

Nov. 26, 1935.

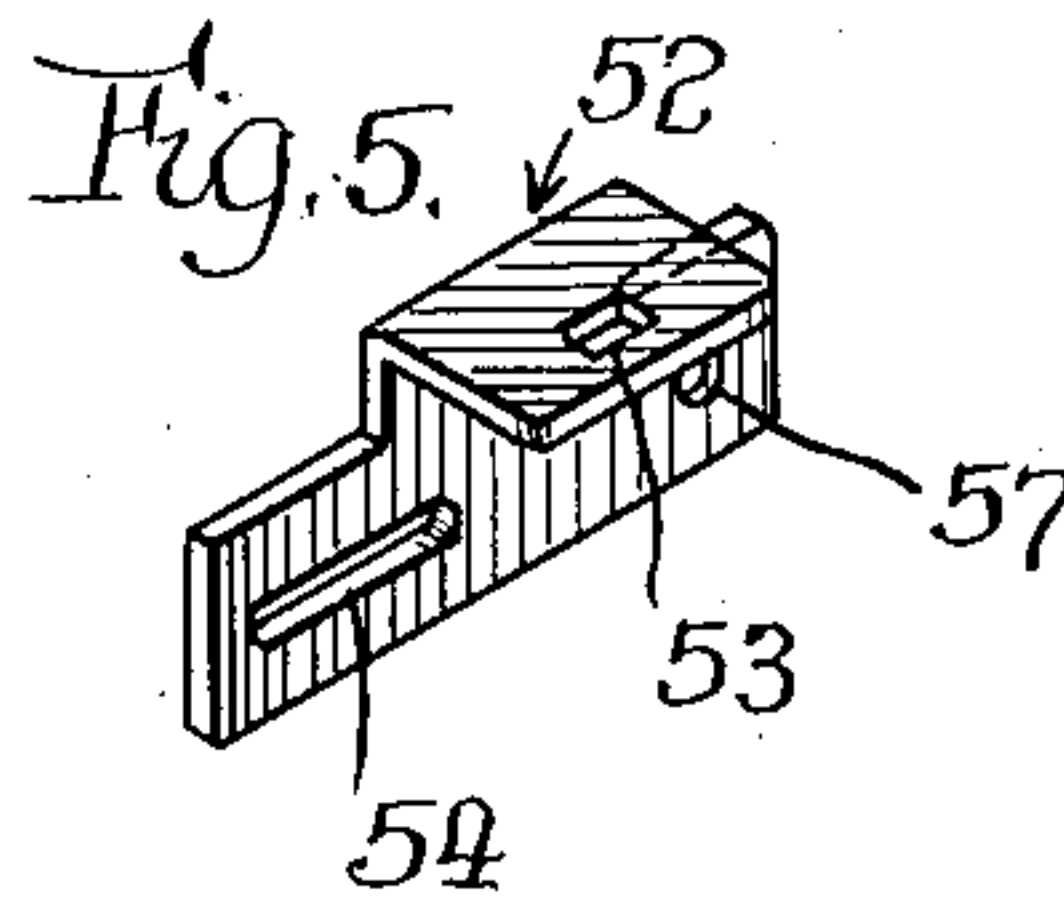
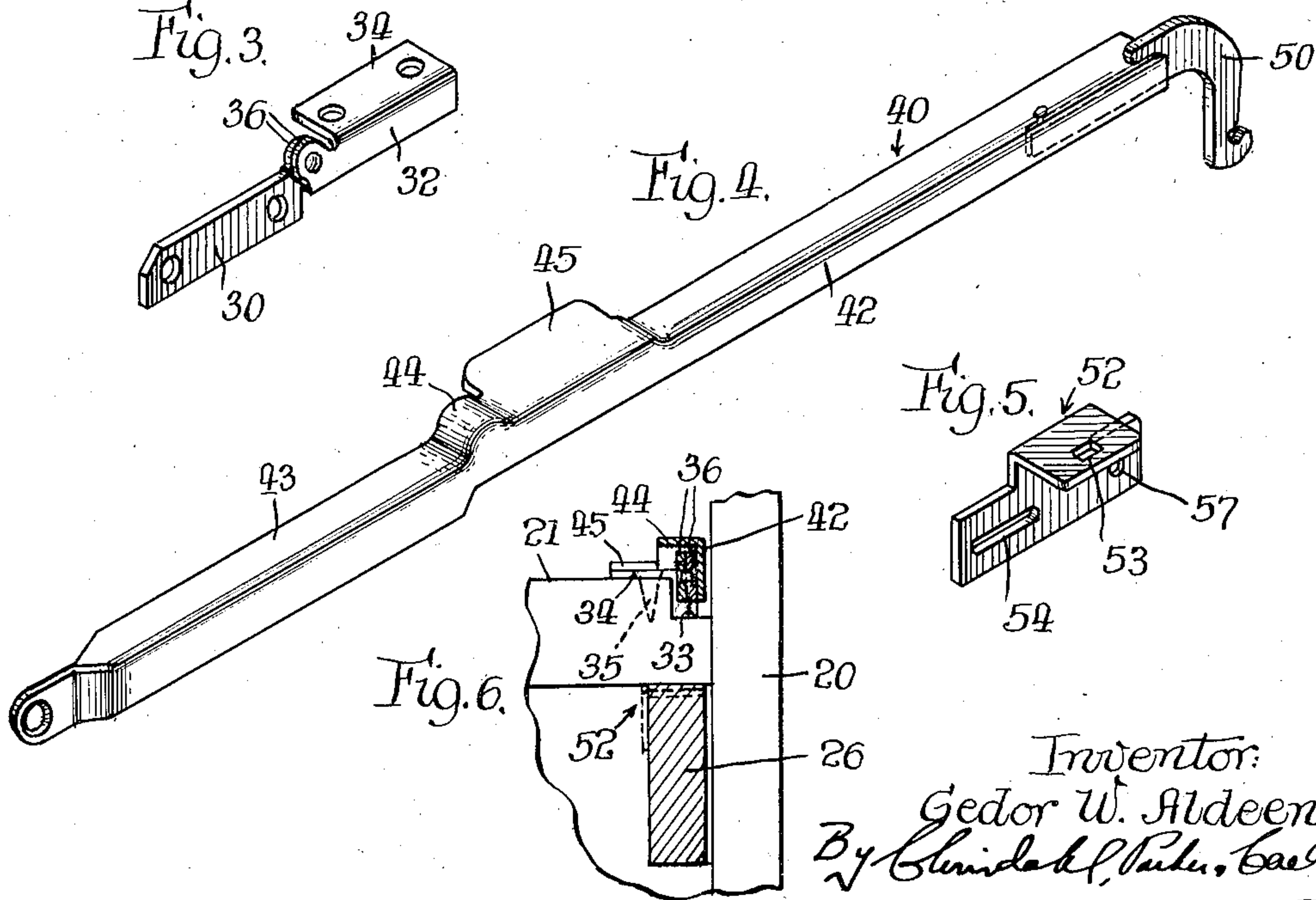
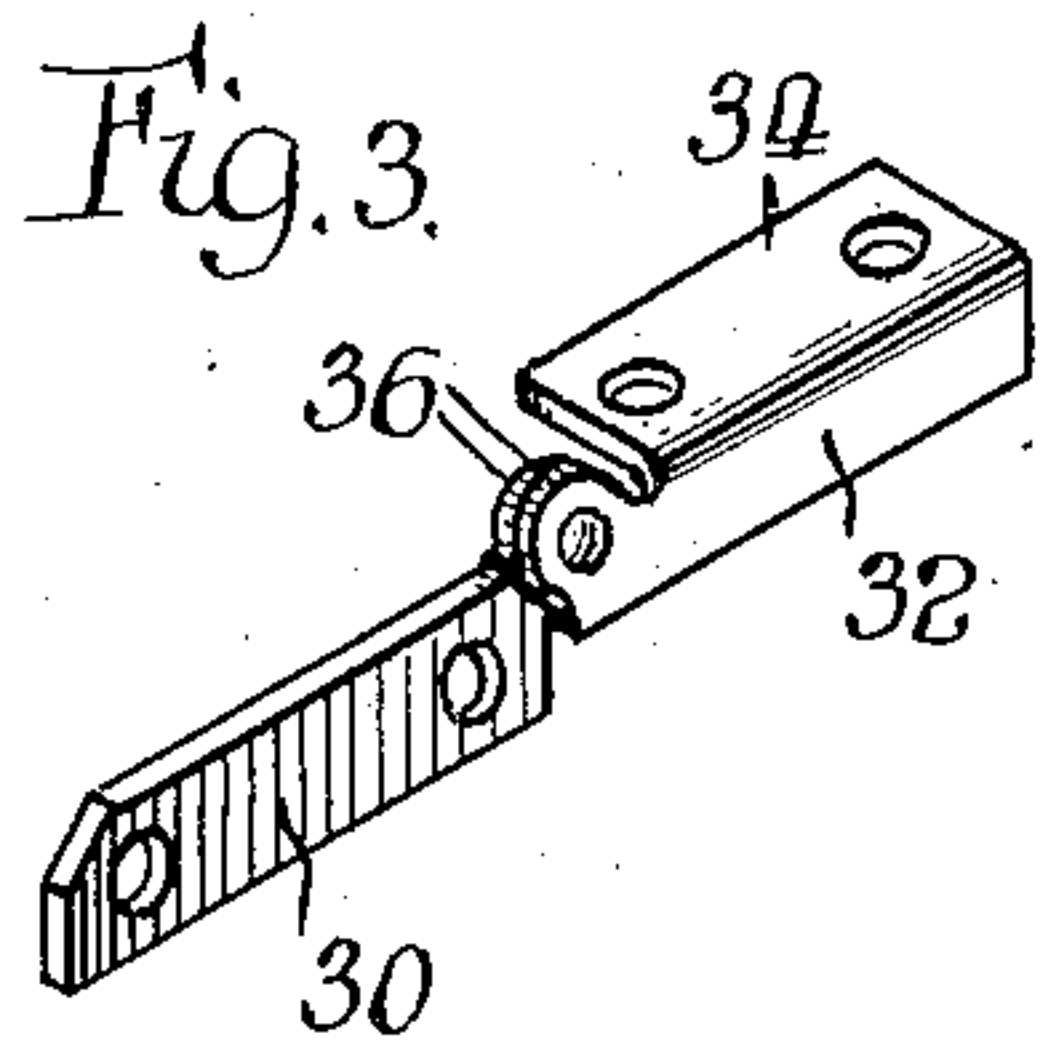
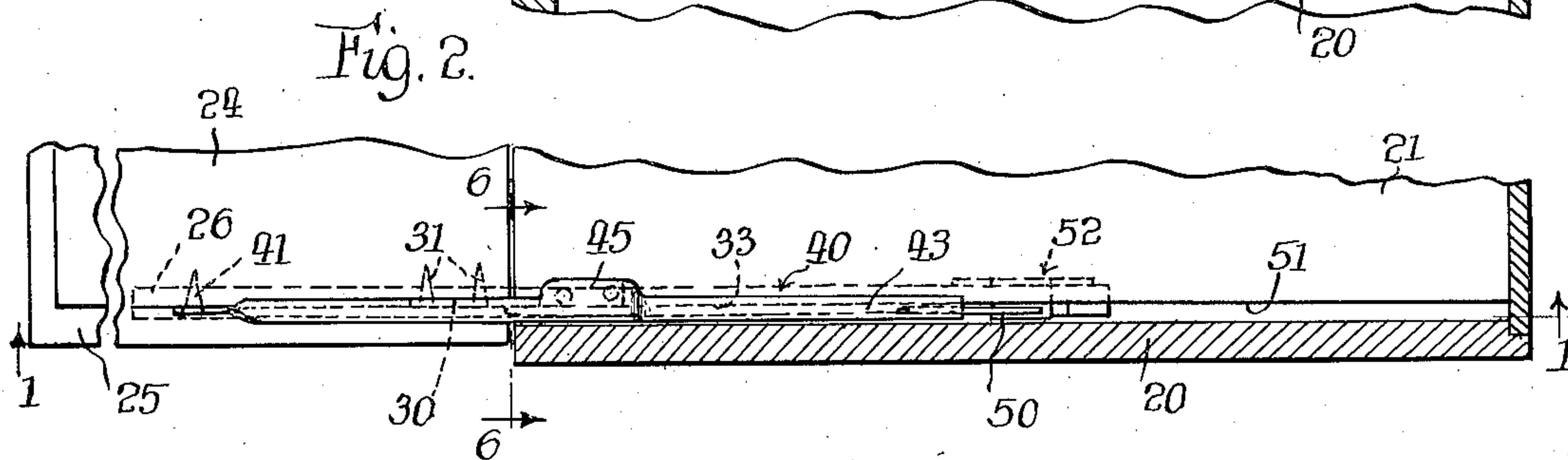
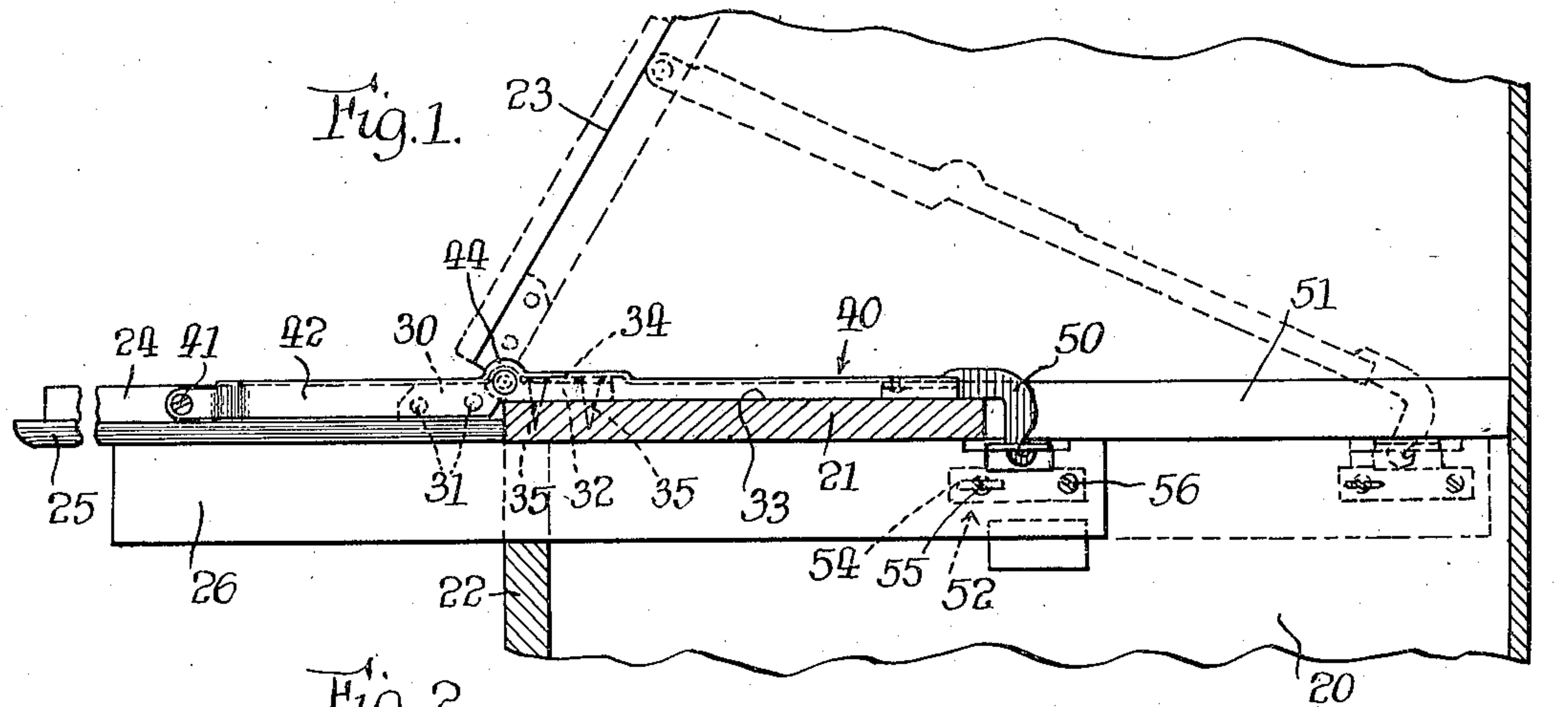
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2,022,172

FALL BOARD STRUCTURE

Filed Dec. 28, 1934

2 Sheets-Sheet 1



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FALL BOARD STRUCTURE

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2 Sheets-Sheet 2

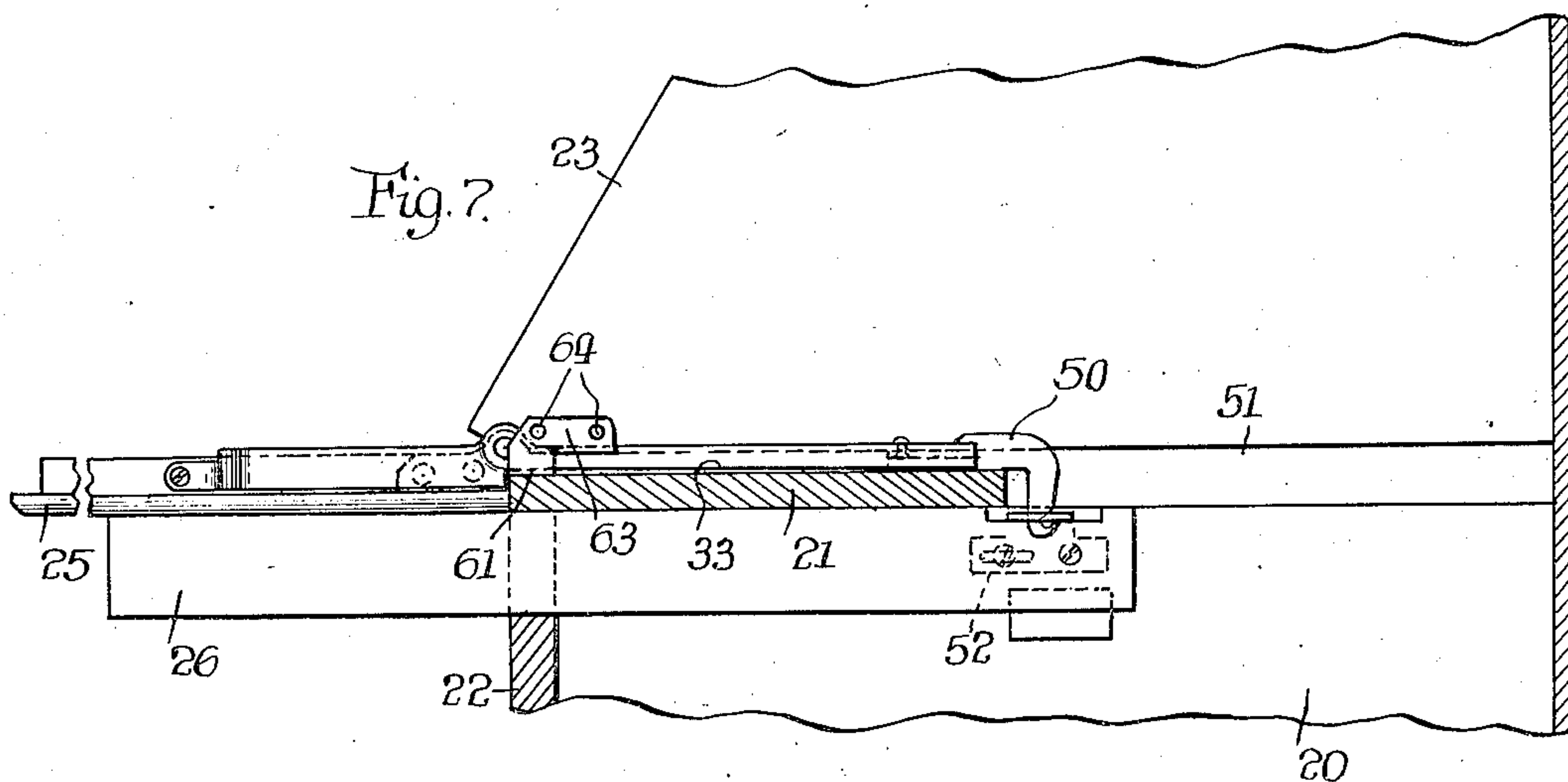


Fig. 8.

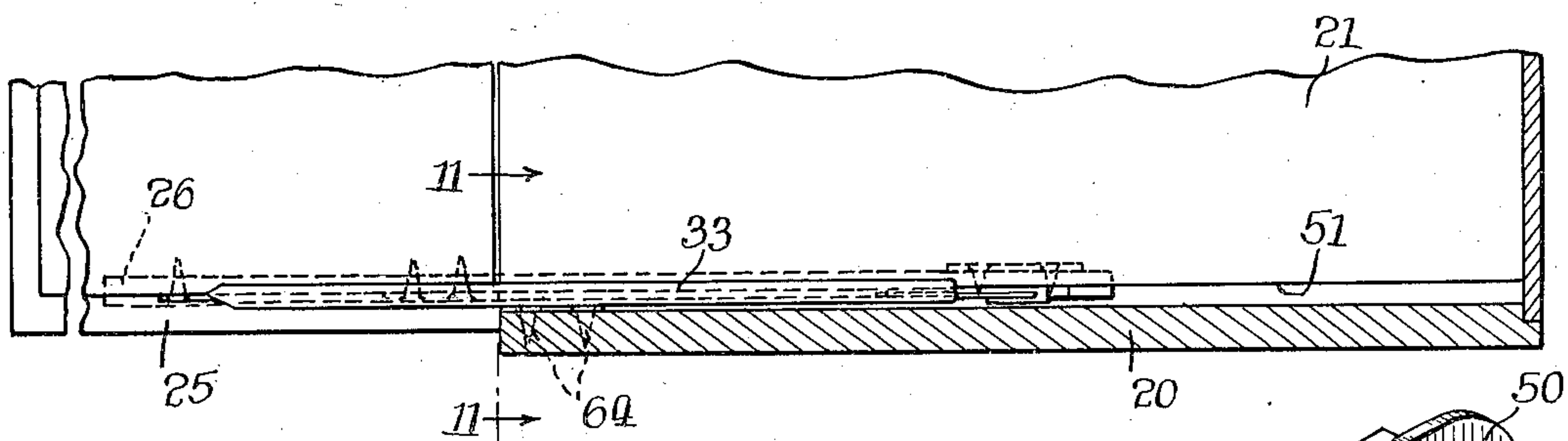


Fig. 9.

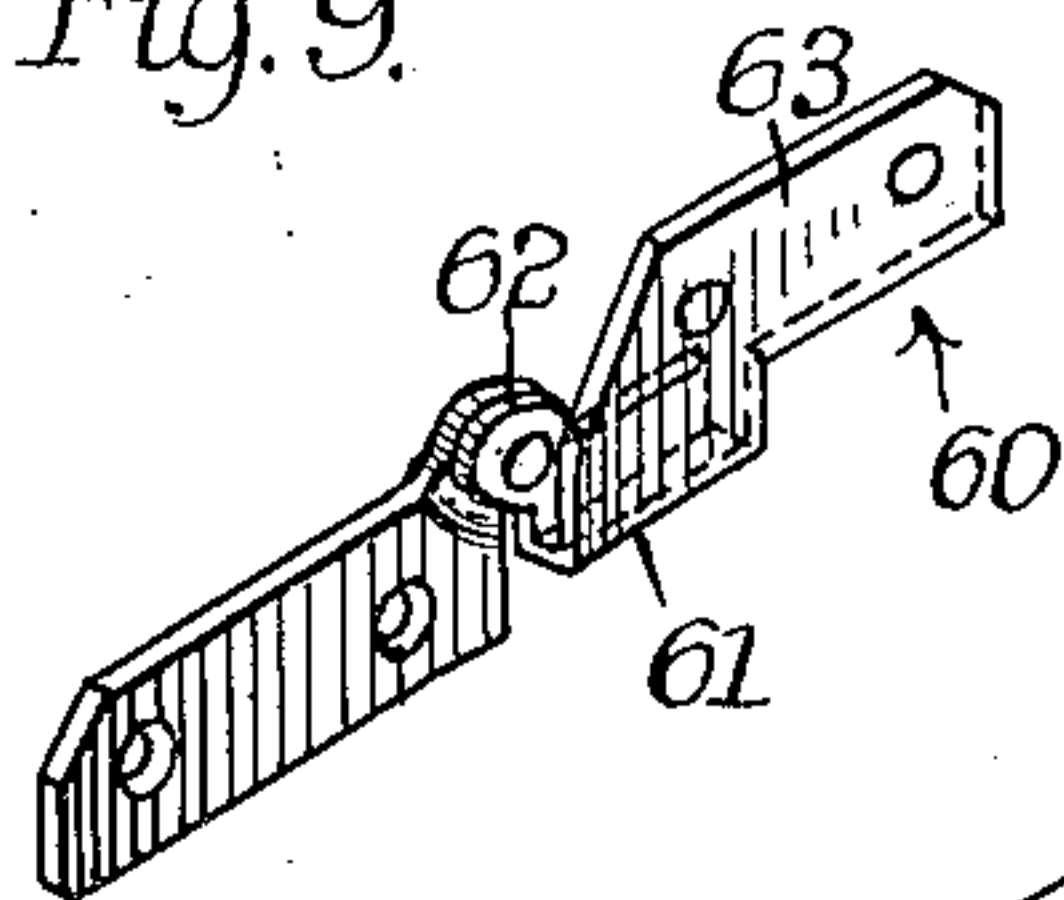


Fig. 10.

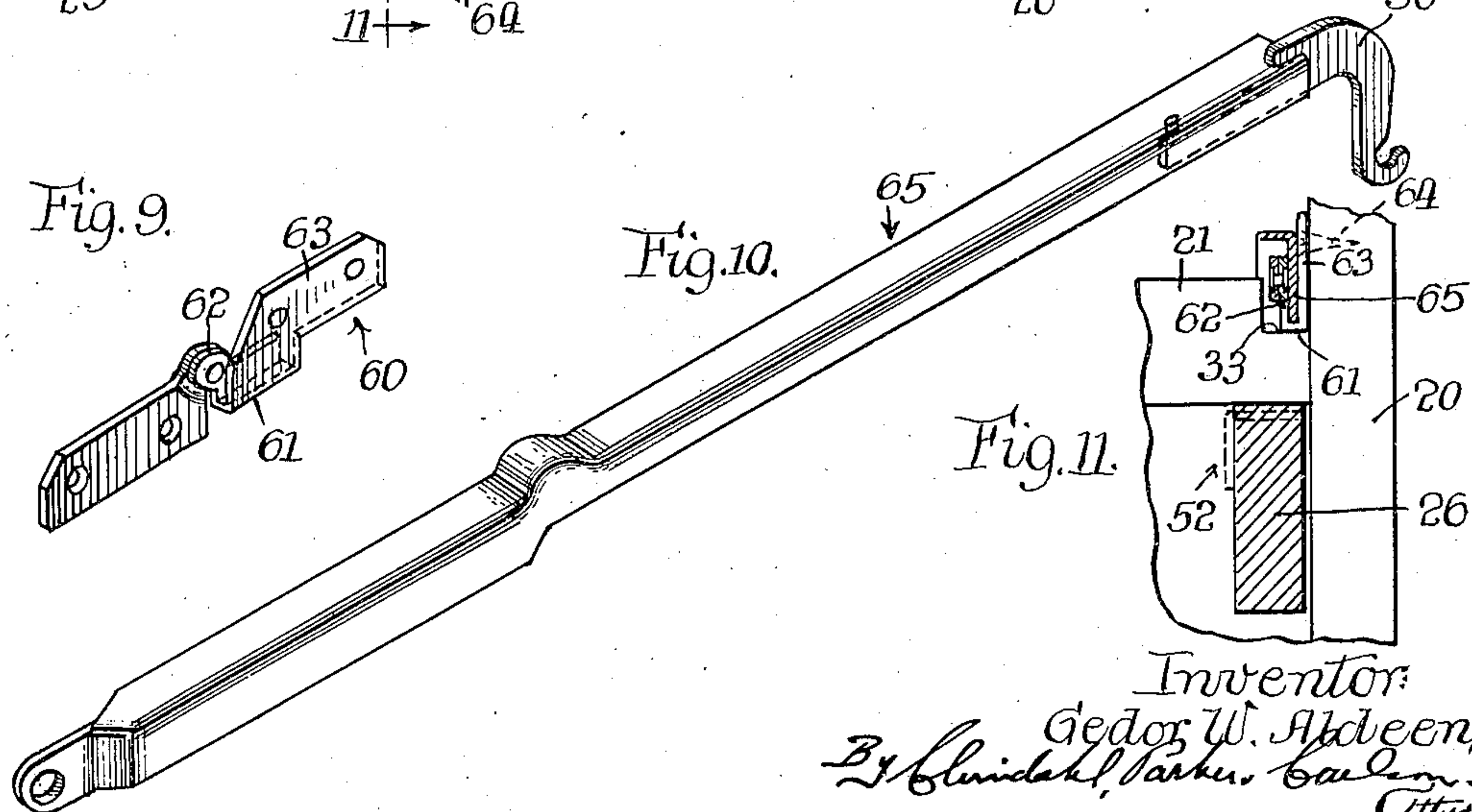
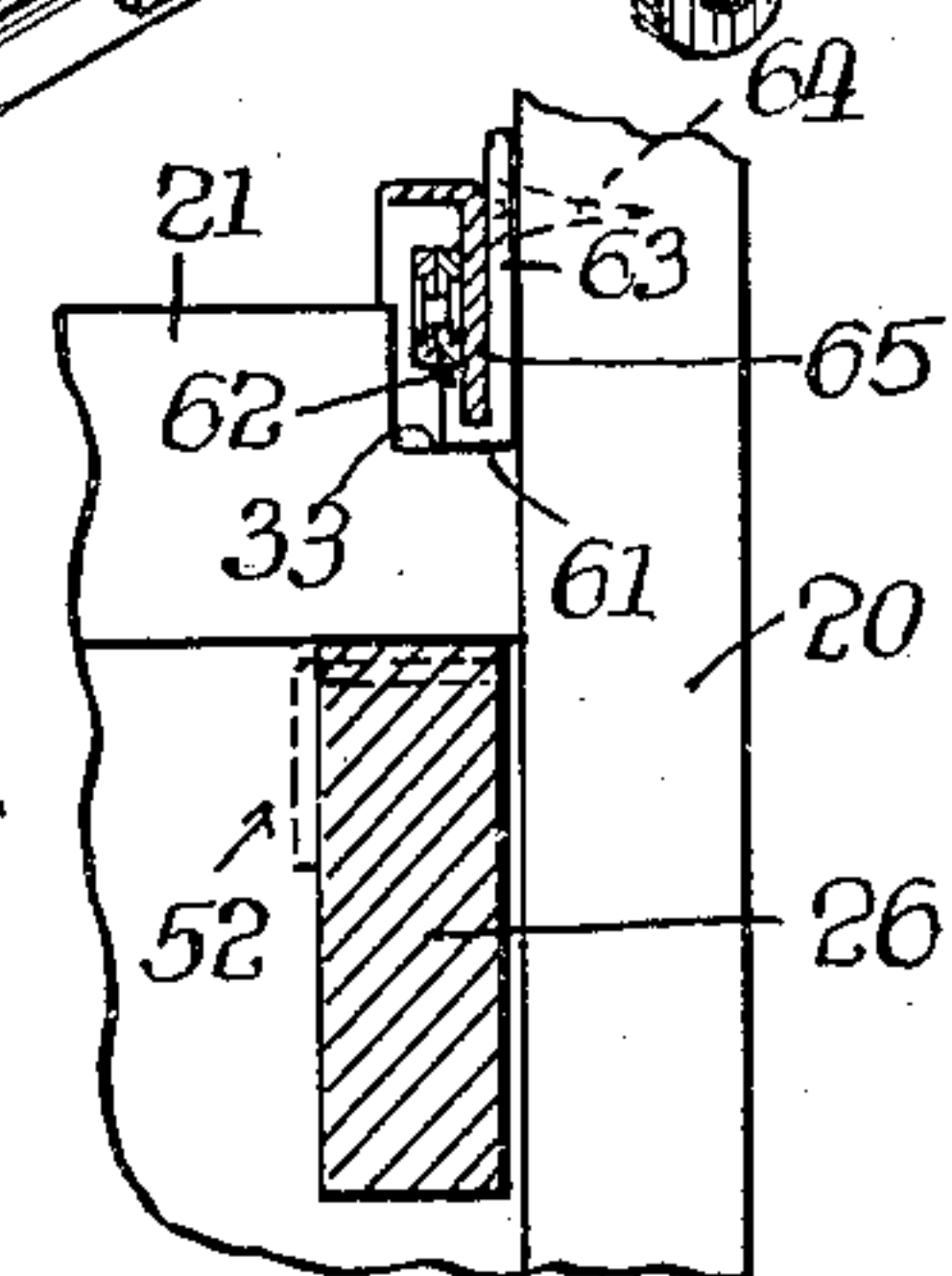


Fig. 11.



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UNITED STATES PATENT OFFICE

2,022,172

FALL BOARD STRUCTURE

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10 Claims. (Cl. 45—91)

The invention relates generally to fall board structures and more particularly to means for hinging a fall board and for operating slidable supports therefor.

5 In the type of desk known as the Governor Winthrop type, a fall board is provided which occupies a rearwardly slanting position when closed. On opening, the fall board is adapted to swing outwardly to a horizontal position flush with the fall bottom or floor of the desk to constitute a continuation thereof of sufficient area to make it convenient for writing. When open, the fall board is supported by a pair of slidable members positioned at the sides of the fall board, the supporting members being drawn out from under the fall bottom of the desk when the fall board is swung open.

10 In this type of desk as originally constructed, the two slidable supports had to be pulled out by hand, but in present day desks, the supports are automatically moved out when the fall board is swung forwardly and are returned to their position under the fall bottom when the fall board is closed. For this purpose, in the more expensive desks, a hinge is provided for the fall board which is mortised into the fall board and the fall bottom. Such a hinge has a link which extends down through the fall bottom and is there connected to a means for automatically moving the slidable support. The hinge and its link are positioned adjacent the side edge of the fall board, and because of the mortises, lie flush with the upper surface of the fall board and fall bottom when the fall board is open. There is thus nothing to protrude above the even surface of the fall board and fall bottom.

15 In less expensive desks, such a hinge is too costly. For this type of desk, it is customary to use a simple bar attached to the side edge of the fall board and extending rearwardly and downwardly through a slot in the fall bottom to operate the slidable support. The hinges for this type of desk are the usual flat leaf type secured to the bottom or rear edge of the fall board and the front edge of the fall bottom at points spaced somewhat from the side edges of the fall board. The objectionable feature of this type of construction is that the knuckles or joints of the hinges are of substantial length and protrude above the writing surface sufficiently to interfere with papers lying on top of the fall board and fall bottom and to prevent articles from being easily slid back from the fall board onto the fall bottom when the desk is to be closed.

The general object of the present invention is therefore to provide a fall board structure having hinging means and means to operate the slidable supports, which do not interrupt materially the flat surface provided by the fall board and fall bottom, and which are of relatively inexpensive construction.

It is also an object to provide hinging means and means to operate the slidable supports, which interfold in such a manner that only small portions thereof protrude above the upper surface of the fall board and fall bottom, with such protruding portions located at the extreme side edges of the fall board where they in no way interfere with the use of the desk.

15 A further object is to provide interfolding hinging means and support-operating means which not only are inexpensive to construct but also are inexpensive to install, are of ample strength for the purpose, and have a neat, finished appearance when the fall board is open.

Another object is to provide hinging means and support-operating means which are especially adapted for use with the rabbeted type of fall board.

Other objects and advantages will become apparent from the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a fragmentary vertical section, taken on the line 1—1 of Fig. 2, of a desk provided with fall board structure embodying the features of the invention, with the fall board shown in its open position by full lines and in its closed position by dotted lines.

Fig. 2 is a fragmentary horizontal section of the desk shown in Fig. 1.

Figs. 3, 4 and 5 are respectively enlarged perspective views of the hinge, the support operator, and the means to connect said operator with the support, employed in the embodiment shown in Figs. 1 and 2.

Fig. 6 is an enlarged fragmentary vertical section taken on the line 6—6 of Fig. 2.

Fig. 7 is a vertical section similar to Fig. 1 but showing a modified form of structure.

Fig. 8 is a horizontal section, similar to Fig. 2, but of the structure shown in Fig. 7.

Figs. 9 and 10 are enlarged perspective views of parts of the modified form of structure shown in Figs. 7 and 8.

Fig. 11 is an enlarged fragmentary vertical section taken on the line 11—11 of Fig. 8.

While the invention is illustrated as being embodied in a desk, it is to be understood that the

invention is not to be limited specifically to a desk but may be embodied in any article of furniture having a fall board and slidable supports therefor. It is also to be understood that, although only the structure at one side of the desk is shown, similar structure is also employed at the other side of the desk.

In the present instance, the desk shown in the drawings comprises a pair of vertical side members 20 between which extends a full bottom or floor 21 and a front apron 22. The front edges of the side members 20 may extend upwardly and rearwardly from the front edge of the fall bottom 21, as shown at 23. To close the upper part of the desk when not in use and to provide a writing surface of adequate area, a fall board 24 is provided which is here shown as of the rabbeted type having a flange-like portion 25 on the two side edges and the front or top edge thereof to overlies the front edges 23 of the side members and the edge of the top of the desk when the fall board is closed. The flange-like portion 25 thus limits the closing movement of the fall board.

When the fall board is open, it is flush with the fall bottom 21, and is supported in such position by a pair of slidable supports 26, only one of which is shown in the drawings. The supports 26 are positioned in the desk proper immediately under the fall bottom and at the extreme side edges of the fall board, and when the fall board is open, the supports 26 are drawn outwardly to extend beyond the front apron 22 and thus provide a rigid support for the fall bottom. When the fall board is closed, the supports 26 are moved back into the desk so that their front edges are flush with the front apron 22.

To provide for the movement of the fall board, a pair of hinges are provided, the pivotal axis of which is in the plane of the top surface of fall board and fall bottom at the rear or bottom edge of the fall board and the front edge of the fall bottom. Thus, when the fall board is open, it lies flush with the fall bottom. Each hinge comprises a pair of members attached respectively to the fall board and fall bottom. In order that they shall not project above the fall board and fall bottom in a way to interfere with the use thereof for writing purposes, they are positioned at the extreme side edges of the fall board. They thus leave the upper surface of the fall board and fall bottom uninterrupted by any projection which would interfere with papers lying thereon.

In the preferred embodiment of the invention shown in Figs. 1 to 6, each hinge comprises a pair of members made of sheet metal. The member attached to the fall board, indicated at 30, is of such size that it may be positioned in the rabbeted portion and lies flat against the side edge of the fall board, screws 31 being employed to secure it in position. The hinge member attached to the desk proper, comprises a vertical portion 32 positioned in a rearwardly extending groove 33 cut in the fall bottom. The upper portion of this hinge member is bent, as at 34, at a right angle to the portion 32 and rests on the top surface of the fall bottom to which it is attached as by screws 35. The hinge members are each provided with pivotally connected portions 36 in face-to-face relation with the edges of the metal upward so that they occupy as little space as possible.

The invention also includes operators, indicated generally at 40, for the slidable supports 26, which are positioned adjacent the side edges

of the fall board and so shaped as to interfold with the hinges and provide a neat appearance when the fall board is open. To this end, each operator is arranged to conceal the hinge. The operator, because of its function, is attached at one end to the fall board to derive motion therefrom and at its other end to the adjacent slidable support 26.

As shown herein, the operator comprises a strip of sheet metal bent longitudinally to provide a right angle cross section and having its front end attached to the side edge of the fall board as by a screw 41. The vertical leg, indicated at 42, of the right angle is of such dimension as to fit in the rabbet on the side edge of the fall board outside of the hinge member 30 and to extend rearwardly in the groove 33 of the fall bottom. The other leg, shown at 43, overlies the top surface of the fall board and fall bottom. To interfold with the hinge, the top leg 43 is provided with a rounded pocket 44 which fits over the pivotally connected portions 36 of the hinge. The top leg 43 may also have an extension 45 to overlies the portion 34 of the hinge. The operator thus neatly interfolds with and conceals all parts of the hinge, when the fall board is open, to provide a neat appearance, and neither the hinge nor the operator materially interrupts the flat top surface provided by the fall board and fall bottom, since the hinge and operator are positioned at the extreme side edge thereof.

The operator at its rear end has a hook-like portion 50 which provides a detachable pivotal connection to the rear end of the slidable support 26. To permit the portion 50 to connect with the slidable support, the groove 33 opens into a slot 51 in the fall bottom, and a connecting member 52 having an aperture 53 (see Fig. 5) for engagement with the hook portion 50 is secured to the slidable support.

Since the rounded pocket 44 of the operator fits over the pivoted portions of the hinge when the fall board is open, and since it is desirable to have the front edge of the slidable support flush with the front apron 22 when the fall board is closed, the connecting member 52 must be accurately positioned on the support. To facilitate this, the connecting member 52 is provided with a screw-receiving slot 54 of substantial length, and is temporarily and approximately positioned on the support by a screw 55 extending through the slot 54. Then, by movement of the fall board to its two extreme positions, the correct position for the connecting member 52 may be determined. The screw 55 is then tightened and a second screw 56 is driven through an aperture 57 in the connecting member to rigidly hold it in place. Thus, it becomes a simple matter to properly position the connecting member so that the front edge of the support will be flush with the front apron 22 when the fall board is closed.

In the modified form of the device shown in Figs. 7 to 11, the hinge member attached to the desk proper, indicated at 60, is shaped for attachment to the inner face of the vertical side member 20 of the desk, while the hinge member attached to the fall board is of the same shape as in the hinge shown in Fig. 3. Thus, in order to interfold with and to provide space for the operator, the hinge member 60 has a U-shaped portion 61 positioned in the groove 33 of the fall bottom. One arm, shown at 62, of the U-shaped portion is pivotally attached to the other hinge member. The other arm of the U, shown at 75

63, lies flat against the inner face of the vertical side member 20, to which it is attached as by screws 64, and extends above the level of the fall bottom so that the screws 64 are accessible.

5 The operator 65 in this instance is similar to that shown in the first form, differing therefrom only by not having the extension 45. The front end of the operator 65 is attached to the side edge of the fall board in the rabbet and the rear end is pivotally connected to the slidable support 26 10 by the hook 50 and the adjustable connector 52. The vertical leg of the right angle cross section of the operator, when the fall board is open, extends down into the U-shaped portion 61 as will be noted in Fig. 11. It thus interfolds with the 15 hinge member to provide a neat, finished appearance, and being at the extreme side edge of the fall board, does not interfere with the free use of the upper surface of the fall board.

20 In operation of the form of the device shown in Figs. 1 to 6, when the fall board is open, the vertical leg of operator 40 extends along the side edge of the fall board and in the groove 33 in the fall bottom. The horizontal leg of the operator overlies the top surface of the fall board 25 and fall bottom and neatly fits over the pivotally connected portions 36 of the hinge member and the attaching portion 34. It thus completely conceals the hinge, and lies closely adjacent the side edge of the fall board so that the top surface thereof is left substantially free of any interruption.

On installing the device, after the hinge has been attached, the operator 40 is secured at its 35 front end to the side edge of the fall board at the proper point so that the rounded pocket 44 fits over the pivotally connected portions of the hinge. The connecting member is then placed on the slidable support in its approximate position and the screw 55 passing through the slot 40 54 is only partially tightened. The fall board is then closed and the slidable support is adjusted relative to the connecting member 52 so that the front edge of the slidable support is flush 45 with the front apron 22. The connecting member 52 is thus accurately positioned and the screws 55 and 56 are driven home.

In the modified form of the device shown in Figs 7 to 11, when the fall board is open, the 50 operator completely conceals the hinge member attached to the fall board, and the vertical leg of the operator folds into the U-shaped portion 61 of the hinge member attached to the vertical member 20 of the desk.

55 It will be noted that the various parts of both forms of the device are of inexpensive construction, since they are made of sheet metal which may be readily shaped. Moreover, the cost of installation is low, since no mortises or the like, 60 except the groove 33 and the slot 51, need be provided, and the parts attached by screws are readily accessible. The structure especially lends itself to the rabbeted type of fall board, and when the fall board is open, provides a 65 neat appearance. The only portions of the device protruding above the top surface of the fall board are located at the extreme side edges of the fall board where they in no way interfere with the use of the desk.

70 I claim as my invention:

1. In a desk provided with a fall board and a slidable support therefor, the combination of a hinge comprising a pair of members having pivotally connected portions, one attached to the 75 side edge of the fall board and the other to the

desk proper, and an operator for the adjacent slidable support having its forward end attached to the side edge of the fall board and its rear end connected to the slidable support, said operator having an angular cross section with one 5 leg thereof extending alongside the side edge of the fall board and outside of the hinge member attached thereto, and the other leg overlying said hinge member and the pivotally connected portions of the hinge members. 10

2. In a desk provided with a fall board and a slidable support therefor, the combination of a hinge for the fall board positioned at the extreme side edge of the fall board and comprising a pair of members having pivotally connected 15 portions, one of said members lying flat against and being secured to the side edge of the fall board and the other member being secured to the desk proper, and an operator for the slidable support secured at its front end to the side edge 20 of the fall board forwardly of the hinge member and the rear end to said slidable support, said operator comprising a strip of metal bent to provide a right angle cross-section with one leg extending alongside the side edge of the fall 25 board and the other leg over the top surface thereof to conceal the hinge member attached to the fall board and the pivotally connected portions to provide a neat appearance when the fall board is open. 30

3. In a desk having a fall board and a slidable support therefor, the combination of a hinge for the fall board positioned at the extreme side edge of the fall board and comprising a pair of members having pivotally connected portions, one of 35 said members being secured to the side edge of the fall board and the other member being positioned in a rearwardly extending slot in the fall bottom, and an operator for the slidable support secured at its respective ends to the fall board 40 and to the slidable support, said operator having a right angle cross-section with one leg of the right angle extending along the side edge of the fall board, outside of the hinge member attached thereto and rearwardly in the slot in fall bottom, 45 the other leg overlying the top surface of the fall board adjacent the side edge thereof and overlying the fall bottom adjacent said slot to substantially conceal said hinge and provide a finished appearance when the fall board is open. 50

4. In a desk having a fall board of the rabbeted type and a slidable support for the fall board, the combination of a hinge comprising a pair of sheet metal members having pivotally 55 connected portions, one member being secured to the side edge of the fall board in the rabbeted portion thereof and the other member being positioned in a rearwardly extending slot in the fall bottom and having a portion extending above the slot for ready attachment to the desk proper, 60 the pivotally connected portions being face-to-face with the edges of the metal upward to occupy as little space as possible, and an operator for the slidable support pivotally secured at its respective ends to the fall board and the slidable 65 support, the operator being made of sheet metal bent longitudinally to provide a right angle cross-section with one leg lying edgewise in the rabbeted portion of the fall board and the slot in the fall bottom and the other leg lying flat- 70 wise on the upper surface of the fall board and fall bottom and having a rounded pocket to fit over the pivotally connected portions of the hinge, when the fall board is open.

5. In a desk having a fall board and a slid- 75

able support therefor, the combination of a hinge comprising a pair of members secured to the desk proper and the fall board at the extreme side edge thereof and having pivotally connected portions, and an operator for the slidable support positioned at the extreme side edge of the fall board and secured at its respective ends to the fall board and the slidable support, said hinge members and said operator interfolding when the fall board is open with the pivotally connected portions covered by said operator to present a finished neat appearance.

6. In a desk having a fall board and a slidable support therefor, the combination of a hinge comprising a pair of sheet metal members having portions pivotally connected in face-to-face relation, one of said members being secured flatwise to the side edge of the fall board, the other member having a right angle portion with one leg positioned in a rearwardly extending slot in the fall bottom and the other leg lying flatwise on the upper surface of the fall bottom and secured thereto, and an operator for the slidable support comprising a strip of sheet metal bent to provide a right angle cross-section with one leg positioned along the side edge of the fall board and extending rearwardly in the slot in the fall board and the other leg overlying the top surface of the fall board, the fall bottom and the hinge member secured thereto, to conceal the hinge and present a finished appearance when the fall board is open.

7. In a desk having a fall board and a slidable support therefor, the combination of a hinge comprising pivotally connected members having portions respectively secured to the fall board and fall bottom at the extreme side edge thereof, and an operator having its ends respectively connected to the fall board and the slidable support and shaped to entirely overlie the hinge members to conceal them when the fall board is open.

8. In a desk having a fall board and a slidable support therefor, the combination of a hinge comprising a pair of members having pivotally connected portions, one member being secured to the side edge of the fall board and the other member having a U shape, one arm of which con-

stitutes the pivotally connected portion and the other arm lies flat against and is secured to the inner face of side wall of the desk, the fall bottom having a rearwardly extending slot in which the U-shaped member is positioned, and an operator for the slidable support comprising a strip of sheet metal connected at its respective ends to the fall board and the slidable support, the operator having a right angle cross section with one leg overlying the top surface of the fall board and fall bottom and the other leg extending along the side edge of the fall board and rearwardly in the slot in the fall bottom and positioned in and interfolding with the U-shape member when the fall board is open.

9. In a desk having a fall board and a slidable support therefor, the combination of a hinge comprising a pair of pivotally connected members, one member being secured to the fall board and the other member having a U shape with one arm thereof secured to the inner face of the side wall of the desk and the other arm pivotally connected to the other member, and an operator for the slidable support secured at its respective ends to the fall board and the slidable support and having a portion overlying said other arm and the pivotally connected portions of both members and having another portion positioned between the arms of the U to permit said operator and the hinge to interfold when the fall board is open.

10. In a desk having a fall board and a slidable support therefor, the combination of a hinge comprising a pair of members respectively secured to the fall board and to the desk proper and having pivotally secured portions, an operator for the slidable support secured at its front end to the fall board, said operator substantially concealing said hinge members and having a rounded pocket overlying the pivotally connected portions, and means for pivotally connecting the operator to the slidable support comprising a member having an elongated screw-receiving slot to provide for temporary connection of said member with the slidable support and adjustment thereof to permit the parts to be properly positioned.

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