P. D. THROPP.

VULCANIZER.

APPLICATION FILED FEB. 24, 1914.

1,152,993. Patented Sept. 7, 1915.

Fig. 1.

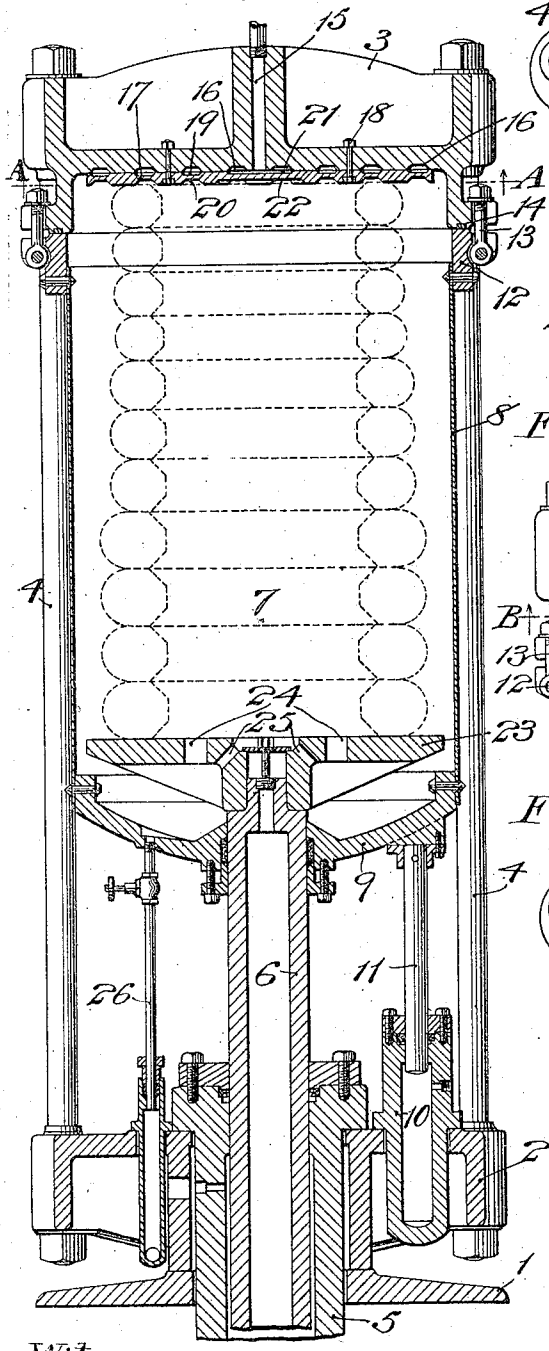


Fig. 2.

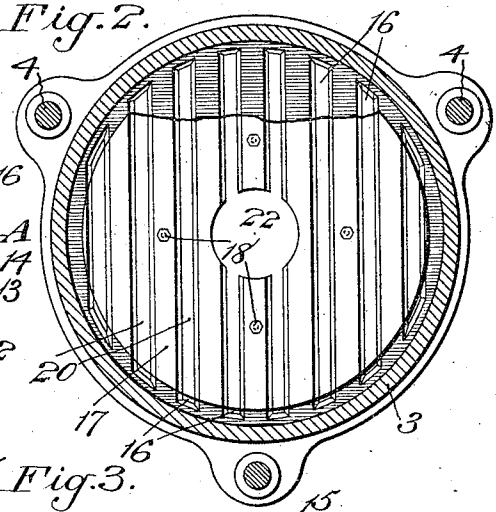


Fig. 3.

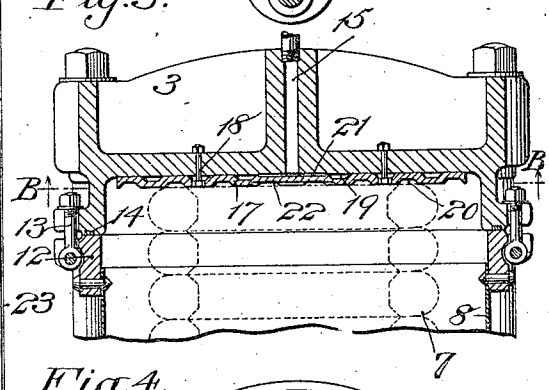
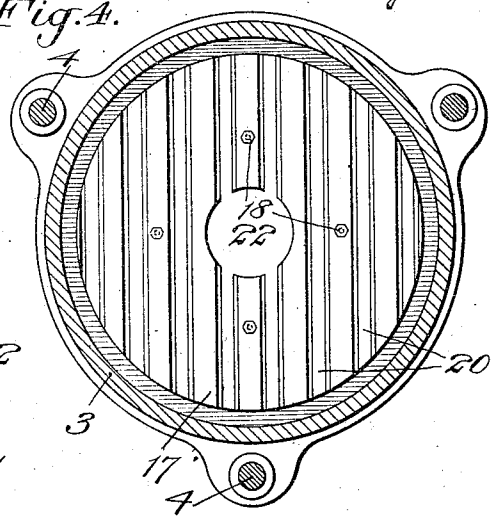


Fig. 4.



Witnesses:-
Hyperion Barry.
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UNITED STATES PATENT OFFICE.

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VULCANIZER.

1,152,993. Specification of Letters Patent. Patented Sept. 7, 1915.

Application filed February 24, 1914. Serial No. 820,606.

To all whom it may concern:

Be it known that I, PETER D. THROPP, a citizen of the United States, and resident of Trenton, in the county of Mercer and State of New Jersey, have invented a new and useful Improvement in Vulcanizers, of which the following is a specification.

This invention relates to an improvement in vulcanizers and particularly in vulcanizers adapted for the curing of annular articles, such as vehicle tires; with the object in view of providing apparatus of this character which has means for producing a beneficial circulation of the heating medium.

Another object is to provide certain improvements in the form, construction and arrangement of the several parts whereby the above-mentioned objects may be effectively carried out.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents a vertical central section through the vulcanizer, Fig. 2 represents a section taken in the plane of the line A—A of Fig. 1, looking in the direction of the arrows, partly broken away, Fig. 3 represents a detail vertical section of a modified form of the upper part of the vulcanizer, and Fig. 4 represents a section taken in the plane of the line B—B of Fig. 3, looking in the direction of the arrows.

The vulcanizer to which this invention is shown as being applied is of the so-called vertical type, and includes the combination of a press and vulcanizer, for the curing of the outer casings of pneumatic tires. The general form of this type of vulcanizer is well known and includes a base 1 upon which is mounted a lower head 2; which lower head is connected to and spaced from an upper head 3 by means of a series of through-bolts 4, in the present case three of such bolts being shown. A hydraulic cylinder 5 is centrally mounted in the base 1 and bottom 2, and therein is fitted the well known ram 6 which is adapted to support and compress a stack of tires 7, the tires being customarily held in their molds during this operation. The apparatus also includes a chamber 8, which is shown, in the present case, as cylindrical in form, and having a bottom 9 which is fitted to reciprocate on the ram 6 under the actuating influence of another motive fluid cylinder 10 and ram 11. The chamber 8 has a ring 12 at the top thereof which is equipped with bolts 13 for securing the chamber 8 firmly to the upper head 3. A packing gland 14 may be provided between the chamber 8 and the head 3 to prevent the escape of the heating medium.

Turning now to the particular features of my invention, the upper head 3 has an inlet 15, shown as centrally disposed in the present instance, for the induction of some heating medium, such as steam, into the chamber 8. The under face of the upper head 3 is provided with a series of grooves 16, which are arranged parallel to each other and extend almost completely across the under face of the said head. A baffle plate 17 is secured to the said face of the head 3 by means of bolts 18; and the said baffle plate is also provided, on both faces, with grooves 19, 20, which correspond with the grooves 16 in the head 3. The said baffle plate 17 also has circular depressions 21, 22, centrally disposed on both sides thereof, and communicating with some of the grooves 16, 19 and 20.

It will be seen that the baffle plate 17 is less in size than the circle described by a line passing through the extremities of the grooves 16, and consequently the ends of the said grooves 16 project beyond the edges of the said plate.

The ram 6 has a support 23 on the upper end thereof and within the chamber 8, which support 23 is adapted to hold the stack of tires 7, as clearly shown in Fig. 1. This support 23 has a series of holes 24, 25, therethrough, which holes are located so as to lie within the tires 7.

The chamber 8 may be provided with a suitable blow-off 26.

Referring now to the modified form shown in Figs. 3 and 4, it will be noted that it is exactly the same as the preferred form already described, except that the under

face of the upper head 3 is not provided with any grooves 16, and the grooves 19, 20 are staggered.

In operation, assuming the chamber 8 and support 23 to be in their lowered position, the tires and their molds are stacked on the support 23, as clearly shown in Fig. 1, and the stack is compressed against the plate 17 on the upper head 3 by actuating the ram 6. The ram 11 is then put in operation, closing the chamber 8 against the head 3, where it is locked by the bolts 13. The articles are now ready to be vulcanized and the heating medium, such as steam, is introduced through the inlet 15. The incoming steam impinges against the circular depression 21 in the plate 17 and is forced to travel therefrom through the grooves 16, 19, to the outer portion of the head 3 and hence to the outer portion of the chamber 8. Upon reaching the said outer portion, the steam passes down around the stack of tires 7 engaging the outer portions thereof. When it reaches the bottom of the chamber 8, it is then permitted to pass up through the holes 24, 25, in the support 23, and thus contact with the inner portion of the said stack of tires. Upon again reaching the top of the vulcanizer, it will, a second time, pass outwardly by way of the depression 22 and grooves 20, thus a second time coming in contact with the outer face of the tire. It will be seen that as long as the steam is inducted into the vulcanizer, it will continue this cycle, thereby following a free and uniform circulation and giving a uniform vulcanization or cure to the tires. The grooves 16 which are not in communication with the inlet 15 serve as additional channels of circulation during the vulcanizing period. At the end of the vulcanizing period, the steam may be let out through the blow-off 26, the support 23 and cylinder 8 depressed, and the tires removed.

It is to be understood that various changes may be resorted to in the form, construction and arrangement of the several parts without departing from the spirit and scope of my invention and hence I do not intend to be limited to specific details except as they are set forth in the claims.

What I claim is:—

1. A vulcanizing apparatus comprising a chamber, a head therefor, an inlet for a heating medium in said head, and grooves in said head extending from the inlet to the outer portion thereof.

2. A vulcanizing apparatus comprising a chamber, a head therefor, a plate secured to the under face of said head, and grooves in said plate extending from one side to the other thereof.

3. A vulcanizing apparatus comprising a chamber, a head therefor, an inlet for a heating medium in said head, a plate secured to the under face of said head, and grooves in said plate extending from said inlet to the outer edges of the plate.

4. A vulcanizing apparatus comprising a chamber, a head therefor, a plate secured to the under face of said head, and grooves in both sides of said plate.

5. A vulcanizing apparatus comprising a chamber, a head therefor, an inlet for a heating medium in said head, a plate secured to the under face of said head, said plate having a depression in communication with said inlet, and grooves extending from said depression to the outer edges of the plate.

6. A vulcanizing apparatus comprising a chamber, a head therefor, an inlet for a heating medium in said head, a plate secured to the under face of the head, said plate having depressions on both sides thereof substantially concentric with the inlet, and grooves extending from said depressions to the outer edges of the plate.

7. A vulcanizing apparatus comprising a chamber, a head therefor, an inlet for a heating medium in said head, a support within the chamber for an annular article to be vulcanized, grooves in the inner face of the head for conducting the medium from the inlet to the outside of the article, and perforations in the support for conducting the medium from the outside of the article to the inside thereof.

8. A vulcanizing apparatus comprising a chamber, a head therefor, an inlet for a heating medium in said head, a support within the chamber for a stack of annular articles to be vulcanized, grooves in the inner face of the head for conducting the medium from the inlet to the outside of the stack of articles, and perforations in the support for conducting the medium from the outside of the stack to the inside thereof.

9. A vulcanizing apparatus comprising a chamber, a head therefor, an inlet for a heating medium in the head, a support within the chamber for an annular article to be vulcanized, a plate secured to the under face of the said head, grooves between the said plate and the said head for conducting the medium from the inlet to the outside of the article, said support having perforations for conducting the medium from the outside of the article to the inside thereof, and grooves on the under side of the said plate for conducting the medium from inside the article to the outside thereof.

10. A vulcanizing apparatus comprising a chamber, a head therefor, an inlet for a heating medium in the head, a support within the chamber for a stack of annular articles to be vulcanized, a plate secured to the under face of the said head, grooves between the said plate and the said head for conducting the medium from the inlet to the outside of the stack of articles, the said support

having perforations for conducting the medium from the outside of the stack to the inside thereof, and grooves on the under side of the said plate for conducting the medium from inside the articles to the outside thereof.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this 19th day of February 1914.

PETER D. THROPP.

Witnesses:

CLIFFORD W. LEE,

HARRY PERRINE MESSLOR.