P. B. BOSWORTH.

CORE FOR PNEUMATIC TIRES AND METHOD OF CONSTRUCTING SAME.

APPLICATION FILED JULY 8, 1920.

1,409,995.

Patented Mar. 21, 1922.

3 SHEETS—SHEET 1.

Fig 1

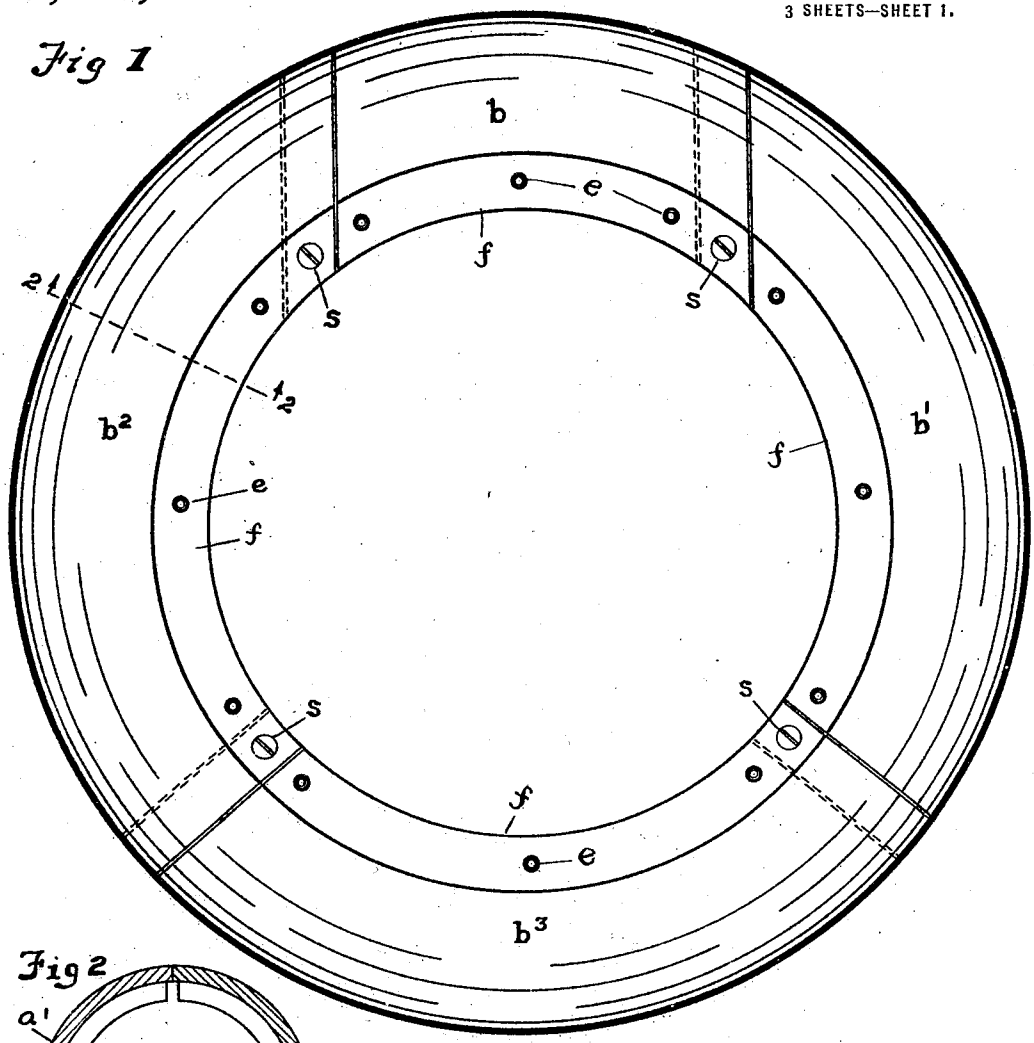
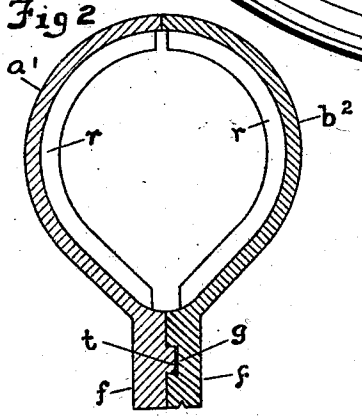


Fig 2



Witness

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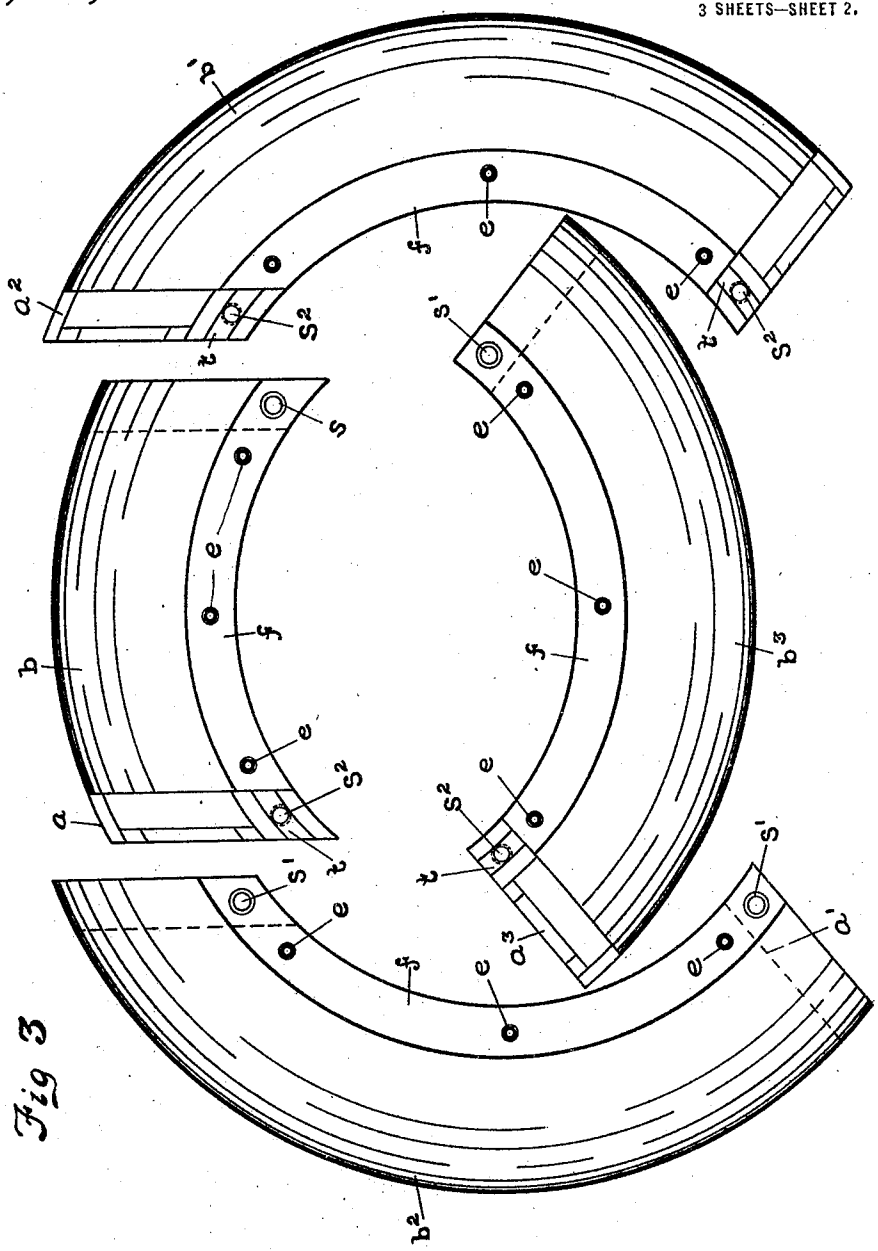


Fig 3

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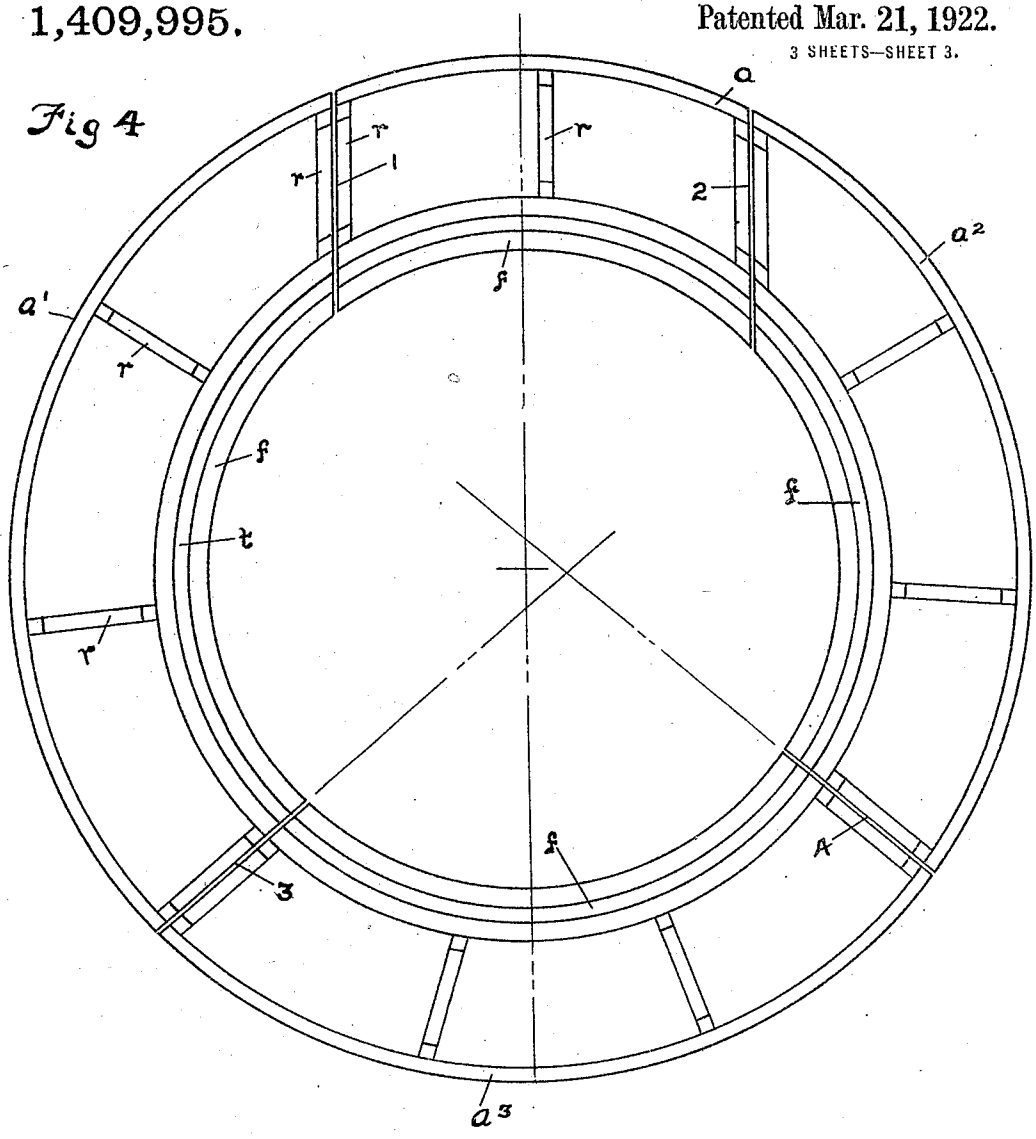
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3 SHEETS—SHEET 3.

Fig 4



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UNITED STATES PATENT OFFICE.

PERCY B. BOSWORTH, OF SPRINGFIELD, OHIO.

CORE FOR PNEUMATIC TIRES AND METHOD OF CONSTRUCTING SAME.

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Application filed July 8, 1920. Serial No. 394,710.

To all whom it may concern:

Be it known that I, PERCY B. BOSWORTH, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Cores for Pneumatic Tires and Methods of Constructing Same, of which the following is a specification.

My invention relates to improvements in the method of making and in the construction of cores for pneumatic tires, it relating more particularly to building cores for the casings of such tires.

An object of my invention is to provide a method and construction of the character referred to which will enable me to build a core which will be light in weight but at the same time of ample strength for the uses to which it is subjected.

A further object of the invention is the construction of a metal core of a collapsible character, the sections of which have overlapping ends, the parts of which sections may be more accurately and conveniently formed and assembled than has heretofore been the practice in the manufacture of cores of this character.

A further object of the invention is to provide a construction of cores of a sectional overlapping character which will permit the sections to be readily collapsed and removed from the tire casing.

A further object of the invention is to provide a core which will be simple in its construction, effective in its operation and economical in manufacture.

Fig. 1 is a side view of a core in assembled condition embodying my improvements.

Fig. 2 is a section of the same on the line 2—2 of Fig. 1.

Fig. 3 is a side view of the different finished sections of the core in unassembled condition.

Fig. 4 is a view of the inner side of one-half of one of the ring castings after being sawed into sections.

The core is first cast in two continuous halves or rings, one of which is shown in Fig. 4 of a shape in cross section as illustrated in Fig. 2. Each ring, after being turned and planed is then sawed into sections, a, a^1, a^2 and a^3 representing the sections of the ring shown in Fig. 4, while b, b^1, b^2 and b^3 represent the corresponding sections of the other ring. For the purpose of conveniently explaining the construction and arrangement, the sections a and b will be referred to as top sections, those a^1 and b^1 as the left hand side sections, those a^2 and b^2 as the right hand side sections, and the ones a^3 and b^3 as the bottom sections, as the sections all appear in this position in the drawings after being assembled. The cuts made by the saw are represented by the characters 1, 2, 3, and 4. The cuts 1 and 2 extend at a slight angle to the vertical center line and at different distances therefrom, as shown in Fig. 4, the angles of the cuts being such that the sections a and b will be slightly wedge-shaped with the outer peripheries of less length than the inner peripheries. The cuts 3 and 4 are also made at different distances from the vertical center line, these cuts being on lines which, if extended, would lie at one side of the center of the finished core. The main body of the two sections, when assembled, will have a contour conforming to the contour of the interior of a tire casing and each section has an inwardly projecting flange f.

When the sections of the respective rings are lying together with their inner faces abutting, and with the imaginary vertical center lines of each ring coinciding, it will be seen that the sections a and b become mates as well as the sections a^3 and b^3, and, due to the fact that the cuts have been made in the manner described, the ends of the respective mating sections will project beyond each other. In like manner the section a^1 mates with the section b^2, with the ends of b^2 projecting beyond the ends of a^1, and the section a^2 mates with b^1 with the ends of a^2 projecting beyond the ends of b^1, as a result of the manner of cutting the sections before described. The respective mating sections are then permanently secured together by rivets e.

The flanges f of the sections of one of the rings, in the present case those a, a^1, a^2 and a^3, are provided with circularly-arranged, laterally-extending tongues t, while the flanges of the sections of the other ring have corresponding circularly-arranged grooves g.

The core sections thus formed when placed together will have overlapping ends and are temporarily secured together by screws s which project through openings s^1 in the

overlapping portions of the ring sections b, b^1, b^2 and b^3 and are threaded in openings s^2 in the overlapping ends of the ring sections a, a^1, a^2 and a^3, with the tongues t projecting into the grooves g.

In collapsing the core after the tire casing has been completed, the screws s are removed and the sections a and b forced inwardly, after which the side sections may be removed and then the top and bottom sections.

By the construction described, whereby the core is first cast in two halves or rings, a considerable saving of material is effected for the reason that when casting the entire core integrally it was necessary to give to the walls of the core an unusual and unnecessary thickness to allow for the floating movement of the sand core in casting, whereas by my method, the walls of the core may be cast of any desired thickness so that they may be as light as possible consistent with proper strength. By sawing the rings or halves thus cast before securing the mating core sections together, the sawing operation is not only more conveniently and economically performed, but also greater accuracy may be secured in giving the proper size diametrically and shape circumferentially to the completed core, when constructing a core of the character where the completed sections are formed in two halves with overlapping ends. To further carry out this accuracy in size and circumferential form, I so position the screw openings s^1 and s^6 as to leave the completed assembled core of the same diameter and circumferential shape as that of each of the rings after being finished but before being sawed into sections. While such a construction will leave uniform spaces between the abutting ends of the sections of each half of the core equal to the amount of metal removed by the sawing operation, such spaces are not detrimental in a building core such as my core is especially designed to be. These spaces also make it easier to separate the top secton a and b in collapsing the core.

By having the inner engaging parts between the flanges as described, that is, the tongues and grooves, a considerable amount of the strain incident to the use of these cores is removed from the fastening screws as well as the rivets which secure the mating sections together, and these tongues and grooves also assist in maintaining the proper contour and size of the finished core, it only being necessary in drilling the screw openings to see that the spaces between adjacent ends of the sections are uniform.

In casting the rings, strengthening ribs r are preferably formed on the interior walls of the rings, and the cuts are made through some of these ribs, which are of double width as shown.

Having thus described my invention, I claim:—

1. The method of constructing cores for pneumatic tires consisting in first casting the same into two separate continuous rings, sawing each ring in a manner to correspond to the other ring into top, bottom and two side sections so as to have the sections on one side of the rings of greater length than those at the other side, placing the inner faces of the rings together so that the respective top sections will form mates as will also the respective bottom sections, with the left side section of one ring mating with the right side section of the other ring, and then permanently securing the mating sections together.

2. The method of forming a core for pneumatic tires, consisting in first casting the same into two continuous rings, sawing each of said rings into four sections in a corresponding manner with the other ring, the saw cuts of each ring being on lines located at different distances from a vertical center line, placing the inner faces of the rings together so that the vertical center lines of said rings will coincide, and then permanently securing mating sections together and provding temporary fastening means for the overlapping ends when said core is assembled.

3. The method of constructing a core for pneumatic tires consisting in first casting the same in two separate continuous rings, sawing the rings into four corresponding top, bottom and side sections on lines located at different distances from a vertical center line, placing the respective ring sections together and permanently uniting mating sections, and providing temporary fastening devices for overlapping ends at points which will maintain the original diameter and circumferential conformation of the rings before cutting.

4. In a collapsible core of the character described, two rings each cast with a hollow body portion and an interior flange and then divided by sawing into a plurality of sections so arranged that when the inner faces of the rings are placed together the sections of the respective rings will overlap, means for permanently securing mating sections together, and temporary devices for securing the overlapping ends together, said temporary devices being so positioned as to maintain in the finished core the same diameter and circumferential conformation as of the rings before being divided into sections, leaving a space between adjacent ends of the respective sections.

In testimony whereof, I have hereunto set my hand this 12th day of May 1920.

PERCY B. BOSWORTH.

Witness:

CHAS. I. WELCH.