Sept. 20, 1949. O. L. CLEVEN ET AL 2,482,099

COMPRESSOR FOLLOWER FOR VERTICAL FILES

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FIG. 1.

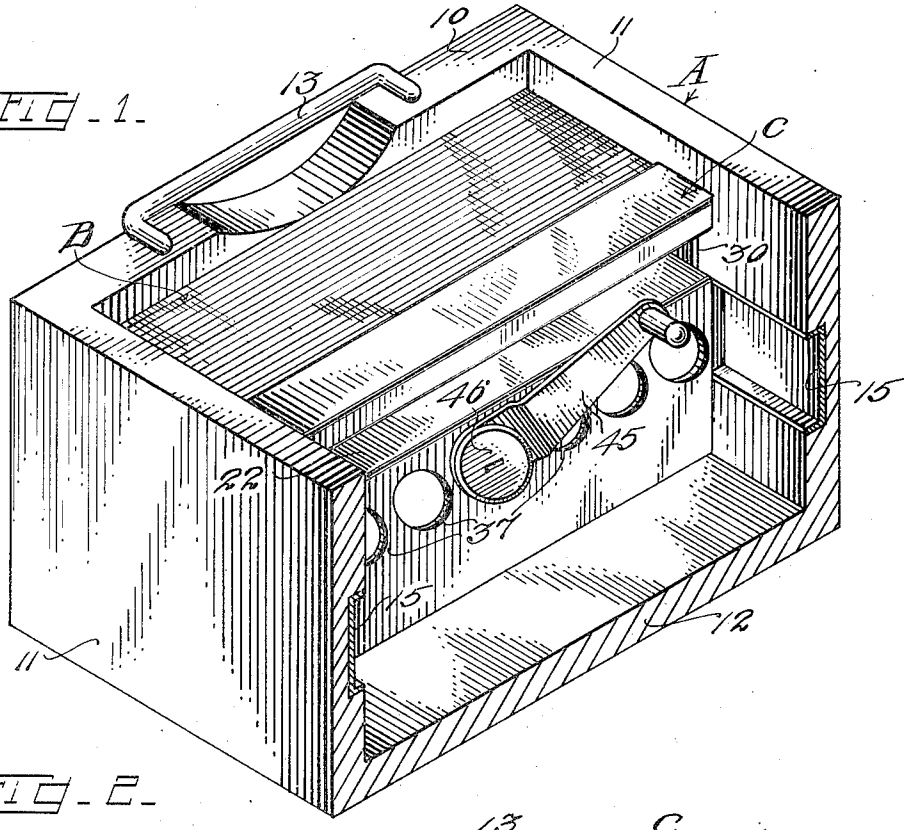
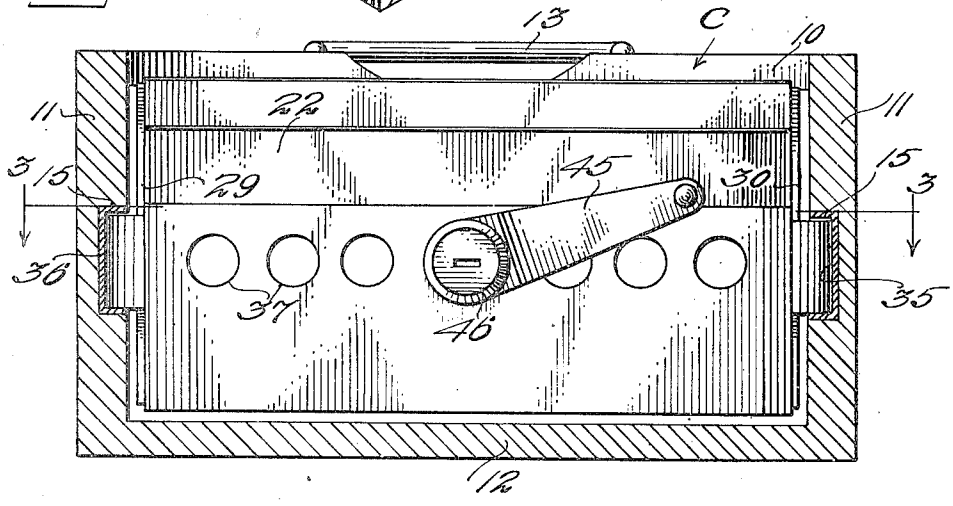


FIG. 2.



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Fig. 3.

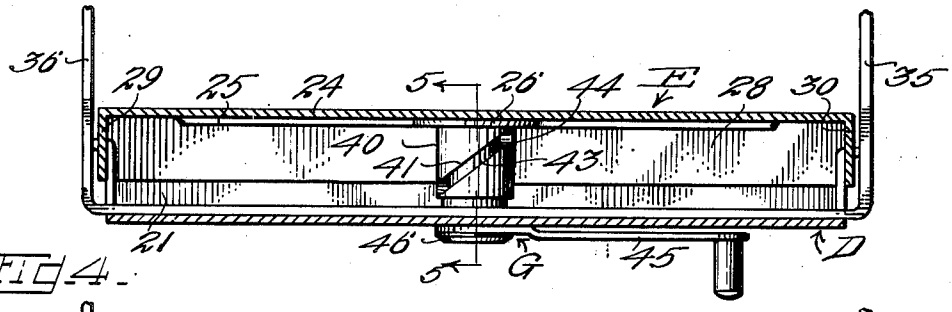


Fig. 4.

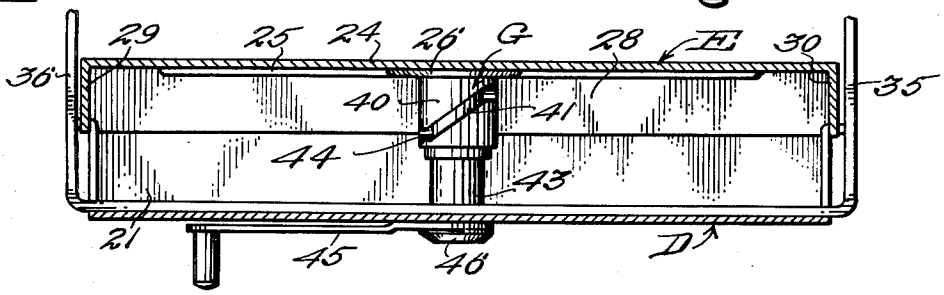


Fig. 5.

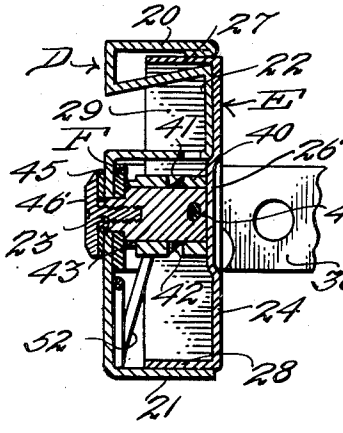


Fig. 6.

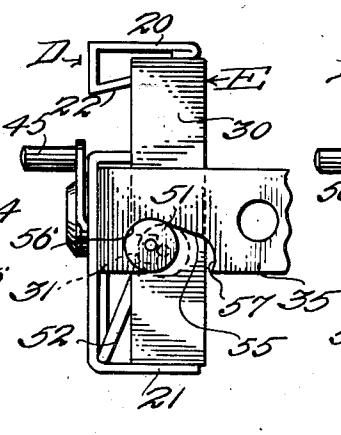
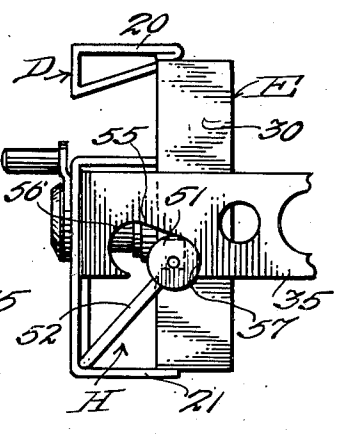


Fig. 7.



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FIG. 8.

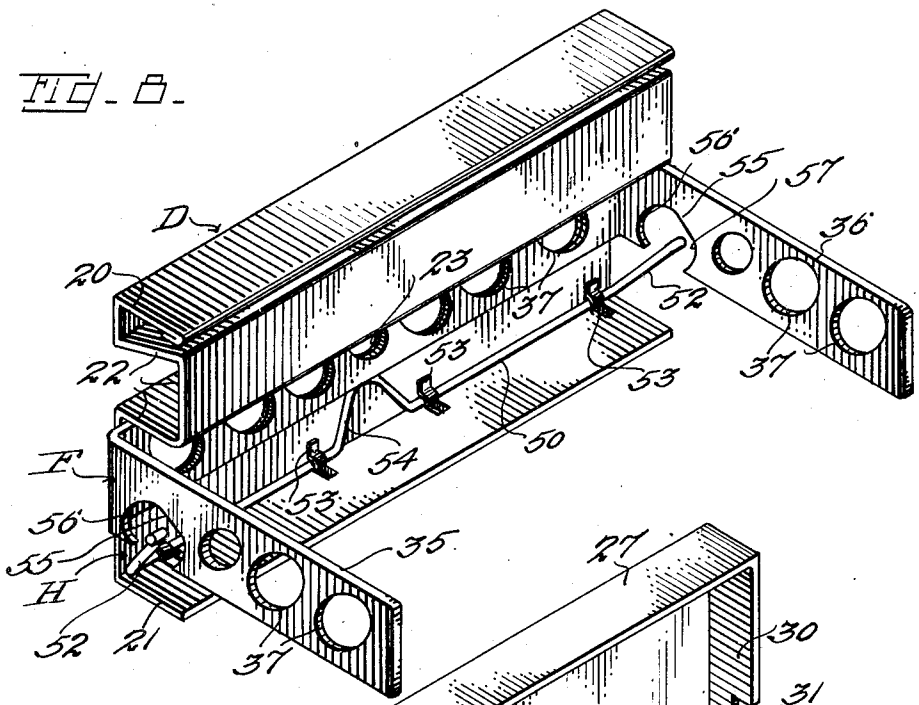
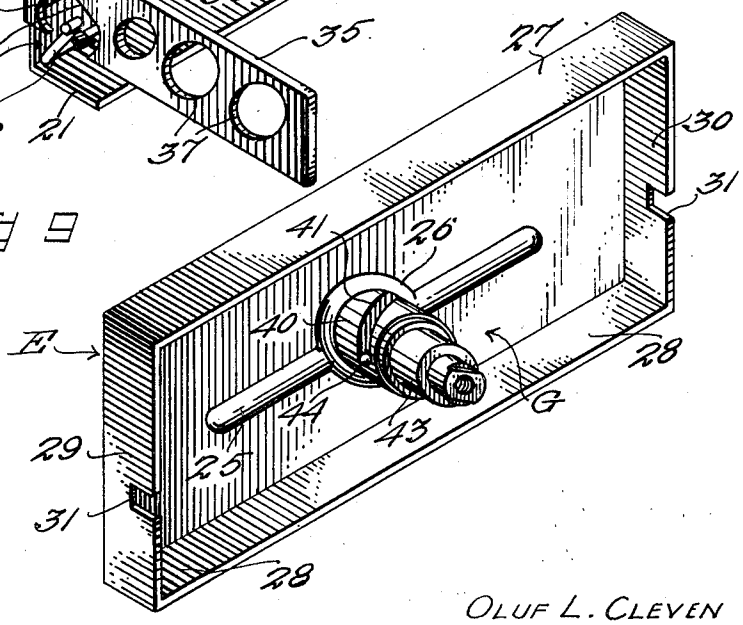


FIG 9



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COMPRESSOR FOLLOWER FOR VERTICAL FILES

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Application January 30, 1946, Serial No. 644,389

6 Claims. (Cl. 129—26)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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The invention described herein may be manufactured and used by or for the Government of the United States for governmental purposes without the payment to me or us of any royalty thereon in accordance with the provisions of the act of April 30, 1928 (Ch. 460, 45 Stat. L. 467).

This invention relates to filing receptacles and more particularly to improvements in compressor followers for vertical card files.

The compressor follower of the present invention is intended to be shiftably mounted in a filing receptacle for adjustment into a position in which its compressor plate engages the files therein. In a preferred embodiment, the compressor follower is adapted in adjusted position to be locked to the filing receptacle and, when locked, to be so operated as to advance its compressor plate toward the engaged files, whereby the files will be compressed and remain compressed until they are to be removed from the receptacle. The preferred embodiment also provides a rugged construction of relatively few parts with its relatively simple locking and operating mechanism installed in a protective housing formed of parts having additional functions.

The construction and functions of the compressor follower of the present invention make it well suited to the requirements of files for the cards used in business and other automatic tabulating machines. In the use of such machines it is important that the cards be straight and flat, otherwise the machines may not operate in the desired manner.

Experience shows that cards used in business machines often become bent or warped for various reasons and then, if fed into a machine, interfere with its normal operation. For example, the cards may become bent or warped from handling. The cards will also tend to buckle when exposed to the atmosphere. Loosely arranged cards in a filing receptacle permit air and its moisture to enter the spaces between adjoining cards. This air and moisture is taken up by the cards and causes them to lose their straight and flat condition.

Filing receptacles provided with cards resting on their edges and with a compressor follower embodying the present invention will straighten warped or bent cards and will prevent the warping or buckling of flat straight cards. This end is accomplished by the compressor plate of the follower which exerts pressure against the cards and maintains them in closely packed condition, the action of the compressor plate being that of a press.

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It is, therefore, an object of this invention to provide a compressor follower with an improved device for securely locking the follower in any position of adjustment in a filing receptacle.

Another object is to provide a compressor follower having relatively shiftable compressor and main plate members and improved means for relatively shifting such plate members.

Still another object is to provide a compressor follower having relatively shiftable compressor and main plate members, and locking means controlled by and responsive to the relative shifting movement of the plate members.

A still further object is to provide a compressor follower which is characterized by its ruggedness and simplicity, by its improved locking and operating mechanism, by the protection afforded for such mechanism, and by the ease with which it may be adjusted, locked and operated to compress filed material.

Another object is to provide an improved card follower for use with a filing receptacle for machine cards, tabulating cards and the like, which deteriorate or warp if not closely packed when filed, the follower being adapted to compress the filed material at a desired pressure and to maintain the compressed condition of the material as long as desired.

Another object is to provide a compressor type of file follower for use with a filing tray for machine cards, tabulating cards and the like, that is well constructed and can be manufactured at a low cost.

Other objects and advantages will be apparent from the following description, the appended claims, and the accompanying drawings, wherein

Fig. 1 is a perspective view of a compressor follower embodying the present invention and installed in a card file receptacle.

Fig. 2 is a transverse, vertical sectional view through the receptacle of Fig. 1 and shows a rear elevational view of the compressor follower.

Fig. 3 is a horizontal sectional view of the compressor follower and is taken on line 3—3 of Fig. 2.

Fig. 4 is a view similar to Fig. 3, but with the compressor plate member adjusted to an advanced position.

Fig. 5 is a vertical sectional view taken on line 5—5 of Fig. 3.

Fig. 6 is an end view of the compressor follower when adjusted as shown in Figs. 3 and 5.

Fig. 7 is an end view of the compressor follower when adjusted as shown in Fig. 4.

Figs. 8 and 9 are perspective views of parts of the compressor follower illustrated in Figs. 1 through 7.

Referring now to the drawings, a receptacle A for filing material B is provided with a compressor follower C embodying this invention.

The receptacle A is illustrated as being in the form of a card tray or drawer, but may be of any conventional form and construction. The illustrated receptacle A has the usual front wall 10, side walls 11, bottom wall 12 and rear wall (not shown). A handle 13 of conventional form may be provided for use in carrying the receptacle A when it is removed from its cabinet (not shown). Channels 15 are set in longitudinal side wall recesses so as to have their open sides facing each other. These channels 15 serve as tracks for slidably supporting the compressor follower C and extend in parallel relation for the full length of the receptacle A.

The filing material B may be tabulating cards, sheets, photographs, or similar files which are usually arranged in vertical position with their edges resting on the receptacle bottom 12.

The compressor follower C is slidably supported in the channels or tracks 15 for rectilinear movement and is adjustable toward and away from the receptacle front wall 10. The compressor follower C comprises two relatively movable plate members D and E, a support member F, a cam device G, and a locking device H.

The main plate member D (Fig. 8) is substantially rectangular, is arranged in upright or vertical position and preferably extends substantially from receptacle side wall 11 to the opposite receptacle side wall 11. The plate D may be formed of sheet metal and stamped or bent to provide forwardly extending substantially parallel upper and lower edge flanges 20, 21 with a longitudinal channel-shaped reinforcing section 22 underlying the upper edge flange 20. The flanges 20, 21 are preferably of the same width and of the same length, and the channel section 22 preferably is of the same length as the flanges 20, 21 and of such depth that its vertical wall is in substantially the same plane as the outer edges of the flanges 20, 21. The plate D is also provided with an aperture 23 for a purpose to be described.

The member E (Fig. 9) is an upright or vertical compressor plate having a substantially rectangular flat front face 24, a longitudinal reinforcing or stiffening rib 25, and a boss 26. The upper, lower and side edges of the plate E are provided with rearwardly extending flanges 27, 28, 29, and 30 which provide a continuous reinforcing flange along the entire plate periphery. Thus, the member E somewhat resembles a shallow tray. The side edge flanges 29 and 30 are provided with notches 31 (Figs. 6 and 9) for a purpose to be described.

As illustrated in Figures 3 through 7, the plate members D and E have sliding, telescopically interfitting relation. The upper flange 27 of plate member E slides in the slot provided by the upper flange 20 and the channel section 22 of the plate member D. The lower flange 28 of member E slides on the upper surface of the lower flange 21 of the member D. The side flanges 29, 30 of the member E are spaced to receive therebetween the channel section 22 of member D.

The interfitting members D and E are supported from the side wall channels or tracks 15 by the U-shaped member F which may be brazed or welded to the inner face of the main plate member D as shown in Figs. 5 and 8. The two

parallel legs 35, 36 of the supporting member F form shoes, are disposed in the side wall channels 15, and have such vertical dimension as to slide freely therein while precluding appreciable tilting. Thus the compressor follower C is easily adjusted relative to the receptacle front wall, yet is so supported as to maintain both its vertical position and its parallel relation with respect to the receptacle front wall 10.

Reduction of weight without sacrifice of required strength may be secured by providing the cut outs 37 in the supporting member F and the main plate D (see Figs. 1, 2 and 8). The shoes 35, 36, if desired, may be integral parts of the member D and formed from the same blank of sheet metal stock.

The compressor plate E is shifted relative to and toward and away from the main plate D by the cam device G. This cam device G comprises a sleeve 40 which may be suitably and rigidly secured to the boss 26 of the plate E, as by welding or brazing. The sleeve 40 is provided with two similar helical cam slots 41 and 42 which terminate short of the sleeve ends. Cam slot 41 may be seen in Figs. 3, 4, 5 and 9 and cam slot 42 may be seen in Fig. 5. In the illustrated embodiment, each slot 41, 42 extends peripherally of the sleeve 40 for about 180 degrees. The slot ends are so disposed that their longitudinal axes lie in planes normal to the axis of the sleeve 40 (see Figs. 3 and 4).

A stud 43 has a reduced end section journaled in the main plate opening 23 and the aligned opening in the support member F (see Fig. 5), and is slidably received and journaled in the sleeve 40 (see Figs. 3, 4 and 9). A pin 44 extends through and is rigidly connected to the stud 43 and has its opposite ends received within the cam slots 41, 42. The outer end of the stud 43 is of non-circular shape in cross-section (see Fig. 9) and is received within a correspondingly shaped aperture in an operating finger lever 45 which is secured to the stud 43 by a screw 46. The lever 45 lies close to the rear face of the main plate D, is supported by the stud 43, and when operated is effective to rotate the stud 43 and its pin 44.

When the lever 45 is swung from the position of Figs. 1, 2, 3, 5 and 6 to the positions of Figs. 4 and 7, the stud 43 is rotated and the pin 44 travels along the cam slots 41, 42 from the position of Fig. 3 to the position of Fig. 4. In this operation of the lever 45, the cam slots 41 and 42 and the pin 44 cooperate to shift the compressor plate E forwardly and away from the main plate D and from the position of Figs. 3, 5 and 6 to the position of Figs. 4 and 7. Reverse operation of the lever 45 will cause the pin 44 to travel in the slots 41, 42 from the setting of Fig. 4 to the setting of Fig. 3 and the compressor follower C to resume the setting of Figs. 1, 2, 3, 5 and 6.

The cam device G provides a positive means for shifting the compressor plate E both away from and toward the main plate D. Only a relatively slight force need be exerted on the finger lever 45 to provide this shifting action. It is also to be noted that in either of the two settings indicated by Figs. 3 and 4, the cam slot ends cooperate with the pin 44 to preclude accidental relative movement of the plates D and E. Thus the cam device G locks the plate E in both its fully retracted and fully advanced positions relative to the plate D.

The illustrated embodiment positions the sleeve 40, the stud 43 and the pin 44 in the space between the flanged plates D and E which thus provide

a protective housing and minimize accidental damage to the cam device G.

The compressor follower C is locked in any selected adjusted position by a device or means H which is controlled by and responsive to the shifting movement of the compressor plate E relative to the main plate D by the cam device G. The locking action is secured in the initial part of the movement of the compressor plate E away from the main plate D and from the setting of Figs. 1, 2, 3, 5 and 6.

The locking device H comprises a resilient wire or rod 50 (Fig. 8) and two rollers 51. The rollers 51 are rotatably received by the ends of the rod 50 and are disposed in the planes of the track shoes 35, 36. The rod 50 is bent or shaped to provide sections 52 which serve as spring arms for supporting the rollers 51. Intermediate the arm sections 52, the rod 50 is loosely secured to the main plate D by clips 53 which may be struck therefrom as shown in Fig. 8. A central section 54 is bent and upstanding to abut the inner face of the main plate D, and position the flexible rod arms 52 at an angle to both of the plates D and E.

The rollers 51, which preferably have knurled peripheries, are received in cut outs in the shoes 35, 36 (see Figs. 6, 7 and 8). Each cut out provides an abutment or edge 55 which is inclined or at an angle to the lower horizontal edge of the respective shoe and to the respective side wall channel 15. Each cut out also terminates in arcuate edges or roller stops 56, 57.

The aligned roller supporting ends of the rod 50 extend through the notches 31 of the compressor plate flanges 29, 30, as shown by Fig. 6. Thus the rollers supporting spring arms 52 at their outer ends are adapted to be engaged by the compressor plate E and to respond to the shifting movement of the latter.

In the collapsed setting of the compressor follower C (Figs. 1, 2, 3, 5 and 6), the compressor plate E holds the arms 52 in such position that shoes. Now the rollers 51 are in a retracted position and do not engage the bottom of the receptacle side wall channels 15. With this setting of the rollers 51, the compressor follower C is free to slide along the side wall channels 15 and may be readily adjusted to any position relative to the receptacle front wall 10 (Fig. 1).

When the lever 45 is operated to shift the compressor plate E from the Fig. 6 position to the Fig. 7 position, the compressor plate E permits the arms 52 to swing forwardly under their inherent resilient action and to move the rollers 51 along the abutments or inclined edges 55 until they assume wedging engagement with both the abutments 55 and the lower sides of the receptacle side wall channels 15, thereby locking the shoes 35, 36 of the compressor follower C to the filing receptacle A and precluding movement of the shoes 35, 36 and the main plate D in a direction away from the receptacle front wall 10. Any force now exerted on the compressor follower C to move it rearwardly would result only in an increase in the effective wedging action of the rollers, abutments and channels.

The rollers 51 and the abutments 55 have such relation that the described wedging and locking action is accomplished within a fraction of the total movement of the compressor plate E away from the main plate D by the cam device G.

When the compressor plate E is next shifted toward the main plate D by the cam device G, the plate E swings the arms 52 toward the main plate D, and the rollers 51 are moved along the abutments 55 to the retracted and compressor follower releasing position of Fig. 6.

It will be noted that the spring rod 50 is substantially enclosed and thereby protected by the plates D and E and that, when the compressor follower C is installed in the receptacle A, the entire locking mechanism or device is inaccessible and thus protected against accidental damage.

Operation

When filing material B is to be inserted in the receptacle or tray A, the finger lever 45 is set in the position illustrated in Figs. 1, 2, 3, 5 and 6 and the compressor follower C is slid along the receptacle side wall channels 15 to any selected position of adjustment. Filing material, such as cards B, are placed on edge in the receptacle A between the front wall 10 and the compressor follower C. The compressor follower C is then shifted forwardly until the front face 24 of the compressor plate E engages the filed cards B (see Fig. 1). This last operation is conveniently accomplished by using one hand to retain the cards B in upright position and closely packed against the receptacle front wall 10 and by using the other hand to shift the compressor follower C. The latter hand may rest on the main plate flange 20 with the finger tips resting in the channel section 22.

The finger lever 45 is then swung counterclockwise (Fig. 2) to the Fig. 4 position. During the first few degrees of rotary movement of the finger lever 45, the compressor plate E moves away from the main plate D and releases the spring arms 52 so that they move the rollers 51 into engagement with both the lower flanges of the side wall channels 15 and the shoe abutments 55 for locking the compressor follower shoes 35, 36 to the receptacle side walls 11. During the remainder of the counterclockwise rotation of the finger lever 45, the main plate D remains locked and stationary and the compressor plate E is advanced to compress the filed cards B against the receptacle front wall 10. The advanced and card compressing position of the compressor plate E is illustrated by Figs. 4 and 7.

It is to be understood that Fig. 7 illustrates the compressor follower C as it appears when removed from the filing receptacle A and the roller 51 as it appears when shifted to an extreme position by the resilient action of the arm 52. However, when the compressor follower C is installed in the filing receptacle A, a relatively short movement of the rollers 51 along the abutments 55 from the solid line position of Fig. 6 to the dotted line position of Fig. 6 is adequate to secure the described wedging and locking action.

The compressor follower C remains in the setting of Fig. 4 as long as the cards B are to remain in the receptacle A, during which time the cards are highly compressed and retained in flat condition.

At this point, it should be noted that the cam slots 41 and 42 are so arranged that a substantial compressing force may be applied to the cards B by using only a relatively slight force on the finger lever 45. Under certain conditions, it may also be found that adequate compression of the cards B may be secured before the lever 45 reaches the extreme position illustrated in Fig. 4. In that event, the lever 45 will be set in a position intermediate the two positions indicated by Figs. 3 and 4, the pin 44 will be set in a corresponding position intermediate the ends

of the cam slots 41, 42, and the cam device G will be effective to maintain the cards B compressed until the lever 45 is next rotated clockwise (looking at Fig. 2).

When access to the filed cards is again desired, the finger lever 45 is swung clockwise and returned to the setting shown in Figs. 1, 2, 3, 5 and 6, to draw the compressor plate E toward the main plate D and retract the rollers 51 to the Fig. 6 setting for releasing the shoes 35, 36 and thereby freeing them for sliding movement along the side wall channels 15. The compressor follower C is then adjusted to a rearward position in the receptacle A, and the cards are conveniently accessible for examination or removal.

If it is desired to remove the tray or receptacle A from its cabinet, it may be conveniently carried by grasping the handle 13 in one hand and the compressor follower C in the other hand. The palm of the latter hand may rest on the main plate flange 20 with the finger tips extending into the channel section 22.

The foregoing is illustrative, since this invention includes all embodiments and modifications coming within the scope of the appended claims.

We claim:

1. In combination with a filing tray having inner side walls provided with tracks, a compressor-follower comprising a file compressor plate member having peripheral flanges, a second plate member having peripheral flanges, the said flanges of the two members having telescopically interfitting relation, means disposed between said two members and operative to effect their relative movement toward and away from each other, a lever for operating said means, shoes rigidly secured to said second plate member and slidably disposed in said tracks, an element disposed between each of said shoes and the corresponding track, each element being movable to secure its shoe to the corresponding track, and resilient supporting means for said elements, said supporting means being located between said plate members, being supported by one of said plate members, and being engageable with the other plate member to respond to relative movement of said plate members for moving said elements.

2. A compressor-follower for filing tray having inner side walls provided with tracks, said compressor-follower comprising shoes adapted to be slidably disposed in said tracks, telescopically interfitting members extending between and supported by said shoes, means positioned in the space between said members for securing their relative movement toward and away from each other, a finger lever for operating said means, an element associated with each of said shoes, each element being movable to secure its shoe to the corresponding track, and resilient supporting means for said elements, said supporting means being located between said plate members, being supported by one of said plate members, and being engageable with the other plate member to respond to relative movement of said plate members for moving said elements.

3. In combination with a filing tray having inner side walls provided with tracks, a compressor-follower comprising a substantially rectangular file compressor plate member provided with a rearwardly extending and continuous peripheral flange, a second plate member having upper and lower forwardly extending edge flanges telescopically interfitting said compressor plate member flange, shoes slidably disposed in said tracks and secured in supporting relation to said second plate member, cam means disposed between said members and operative to shift said compressor plate member toward and away from said second plate member, a finger lever operatively connected to said cam means, a roller associated with each of said shoes, each roller being movable relative to its shoe for securing the shoe to the corresponding track, and a resilient arm support for each of said rollers, said arm supports being located between said plate members, being supported by one of said plate members, and being engageable with the other plate member to respond to relative movement of said plate members for moving said rollers.

4. The combination with a filing receptacle having inner side walls provided with longitudinal channels opening toward each other, and a compressor-follower having relatively movable plate members each extending between said side walls and also having shoes rigidly secured to one of said members and slidably disposed in said channels, of locking means comprising an abutment on each of said shoes disposed at an angle to the respective channel, a roller positioned between each shoe abutment and the respective channel, and resilient arms rotatably supporting said rollers and movable to shift said rollers along said abutments, said arms being carried by said one plate member and being engageable with the other plate member to respond to relative movement of said plate members away from each other for shifting said rollers into locking engagement with said abutments and said channels and to relative movement of said plate members toward each other for shifting said rollers to releasing position.

5. The combination with a filing receptacle having inner side walls provided with longitudinal channels opening toward each other, of a compressor-follower comprising a shoe in each channel and adapted to slide therein, a vertical main plate member rigidly connected to and supported by said shoes, a compressor plate member supported by said main plate member and movable relative thereto, means operative to move said plate members toward and away from each other, each of said shoes having a cut-out intermediate the ends thereof, each cut-out providing an abutment disposed at an angle to the respective channel, a roller positioned between each shoe abutment and the respective channel, a resilient rod mounted on said main plate member, the ends of said rod rotatably supporting said rollers, sections of said rod adjacent said rod ends serving as spring arms for yieldingly urging said rollers along said abutments and into locking engagement with said abutments and said channels, said compressor plate member in the movement thereof toward said main plate member being engageable with said rod to shift said rollers along said abutments to releasing position.

6. The combination with a filing receptacle, of a compressor-follower slidably supported in said receptacle for movement relative thereto, said compressor-follower comprising: a vertical main plate extending between the side walls of said receptacle; said plate having forwardly extending, substantially parallel upper and lower edge flanges and reinforcement in the form of a longitudinal channel shaped section underlying said upper edge flange; a vertical compressor plate having rearwardly extending upper, lower and side edge flanges; the upper and lower flanges of said two plates having slidable, telescopically interfitting relation and with said main plate

channel section positoned between the side edge flanges of said compressor plate, means for locking said main plate in adjusted position relative to said receptacle, means disposed within the space defined by said two plates and said plate flanges for shifting said compressor plate toward and away from said main plate, and a lever positioned at the outer side of said main plate for operating said plate shifting means.

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

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Certificate of Correction

Patent No. 2,482,099 September 20, 1949

OLUF L. CLEVEN ET AL.

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

Column 5, line 42, after the word "that" insert *the rollers 51 engage the arcuate edges 56 of the*;

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

Signed and sealed this 14th day of February, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.