank may be swung upward so as to again leave the space between the arms 10 and 11 unobstructed so that the tire may be readily removed. It will be seen that by swinging the presser foot shank upward and beyond the base that the member 25 may be readily removed entirely from its engagement with the member 21 and this permits a presser foot shank section with a larger presser foot to be inserted in the member 21 so that larger patches may be vulcanized. Where larger patches are vulcanized the member 21 must be shifted out to the outer extremity of the slot 13 and the base 15 must also be shifted outward so as to bring the center of the base and the center of the presser foot in line. This dispenses with the necessity of having different clamping devices or different sizes of clamping devices for applying different size patches and permits my device to be used either with larger or smaller patches, as may be desired, and with larger or smaller packages of combustible material to suit the various sized patches.

While the construction shown in Figs. 1 and 2 is thoroughly effective and is very simple in construction, yet it is obvious that the principle of my invention might be embodied in other forms of clamping device and I have illustrated in Figs. 3 to 5 another form of this clamping device. The support consisting of the member 12 and the arms 10 and 11 is exactly the same as heretofore described and so is the base. The difference between this construction and the construction shown in Figs. 1 and 2 consists in the difference in the construction of the presser shank. In the form now to be described the presser shank consists of a body 33 which is approximately U-shaped and which is formed with a slot extending downward from the top of the body nearly to the lower end thereof, this slot being wide enough so that the two arms on each side of the slot will just embrace the arm 10. The bolt 23 passes through the body and the arm 10 and preferably the body of the shank is vertically slotted as at 34 for the passage of this bolt. The movable section of the shank in this case comprises a plunger 35 which is vertically shiftable through the shank and pivotally connected to this plunger section 35 is an arm 36 which extends out through the slotted body and is provided with two ears 37. Links 38 are pivoted at their upper ends to the body and at their lower ends to these ears 37. The extremity of the operating arm 36 is provided with a transverse bar 39 forming a stop. The lower end of the plunger-like section 35 is enlarged and interiorly screw threaded as at 40 for the reception of a shank section 41 whose lower end is swiveled to the transverse foot 42, in the manner heretofore described. Preferably the plunger section 35 is enlarged at its lower end and formed to detachably receive a section 41 which is swiveled to the presser foot 43 of the construction heretofore described. By this means the presser foot may be removed from its engagement with the shank section 41 so as to permit a shank section with a larger or smaller presser foot to be substituted. The operation of this form of my invention is practically the same as that heretofore described. It will be seen that when the arm 36 is turned up the plunger member 35 is forced downward with great pressure against the work, while when the arm 36 is drawn downward the plunger section will be quickly raised. In this form of the invention also the shank of the presser foot

which is formed of the several sections described may be readily swung upward and out of the way to permit the easy manipulation of the work and the placing it in or removing it from the clamp. This method of applying pressure permits of a very speedy action while at the same time retaining the advantageous features of the form illustrated in Fig. 1.

It will be noted that the heating package is entirely separate from the presser foot and it can, therefore, be placed in exact position upon the top of the patch to be vulcanized. The slot 34 permits additional vertical adjustment of the presser foot and shank.

In Fig. 6 I show still another embodiment of my invention which is simpler in construction than the other embodiments and is in many ways preferable. In this case 10^a designates the upper arm of a U-shaped clamp 12^a, designating the body of the clamp. The lower arm is not shown. The arm 10^a is cylindrical in cross section and mounted upon this cylindrical arm is a presser foot section 44 which is formed with a bore for the reception of the screw-threaded shank of the presser foot section 45 and at its upper end with a circular aperture 46 loosely fitting the arm 10. The upper end of the presser foot section 44 is vertically slotted as at 47, this slot intersecting the aperture 46 so as to form two normally divergent jaws through which passes a clamp screw 48. Normally the jaws formed by slitting the upper end of the member 44 are spread sufficiently far apart to permit the member 44 to easily slide upon the arm 10 or rotate upon the arm from a vertical to a horizontal position. By setting the screw 48, however, this member 44 may be clamped rigidly upon the arm. It is obvious that other means may be used for the purpose, though the form shown is particularly effective. It will be seen that the upward thrust against the arm caused by turning the presser foot down upon the tire will not in any way affect the clamping screw and will not tend to turn the member 44 upon the arm. The screw threaded member 45 is illustrated as provided with the knurled head 49 and as formed at its lower end with a globular terminal adapted to be inserted within a socket formed in the presser foot proper. It will be seen in the form illustrated in Fig. 6 that the presser foot shank is formed in two sections and that the section 45 may be removed from the section 44 so as to permit of the use of a larger or smaller presser foot in the manner previously described. It will likewise be seen that with this construction the presser foot shank and presser foot may be adjusted longitudinally upon the arm 10^a and that the presser foot shank may be readily turned up out of the way to permit access to be had to the work, but turned down into its operative position.

While I have illustrated three embodiments of my invention, I wish it understood that various modifications may be made within the scope of the appended claims without departing from the spirit of the invention.

Having described my invention, what I claim is:

1. A vulcanizing press comprising a base and an arm arching over the base, a presser foot shank pivoted to the arched arm for swinging movement into or out of a vertical depending position, said presser foot shank comprising a plurality of sections longitudinally adjustable with relation to each other.

2. A vulcanizing press comprising a base, an arm arching over the base, and a presser foot shank mounted on the arm for longitudinal adjustment with relation thereto.

3. A vulcanizing press comprising a supporting member, a base adjustable longitudinally of the supporting member, an arm forming part of the supporting member and arching over the base, and a presser foot shank adjustable longitudinally along the arm parallel to the adjustment of the base.

4. A vulcanizing press comprising a base, an arm arching over the base, a presser foot shank pivoted to the arched arm and adjustable longitudinally therealong, the presser foot shank being made in a plurality of relatively longitudinally adjustable sections.

5. A vulcanizing press comprising a supporting member having an upper arm and a lower arm, a presser foot shank operatively connected to the upper arm, and a base detachably connected to the lower arm extending over the same and having downwardly extending flanges equal in depth to the depth of the lower arm.

6. A vulcanizing press including a supporting member having an upper and a lower arm, and a base having a pair of parallel flanges embracing the lower arm, and means passing through said flanges for engaging the base with the lower arm.

7. A vulcanizing press including a supporting member having an upper arm and a lower arm, a presser foot shank operatively engaged with the upper arm, a base detachably engaged with the lower arm, said base on its under side having a pair of spaced flanges to receive the lower arm, marginal flanges extending down from the base and equal in depth to the depth of the lower arm, and means passing through the first two flanges for detachably engaging the base with said lower arm.

8. A vulcanizing press comprising a base, an arm arching over the base, a presser shank formed in two sections, one of said

sections being swingingly connected to the arched arm and rotatable in a vertical plane, the other section having screw threaded engagement with the first section, and a presser foot operatively connected to the second named section.

9. A vulcanizing press comprising a base, an arm arching over the base, the arm being longitudinally slotted, a presser foot shank composed of two sections, one of said sections being bifurcated to embrace the arched arm, the other section having screw threaded engagement with the first named section and having a head whereby it may be rotated, a presser foot operatively connected to the last named section, and a bolt passing through the bifurcated end of the first named section and through the slot in said arm.

10. A vulcanizing press comprising a base, an arm arching over the base, the arm being longitudinally slotted, a presser foot shank composed of two sections, one of said sections being bifurcated to embrace the arched arm, the other section having screw-threaded engagement with the first named section and having a head whereby it may be rotated, a presser foot operatively connected to the last named section, and a bolt passing through the bifurcated end of the first named section and through the slot in said arm, said base being adjustable so as to center it beneath the presser foot.

11. A vulcanizing press comprising a supporting member, a base and a presser foot, the base and presser foot being both adjustable relative to the supporting member whereby to center the base and presser foot.

12. A vulcanizing press comprising a base, an arm arching over the base, a presser foot shank formed in a plurality of sections swingingly connected to the arched arm for movement in a vertical plane, a presser foot connected to one of the sections, and means for moving said last named section longitudinally relative to the other section and holding it in its shifted position.

13. In a vulcanizing press, a substantially U-shaped supporting member embodying oppositely disposed parallel arms, one of said arms being circular in cross section, a presser foot shank swingingly engaged with the last named arm, and a presser foot detachably and adjustably engaged with said presser foot shank.

14. A vulcanizing press comprising a base, an arm circular in cross section arching over the base, a presser foot shank section having a circular aperture through which said circular arm passes and by which the presser foot shank section is rotatably supported upon the arm, and a presser foot shank section longitudinally adjustable with relation to the first named section.

15. A vulcanizing press comprising a base, an arm circular in cross section arching over the base, a presser foot shank section having a circular aperture through which said circular arm passes and by which the presser foot shank section is rotatably supported upon the arm, and a presser foot shank section having detachable screw threaded engagement with the first named shank section.

16. A vulcanizing press comprising an approximately U-shaped supporting member embodying oppositely disposed parallel arms, one of said arms being circular in cross section, a presser foot shank section having an aperture through which the circular arm passes, there being a slot extending downward from the upper end of the presser foot shank section and intersecting said aperture to provide opposed jaws, a screw engaged with the said jaws and adapted to move the jaws toward or from each other, and a presser foot shank section having screw threaded engagement with the first named shank section.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

BENJAMIN F. WHITE.

Witnesses:
TULLY D. WHITE,
BERTHA C. PEDERSEN.