

W. E. SERVICE.
 PHOTOGRAPHIC PRINTING MACHINE.
 APPLICATION FILED MAR. 27, 1908.

970,127.

Patented Sept. 13, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

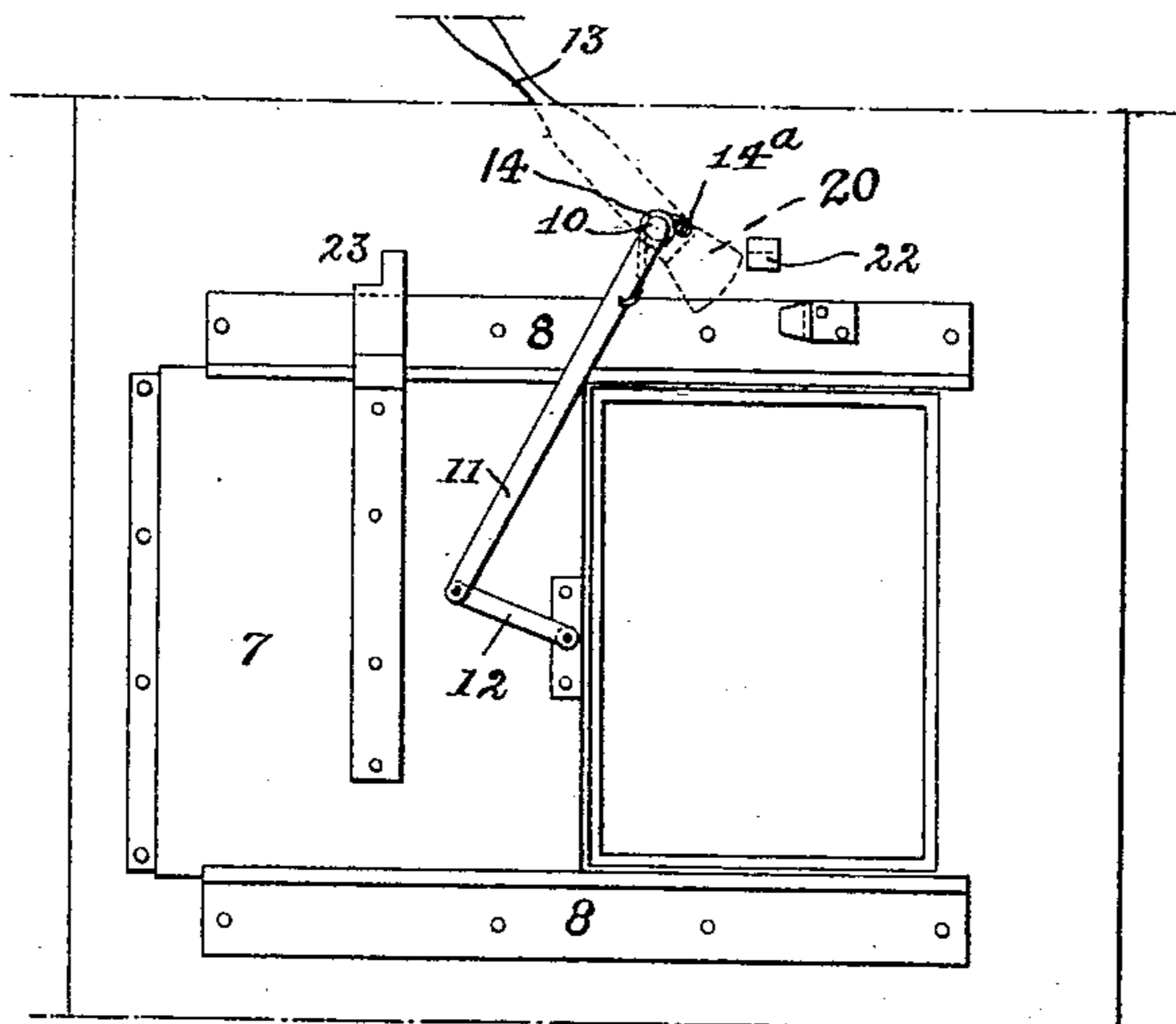


Fig. 3.

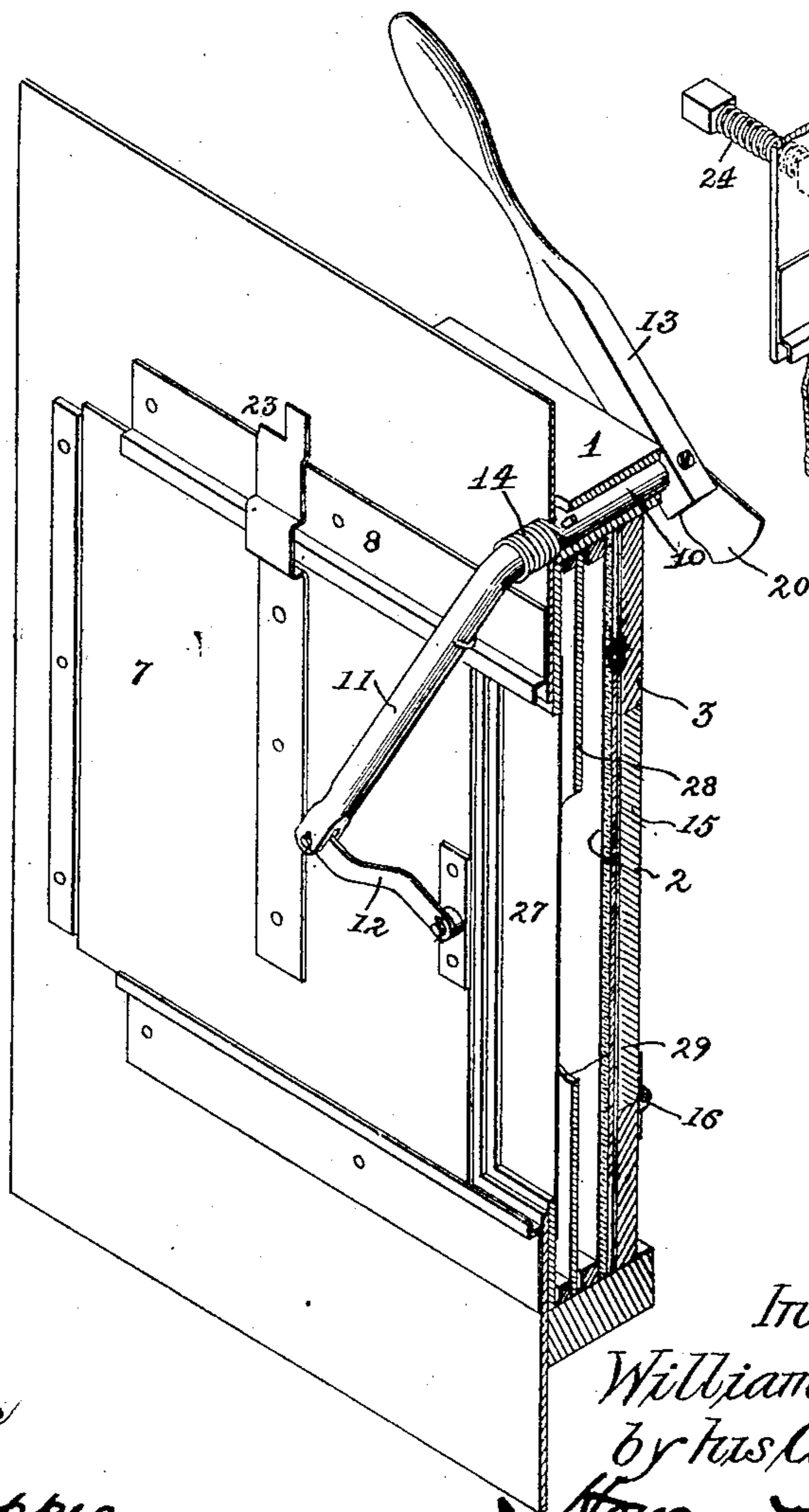
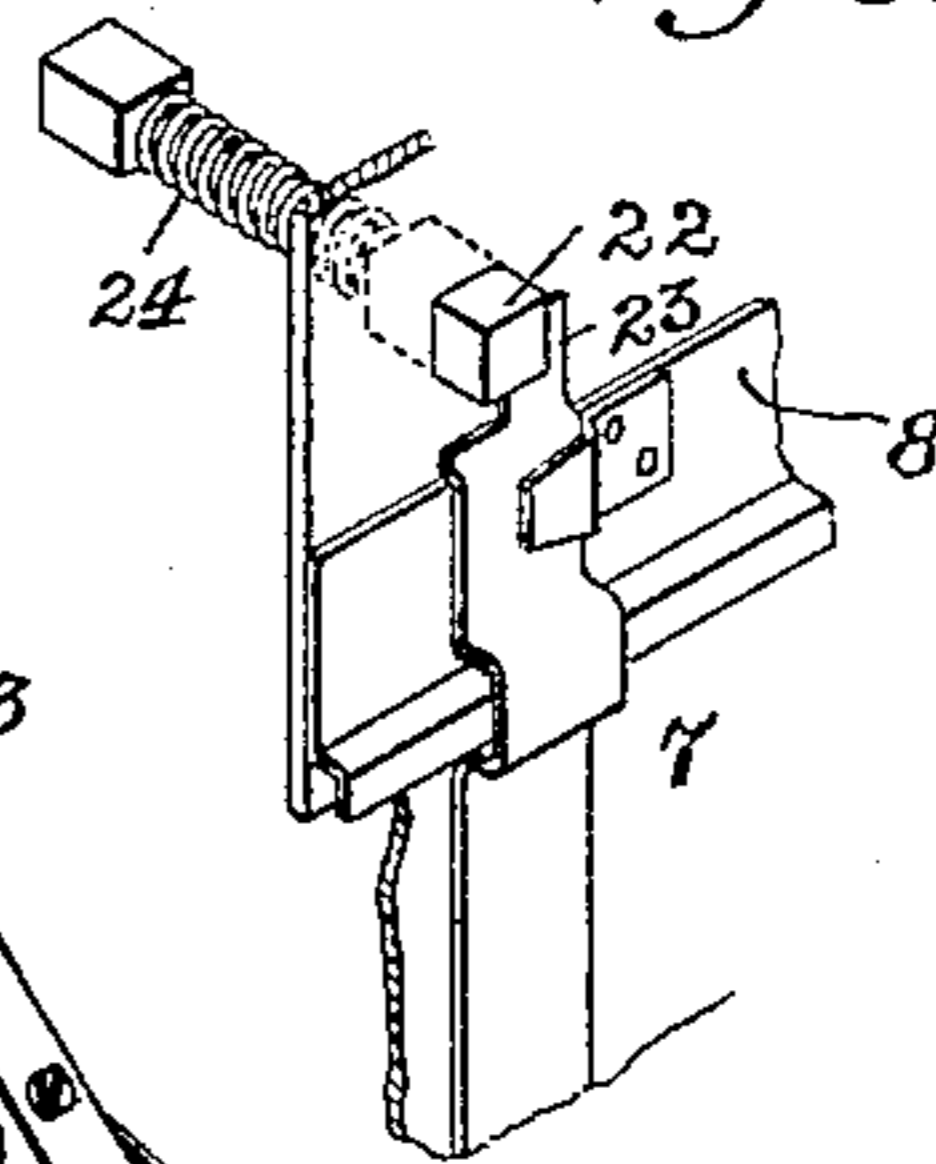


Fig. 5.



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 Augustus B. Coppes

Inventor,
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 by his Attorneys
 Howard & Howard

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2 SHEETS—SHEET 2.

Fig. 2.

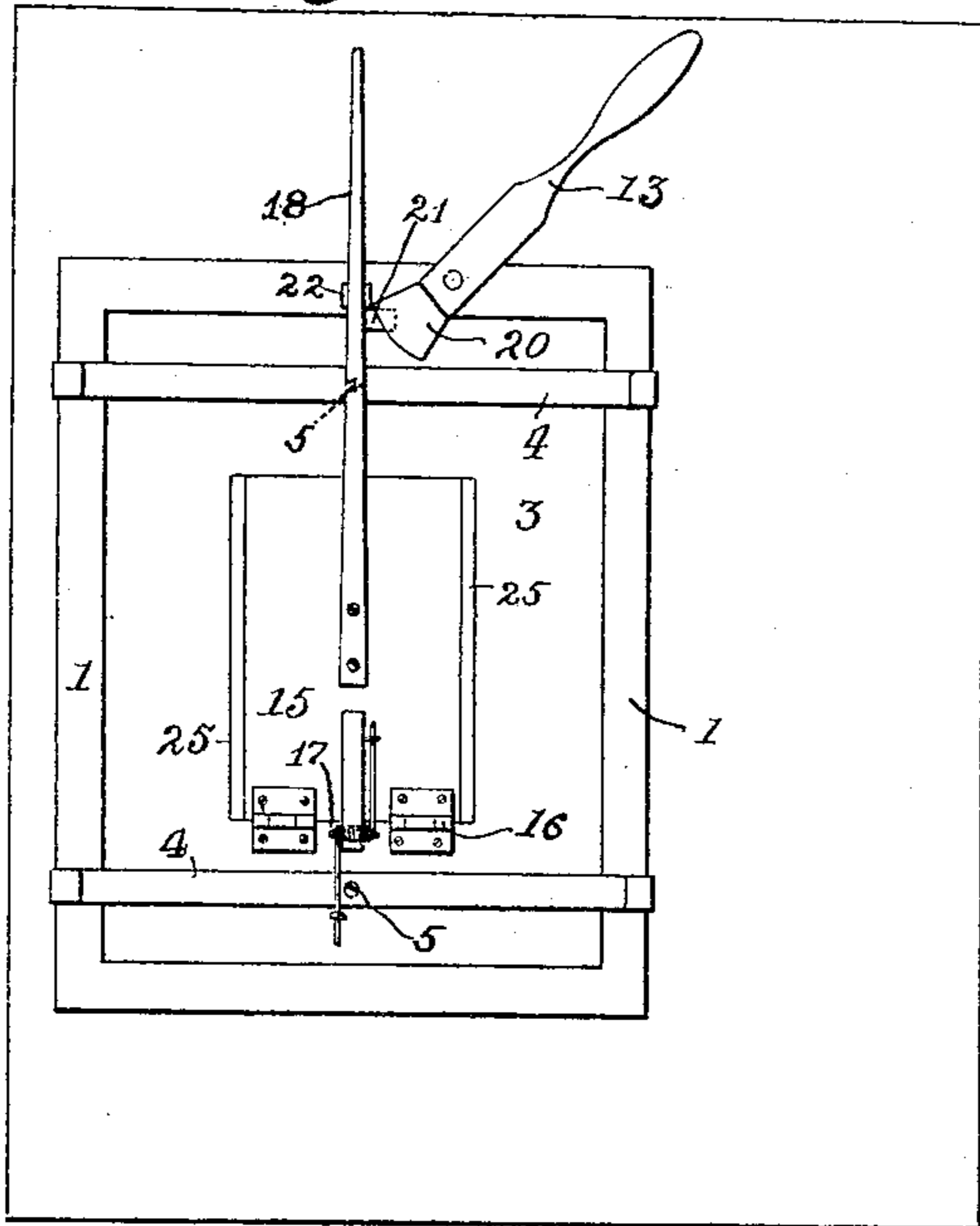


Fig. 6.

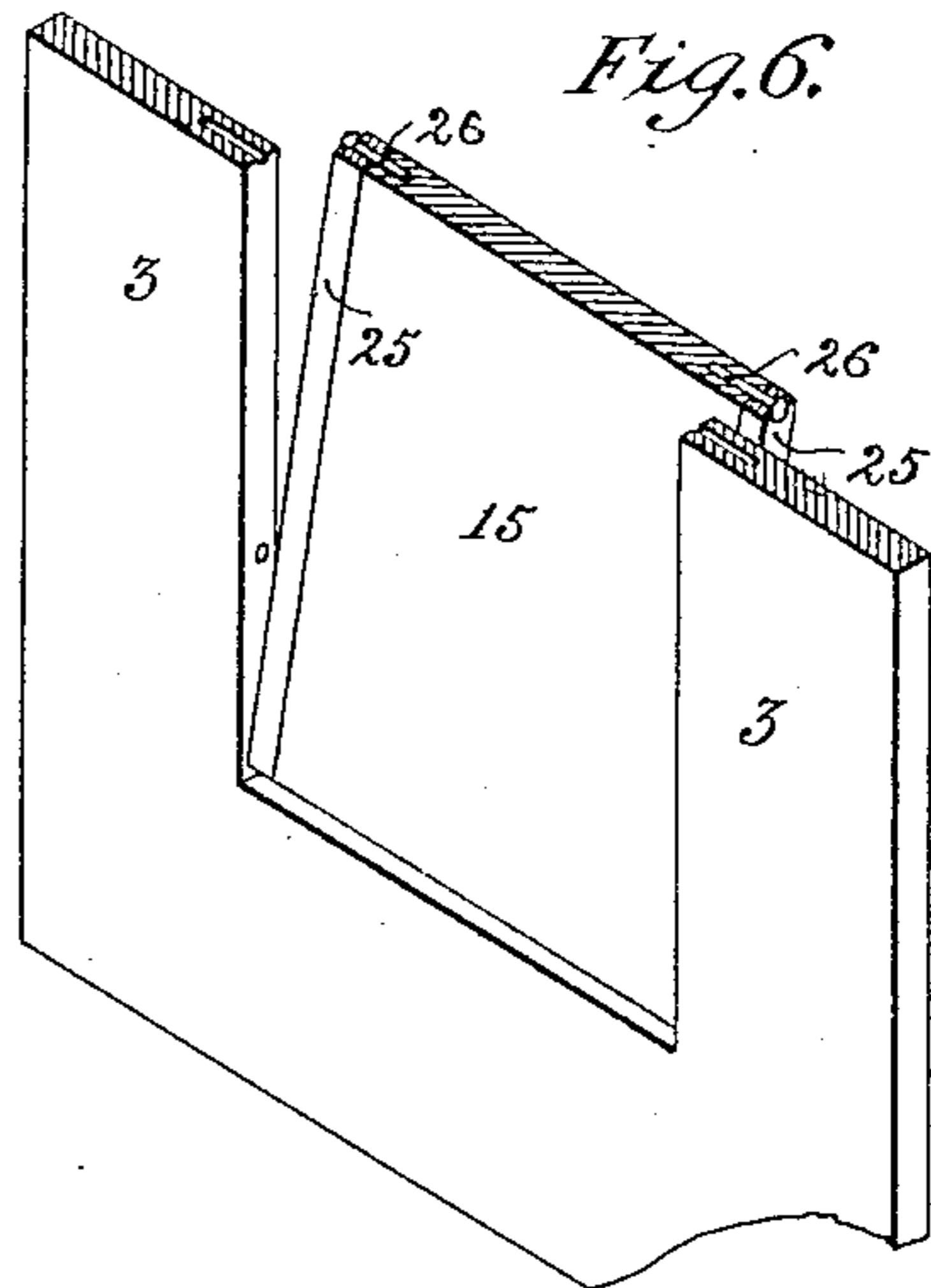


Fig. 7.

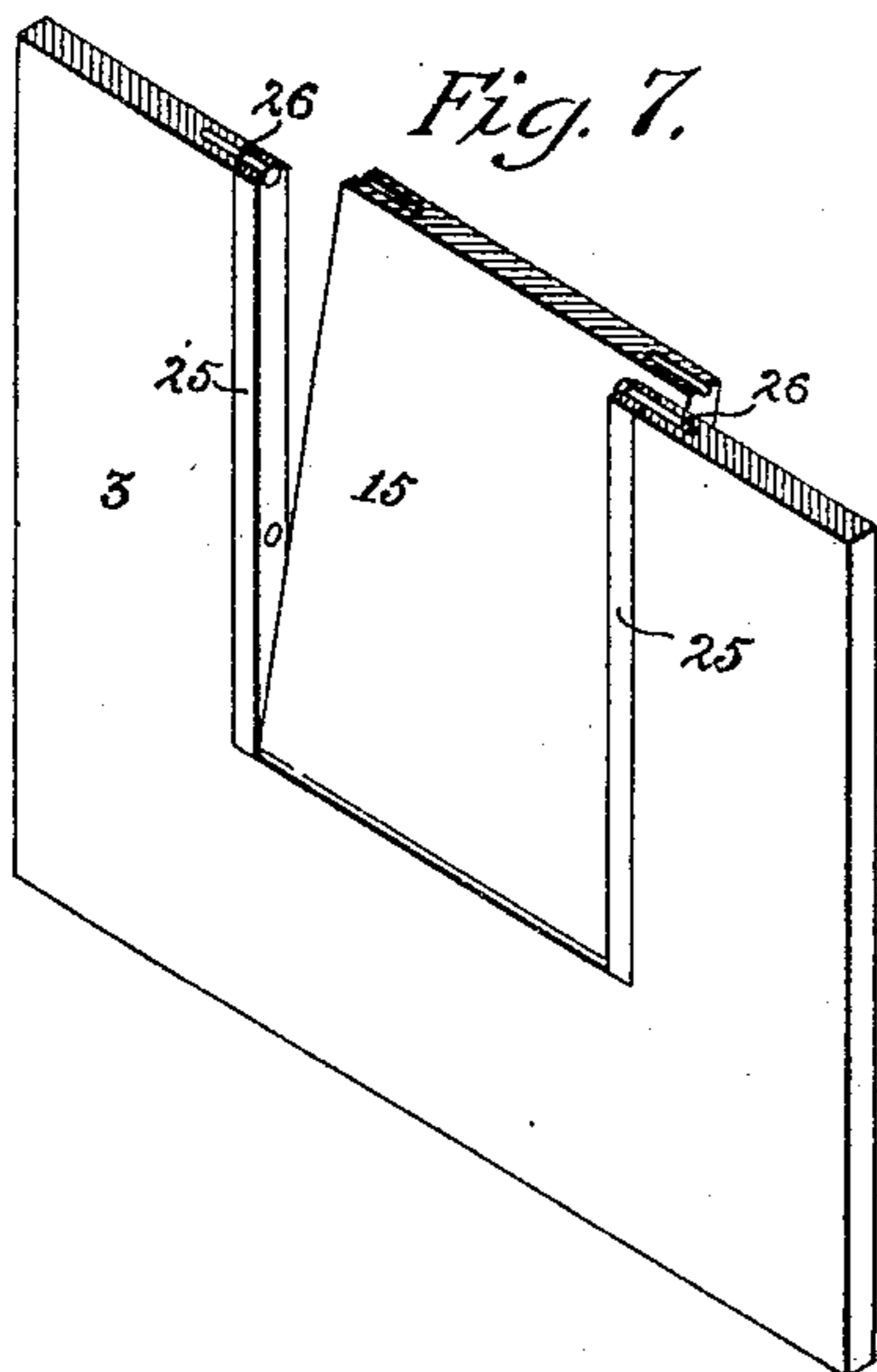
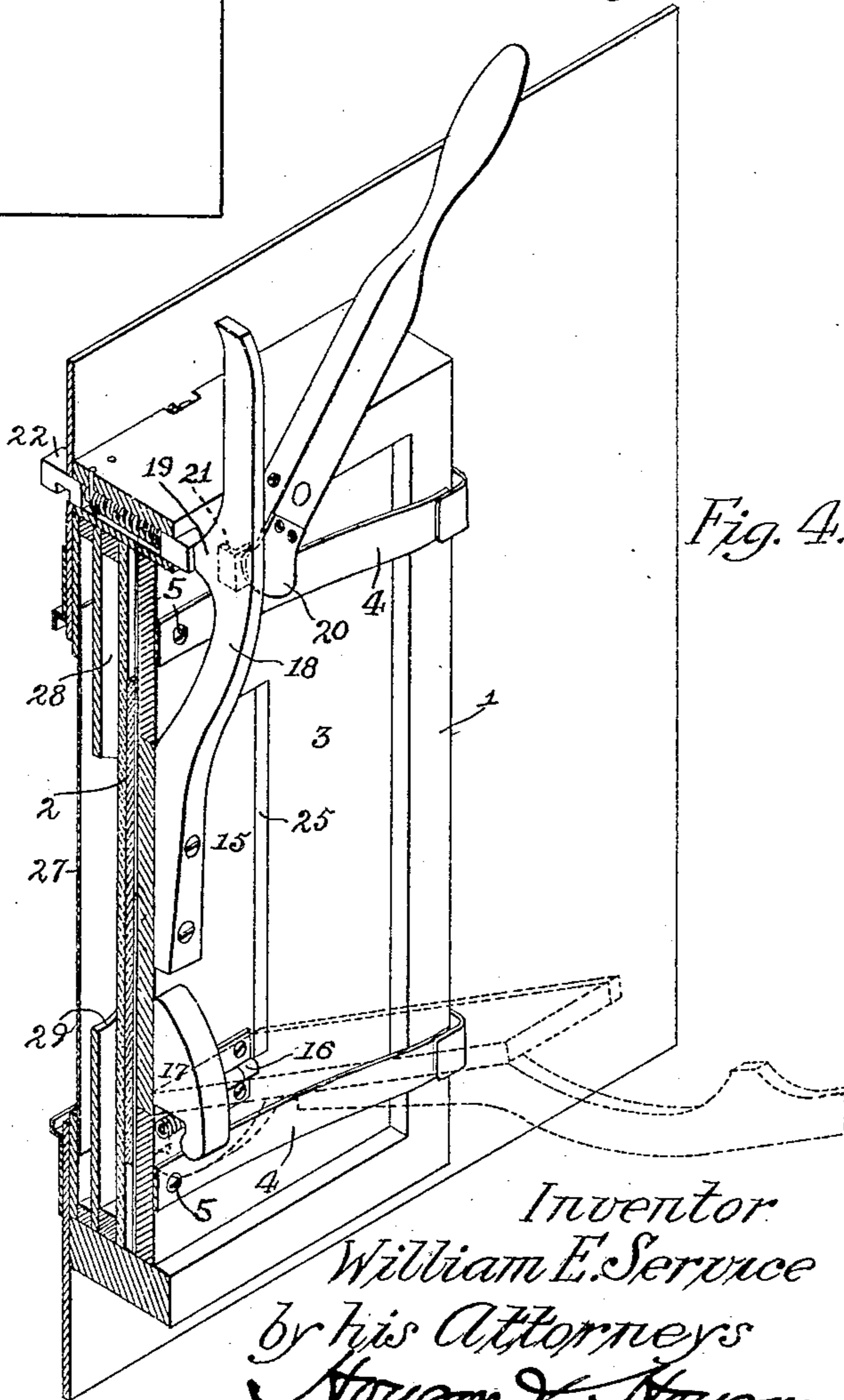


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM E. SERVICE, OF BRIDGETON, NEW JERSEY.

PHOTOGRAPHIC-PRINTING MACHINE.

970,127.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed March 27, 1908. Serial No. 423,545.

To all whom it may concern:

Be it known that I, WILLIAM E. SERVICE, a citizen of the United States, and a resident of Bridgeton, Cumberland county, New Jersey, have invented certain Improvements in Photographic-Printing Machines, of which the following is a specification.

My invention relates to photographic printing frames or printing machines; and the object of my invention is to provide an apparatus for rapidly printing pictures from photographic negatives, whether on glass or flexible films.

The details of my invention will be fully pointed out hereinafter, reference being had to the accompanying drawings, in which:

Figure 1, is a front elevation of apparatus embodying my invention; Fig. 2, is a rear elevation of the same; Fig. 3, is a sectional perspective view looking at the front of the structure; Fig. 4, is a sectional perspective view looking at the rear of the structure, and Figs. 5, 6 and 7, are views illustrating details of my invention.

My improved printing frame or printing machine is designed particularly for use in connection with the developing papers in use at the present time. The printing action upon these papers is, in many instances, so quick as to be almost instantaneous, and in order to secure the greatest efficiency from the use of such paper, it is desirable that the mechanism of the printing device shall be as simple and easy of action as is possible.

The structure forming the subject of my invention comprises a frame arranged to be set in a suitable place with respect to natural or artificial light, and provided with means whereby extraneous light from the top, sides or bottom, or other source may be cut off.

In the drawings, 1 represents the walls of a printing frame, having in the present instance a sheet of glass 2, and cover 3; the latter being provided with clamps 4, of the usual type, suitably pivoted at 5 to said cover so that it may be readily applied to or removed from the frame as desired. Confined between the sheet of glass 2 disposed in said frame and the cover, is an ordinary photographic negative, which may be on a glass plate as indicated at 6, or may be one of the films in common use at the present time. By employing the glass 2 as a support for the negative I am enabled to

secure the latter in any desired position and maintain it fixed in such position for subsequent printing.

At the front of the structure, a shutter 7 is provided, adapted to upper and lower guides 8; means being provided whereby said shutter can be shifted in both directions so as to open and close the printing area; the printing paper being set in place when such shutter is closed and subsequently printing when the shutter is opened.

Journaled in the upper wall of the frame 1, is a spindle 10 having a bent arm 11 extending down across the face of the shutter and pivotally connected thereto by means of a link 12, in the manner indicated in Fig. 3. At the opposite end of the spindle 10 at the rear of the structure, a handle 13 is mounted whereby a rocking movement may be imparted to said spindle to move the shutter across the opening of the photographic frame and close the same while the printing paper is being inserted. Means are provided to limit rotative movement of this spindle. The spindle also carries a torsion spring 14, one end of which is anchored to the frame 14^a while the opposite end engages the arm 11, to which tension is applied by such closing action, so that when said handle is released, the spring will cause the shutter to open to the position indicated, uncovering the printing area and permitting the printing paper to receive the impression of the negative.

Disposed substantially in the center of the usual cover 3 of the frame, is a supplemental cover or door 15, hinged to the main cover at 16 and provided with a spring 17 so as to automatically open when released from its retaining means. This door is provided with an operating handle 18 having a projection 19 for a purpose to be described, and in order to insert the sheets of developing paper to be printed, it is necessary to open said door. The door is normally held in the closed position by means of a latch 20 carried by the handle 13 and engaging a lateral projection 21 on the handle 18. Upon pulling said handle 13 downward, the handle 18 carried by the door 15 is released and the spring 17 immediately opens said door. The shutter has meanwhile been closed by the downward movement of the handle 13 through the medium of spindle 10 and arm 11, and held in the closed position by the engagement of a bolt 22 mounted in the

upper frame of the machine, with a catch 23 carried by said shutter. The bolt 22 is notched at 22^a for the passage of said catch 23 when in alinement therewith and is held in so as to engage said catch and retain the shutter in the closed position by means of a spring 24, and said bolt is in line with the projection of the handle carried by the door of the back of the frame.

As soon as a sheet of paper has been placed in position with respect to the negative, the door 15 is closed by means of its handle 18, and the projection 19 thereon coming in contact with the bolt 22, releases the same from engagement with the catch 23 and said shutter opens under the influence of the torsion spring 14. At the same time, the handle 13 is carried up by said spring bringing its latch into engagement with the lateral projection 21 on the handle of the door, holding the latter firmly closed. To open the door, therefore, it is only necessary to pull down on the handle 13, which action closes the shutter and releases the handle 18, permitting the door 15 to open under the influence of its spring 17 so that another sheet of paper may be inserted. It will thus be seen that the shutter 7 is closed every time the door 15 is opened, and the closing of the door automatically releases the shutter, causing the same to open, and at the same time the handle 13 locks the handle 18 carried by the door and holds the latter in place until the handle 13 is again actuated.

An important feature of my invention is the means for adjusting the size of the opening in the back of the frame closed by the door 18. This arrangement adapts the frame for use in printing pictures of various sizes. To make such adjustment, I provide removable pieces 25 arranged to be combined with the door or the back, such pieces having dowels 26 whereby they may engage recesses in the edges of the door or in the walls of the opening closed by such door, as clearly indicated in Figs. 6 and 7. The opening in Fig. 6, is the larger of the two sizes indicated and has been arranged for the printing of cabinet size photographs, while as shown in Fig. 7, the opening is the smaller of the two indicated, and in the present instance has been arranged for the printing of postal cards. Other strips of the same character as those shown at 25 may be provided so as to permit further adjustment of the opening and the arrangement of the same to a larger or smaller degree as may be desired.

If desired the light may be modified by the use of sheets of transparent paper indicated at 27, and vignettes may be printed by the use of a card 28 having an opening 29 as indicated, such opening being arranged opposite the picture on the negative.

The structure forming the subject of my

invention is extremely simple in operation and thoroughly efficient in practice. In the hands of a skillful operator, it is capable of printing from 700 to 1,000 pictures per hour, and, in fact, the number printed only depends upon the speed of the operator in opening and closing the frame and inserting the paper.

It will be understood that I do not wish to be limited to the exact construction shown and described, nor to the use of the exact means or elements employed in connection with my improved structure, as it will be understood that changes and modifications may be made, and that equivalent means or elements may be employed, within the scope of my invention.

I claim:

1. In a printing machine, the combination of a frame, means for retaining a negative therein, said means being apertured to permit the placing of printing paper over the negative, means for cutting off access of light to the negative during the placing of such printing paper, such light cutting off means tending to remain in the open position, means for moving said light cutting off means to the closed position, means for holding it in the closed position, a hinged member carried by the negative holding means for maintaining the printing paper in contact with said negative when said hinged member is in closed relation with said negative holding means, and a handle carried by said hinged member for operating the same, said handle serving to displace the means holding the light cutting off means in the closed position after said printing paper has been set in place, and being retained by the means for moving the light cutting off means.

2. In a printing machine, the combination of a frame, means for retaining a negative therein, said means being apertured to permit the placing of printing paper over the negative, a shutter for cutting off access of light to the negative during the placing of such printing paper, such shutter tending to remain in the open position, means for moving said shutter to the closed position, a catch for holding the shutter in the closed position, a hinged door carried by the negative holding means for maintaining the printing paper in contact with said negative when said door is in closed relation with said negative holding means, and a handle carried by said door for operating the same, said handle serving to displace the catch holding the shutter in the closed position after said printing paper has been set in place, and being retained by the means for moving the shutter.

3. In a printing machine, the combination of a frame, a removable back for holding a negative therein, said back being apertured

to permit the placing of printing paper over the negative, a door normally closing said aperture and serving to hold the printing paper in place, a sliding shutter for cutting off access of light to the negative during the placing of such printing paper, means carried by the frame for holding the shutter open, means for closing said shutter, means for holding the same in a closed position, and a handle carried by the door for closing the same over the printing paper, said handle releasing the shutter holding means as said door is closed.

4. In a printing machine, the combination of a frame, means for holding a negative therein, said means being apertured to permit the placing of printing paper over the negative, a door normally closing said aperture and serving to hold the printing paper in place, a sliding shutter for cutting off access of light to the negative during the placing of such printing paper, means carried by the frame for holding the shutter open, means for closing said shutter, means for holding the same in a closed position, a handle carried by the door for closing the same over the printing paper, said handle releasing the shutter holding means as said door is closed, and a catch carried by said handle for engagement by the shutter moving means so as to hold said door closed while the shutter is open.

5. In a printing machine, the combination of a frame, means for holding a negative therein, an independent door hinged to said means and arranged to uncover said negative for the purpose of placing printing paper against the same, a shutter for covering the opening giving access of light to the negative while said door is open, means for moving said shutter to the closed position, means for holding the same closed, a handle for closing the door, a projection carried by said handle for releasing the shutter holding means, a spring for causing the shutter moving means to move said shutter to the open position when said holding means are released, and a catch carried by said handle for engagement by the shutter moving means so as to hold said door closed while the shutter is open, said shutter moving means releasing said handle and allowing the door to open when the shutter is brought to the closed position.

6. In a printing machine, the combination of a frame, means for holding a negative therein, an independent door hinged to said means and arranged to uncover said negative for the purpose of placing printing paper against the same, a shutter covering the opening giving access of light to the negative while said door is open, means for moving said shutter to the closed position, a catch for holding the same in the closed position, a handle for closing the door holding

the printing paper in place, a projection carried by said handle for releasing the shutter holding catch, and a spring for causing the shutter moving means to move said shutter to the open position when said holding means are released, said spring serving also to move the shutter closing means into position to engage said handle and lock it against the printing paper.

7. The combination, in a photographic printing machine, of a printing frame, a shutter, means for holding the shutter in the open position, a handle for moving said shutter to the closed position, means for holding said shutter in the closed position, an independent door in the back of the frame, and means for releasing said shutter from the means for holding it in the closed position when the door is closed, the door being held in the closed position by the means employed to close the shutter when the latter is open.

8. The combination, in a photographic printing machine, of a printing frame, a shutter, a spring for holding the shutter in the open position, a handle for moving said shutter to the closed position, means for holding the same in this position, an independent door in the back of the frame, and means carried by the door for releasing said shutter from the means for holding it in the closed position when the door is closed, the door being held in the closed position by the means employed to close the shutter when the latter is open.

9. The combination, in a photographic printing machine, of a printing frame, a shutter, a spring for holding the shutter in the open position, means for moving said shutter to the closed position, a catch for holding the same, a door in the back of the frame, means for opening said door when the shutter is closed, and means carried by the door for releasing said shutter holding means when the door is closed, the door being held in the closed position by the means employed to close the shutter when the latter is open.

10. The combination, in a printing machine, of a printing frame, a shutter, a rock shaft, a connection between said rock shaft and the shutter, a handle for operating said rock shaft to close the shutter, a catch for automatically engaging the shutter when the latter is closed, and means for releasing said catch.

11. The combination, in a printing machine, of a printing frame, means for holding a negative therein, a shutter, a door in the frame covering a space for the reception of printing paper, a rock shaft, a connection between said rock shaft and the shutter, a handle for operating said rock shaft whereby the shutter may be closed when the paper is inserted, a catch for au-

tomatically engaging the shutter when the latter is closed, and means for releasing said catch when said door is closed.

12. The combination, in a printing machine, of a printing frame, a shutter, a rock shaft, a connection between said rock shaft and the shutter, a handle for operating said rock shaft to close the shutter, a catch for automatically engaging the shutter when the latter is closed, a door in the back of the printing frame arranged to be open when the shutter is closed, and means carried by said door for releasing said catch as the door is closed.

13. The combination, in a printing machine, of a printing frame, a shutter, a rock shaft, a connection between said rock shaft and the shutter, a handle for operating said rock shaft to close the shutter, a catch for automatically engaging the shutter when the latter is closed, a door in the back of the printing frame arranged to be open when the shutter is closed and closed when the shutter is open, a handle carried by said door for engagement with the shutter catch as the door closes whereby the shutter may be released, and means for moving the shutter to the open position.

14. The combination, in a printing machine, of a printing frame, a shutter, a rock shaft, a connection between said rock shaft and the shutter, a handle for operating said rock shaft to close the shutter, a catch for automatically engaging the shutter when the latter is closed, a door in the back of the printing frame arranged to be open when the shutter is closed and closed when the

shutter is open, a handle carried by said door for engagement with the shutter catch as the door closes whereby the shutter may be released, and a spring carried by the rock shaft for automatically moving the shutter to the open position.

15. The combination, in a printing machine, of a printing frame, a back for the same, an independent door hinged to said back, removable side sections disposed between the door and back, and means to attach the section to either the door or the back to regulate the size of the opening and the size of the door closed by the same.

16. The combination, in a printing frame, of negative holding means including an apertured back, a door closing said aperture, a handle carried by the said door, a shutter, means for maintaining the shutter in an open position, a handle for moving said shutter to a closed position, and a catch for retaining the shutter in the closed position, the handle carried by the door releasing the shutter catch when said door is closed thereby permitting said shutter to open and the handle for operating the shutter releasing the handle carried by the door when the shutter is closed thereby permitting the door to open.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WM. E. SERVICE.

Witnesses:

ANNIE L. SERVICE,
DAVID M. BOWEN.