(No Model.) 4 Sheets—Sheet 1.

J. R. McLAREN, Jr. & E. H. BOYCE.

MACHINE INCLOSING CABINET.

No. 589,976. Patented Sept. 14, 1897.

Fig. 1.

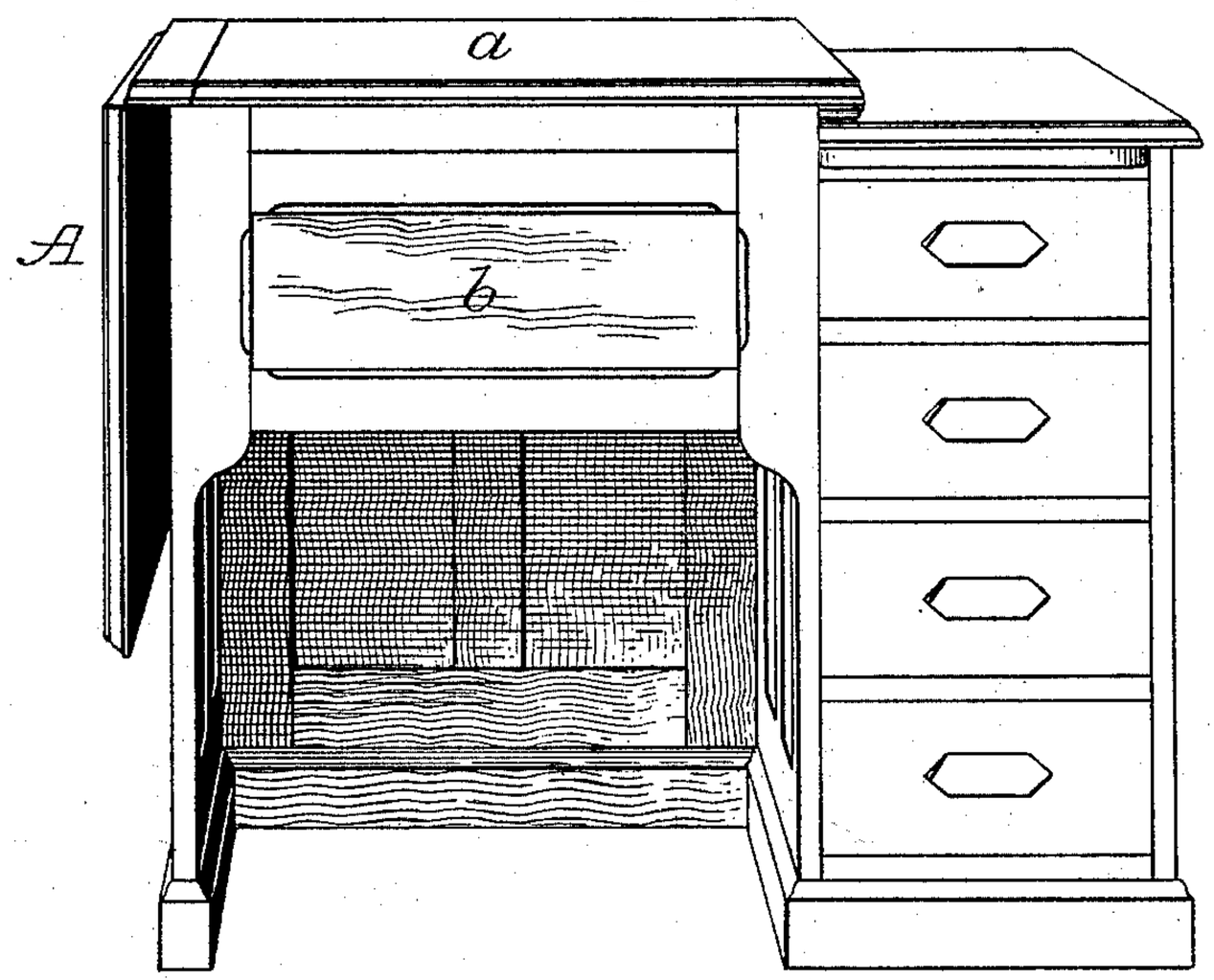
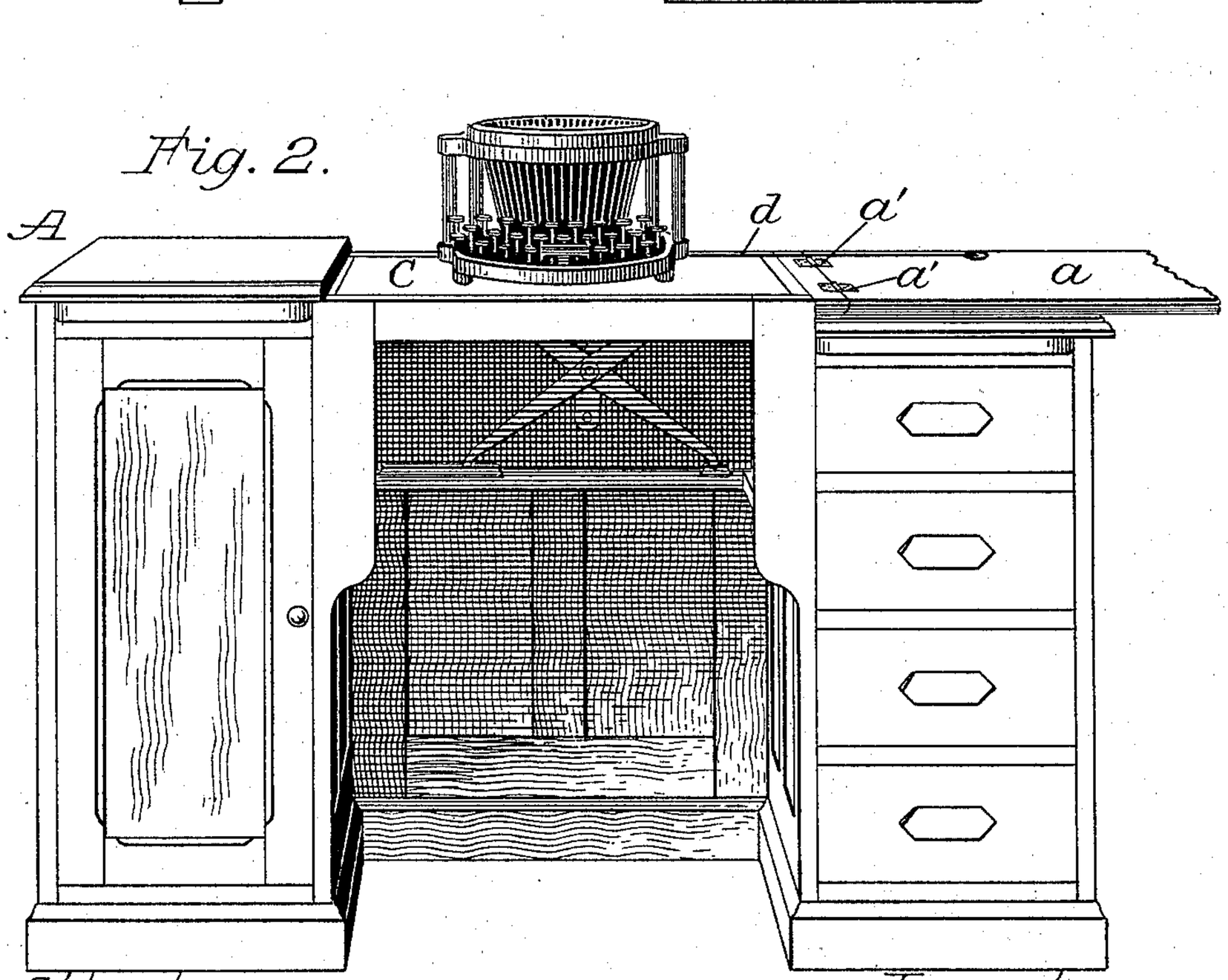


Fig. 2.



Attest:
Howell Battle.
Emma E. Marks.

Inventors:
John R. McLaren Jr.
Eugene H. Boyce.
By Wm. Elwood
Attorney.

(No Model.) 4 Sheets—Sheet 2.

J. R. McLAREN, Jr. & E. H. BOYCE.

MACHINE INCLOSING CABINET.

No. 589,976. Patented Sept. 14, 1897.

Fig. 3.

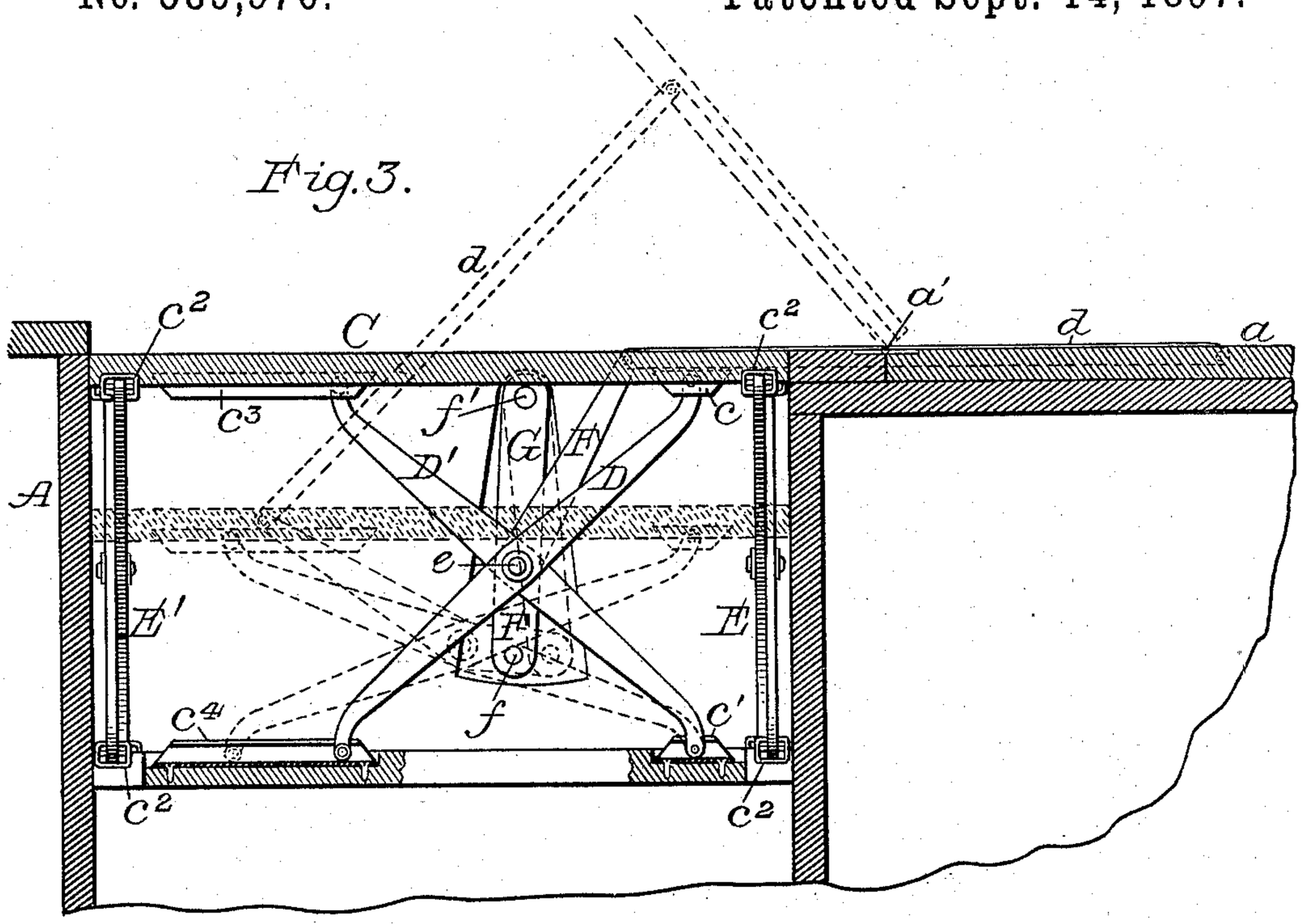
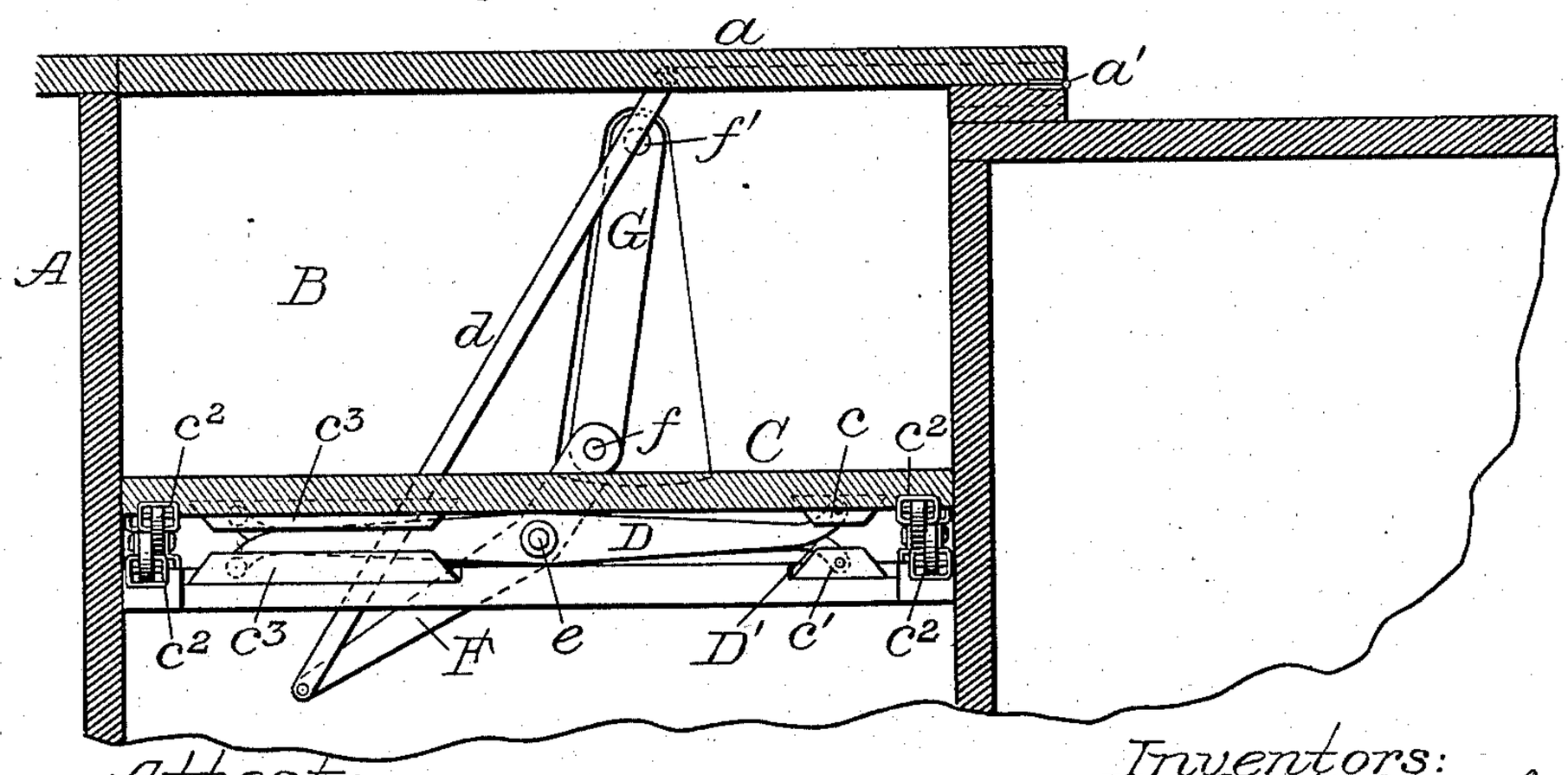


Fig. 4.



Attest:
Howell Battle.
Emma E. Marts.

Inventors:
John R. McLaren Jr.
Eugene H. Boyce.
By Munn & Co.
Attorneys.

(No Model.) 4 Sheets—Sheet 3.

J. R. McLAREN, Jr. & E. H. BOYCE.

MACHINE INCLOSING CABINET.

No. 589,976. Patented Sept. 14, 1897.

Fig. 5.

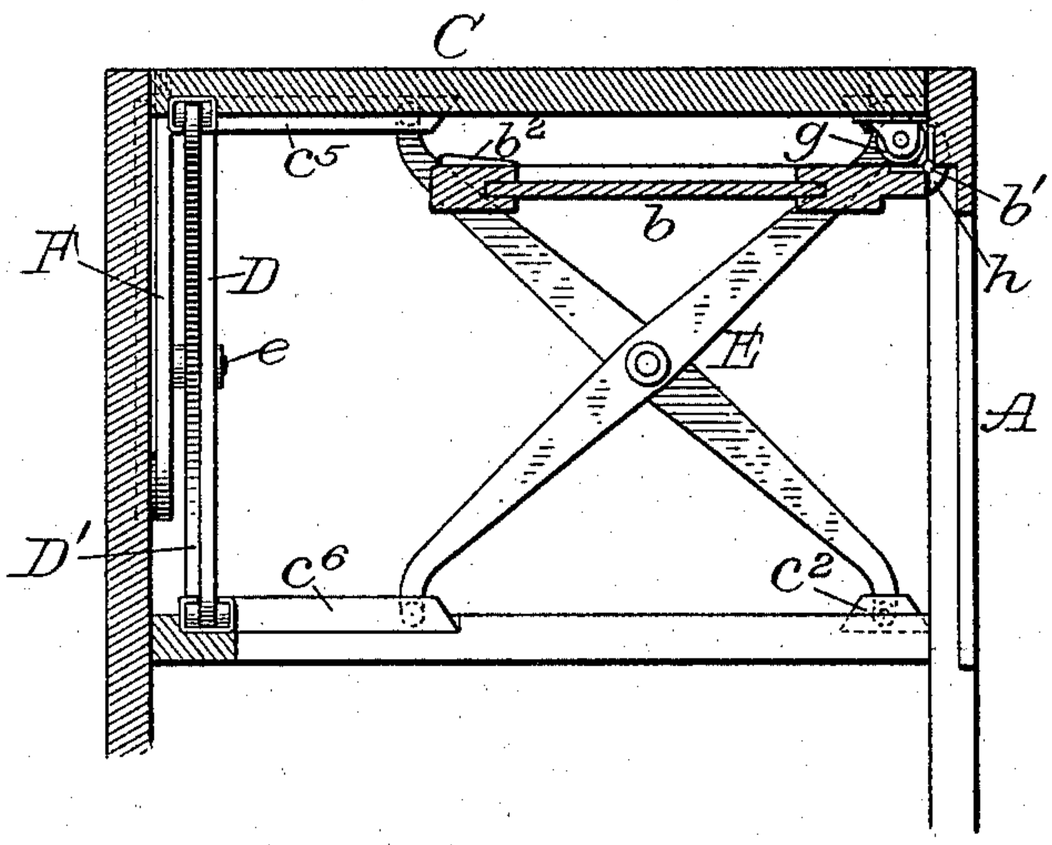


Fig. 7.

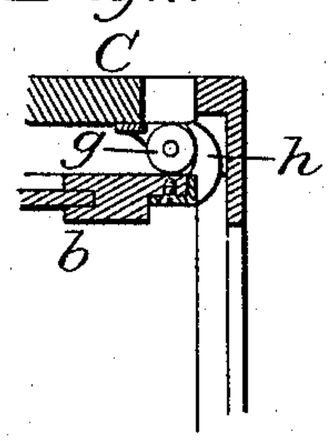


Fig. 6.

Attest:
Lowell Battle.
Emma E. Marks.

Inventors:
John R. McLaren Jr.
Eugene H. Boyce.
By Wm. C. Ward
Attorney.

(No Model.) 4 Sheets—Sheet 4.

J. R. McLAREN, Jr. & E. H. BOYCE.

MACHINE INCLOSING CABINET.

No. 589,976. Patented Sept. 14, 1897.

Fig. 8.

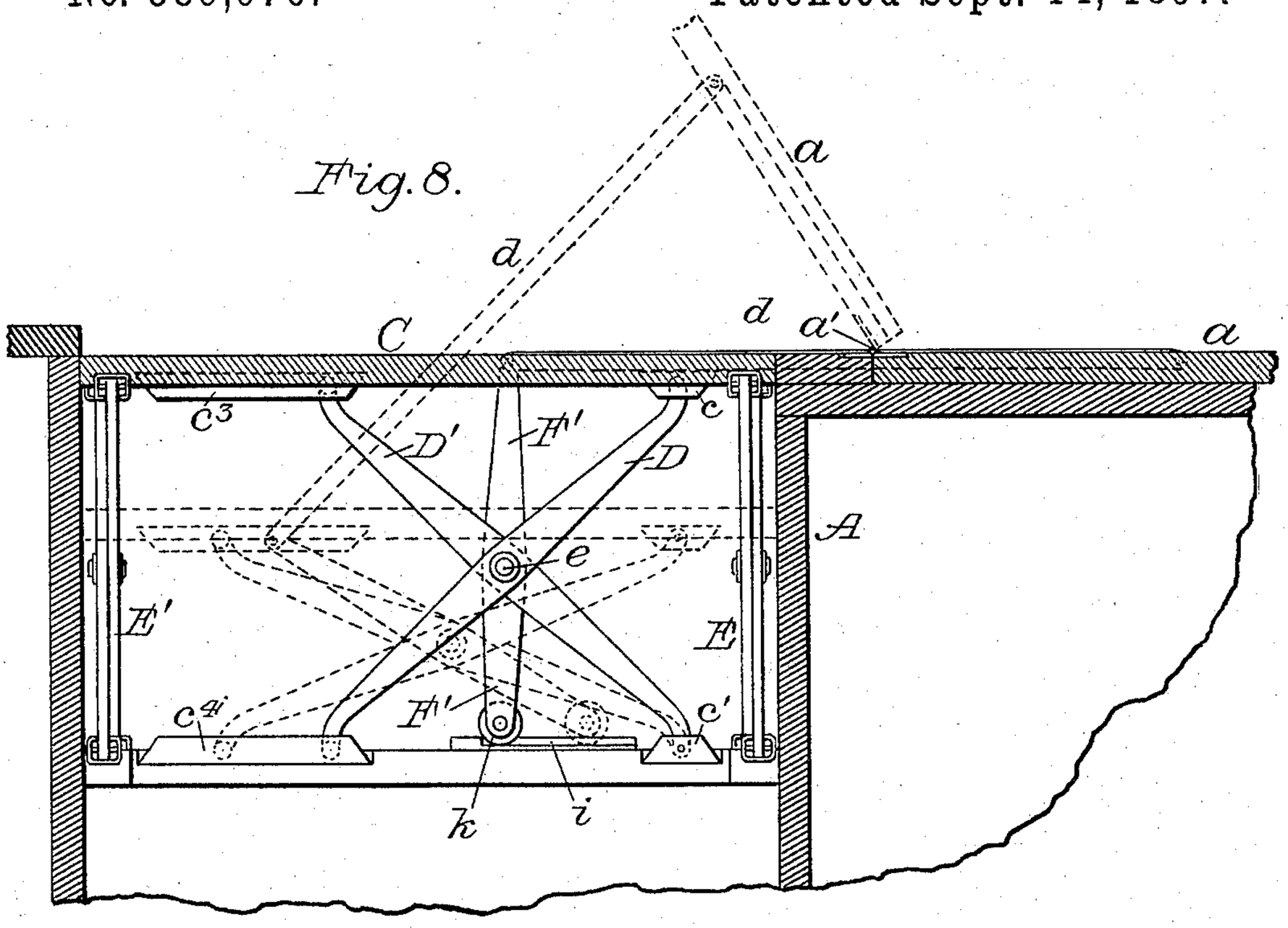
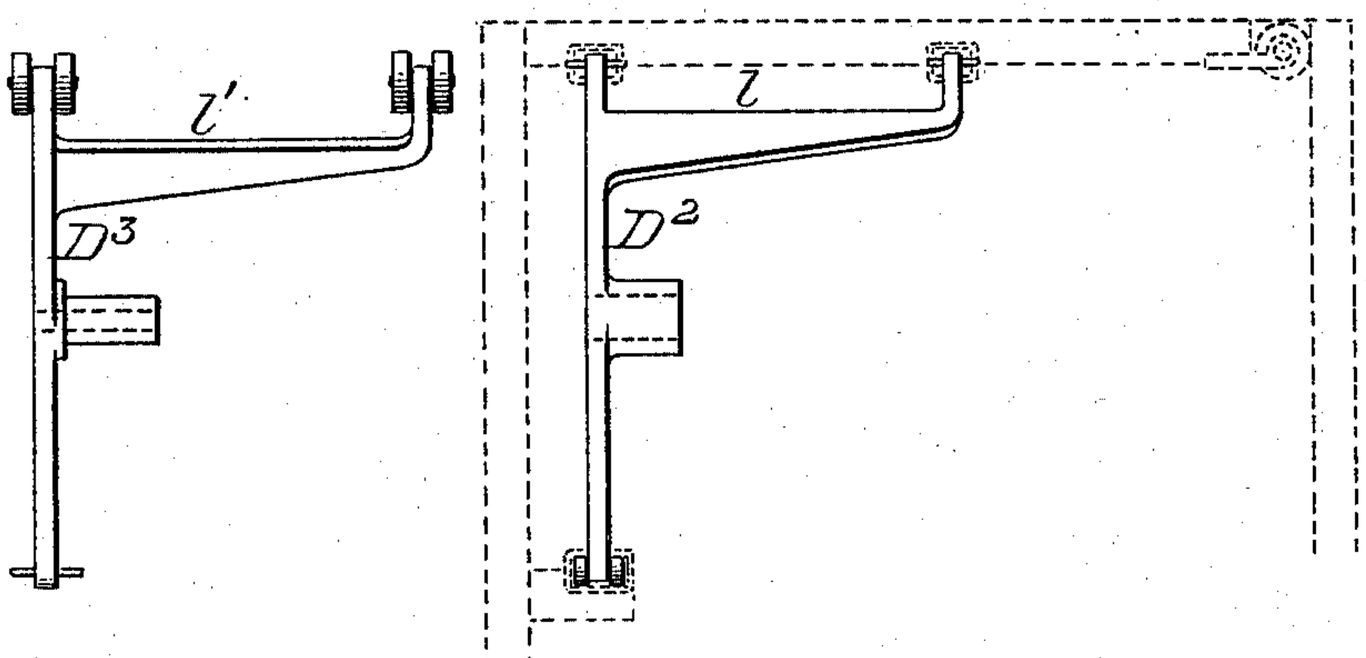


Fig. 9.



Attest:
Howell Battle
Emma E. Marks.

Inventors:
John R. McLaren Jr.
Eugene H. Boyce.
By Wm Elwood
Attorney.

UNITED STATES PATENT OFFICE.

JOHN R. McLAREN, JR., AND EUGENE H. BOYCE, OF BURLINGTON, VERMONT.

MACHINE-INCLOSING CABINET.

SPECIFICATION forming part of Letters Patent No. 589,976, dated September 14, 1897.

Application filed July 13, 1896. Serial No. 598,972. (No model.)

To all whom it may concern:

Be it known that we, JOHN R. MCLAREN, Jr., and EUGENE H. BOYCE, of Burlington, in the county of Chittenden and State of Vermont, have invented certain new and useful Improvements in Machine-Inclosing Cabinets; and we do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of our invention.

Our said improvements relate to that general class of cabinets upon or in which typewriters and sewing-machines are mounted and which inclose the machines when not in use, and to that special class of cabinets wherein the act of opening and closing a hinged top or cover causes the machine to be lifted into position for use and lowered therefrom.

In one type of cabinet as heretofore organized the vertically-movable platform on which the machine is mounted is coupled to crossed and pivoted toggle-arms, which operate only as guides for the platform by maintaining it in a horizontal position during its vertical movements. Said prior toggle-arms do not operate as toggle-levers because the lifting, supporting, and lowering of the platform is performed by a pair of lifting-levers hinged or fulcrumed at the hinge-line of the cover and extending beneath the platform, with which they engage in rolling contact by way of rollers carried on their free ends. These prior lifting-levers are actuated by the top or cover, which during a portion of its movement so engages with both lifting-levers near the hinge-line as to serve as a free arm for both of said levers, the cover operating as an extension thereof.

In our novel organization we employ vertical crossed toggle-levers, which instead of being mere guides like the toggle-arms heretofore used are a part of the lifting and lowering mechanism, they being pivotally coupled to a controlling-lever which at one end has a movable or shifting fulcrum and at the other end is coupled by a link to the top or cover of the cabinet, and when the platform with the machine thereon has been raised the entire weight is borne by the controlling-lever, its shifting fulcrum being then substantially in the same vertical plane as the pivot which couples the toggle-levers.

With our organization light strains are borne by the hinges of the cover, and the latter is subjected to no strains other than those required for shifting the position of the controlling-lever, which is easily effected because its long arm is coupled to the cover, and the shifting fulcrum at its short arm assures an easy lifting movement.

With our toggle-levers serving as a part of the lifting mechanism we employ suitable means for maintaining the platform in a horizontal position, a desirable means being such crossed toggle-arms as perform the same function in the prior cabinets referred to.

In prior cabinets the front side or wall of the machine-inclosing chamber has been hinged and so organized that it would swing inwardly and upwardly when the machine and platform were elevated for affording knee-space to the operator. In said prior cabinets the hinged side is actuated by a curved bar pendent from a depressible portion of the top of the cabinet, which is hinged to and underlies the hinged cover when in its opened and horizontal position, so that the weight of the cover forces the curved bar downward and inward against the outer surface of the hinged side or wall below its hinge-line and imparts to the side or wall a similar inward and upward swinging movement.

In our cabinet the hinged front wall is directly actuated and controlled by the movable platform, which carries a suitable contact-plate or a roller at its front edge for engagement with an inwardly-projecting stud on the hinged side or wall above its hinge-line, so that said front side or wall is swung inwardly and upwardly as the platform rises, and when the latter descends it permits the side or wall to drop into its pendent position.

After describing our invention in connection with the drawings the features deemed novel will be duly specified in the several clauses of claim hereunto annexed.

Referring to the drawings, Figures 1 and 2, respectively, illustrate closed and open cabinets embodying our invention. Fig. 3 is a longitudinal sectional view of the main por-

tions of the cabinet with the machine-platform in its fully-elevated position as for service and with said platform, its levers, and the cover of the cabinet in dotted lines for indicating their several relative positions, as during the lifting of the cover. Fig. 4, in a similar section, illustrates the platform in its lowest position and the cabinet-cover closed. Fig. 5 is a lateral section showing the platform in its elevated position, and the front wall or side of the inclosing chamber swung inwardly and upwardly, and it also illustrates the toggle-arms, which being below each end of the platform serve as its guides. Fig. 6 is a similar section showing the platform in its lowest position and the front hinged wall in its pendent or inclosing position. Fig. 7 is a detail view of the means for controlling the hinged front side of the inclosing chamber. Fig. 8 illustrates a modification of the arrangement of the lever which is coupled to and controls the toggle-levers. Fig. 9 illustrates the toggle-levers provided with lateral arms to serve as movable brackets for better supporting the platform and contributing to maintaining the platform in a horizontal position.

In the several figures the cabinet A has a top or cover *a*, hinged at *a'*, and which when opened serves as an extension-top, as heretofore. When said cover is closed, a machine-chamber is afforded at B, the cover being the top, the rear and end walls being adjacent portions of the cabinet, and the front side or wall *b* being a pendent panel hinged at *b'* to an overlying front portion of the cabinet, the bottom of said chamber being the movable platform C, as is clearly indicated in Fig. 4.

Below the movable platform C and near its rear edge there is a pair of vertical crossed toggle-levers D D', which constitute portions of the platform-lifting mechanism, and below each end of the platform there is a pair of vertical crossed toggle-arms E and E', which serve as guides for maintaining the platform in a horizontal position during its vertical movements. The toggle-arms and the toggle-levers are similar in their form and pivotal arrangement, one arm of each pair being pivotally coupled to the under side of the platform, the toggle-lever D being coupled at lug *c* and the toggle-arms having similar lugs. The other toggle-lever and one arm of each pair are in like manner coupled to underlying stationary lugs, as shown in Figs. 3 and 4 at *c'* in connection with the toggle-lever D', and at c^2 in connection with one of the toggle-arms E in Fig. 5. The opposite or free ends of these several levers and arms are each preferably provided with rollers, if heavy machines are to be lifted, so as to operate with a smooth traveling contact, but for ordinary service smooth and well-rounded contact-surfaces can be relied upon.

As shown in Figs. 3 and 4, the toggle-lever D' has a long channeled guide-lug c^3 on the under side of the platform C, and the lever D has a similar underlying stationary lug c^4, the corresponding lugs for the two toggle-arms at E being shown at c^5 and c^6 in Figs. 5 and 6.

It will be seen that the toggle-arms E and E' will conform to such vertical movement of the platform as may be imparted thereto by way of the toggle-levers D D' and that said arms will maintain the platform in a horizontal position during its movements.

The power for lifting the platform C is applied to the toggle-levers D D' from the hinged top or cover *a* by means of a controlling-lever F and a link *d*, which connects the long end of said lever to the hinged top. The controlling-lever F is mounted upon the stud or pin *e*, which hinges the two toggle-levers together, and as this hinge-point moves laterally during the lifting and lowering movements the fulcrum-bearing of the controlling-lever must permit said lever to follow the movements of the pin, and therefore the controlling-lever has a movable or shifting fulcrum.

As shown in Figs. 3 and 4, the controlling-lever is fulcrumed on a stud *f*, carried by a link G, pendent from a fixed stud *f'* at its upper end, the adjacent portion of the cabinet being recessed for the free reception of said link.

The lifting of the cover *a* from its closed position, Fig. 4, causes the toggle-levers to open, as shown in Fig. 3, the link G swinging slightly to and fro, as indicated in dotted lines, and permitting the controlling-lever to assume its various positions, but when the platform has been fully lifted the link is substantially vertical and the short arm of the controlling-lever is parallel therewith, so that the toggle-pin *e*, the fulcrum-stud *f*, and fixed stud *f'* are all substantially in line, thus locking the toggle-levers in their opened position, the platform being then firmly supported by the pendent link G, which in part is supplemented by the toggle-arms E E', which while they maintain the platform in a horizontal position perform no lifting or sustaining duty independently of the toggle-levers and the controlling-lever.

During the upward movement of the platform C a roller *g*, attached thereto beneath its front edge and below an open slot, (shown in detail in Fig. 7,) engages with an inwardly-projecting finger *h*, attached to the hinged front side or panel *b* above its hinge-line and swings said panel inwardly and upwardly, as shown in Figs. 2 and 5, to afford knee-space for the operator.

The inner lower side of the hinged panel is beveled, as at b^2, so that the roller *g*, when the platform is lowered as shown in Fig. 6, engages with the beveled surface and securely wedges the panel into its proper position. The roller *g* operates smoothly as a contact-piece for engaging with the finger *h*, although a suitably-rounded plate would serve a similar purpose.

It is to be understood that although we prefer to employ a pendent link and a controlling-lever fulcrumed thereon we do not restrict the main feature of our invention to that arrangement for operating the toggle-levers and for rigidly supporting the elevated platform, because if specially light machines are to be lifted the pendent link may be dispensed with and the controlling-lever be otherwise provided with a shifting fulcrum—as, for instance, as illustrated in Fig. 8. The toggle-levers D and D′ are as before described and the controlling-lever F′ is pivoted to their stud or pin *e* in like manner, but instead of the pendent link the fulcrum-bearing is here afforded by an underlying stationary ledge *i*, with which a roller *k* at the end of the inner arm of the controlling-lever has a traveling contact during the lifting and lowering movements, the opposite arm of the lever being connected to the hinged cover, as before described. When the platform is fully elevated, the axis of the roller *k* and the stud *e* occupy substantially the same vertical line, and therefore the stationary ledge *i* will rigidly support the platform, the inner arm of the lever then serving as a supporting and locking post. During the movements of the lever the ledge *i* and roller *k* provide a shifting fulcrum similar to that afforded by the pendent link, and both arrangements of the controlling-lever securely lock the toggle-levers in their fully-opened positions.

It will be obvious that when one pair of toggle-levers are employed and actuated as described some means for maintaining the platform in a horizontal plane must be employed therewith, and these means may be varied without substantial departure from the main features of our invention. In some cases it is not essential that the front side of the inclosing chamber should be hinged, and therefore two pairs of such toggle-levers, with their controlling-levers, could be employed, as would be desirable for use in connection with specially heavy machines, and each pair of such toggle-levers would coöperate with the other pair as a means for maintaining the platform in a horizontal position.

For use with specially light machines one pair of toggle-levers, although located near one edge of the platform, may be so constructed as to render the toggle-arms E and E′ unnecessary, as illustrated, for instance, in Fig. 9. As here shown, the toggle-levers D^2 and D^3 have lateral arms, which should extend somewhat beyond the longitudinal central line of the platform. The lever D^2, being pivoted to the under side of the platform, has its arm *l* provided at its end with a pivot-pin for hinging to the under side of the platform in line with the hinge-pin at the top of the lever, and the lever D^3 is provided with rollers at the top of the lever and also at the outer end of its arm *l′*, each lever thus affording a broad bearing for the platform upon both toggle-levers. For securing an ample broad pivotal bearing adjacent to the pin *e* the toggle-levers have a sleeve and hub coupling, as shown, and for securing a smooth rolling contact at the front edge of the platform it would be provided with rollers, as shown in dotted lines, similar to the roller *g*, Figs. 5 and 6, which would engage in rolling contact with vertical inner surfaces of adjacent front portions of the frame of the cabinet during the vertical movements of the platform and assure its horizontal position.

Having thus described our invention, we claim as new, and desire to secure by Letters Patent—

1. In a machine-inclosing cabinet, the combination with a vertically-movable platform, and a hinged cover or top, of crossed vertical toggle-levers beneath the platform, and a controlling-lever coupled to the toggle-levers and to the hinged cover, substantially as described, whereby power applied in raising the cover will be communicated through the controlling-lever to the toggle-levers for lifting the platform.

2. In a machine-inclosing cabinet, the combination with a hinged cover or top, and a vertically-movable platform, of crossed vertical toggle-levers beneath the platform, a controlling-lever hinged near one end to the toggle-levers and having a suitable shifting fulcrum; a link which couples the other end of said controlling-lever to the hinged top, and means for maintaining the platform in a horizontal plane, substantially as described.

3. In a machine-inclosing cabinet, the combination substantially as described, of a hinged top or cover, a vertically-movable platform, vertical crossed toggle-levers beneath the platform, and a controlling-lever which is coupled to the toggle-levers and to the hinged top, and serves as a part of the lifting mechanism and also to lock the toggle-levers in their opened position as when the platform has been fully elevated.

4. In a machine-inclosing cabinet, the combination with a vertically-movable platform and a hinged top or cover, of crossed vertical toggle-levers beneath the platform, a controlling-lever hinged to the pivot-pin of the toggle-levers, a pendent link affording a shifting fulcrum for the controlling-lever, and a link which couples said controlling-lever to the hinged top or cover substantially as described.

JOHN R. McLAREN, JR.
EUGENE H. BOYCE.

Witnesses:
CHAS. S. H. HOLDSTOCK,
JAMES E. MULDOON.