

July 6, 1948.

J. R. LATHAN ET AL

2,444,780

EXPANDING CAKE HOLDER

Filed April 28, 1947

2 Sheets-Sheet 1

Fig. 1.

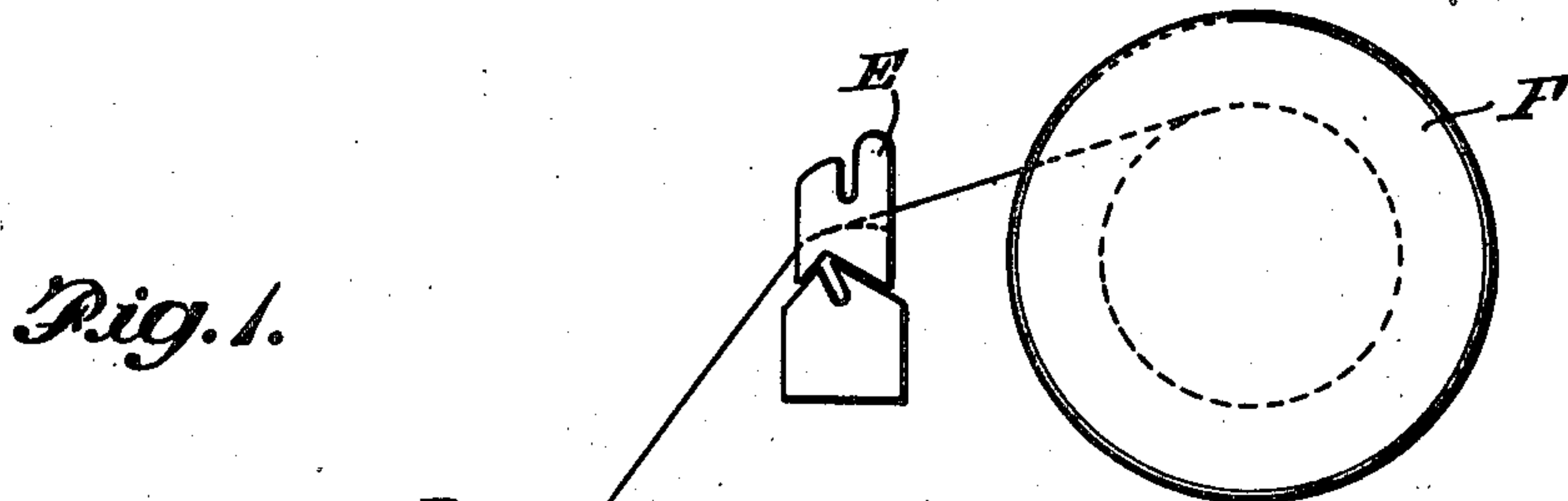


Fig. 2.

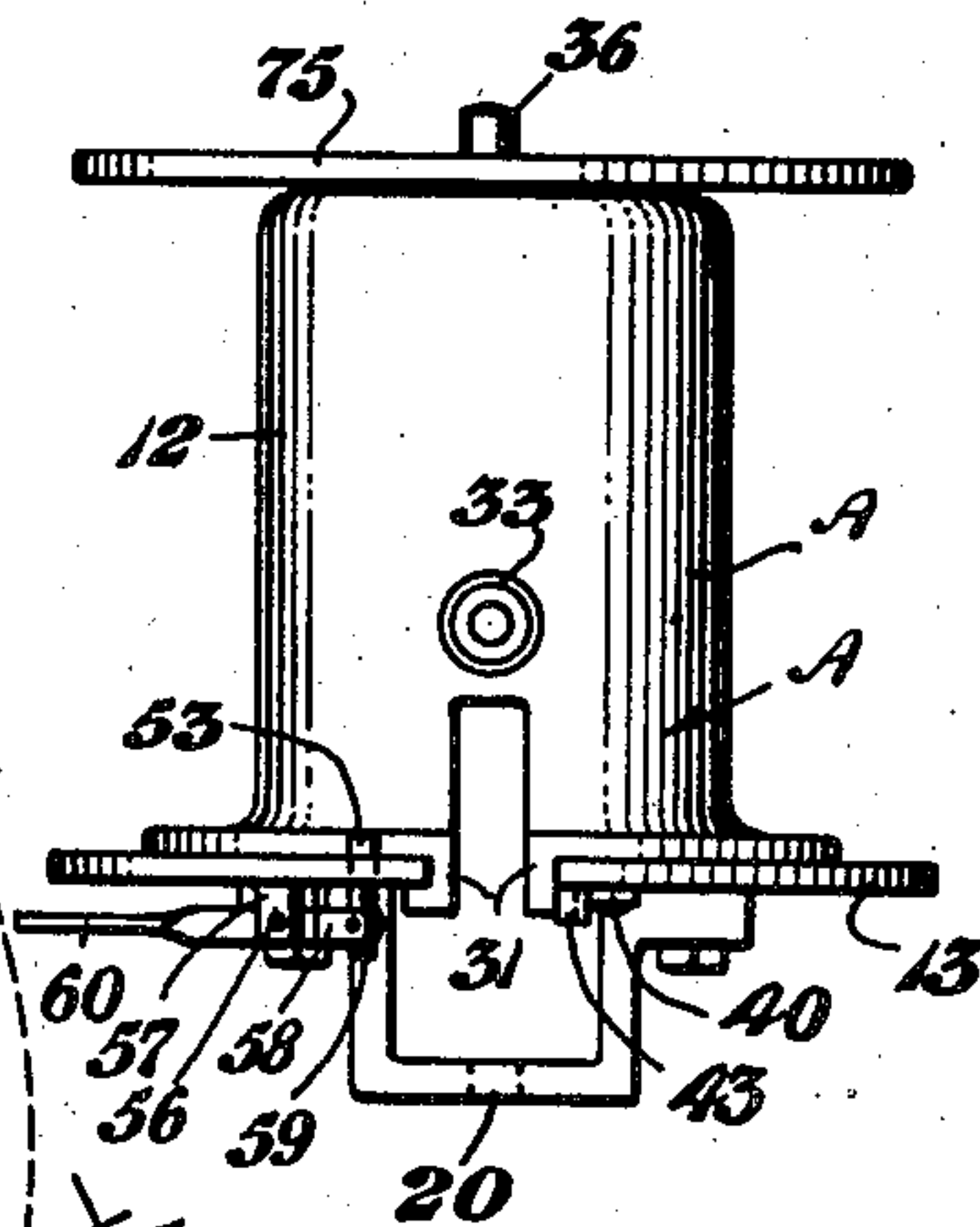


Fig. 8.

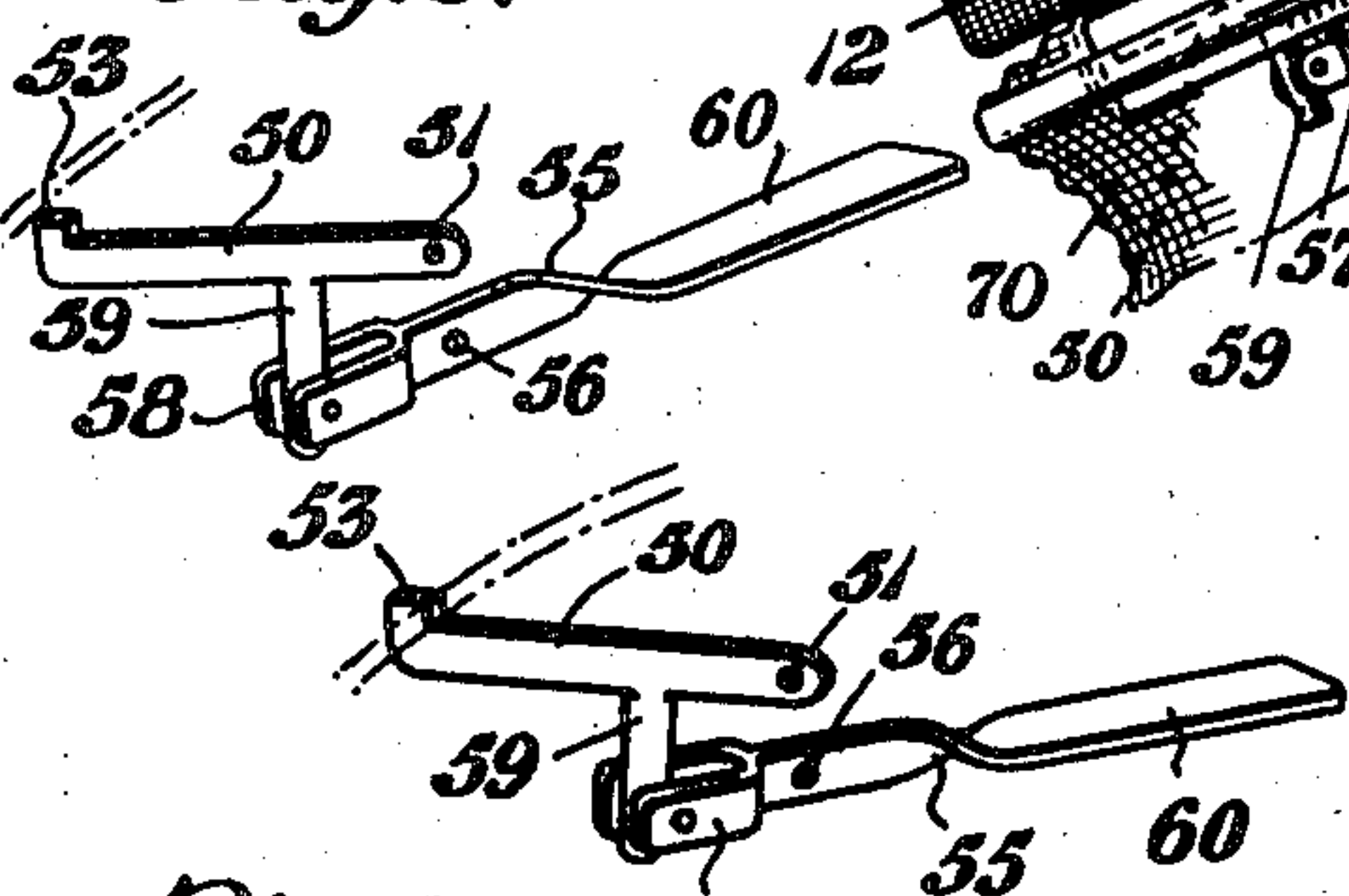
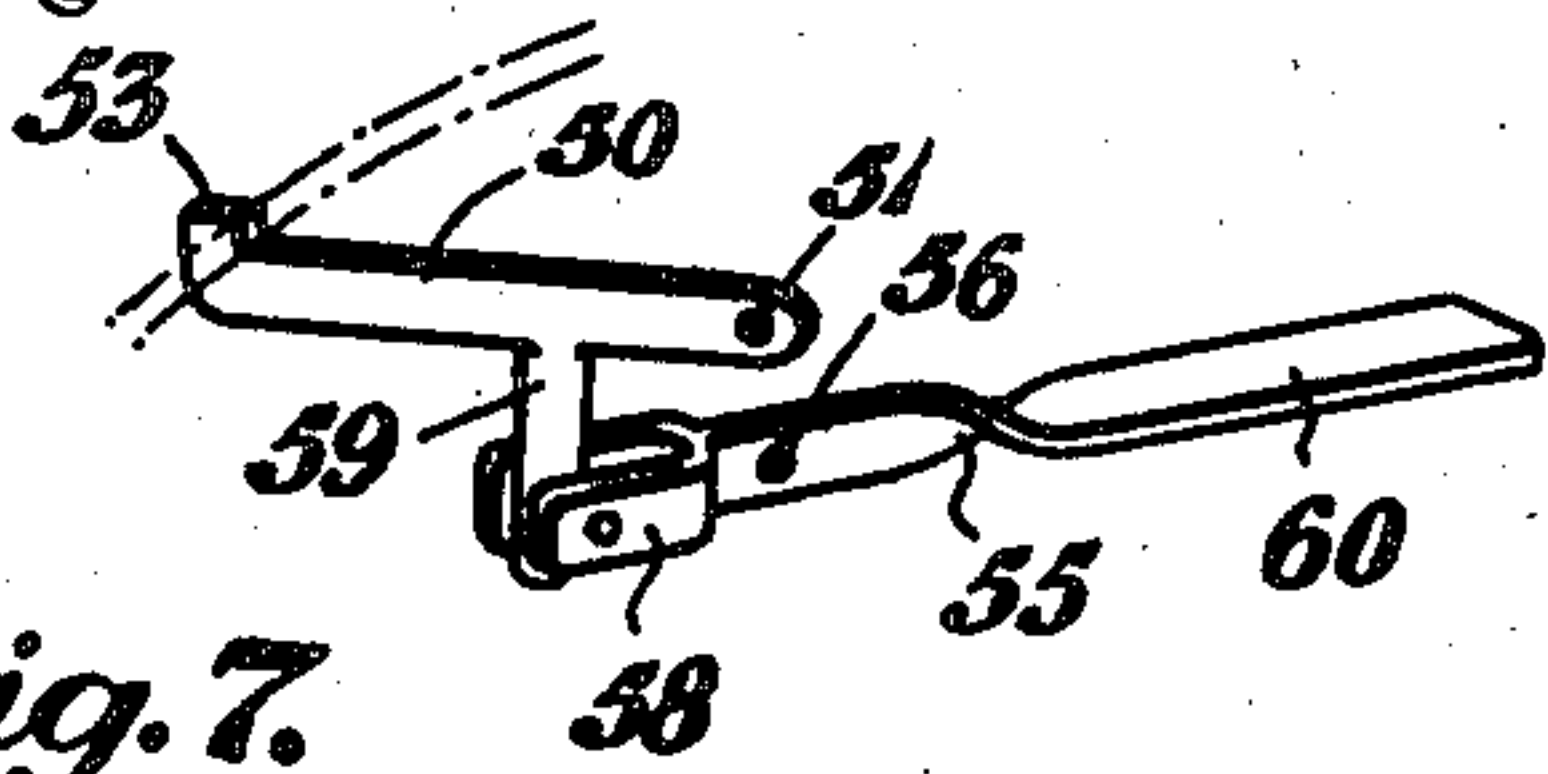


Fig. 7.



Inventors

James R. Lathan
Marvin H. Comer

By

Marvin H. Comer

Attorney

July 6, 1948.

J. R. LATHAN ET AL
EXPANDING CAKE HOLDER

2,444,780

Filed April 28, 1947

2 Sheets-Sheet 2

Fig. 3.

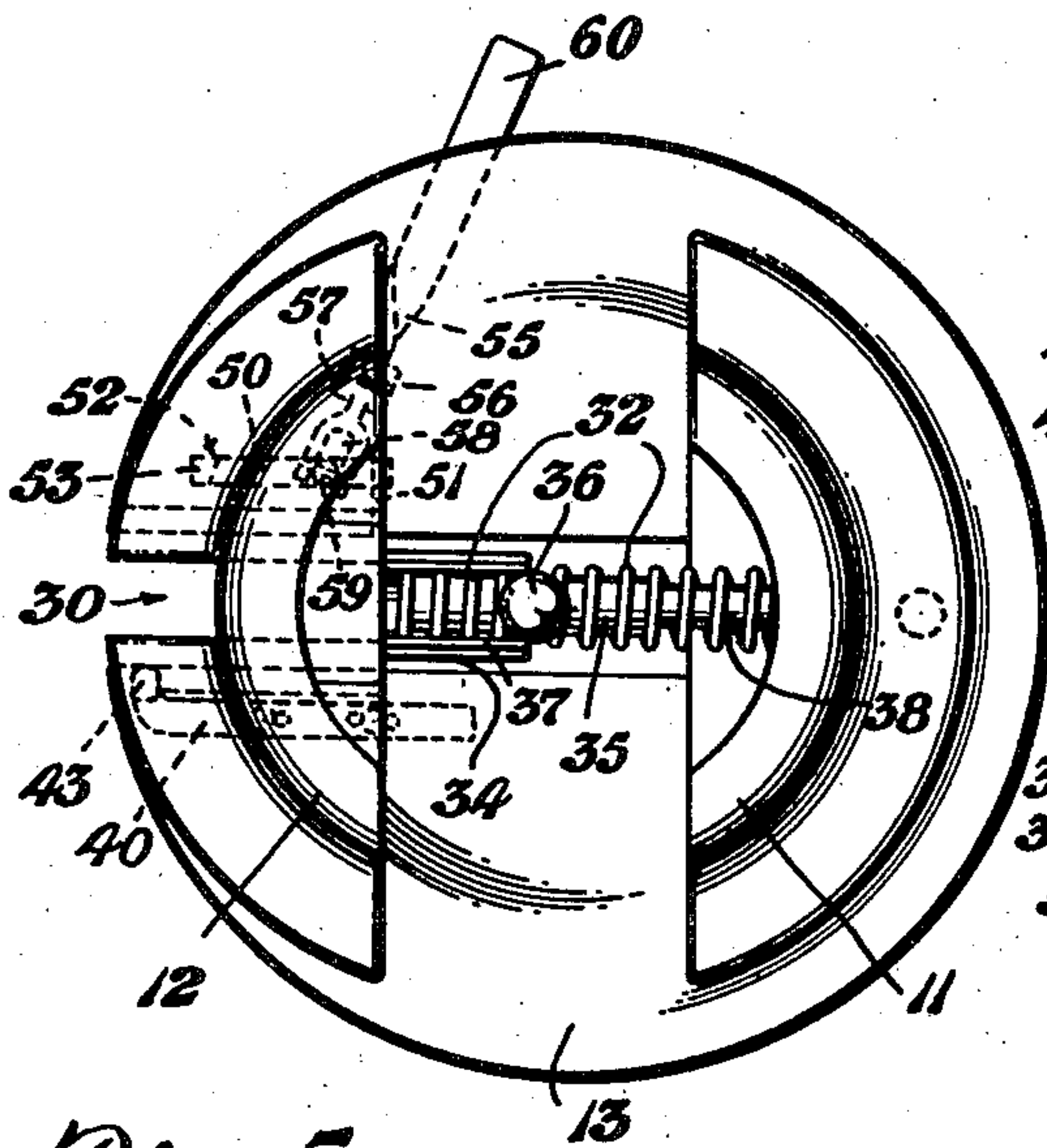
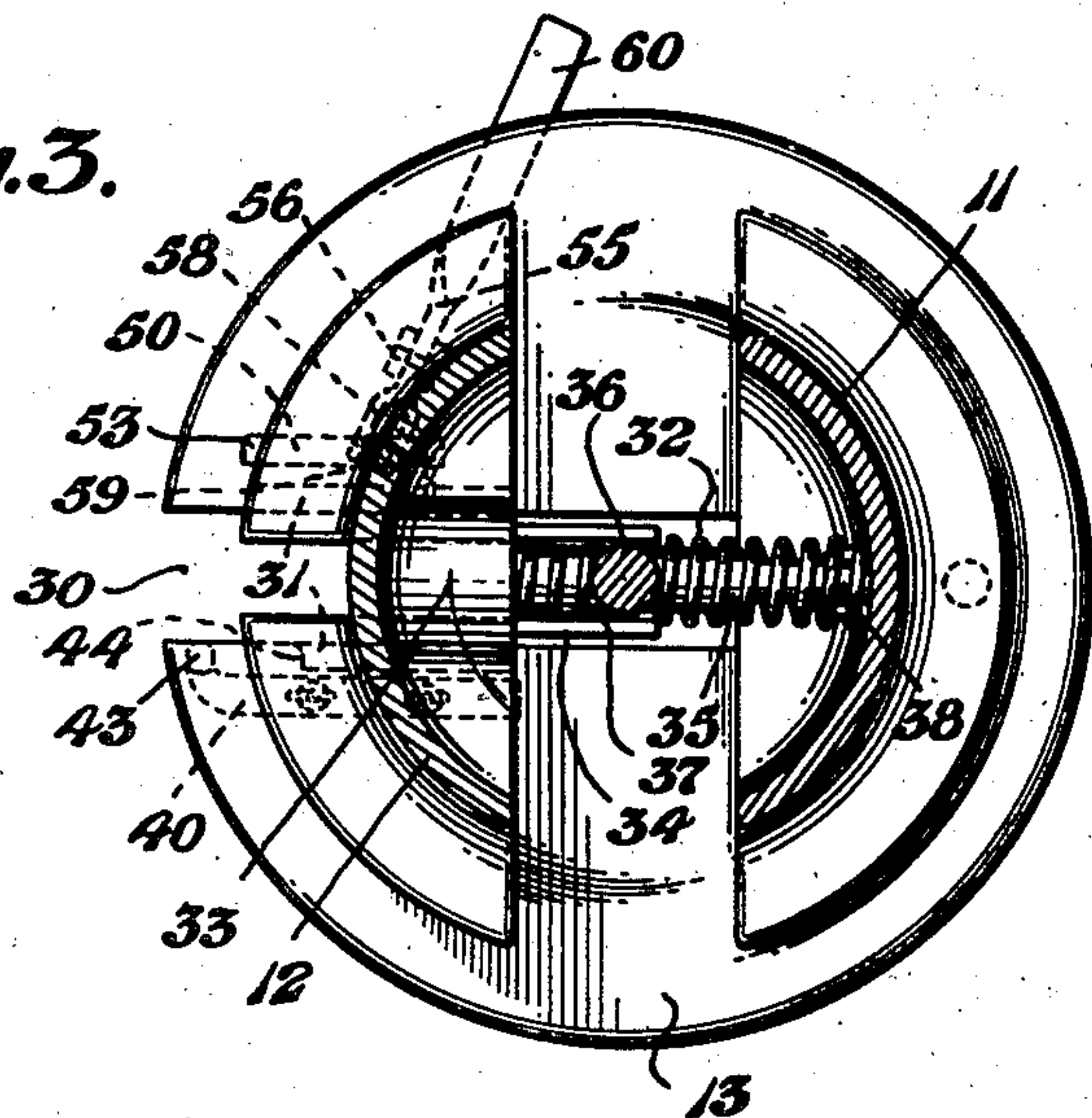


Fig. 5.

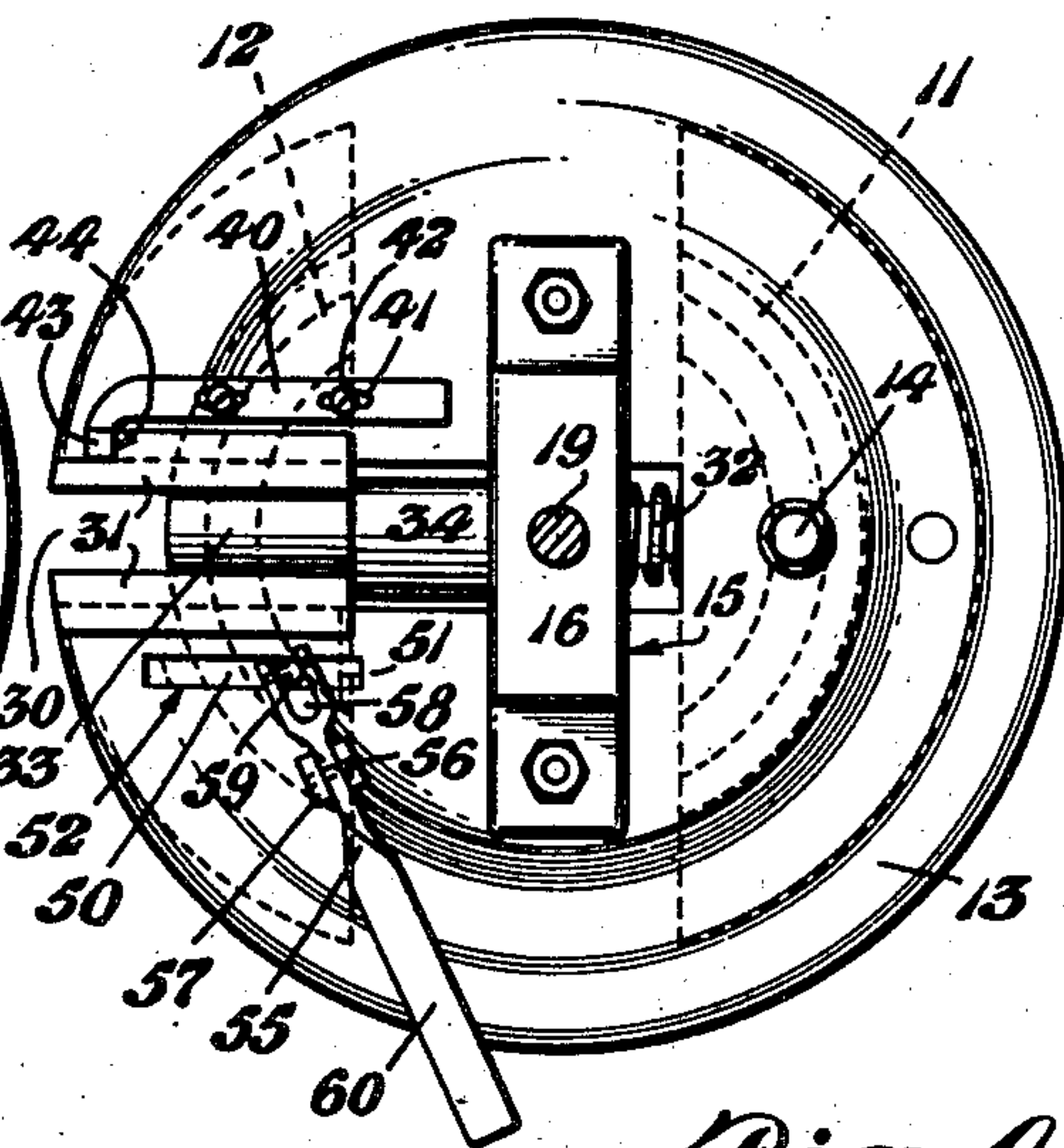


Fig. 4.

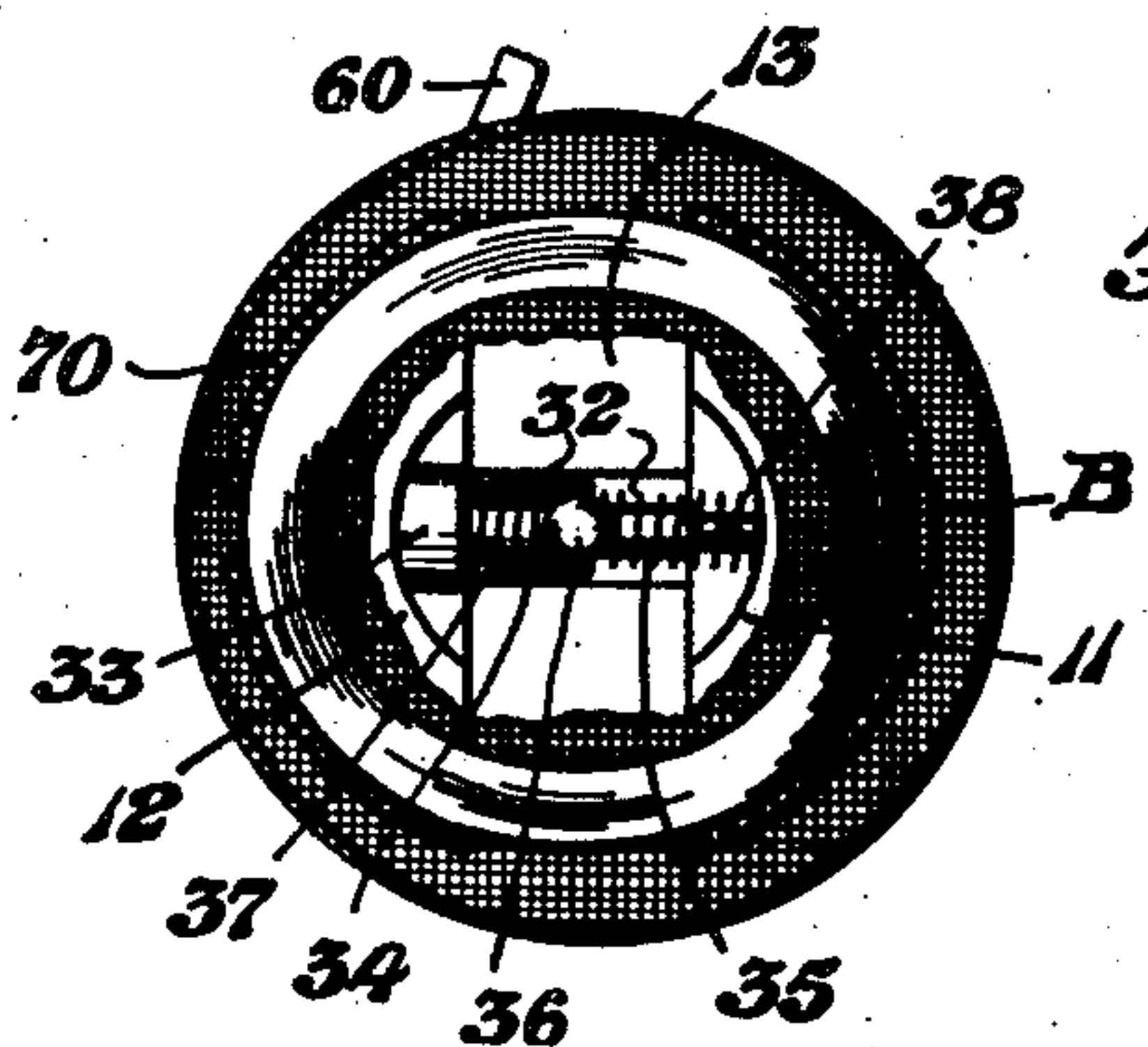


Fig. 6.

Inventors
James R. Lathan
Marvin H. Comer
By *Marvin H. Lare.*

Attorney

UNITED STATES PATENT OFFICE

2,444,780

EXPANDING CAKE HOLDER

James R. Lathan and Marvin H. Comer, Burlington, N. C., assignors to Burlington Mills Corporation, Greensboro, N. C.

Application April 28, 1947, Serial No. 744,480

4 Claims. (Cl. 242—129)

1

The invention relates to an improved device for holding filament yarn in unsupported cake form while it is being unwound to another type of package for further processing. More particularly the invention relates to improvements in yarn cake holders of the expanding type.

The cake holder of the present invention preferably consists of two relatively movable members, one being stationary and the other movable with reference to a base plate upon which the members are mounted. The two holder members together support thereon the yarn cake and are provided with a horizontal internal coil spring tending to force the members apart, the coil spring being mounted around a movable upright centering pin to maintain the pin in a central position as the members are moved toward or away from each other. The movable holder members, which are preferably arcuate or semi-cylindrical in cross section, together with the base plate upon which they are carried, constitute a removable unit which is preferably rotatably mounted so as to permit turning with a circular or oscillatory motion in either a clockwise or counter-clockwise direction. The base plate upon which the arcuate holder arms are mounted is preferably circular.

Expanding cake holders are known in the art, particularly in connection with the processing of artificial filaments such as rayon and the like, and it is the object of the present invention to improve such expanding cake holders in various respects. In certain prior art devices of this character the parts of the cake holder are automatically expanded by means of spring pressure, but are contracted by means of a foot lever or the like actuated by the operator. This necessitates the mounting of the cake holder adjacent the floor, which is frequently inconvenient for various reasons. In our improved device the foot lever may be omitted entirely and the cake holder may accordingly be mounted, if desired, at a substantial distance from the floor.

Another characteristic feature of our device resides in the use of a sliding centering pin which, through the action of the expansion spring, remains at the center of the holder throughout the entire expanding and contracting operation.

Still another feature of the present invention resides in improved means for housing the expanding spring within the holder itself.

Another feature of the invention resides in an improved method of mounting the holder to permit rotation or oscillation thereof during the unwinding operation.

A further feature of the invention resides in

2

the use of a gravity actuated catch drop pin mounted on a base plate for holding in a compressed position the movable portion of the expansible holder while the stockinette from the old cake is being removed and a new cake inserted on the assembly, this catch involving a quick and easy release by a slight upward pull on the catch lever.

A further feature of the invention resides in the mounting of the entire assembly upon a bracket which may be easily moved to any desired position, the complete unit being free from any external controls.

A further feature of the invention resides in the improved structural details of the coil spring mounting.

The expanding cake holder is of such construction that it may be readily collapsed against the pressure of the spring by a slight inward thrust against the expanding member by means of the operator's hand, and after the inward thrust a catch drop pin mounted on the bottom of the base plate is automatically forced upwardly to hold the assembly in a collapsed position for removing the old cake stockinette wrapper during the placement of a new cake on the assembly.

The invention will be readily understood by reference to the accompanying drawings and the following detailed description, in which are set forth by way of illustration a specific embodiment of the inventive thought.

In the drawings:

Fig. 1 is a sectional view of the expanding cake holder together with associated mechanism, parts being shown in elevation;

Fig. 2 is a side elevation of the holder taken substantially at right angles to the position shown in Fig. 1, Fig. 2 being on a somewhat smaller scale than Fig. 1;

Fig. 3 is a section on line 3—3 of Fig. 1, parts being shown in elevation;

Fig. 4 is a bottom plan view of the holder;

Fig. 5 is a top plan view of the holder shown in an expanded position as compared with that illustrated in Fig. 1;

Fig. 6 is a top plan view with parts broken away to show the stockinette applied to the cake; and

Figs. 7 and 8 are detail views illustrating the operation of the catch drop pin constituting the latching and releasing mechanism.

Referring to the drawings, and particularly to Fig. 1 thereof, A denotes a two-part expansible cake holder having mounted thereon a cake B of filament yarn which is to be unwound to an-

3

other package for further processing. The thread C passes from the cake B to suitable tensioning devices D and E about a package or roll F. The expandable cake holder A is angularly and rotatably mounted with reference to a fixed member G which is secured to the frame of the machine and may be conveniently mounted about five feet from the level of the floor.

The holder A comprises two parts 11 and 12, member 11 being stationary and member 12 being movable with reference thereto and also with reference to a circular base plate 13 to which the member 11 may be secured, as by means of a bolt 14. Members 11 and 12 are of arcuate and preferably semi-circular cross section, and are normally urged apart by suitable spring means to be described hereinafter.

As shown, the base plate 13 is provided with a U-shaped bracket 15 secured to and depending therefrom and having a foot 16 adapted to rest upon one arm 17 of an angle member whose other arm 18 is suitably secured to the frame member G. As indicated in Fig. 1, the cake holder is supported with its axis at substantially forty-five degrees to the horizontal, as represented by the top of the frame member G. As shown, the carrier is mounted for rotary or oscillatory movement about its central inclined axis through the medium of a bolt 19 which extends through an opening 20 in the foot of the bracket 15, the bolt 19 being in line with the central axis of the expanding cake holder A. The bolt 19 may be provided with a spring 21 which engages a nut 22 adjustably mounted on the threaded end of the bolt. It will be apparent that the entire cake holder assembly may be readily removed from the angle member 17 by simply removing the nut 22 and bolt 19, whereupon the assembly may be transferred to any other desired location, or a new cake assembly substituted therefor.

The movable holder member 12 is mounted to slide on the base plate 13, which plate is provided with a radial slot 30 with which coact guide flanges 31 carried by the base of the sliding holder member 12 and embracing the under side of the base plate 13 adjacent the edges of the slot 30, as clearly illustrated in Figs. 2 and 4.

The parts 11 and 12 are urged apart by a spring 32 which, as shown, is completely housed within the cake holder A with opposite ends of the spring engaging the curved inner surfaces of members 11 and 12.

As shown, the movable member 12 is provided with a fixed inwardly projecting tubular member 33 within which is mounted a sleeve 34 which projects beyond the member 33 into the interior of the cake holder, the sleeve 34 being slotted at its upper portion to provide a keyway for a centering pin to be hereinafter described.

Slidable within the sleeve 34 is a tubular member 35 which provides a sliding base for a centering pin 36 affixed thereto, which pin is guided in a slot 37 in the sleeve 34. One end of the member 35 slidably fits over a fixed rod or pin 38 secured to the fixed member 11 of the expandable holder and projecting inwardly therefrom, and the other end of the tubular member 35 slides within the sleeve 34. The slidable tubular base member 35 is preferably keyed to the horizontal rod 38 so as to maintain the centering pin upright at all times. The cake holder expanding spring 32 fits over the pin 38 in the slidable tube 34 and a portion thereof is housed

4

within the sleeve 34, opposite ends of the spring 32 abutting the members 11 and 12 of the expandable cake holder as previously described, while an intermediate portion of the spring contacts the centering pin 36 projecting upwardly from the slidable tube 35.

In order to limit the outward movement of the member 12 of the expandable holder under the influence of the spring 32 we provide an adjustable limiting stop mechanism comprising an elongated member 40, herein shown as mounted on the bottom of the base plate parallel to the slot 30 therein. Longitudinal adjustment of the stop member 40 may be secured by the provision of slots 41 in the member 40 cooperating with adjustment screws 42 which extend into the base plate 13. The longitudinal member 40 is provided with a finger 43 turned inwardly toward the slot 30 and coacting with a shoulder 44 formed by cutting away a part of one of the slide flanges 31 of the movable member 12 of the cake holder.

In order to hold the movable member 12 in its inner or collapsed position illustrated in Fig. 3 a releasable catch drop pin mechanism is provided, the details of which are shown detached in Figs. 7 and 8 and applied to the base of the holder in Figs. 1, 2, 3, 4 and 5.

The catch drop pin mechanism includes a catch lever 50 pivoted near one end thereof at 51 in a slot 52 in the base plate 13 shown extending parallel to the slot 30 therein. The lever 50 is provided with an upstanding finger or pin 53 adapted in one position of the lever 50 to project above the level of the plate 13 into the path of the base of the movable member 12, preventing expansion under pressure of the spring 32. When the finger 53 is retracted into the slot 52 the member 12 may then move freely outwardly under the pressure of the spring 32 until stopped by the detent 43 on the stop member 40.

The catch lever or member 50 is adapted to be actuated by means of a weighted member 55 shown as pivoted at 56 in a bracket 57 secured to the under side of the base plate 13. Beyond the fulcrum 56 the actuating member is bifurcated at 58 and pivotally engages a pin 59 projecting downwardly from the pivoted catch member 50. The handle portion 60 of the actuating member 55 is of sufficient weight so that it tends to raise the latching member 50 about its pivot 51. To release the catch the handle 60 may be pressed upward slightly, tilting the member 55 about its pivot 56, thus drawing the pin 59 downwardly and retracting the catch 53 to allow free sliding movement of the movable member 12 of the expandable holder.

Operation

To apply a yarn cake the holder is first moved to its collapsed position. This may be accomplished by the operator applying a gentle pressure with his hand to the movable member 12 of the holder sufficient to overcome pressure of the light spring 32, thus moving the member 12 from its outer or expanded position shown in Fig. 5 to the inner or compressed position shown in Fig. 3. As soon as the base of the member 12 clears the catch drop pin 53 the weight of the handle 60 is sufficient to raise the projection above the level of the base plate 13, thereby holding the parts in contracted or compressed position until positively released. The cake B may then be applied to the holder and its stockinette wrapper 70 is then adjusted thereon in the

5

usual manner, after which a centering cap 75 is placed on the pin 36 which is maintained at the center of the holder at all times, as previously described. The thread C is then connected through the tensioning devices D and E to the rotatable member F.

The projecting catch drop pin member 53 is then released by raising the handle 60 and the machine is ready for operation. As the thread is unwound from the exterior of the cake B the cake holder A expands under pressure of the spring 32 and the pin 36 carrying the centering cap 75 is maintained at the center of the holder at all times. During the operation of the device the holder is free to turn about its central axis owing to the centered arrangement of the attaching bolt 19. Outward movement of the expansible member 12 of the holder is limited by contact of the lower flange or slide member 31 thereof with the inwardly projecting finger 43 of the adjustable stop member 40.

The holder may then be again collapsed by applying a slight inward pressure of the hand to the movable member 12 of the holder until the catch 53 is cleared, whereupon the catch is automatically raised and the holder is maintained in its collapsed position, after which the stockinette may be removed from the old cake and a new cake may be applied and adjusted, whereupon the cycle is repeated.

The invention has been described in detail for the purpose of illustration, but it will be obvious that numerous modifications and variations may be resorted to without departing from the spirit of the invention.

We claim:

1. An expansible yarn cake holder having a base plate, a pair of relatively movable members mounted on the base plate and adapted to jointly support a yarn cake, one being fixed and the other slidable, resilient means urging the slidable member outwardly, means carried by said base plate and coacting with a portion of said slidable member for limiting the outward movement of said slidable member, and means comprising a pivoted catch member mounted in said base plate adapted to retain the movable member in retracted position until positively released.

2. A multipart expansible yarn cake holder having a base plate, a pair of relatively movable

6

holder members mounted on said base plate and adapted to jointly support a yarn cake thereon, one being fixed to the base plate and the other slidable thereon, resilient means constantly urging the slidable member outwardly, and means comprising a gravity acting pivoted catch member mounted on said base plate adapted to retain the movable member in retracted position against the pressure of said spring until positively released.

3. An expansible yarn cake holder comprising a pair of relatively movable holder members adapted to jointly support a yarn cake, a transverse expansible spring reacting between the inner faces of said holder members and normally urging them apart, guide members for said spring carried by said respective holder members, one of said guide members comprising a pin and the other a socket, a slidable tubular member connecting said guide members, and an upright centering pin for the cake carried by said slidable tubular member and actuated by said spring, and a centering cap carried by said upright pin.

4. An expansible yarn cake holder unit comprising a base plate, a stationary and a movable holder member mounted in said base plate and cooperating to hold a yarn cake, each member being arcuate in cross section, means tending to move said holder members apart comprising a horizontal coil spring whose ends contact the interior surfaces of said holder members, and means comprising a catch drop pin mounted in the base plate for retaining the holder in collapsed position, and means for releasing the catch drop pin.

JAMES R. LATHAN.
MARVIN H. COMER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,245,937	Parker	June 17, 1941

FOREIGN PATENTS

Number	Country	Date
81,278	Sweden	Aug. 21, 1934