Jan. 11, 1949. E. W. NORTH 2,458,627

TABLE LID SUPPORT

Filed July 23, 1945 2 Sheets-Sheet 1

Fig. 1.

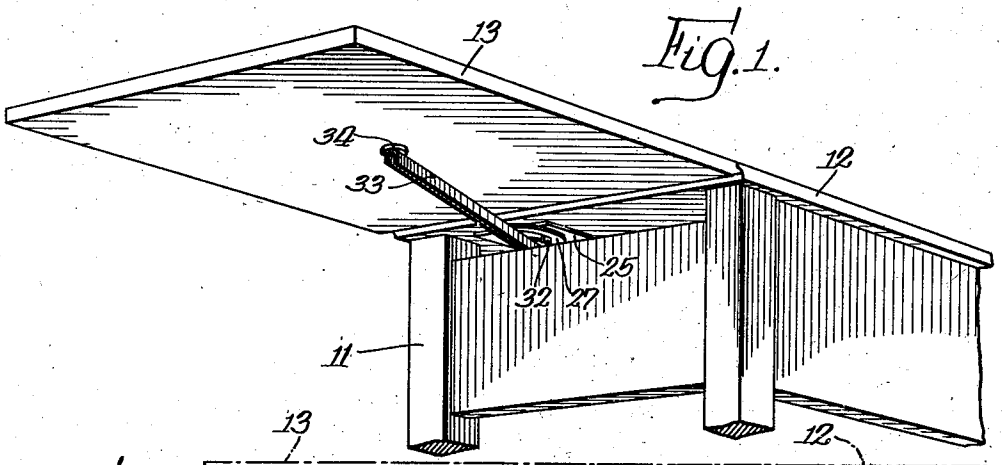
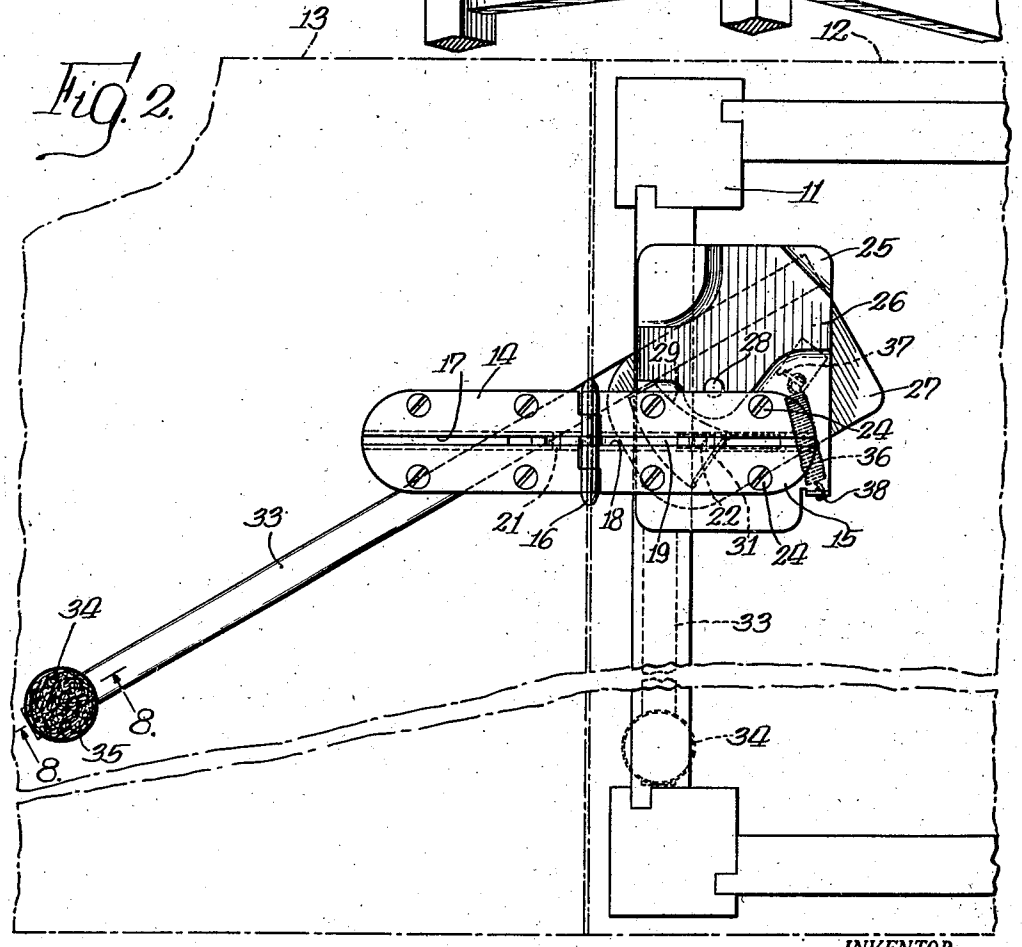


Fig. 2.



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Fig. 3.

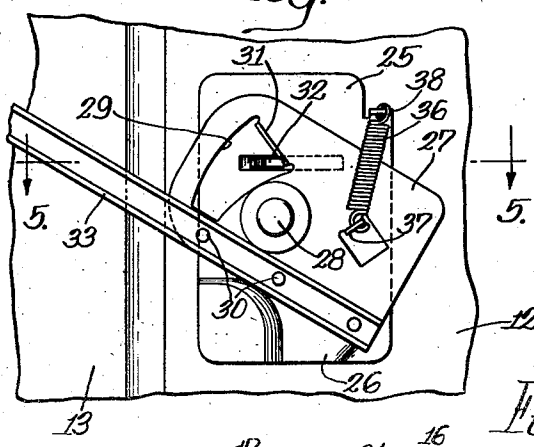


Fig. 4.

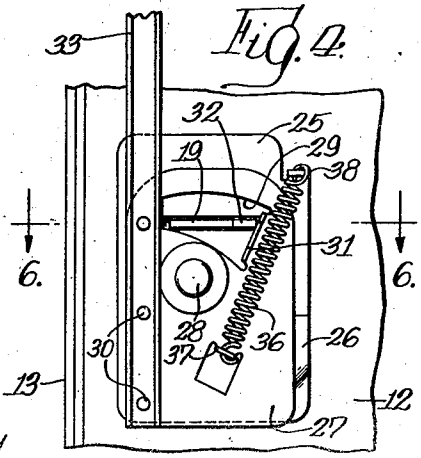


Fig. 5.

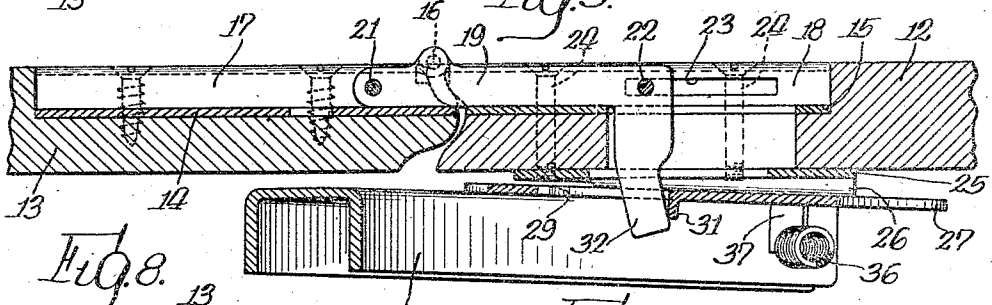


Fig. 8.

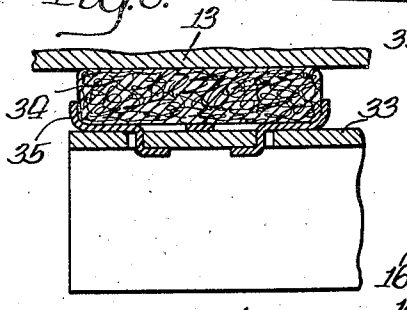


Fig. 6.

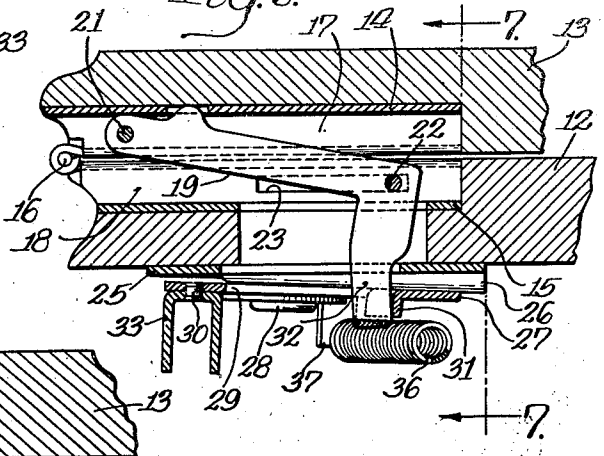
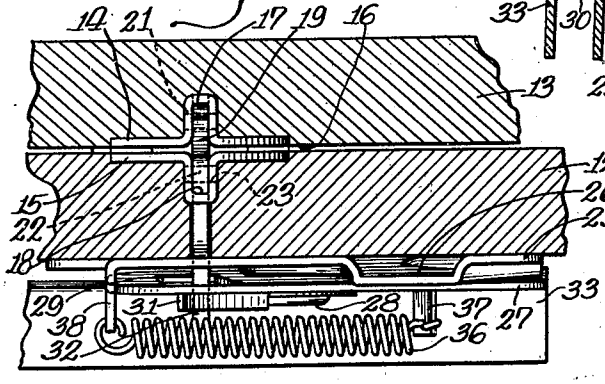


Fig. 7.



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UNITED STATES PATENT OFFICE

2,458,627

TABLE LID SUPPORT

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Application July 23, 1945, Serial No. 606,508

10 Claims. (Cl. 311—62)

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This invention relates to supports for the lids or leaves of cabinets, tables and the like, and in the form here shown as exemplifying the principles of my invention, it is designed as a support for the lid of a drop head sewing machine cabinet.

The lid for such a cabinet is customarily hinged to one edge of the cabinet top, so as to swing about a horizontal axis from a position overlying the top to an extended position forming a continuation of the top adapted to serve as a work support.

The primary purpose of my present invention is to provide a support for such a lid which, when the lid is closed, will lie within the confines of the cabinet and when the lid is opened will automatically be projected outwardly from the cabinet into a position beneath the lid to support the same in horizontal extended position.

Another object of my invention is to provide a support of the character indicated which will not only be automatically moved into projected lid supporting position when the lid is swung from closed to open position, but will also be automatically retracted into the cabinet when the lid is swung from open to closed position.

A further feature of my invention resides in the fact that the supporting arm is yieldingly projected into extended position and is connected with the lid only through a lost motion connection, so that should the arm encounter a wall or a piece of furniture or the like when being projected, its movement will be arrested and no damage to the obstruction or to the arm or its operating mechanism will result.

A further purpose of my invention is to provide a support of the character indicated which will be simple in construction, consisting of few parts, and will, therefore, be economical to manufacture and which will be reliable and durable in use.

Other objects and inherent advantages of my invention will be readily appreciated as the same becomes better understood by reference to the following description when considered in connection with the accompanying drawings.

Referring to the drawings,

Fig. 1 is a perspective view looking at the under side of the lid of a cabinet equipped with my invention;

Fig. 2 is a plan view of my improved support in the position illustrated in Fig. 1, a phantom showing of the leaf and cabinet top being included;

Fig. 3 is a fragmentary view looking at the under side of the support with the arm in projected position;

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Fig. 4 is a view similar to Fig. 3 with the arm in retracted position;

Fig. 5 is a fragmentary sectional view on the line 5—5 of Fig. 3;

Fig. 6 is a sectional view on the line 6—6 of Fig. 4;

Fig. 7 is a sectional view on the 7—7 of Fig. 6; and

Fig. 8 is a fragmental view on the line 8—8 of Fig. 2.

Referring to the drawings more in detail, reference character 11 indicates generally the frame of a table or cabinet provided with the top 12 to one edge of which the lid or leaf 13 is hingedly connected by a pair of spaced apart hinges, one (not shown) being of typical construction and the other, which will be described, constituting a part of my invention.

This special hinge comprises the leaves 14 and 15 connected by a hinge pintle 16 and shaped to provide the respective channels 17 and 18 for the accommodation of the link 19 which is pivoted in the channel of the leaf 14 on a pivot pin 21, and is slidably guided in the channel 18 of the leaf 15 by a stud 22 projecting from the link into elongated slots 23 formed in the side walls of the channel 18. It will be apparent from Figs. 5 and 6 that movement of the lid from the closed position of Fig. 6 to the extended position of Fig. 5 will move the link 19 longitudinally from the position of Fig. 6 to that of Fig. 5, and conversely the return of the lid from extended to closed position will slide the link along the guide slots 23 back into the position indicated in Fig. 6.

To the bottom face of the cabinet top 12 there is secured by screws 24, which also secure the hinge leaf 15 to the cabinet top, a plate 25 having a downwardly struck portion 26 providing, as shown in Figs. 5 and 6, an inclined surface against which an operating plate 27 is mounted for rotatable movement about a pintle or fulcrum stud 28. This plate is provided with a sector-shaped opening 29 of substantial size having at one end a down-turned flange 31 adapted to form a bearing surface of substantial area against which the depending toe 32 of the link 19 abuts.

The supporting arm 33, which may be of channel shaped construction as shown in Figs. 5 and 6, is fixed to the plate 27 by rivets 30, or otherwise, and carries at its outer end a supporting pad or cushion 34 of felt, rubber or similar material, which is carried in a holder 35 mounted upon the arm near its outer end. The cushioning material prevents marring of the contacting surface of the lid, which becomes the upper exposed surface of

the cabinet when the lid is in closed position, and also renders engagement of the lid with the support noiseless, should the lid be dropped before being fully opened.

A coiled tractile spring **36**, connected at one end to a lug **37** struck downwardly from the plate **27** and at its other end to a lug **38** struck downwardly from the plate **25**, induces a counter-clockwise rotation of the plate **27** (Figs. 3 and 4), thereby biasing the supporting arm into the projected position illustrated in Figs. 1, 2 and 3. The extent of rotation of the plate and supporting arm in this direction is limited by engagement of the bearing flange **31** with the toe **32** of the link **19**, so that when the lid is in extended position, as shown in Fig. 5, the supporting arm assumes the operative projected position shown in Figs. **1**, 2 and 3. If now the lid be swung upon its hinges to the closed position of Fig. **6**, the link will be slid inwardly to the right, viewing Fig. 5, to the position shown in Figs. 6 and 4, thereby rotating plate **27** in a clockwise direction from the position of Fig. 3 to that of Fig. 4 to retract the supporting arm into the position of Fig. 4, which is also illustrated in dotted lines in Fig. 2.

From Figs. 5 and 6 it will be apparent that the inclined depression **26** of the plate **25**, upon which the rotatable plate **27** is mounted, causes the rotatable plate to be disposed at an angle to the horizontal, or, in other words, to be upwardly inclined from its inner edge outwardly. The supporting arm **33**, consequently, when projected from inoperative to operative position, carries the supporting pad upwardly as well as outwardly from the cabinet, thus disposing it substantially in the plane of the lower face of the cabinet top to receive and support the lid in alignment with said top. Upon reverse or retractive movement of the arm, the inclination of its carrying plate causes the pad **34** to move downwardly, so that it will pass beneath the top **12** and be disposed entirely or substantially within the confines of the cabinet.

It will be apparent from the foregoing that I have provided a lid support in which the supporting arm is normally concealed within the cabinet, but when the lid is swung from closed to open position, the arm is automatically projected from the cabinet and moved upwardly to provide a support for maintaining the lid in alignment with and forming an extension of the cabinet top. Upon return of the lid to closed position, the link pushes the rotatable plate upon which the supporting arm is mounted in the opposite direction against the action of spring **36**, thereby returning the arm to the cabinet.

It will be observed that the arm is continually biased by the spring toward projected position. The extent of its movement in that direction at any time being limited by the position of the lid controlled link **19**. If the link, however, were positively connected with the plate **27**, the supporting arm would be positively projected by opening movement of the lid. In such event engagement of the positively actuated arm with a wall or a piece of furniture or the like would result in injury to the article or to the mechanism, or both, whereas, the spring induced projecting movement of the arm effected by my invention enables the outward movement of the arm to cease upon encountering an obstacle, irrespective of the continued movement of the lid.

The structural details shown and described and the size, shape and proportion of the various parts are capable of considerable modification without exceeding the scope of my invention as defined in the following claims.

I claim:

1. In a lid support or the like, the combination of a supporting arm rotatably mounted beneath the cabinet top, a lid connected to said top so as to overlie the same or be extended therefrom, a link pivotally connected to said lid and slidably connected to said top, said link having an abutment positioned to limit the outward movement of said arm, and a spring connected to project said arm into an extended position limited by the position of said link.

2. In a lid support, the combination with a cabinet top having a lid hingedly mounted thereon, of a supporting arm rotatably mounted beneath said top, means for yieldably biasing said arm into projected position to support said lid at a point beyond the confines of said top, and means including a link pivoted to and operable by said lid and having an abutment for controlling the projection of said arm under said biasing influence.

3. In a lid support, the combination of a cabinet top, a lid, a hinge consisting of a pair of pivotally connected leaves attached respectively to said top and lid, each leaf having a longitudinally extending groove, a link pivoted at one end in the groove of the lid leaf and slidably guided at its other end in the groove of said top leaf, a supporting arm, a spring biasing said arm into projected position, and a lost motion connection between said arm and said link whereby the position of the arm under the influence of said spring is controlled by said link.

4. In a lid support, the combination of a hinge comprising a pair of pivotally connected leaves provided with a longitudinal groove, a link slidably disposed in the groove of one leaf and pivotally connected with the other leaf, said link being provided at its slidably mounted end with a depending toe, a rotatably mounted plate having an elongated opening into which said toe extends, and a spring biasing said plane into abutting engagement with said toe of the link.

5. In a lid support, the combination with a cabinet top and a lid hinged thereon, of a plate rotatably mounted beneath said top and provided with an elongated opening, a link pivotally connected at one end to said lid and extending at its other end through said top and into said opening, a spring biasing said plate about its pivot to engage one edge of said opening with said link, and a supporting arm carried by said plate for supporting said lid when in projected position.

6. In a lid support, the combination with a cabinet top and a lid hinged thereto, of a support for said lid including an arm having a pivotal mounting adapted to be disposed beneath said top and to be projected outwardly therefrom, a supporting cushion carried by said arm, and means for projecting and retracting said arm, the axis of the mounting for the arm being inclined relatively to the plane of said top to cause the said cushion to be elevated upon projection of the arm and to be lowered upon retraction thereof.

7. In a lid support, the combination with a cabinet top and a lid hinged thereon, of a plate mounted beneath said top and providing an inclined bearing face, a second plate rotatably supported by said first plate and positioned by said inclined bearing face so as to rotate in a plane intersecting the plane of said top, a supporting arm fixed on said rotatable plate, a spring biasing rotatable plate in one direction, and means

actuated by said lid for controlling the movement of said rotatable plate under the influence of said spring.

8. In a lid support, the combination of a plate adapted to be stationarily mounted beneath a cabinet top, said plate being formed to provide in inclined bearing surface, a second plate rotatably mounted on said first plate and adapted to oscillate in a plane parallel to said inclined bearing surface, a supporting arm fixed on said rotatable plate, a spring biasing said rotatable plate in one direction, and a link slidably associated with the table top and extending through said stationarily mounted plate into the path of a bearing surface forming an abutment on said rotatable plate, said link being adapted for connection to a lid hingedly mounted on said top.

9. In a lid support, the combination with a table top having a lid hinged thereto, of a link slidably mounted on said top and pivotally connected with said lid, a stationary plate adapted to be mounted beneath said top, a rotatable plate pivotally connected to the supporting plate so as to rotate in a plane disposed at an angle to said top, said rotatable plate being provided with an abutment and said link having a depending portion projecting through the stationary plate into engagement with said abutment, a spring biasing said abutment into engagement with said depending portion, a supporting arm carried by said rotatable plate, and a cushion mounted on said arm.

10. In a lid support, the combination of a pivotally mounted supporting arm, a spring biasing said arm into projecting position, a hinge comprising a cabinet top leaf and a lid leaf, and a slidable link connected by a fixed pivot with said lid leaf and positioned to retract said arm against the action of said spring upon movement of said lid leaf into folded relation with said cabinet top leaf.

EDWIN W. NORTH.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
186,171	Schier	Jan. 9, 1877
2,362,243	Chason et al.	Nov. 7, 1944

Certificate of Correction

Patent No. 2,458,627. January 11, 1949.

EDWIN W. NORTH

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 4, line 44, claim 4, for the word "plane" read *plate*; line 75, claim 7, after the syllable "ing" insert *said*;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 17th day of May, A. D. 1949.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.