Sept. 7, 1965 N. P. WOOD 3,204,640

TABULATING CARD FILE TRAY CONSTRUCTION

Original Filed Sept. 23, 1959 2 Sheets-Sheet 1

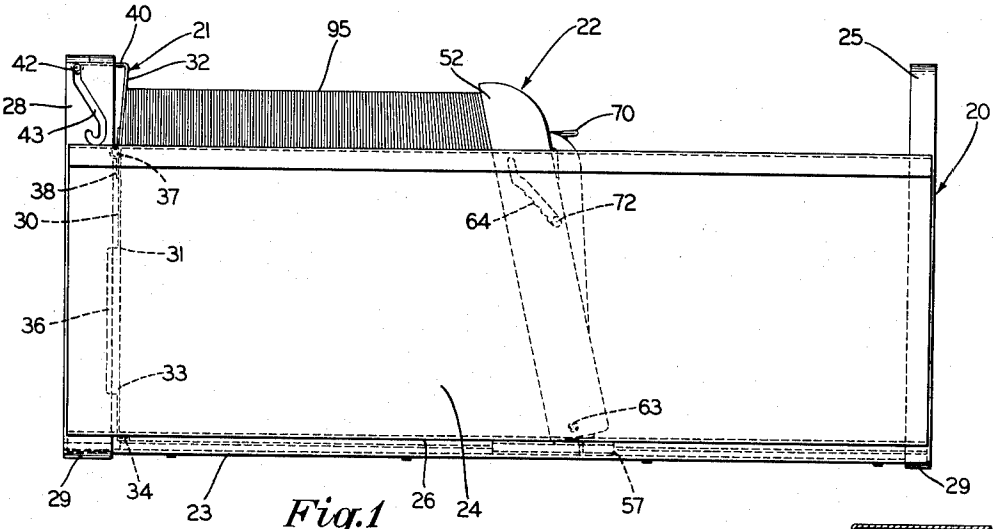


Fig. 1

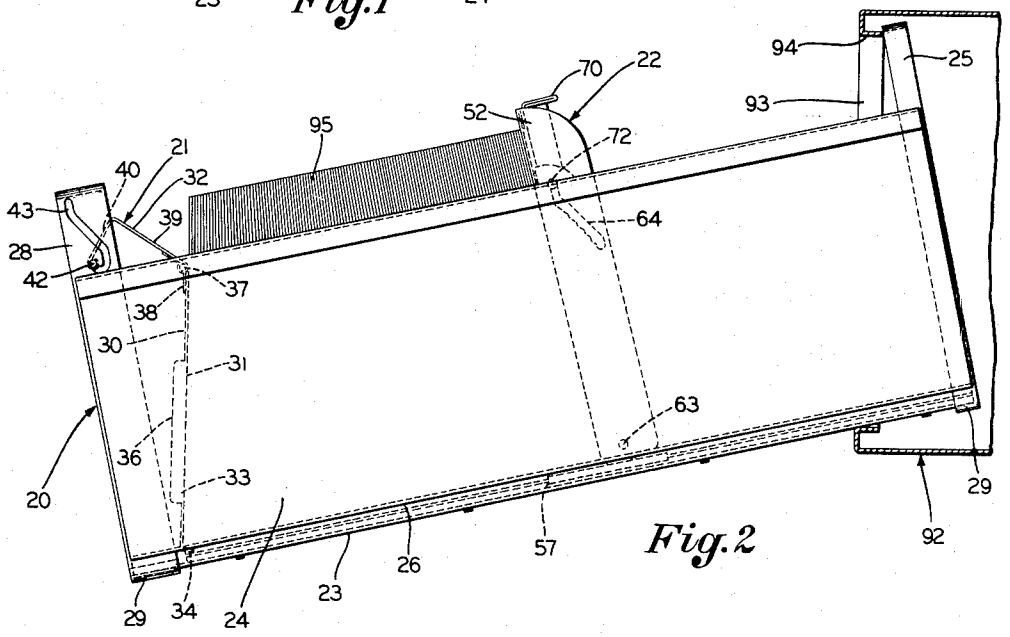


Fig. 2

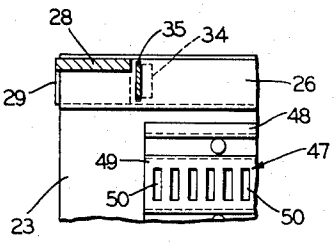


Fig. 7

INVENTOR.
Noah P. Wood

BY

Frease, Bishop, Johns & Solick

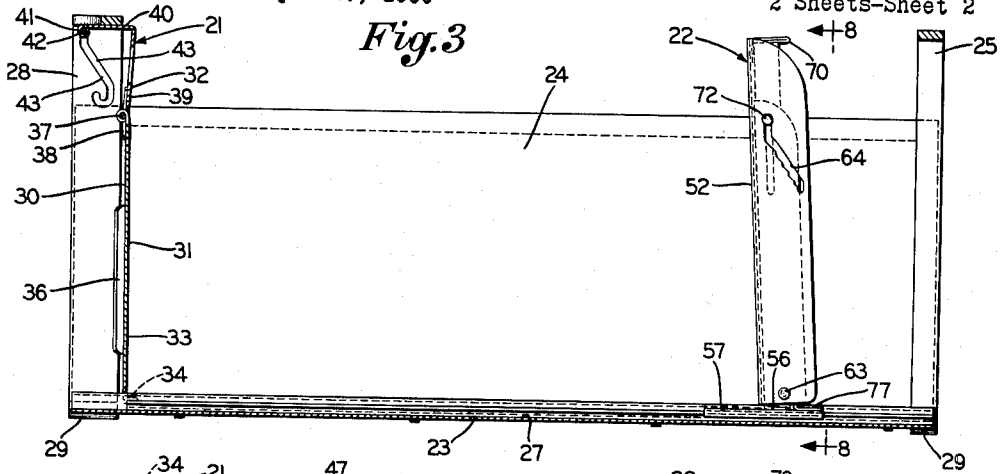
ATTORNEYS

Sept. 7, 1965 N. P. WOOD 3,204,640

TABULATING CARD FILE TRAY CONSTRUCTION

Original Filed Sept. 23, 1959 2 Sheets-Sheet 2

Fig. 3



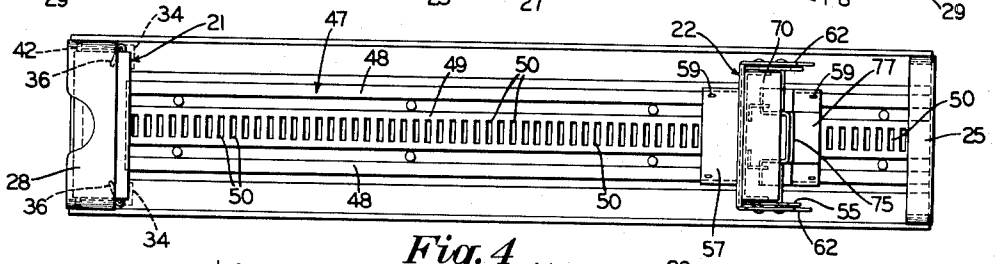


Fig. 4

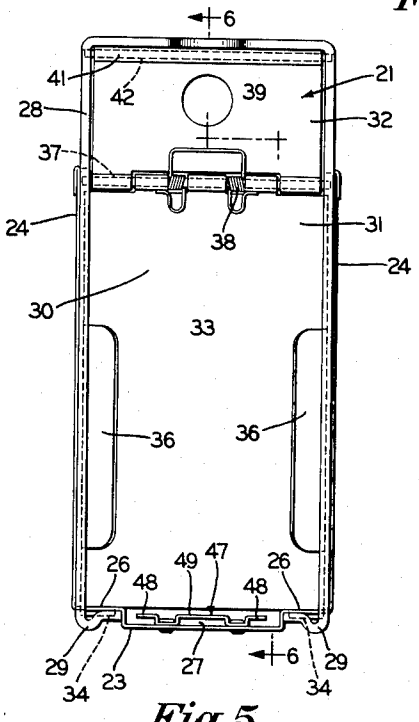


Fig. 5

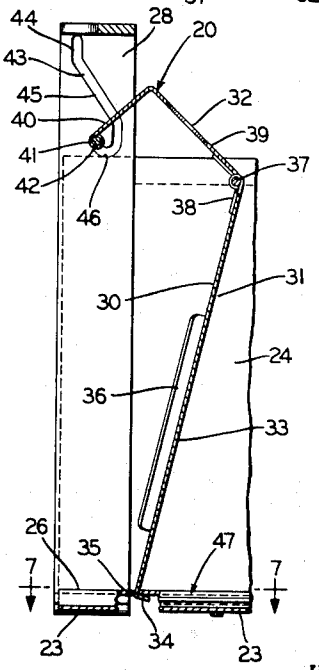


Fig. 6

INVENTOR.
Noah P. Wood

BY

Frease, Bishop, Johns & Schick

ATTORNEYS

United States Patent Office 3,204,640 Patented Sept. 7, 1965

3,204,640

TABULATING CARD FILE TRAY CONSTRUCTION

Noah P. Wood, Hubbard, Ohio, assignor to Diebold, Incorporated, Canton, Ohio, a corporation of Ohio

Original application Sept. 23, 1959, Ser. No. 841,866, now Patent No. 3,108,585, dated Oct. 29, 1963. Divided and this application Feb. 5, 1963, Ser. No. 256,440

4 Claims. (Cl. 129—26)

This application is a division of my copending application, Serial No. 841,866, filed Sept. 23, 1959, now Patent No. 3,108,585.

My invention relates to improvements in file tray construction for use in holding tabulating cards preferably of the type used in conjunction with modern business machines and on which cards various information may be stored in punched form. More specifically, my invention relates to tabulating card file tray construction, preferably of the vertical processing type, having an improved form of front end wall.

For certain reasons, it is desired to provide tabulating card file trays for storing the punched tabulating cards used in conjunction with business machines in a vertical position, that is, with the larger dimension of the cards extending vertically rather than horizontally. Further, various forms of such trays have been provided prior to the present invention, none of which have been completely satisfactory.

Trays of this type are usually provided with upstanding side walls and at least one end wall with a slidable follower mounted within the tray for slidable movement toward and away from this end wall. Thus, tabulating cards may be positioned in the tray in vertical position resting against the end wall and the follower moved to a position securing the cards in the tray.

In most prior constructions, the end wall has been formed as a solid member and the cards directly adjacent the end wall are difficult to grasp and remove from the tray for use in the particular business machine, since the cards are tightly abutting the end wall and there are no spaces for maintaining a grip on the cards. Thus, it is desirable to provide a form of end wall which will position the cards for easy accessibility when necessary in order to permit convenient removal of the cards from the tray.

Further, when the cards are to be stored in the tray, unless an exact predetermined number of cards are positioned therein, it is difficult to slide the follower to a position to which the cards are tightly and properly held in the tray. This problem has been solved to a certain degree by certain prior constructions using a compression type of follower which may be slid to abut the pack of cards and manipulated for moving a plate or surface thereof toward the pack of cards to tightly press the cards against the stationary end wall.

Most of these prior compressor-followers have been difficult to manipulate, however, and further have required several actuating levers thereon, one for accomplishing compressing movement and the other for releasing the follower for slidable movement toward and away from the pack of cards and the stationary end wall.

It is, therefore, desirable to also provide a compressor-follower which may be slidably positioned with a maximum of efficiency and convenience, and also may be easily and conveniently moved from non-compressing to compressing position. Further, it is desirable to provide such a compressor-follower that will remain in such compression position without danger of accidental release.

It is, therefore, a general object of the present invention to provide a tabulating card file tray construction

eliminating the foregoing problems and providing the desirable features discussed above.

It is a primary object of the present invention to provide a tabulating card file tray construction which may include a unique form of end wall which may be manipulated to provide convenient access to the tabulating cards positioned in the tray, and which may also be provided with a unique form of compressor-follower having a positive and secure compressing action.

It is a further object of the present invention to provide a tabulating card file tray construction in which the end wall against which the tabulating cards rest may be manipulated from a vertically upstanding position to a generally V-shape position for moving the top portions of the tabulating cards next adjacent the end wall away from the end wall for easy accessibility.

It is still a further object of the present invention to provide a tabulating card file tray construction having such an end wall which may be positively locked in its V-shaped position and will not accidentally release during use and removal of the tabulating cards positioned in the tray.

Finally, it is an object of the present invention to provide a tabulating card file tray construction which accomplishes all of the above objects in a simple and efficient manner and may be provided at a minimum of material and labor cost.

These and other objects are accomplished by the parts, constructions, arrangements, combinations and subcombinations comprising the present invention, the nature of which is set forth in the following general statement, a preferred embodiment of which—illustrative of the best mode in which applicant has contemplated applying the principles—is set forth in the following description and illustrated in the accompanying drawings, and which is particularly and distinctly pointed out and set forth in the appended claims forming a part hereof.

In general terms, the tabulating card file tray construction comprising the present invention may be stated as including a tray member having a generally horizontally and longitudinally extending bottom wall, a front end member, a side engagement member for the front end member preferably in the form of an inverted U-shaped vertically extending engagement member mounted at the front end of the tray, and a compressor-follower slidably mounted on the tray bottom wall selectively slidably movable longitudinally toward and away from the front end member.

Further, the tray may preferably have generally vertically and longitudinally extending upstanding side walls extending vertically to a point spaced downwardly from the upper end of the U-shaped front end engagement member and also a generally vertically extending inverted U-shaped rear end engagement member likewise extending above the side walls a predetermined distance.

The front end member is further formed with a front end wall having an upper and lower section, with the lower section preferably being pivotally connected to the tray bottom wall by downwardly rearwardly extending tab means received in slot means in the tray bottom wall and with the lower section being hingedly connected to the upper section for hinged movement in a generally horizontal plane by horizontally extending hinge means.

Still further, the front end wall upper section is preferably generally inverted L-shaped normally extending vertically upwardly from its hinge connection to the lower section and then forwardly to a pivoted connection with the tray front end engagement member through generally horizontally extending pin means.

The pin connection of the front end wall upper section to the tray front end engagement member is through gen-

erally hook-shaped slots formed at horizontally aligned and vertically extending portions of the engagement member, with the pin connection being slidable in said slots carrying the upper section therewith and, therefore, moving the front end wall from a normally generally vertically extending position to a rearwardly directed V-shape position. Thus, when tabulating cards are positioned in the tray with the front end wall in its vertically extending position, the tabulating cards will abut both the upper and lower sections thereof; but with the front end wall in its rearwardly directed V-shape position, the tabulating cards will be angled rearwardly and will only abut the lower section, with the upper section extending upwardly and forwardly therefrom to the engagement member.

By way of example, an embodiment of the improved tabulating card file tray construction of the present invention is illustrated in the accompanying drawings forming a part hereof, wherein like numerals indicate similar parts throughout the several views, and in which;

FIG. 1 is a side elevation of the tabulating card file tray construction of the present invention, with tabulating cards positioned in the tray, the front end wall of the front end member in normal vertically extending position and the compressor-follower with the compressor plate member in compressing position;

FIG. 2 another side elevation of the construction of FIG. 1 with the file tray engaged angled downwardly from the front portion of a filing cabinet, the front end wall of the front end member in rearwardly directed V-shaped position and the compressor-follower with the compressor plate member in non-compressing position;

FIG. 3 a vertical sectional view, part in elevation, showing a vertical section just laterally inside the tray side wall to thereby show the front end member in vertical position with the front end wall extending generally vertically, and the compressor-follower in side elevation and in non-compressing position;

FIG. 4 a top plan view of the tabulating card file tray construction of the present invention with the front end member and compressor-follower in the positions of FIG. 3;

FIG. 5 an end elevation looking at the front end member and taken from FIG. 4;

FIG. 6 a fragmentary sectional view, part in elevation and with parts broken away, looking in the direction of the arrows 6—6 in FIG. 5, showing the front end member in rearwardly directed V-shaped position; and

FIG. 7 a fragmentary sectional view, part in elevation, looking in the direction of the arrows 7—7 in FIG. 6.

The tabulating card file tray construction comprising the improvements of the present invention is illustrated in the drawings showing the improved form of front end member in combination with the improved form of compressor-follower claimed in said copending application, Serial No. 841,866, now Patent No. 3,108,585. It should be understood, however, that either the improved front end member or the improved compressor-follower may be advantageously used separate from each other, and such use is contemplated within the scope of the present invention.

Furthermore, the particular embodiment of the tabulating card file tray construction illustrated in the drawings is arranged for containing the tabulating cards in a vertical position, which is the most desirable. Again, it should be understood, however, that it is not intended that the principles of the present invention should be limited to such positioning of the tabulating cards, but the principles of the present invention can be readily applied to other forms of tray construction, whether in use with tabulating cards in a vertical position, in other positions, or with other filed material.

The tabulating card file tray construction of the present invention includes a tray member, generally indicated at 20 and shown in FIGS. 1 through 4. Tray member 20 is provided with a front end member, generally indicated

at 21, and a compressor-follower member, generally indicated at 22, all of which may be formed of usual materials, such as steel and the like, and by usual manufacturing processes.

Tray member 20, when this tray member is in normal stored position, is provided with a generally horizontally and longitudinally extending bottom wall 23 and the laterally spaced generally vertically and longitudinally extending side walls 24. Side walls 24 define an open rearward end for the tray member and are reinforced at this rearward end by being secured to an inverted generally U-shaped rear end engagement member 25.

The side walls 24 may be turned over at their upper extremities again to add stiffness as desired, and these side walls may be formed integral with the bottom wall 23 to thereby form the entire shell of the tray member as a one-piece stamping. Further, as shown in vertical and lateral cross section in FIG. 5, the bottom wall 23 is formed generally U-shaped extending horizontally inwardly from the lower extremities of the side walls 24, forming the downwardly opening recesses 26, and then vertically downwardly and then horizontally the remainder of the distance between the side walls to form the track well 27 within the confines of the tray member 20, as shown.

The front end member 21 includes a front end engagement member 28 which is likewise generally U-shaped in configuration, similar in shape to the rear end engagement member 25, only having a slightly greater longitudinal length. Both the rear end and front end engagement members 25 and 28 extend vertically above the upper extremities of the side walls 24 a predetermined distance, and then laterally span the distance between these side walls 24 and over the bottom wall 23.

Side walls 24 abut the laterally outward surfaces of the rear end and front end engagement members 25 and 28 and are secured thereto, as shown. Thus, the rear end and front end engagement members 25 and 28 extend vertically downwardly within the side walls 24 and then below the lower extremities of these side walls to form the arcuate leg portions 29 extending slightly below the bottom wall 23.

Finally, the rear end and front end engagement members 25 and 28 extend laterally inwardly from the leg portions 29 within the bottom wall recesses 26, as best seen in FIG. 5, terminating against the outer surfaces of the portions of the bottom wall forming the track well 27, previously described.

Both the front end and rear end engagement members 25 and 28 are multiple-function members, forming reinforcing members for the front and rear portions of the tray member 20, and also leg members for the front and rear portions of the tray member. Further, the rear end engagement member 25 in combination with the bottom wall 23 serves to support the tray member 20 in a downwardly angled position when the tray member is extended from its stored position within a filing cabinet to an accessible position extending from the filing cabinet, as shown in FIG. 2 and as will be hereinafter more fully explained.

Also, the front end engagement member 28 serves to support and guide the front end wall 30, as will be hereinafter described, with both of these engagement members 25 and 28 likewise serving as handles for the tray member 20 when it is completely removed from a filing cabinet.

The front end wall 30 on the front end member 21 normally extends generally vertically at the rearward edge of the front end engagement member 28, as shown in FIGS. 1 and 3, and includes a lower section 31 and an upper section 32. The lower section 31 is formed for the main part from a laterally and normally vertically extending plate 33 which extends laterally between the side walls 24 with slight clearance at the side walls for longitudinal movement of plate 33 within the side walls.

Further, the lower section 31 is provided with the gen-

erally L-shaped laterally spaced longitudinally rearwardly directed foot portions 34, preferably formed integral with the plate 33. These foot portions 34 are preferably received in laterally extending slots 35 formed in the bottom wall 23 in the portions of the bottom wall extending generally horizontally and forming a part of the recesses 26, as previously described. Also, the lower section 31 may be provided with the forwardly and laterally inwardly directed card-holding flanges 36, as shown in FIGS. 1 through 5, for holding an identification card to identify the particular tabulating cards stored in the tray member 20.

The lower section plate 33 terminates vertically upwardly spaced below the upper extremities of the side wall 24, where it is hingedly connected to the upper section 32 through a hinge pin 37 and a spring 38. Spring 38 is arranged for normally urging the front end wall 30 to its normal vertically extending position, as shown in FIGS. 1 and 3.

The upper section 32 normally extends vertically upwardly from the lower section 31 and is inverted generally L-shaped in longitudinal cross section, having the normally generally vertically extending plate portion 39 which extends laterally between the side walls 24 and upwardly to a point spaced slightly below the upper extremities of the front end engagement member 28, and the forwardly directed normally generally horizontal leg portion 40 which extends forwardly from the plate portion 39 within the confines of the front end engagement member 28. The upper section leg portion 40 terminates forwardly in a rolled portion 41 which encompasses a laterally extending engagement pin 42.

Engagement pin 42 extends laterally within the upper section rolled portion 41 and is slidably and pivotally engaged laterally outwardly of this rolled portion in generally hook-shaped engagement slots 43, which slots are formed at either side of the front end engagement member 28 within the vertically extending portions thereof and are substantially identical and laterally aligned. The hook-shaped engagement slots 43 include the upper generally vertically extending portions 44, which connect downwardly to the downwardly and rearwardly angled portions 45, which in turn are connected downwardly to the downwardly-forwardly-upwardly hooked portions 46.

Thus, with the foregoing construction of the front end wall 30 in combination with the front end engagement member 28, the spring 38 at the hinge pin 37, forming the hinge connection between the lower and upper sections 31 and 32, normally retains these sections in their vertically extending positions, as shown in FIGS. 1 and 3. When, however, a rearwardly directed force is applied to the front end wall 30 in the vicinity of the hinge pin 37, overcoming the resilient force of the spring 38, both the upper end of the lower section 31 and the lower end of the upper section 32 will be moved rearwardly within the side walls 24.

As this rearward movement takes place, the lower section 31 will pivot with reference to the bottom wall 23, due to the pivotal connection of the foot portions 34 on the lower section 31 received through the slots 35 in the bottom wall 23. Furthermore, as this rearward movement takes place, the engagement pin 42 in the upper section rolled portion 41 will move downwardly within the generally hook-shaped engagement slots 43, through the upper generally horizontally extending portions 44 into the angled portions 45, and ultimately will be engaged in the forward extremities of the hooked portions 46, so that the front end wall 30 then assumes a generally V-shape, as viewed in longitudinal cross section and as shown in FIGS. 2 and 6. The engagement of the upper section engagement pin 42 in the hook portions 46 of the engagement slots 43 will retain the front end wall 30 in this V-shaped position against the forward urging of the spring 38.

The compressor-follower member 22, and the various elements thereof, as well as the operation thereof, are clearly described and discussed in said co-pending application, Serial No. 841,866, now Patent No. 3,108,585. Thus, such descriptions and discussions are not repeated here, but reference is made to said co-pending application for the same.

As shown in FIGS. 1 and 2, it is preferred to provide the tray member 20 with both the unique form of front end member 21, as described, and the unique form of compressor-follower member 22, as described in said co-pending application, Serial No. 841,866, now Patent No. 3,108,585. Further, it is preferred to provide the tray member 20 with a rear end engagement member 25 and mount the tray member for storage in filing cabinets, generally of the type shown in FIG. 2 at 92, having the tray opening 93 provided with the downwardly and preferably rearwardly extending engagement flange 94.

Thus, as shown in FIG. 1, in normal stored position the tabulating cards 95 are retained securely within the tray member 20. In this position, the compressor-follower member 22 has been moved longitudinally forwardly of the tray member to abut the cards 95 while the compressor plate member 52 is in non-compressing position, and the front end wall 30 of the front end member 21 is in generally vertically extending position with the lower and upper sections 31 and 32 of front end wall 30 substantially vertically aligned.

The actuating member of the compressor-follower member 22 is then moved vertically downwardly through flange 70 to first engage the positioning dog of the positioning dog assembly with the track member 47, retaining the compressor-follower member immovable longitudinally of the tray member 20, and then further downwardly to move the compressor plate member 52 to its forwardly angled compressing position, as shown in FIG. 1. This compresses the tabulating cards 95 between the front end member 21 and compressor-follower member 22, retaining them securely in the tray member 20.

When it is desired to gain access to certain of the tabulating cards 95, the tray member 20 is moved outwardly of the filing cabinet 92 to the position shown in FIG. 2, that is, with the tray member angling downwardly with respect to the filing cabinet and having the rear end engagement member 25 engaged with the engagement flange 94 of the cabinet. The actuating member is then moved vertically upwardly to move the compressor plate member 52 to its non-compressing position and also to release the positioning dog from the track member 47, so that the compressor-follower member 22 may be moved slightly longitudinally rearwardly away from the tabulating cards 95.

This results in the tabulating cards 95 resting loosely in angled positions against the front end members 21, with the front end wall 30 thereof still extending in its generally vertically extending position. Then by applying a rearward directed force to the front end wall 30 in the general vicinity of the hinge pin 37, such as by a person inserting the fingers of one hand witihn the front end engagement member 28 and against the front end wall 30, this front end wall is moved to its generally V-shape position, as shown in FIG. 2, thereby moving the tabulating cards 95 to a more upstanding position and moving the upper portions of these tabulating cards away from the upper section 32 of the front end wall 30. This, therefore, provides convenient access to the tabulating cards 95 even at the forwardmost portion of the tray member 20, so that these cards can be removed, if desired, and used in conjunction with the business machines.

Thus, according to the principles of the present invention, a front end member 21 is provided having a front end wall 30 which may be positioned in a generally vertically extending position during normal storage but which may be manipulated to a V-shape, moving the filed material, such as the tabulating cards 95, away from the upper section 32 thereof to provide easy access to

these cards even at the front portion of the tray member 29. Furthermore, this front end wall 30 is retained in its V-shaped position by the engagement pin 42 cooperating with the generally hook-shaped engagement slots 43 in the front end engagement member 28.

In the foregoing description, certain terms have been used for brevity, clearness and understanding, but no unnecessary limitations are to be implied therefrom, because such words are used for descriptive purposes herein, and are intended to be broadly construed.

Moveover, the embodiment of the improved construction illustrated and described herein is by way of example, and the scope of the present invention is not limited to the exact details of the construction shown.

Having now described the invention, the construction, operation and use of a preferred embodiment thereof, and the advantageous new and useful results obtained thereby; the new and useful construction and reasonable mechanical equivalents thereof obvious to those skilled in the art are set forth in the appended claims.

I claim:

1. File tray construction including a tray member having a longitudinally extending bottom wall member and front end wall means at the forward end of the bottom wall member extending generally laterally of the tray member and bottom wall member, the front end wall means having an upper and lower section pivotally connected about a generally laterally extending axis for selective movement between a generally vertically extending upstanding position and a rearwardly directed generally V-shaped position, spring means operably connected between the front end wall means upper and lower sections normally urging the front end wall means toward upstanding position, generally hook-shaped slot means formed in the tray member extending generally vertically and longitudinally adjacent the upper extremity of the front end wall means upper section, the hook-shaped slot means extending downwardly in an upwardly-forwardly terminating hook portion, pin means operably connected to the upper extremity of the front end wall means upper section slidably engaged in said hook-shaped slot means, and means pivotally connecting the lower extremity of the front end wall means lower section to the tray member.

2. File tray construction including a tray member having a longitudinally extending bottom wall member and front end wall means at the forward end of the bottom wall member extending generally laterally of the tray member and bottom wall member, the front end wall means having an upper and lower section pivotally connected about a generally laterally extending axis for selective movement between a generally vertically extending upstanding position and a rearwardly directed generally V-shaped position, spring means operably connected between the front end wall means upper and lower sections normally urging the front end wall means toward upstanding position, generally hook-shaped slot means formed in the tray member extending generally vertically and longitudinally adjacent the upper extremity of the front end wall means upper section, the hook-shaped slot means extending downwardly in an upwardly-forwardly terminating hook portion, pin means operably connected to the upper extremity of the front end wall means upper section slidably engaged in said hook-shaped slot means, downwardly-rearwardly extending foot means mounted on the lower extremity of the front end wall means lower section, and pivot slot means formed in the bottom wall member underlying the lower extremity of the front end wall means lower section receiving the foot means therethrough for pivotally connecting the lower extremity of the front end wall means lower section to the tray member.

3. File tray construction including a tray member having a longitudinally extending bottom wall member and front end wall means at the forward end of the bottom wall member extending generally laterally of the tray member and bottom wall member, the front end wall means being divided into upper and lower sections each having upper and lower end portions, generally laterally extending pivot means operably connected to the lower end portion of the end wall upper section and the upper end portion of the end wall lower section forming a generally laterally extending pivot axis between said sections, means pivotally connecting the upper end portion of the end wall upper section and the lower end portion of the end wall lower section to the tray member for selected pivotal movement of the end wall means about said tray member connected end portions and about said pivot axis between a generally vertically extending upstanding position and a rearwardly directed generally V-shaped position, said means pivotally connecting being constructed and arranged such that said generally laterally extending pivot axis between the end wall upper and lower sections is located spaced above the tray bottom wall member in both said end wall means upstanding and rearwardly directed generally V-shaped positions and said axis is displaced generally rearwardly in said V-shaped position, and means operably connected to the end wall means for maintaining said end wall means in the selected upstanding and rearwardly directed generally V-shaped positions between the selected movements between said positions.

4. File tray construction as defined in claim 3 in which the means for maintaining the front end wall means in the rearwardly directed generally V-shaped position includes hook-shaped slot means operably connected to the upper end portion of the end wall upper section for guiding said upper end portion of the upper section during movement of the end wall upper and lower sections between said upstanding and rearwardly directed generally V-shaped positions and releasably locking said sections in said rearwardly directed generally V-shaped position.

References Cited by the Examiner

UNITED STATES PATENTS

1,497,486	6/24	Card et al.	129—16
1,695,257	12/28	Ohnstrand	129—16
2,225,385	12/40	Harriman	129—28
2,635,609	4/53	Swimmer	129—26

FOREIGN PATENTS

521,921	6/40	Great Britain.

JEROME SCHNALL, *Primary Examiner.*