

Jan. 29, 1924.

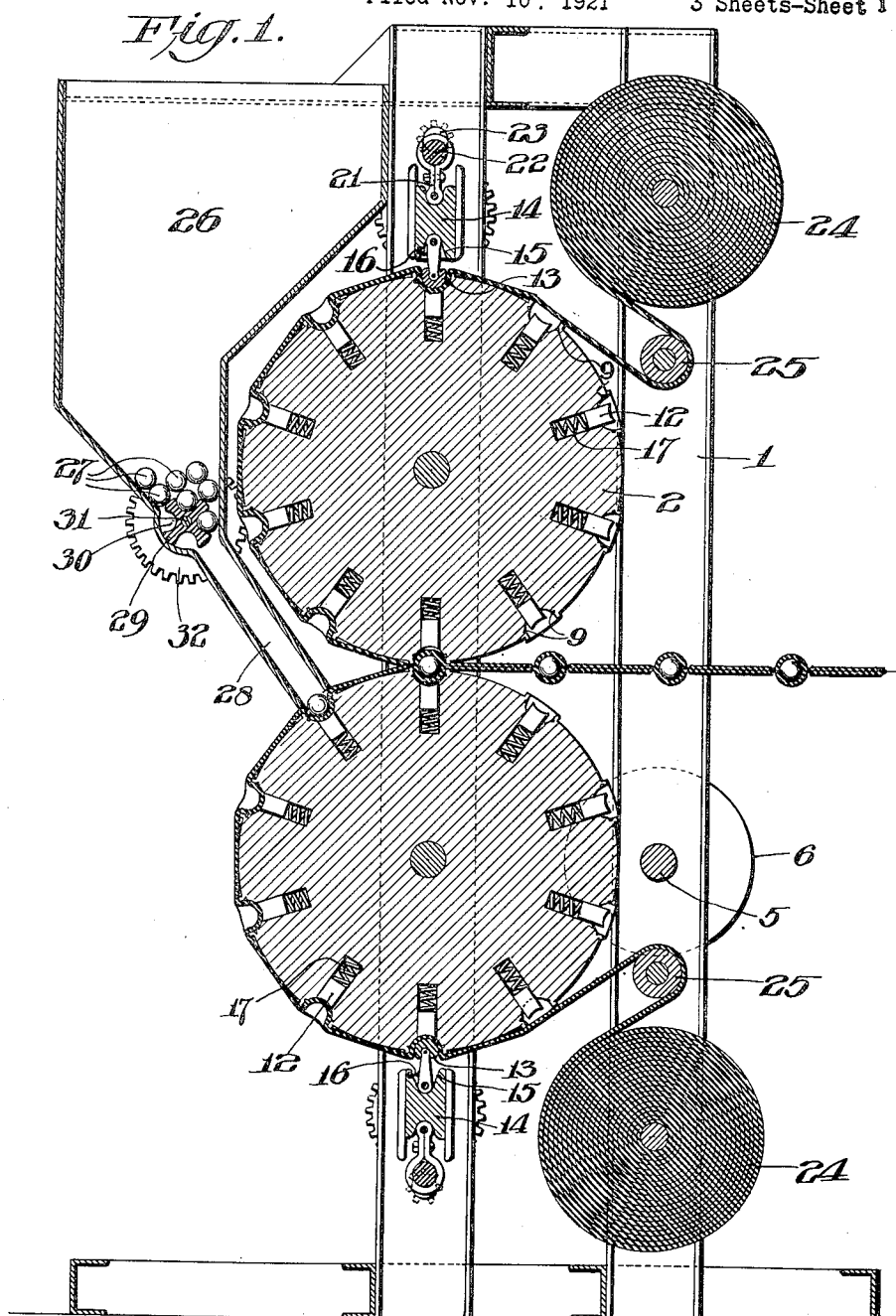
S. H. HEIST

1,481,866

METHOD OF AND APPARATUS FOR COVERING CORES

Filed Nov. 10, 1921

3 Sheets-Sheet 1



INVENTOR

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BY

Wiederheim & Gault

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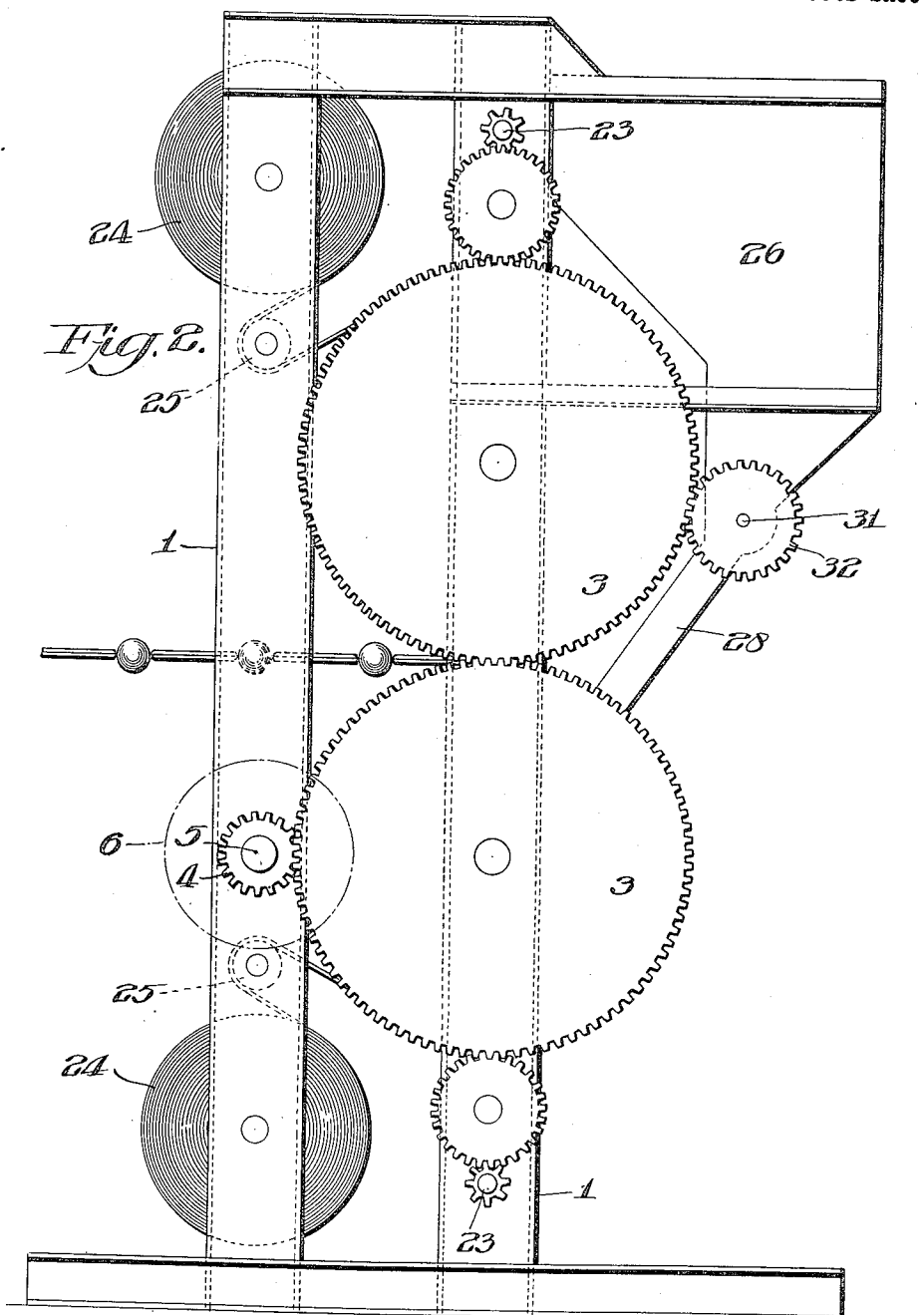
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METHOD OF AND APPARATUS FOR COVERING CORES

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3 Sheets-Sheet 2



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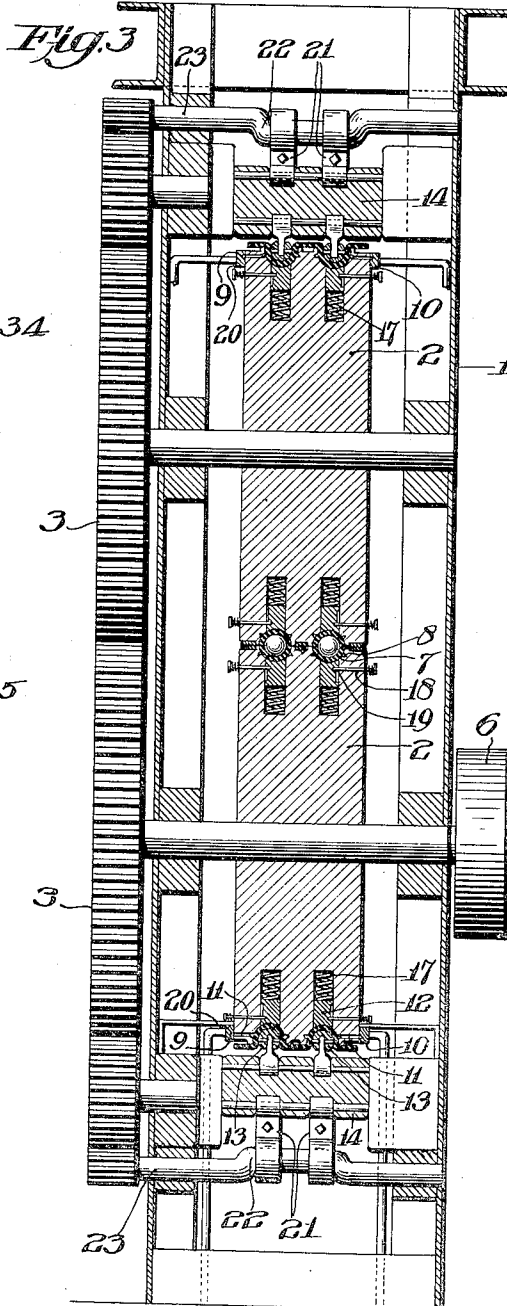
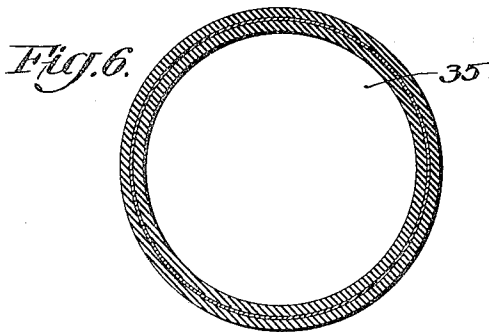
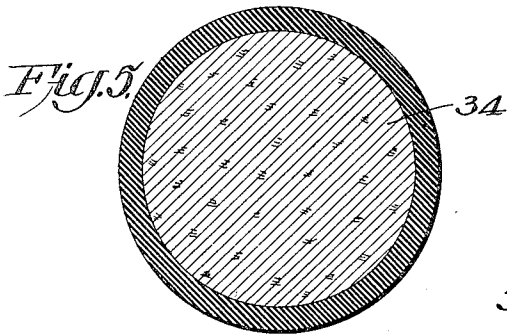
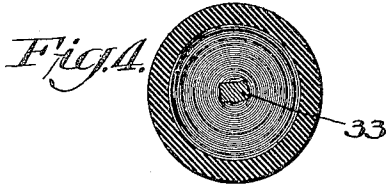
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METHOD OF AND APPARATUS FOR COVERING CORES

Filed Nov. 10, 1921

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

STUART H. HEIST, OF PENNLYN, PENNSYLVANIA, ASSIGNOR TO PENN RUBBER PRODUCTS CORPORATION, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF DELAWARE.

METHOD OF AND APPARATUS FOR COVERING CORES.

Application filed November 10, 1921. Serial No. 514,240.

To all whom it may concern

Be it known that I, STUART H. HEIST, a citizen of the United States, residing at Penllyn, county of Montgomery, State of Pennsylvania, have invented a new and useful Method of and Apparatus for Covering Cores, of which the following is a specification.

My invention comprehends a novel method of and apparatus for covering cores which may be of any desired construction such as, for example, the elastic wound cores of golf balls, the cork or other centers of play balls, the core for covered buttons, or any other desired core to which it is desired to apply a cover.

It further comprehends a novel method of and apparatus for covering cores wherein the cover is automatically formed in sections from the stock, the latter being preferably in sheet form. The cores are automatically fed to complementary cover sections, which are automatically seamed at their juxtaposed edges, and the covers secured around the cores under any desired degree of pressure. After the cover has been applied the article may be vulcanized or otherwise treated in any desired or conventional manner.

Other novel steps of the method and features of construction and advantage will hereinafter more clearly appear in the detailed description of the invention.

For the purpose of illustrating my invention, I have shown in the accompanying drawing a typical embodiment thereof which is at present preferred by me, since this embodiment will be found in practice to give satisfactory and reliable results. It is, however, to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents, in sectional elevation, an apparatus for covering cores, embodying my invention, and by the employment of which my method of covering cores can be advantageously practised.

Figure 2 represents a side elevation of the apparatus.

Figure 3 represents a section on line 3—3 of Figure 1.

Figure 4 represents, in section, a golf ball to which the cover has been applied in accordance with my invention.

Figure 5 represents, in section, a play ball having a solid core to which the cover has been applied in accordance with my invention.

Figure 6 represents a play ball with the fluid core to which the cover has been applied in accordance with my invention.

Figure 7 represents, in perspective, a button core.

Referring to the drawings—

1 designates the frame of the machine in which is journaled the shafts of the rotatable molds 2 which are intergeared by means of the gears 3, one of said gears 3 meshing with a gear 4 on a driving shaft 5 which is driven by any desired source of power, as illustrated, by being provided with a pulley 6 adapted to receive a driving belt.

The rotatable molds 2 are provided in their peripheries with the mold cavities 7 which are vented, as at 8, such vents communicating with the atmosphere or preferably being connected with vacuum passages 9 which are in communication with a suction producing apparatus and are controlled by means of the stationary valve plate 10 which co-operates with ports 11 communicating with the vacuum passages 9 so that the suction is applied subsequently to the forming of the cover sections in the mold cavities, in order to retain the formed sections therein, and the suction is released prior to the seaming operation of complementary cover sections. The plastic stock in sheet form is preferably fed directly from its source of production around each rotatable mold. The plastic stock is seated in the mold cavities during the rotation of the molds, as illustrated by a preponderance of pressure preferably mechanically exerted, and for this purpose, I have shown each mold as provided with an anvil 12 adapted to co-operate with a male forming member 13 which latter is pivotally carried by a slide

14 which is cut away to permit upward movement of the male forming member during the rotation of its co-operating mold and which is provided with a shoulder 15 so that the male forming member will be properly aligned with respect to the mold cavity with which it is co-operating. A spring 16 is provided to return a male forming member from the position into which it has been moved by the rotation of the molds to its initial position so that it will be in alignment with the next mold cavity when it comes into register with it. Each anvil 12 is resiliently supported by a spring 17 and is provided with a groove into which extends a spring pressed locking pin 18 which locks against a shoulder 19 on the anvil when the latter is moved inwardly. The locking pin is released at the proper time by a cam 20.

The slide 14 is eccentrically connected by means of a rod 21 with an eccentric 22 which is mounted on a shaft 23 which is driven and timed in such a manner that at the proper time the male forming member will move forwardly and mechanically seat the sheet stock in a mold cavity so that the sheet stock is formed around the male forming member. The sheets 24 of plastic stock pass around rolls 25 and then around the rotatable molds 2.

26 designates a hopper adapted to receive the cores 27 which feed through the hopper discharge spout 28. In order to automatically control the discharge of the cores to a formed cover section in one of the molds, I provide a rotatably mounted transfer member 29 having hemispherical recesses 30 in its periphery, said feed member serving to transfer the cores from the hopper spout 28 into a formed cover section. The shaft 31 of the transfer member 29 carries a gear 32 which meshes with one of the gears 3 and is timed in such a manner that a partial revolution is intermittently applied to the shaft 31 so that as each mold cavity comes into register with the discharge end of the hopper spout, a core is discharged into such registering mold cavity.

The character, construction and contour of the core will vary widely in practice in accordance with the character of the articles to be produced and the character of the plastic material forming the cover sections will also vary widely in practice in accordance with the character of the cover which is to be secured around the core. If a golf ball core is to be covered, the plastic stock would be gutta-percha which would be secured around the rubber thread round center of the golf ball. In one type of play ball the core would be formed of cork and the cover of soft rubber and in another type the core would be a hollow, inflated and vulcanized article. In the case of buttons or other similar articles, the core may be formed of

any desired material such as wood, a composition, papier-mâché or any other desired center or core forming material and the cover may be of hard rubber.

I have illustrated different forms of cores which can be employed, the golf ball core being designated 33 in Figure 4, the play ball core with the cork center being designated 34 in Figure 5, the inflated play ball core being designated 35 in Figure 6 and the button core being designated 36 in Figure 7.

The operation of my novel apparatus for covering cores and the manner in which my novel method is carried out in practice will now be readily apparent to those skilled in this art and is as follows:—

The plastic stock in sheet form passes around a rotatable mold and assuming now that the molds are rotating, it will be apparent that as the mold cavities come into register with the male forming members, the male forming members will be moved toward the plastic sheet stock and the stock will be formed around the male forming member. The anvil moves inwardly and is locked in its inward position. After the cover sections have been formed in this manner, the suction is applied to the mold cavities to retain the formed cover sections therein, and as a formed cover section of one mold comes into register with the discharge spout from the hopper, the core is automatically discharged into said cover section. As the two molds continue to revolve complementary cover sections will be seamed around the core by the rolling pressure of the molds or, in other words, by co-operation between the rotatable molds. Prior to this seaming operation the suction is released. The locking pins 18 are now released by the cams 20. The articles are next subjected to any further treatment desired. If the plastic stock from which the cover is made is rubber or a rubber composition, the articles are placed in a vulcanizing mold and vulcanized to their final contour.

It will be apparent from the foregoing that in accordance with my present invention, the cover sections are automatically formed, the cores are automatically transferred thereto, and complementary cover sections are automatically secured around the cores so that I materially reduce the cost of production as a large amount of hand labor which has heretofore been deemed necessary is eliminated.

Owing to the rapidity with which the plastic stock is used up, I preferably take the plastic stock directly from its source of production such as, for example, a tubing machine or a calender as otherwise more time is consumed in transferring the plastic stock from its source of production to the apparatus than is consumed in the act of

forming the cover sections and securing them around the core.

The contour of the mold cavity will of course vary in accordance with the character of the cores to which they are to be applied. It is to be understood that where in the claims I specify a preponderance of pressure mechanically applied, I do not intend to have such expression construed as covering an operation wherein the plastic stock is formed in the mold cavities by fluid pressure contacting directly with the plastic stock.

It will now be apparent that I have devised a new and useful method of and apparatus for covering cores which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and described an embodiment thereof which will give in practice satisfactory and reliable results, it is to be understood that this embodiment is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. The method of covering cores, which consists in seating plastic stock in complementary mold cavities, of rotatable molds to form cover sections by means of a preponderance of pressure mechanically applied to the stock, placing a core in the cover section of one mold cavity and rotating the molds to cause the cover section to be secured around the core.

2. The method of covering cores, which consists in seating plastic stock in complementary mold cavities to form cover sections by means of a preponderance of pressure mechanically applied, mechanically feeding a core to one of said cover sections, and securing the cover sections around the core by the rolling contact of the molds.

3. The method of covering cores, which consists in seating plastic stock in complementary mold cavities by means of a preponderance of pressure mechanically applied to form cover sections, maintaining the formation of the cover sections by fluid pressure, placing a core in the cover section of one mold cavity and effecting relative movement of the molds to cause complementary cover sections to embrace the cores and to join their juxtaposed edges.

4. The method of covering cores, which consists in seating plastic stock in complementary mold cavities to form cover sections by means of a preponderance of pressure mechanically applied, mechanically feeding a core to one of said cover sections, securing the cover sections around the core by the rolling contact of the molds, and tim-

ing the mechanical feed by and in accordance with the movement of one of said molds.

5. The method of covering cores, which consists in seating plastic stock in complementary mold cavities by means of a preponderance of pressure mechanically applied to form cover sections, resiliently supporting the polar regions of the cover sections as they are being mechanically formed, placing a core in the cover section of one mold cavity and effecting relative movement of the molds to cause complementary cover sections to embrace the cores and to join their juxtaposed edges.

6. The method of covering cores, which consists in seating plastic stock from continuous sheets in complementary mold cavities to form cover sections, resiliently supporting the polar regions of the cover sections as they are being formed, placing a core in position to be enveloped by the complementary cover sections and effecting the relative movement of the molds to cause the complementary cover sections to embrace a core and to join the juxtaposed edges of the cover sections around said core.

7. The method of covering cores, which consists in seating plastic stock in complementary mold cavities, of rotatable molds to form cover sections, introducing a core in one section of the cover and automatically sealing the juxtaposed edges of complementary cover sections during the rotation of the molds.

8. The method of covering cores, which consists in seating continuous sheets of plastic stock in mold cavities of relatively movable molds, effecting relative movement of the molds to effect the feed of the sheet stock and the sealing of juxtaposed edges of complementary cover sections, and introducing between complementary cover sections prior to their sealing the cores which they are to inclose.

9. The method of securing covers around cores, which consists in automatically forming cover sections in rotatable molds, automatically feeding cores into position to be inclosed by the cover sections, and automatically securing the cover sections in sealed condition around the cores by the rotation of the molds.

10. The method of securing covers around cores, which consists in automatically forming cover sections in travelling molds, introducing cores into position to be covered by complementary cover sections, and automatically effecting relative movement of the molds to cause complementary cover sections to be sealed around a core.

STUART H. HEIST.

Witnesses:

H. S. FAIRBANKS,
C. D. McVAY.