

Feb. 24, 1953

B. E. NIBERT
DISPLAY DEVICE

2,629,187

Filed July 17, 1950

2 SHEETS—SHEET 1

Fig. 1

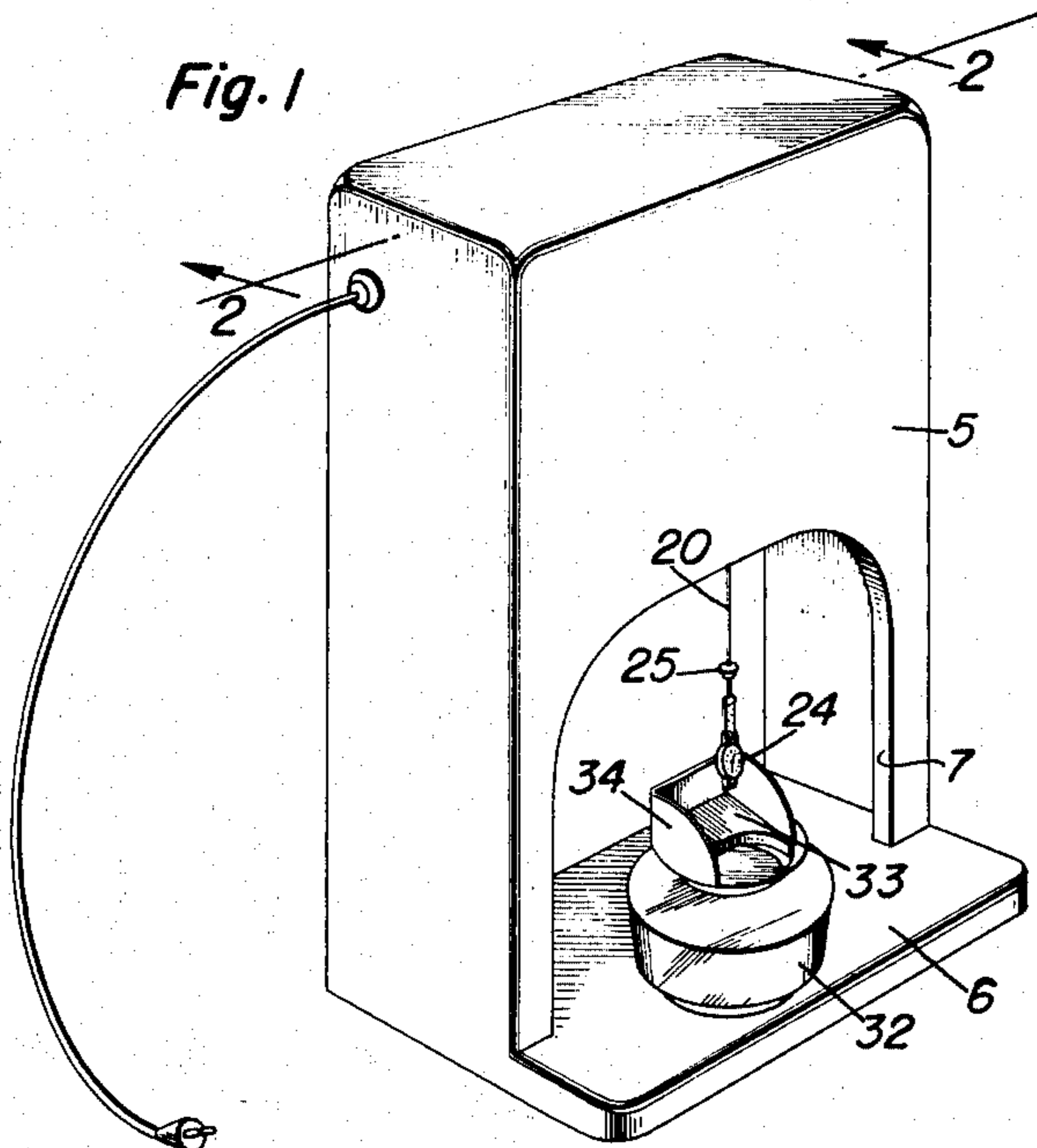
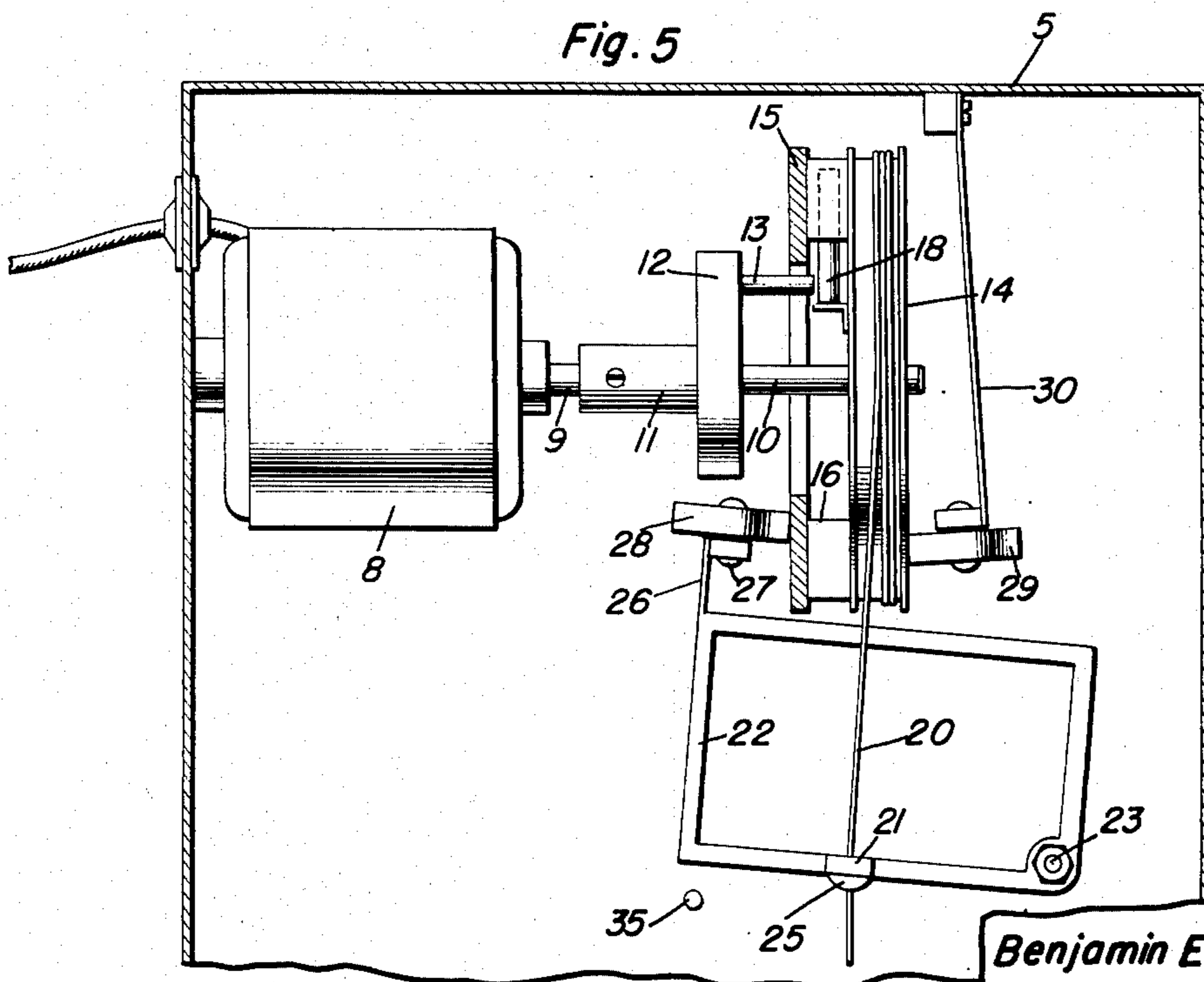


Fig. 5



Inventor

Benjamin E. Nibert

By

Clarence A. O'Brien
and Harvey B. Jacobson
Attorneys

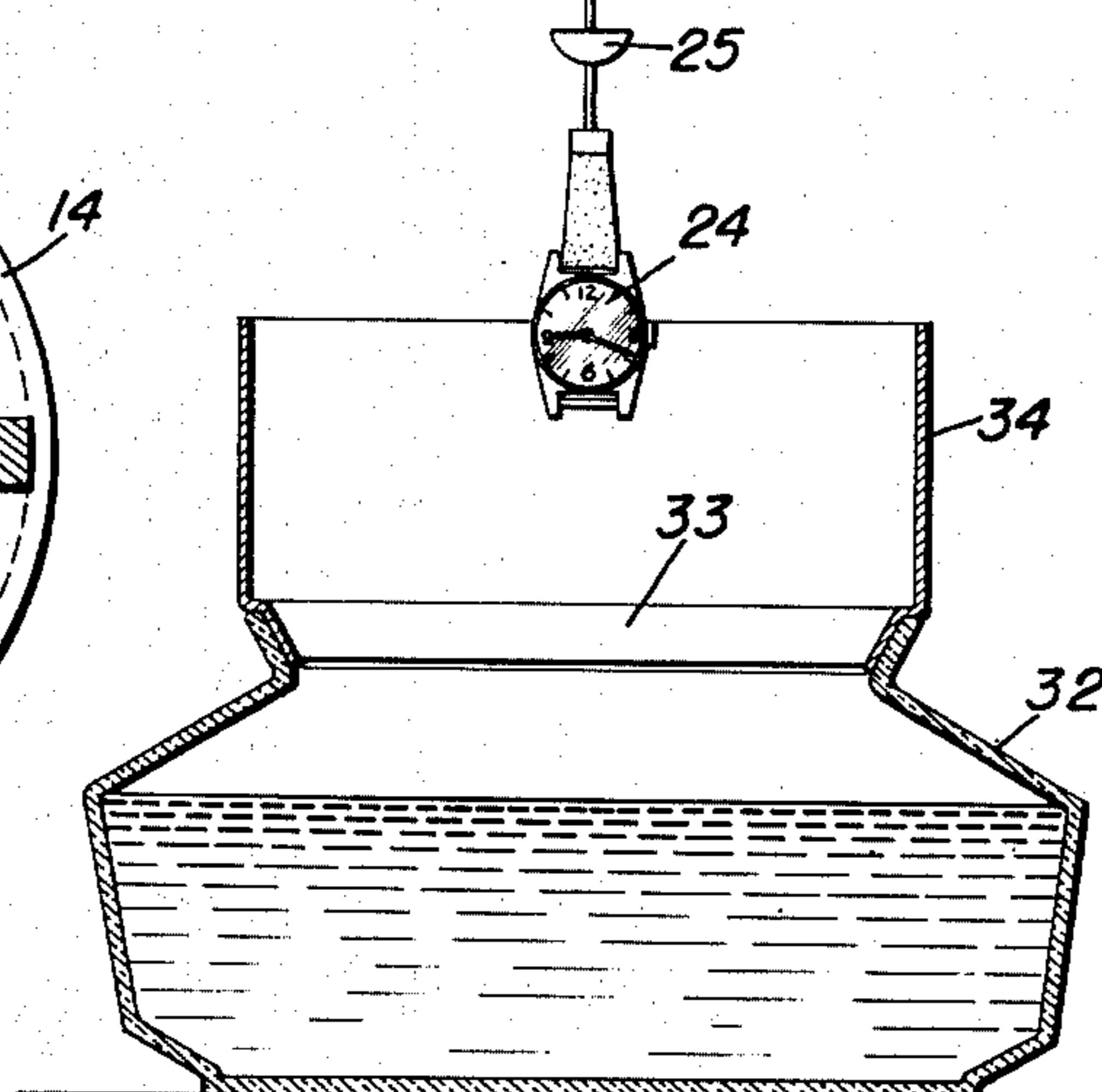
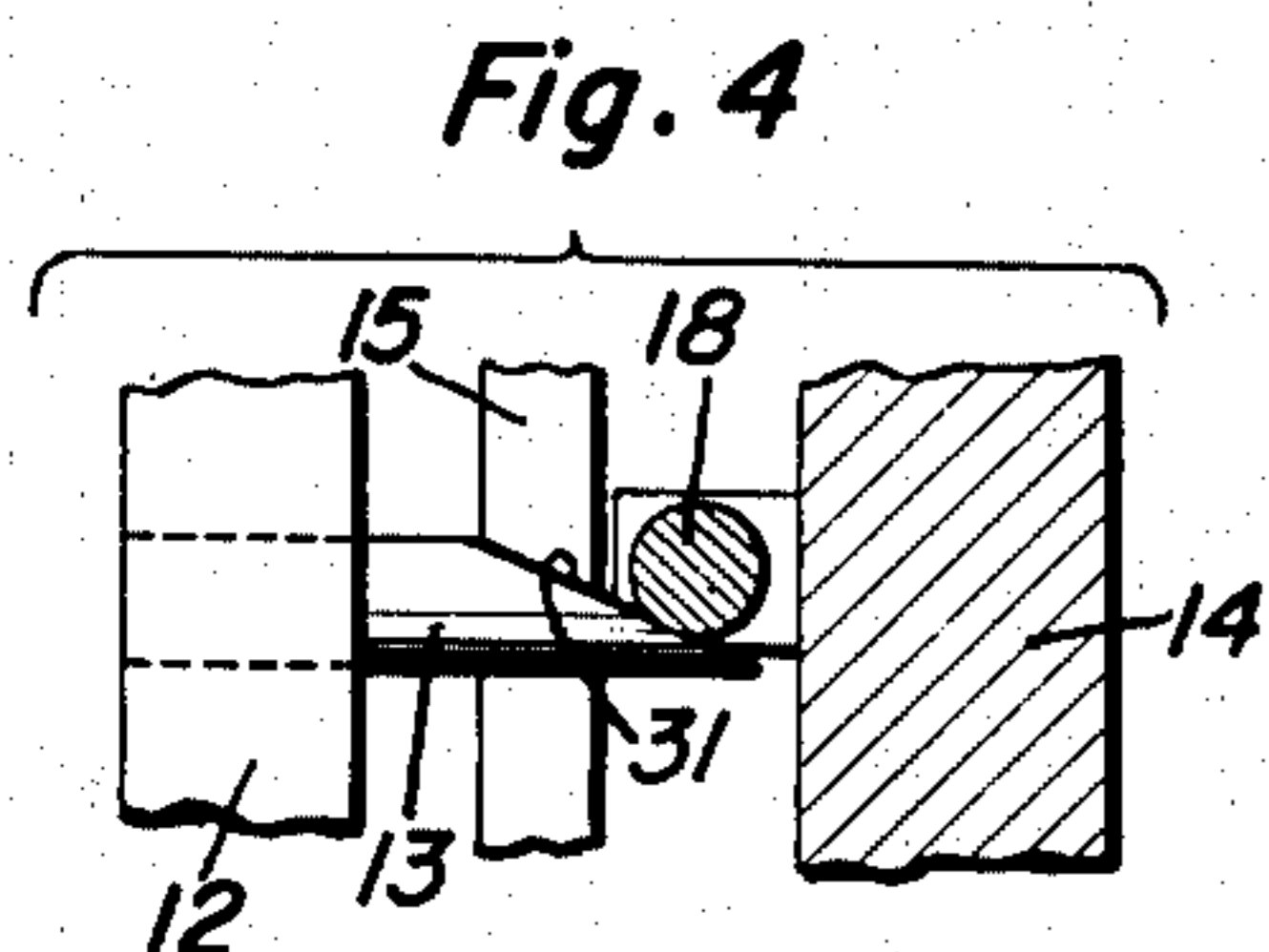
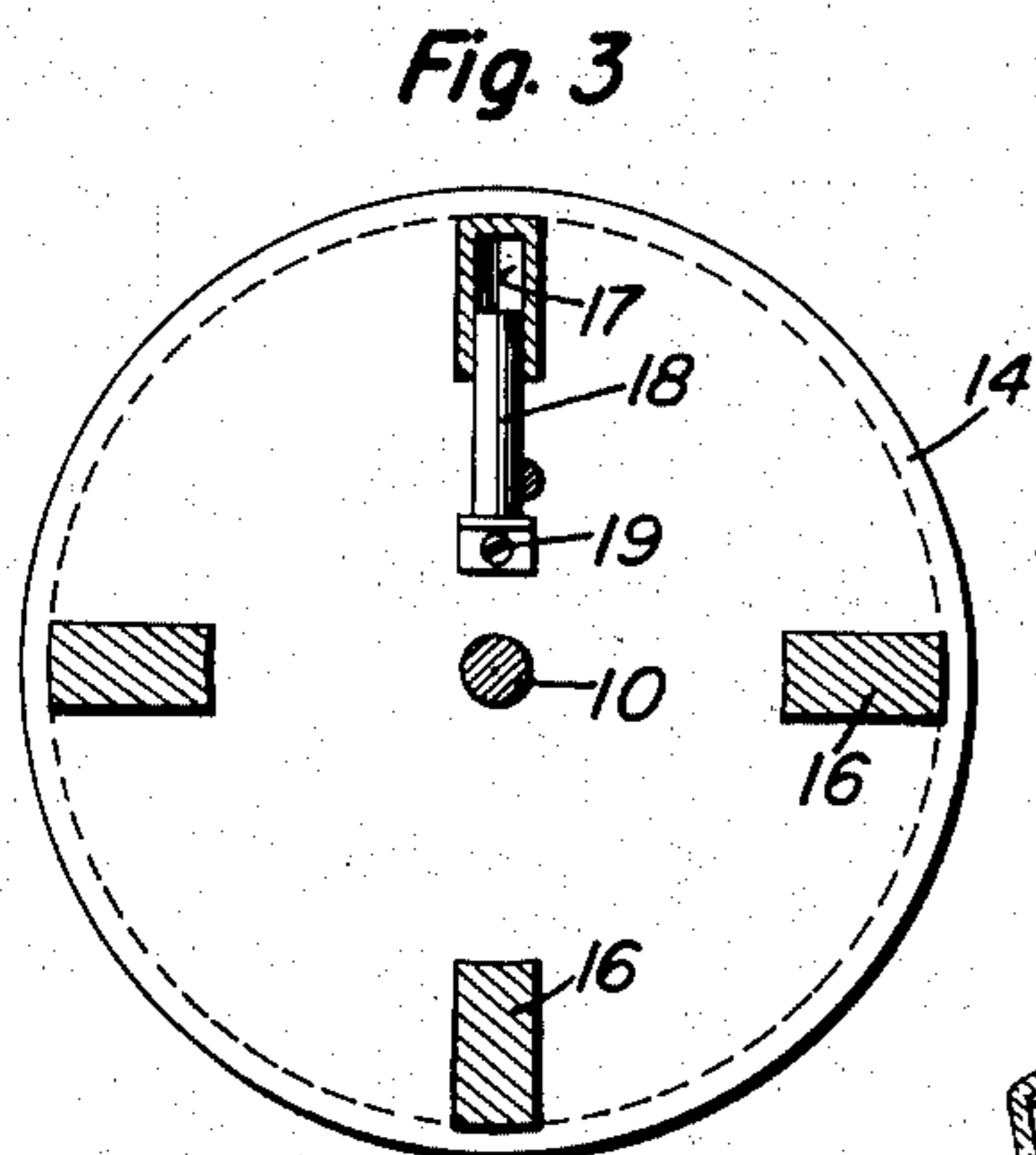
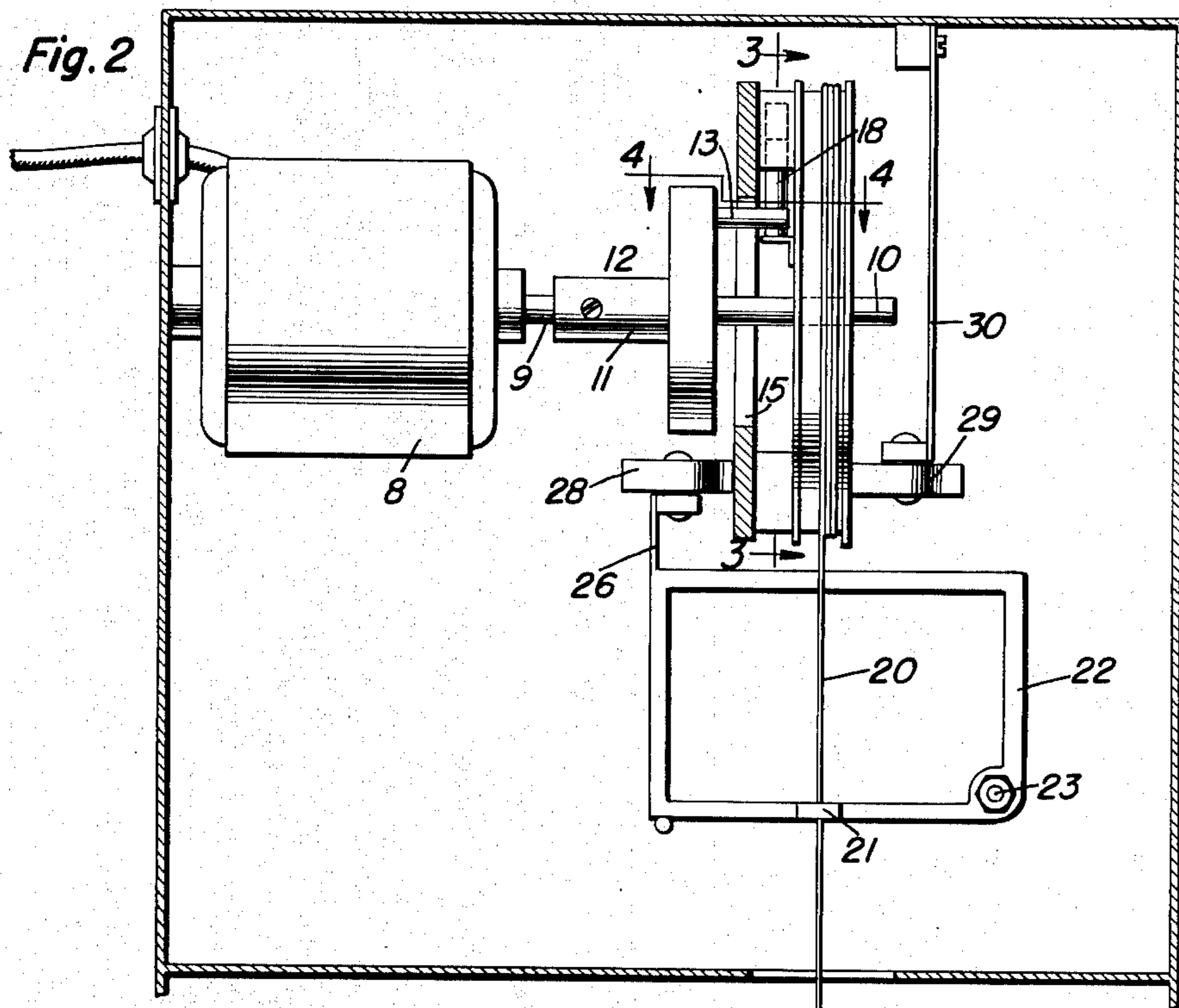
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2 SHEETS—SHEET 2



Inventor

Benjamin E. Nibert

By

Oliver A. O'Brien
and Harvey B. Jacobson
Attorneys

UNITED STATES PATENT OFFICE

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DISPLAY DEVICE

Benjamin E. Nibert, Edinburg, Tex.

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5 Claims. (Cl. 35—49)

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The present invention relates to new and useful improvements in display devices and more particularly to an apparatus used in demonstrating the durability of shockproof and waterproof watches.

An important object of the invention is to provide mechanism for periodically raising a watch and dropping the watch onto a hard surface to demonstrate its shock resisting qualities and from which surface the watch then falls into a container of water to demonstrate the waterproof qualities of the watch.

A further object of the invention is to provide a novel motor operated hoisting device for the watch and including a pulley driven by the motor and on which a rope or other flexible member is wound together with means for releasing the pulley from its driving engagement with the motor to suddenly drop the watch after the latter has been raised to a predetermined height.

A still further object is to provide an apparatus of this character of simple and practical construction, which is efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view.

Figure 2 is a vertical sectional view taken substantially on a line 2—2 of Figure 1.

Figure 3 is a fragmentary vertical sectional view taken on a line 3—3 of Figure 2.

Figure 4 is an enlarged fragmentary sectional view taken on a line 4—4 of Figure 2, and

Figure 5 is a vertical sectional view showing the pulley in disengaged position for dropping the watch.

Referring now to the drawings in detail wherein for the purpose of illustration I have disclosed a preferred embodiment of the invention, the numeral 5 designates a display housing having a platform 6 at its bottom and an opening 7 in the lower front wall of the housing.

An electric motor 8 is suitably supported in the upper portion of housing 5 with its shaft 9 positioned horizontally. A shaft extension 10 is provided with a sleeve 11 secured to the shaft 9 and a wheel or disk 12 is suitably fixed to shaft extension 10 and is provided with an eccentric pin 13.

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A pulley or drum 14 is freely mounted on shaft extension 10 for rotation independently thereof and to one side of the pulley is secured a ring 15 by spacing blocks 16.

One of the spacing blocks 16 is formed with a cylinder 17 in which a pin 18 is slidable for radial inward and outward movement with respect to pulley 14, the pin being limited in its inward movement by a stop 19 secured to the adjacent side of the pulley.

A cord or similar flexible member 20 is secured at one end to pulley 14 for winding thereon, the cord extending downwardly through a guide 21 in the lower portion of a trip member 22 of open frame construction which is pivoted at one lower corner on a pin 23 secured in the upper portion of housing 5. A watch or other object 24 forming the subject of the demonstration is attached to the lower end of cord 20 and a weighted body 25 is secured to the cord immediately above the watch for engaging guide 21 during a rotation of the pulley to raise the watch.

A bracket 26 rises from the corner of the trip member 22 opposite from its pivot 23 and supports a pin or shaft 27 in an upstanding position and on which a roller 28 is journaled in a position for engaging ring 15.

A second roller 29 is rotatably supported at the lower end of a spring arm or hanger 30 suitably secured at its upper end to the top of housing 5 and tensionally holding pulley 14 inwardly on shaft extension 10 with the pin 18 in the path of rotation of eccentric pin 13. Eccentric pin 13 is beveled at one side, as indicated at 31 to facilitate disengagement of pin 18 therewith upon an outward sliding movement of the pulley 14 on the shaft extension 10.

A vessel 32 suitable for containing water is placed on platform 6 and a sloping plate 33 is supported in the neck or open top of the vessel in the path of downward movement of the watch 24. A shield 34 rises from the rear and sides of the plate 33 and the plate 33 is of an area substantially less than the diameter of the neck of the vessel 32 in order that the watch, after striking the plate will slide downwardly into the water contained in the vessel.

In the operation of the device, the weight of trip frame 22 normally maintains the same in a lowered position with its lower free edge resting on a stop pin 35. Spring arm or hanger 30 and roller 29 hold pulley 14 inwardly on shaft extension 10 to move radial pin 18 in the path of eccentric pin 13.

Motor 8 is constantly driven so that with pin 13

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engaging pin 18 pulley 14 will be driven to wind rope 20 thereon and to lift a watch 24 attached to the lower end of the rope until weight 25 engages guide 21. Trip frame 22 will then swing upwardly at its free end on pin 23 and the tilting movement of the frame will cause roller 28 to push against ring 15 and slide pulley 14 outwardly on shaft extension 10 to disengage pins 13 and 18 and disengage pulley 14 from driving engagement with the motor.

Weight 25 will then rapidly lower watch 24 which strikes plate 33 and then slides into the water in bowl 32. The rapid rotation of pulley 14 during unwinding of cord 20 will slide pin 18 outwardly by centrifugal action to keep the pin out of the path of the continuously moving pin 13, and the length of cord 20 is arranged to stop unwinding movement of the pulley when the pin 18 is uppermost so that when the pulley stops the pin 18 will drop downwardly on stop 14 for engagement by pin 13 upon its next revolution to again rotate the pulley and raise the watch.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A display device comprising a motor driven shaft, a hoisting device including a drum slidably journaled on the shaft and having a vertically movable flexible member connected to the drum for winding thereon, clutch means connecting the shaft and drum to each other in driving relation upon a sliding movement of the drum in one direction, a vertically swingable drum-shifting member underlying the drum and movable into and out of engagement with the drum to slide the latter out of driving relation with the shaft, and means carried by the flexible member and engaging the drum-shifting member upon a predetermined hoisting movement of said flexible member to slide the drum out of driving relation with the shaft.

2. A display device comprising a motor driven shaft, a hoisting device including a drum slidably journaled on the shaft and having a flexible member connected to the drum for winding thereon, clutch means connecting the shaft and drum to each other in driving relation upon a sliding movement of the drum in one direction, a pivoted guide for the flexible member, means carried by the guide and engaging the drum to slide the drum into a de-clutching position, and

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means carried by the flexible member and engaging the guide upon a predetermined hoisting movement of said member to actuate the guide in a drum de-clutching movement.

3. A device for demonstrating the reaction of objects to shock and comprising a hoisting mechanism including a slidable drum and a raised and lowered flexible member attached to the drum and adapted for attaching an object to be demonstrated thereto, a continuously operated prime mover, driving means between the prime mover and the drum, spring means bearing against one side of the drum and holding the drum in driving relation with the prime mover to raise the object, a rockable member bearing against an opposite side of the drum, and actuating means for the rockable member carried by said flexible member to move the drum out of driving relation with the prime mover upon a pre-determined hoisting movement of the flexible member to drop the object.

4. A device for demonstrating the reaction of objects to shock and comprising a power driven shaft, a drum slidable and freely rotatable on the shaft, clutch means connecting the drum to the shaft, a flexible member connected to the drum for winding thereon to lift an object attached to the flexible member, and de-clutching means for the drum and including a rockable member, means carried by the rockable member engaging the drum to slide the latter in one direction out of driving engagement with the shaft, spring means sliding the drum in an opposite direction into driving engagement with the shaft, guide means for the flexible member carried by said rockable member, and a stop on the flexible member engaging the rockable member to move the latter into de-clutching position and to free the drum for dropping the object into demonstrating position upon a predetermined hoisting movement of the flexible member.

5. The combination of claim 4 wherein said clutch means includes a pin, means attaching the pin to the power driven shaft in a position parallel thereto for rotation about the axis of the shaft, and a radially slidable pin carried by the drum and movable into and out of the path of the first named pin.

BENJAMIN E. NIBERT.

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