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CYLINDER FOR WASHING MACHINES

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2 Sheets-Sheet 1

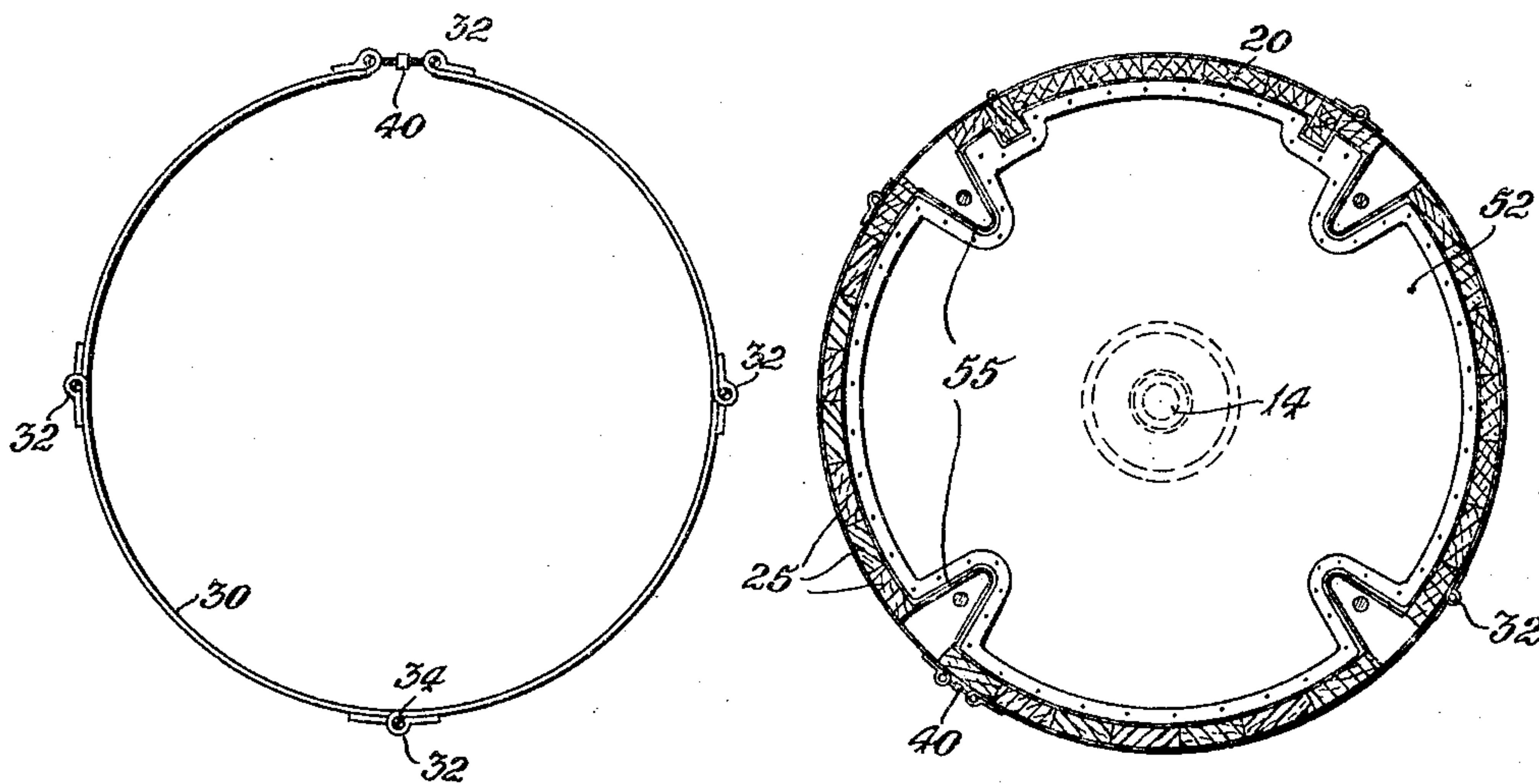
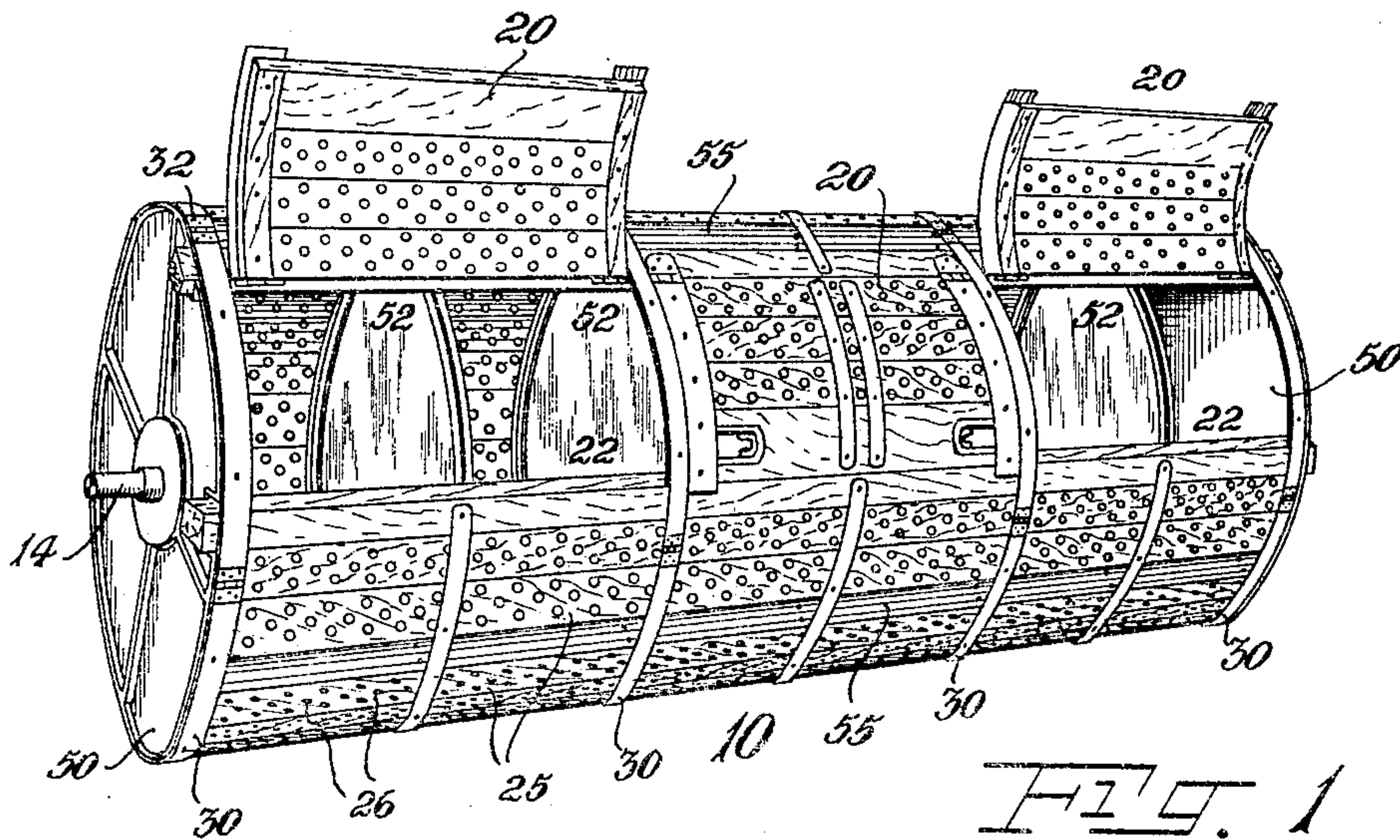


FIG. 5

FIG. 2

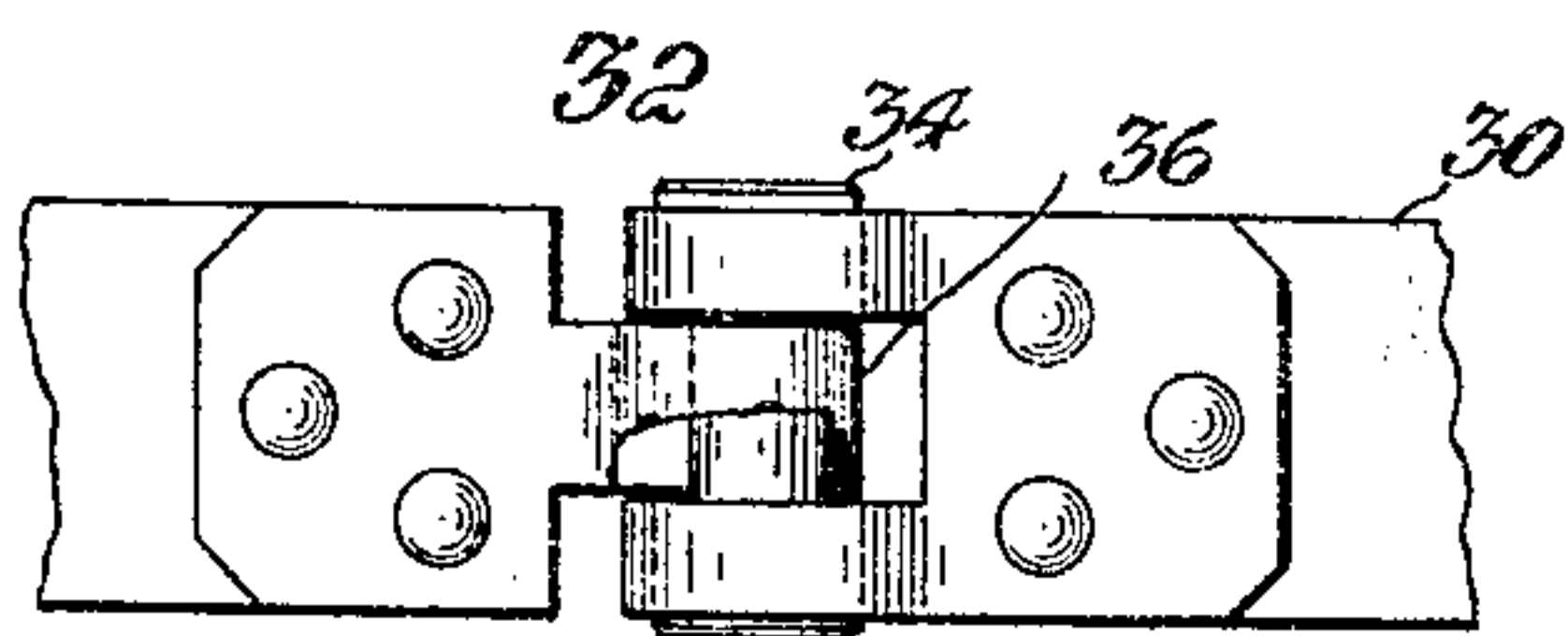


FIG. 6

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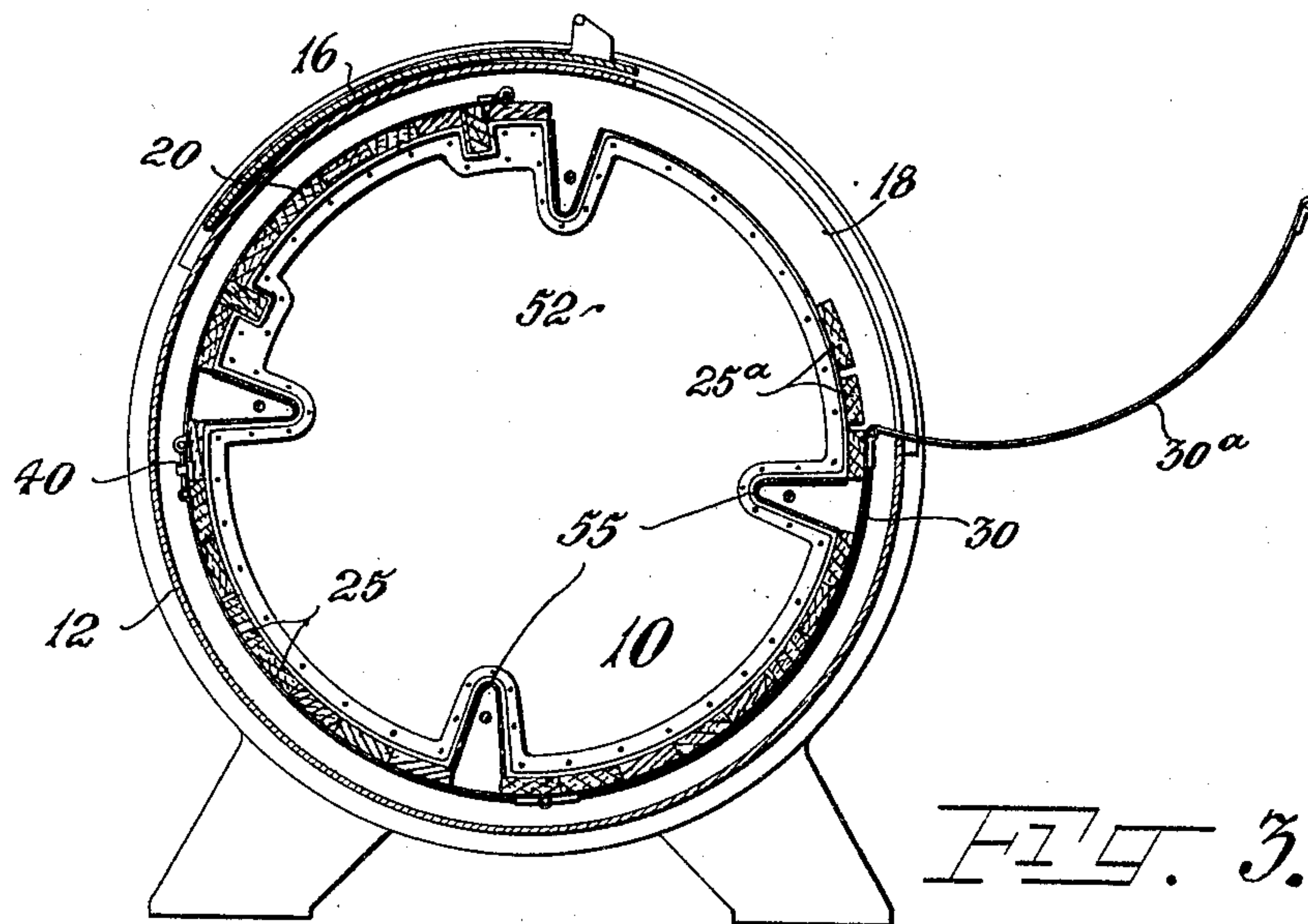


Fig. 3.

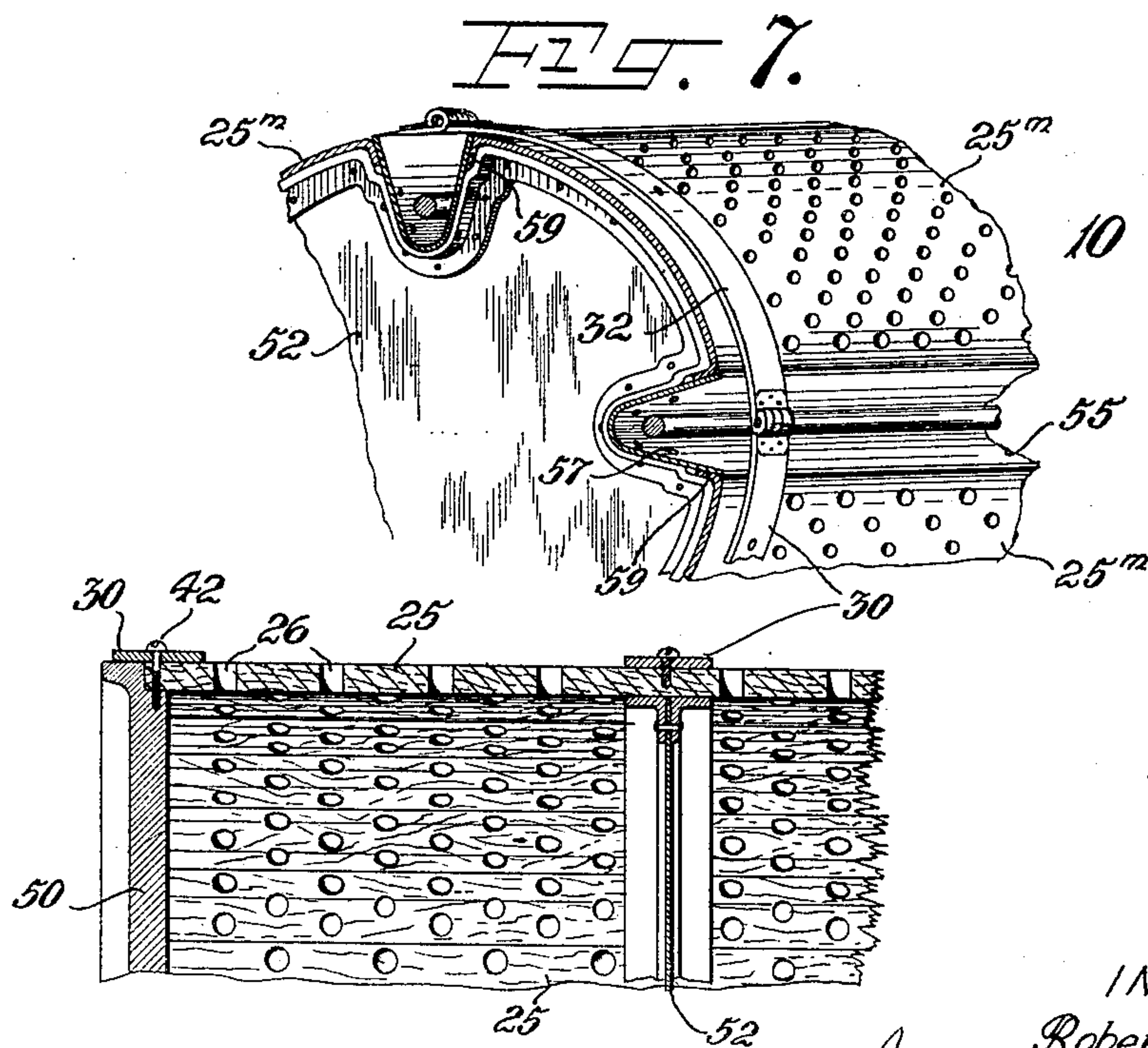


Fig. 2.

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## UNITED STATES PATENT OFFICE

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## CYLINDER FOR WASHING MACHINES

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This invention relates to cylinders of washing machines or the like, and provides improvements therein.

In the wooden stave-type of washing machine cylinder, when the staves become worn, it is necessary to partially dismantle the machine and replace the worn cylinders, which is relatively time-consuming and expensive. Moreover it is impracticable to attempt to use any of the old partitions or ends, as these are water-soaked and often badly worn, and the use of new and water soaked wood does not give good results, and the usual practice is to entirely discard worn cylinders.

In metal cylinders, any break in the sheet-metal cylindrical wall necessitates the removal thereof from the machine and the replacement of the wall. The cylinder wall must be perfectly smooth, and the practical laundryman does not even accept patches.

By the present invention there is provided a cylinder in which wooden staves may be replaced in whole or in part without structural disadvantages in the repaired structure, and without removing the cylinder from its shell or casing, and consequently providing for ready and inexpensive repairs and renewals. The ease of repair furthermore makes it practicable to use thinner staves than heretofore, thereby lightening the cylinder.

The invention further provides a cylinder having metal staves or sections, likewise replaceable without removing the cylinder from its shell or casing, with consequent great economy and facility in the repair of metal cylinders.

Two embodiments of washing machine cylinders according to the present invention are illustrated in the accompanying drawings, wherein:

Figure 1 is a perspective view of a wooden-stave cylinder, according to the present invention.

Fig. 2 is a cross-section of the cylinder shown in Fig. 1.

Fig. 3 is a cross-section through a machine having a cylinder according to the embodiment in Fig. 1, and illustrating the mode of replacing staves.

Fig. 4 is a longitudinal section along part of a cylinder made according to Fig. 1.

Figs. 5 and 6 are views of one of the bands or straps used, Fig. 5 being a side view, and Fig. 6 a face view at one of the joints.

Fig. 7 is a perspective of part of a cylinder according to a second embodiment, and viewed from a cross-section thereof.

Referring to said drawings, numeral 10 designates a rotary cylinder or basket of a washing machine, which cylinder is mounted in a shell or casing 12, on trunnions 14 at each end. The shell 12 contains the washing solution, and is provided with a door 16, here shown as of the sliding type, adapted to cover an opening 18 running the length of the shell, which opening 18 is adapted to register with doors 20 and openings 22 in the cylinder 10, and through which openings 18 and 22 the wash is placed within and removed from the cylinder 10.

In the embodiment illustrated in Figures 1, 2, 3 and 4, the cylindrical wall of the cylinder 10 is composed of a plurality of wooden staves or longitudinal sections 25. The staves 24, as usual, may be provided with perforations 26.

Encircling the staves or sections 25 are a plurality of bands 30. Each of these bands are made up of a plurality of sections, here shown as four in number, joined together. Numeral 32 indicates the joints. These joints 32, in the assembled bands 30, are arranged in alinement longitudinally of the cylinder 10. The joints are preferably a hinge or knuckle joint, provided with a removable pin 34 (Fig. 5). Moreover the pin 34 is preferably provided with a reduced middle portion 36, which in the tensioned position of the band 30 receives the corresponding portion of the hinge knuckle, and thereby locks the pin 34 against axial movement. The bands are preferably provided with means for tensioning and loosening them, for which purpose turnbuckles 40 may be provided.

In order to replace a stave, or to replace all of the staves 25 of the cylinder wall, a series of joints 32 in horizontal alinement, are disconnected, and the band sections, as the band section 30<sup>a</sup>, Fig. 3, are displaced or swung



out as shown, thereby freeing from the confinement of the bands all the staves or longitudinal sections 25 which underly the length of the band section 30<sup>a</sup>. The opening 18 in the shell permits the band sections 30<sup>a</sup> to be removed or swung out, as shown in Fig. 3, and one or all of the staves which lie under the displaced band section may be removed through the opening 18, and replaced by new staves, some of which are indicated by numeral 25<sup>a</sup>, Fig. 3.

After the staves underlying one band section 30<sup>a</sup> have been replaced, the band sections are again joined. The cylinder 10 may then be rotated the length of a succeeding band section, to bring the portion to be replaced in front of the opening 18 in the casing, and the bands 30 disjointed, and the band sections displaced or swung, as heretofore described in reference to the band sections 30<sup>a</sup>. The staves are then removed and replaced, and the bands again joined, and the cylinder 10 rotated to bring a new section of the cylinder in front of the opening 18, and the disjointing of the bands, and replacement of the underlying staves, repeated as often as is necessary to work entirely around the circumference of the cylinder.

Means 42, such as the screws passing through each of the band sections, into the end pieces, as shown in Fig. 4, may be provided for holding the band 30 in place, when a band is disjointed and a band section displaced.

In the particular band construction illustrated, to disjoint the bands, the turnbuckles 40 are first loosened, and the eyes in the hinge joint 32 brought into alinement, and the hinge-pin 34 slid out axially. The screw or screws 42 passing through the band section 30<sup>a</sup> which is to be displaced are also removed. After the staves have been replaced the displaced band section 30<sup>a</sup> is joined to its adjacent band section, the pin 34 pushed through the alined eyes of the hinge joint, and the turnbuckle 40 tightened. The tension of the bands on the new wood, as it swells in contact with water, can be relieved from time to time by the turnbuckle 40.

It will thus be seen that the present construction permits of ready replacement of staves or sections of the cylinder 10, without the necessity of removing the cylinder from the shell or casing 12.

In order to more fully obtain the advantages of the present invention, the frame of the cylinder 10 is made more indestructible than the staves. Accordingly the two end-pieces 50 of the cylinder, and the one or more partitions 52 are formed of metal, and the inwardly projecting ribs 55 which pound and turn the wash, are also preferably made of metal and extend the length of the cylinder. The metal ribs 55 are connected with

the end-pieces 50 and the partitions 52, by means of rivets or the like, as indicated at 57, Fig. 7, and thus the ribs 55, end-pieces 50 and partitions 52 constitute a frame which holds together when the bands 30 are disjointed and the staves 25 are being replaced. The staves 25 are held against the circumference of the end-pieces 50 and partitions 52 by the bands 30. The frame being virtually indestructible, and the staves being readily replaceable, the present invention provides a washing machine cylinder capable of giving substantially indefinite service, upon replacing the staves from time to time in the simple manner provided by the invention.

The embodiment illustrated in Fig. 7 is generally the same as that described in reference to the other figures, except that the cylindrical wall and the cylinder 10 is composed of a plurality of sheet-metal sections 25<sup>m</sup>. These longitudinal wall sections 25<sup>m</sup> are conveniently made of a width corresponding to the length of a band section 30<sup>a</sup>, whereby when a series of band sections 30<sup>a</sup> are disjointed and displaced, any worn or damaged cylindrical sections 25<sup>m</sup> may be removed and replaced. In the construction shown the band sections 30<sup>a</sup> have a length corresponding to one-fourth of the circumference of the cylinder, and with the bands so constructed, the cylindrical wall sections 25<sup>m</sup> may be four in number and have a width substantially equal to one-quarter of the circumference of the cylinder 10. The edges 59 of the sections 25<sup>m</sup> are preferably flanged, and when assembled, lie alongside of the ribs 55 as shown. By the construction just described, a cylinder having a metallic cylindrical wall is provided, in which sections may be replaced, in a very simple and inexpensive manner, in cases of damage, and the necessity of removing the cylinder from the shell or casing, and of removing the entire cylindrical wall, or a large portion thereof, avoided.

The invention may receive other embodiments than those herein specifically illustrated and described.

What is claimed is:

1. In a washing machine, a cylinder therefor, comprising a plurality of removable longitudinally extending sections each forming a part of the cylindrical wall of the cylinder, bands encircling said plurality of sections, said bands each having a plurality of joints, and means for unfastening the joints of said bands whereby band-sections may be displaced to permit replacement of said longitudinally extending sections.

2. In a washing machine, a cylinder therefor, comprising a plurality of removable longitudinally extending sections each forming a part of the cylindrical wall of the cylinder, bands encircling said plurality of sections, said bands each having a plurality of joints, and means for unfastening the joints



of said bands whereby band-sections may be displaced to permit replacement of said longitudinally extending sections, and turn-buckles in said bands.

5 3. In a washing machine, a cylinder therefor, comprising a frame comprising end-pieces and intermediate partitions, and ribs running the length of said cylinder and fastened to the end-pieces and partitions to  
10 hold the same in assembled position, a plurality of removable longitudinally extending sections each forming a part of the cylindrical wall of the cylinder, bands encircling said plurality of sections, said bands each  
15 having a plurality of joints, and means for unfastening the joints of said bands whereby band-sections may be displaced to permit replacement of said longitudinal sections.

4. In a washing machine, a cylinder therefor, comprising a frame comprising metal  
20 end-pieces, and intermediate metal partitions, and metal ribs running the length of said cylinder and fastened to the end-pieces and partitions to hold the same in assembled  
25 position, a plurality of longitudinally extending sections each forming a part of the cylindrical wall of the cylinder, bands encircling said plurality of sections, said bands each having a plurality of joints, and means  
30 for unfastening the joints of said bands whereby band-sections may be displaced to permit replacement of said longitudinal sections.

In witness whereof, I have hereunto signed  
35 my name.

ROBERT L. LOGAN.

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