

No. 786,875.

PATENTED APR. 11, 1905.

W. E. COPITHORN.
KNOCKDOWN BARREL.
APPLICATION FILED FEB. 19, 1904.

Fig. 1

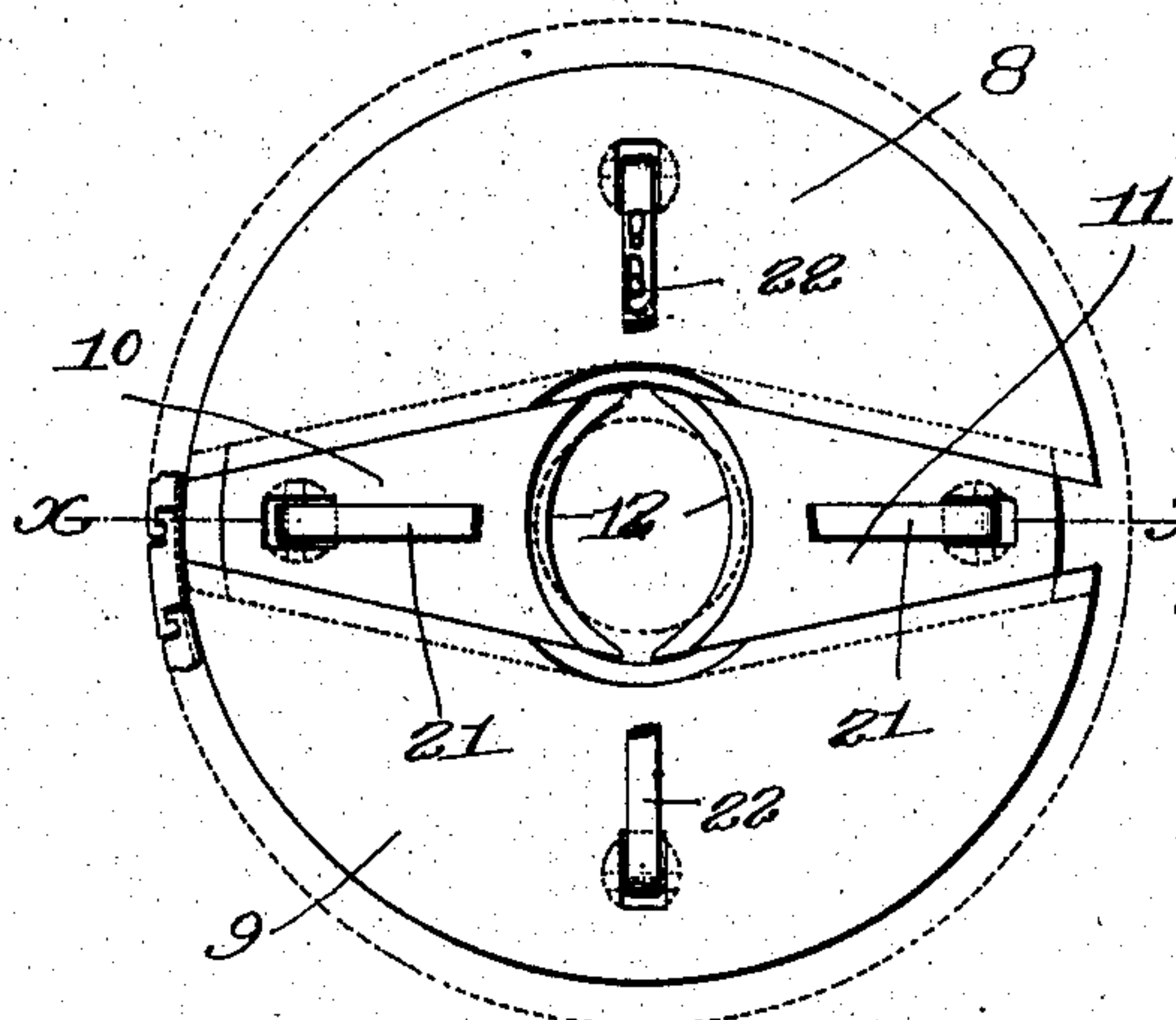


Fig. 2.

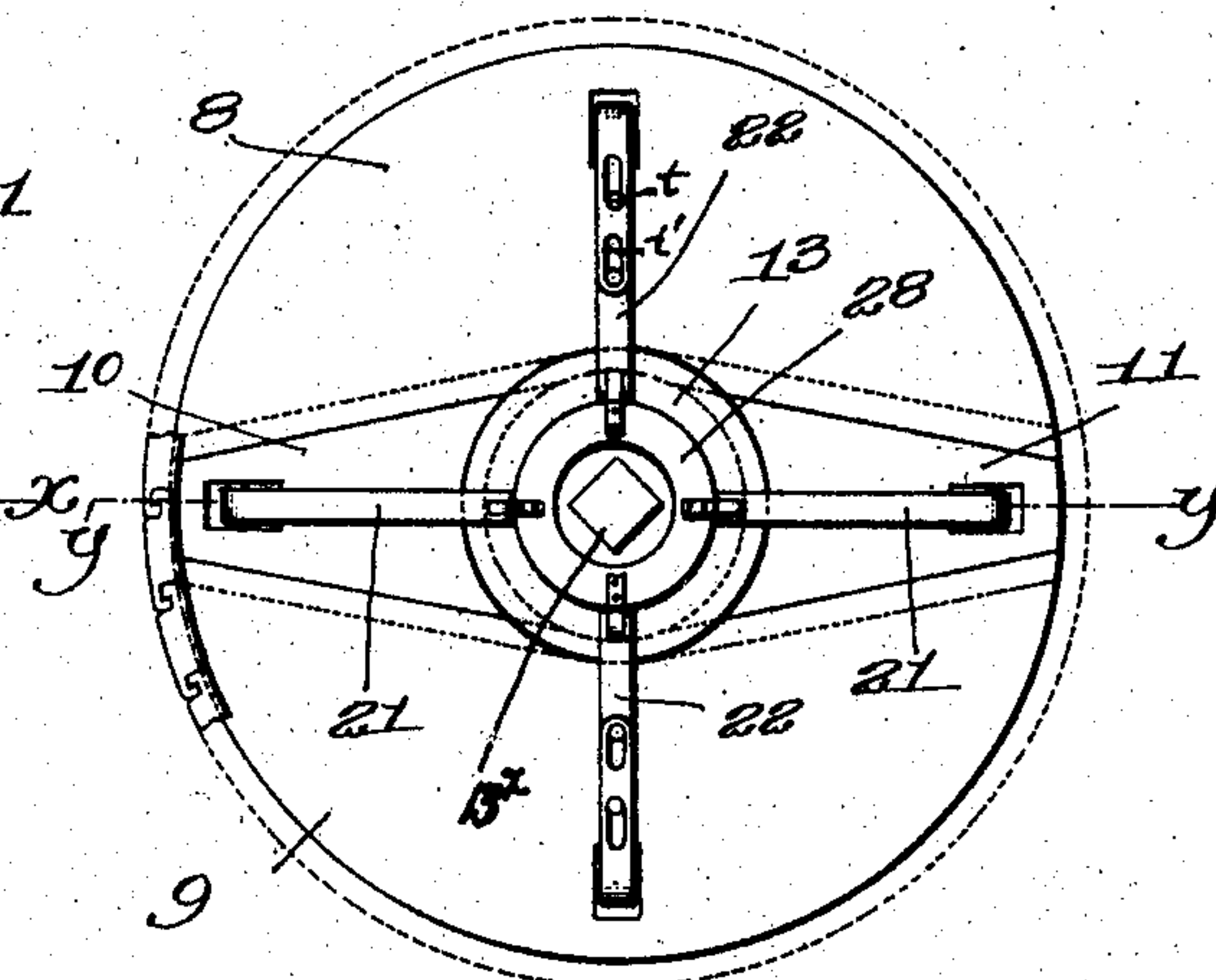


Fig. 3.

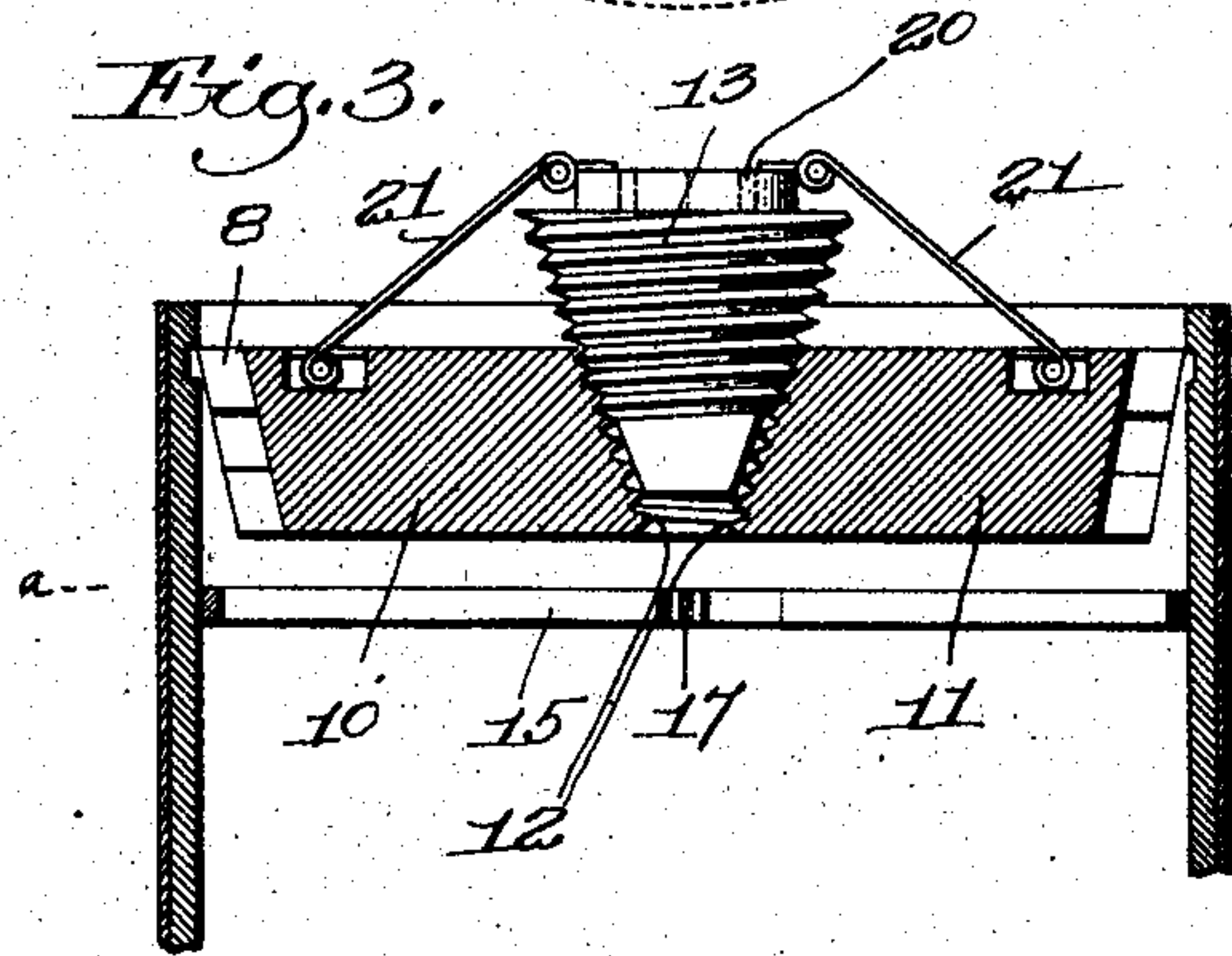


Fig. 4.

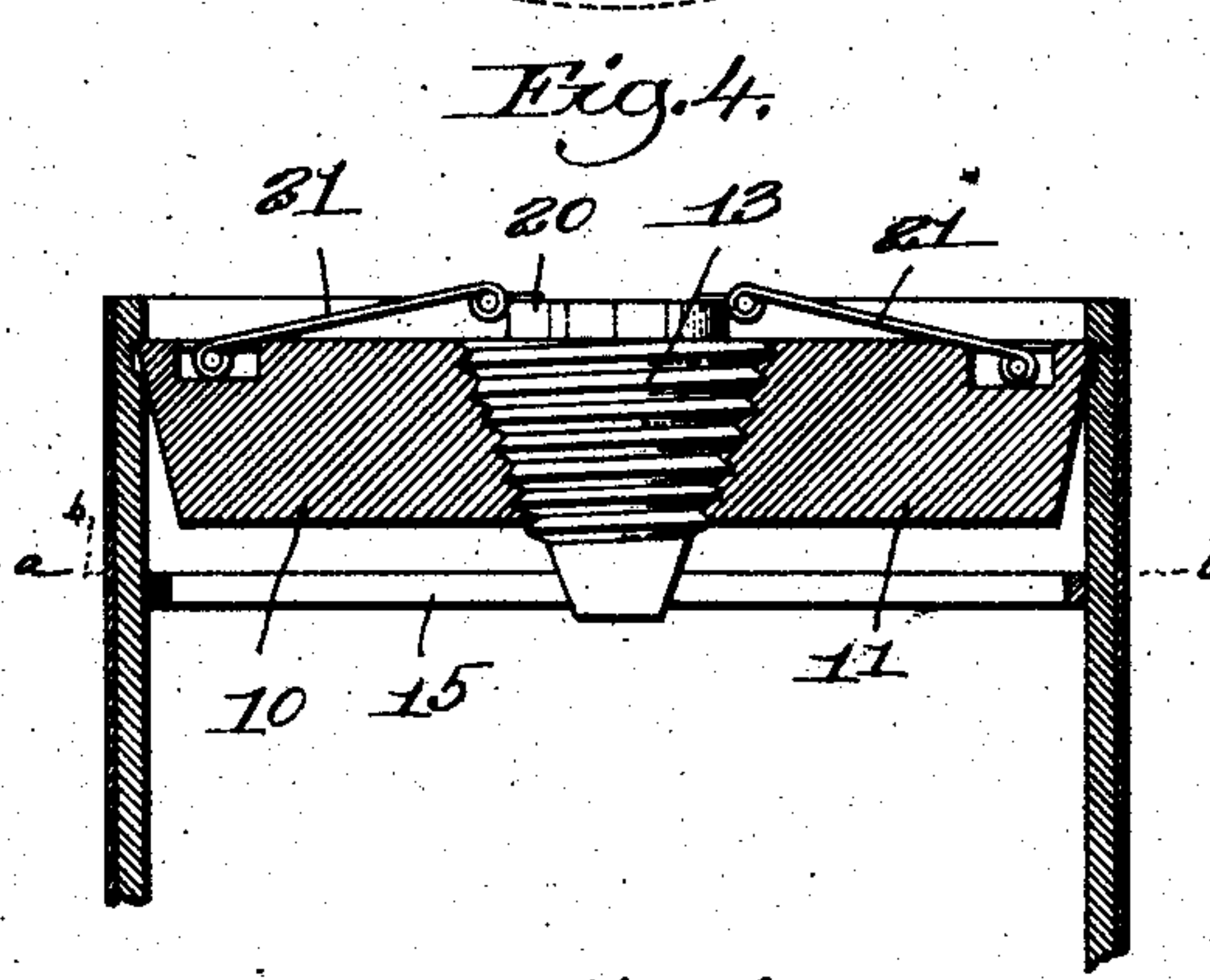


Fig. 5.

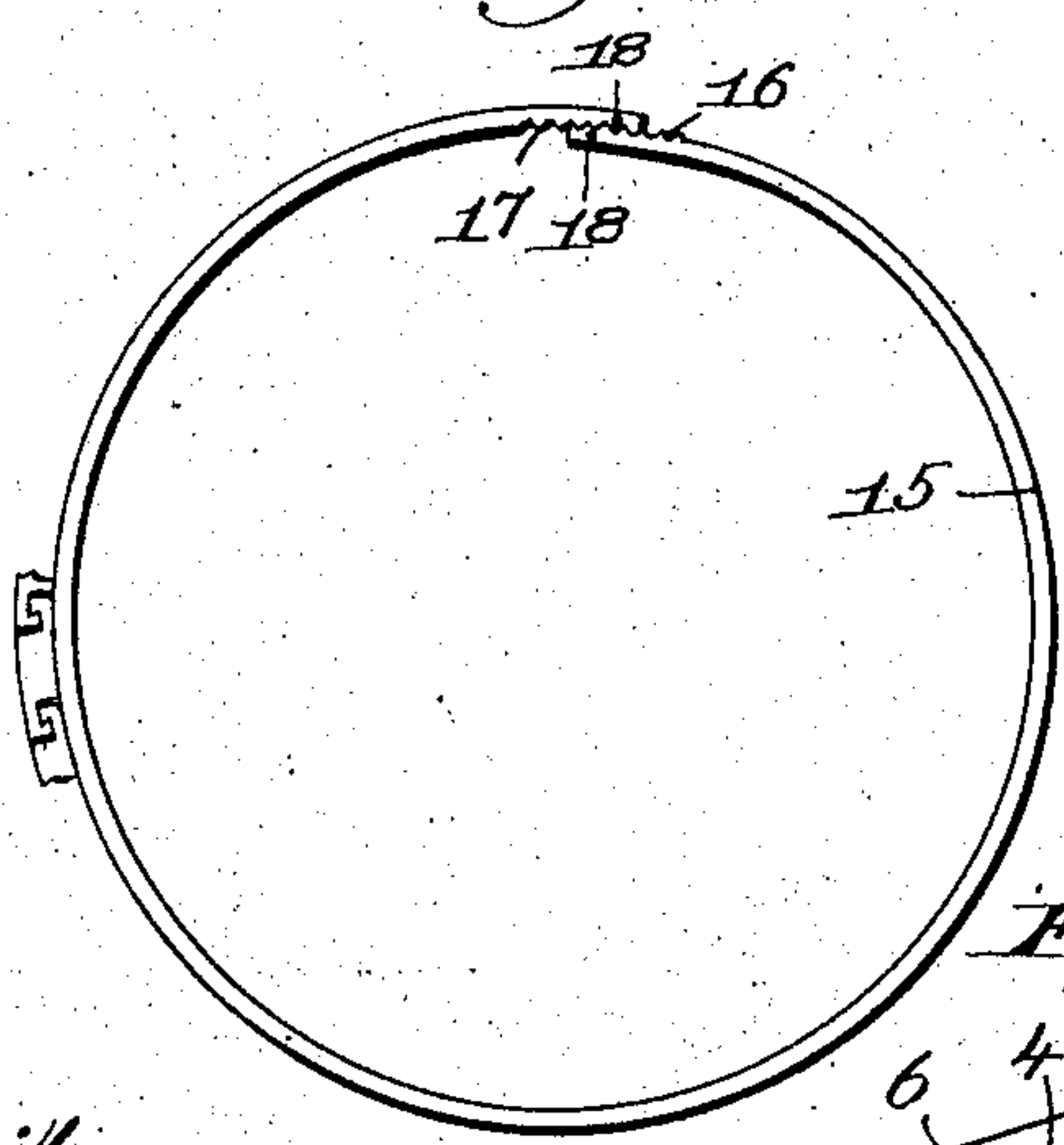


Fig. 6.

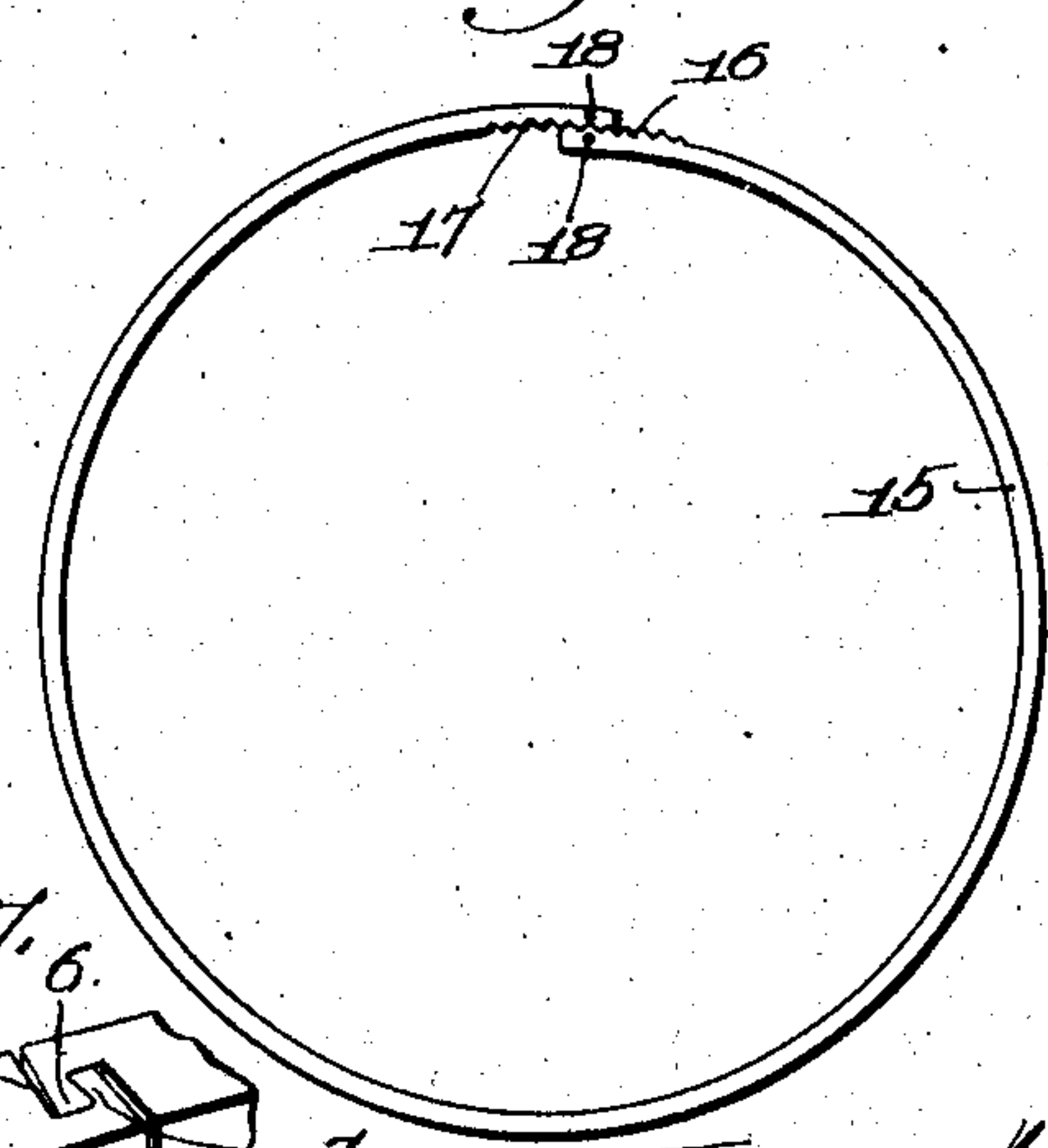
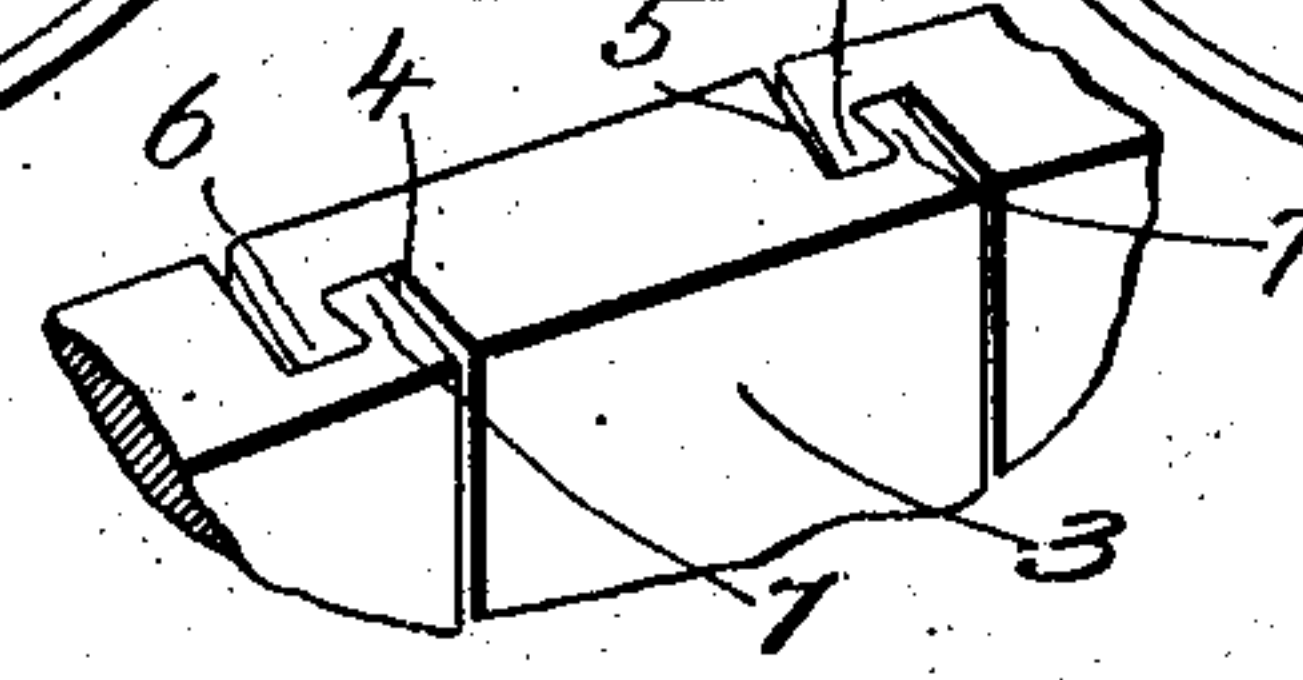


Fig. 7.



Witnesses:
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UNITED STATES PATENT OFFICE.

WALTER E. COPITHORN, OF NATICK, MASSACHUSETTS.

KNOCKDOWN BARREL.

SPECIFICATION forming part of Letters Patent No. 786,875, dated April 11, 1905.

Application filed February 19, 1904. Serial No. 194,414.

To all whom it may concern:

Be it known that I, WALTER E. COPITHORN, a citizen of the United States, residing at Natick, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Knockdown Barrels, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object to provide a novel form of knockdown barrel which can be easily erected or taken down and which will be as strong as a permanent barrel.

In carrying out my invention I provide the contacting edges of adjacent staves with interlocking means, so arranged that the staves cannot pull away from each other, and also employ a novel form of expansible head. The head is made of two or more laterally-movable members, with which cooperate a tapered screw-plug, said plug operating to force the laterally-movable members outward, and thus expand the head into the barrel.

In the drawings, Figure 1 is a top plan view of my improved barrel with the head collapsed. Fig. 2 is a similar view with the head expanded. Fig. 3 is a section on the line *xx*, Fig. 1. Fig. 4 is a section on the line *yy*, Fig. 2. Fig. 5 is a section on the line *aa*, Fig. 3. Fig. 6 is a section on the line *bb*, Fig. 4; and Fig. 7 is a detail showing an enlarged view of one of the staves.

In the preferred form of my invention the staves 3 are constructed as shown in Fig. 7—that is, with a groove 4 on the inside at one edge and a groove 5 on the outside at the opposite edge, said grooves forming ribs 6 and 7, which enter the grooves of the adjacent staves. This construction forms an interlocking connection between adjacent staves, which prevents said staves from pulling away from each other, as will be obvious. In this form of my invention the head of the barrel comprises the two main members 8 and 9, between which are the wedge-shaped radially-movable key-pieces 10 and 11, said key-pieces preferably each having its wider end toward the center and having a tongue-and-groove engagement with the members 8 and 9. The

inner ends of said key-pieces and also the central portion of the members 8 and 9 are provided with the tapered screw-threads 12, with which a tapered screw-plug 13, having a head 13^x, cooperates. After the staves have been erected and the collapsed head put in place, as shown in Fig. 1, the plug 13 is inserted in the central aperture in the head and screwed home, this operation resulting in forcing the tapered key-pieces 10 and 11 outward in a radial direction, thus seating the chamfered edge of the head in the usual grooves in the staves, as shown in Fig. 4, and making the head perfectly tight. This expanding operation of the head also tends to expand or crowd the staves apart, such action, however, being resisted by the interlocking connection between the staves. Moreover, by virtue of the peculiar manner in which the staves are united the expanding of the head tightens the interlocking connection between the staves and closes the openings therebetween, thus making the barrel water-tight. The number of the wedge-shaped key-pieces 10 11 is not essential to my invention, and while I have illustrated two in this form of my invention I do not wish to be limited to this number, as three, four, or any number could be employed without departing from the invention.

My improved expansible head differs from others with which I am familiar in that the operation of screwing the plug home causes the wedge-shaped pieces to move outward radially, and thus expands the head into place. It is not necessary, therefore, to first force the wedge-shaped pieces outwardly before the plug can be inserted. It will be noted that the plug has a long taper and a comparatively small end, this being especially provided to permit it to be partially inserted into the aperture while the wedge-pieces are contracted.

A barrel such as I have above described can be easily erected and as easily knocked down for shipment and can be made non-leakable. It is not necessary to use any hoops either outside or inside to hold the barrel in shape, for the peculiar interlocking connection between the staves prevents them from spreading, and the expansible head prevents them from collapsing. I prefer, however, to em-

ploy one or more expansible inside hoops, such as shown at 15, to assist in holding the barrel expanded and in shape. The form of the hoop herein illustrated is provided at its ends with interlocking corrugations 16 17, which engage each other and which prevent the hoop from collapsing. In setting up the barrel the staves are first placed in position and then a hoop 15 is inserted, as shown in Figs. 3 and 5. Thereafter the hoop is expanded, as shown in Figs. 4 and 6, to tighten the staves, this being accomplished in any suitable way, as by means of a forked tool or barrel-wrench, the legs of which can be inserted in the apertures 18 in the ends of the hoop. After this implement has been inserted, as described, the hoop can be expanded by merely turning the same, as will be obvious. The expanding of the hoop in the barrel tightens the whole structure, as will be readily seen, and thereafter one or both of the collapsible heads may be inserted as needed.

I may merely use one hoop 15 centrally of the barrel, or I may use one of said hoops near each end. When the latter construction is employed, the hoops at either end will hold the barrel in shape and prevent its collapsing when either head is removed.

I have provided suitable means cooperating with the plug 13, whereby the key-pieces 10 and 11 and preferably the main members 8 and 9 may be positively retracted by the plug as the latter is withdrawn. In the form in which I have herein chosen to illustrate my invention I provide a plate or a disk 20, which rests loosely on the top of the plug, leaving the head 13^x exposed, so that a wrench may be applied thereto to turn the plug. The disk 20 has hinged to it links 21, that are hinged to the key-pieces 10 and 11, and other links 22 are hinged to the main members 8 and 9. The links 22 are shown as made in two parts, loosely connected by a pin and slot *t* and *t'*. With this construction when the plug is unscrewed, as shown in Fig. 3, it elevates the plate 20 and through the links 21 retracts the key-pieces 10 and 11, and thereafter, through the links 22, the main members 8 and 9 are retracted. The radial movement which the key-pieces 10 and 11 have is very much greater than that which the members 8 and 9 have, and therefore I provide each of the members 22 with the pin-and-slot connection above referred to. This device not only serves to positively retract the members 10 and 11, but also serves to hold the entire barrel-head together and prevents the parts from becoming disconnected and scattered when the head is removed from the barrel.

In the form of my invention herein illustrated the grooves 4 and 5 are undercut or dovetailed in shape, and the ribs 6 and 7 have a corresponding shape. This form of tongue and groove has the advantage that the lateral pressure on the staves, due to the expansive

force of the hoop or of the head, serves to draw the staves tighter together.

While I prefer the form of interlocking connection between the staves which has been described above, yet my invention is not necessarily limited thereto, as other ways of interlocking the staves together may be employed. Furthermore, it is within my invention to employ, if necessary, any ordinary adjustable outside hoop provided with the usual union-screw.

Although in describing my invention I have referred to a barrel, yet I wish it understood that my invention can be embodied in pails, tanks, and receptacles of various kinds.

Various changes in the details of the various parts may be made without in any way departing from my invention.

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

1. In a knockdown barrel, a plurality of staves arranged edge to edge, each stave having an interlocking connection with the adjacent stave, and an expansible head comprising main members, and interposed radially-movable key members provided with tapered screw-threads at their inner ends, and a tapered screw-threaded plug to engage the key members and force the latter outwardly as said plug is screwed home.

2. In a knockdown barrel, a plurality of staves arranged edge to edge, each stave having an interlocking connection with the adjacent stave, an expansible head comprising main members, interposed radially-movable key members provided with tapered screw-threads at their inner ends, a tapered screw-threaded plug to engage the key members and force the latter outwardly as said plug is screwed home, and means whereby the key members are retracted by the plug as the latter is withdrawn.

3. In a knockdown barrel, a plurality of staves having an interlocking connection with each other and an expansible head comprising main members, radially-movable key-pieces, and a tapered screw-plug to force the members outwardly as the plug is screwed home.

4. In a knockdown barrel, a plurality of staves having an interlocking connection with each other adapted to withstand lateral and radial pressure, and an expansible hoop on the inside of the barrel and acting to press outwardly upon the staves.

5. In a knockdown receptacle, a plurality of staves arranged edge to edge each stave having a longitudinal groove on its inner side at one edge, and a tongue on its outer side at the other, said tongues adapted to enter said grooves, and an expansible head.

6. An expansible head for barrels and similar receptacles, comprising main members and interposed radially-movable key members provided with tapered screw-threads at their

inner ends, and a tapered screw-threaded plug to engage said key members and force the latter outwardly, as said plug is screwed home.

5 7. An expansible head for barrels and similar receptacles comprising main members, and interposed radially-movable wedge-shaped key members having their wider ends toward the center of the barrel, and a tapered screw-threaded plug to engage said thicker edges
10 and force the key members outwardly, as said plug is screwed home.

15 8. An expansible head for barrels and similar receptacles comprising main members and interposed radially-movable key members provided with tapered screw-threads at their
20 inner ends, a tapered screw-threaded plug to engage said key members and force the latter outwardly, as said plug is screwed home, and means operated by the plug when it is withdrawn to retract positively said key members.

9. An expansible head for barrels and similar receptacles, comprising main members and interposed radially-movable key members

provided with tapered screw-threads at their inner ends, a tapered screw-threaded plug to
25 engage said key members and force the latter outwardly, and connections between said plug and key members whereby the latter are retracted as the plug is withdrawn.

10. An expansible head for barrels and similar receptacles comprising main members and
30 interposed radially-movable key members provided with tapered screw-threads at their inner ends, a tapered screw-threaded plug to engage said key members and force the latter
35 outwardly, as said plug is screwed home, a plate resting on the top of the plug, and links pivoted to said plate and key members.

In testimony whereof I have signed my name to this specification in the presence of two sub-
40 scribing witnesses.

WALTER E. COPITHORN.

Witnesses:

JOHN A. McCAIG,
DAVID B. STEWART.