

G. E. ABBOTT.
TUMBLING BARREL.
APPLICATION FILED NOV. 22, 1909.

970,977.

Patented Sept. 20, 1910.

2 SHEETS—SHEET 1.

Fig. 2.

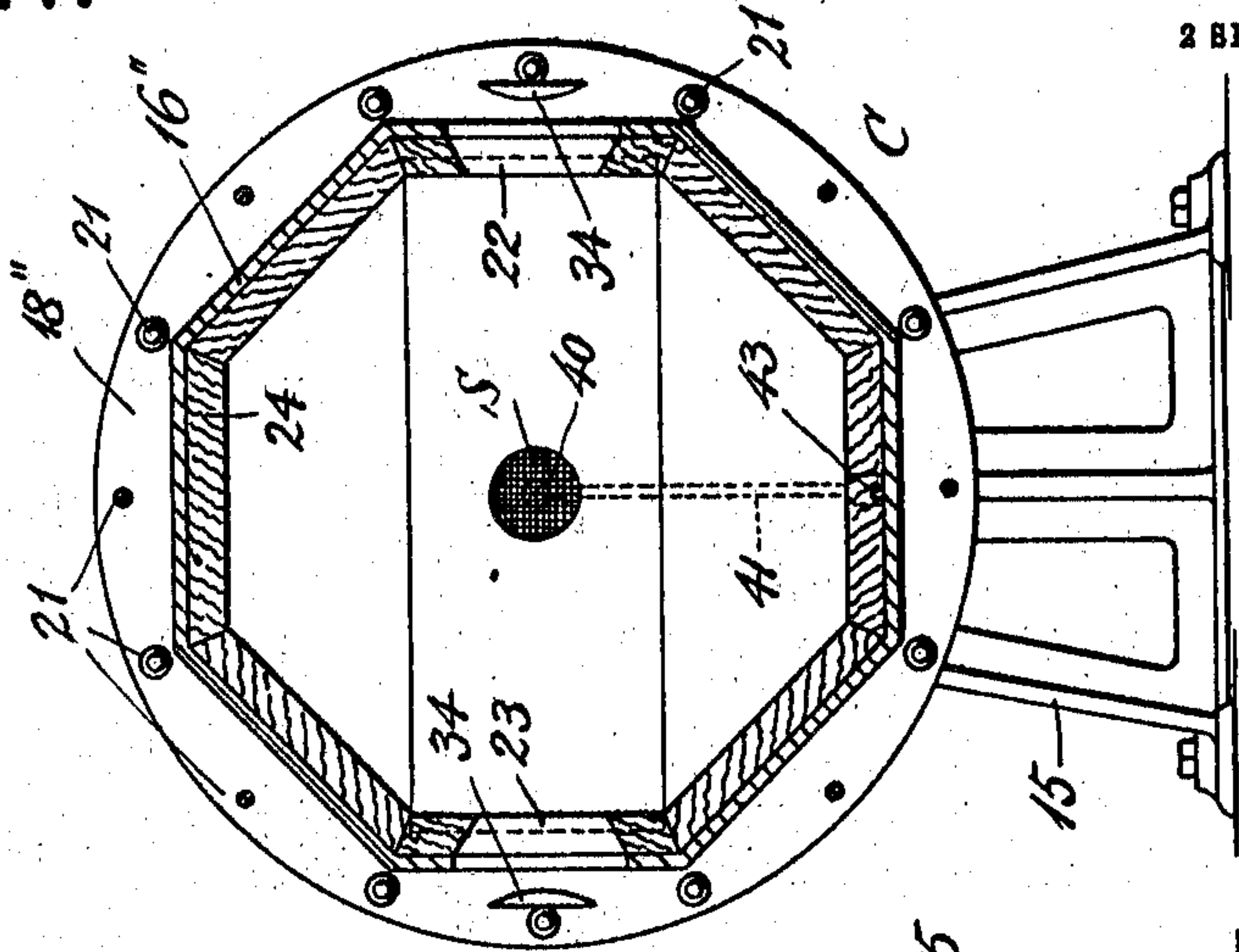
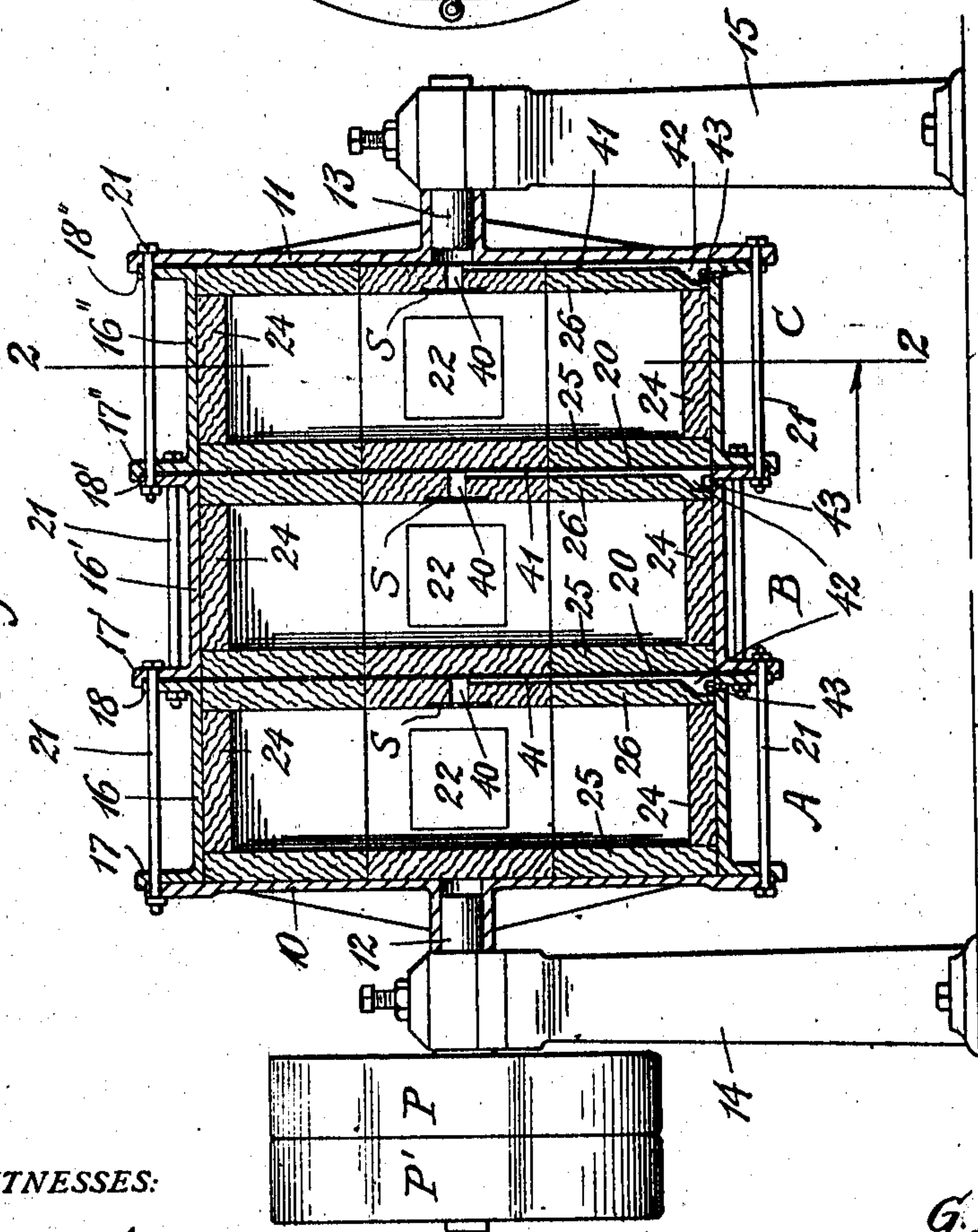


Fig. 1.



WITNESSES:

Louis Lucia.
Margaret E. O'Neill

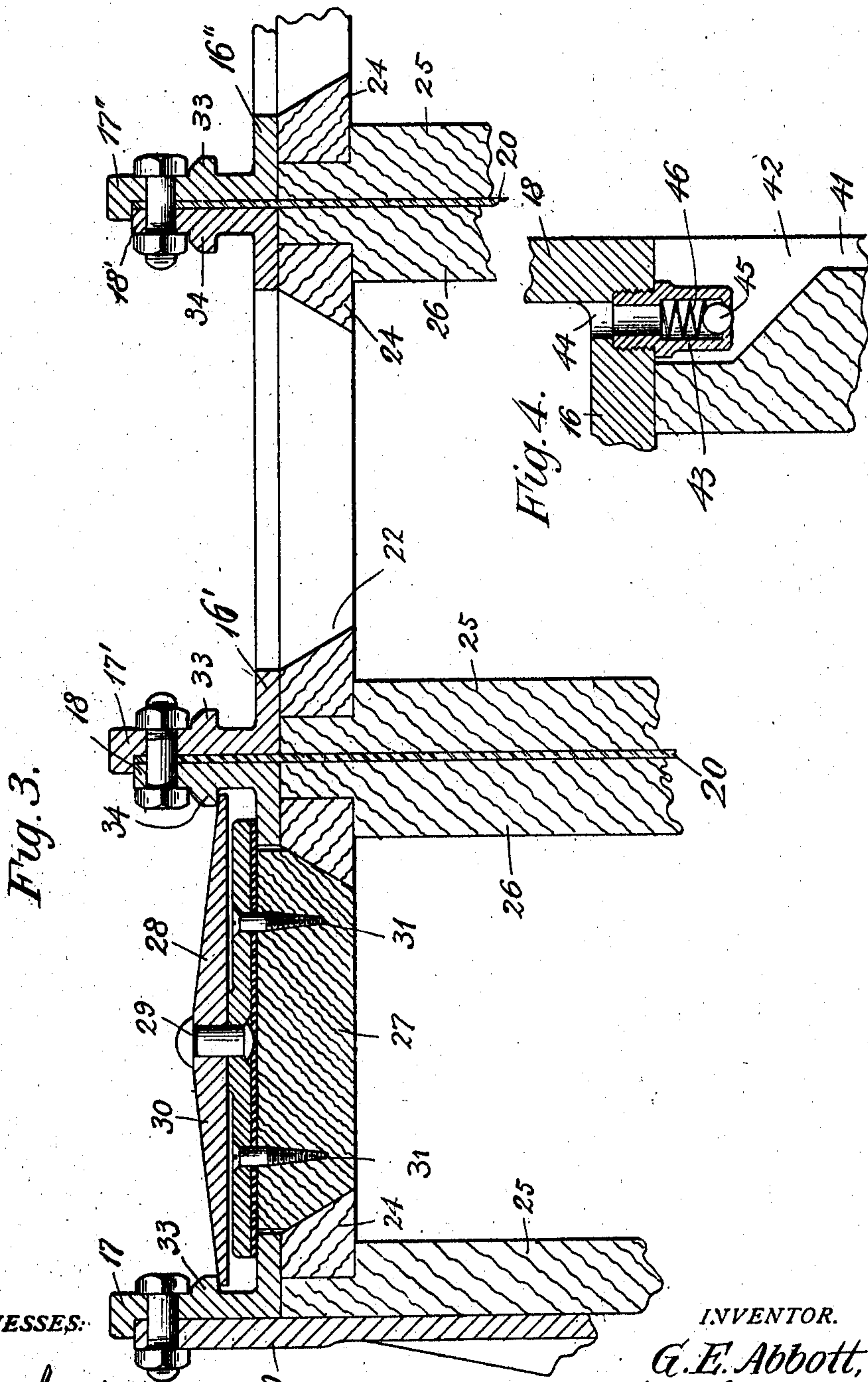
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UNITED STATES PATENT OFFICE.

GEORGE E. ABBOTT, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE GLOBE MACHINE & STAMPING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

TUMBLING-BARREL.

970,977.

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To all whom it may concern:

Be it known that I, GEORGE E. ABBOTT, a citizen of the United States, and resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Tumbling-Barrels, of which the following is a full, clear, and exact specification.

This invention relates to tumbling barrels, and more particularly to that class thereof in which a solution may be used in conjunction with the articles to be treated, so that the latter may be burnished, or have a high polish imparted thereto which result is attained by the employment of polished steel balls of different sizes so as to adapt the work to be touched and burnished in even the smallest crevices or depressions.

The invention has for one of its objects the provision of an apparatus of this nature which might be termed elastic, or in other words, which may consist of one or a plurality of interchangeable sections which may be removed at will, or to which more sections can be added as required.

A further object of the invention resides in the provision of means whereby each one of the sections may be independently vented and in such a manner that no intermingling between the solutions contained in a pair of adjacent sections can occur, the venting feature being essential inasmuch as by it all excess of pressure which may be established by the vaporization due to the churning of the solutions during the rotation of the barrel may be carried off, and all danger of bursting due to such pressure be entirely avoided.

Further objects of the invention will hereinafter appear, and the means of their attainment be pointed out in the claims.

The invention has been clearly illustrated in the accompanying drawings in which similar characters denote similar parts, and in which—

Figure 1 represents a longitudinal section of a barrel consisting of three individual compartments or units assembled to form what may be termed a unitary structure. Fig. 2 is a cross section on line 2, 2 of Fig. 1. Fig. 3 illustrates the method of attaching

a pair of adjacent units, and Fig. 4 is a detail illustrating the relief-valve whereby each unit may be vented.

The tumbling barrel shown in the accompanying drawings consists of three independent sections or units A, B and C which are of comparatively narrow width compared with the diameter thereof. Incidentally, it may be mentioned here that practice has demonstrated that the octagon form shown in Fig. 2 is by virtue of the angularity of its adjacent sides well adapted for the use for which the barrel is to be employed especially when considered in connection with the solution which is contained within each unit and which would cause the barrel simply to slip around the work, without really producing the tumbling or abrading effect which it is to accomplish between the burnishing balls and the work.

Referring to Fig. 1 it will be seen that the barrel comprises a pair of heads 10 and 11, respectively, between which the different units are disposed and which have trunnions 12 and 13, respectively, journaled in bearings 14, 15 of such height as to leave sufficient room beneath the barrel to permit a box or truck to be run under the barrel for the purpose of emptying the contents thereof. Interposed between the heads 10 and 11 are a series of spacer-rings 16 preferably made of cast iron and all similar in shape and each having a flange 17 which is recessed to receive the adjacent member and hold the same in concentric relation therewith. It will be noted that the flange 17 of the spacer-ring 16 of the unit A is fitted over the head 10, while the flange 18 of said ring 16 is adapted to enter the circular recess provided in the flange 17' in the spacer-ring 16' of the unit B. In a similar manner the flange 18' of the spacer-ring 16' enters into the circular recess in the flange 17'' in the spacer-ring 16'' which has a flange 18'' adapted to enter the recess in the head 11. In other words, it will be noted that the spacer-rings 16, 16', 16'' are all alike and that any one of them can be removed or interchanged with any other of the series, and furthermore, that the head 11 can be brought into coöperation with the spacer-ring 16 in—

asmuch as the flange 18 will also be adapted to enter the recess in the head 11.

By virtue of the great circumferential and face contact between the several units or spacer-rings and the end-heads 10 and 11, the barrel as a whole is entirely self-supporting, without any central supporting means except the trunnions 12 and 13, above mentioned.

Practice has demonstrated that different articles require different solutions and also different sized balls to perform the work, and for this reason the several units A, B, C are entirely separated from each other, as for instance by partition-plates 20 preferably made of boiler iron, and of a diameter so that they will enter the recesses in the several spacer-rings, above referred to, and in such a manner that the adjacent flanges of the spacer-rings will clamp the partition-plates between them. While many different methods may be employed for drawing the several units together, I preferably use bolts 21, extending across one unit, so as to serve also as a handle whereby the barrel or unit may be turned by hand when desired, as for instance when the unit is to be loaded or discharged. For the latter purpose the barrel is provided with oppositely disposed openings 22, 23 in the spacer-rings which are preferably of polygon shape, and which are lined with circumferential strips 24 of hard maple, so as to protect the articles to be operated upon from contact with the metal. Likewise the side walls of the units are protected by wood linings 25 and 26. The openings 22, 23, above referred to, extend naturally also through the linings 24 and are normally closed by covers 27 also made of wood and fitted into said openings, so as to constitute a continuous lining for the units, respectively. Each of the covers 27 is forced into and held in place by a swivel-lever 28 fulcrumed on a stud 29 which is secured to a metal cover-plate 30, the latter being secured to the cover-block 27, as for instance by screws 31 and packed on to its respective spacer-ring by packing 32.

The ends of the swivel or clamp-lever 28 are adapted to engage cam lugs 33, 34 disposed on the flanges 17 and 18, respectively (see also Fig. 2). It will, therefore, be noted that when the two covers of a unit are clamped in place, the chamber of this unit is hermetically closed. Now, inasmuch as the constant friction and churning of the solution which takes place when the barrel is in operation has a tendency of vaporizing the solution or converting the same into steam which if not released would establish pressure within the unit chamber, means are provided whereby such pressure will be released or carried off. In order to

accomplish this result, I deem it essential that each unit be vented independently and without interfering with the adjacent unit, and also the position of the vent opening shall be as near a neutral point as possible, so that any leakage of solution, or the passage of articles to be treated or the burnishing balls, shall be avoided. Hence, I provide near the center of rotation of each unit an aperture 40 extending through the side lining, this aperture 40 being connected by means of a radially extending conduit or duct 41 with a pocket 42 which is adapted to receive a relief-valve 43, serving at the same time as a locking means for preventing shifting movement between the lining 26 and the spacer-ring to which it pertains. In order to guard against any of the articles or burnishing balls from entering the aperture 40 whereby the conduit 41 might be clogged and the proper venting of the unit be interfered with, I preferably employ a screen S consisting either of wire gauze or a foraminated plate which is secured to the lining 26, as shown in Figs. 1 and 2.

The relief-valve 43 is screw threaded into the spacer-ring which is provided with a vent opening 44 through which the gases or excess pressure may pass to the atmosphere as controlled by a ball-valve 45 which is normally seated by a spring 46 contained in the valve-casing. This spring may be made any required stiffness, and so that it will permit the ball-valve 45 to open as soon as certain pressure exists within the unit-casing. It should be noted at this time that I do not confine myself to this particular construction since many ways and methods may be employed to accomplish this result, and as a matter of fact, the relief-valve itself may be entirely dispensed with, but its use is advantageous since it prevents dirt or other extraneous matter from entering the vent groove from the outside.

From the above description it will be seen that the conduit 41 may be readily made by a saw-cut into the lining back because such conduit will be bounded on one side thereof by the adjacent partition-plate 20, above mentioned.

Referring again to the covers 27 and also to Fig. 3, it will be noted that the several sections or units are connected by means of short bolts which extend only through the adjacent flanges of said sections, a construction which exists only at the particular places where the covers are located so as not to interfere with their ready removal or insertion. The particular reason why a pair of such openings are provided substantially at diametrically opposite points in each unit is to facilitate the discharging of the contents of the unit, the lower cover being open

to release the contents, while the upper cover may be removed so as to afford access to the interior for cleaning out purposes.

Any suitable driving mechanism may be employed for rotating the barrel on its trunnions, such mechanism being shown herein as tight and loose pulleys P and P', respectively, which are secured to the trunnion 12 of the end-head 10.

10 In brief, a barrel made in accordance with the present invention possesses many features not found heretofore especially as far as its practical utility and its faculty of being extended or contracted according to the
15 demands, is concerned. Other units may readily be added by unskilled help inasmuch as the several units are interchangeable and are all made to standard size. Likewise, solutions of different kinds and
20 also articles of different characters may be placed into the units, respectively, and tumbled for the required length of time when each of the units may be discharged and replenished individually and without any reference to the adjacent unit.

25 Many changes may be made in the organization as well as in the particular construction of the component elements of the tumbling barrel, without departing from the spirit of the invention.

I claim:—

1. A tumbling barrel comprising a rotatable casing having in its interior lining, at its sides and its interior periphery, one
35 of said sides having an aperture, a conduit connecting with said aperture and the atmosphere and disposed in said lining.

2. A tumbling barrel consisting of a plurality of suitable units, each comprising a
40 spacer-ring having two cooperating flanges; means for disassembling said units into a single and distinct compartment; and means comprising said cooperating flanges for uniting any number of said units into one
45 common structure.

3. A tumbling barrel consisting of a plurality of separable units each comprising a

chamber, means for separating said units from each other, and means for venting each individual unit independently of the other. 50

4. A tumbling barrel consisting of a plurality of separable units, each comprising a chamber, partition-plates for separating said units from each other, and means for venting each individual unit independently
55 of the other.

5. A tumbling barrel consisting of a plurality of separable units, each comprising a chamber, means for separating said units from each other, and means for venting each
60 individual unit independently of the other, said venting means comprising a conduit leading from the central portion of said units to the peripheral surface thereof, and independent relief-valves connected with
65 said conduits.

6. A tumbling barrel comprising a pair of heads, a plurality of separable spacer-rings disposed between said heads, means for positioning the end-rings relatively to
70 the heads, respectively, means for independently positioning the intervening spacer-rings relatively to the end-rings, separable partitions between the several spacer-rings for forming independent compart-
75 ments, and means for independently connecting each pair of adjacent spacer-rings together.

7. A tumbling barrel comprising a pair of heads, a plurality of spacer-rings disposed between said heads, means for positioning the end-rings relatively to the heads,
80 respectively, means for positioning the intervening spacer-rings relatively to the end-rings, partitions between the several spacer-rings for forming independent compart-
85 ments, and means for connecting each pair of adjacent spacer-rings together, and means for venting each compartment individually.

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Witnesses:

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