

D. E. FELT.  
CASING FOR KEY OPERATED MACHINES.

APPLICATION FILED NOV. 3, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1

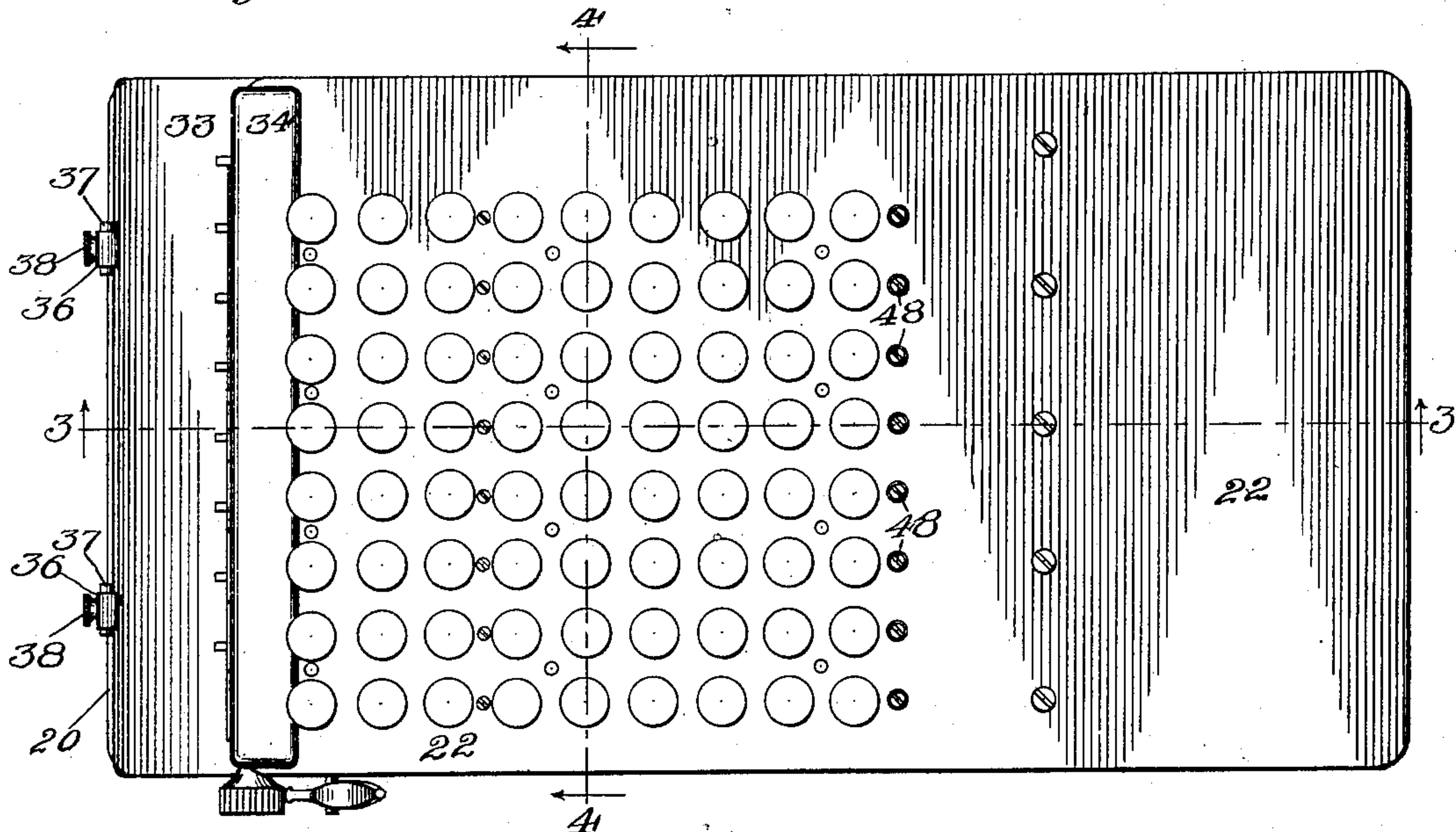
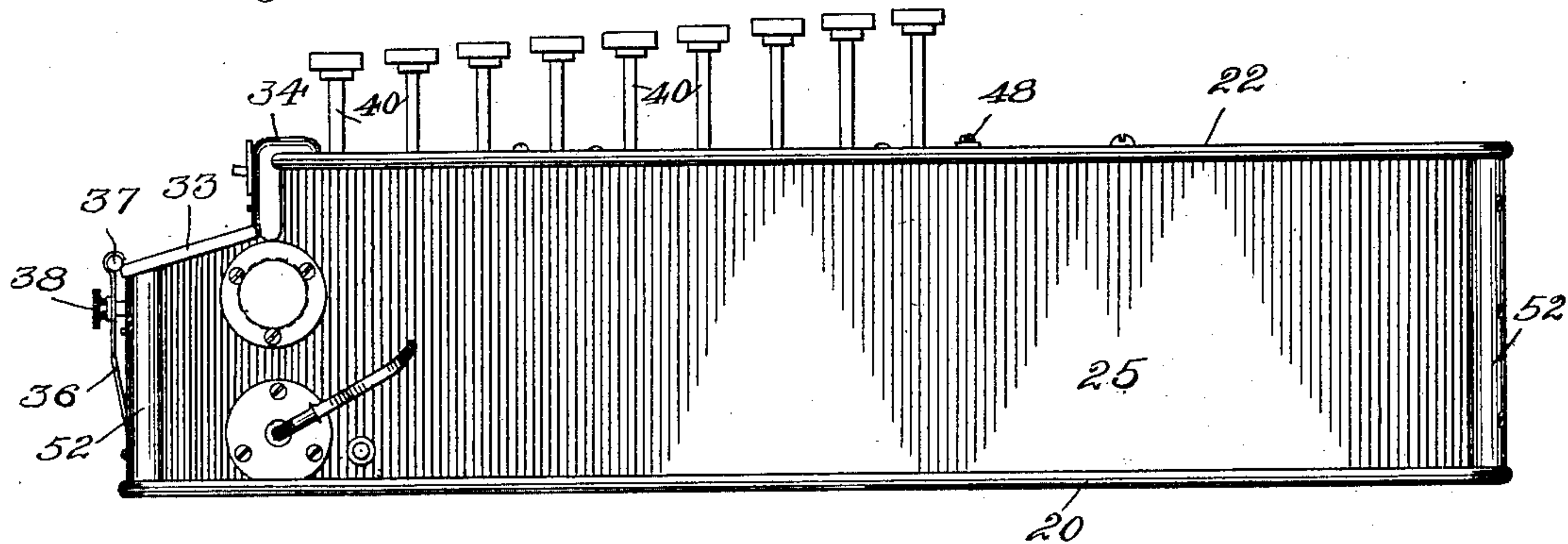


Fig. 2



Witnesses:

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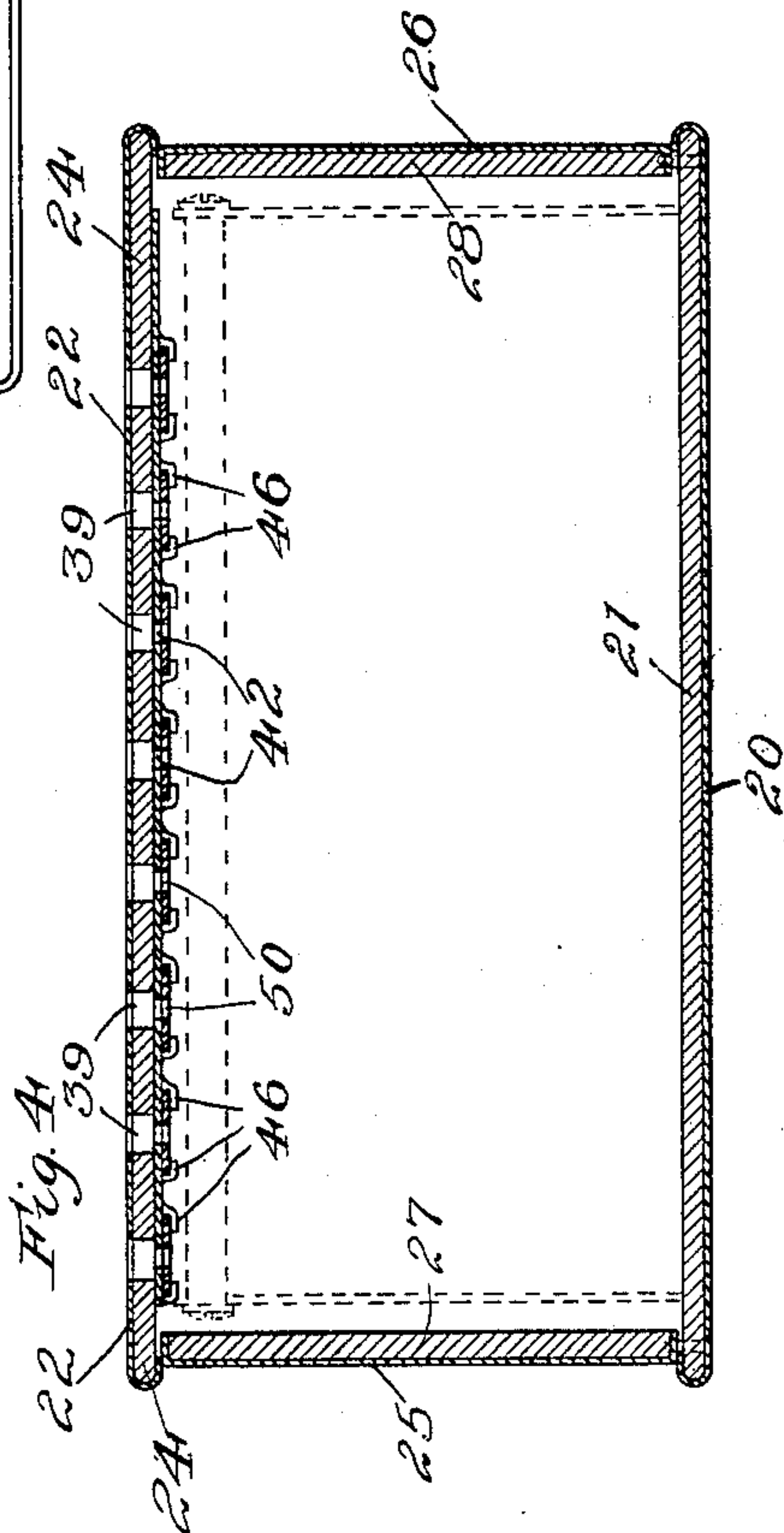
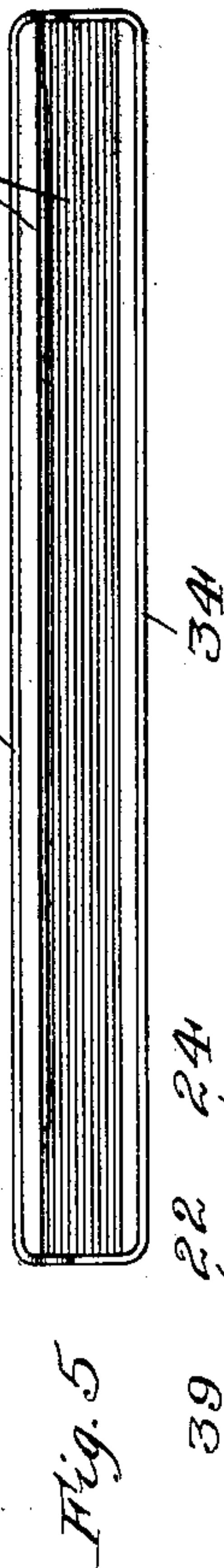
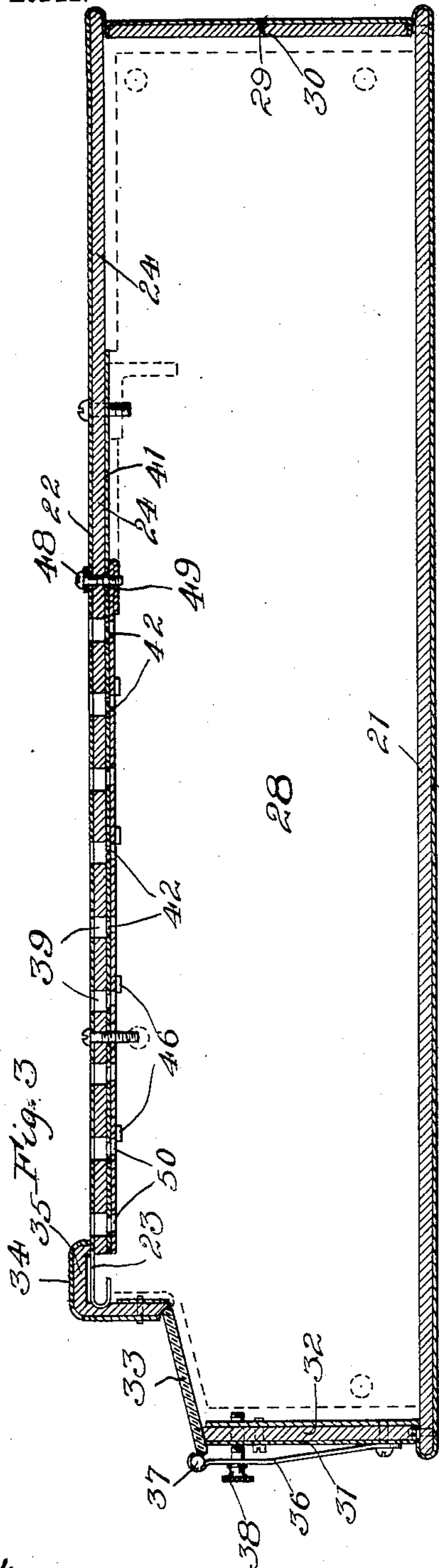
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3 SHEETS—SHEET 2.



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NO MODEL.

3 SHEETS—SHEET 3.

Fig. 6

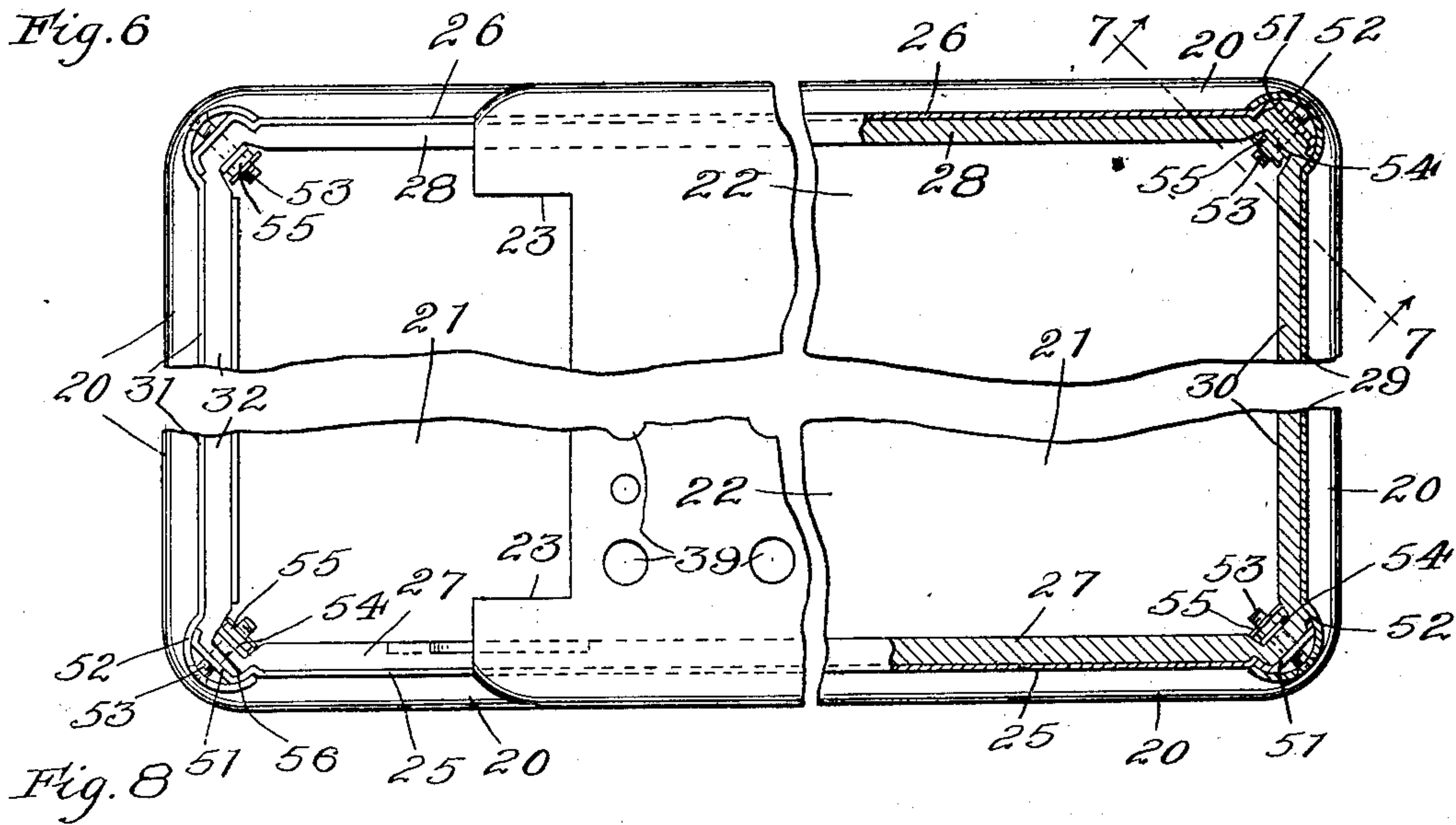


Fig. 8

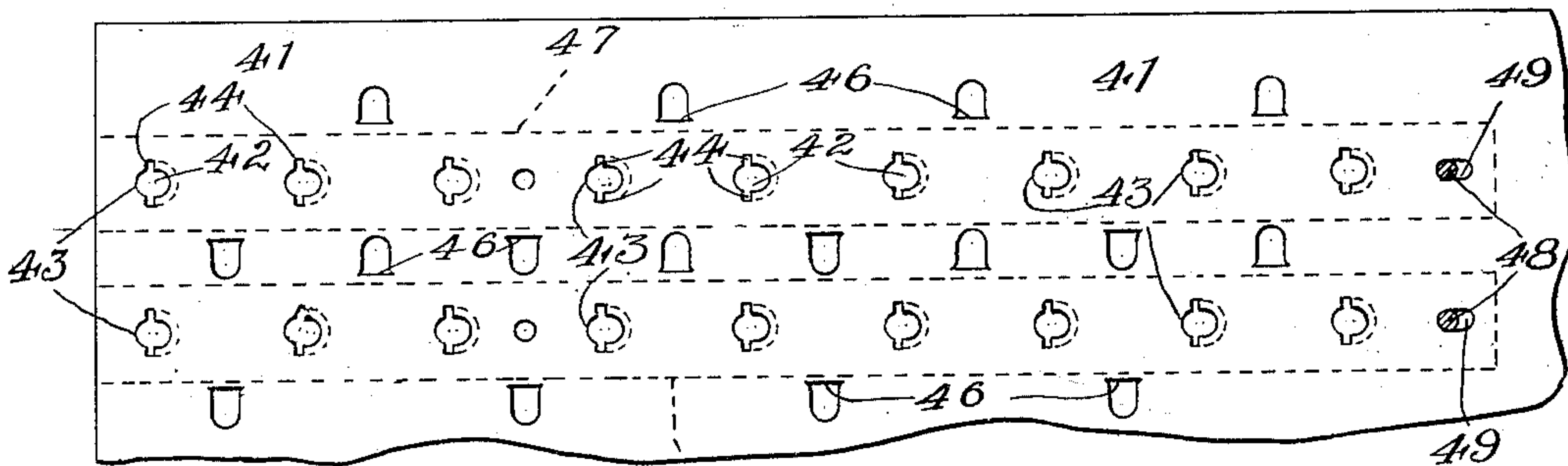


Fig. 9

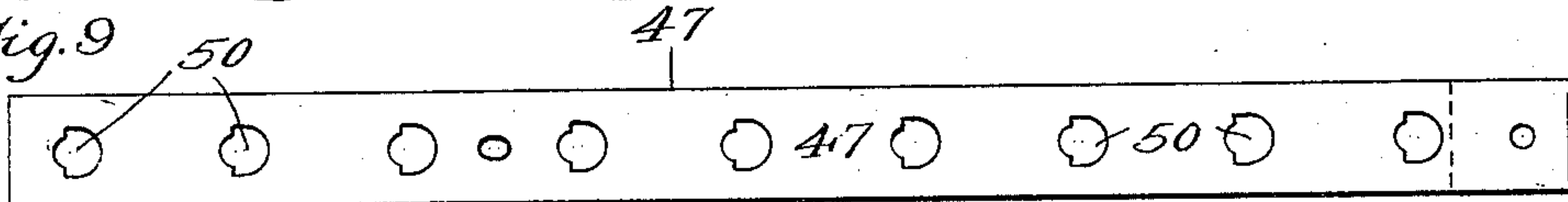


Fig. 7

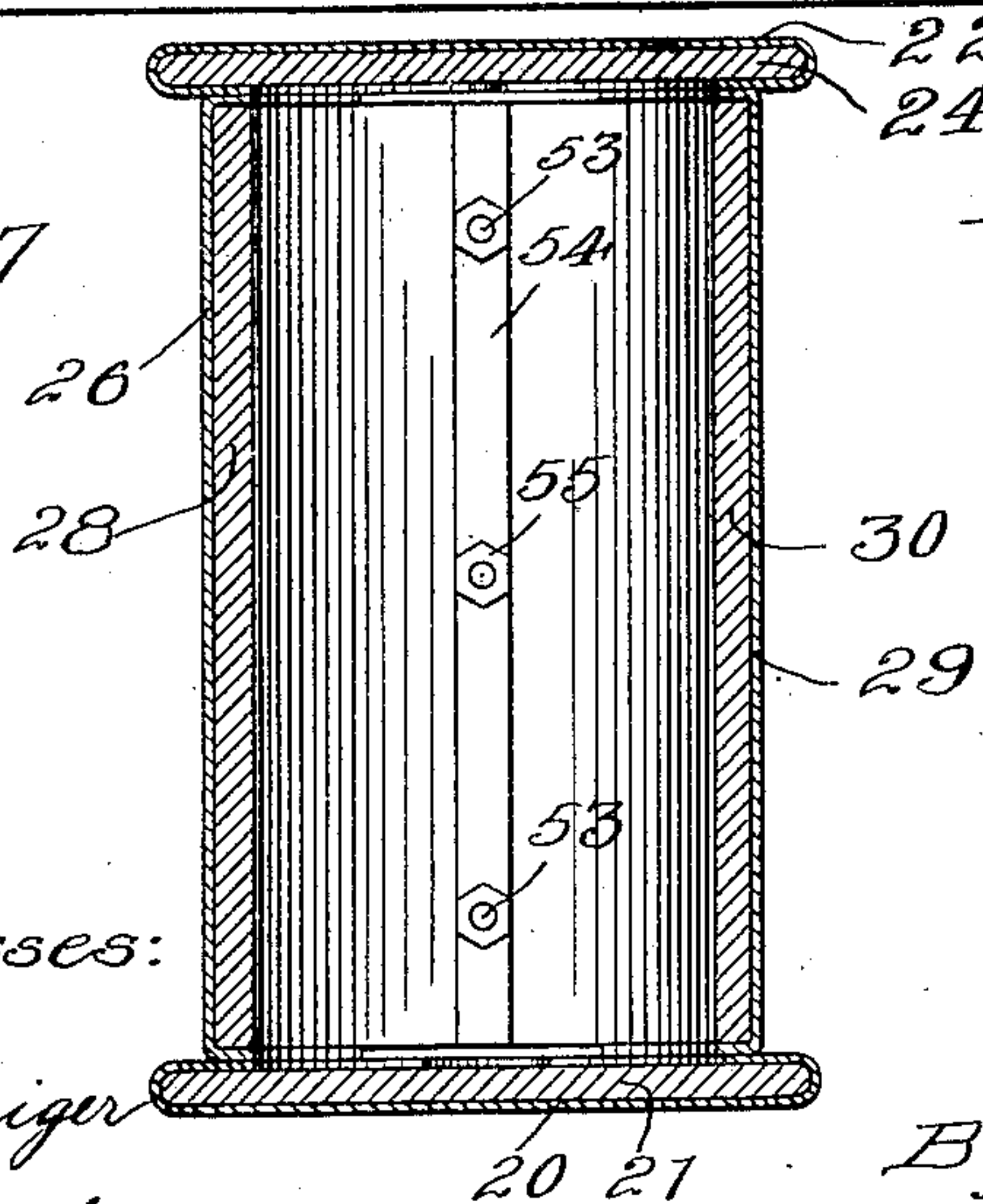
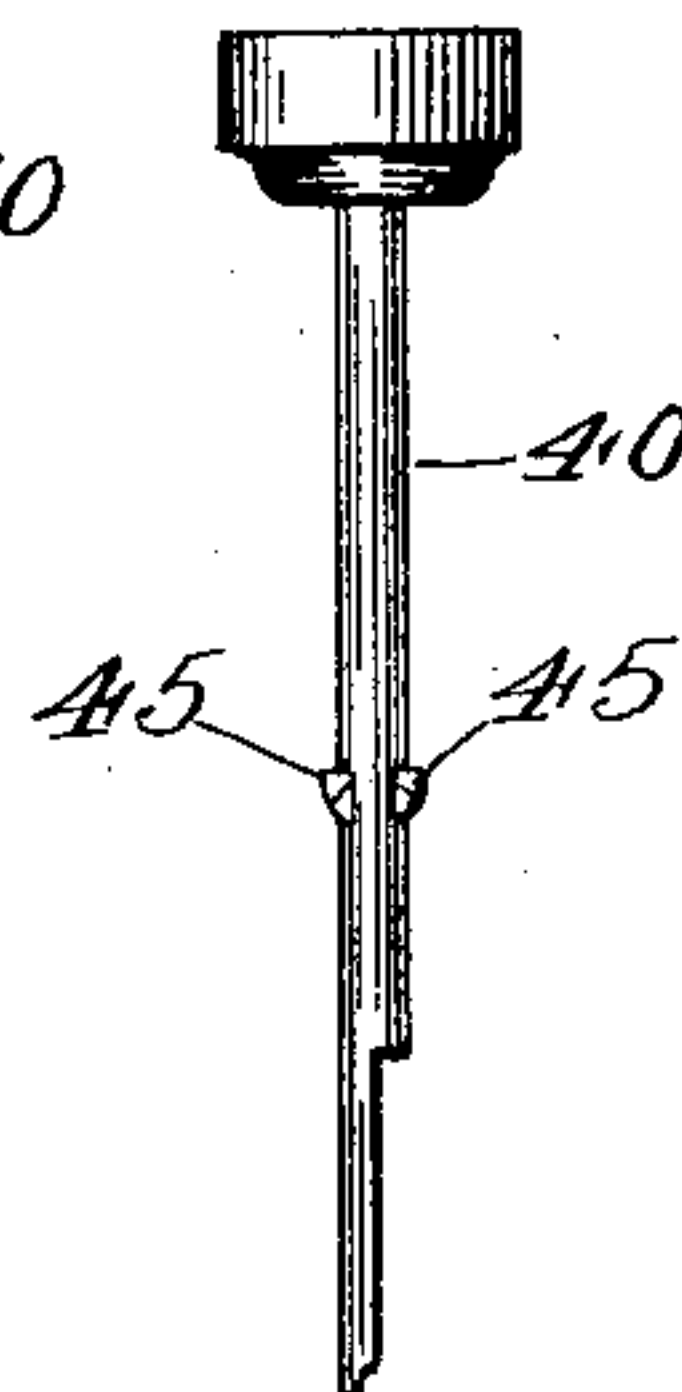


Fig. 10



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# UNITED STATES PATENT OFFICE.

DORR E. FELT, OF CHICAGO, ILLINOIS.

## CASING FOR KEY-OPERATED MACHINES.

SPECIFICATION forming part of Letters Patent No. 733,379, dated July 14, 1903.

Application filed November 3, 1902. Serial No. 129,903. (No model.)

*To all whom it may concern:*

Be it known that I, DORR E. FELT, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have  
 5 invented a new and useful Improvement in Casings for Key-Operated Machines, of which the following is a specification.

This invention relates to a means for deadening the sound produced by mechanism in  
 10 key-operated instruments—such, for example, as the comptometer; and it consists in lining the casing, which entirely incloses the working parts of the instrument, with a material like linoleum, as will be herein more  
 15 fully set forth in connection with the accompanying drawings, which form a part of this specification.

In said drawings, Figure 1 is a top or plan view of a comptometer provided with my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a central vertical section on the line 3 3 of Fig. 1, the keys and the mechanism of the machine being omitted, the outline of the framework of the contained mechanism being shown in dotted line. Fig. 4 is a similar vertical cross-section on the line 4 4 of Fig. 1. Fig. 5 is a bottom plan or interior view of the hood or front upper corner of the casing shown removed. Fig. 6 is a contracted  
 30 or broken-away plan view similar to Fig. 1, but upon a larger scale and with the hood and glass removed and having the rear part shown in horizontal section, the purpose of the figure being to illustrate the manner of forming the corners and uniting the linoleum fabric to the exterior casing. Fig. 7 is an interior view of one of the corners, the same being a vertical cross-section upon the diagonal line 7 7 of Fig. 6. Fig. 8 is a partial plan view of  
 40 the key-plate. Fig. 9 is a plan view of one of the sliding lock-bars for locking the keys to prevent removal upward through the key-plate. Fig. 10 is an elevation of one of the keys to show the shoulders thereon that cooperate with the key-plate and the locking-bar.  
 45 While the comptometer as invented and constructed by me has proved to be an exceedingly useful instrument and has gone into extensive use, a very serious defect which  
 50 I have long well recognized as being such in

its use has been the excessive noise produced by its manipulation from the key-stroke and the operation of the mechanism set in motion thereby. This noise is very considerable even when a single machine is in operation  
 55 in the room; but when several are simultaneously being used it becomes a serious difficulty and puts an undue strain upon those who are engaged in the mental operations involved in the use of the machine and upon every-  
 60 body in the immediate neighborhood. To overcome this difficulty has been for a long time a most serious problem; but in the present invention I have been at last enabled to so far  
 65 deaden the sound that it ceases to be a noise and becomes scarcely perceptible, and this, too, by means which actually cheapen the construction of the machine. I accomplish  
 70 this purpose by entirely inclosing the working parts of the machine, excepting only the key-heads and the manipulating devices, that must be within reach of the operator's hand or fingers, in a casing composed of sheet  
 75 metal lined throughout with linoleum, a fabric commonly employed as a floor-covering, said casing being complete, excepting for the holes through which the keys and exterior  
 80 manipulating parts project and excepting a glass plate through which the numbers on the numeral-wheels are rendered visible to the  
 85 eye of the operator.

In said drawings, 20 is the bottom plate of the casing, and the same is made, preferably, of sheet-steel—say one thirty-second of an  
 90 inch in thickness—in the form of an oblong rectangle, with the edge all around turned up and over a similarly-shaped sheet of linoleum 21 of, say, one-eighth of an inch in thickness. I prefer to stamp the sheet metal  
 95 into shape and turn it up over the piece of linoleum by means of a die.

22 is the top plate of the case, made like the bottom plate, with the exception that it is shorter and that its front end is cut away with the cavity 23, to be subsequently covered by a  
 100 hood that is described in its turn. Like the bottom plate, said top plate is similarly lined with linoleum 24.

25 26 are the vertical side plates of the casing lined with the linoleum pieces 27 28, re- 100



spectively, excepting that the top and bottom edges of the sheets 25 and 26 are not recurved upon the linoleum.

29 is the rear vertical end piece of the outer casing, made like the side pieces and lined with the linoleum slab 30.

31 is the front end piece, made shorter than the rear end piece and lined, like it, with the linoleum slab 32. In the latter case the slab 32 projects above the metal casing to form a non-metallic resting-place for the lower edge of the inclined glass plate 33, and it may be here remarked that the side plates 25 26 and their lining of linoleum are so constructed that at the inclined glass plate the linoleum projects slightly above the metal, so that said glass plate will rest upon the linoleum. A hood 34, formed exteriorly of sheet metal and lined interiorly with a linoleum lining 35, is supplied to fill the gap between the front edge of the top plate and the upper edge of the glass 33, and the lower edge of this hood is so constructed (see Fig. 3) that its linoleum lining may come in contact with the upper edge of said glass plate.

On the front of the machine are mounted two springs 36 36, the upper ends of which are furnished with bearing-pieces 37 37, made of some sound insulating material, preferably vulcanized. Thumb-screws 38 38, setting through the springs into the casing, serve to hold the vulcanized bars against the lower edge of the glass plate 33, and thus lock said glass plate in position. This glass plate 33 comes immediately over the numeral-wheels, so that the numbers on them can be seen by the operator, and I find that this plate of glass, although a material which conducts sound fairly well, will not permit the escape of noise from the casing to any appreciable or annoying amount. The glass plate is in contact at all points with the linoleum and vulcanite only.

The top plate of sheet metal and the linoleum lining therefor are perforated with plain round holes 39 for the passage of the key-stems 40, but which are made larger than the diameter of the key-stems; but beneath the lining 24 of the top of the casing and secured thereto is a supplemental plate 41, (see Fig. 8,) which is perforated with a series of peculiarly-formed holes 42. These holes are cut with the circular part 43 upon a circle of the same diameter as the key-stems 40, and at each side of the semicircle 43 is a wing extension or slot 44 to permit the passage of the wing 45 45 on the key-stems. (See Fig. 10.) The plate 41 at each side of each row of holes 42 is punched with a row of tangs 46, extending downward from the plate to guide a series of lock-bars 47, one placed beneath each row of holes 42 and connected to the plate 41 by pins 48 passing through slots 49. Through these lock-bars are holes 50, formed of the shape shown. The key-stem 40 is inserted down to the key-plate 41 and the bar 47 and the key slightly turned, after which the bar

47 is pushed longitudinally until the key is locked in place, so that it cannot be withdrawn until after the bar is pushed back to its original position.

The four vertical corners of the casing are formed as follows: Each vertical sheet-metal side piece is formed at one end with the bent part 51 and each end piece with the overlying bent part 52. These bent parts fitting together form a joint having but one exterior seam. Screws 53, the heads of which may be countersunk, pass through both of these bent parts and engage in a vertical strip 54 and nuts 55. The vertical linoleum lining 27, 28, 30, and 32 is made, preferably, in one piece, which extends all the way around, the ends being joined together by a gain or rabbet 56 at one of the corners. (See Fig. 6.) The screws 53 pass through holes in this linoleum fabric, and when the linoleum fabric is applied to the interior of the vertical sides the vertical strips 54 can then be slipped on over the projecting ends of the screws 53 in the interior of the case, and the nuts 55 being tightened up the linoleum fabric will yield enough by reason of its elasticity as the screws are tightened to cause it to hug the vertical sheet-metal walls closely, and thus be held thereto without the employment of any cement or glue, the use of which is objectionable both from lack of durability and because it lessens the sound-insulating properties of the casing.

The casing made as above described is not only simple in construction, easy and cheap to make, but unchanging in condition and exceedingly durable.

I am informed and believe it to be true that for the purpose of deadening the sound metallic cases have been lined with sound-deadening materials, such as cloth and various other insulating materials. I do not claim to be, broadly, the inventor of such devices. Indeed, I have tried experiments with many sorts of material for lining; but until I hit upon linoleum and the similar materials I did not obtain a satisfactory result.

As will be seen from Fig. 6, the parts of the lining which are acted upon by the vertical strips 54 and screws 53 are forced outward into the hollows of the columnar corners, and thereby the portions of the lining between the corners are tightened.

I claim—

1. The calculating-machine having a sound-deadening inclosing case comprising in combination a casing and a lining of linoleum, substantially as specified.

2. The calculating-machine having a sound-deadening inclosing case comprising in combination an exterior casing and an interior lining of linoleum, substantially as specified.

3. The calculating-machine having a sound-deadening inclosing case comprising in combination a sheet-metal casing and a lining of linoleum, substantially as specified.



4. The calculating-machine having a sound-deadening inclosing case comprising in combination an exterior sheet-metal casing and an interior lining of linoleum, substantially as specified.

5. The calculating-machine wherein are combined an exterior sheet-metal casing lined with linoleum, the interior lining of linoleum and the glass plate, substantially as specified.

6. The combination of the exterior sheet-metal casing lined with linoleum, the interior lining of linoleum and the glass plate, said glass plate being supported by contact with the linoleum lining, substantially as specified.

7. The combination of the exterior sheet-metal casing lined with linoleum, the interior lining of linoleum and the glass plate, said glass plate being supported by contact with the linoleum lining and secured in place by clamps having insulated contact with the glass, substantially as specified.

8. The sheet-metal casing adapted to be lined with linoleum, the sides and ends of which casing are joined together by a columnar joint consisting of an interior and an exterior columnar part fitting together, and held by through-bolts, substantially as specified.

9. In a sound-deadening casing, the combination of the vertical walls having columnar joints at the corner, the through-bolts for securing said corner, the interior vertical strip through which the through-bolts pass, and the continuous strip of linoleum placed between the vertical strips and the casing, and the nuts for the through-bolts, whereby, by tightening the nuts the linoleum lining may be secured and caused to hug the sheet-metal casing, substantially as specified.

10. In a sound-deadening inclosing case, the combination of the sheet-metal bottom piece, the linoleum lining therefor secured thereto by folding the sheet metal on the linoleum, the sheet-metal top piece, its lining, secured thereto in a similar manner, and the vertical side pieces with their linoleum lining secured thereto by through-bolts at the corners, all substantially as specified, and whereby the use of cement is avoided.

11. In a sound-deadening inclosing case

for a key-operated mechanism, the combination of a sheet-metal exterior casing lined with linoleum, the interior top portion of the casing being perforated with holes for the passage of the key, a metallic plate pierced with holes, a part of each hole being conformed to fit a part of the key-stem and secured beneath the top of the casing, a movable bar pierced with corresponding holes and secured beneath the last-mentioned plate, the key having shouldered stems, whereby the said keys may be inserted by passing their stems down through the cover of the casing, the holes in the metallic plate and in the bar, and locked against upward withdrawal by a sliding removable bar, substantially as specified.

12. The metal casing for calculating-machines having a sound-deadening lining secured to the casing by metal clamps at the joints between the parts of the casing, substantially as specified.

13. The metal casing for calculating-machines having a sound-deadening lining secured to the casing by suitable means at the joints between the parts of the casing, and the intermediate portions of the lining being unattached, substantially as specified.

14. The combination of the exterior sheet-metal casing lined with linoleum, the interior lining of linoleum and the glass plate, said glass plate being supported by contact with the linoleum lining and secured in place by elastic clamps, substantially as specified.

15. The calculating-machine the casing whereof embodies the combination with vertical exterior walls, of a lining for such walls secured at the corners and drawn tight between the corners, substantially as specified.

16. A calculating-machine having a sound-deadening case wherein are combined sides and ends of rigid material properly secured together, and an elastic lining secured at intervals to the sides and ends, and drawn tight between the points of attachment, substantially as specified.

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Witnesses:

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