

No. 864,671.

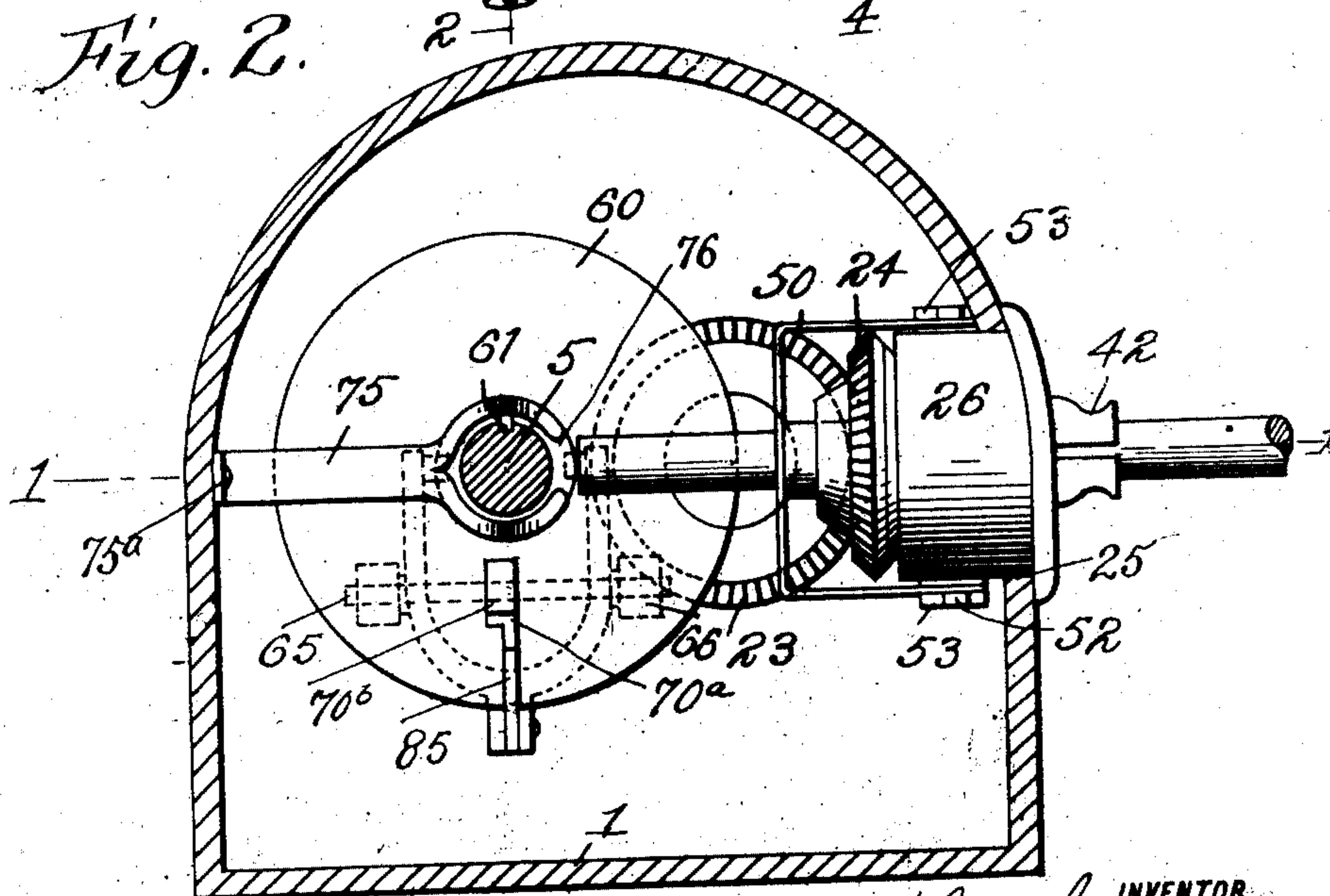
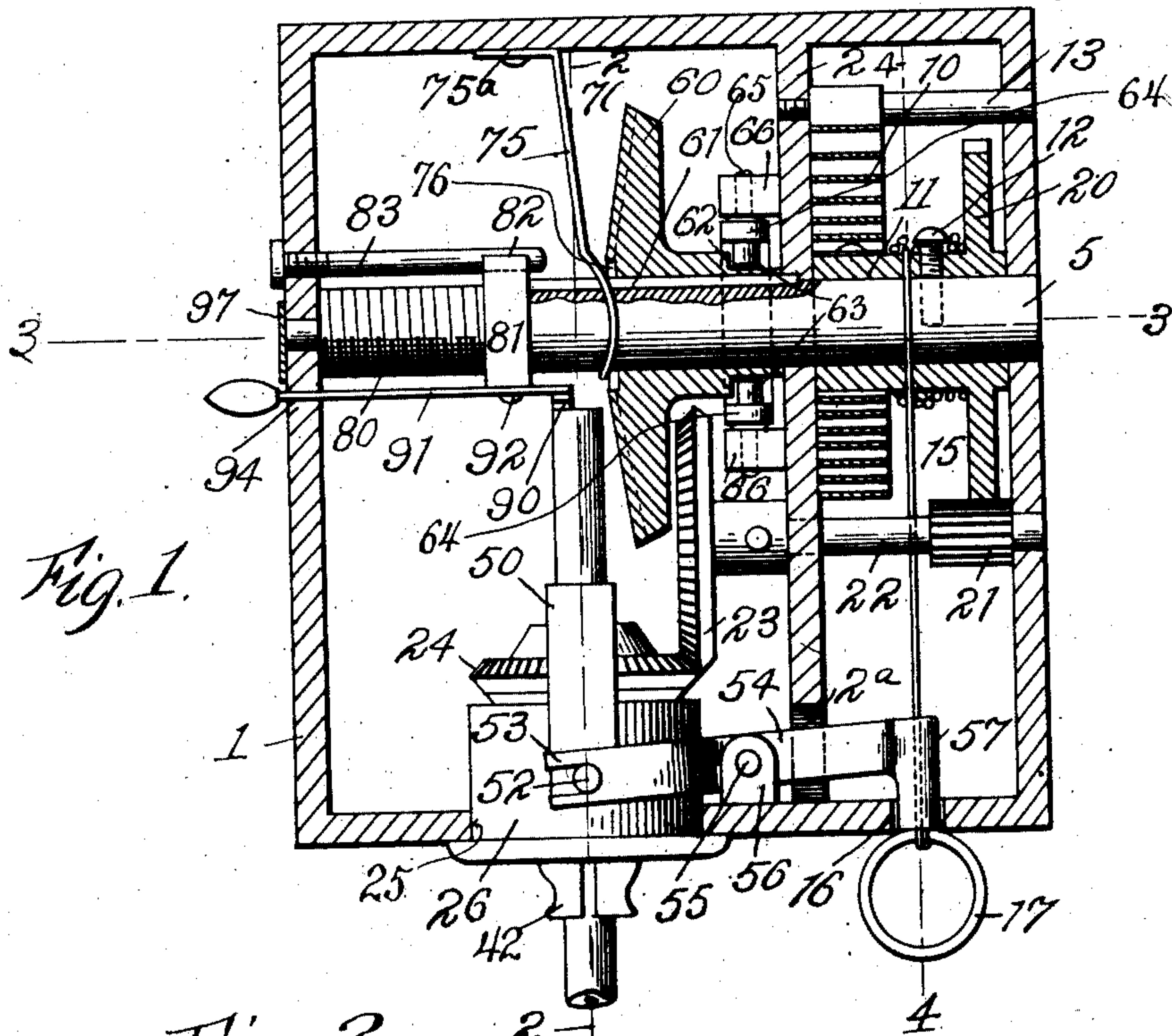
PATENTED AUG. 27, 1907.

L. MYERS.

**AUTOMATIC PENCIL SHARPENER.**

APPLICATION FILED NOV. 19, 1908.

4 SHEETS—SHEET 1.



**WITNESSES**

Ina F. Becker  
R.F. Lomack.

***INVENTOR***

**BY**

BY *Louis Meyer* *Am. in 1880*

**ATTORNEYS**

No. 864,671.

PATENTED AUG. 27, 1907.

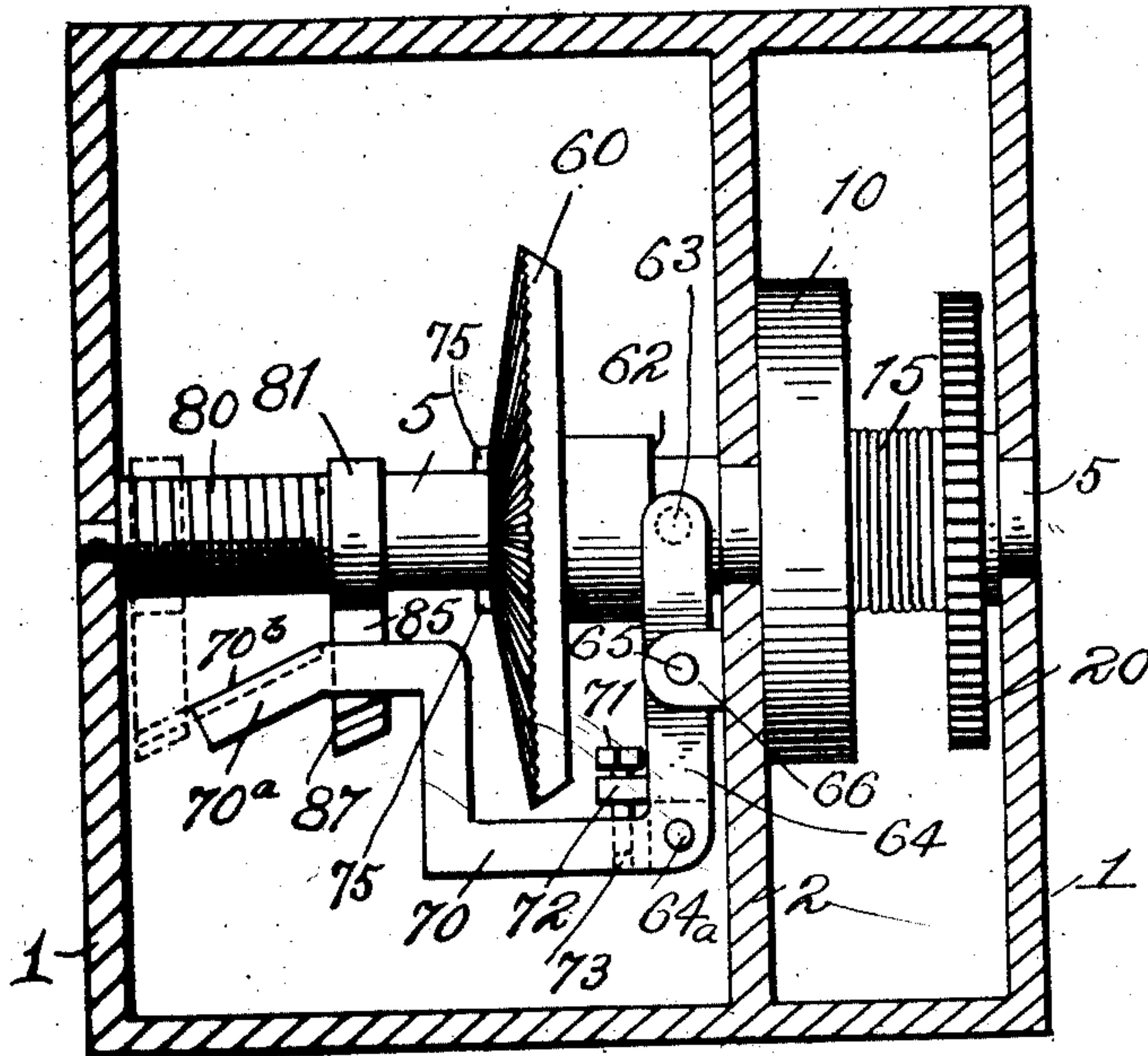
L. MYERS.

**AUTOMATIC PENCIL SHARPENER.**

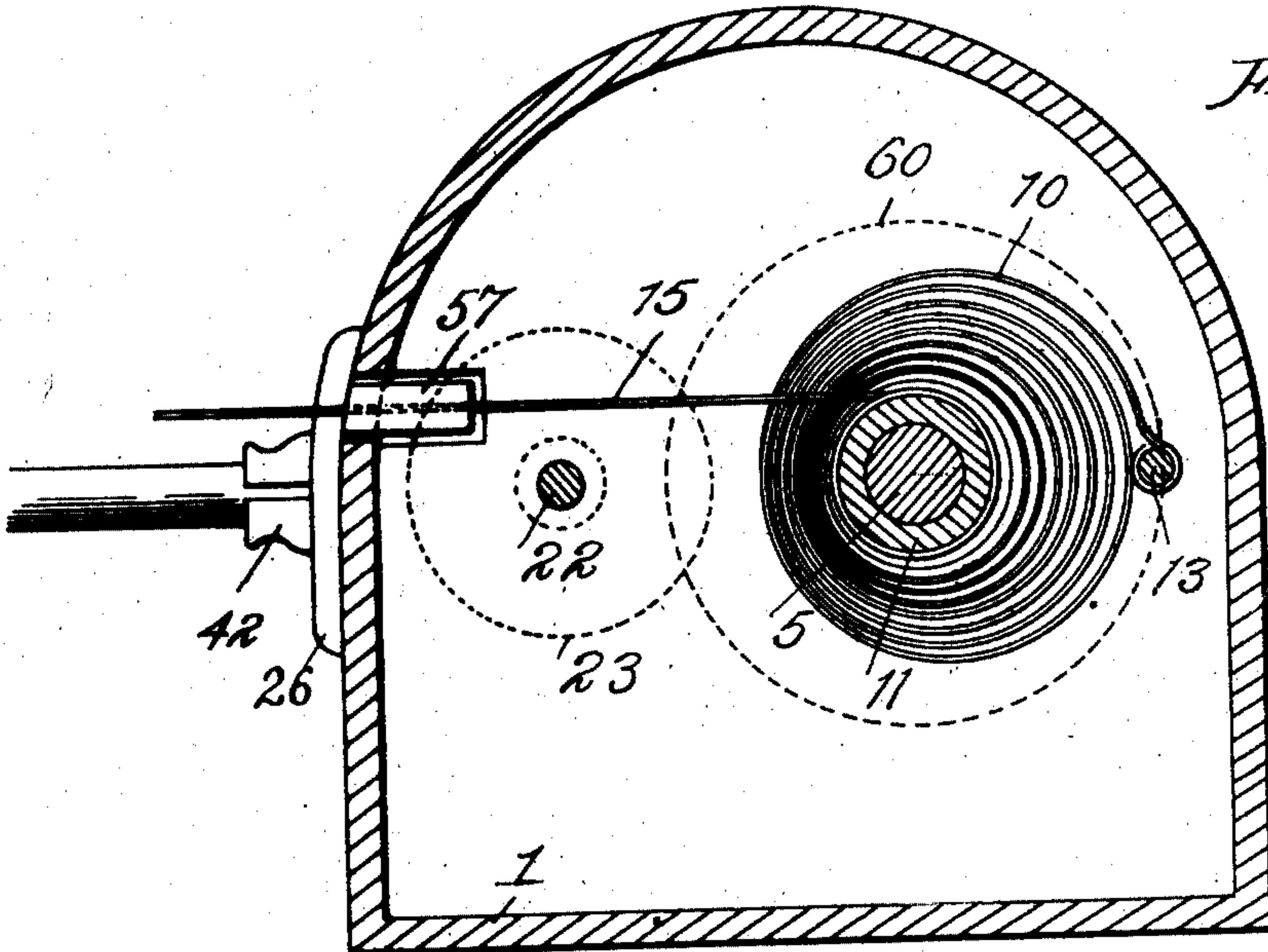
APPLICATION FILED NOV. 19, 1906.

4 SHEETS—SHEET 2.

*Fig. 3.*



*Fig. 4.*



WITNESSES  
*John F. Becker*  
*R. Hornum*

BY

*Louis Myers*  
*Sturges*

ATTORNEYS

No. 864,671.

PATENTED AUG. 27, 1907.

L. MYERS.  
AUTOMATIC PENCIL SHARPENER.  
APPLICATION FILED NOV. 19, 1906.

4 SHEETS—SHEET 3.

Fig. 5.

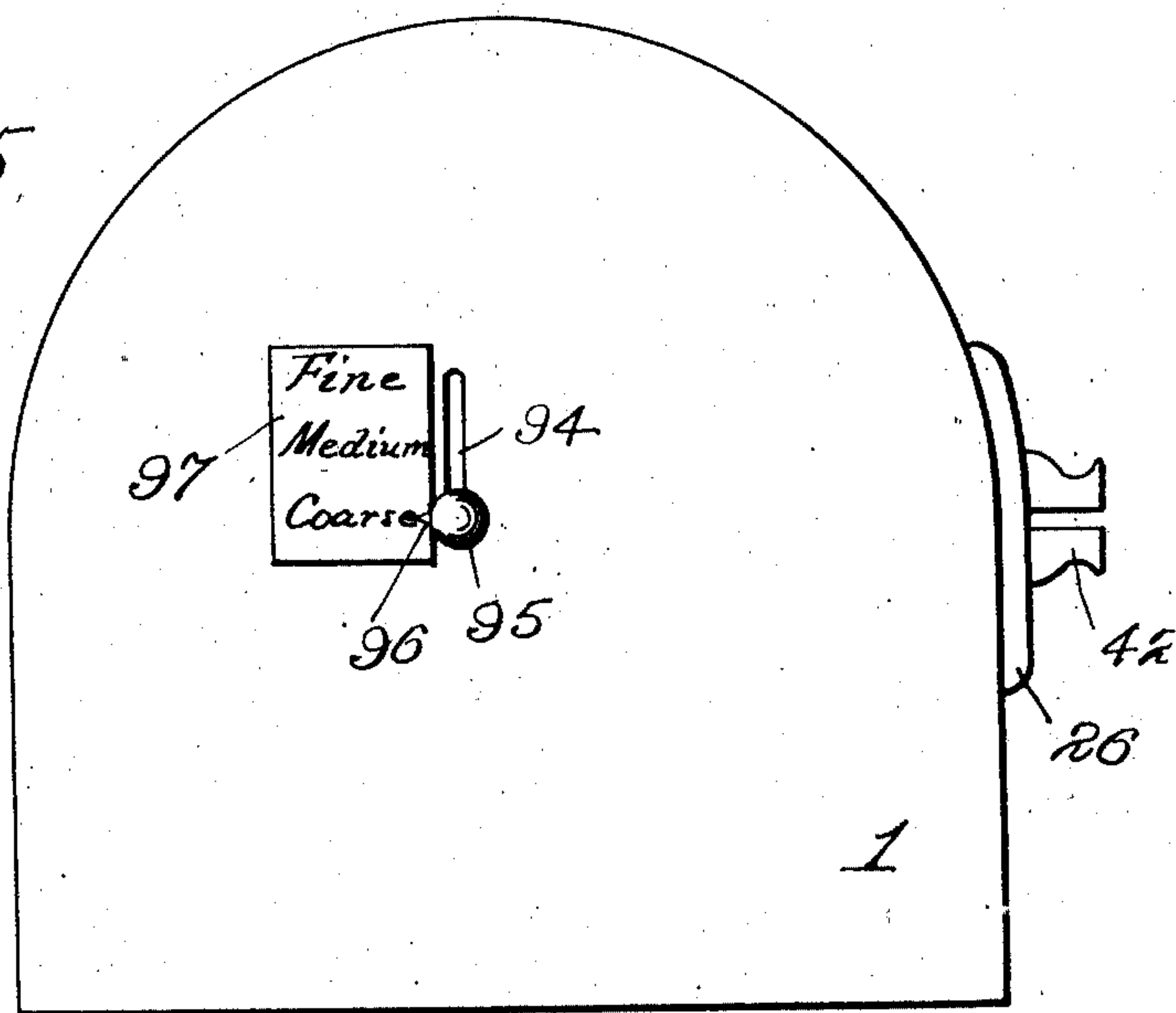


Fig. 7.

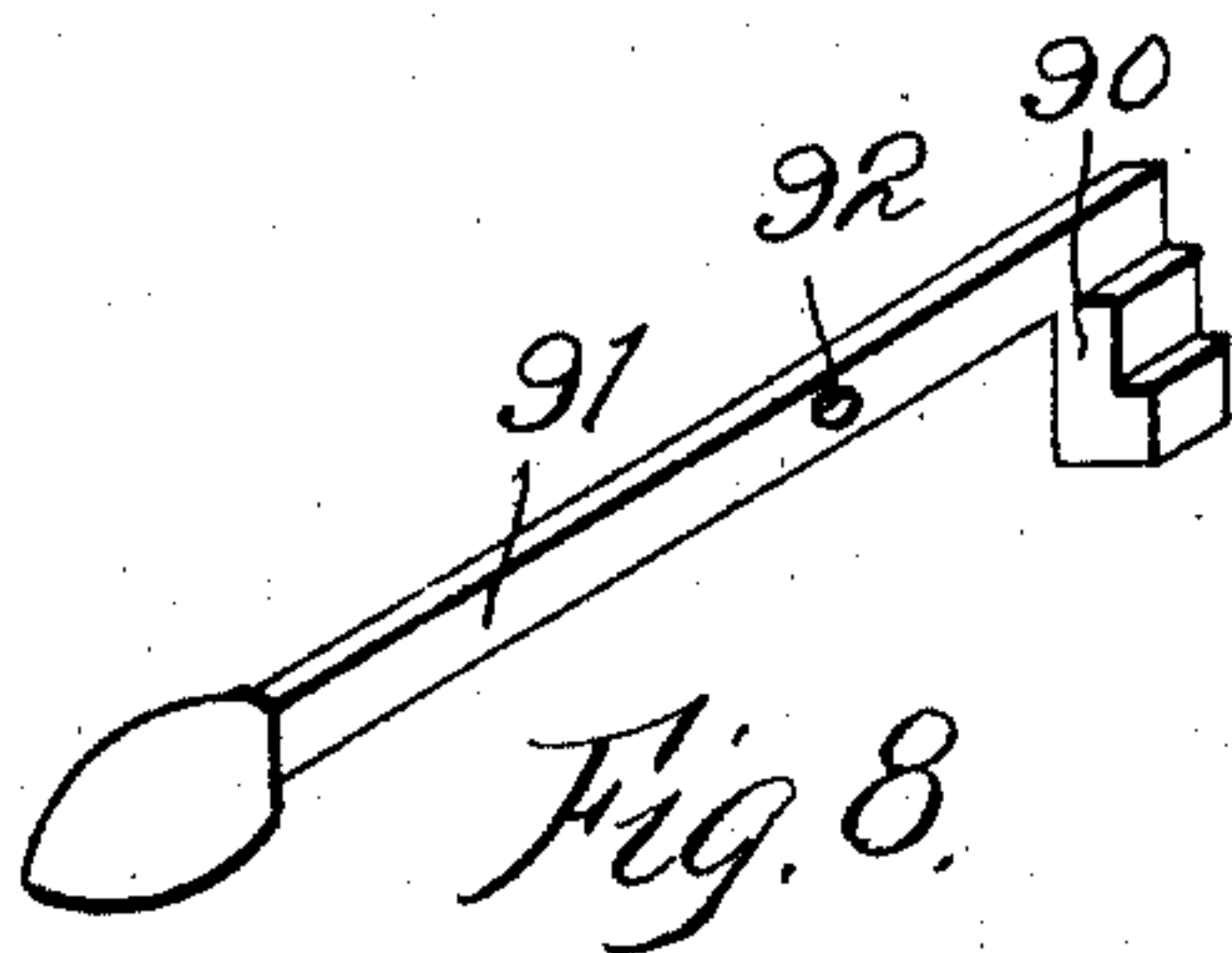
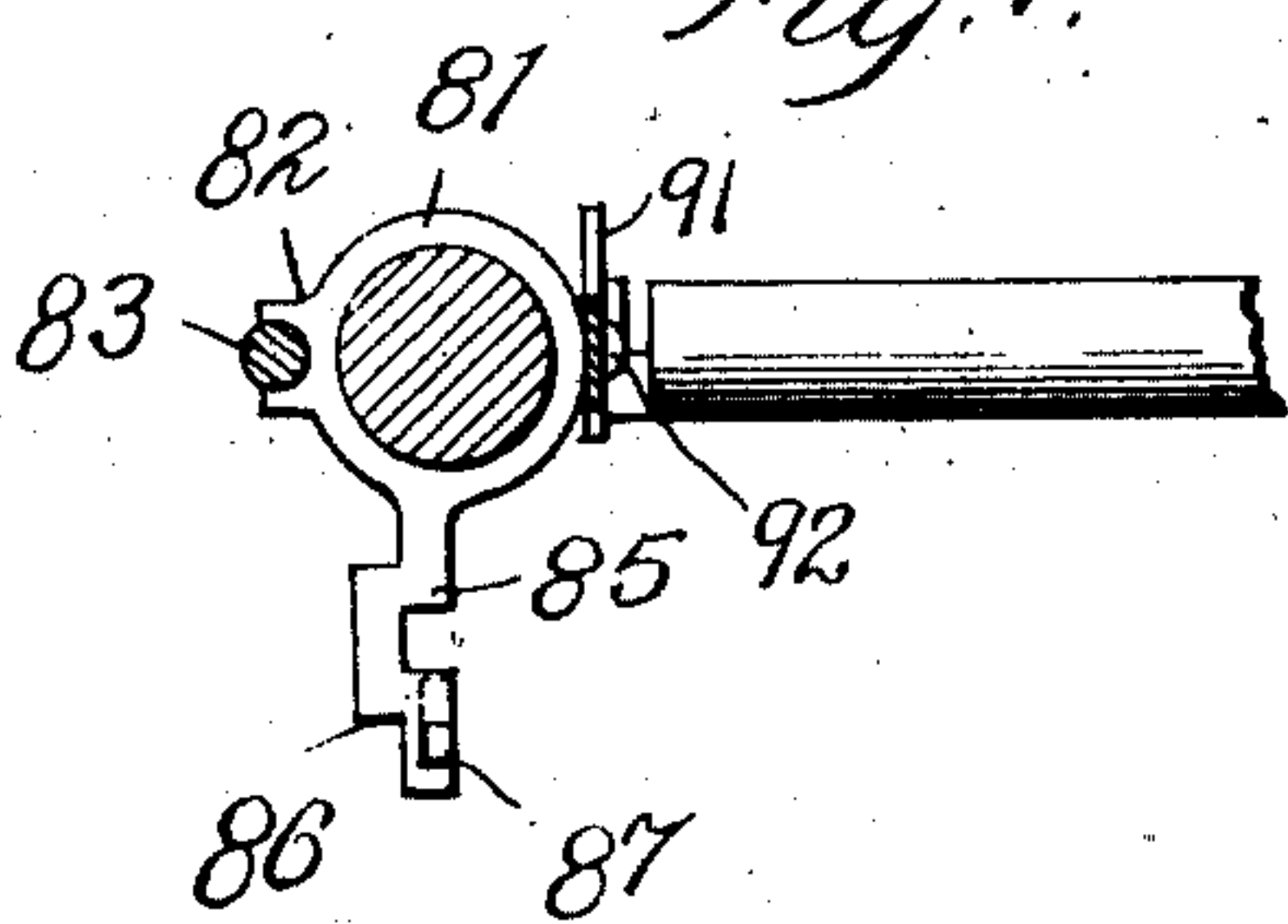


Fig. 6.

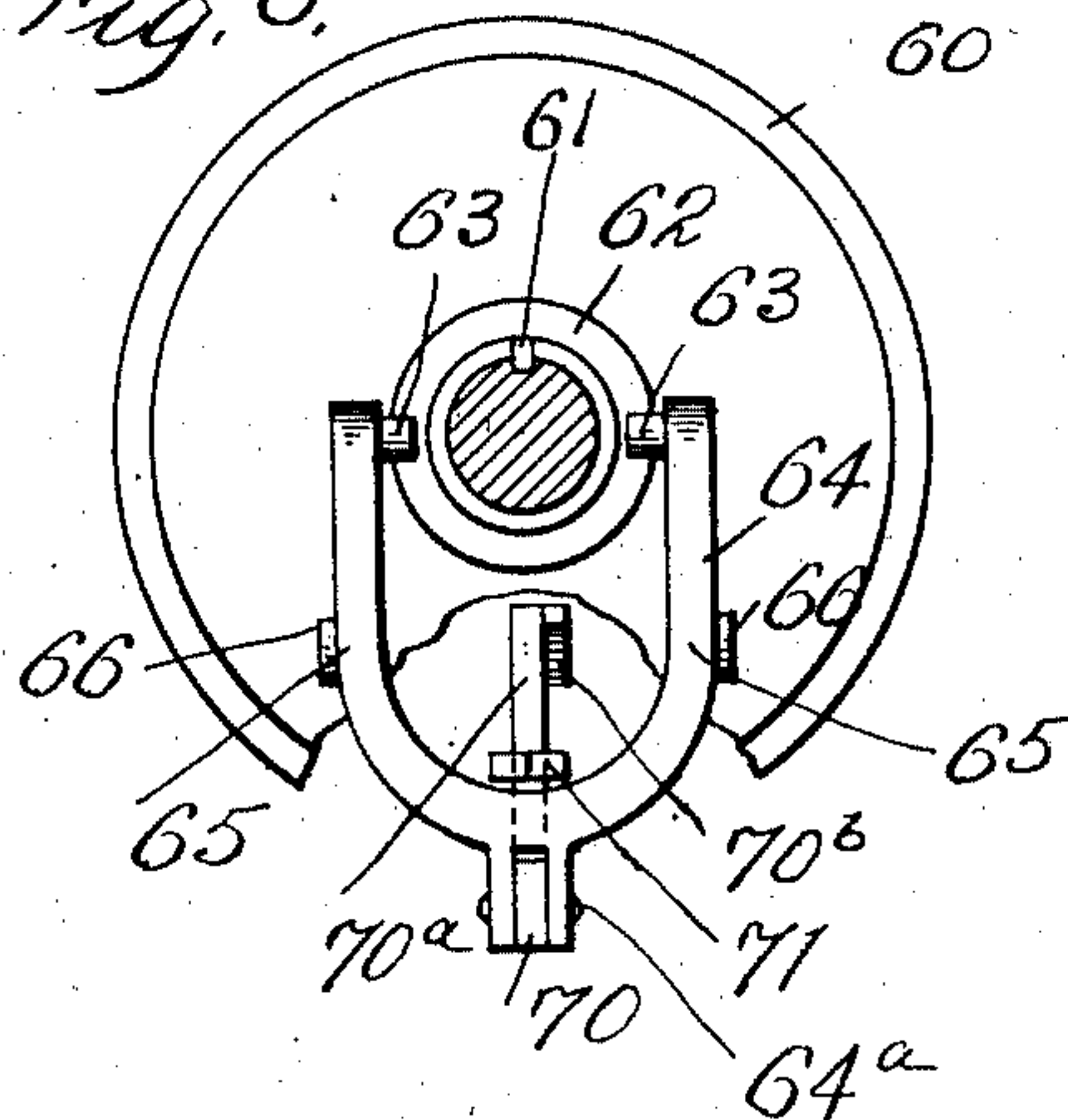
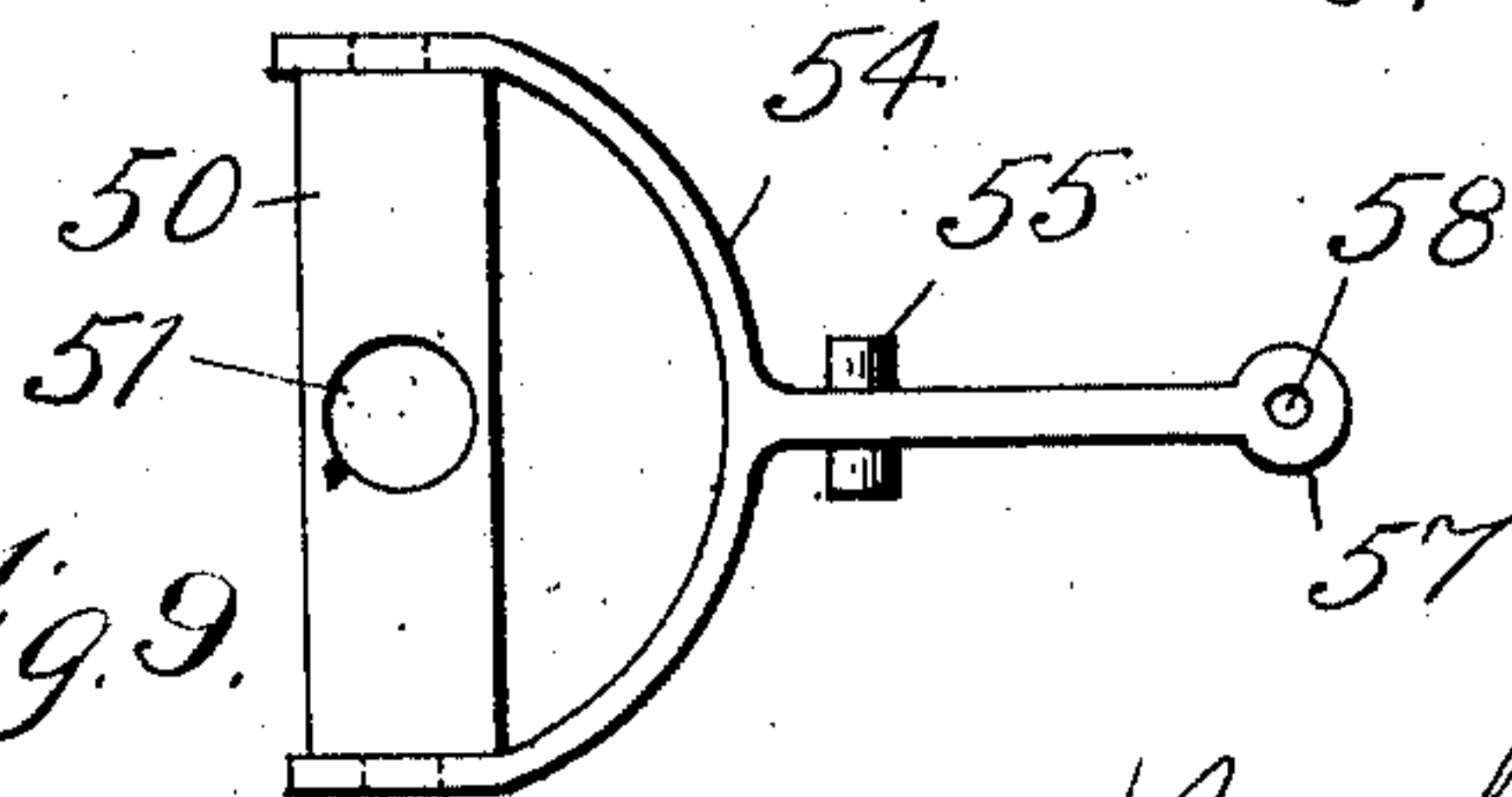


Fig. 9.



Witnesses  
Jas. F. [Signature]  
P. [Signature]

Louis Myers  
Inventor

By his Attorneys [Signature]



No. 864,671.

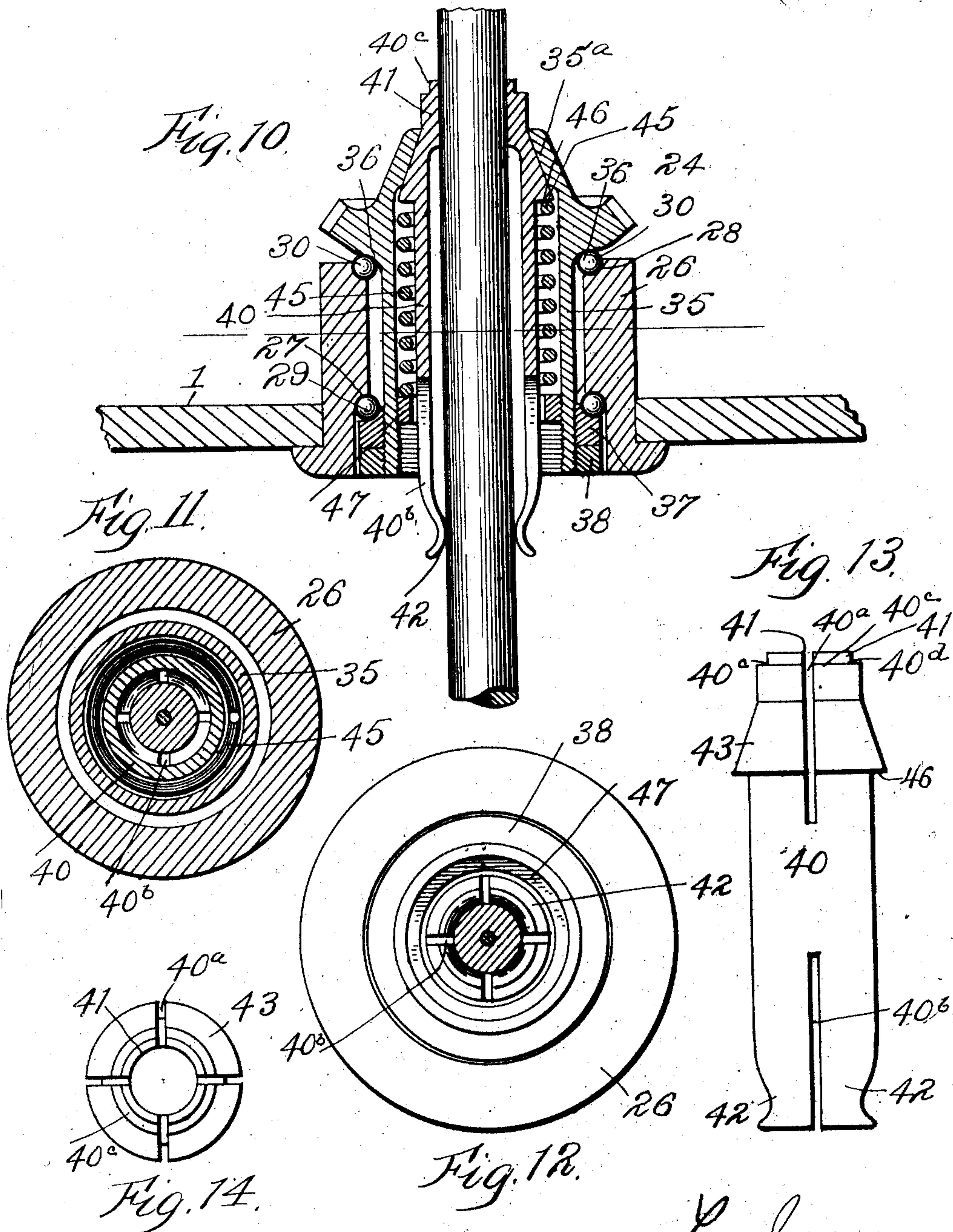
PATENTED AUG. 27, 1907.

L. MYERS.

**AUTOMATIC PENCIL SHARPENER.**

APPLICATION FILED NOV. 19, 1906.

4 SHEETS—SHEET 4.



WITNESSES  
*John L. Becker*  
*R. H. Tomch*

*Louis Myers*  
INVENTOR

BY *Amos W. Ward*

ATTORNEYS



# UNITED STATES PATENT OFFICE.

LOUIS MYERS, OF NEWARK, NEW JERSEY.

## AUTOMATIC PENCIL-SHARPENER.

No. 864,671.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed November 19, 1906. Serial No. 344,082.

To all whom it may concern:

Be it known that I, LOUIS MYERS, a citizen of the United States, and a resident of Newark, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Automatic Pencil-Sharpeners, of which the following is a specification.

My invention relates to improvements in the type of pencil sharpening or like machines in which a rotary cutter and a geared chuck or rotary holder for the pencil or other object to be operated upon are driven by a spring motor.

In my improved machine, the operating spring acts directly upon the cutter shaft in such manner that it can be wound by the backward rotation of the shaft through some suitable manually operated device preparatory to each operation of sharpening a pencil or the like. Preferably, the winding device consists of a pull cord which is wound upon the cutter-shaft. The cutter is splined upon its shaft so as to rotate therewith, and at the same time be capable of longitudinal movement thereon to gradually approach the pencil during the cutting operation. The means for causing the cutter to approach the pencil consists preferably of a pivoted yoke engaging the hub of the cutter and formed with a trip-arm which projects into the path of a detent projecting from a traveling nut which operates upon a screw-threaded portion of the shaft. A spring yieldingly holds the cutter and its actuating yoke normally in retracted position, and automatically returns them to said position at the completion of each cutting operation. The traveling nut is caused to move outwardly upon the shaft into active position by the backward rotation of the shaft during the winding action, the detent passing beneath the trip arm (in this outward movement) into position to engage said arm upon its inward active movement. The forward spring driven movement of the shaft, during the cutting operation, causes the nut to travel inwardly upon the shaft to shift the cutter gradually toward the pencil which is being sharpened. I provide an adjustable stop for gaging the position of the pencil in the holder. This gage stop is preferably mounted upon the traveling nut and is supported thereby normally in gaging position, and is moved away from the cutter out of the path of the pencil each time the shaft is rotated backwardly for winding the spring.

The pencil holder consists preferably of an automatic spring chuck which is normally held in released position by the main motor-spring acting through the winding cord, and is automatically released for gripping the pencil every time the winding cord is operated. This chuck operating device consists preferably of a yoke engaging the movable spring pressed member of the chuck and a pivoted lever engaging the yoke and having an arm projecting into the path of the winding cord.

The chuck is automatically released at the completion of each cutting operation, to permit the withdrawal of the sharpened pencil.

In said drawings Figure 1 is a horizontal sectional plan view of my improved machine taken on the line 1—1, of Figs. 2, 3, 4 and 5. Fig. 2 is a vertical transverse sectional view of the same taken on line 2—2, of Fig. 1. Fig. 3 is a vertical longitudinal sectional view taken on the line 3—3, of Fig. 1. Fig. 4 is a vertical sectional view taken on the line 4—4, of Fig. 1. Fig. 5 is an outside end view of the machine. Fig. 6 is a detail elevation of part of the cutter shifting mechanism. Fig. 7 is a detail transverse sectional view of another part of the same mechanism. Fig. 8 is a detail perspective view of the adjustable pencil stop or gage. Fig. 9 is a detail elevation of the clutch actuated yoke. Figs. 10, 11, 12, 13 and 14, are detail views of the automatic pencil holding chuck, on an enlarged scale.

1 is a metallic casing of any desired shape preferably with a rectangular base portion with an arched top as shown in Figs. 2, 4 and 5. This casing 1 is formed with an internal partition wall 2 slightly nearer one end of the casing, as shown in Figs. 1 and 3. This casing supports the operative parts of the pencil sharpening machine, and also affords a receptacle for the collection of the shavings and dust resulting from the sharpening of pencils. A suitable opening (not shown), is provided for the removal of the dust and shavings.

5 is the main shaft of the machine, hereinafter referred to as the cutter shaft. The shaft 5 is journaled in the side and partition walls of the casing as shown.

10 is a motor spring having its inner end secured to a sleeve 11 which is mounted upon one end of shaft 5 and is rigidly secured thereon by means of a pin or screw 12. The spring 10 is wound upon the shaft, and has its outer end securely fastened to a pin 13 which is mounted in one of the end walls and the partition wall.

Wound upon the sleeve 11 is a pull cord or wire 15 which has its inner end fastened to the sleeve and its outer end passed through an opening formed through the end of the chuck controlling lever (hereinafter referred to), which projects through an opening 16 in the front wall of the casing. The ring, button or other convenient device 17 is secured to the outer end of the pull cord 15 for the convenient manipulation of the cord in winding the motor spring. It will, of course, be understood that the spring 10 is mounted under proper tension, and that when the cord 15 is pulled outwardly to the limit, the spring 10 will be further wound up to a sufficient extent to cause an operation of the cutter and chuck for sharpening a pencil as hereinafter explained.

Rigidly secured to or formed integral with the sleeve 11 at its outer end is a large gear 20 which meshes



with a small pinion 21 secured to an auxiliary shaft 22 which is journaled in the end wall and partition wall, and projects inwardly toward the center of the machine from the partition wall. Auxiliary shaft 22 has secured to its inner end a beveled gear 23, which meshes with a smaller bevel gear 24 formed integral with the outer member of the pencil holding chuck.

The pencil holding chuck is shown in detail in Figs. 10 to 14. The front wall of the casing has cut through it a large opening 25 in which is securely seated a flange bearing collar 26, which projects inwardly from the front wall. This collar 26 is formed with annular grooves 27 and 28 at its inner and outer ends for the reception of the antifriction balls 29 and 30.

35 is the main outer tubular member of the automatic pencil holding chuck. This tubular chuck member 35 has the integral gear 24 projecting from it in such position as to form a proper annular channel at 36 which seats upon the antifriction balls 30. At the outer end of the tubular member 35 a properly grooved bearing ring 37 is mounted. This bearing ring 37 is threaded upon the tubular member 35 and is formed with an annular channel which seats against the outer series of balls 29.

38 is a lock nut ring also threaded upon the outer end of chuck member 35 for locking the bearing ring 37 in the desired adjusted position. It will be observed from this structure that the chuck is accurately supported upon two sets of ball bearings upon which it is free to rotate. The inner end of the tubular chuck member 35 is formed as usual with the tapered ring or collar 35<sup>a</sup> to engage with the tapered faces of the inner spring actuated split chuck member which will now be referred to.

40 is the inner chuck member having at its opposite ends the longitudinal slots 40<sup>a</sup> and 40<sup>b</sup> to form spring gripping fingers 41 and 42 presented in position to grip a pencil at two relatively distant points so as to accurately support the pencil during the sharpening operation. This inner chuck member is formed with conical faces 43 at its inner end, which faces are adapted to engage with the inner conical face of the tapered ring or collar 35<sup>a</sup> of the outer chuck member 35 in such manner that when the inner member is forced inwardly through the outer member, the gripping fingers 41 will be forced into engagement with the pencil passing centrally through them. It will, of course, be understood that the inner chuck member is of tubular formation with a bore of the proper size to receive the ordinary pencil, the size being, of course, sufficient to allow for slight variations in the diameter of pencils, or the parts of the chuck are made of dimensions to suit any like object to which the machine may be applied.

An expansion spring 45 surrounds the inner chuck member 40 within the outer member 35, one end of said spring engaging the annular shoulder 46 and the other end a threaded ring 47. The ring 47 is screwed into the interiorly threaded outer end of the outer chuck member 35. By adjusting the ring 47 the tension of spring 45 will be regulated.

50 (Figs. 1, 2 and 9), is a yoke formed with a central opening 51 which fits over the reduced inner end 40<sup>c</sup>, and engages the annular shoulder 40<sup>d</sup> of the inner chuck member. Yoke 50 straddles the automatic

chuck 35—40, and its two arms are provided adjacent to their outer ends with lugs 52 which engage in the slots 53 formed in the ends of a yoke shaped lever 54, which is journaled at 55 between the bracket ears or lugs 56 projecting inwardly from the front of the machine casing. This lever 54 extends through an opening 2<sup>a</sup> in the partition wall, and is formed at its end with an outwardly projecting angular finger 57 formed with an opening 58 through which the pull cord 15 extends as above referred to. The angular extension 57 of lever 54 projects into the opening 16 of the front plate of the casing, and is extended slightly beyond the front of the case when the pull cord is operated for winding the motor spring, it will be observed that the pull button or ring 17 engages the outer end of the angular extension 57 of lever 54, and is held in this engagement by the tension of the motor spring 10. This tension of the motor spring acting through lever 54 and yoke 50 holds the inner movable member 40 of the automatic chuck pressed inwardly against the tendency of its spring 45, thereby maintaining the chuck normally in unclamped or released position in readiness for the insertion of the pencil to be sharpened. The moment that the ring or button 17 is pulled outwardly, the restraint upon the angular finger 57 of lever 54 is removed so that the chuck spring 45 is allowed to act for forcing the inner chuck member outwardly to clamp the pencil which has been inserted.

The cutter shaft 5 has mounted upon it a rotary cutter disk 60 of ordinary construction. This cutter 60 is splined upon the shaft 5 as shown at 61 so that the cutter will rotate with the shaft and at the same time will be capable of moving longitudinally upon the shaft. The hub of the cutter 60 is formed with an annular shoulder 62 with which engage the inwardly presented pins 63, mounted in the upper ends of the yoke 64, which is pivotally supported at 65 upon the lugs 66 projecting inwardly from the partition wall 2. Yoke 64 has pivoted to its lower end at 64<sup>a</sup> an angular arm 70 which is adjustably connected with the yoke by means of adjusting screws 71 passing through a lug 72 on yoke 64 and threaded into an opening 73 in the arm 70. This arm 70 is shaped to pass beneath the cutter disk 60, its end extending upwardly and outwardly around the cutter to allow sufficient space for the cutter to rotate and shift upon its shaft. At the extreme outer end of the arm 70 is formed a downwardly inclined portion 70<sup>a</sup>, having upon its inner or rear face an inclined cam or flange 70<sup>b</sup> for the purpose which will presently appear.

A leaf spring 75 is secured at 75<sup>a</sup> to the inner face of the rear wall of the casing, and is formed with a bifurcated or forked inner end, which engages in the annular recess 76 cut in the face of the cutter 60 immediately surrounding the shaft 5. The two arms of the leaf spring 75 are curved to fit around the shaft 5, and to project into effective engagement with the recessed portion of the cutter. The spring 75 tends to retain the cutter 60 in its innermost position upon its shaft, and to also hold the yoke 64 and connected arm 70 in their retracted inactive position.

The shaft 5 at its end opposite the motor spring 10 is screw-threaded for a part of its length as shown at 80. A nut 81 engages the threaded portion 80 of the shaft

65 chuck member. Yoke 50 straddles the automatic



means-actuated by the movement of the nut for shifting the cutter longitudinally upon the shaft, a pencil holding clamp, a gage or stop mounted upon the nut.

25. In a pencil sharpening machine, the combination of  
5 a rotary chuck for holding the pencil to be sharpened, a cutter shaft, a cutter movable longitudinally on said shaft by which it is driven, a non-rotating nut threaded on said shaft and moved longitudinally by rotation of the shaft and a lever and cam device connecting the longitudinally  
10 moving nut with the hub of the rotary cutter, so as to impart longitudinal motion to the latter.

26. An automatic pencil sharpener comprising a rotating chuck for holding the pencil to be sharpened, a spring driven shaft on an axis at right angles to the pencil chuck,

a rotary cutter splined on said shaft so as to be capable of longitudinal movement thereon, a non-rotating nut threaded on the said shaft and moved longitudinally by rotation of the latter, a lever and cam device connecting the longitudinally moving nut with the hub of the rotary cutter so as to gradually advance the latter toward the axis of the pencil clutch by the rotation of the driving shaft, manually operated means for winding the driving shaft spring and connecting gear between the cutter shaft and pencil clutch, rotating the latter from the former.

Witnesses:

OCTAVIUS KNIGHT,  
WM. P. HAMMOND.

LOUIS MYERS.