

Feb. 6, 1951

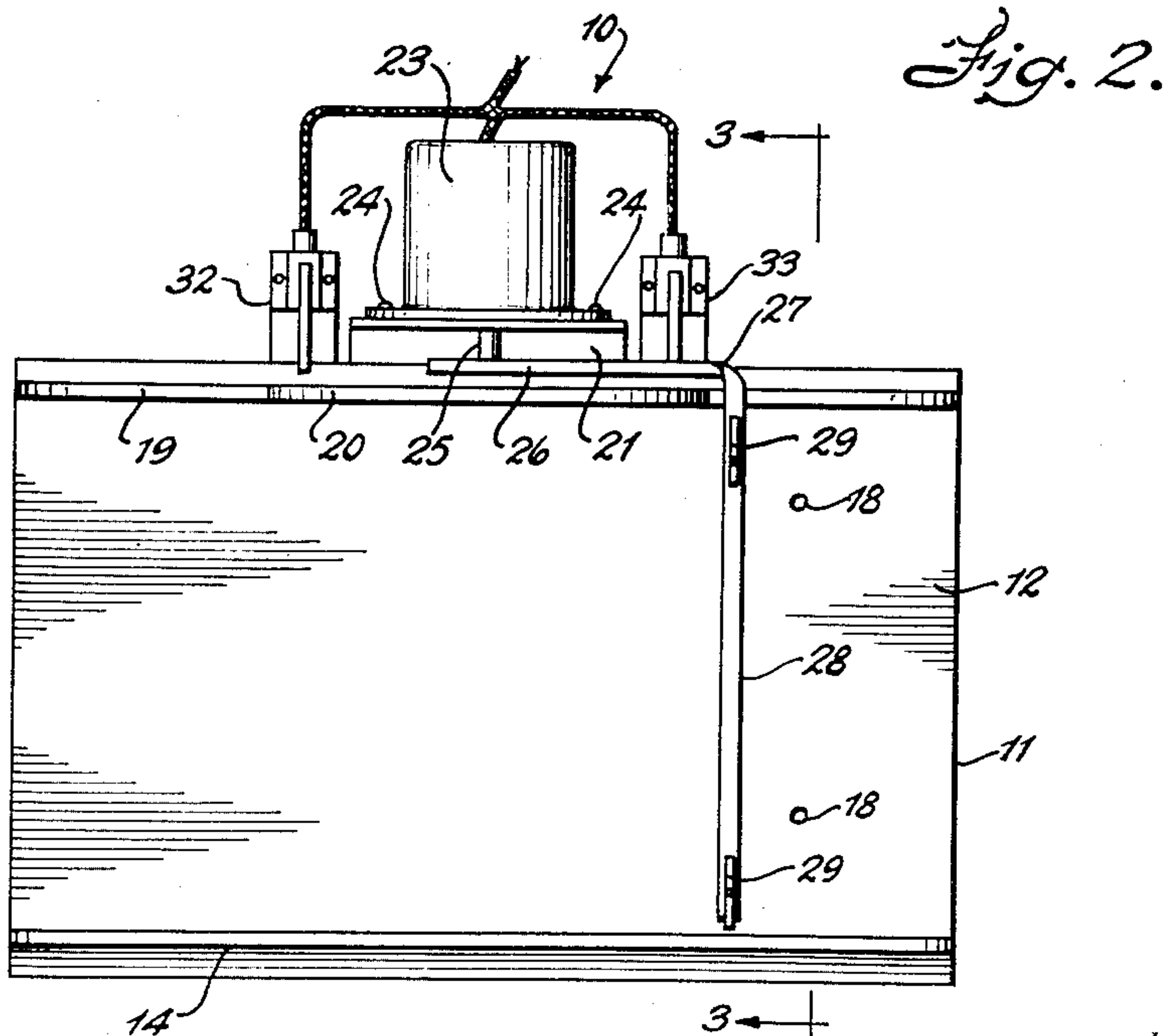
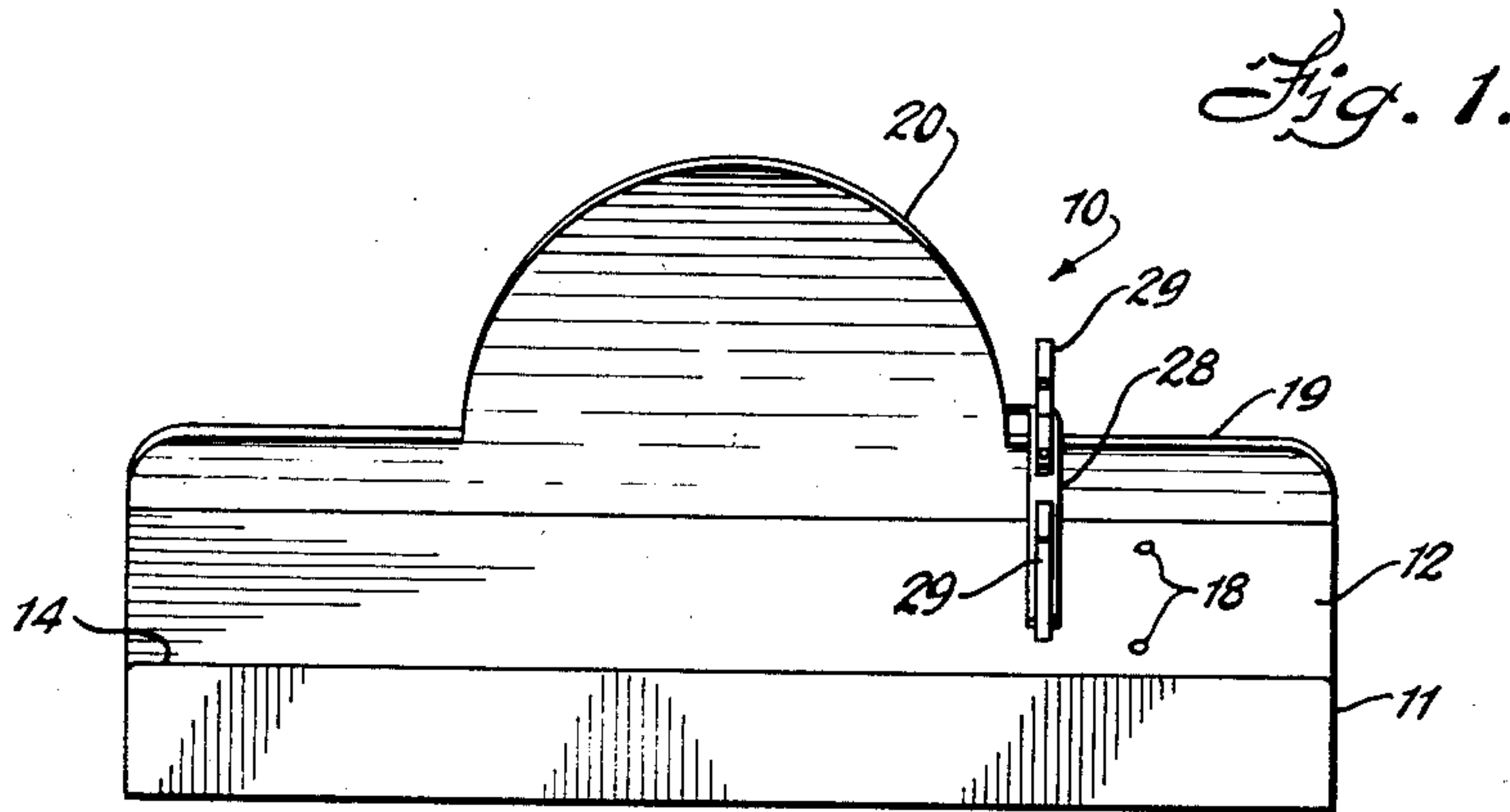
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2,540,244

BOOK OPENING AND CLOSING DEVICE

Filed Sept. 16, 1946

2 Sheets-Sheet 1



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BOOK OPENING AND CLOSING DEVICE

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2 Sheets-Sheet 2

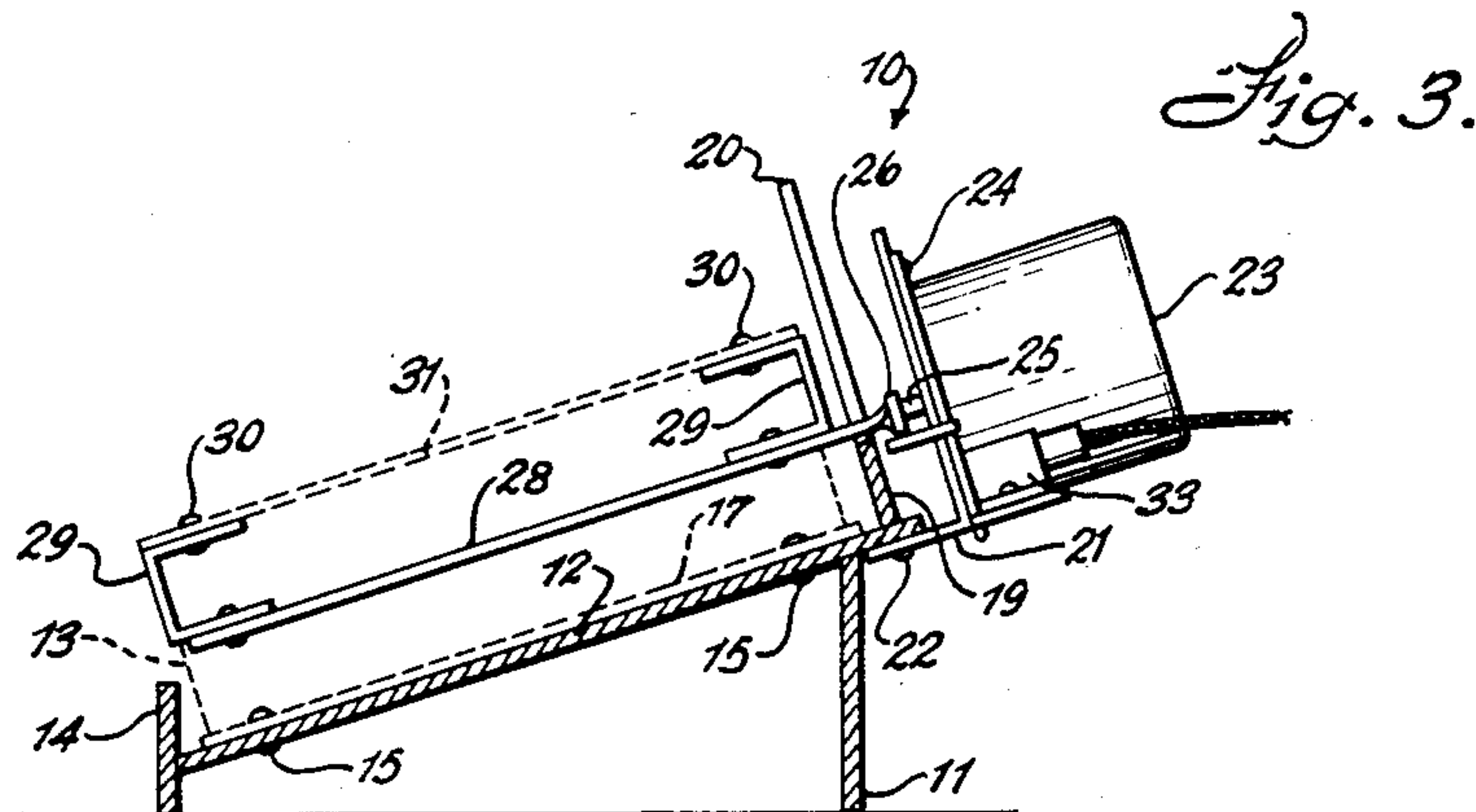


Fig. 4.

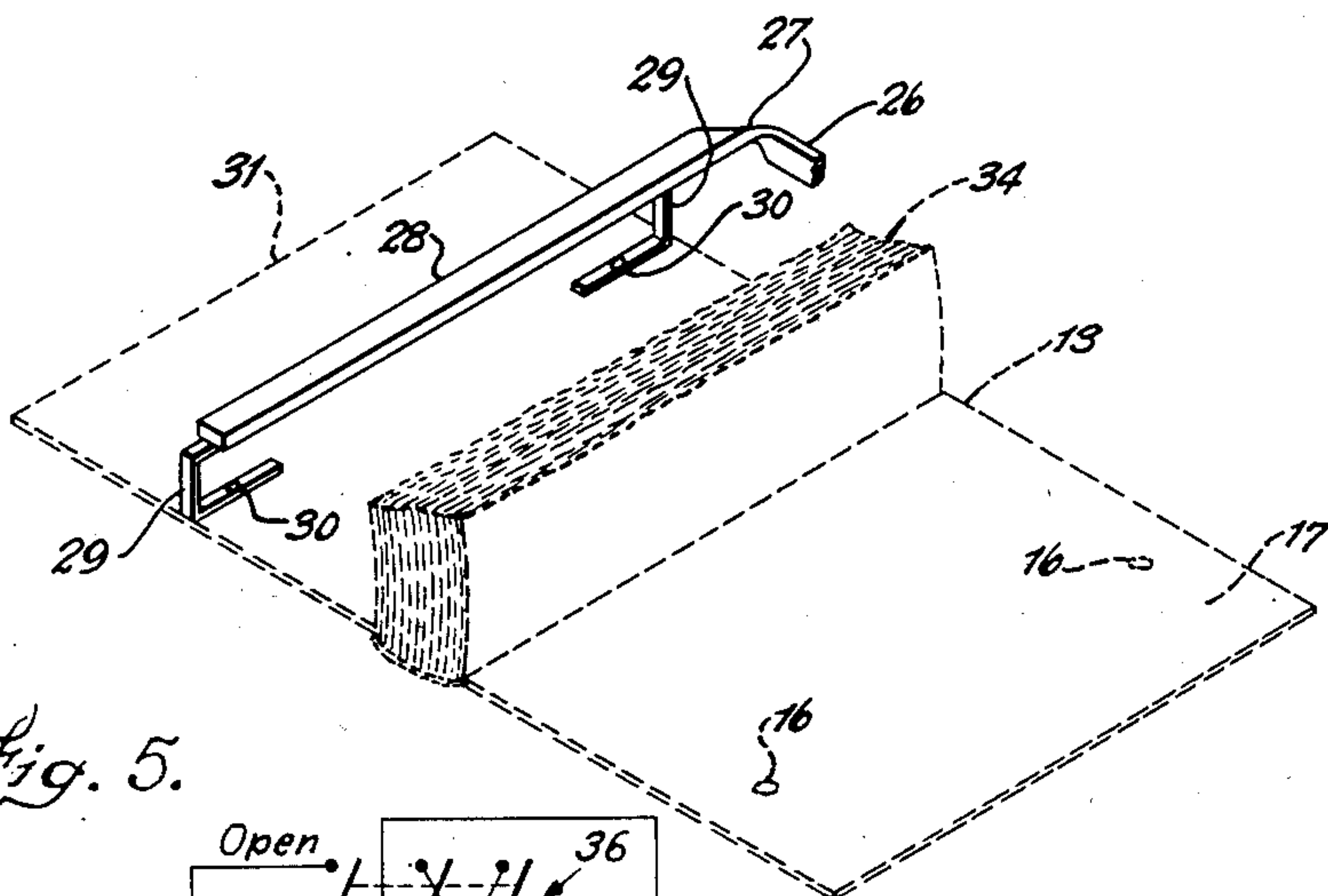
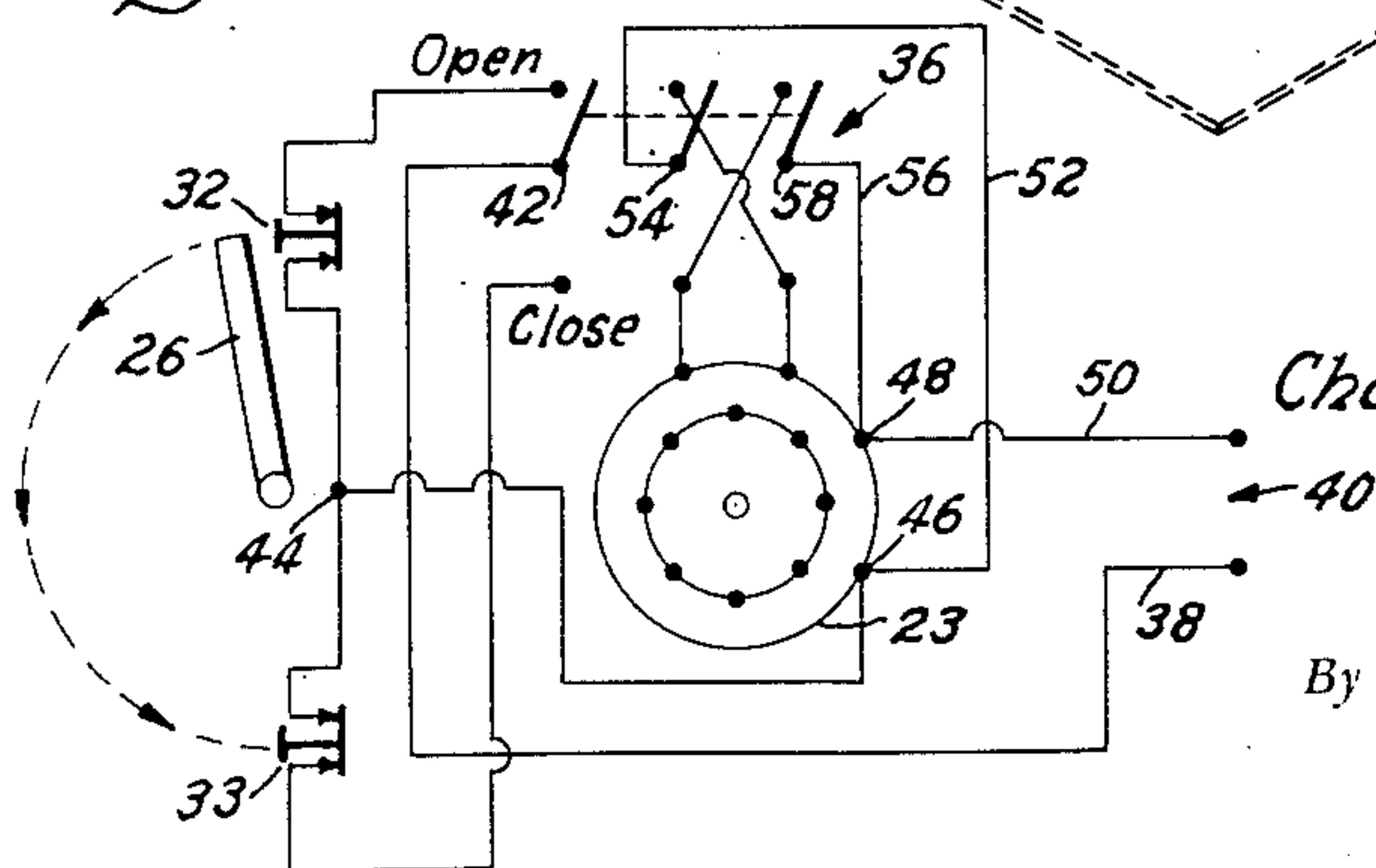


Fig. 5.



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UNITED STATES PATENT OFFICE

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BOOK OPENING AND CLOSING DEVICE

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4 Claims. (Cl. 40—104)

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This invention relates to new and useful improvements and structural refinements in opening and closing devices for books, and the principal object of the invention is to provide a device of the character herein described, which is particularly adapted for use in churches for opening and closing the altar Bible.

A further object of the invention is to provide a book opening and closing device which, being hidden from view, creates an impressive effect when in operation.

Another object of the invention is to provide a book opening and closing device which is simple in construction and which may be easily and conveniently manipulated.

An additional object of the invention is to provide a book opening and closing device which will not easily become damaged and which will readily lend itself to economical manufacture.

With the above more important objects in view, and such other objects as may become apparent as this specification proceeds, the invention consists essentially of the arrangement and construction of parts as illustrated in the accompanying drawings, in which:

Figure 1 is a front elevation of the invention.

Figure 2 is a top plan view thereof.

Figure 3 is a cross sectional view, taken substantially on the plane of the line 3—3 in Figure 2; and

Figure 4 is a perspective view of an extension arm and spacing bracket used in the invention, the same being shown in association with a book indicated by phantom lines.

Figure 5 is a schematic diagram illustrating an electrical circuit adapted for use with the present invention.

Like characters of reference are used to designate like parts in the specification and throughout the several views.

Referring now to the accompanying drawings in detail, the invention consists of a book opening and closing device designated generally by the reference character 10, the same embodying in its construction a base 11 configured substantially as shown and provided with an inclined upper surface or platform 12, on which a book 13 may be positioned. The lower edge of the base 11 may, if desired, include an upstanding ledge 14, such as would normally be employed to prevent the book from sliding downwardly from the platform 12. In the instant invention, however, the ledge 14 is purely ornamental, since the book 13 is firmly secured to the base by means of suitable screws or rivets 15 which pass through

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apertures 16 formed in one of the book covers 17 and through further apertures 18 provided in the platform 12.

The upper edge of the base 11 is provided with a further ledge 19, formed with a substantially semicircular, centrally disposed shield 20. It will be noted that the ledge 19 and the shield 20 are disposed substantially at right angles to the plane of the platform 12.

A mounting bracket 21 is secured as at 22 to the upper edge portion of the base 11, the bracket 21 being more or less L-shaped and supporting a motor 23 which is designed to rotate at the speed of approximately one revolution per minute. The motor 23 is secured to the bracket 21 as at 24.

The armature shaft 25 of the motor 23 is disposed in a plane parallel to the plane of the platform 12, and a lever 26 is secured at one end thereof to the armature shaft, as is best shown in Figure 2. The remaining end portion of the lever 26 is angulated as at 27 and constitutes what may be referred to as an extension arm 28.

The arm 28 extends in a flat, parallel relationship to the platform 12, and a pair of substantially U-shaped spacing brackets 29 are welded or otherwise suitably secured to the arm 28, as is best shown in Figures 3 and 4. These brackets are disposed in an opposed relation, so to speak, and the free arms of the brackets are secured by suitable screws or rivets 30 to the remaining cover 31 of the book 13. It will be noted that in this manner, the arm 28 will be rigidly secured in spaced relation to the cover 31.

Finally, a pair of limit switches 32, 33 of suitable type, are attached to the base 11 at the relatively opposite sides of the motor 23, the aforementioned lever 26 being engageable with these switches, as will be hereinafter more fully described.

When the invention is placed in use, the book 13 is positioned upon and secured to the platform 12 by means of the bolts or rivets 15, as has been already explained.

Thereupon, approximately one half of the pages 34 of the book are inserted between the cover 31 and the arm 28 while the remaining pages are, of course, disposed between the arm 28 and the cover 17.

Assuming the book to be in the open position, substantially as shown in Figure 4, the three pole, triple throw reversing switch 36 is moved to the "close" position. Current will now flow to the motor 23 from the source 40 by the lead 38, through the movable contact arm 42 to the limit

switch 33 and by way of the terminal 44 to one side 46 of a first phase winding, through the winding to the end 48 and back to the other side of the source 40 by the lead 50. Further, from the ends 46, 48, leads 52, 56 will carry current by the movable arms 54, 58 of the switch 36 to the second phase winding of the motor. This action causes the motor 23 to rotate or swing the lever 26 and the associated arm 28 so as to close the book, this being best shown in Figures 3 and 5. The closing action is facilitated by the rigid connection of the arm 28 to the cover 31 (through the medium of the brackets 29) and by the positioning of the adjacent half of the book pages between the arm 28 and the cover 31. When the book is fully closed, the lever 26 will contact the switch 33, thereby opening the electrical circuit to the motor 23 and preventing further actuation of the device in that direction.

When it is desired to open the book, the flow of current through the motor 23 is reversed by throwing the switch 36 to the "open" position, whereby the lever 26 and the associated arm 28 will be caused to rotate in the relatively opposite direction until the book is fully opened. It will be noted that the switch 36 both bypasses the limit switch 33 allowing current to flow to the motor through the switch 32 and further reverses the connections to the second phase winding of the motor whereby reversed rotation is effected. At the open position of the book, the lever 26 will contact the limit switch 32 and further actuation of the device in that direction will again be prevented.

It will be noted from the foregoing that the device is intended to open the book at one predetermined page, that is, no means are provided for selective opening at any page such as may be required. This is because the device is primarily intended for display purposes, such as in churches at the beginning and end of the religious ceremony. In such instance, the opening and closing of the book will create an impressive effect, since the mechanism involved, particularly the motor 23 and the associated lever 26, is completely hidden from view by the shield 20 and the ledge 19. The book, therefore, is not used for the religious service, the minister having another Bible on his pulpit.

It is believed that the advantages and use of the invention will be clearly understood from the foregoing disclosure and accordingly, further description thereof at this point is considered unnecessary.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

What I claim as my invention is:

1. Means for opening and closing a book in a predetermined position comprising a base support

port for a book having a pair of cover members, one of the covers being secured to the base, a prime mover having an armature shaft carried by said base in spaced proximity to said book, an angular extension arm secured to said shaft and positioned in the book to overlie one of the pages therein, connectors secured to said extension arm and secured to the unattached cover, motor stop elements positioned on said base on each side of the motor and adapted to be engaged by said lever.

2. Means for opening and closing a book in a predetermined position comprising a base support for a book having a pair of cover members, one of the covers being secured to the base, a prime mover having an armature shaft carried by said base in spaced proximity to said book, a member positioned in the book and overlying one of the selected pages therein, a lateral extension on one end of the arm, said extensions being connected to the armature shaft, bracket members carried by the opposing ends of the member and attached to the free cover, motor stop elements positioned on said base on each side of the motor and adapted to be engaged by said extension.

3. A book opening and closing apparatus including a base adapted to support a book having one of its covers secured thereto, an electric motor mounted on the base, an arm transversely secured to the shaft and extending upwardly above one end of the book, a lateral extension on the arm, said extension being positioned in the book and overlying one of the pages therein and bracket members carried by the opposing ends of the extensions and secured to the free cover whereby a plurality of pages are held between the extension and the cover.

4. A book opening and closing apparatus including a base adapted to support a book having one of its covers secured thereto, an electric motor mounted on the base, an arm transversely secured to the shaft and extending upwardly above one end of the book, a lateral extension on the arm, said extension being positioned in the book and overlying one of the pages therein and bracket members carried by the opposing ends of the extension and secured to the free cover whereby a plurality of pages are held between the extension and the cover, and stop switches disposed on opposite sides of the motor and actuated by the arm upon predetermined movement thereof to hold the book open at the selected page or closed.

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