

Aug. 14, 1923.

1,464,833

W. A. RINGLER

FILING DEVICE

Filed Oct. 21, 1922

2 Sheets-Sheet 1

Fig. 1.

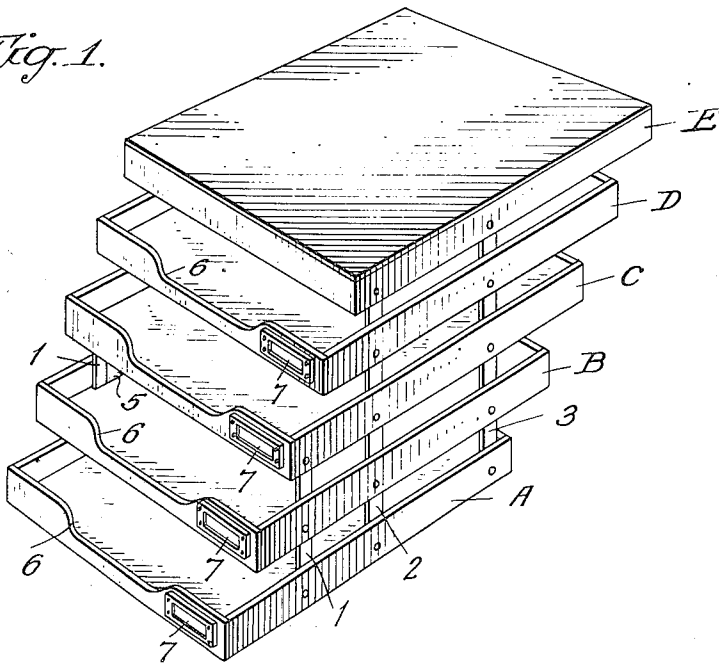
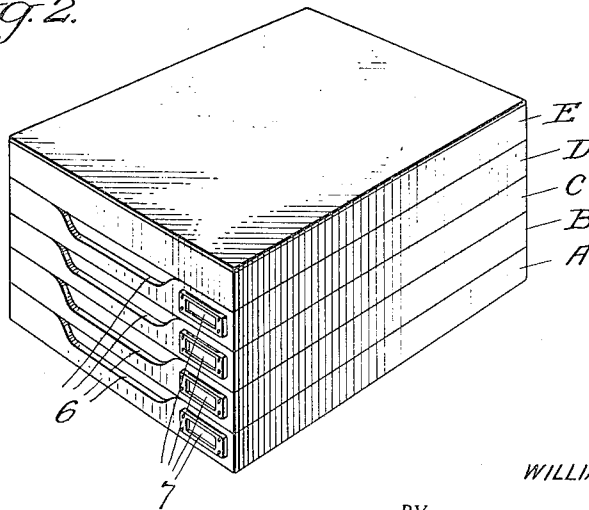


Fig. 2.



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2 Sheets-Sheet 2

Fig. 3.

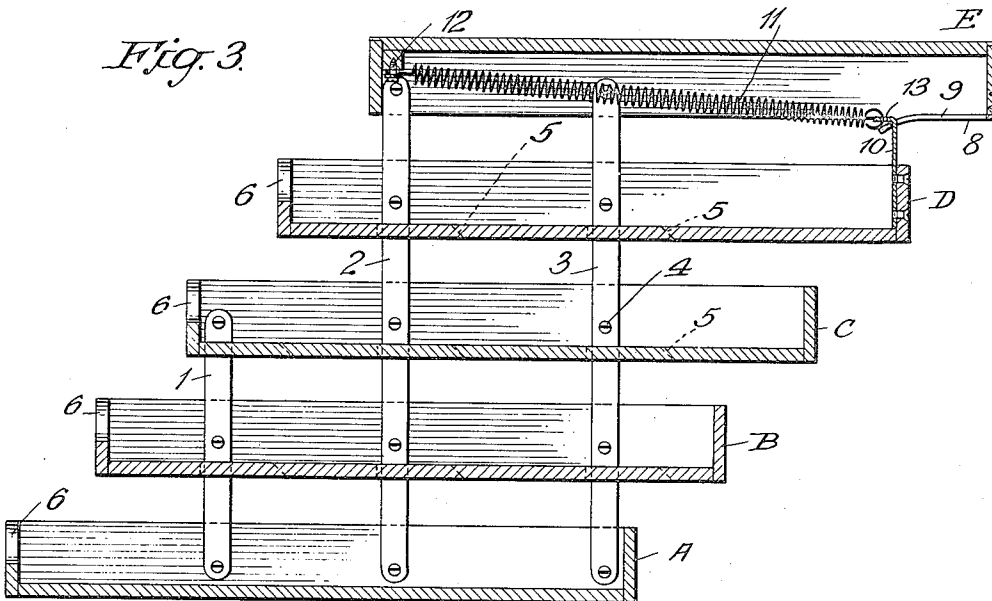
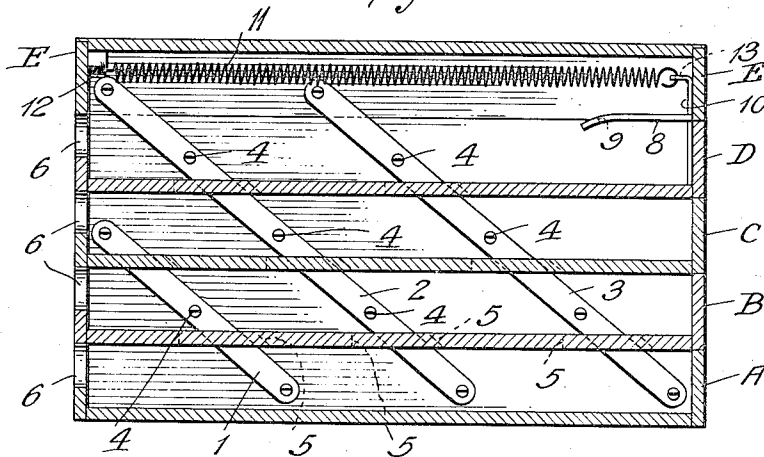


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM A. RINGLER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
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FILING DEVICE.

Application filed October 21, 1922. Serial No. 595,923.

To all whom it may concern:

Be it known that I, WILLIAM A. RINGLER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Filing Devices, of which the following is a full, clear, and exact description.

This invention relates to filing devices, such as trays or containers which are superposed so as to occupy a minimum horizontal area, and has for an object to provide an improved device of this type, with which convenient access may be had to any of the units or sections thereof for the purpose of inserting or removing articles therefrom, which can be collapsed by a simple movement into a substantially closed cabinet or opened by a reverse movement, which will remain in open or collapsed conditions without the use of locks or latches, which when collapsed occupies a minimum volume, and which is exceptionally simple, convenient, compact, light in weight, easy to manipulate, attractive in appearance, and inexpensive. Other objects and advantages will be apparent from the following description of one embodiment of the invention and the novel features will be particularly pointed out hereinafter in claims.

In the accompanying drawings:

Fig. 1 is a perspective of a filing device constructed in accordance with this invention;

Fig. 2 is a similar perspective of the same with the device collapsed;

Fig. 3 is a transverse sectional elevation of the device when in its open condition; and

Fig. 4 is a similar transverse sectional elevation of the same when in closed or collapsed condition.

In the illustrated embodiment of the invention a plurality of units A, B, C, D and E are arranged in superimposed relation and connected together by a plurality of links 1, 2 and 3, which are parallel to one another and pivotally connected by screws 4 to each of the units along opposite side walls thereof, so as to form with the sides of the units a plurality of parallelograms. The links are preferably disposed along the inner faces of the side walls. When so placed the intermediate units B, C and D are provided with slots or apertures 5 in the bottom walls thereof through which the

links may pass from unit to unit, and which slots are of sufficient length to permit of oscillatory movement therein of the links. The links are connected to the units in such a manner that when the units are in contact and aligned vertically, as shown in Figures 3 and 4, the connecting links will be oblique to the units (or the bottom walls thereof) so that when the upper sections are forced rearwardly relatively to the lowermost section, the links will move into vertical positions, as shown in Figures 1 and 3, and carry the units into a step-like relation with the units spaced vertically and rearwardly. When one of the upper sections is moved forwardly from the position shown in Figures 1 and 3, the links will move toward the position shown in Figure 4 and carry the units into contact with one another as shown in Figures 2 and 4.

The units may be any suitable filing unit or device, but in the illustrated embodiment the units A, B, C and D comprise letter trays or sections and the unit E comprises a cover section which fits over and entirely covers the lower sections when the filing device is in its collapsed or closed condition. Obviously the unit E could be a filing tray instead of a cover unit if desired. The trays may have notches 6 in their forward ends to facilitate the removal of the contents of any tray, and may also have group identification devices 7 on the forward end for indicating the contents of each tray.

A plate 8 extends forwardly from the rear end of the cover section E, and is provided with an aperture 9 which extends forwardly and rearwardly of the sections, that is, in the direction of relative lateral movement of the units. A lug 10 projects upwardly from the rear end of the section D, which is next below the cover section, and passes through the aperture 9 of the plate 8 so as to have relative movement in the aperture when the sections are moved between open and closed positions. The engagement of the lug 10 in the forward end of the aperture 9 of the plate 8 serves to limit the rearward movement of the connecting links to positions in which the links are substantially vertical.

A helical coil spring 11 is anchored at one end, such as by a screw 12, to the forward end of the cover section, and at its other end is secured, with the spring under

some tension, in an aperture 13 in the upper end of the lug 10, which lug is at the opposite end of the next lower section. The spring in acting between the two uppermost sections at opposite ends thereof serves to hold the sections in their open positions by pulling the links about their pivotal connections to the section D. The opening movement of the sections is limited by the engagement of the lug 10 in the forward end of the aperture 9 in the plate 8. In the open position of the parts there will be little tendency for the device to collapse or move to a closed condition because of the fact that the links are substantially vertical and the entire weight will be lengthwise of the links and not in a direction to cause rotation thereof about their pivotal connections to the trays. The spring also opposes the closing movement so that the filing device, when in its open condition, is substantially stable, and because of the vertically spaced and step-like relation of the trays, each tray is readily accessible when articles are to be inserted or removed therefrom.

When the sections are moved forwardly upon the lowermost section into their closed or collapsed positions, the links become oblique to the bottom walls of the trays. The weights of the sections supply turning forces upon the links which tend to move them into closed positions as soon as the sections are moved forwardly sufficiently to carry the links out of vertical positions, and the effective moments of the weights of the sections increase as the sections move closer together. The spring during this movement is put under a somewhat greater tension, owing to the fact that the lug 10 moves rearwardly with respect to the plate 8, and this increase of the tension of the spring acts upon the sections in a direction tending to move them into open position and opposed to the closing movement thereof. When the sections are entirely collapsed or closed as shown in Figures 2 and 4, the turning moments upon the links caused by the weights of the sections are sufficient to overcome the turning moment in the opposite direction which is caused by the action of the spring, so that the sections will remain in closed or collapsed positions. Upon a slight separating movement of the sections, the turning moments caused by the weights of the sections will decrease and the turning moment of the spring will increase, with the result that the spring will become active to assist the opening movement during the latter part of said movement and will hold the parts in the open positions.

This filing device is particularly useful and valuable when used on office desks for the filing or sorting of mail or various papers, and when collapsed it occupies a

minimum of space, which is of considerable advantage if the file is to be placed in a safe where space is limited. This filing device may be placed in the drawer of a desk or cabinet having a height substantially equal to the height of the filing device when collapsed, and when the drawer is pulled outwardly the filing device can, be a simple movement, be opened or expanded into a position in which the trays are readily accessible and the contents visible. In closing the drawer, if one fails to first close the filing device, the uppermost unit, by its engagement with the front wall or face of the desk or cabinet will be shoved forwardly and cause the filing device to collapse during the inward movement of the drawer. In fact, if desired, these filing devices could be mounted in cabinets in the manner of drawers so as to occupy a minimum of space within the cabinet and be expansible into open positions when pulled outwardly.

It will be obvious that various changes in the number and nature of the units, and the details and arrangement of parts herein described and illustrated for the purpose of explaining the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

I claim:

1. A filing device comprising a plurality of superimposed units, a plurality of parallel links pivotally connected to adjoining lateral walls of the units at opposite sides thereof, said links extending oblique to the bottom walls of the units when the units are in contact, whereby when the links are moved into positions perpendicular to the bottom walls of the units, the units will be separated vertically, and a spring connected under tension between two of the units in the direction of relative lateral movement of the units.

2. A filing device comprising a plurality of superimposed units connected by parallel links, said links being pivotally connected to adjoining units, whereby relative movement of the units will result in a separation and lateral spacing of the same, and a spring device connected under tension between two of the units in the direction of relative lateral movement therebetween for stressing the units in a direction to rotate the links into positions in which they are normal to the units.

3. A filing device comprising a plurality of superimposed units connected by parallel links, said links being pivotally connected to adjoining units, whereby relative movement of the units will result in a separation and lateral spacing of the same, a spring device connected under tension between two of the units in the direction of relative lateral movement therebetween for stressing the

units in a direction to rotate the links into positions in which they are normal to the units, and means for limiting relative movement of the units under the action of the spring device.

4. A filing device comprising a plurality of superimposed units connected by parallel links, said links being pivotally connected to adjoining units, whereby relative movement of the units will result in a separation and lateral spacing of the same, a spring device connected under tension between two of the units in the direction of relative lateral movement therebetween for stressing the units in a direction to rotate the links into positions in which they are normal to the units, and means acting between two of the units for limiting relative movement of the units under the action of the spring device.

5. A filing device comprising a plurality of superimposed units connected by parallel links, said links being pivotally connected to adjoining units, whereby relative movement of the units will result in a separation and lateral spacing of the same, and a pin and slot connection between two of the units for limiting relative movement of the units.

6. A filing device comprising a plurality of superimposed tray sections and a cover

section connected by parallel links, said links being pivotally connected to adjoining sections whereby relative movement of the sections will space them endwise and separate them, a lug carried by the uppermost tray section, and a stop member carried by the under side of the cover section and cooperating with the said lug for limiting spacing movements of the sections.

7. A filing device comprising a plurality of superimposed tray sections and a cover section connected by parallel links, said links being pivotally connected to adjoining sections whereby relative movement of the sections will space them endwise and separate them, a lug carried by the uppermost tray section, a stop member carried by the under side of the cover section and cooperating with the said lug for limiting spacing movements of the sections, a spring connected under tension between the said lug and the opposite wall of the cover section for pulling said sections in a direction to carry the links into a position normal to the sections.

In witness whereof, I hereunto subscribe my signature.

WILLIAM A. RINGLER.