

May 27, 1952

R. E. BOYDEN

2,598,342

OFFICE MACHINE

Filed Feb. 24, 1948

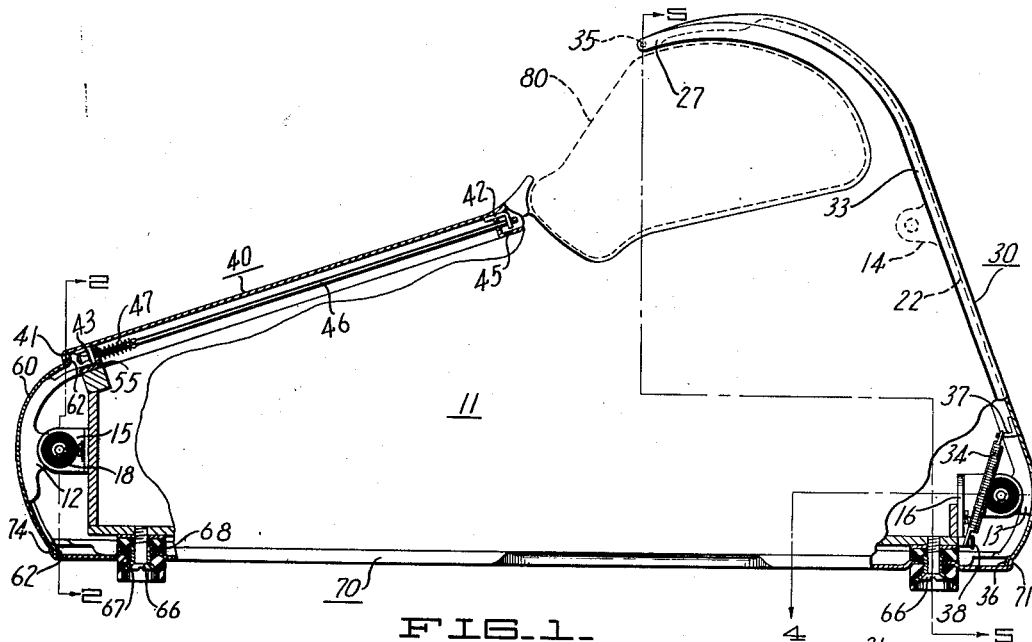


FIG. 1.

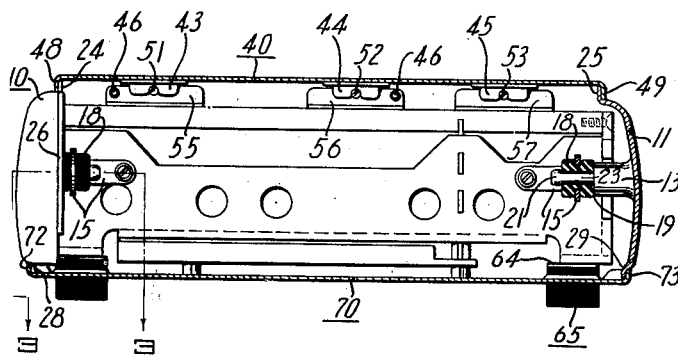


FIG. 2.

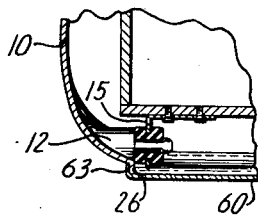


FIG. 3.

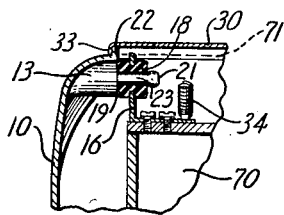


FIG. 4.

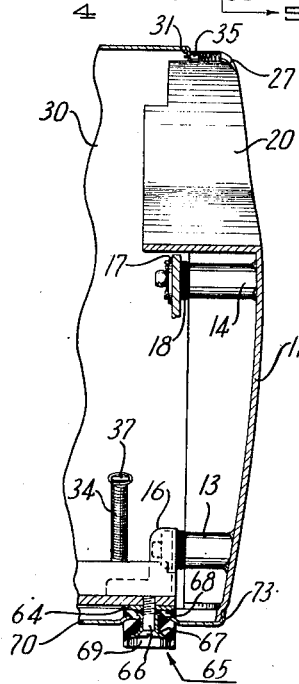


FIG. 5.

INVENTOR:
Robert E. Boyden

BY

Howard M. Dustin.

UNITED STATES PATENT OFFICE

2,598,342

OFFICE MACHINE

Robert E. Boyden, Los Angeles, Calif., assignor to
Marchant Calculating Machine Company, a
corporation of California

Application February 24, 1948, Serial No. 10,362

3 Claims. (Cl. 45—68.1)

1

This invention relates to office machines and more particularly concerns the construction and assembly of covers therefor.

Covers which completely enclose office machines have heretofore required outwardly exposed screws or similar means for attaching the covers to the inside framework of the machine. In order that cover assemblies may be attractive as well as useful, manufacturers of office machines have inclined toward improvements in appearance and styling. Such appearance is notably enhanced by eliminating exposed screws or their equivalent from the outside surface of the covers.

It is, therefore, a primary object of the present invention to arrange and securely attach the covers of such machines without using outwardly exposed visible screws or the like.

It is a further object of the invention to attain the objective set forth in the primary object of the invention by overlapping and interlocking one or more covers with other covers.

It is a further object of the invention to provide a machine cover assembly in which certain of the covers may be held securely in place without the use of any external or internal screws or the like.

Other objects will be apparent from detailed description of a preferred form of the invention, reference being had to the accompanying drawings forming a part of the specification, in which:

Fig. 1 is a right side view partially in section showing the manner in which various covers are attached to the framework of the machine and/or interlocked with other covers.

Fig. 2 is a front view partially in section taken on line 2—2 of Fig. 1 with the front cover removed and illustrating the interlocking relation of the top and bottom covers to the side covers.

Fig. 3 is a fragmentary sectional plan view taken on line 3—3 of Fig. 2 showing the manner in which the left side cover is secured to the framework of the machine and also illustrating the interlocking of the front cover with that side cover.

Fig. 4 is a fragmentary sectional plan view taken on line 4—4 of Fig. 1 illustrating the manner of interlocking the back and side covers.

Fig. 5 is a fragmentary front sectional view taken on line 5—5 of Fig. 1 showing the right side cover in relation to the back and bottom covers.

The covers of the machine either are securely attached to the frame of the machine by resilient grommets, by internal or hidden screws, or are

2

locked in position by flanges interlocking with flanges of adjacent covers without using any screws or the like, as will appear more clearly from the following detailed description of the invention.

The cover assembly (Figs. 1 and 2) consists of two side covers 10 and 11, a back cover 30, a top or keyboard cover 40, a front cover 60, and a bottom cover or plate 70.

The initial step in assembling the interlocking covers is to attach the side covers to the framework of the machine. Three framework brackets 15, 16, and 17 (Figs. 1, 2, 3, 4, and 5) secured to the framework of the machine are provided for supporting side cover 10 or 11 (Fig. 1). For this purpose the brackets have molded thereon, or otherwise secured thereto, grommets 18 (Fig. 2) which are adapted to receive the reduced shanks 23 (Figs. 2 and 4) of respective projections 12, 13, and 14 formed on the inside of each side cover 10 and 11. A knob 21 is formed on the end of each shank 23 and after being pressed through the grommet, the knob serves to yieldably hold the shank within the grommet, with the shoulder 19 of a projection 12, 13, or 14 pressed against said grommet.

If it is preferred to use screws or the like for attaching the side covers to the framework brackets, the screws may be inserted through the brackets into threaded bosses formed on the inside of the covers, the back cover being swung counter-clockwise from the position shown in Fig. 1 to permit the insertion of the screws from the inside of the machine.

In this manner an unbroken exterior finish of the side covers is preserved either by attaching the covers to the framework of the machine without the use of screws or the like, or if screws are used for such attaching, the screws may be inserted into the inside of said covers from the inside of the machine.

As seen in Fig. 5 each side cover 10 and 11 has formed as a part thereof a laterally extending portion 20 so shaped as to conform with the outline of a shiftable carriage 80 shown by dotted lines in Fig. 1. The extending portion 20 forms a part of the cover design and also aids in preventing the entry of dust into the machine when the carriage is shifted to either of its end positions.

The back cover 30 (Fig. 1) is pivotally supported between similar upper extensions 27 of side covers 10 and 11. As illustrated in Fig. 5, the right side extension, for example, carries a spring urged plunger 35 adapted to pass through an

aperture formed in an ear 31 of the back cover.

It will be apparent that fixed studs or the like could be carried by the side covers 10 and 11 in place of the spring urged plungers 35 in which case the studs on the side covers would be inserted into their respective ears 31 of the back cover before the second side cover is attached, the back cover as viewed in Fig. 1 being swung counter-clockwise about the studs so that flanges on the back cover will subsequently overlie and interlock with cooperating flanges on the side covers when the back cover is swung counter-clockwise into proper position.

Back cover 30 is secured against lateral movement by right and left flanges 33 (Fig. 4) thereon overlying and interlocking with rearwardly extending flanges 22 on side covers 10 and 11. In addition to being pivotally supported, as described above, the back cover is yieldably secured to the framework of the machine and is urged into interlocking relationship with the side covers by two springs 34 (Fig. 1) attached each at one end to respective brackets 37 on the inside of back cover 30 and adapted at their other ends to be drawn by means of a hook or other tool over respective extensions 38 of brackets 16, the latter being previously disclosed as secured to the framework of the machine. When bottom plate 70 is secured as later described, the bottom flange 36 of back cover 30 will be interlocked by a flange 71 on the bottom plate 70 (Fig. 1) to complete the securing of cover 30.

The top or keyboard cover 40 has apertures (not shown) formed therein to receive the respective numeral and control keys of the keyboard and has brackets mounted underneath its forward and rearward ends by means of which it is attached to the framework of the machine. Two rearward brackets 42 of cover 40, as illustrated in Fig. 1, are each adapted to receive the rearward end of a respective spring urged plunger 46. The plungers are supported at their rearward ends by framework brackets 45 and are supported at their forward ends by similar framework brackets 55 and 56 (Figs. 1 and 2). The three forward brackets 43, 44, and 45 (Fig. 2) of top cover 40 are slotted to receive the shanks of respective set screws 51, 52, and 53, carried by framework brackets 55, 56, and 57, the brackets 55 and 56 also supporting the plungers 46 as previously described.

Top cover 40 has left and right side flanges 48 and 49 (Fig. 2) which overlie respective cooperating flanges 24 and 25 of left and right side covers 10 and 11. A depending front flange 41 (Fig. 1) on top cover 40 is provided for cooperation with front cover 60 as later described.

Top cover 40 is mounted in the following manner. The cover is placed in tentative alignment with side covers 10 and 11. Then the forward end of cover 40 is raised to expose the forward end of plungers 46 which are withdrawn to the left as viewed in Fig. 1 by an amount sufficient to clear the rear brackets 42 and allow the same to drop into alignment with the plungers.

Upon the release of the plungers to the tension of plunger springs 47 the plungers enter the apertures in brackets 42 to lock the rearward end of cover 40 to the framework of the machine. The front end of cover 40 is then lowered so that slots cut in the forward brackets 53, 54, and 55 overlie the shanks of set screws 51, 52, and 53 which screws are tightened to complete the securing of cover 40 to the framework of the machine.

The front cover 60 is interlocked in proper position by top cover 40, side covers 10 and 11 and bottom plate 70 without the use of screws, springs,

or other such attaching devices. Front cover 60 is mounted by hooking the flange 62 (Fig. 1) thereon under flange 41 of the top cover while holding the lower portion of the front cover slightly clockwise from the position shown and then by swinging it counter-clockwise so that its similar left and right side flanges 63 (Fig. 3) overlie and interlock with respective flanges 26 of the left and right side covers.

Bottom plate 70 is mounted last to complete the cover assembly. Front flange 74 (Fig. 1) of bottom plate 70 overlies and interlocks with flange 62 of front cover 60 while rear flange 71 of plate 70 overlies and interlocks with flange 36 of back cover 30. Left and right side flanges 72 and 73 (Fig. 2) of bottom plate 70 overlie and interlock with flanges 28 and 29 of left and right side covers respectively.

The bottom plate 70 is secured to the framework of the machine by four rubber foot assemblies 65 (Fig. 5), each including a rubber foot 69, a steel collar 67, a rubber retainer 68, a washer 64 and a screw 66. Rubber foot 69 underlies an aperture formed in bottom plate 70 and is formed to receive collar 67. An upper shoulder of the latter is adapted to protrude through the aligned aperture of plate 70. Retainer 68 lies between plate 70 and washer 64 adjacent the machine framework, and is recessed to receive and snap over the upper shoulder of the steel collar 67. At the time of attaching the bottom cover or plate to the machine the foot 69, collar 67, plate 70 and retainer 68 are assembled into an integral unit. Screw 66 is inserted through the above mentioned collar, and is tightened into the framework of the machine to attach plate 70 and foot assembly 65 to the same. With the machine standing on its four feet 69 the screws 66, being embedded in the feet, cannot be seen.

An alternative method of attaching the rubber feet 69 and the bottom plate 70 to the framework of the machine is to substitute a bayonet type mount for the threaded portion of the screw 66 which is then locked into the framework of the machine by a partial turn of the screw.

When the covers comprising the cover assembly are secured, the screws, springs, grommets, and plungers that aid in holding the covers to the framework of the machine are completely hidden, thus providing smooth exterior surfaces. The interlocks and overlapping edges constituting a part of the organization for holding and retaining the various covers in place reduce the number of operations and the time required for attaching or removing the cover assembly from the framework of the machine.

For servicing the machine, all or part of the covers may be removed as the occasion demands. By removing four screws and the bottom cover, the front cover may be removed from interlocking relation with the side and top covers. Loosening the three screws 51, 52, and 53 (Fig. 2) together with withdrawal of two plungers 46 allows removal of the keyboard or top cover 40. Then, by detaching the two springs 34 (Fig. 1), the back cover may be swung counter-clockwise on its pivots 35 until it rests on top of the keyboard, and at which time the detachment of the two side covers 10 and 11 from their respective supporting framework brackets completely strips the machine of covers.

From the foregoing description of the preferred embodiment of the invention it will appear that various modifications of interlocking covers based upon the principle disclosed herein could be de-

5

vised; for example, instead of the framework limiting inward movement of the side covers, as shown in Fig. 2, with flanges on the bottom cover preventing outward movement of the side covers, the flanges of the side covers could, as well, fit inside slots or flanges on the bottom framework to prevent outward movement of the side covers relative thereto, with flanges on the bottom cover to fit inside the flanges of the side covers to prevent inward movement of the latter and wedge or press the side cover flanges outwardly against the bottom framework flanges or slots.

I claim:

1. In an office machine, the combination of an internal framework, and an external cover assembly including a first cover, and restraining devices including a part of the framework to limit movement of said cover relative to the framework in all but one direction, a second cover fixed to the framework and lying in a plane substantially perpendicular to the plane of said first cover, a flange formed on the second cover and interlocking one of the edges of the first cover to prevent movement of said one edge of the latter cover in said one direction, a third cover fixed to the framework and lying in a plane substantially perpendicular to the plane of the first cover, a flange formed on the third cover and interlocking another one of the edges of the first cover to prevent movement of the latter edge of said cover in said one direction.

2. In an office machine, the combination of an internal framework, and an external cover assembly including, two side covers, a cover pivotally mounted at both sides of the top edge thereof to the respective right and left side covers, means including a part of the pivotally mounted cover and a part of the side covers to prevent inward movement of the top of the side covers, side flanges formed on the right and left sides of said pivotally mounted cover and interlocking the edges of the side covers to prevent outward movement of the latter relative to the framework, means including a part of said side covers and a part of said framework to prevent inward movement of the side covers relative to the framework, a bottom cover secured to the framework and including a flange interlocking the bottom edge of the pivotally mounted cover to

6

prevent outward movement of the bottom edge thereof and to maintain the side flanges in interlocking relation to said side covers.

3. In an office machine, the combination of an internal framework, and an external cover assembly including, a quadrilateral cover having an upturned flange formed longitudinally the upper edge of said cover, an interlocking cover fixed to said framework and having a downwardly formed flange disposed adjacent the outer edge of said upturned flange to prevent outward movement of the upper edge of the quadrilateral cover relative to said framework, a second interlocking cover fixed to the framework and having an upturned flange formed longitudinally said second interlocking cover and disposed adjacent the outer surface of the lower edge of the quadrilateral cover to prevent outward movement of said lower edge relative to said framework, two opposite covers each having an edge disposed adjacent the inner surface of the two ends of said quadrilateral cover to prevent inward movement thereof relative to the framework, flanges formed on said two ends of the quadrilateral cover and interlocking the adjacent edges of said opposite covers to prevent outward movement of the latter covers relative to the framework.

ROBERT E. BOYDEN.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,458,618	Dowd	June 12, 1923
1,497,918	Landsiedel	June 17, 1924
1,858,778	Horton	May 17, 1932
2,265,618	Adams	Dec. 9, 1941
2,273,195	Helmond	Feb. 17, 1942
2,273,491	Leedy	Feb. 17, 1942
2,278,405	Niemann	Mar. 31, 1942
2,389,774	Haberstump	Nov. 27, 1945
2,404,915	McCullough	July 30, 1946
2,418,043	Myers	Mar. 25, 1947
2,431,351	Stiriss	Nov. 25, 1947
2,434,996	Gautier et al.	Jan. 27, 1948
2,489,696	Boyden	Nov. 29, 1949