April 8, 1941. C. F. WOLTERS 2,238,005

CARD INDEX CABINET

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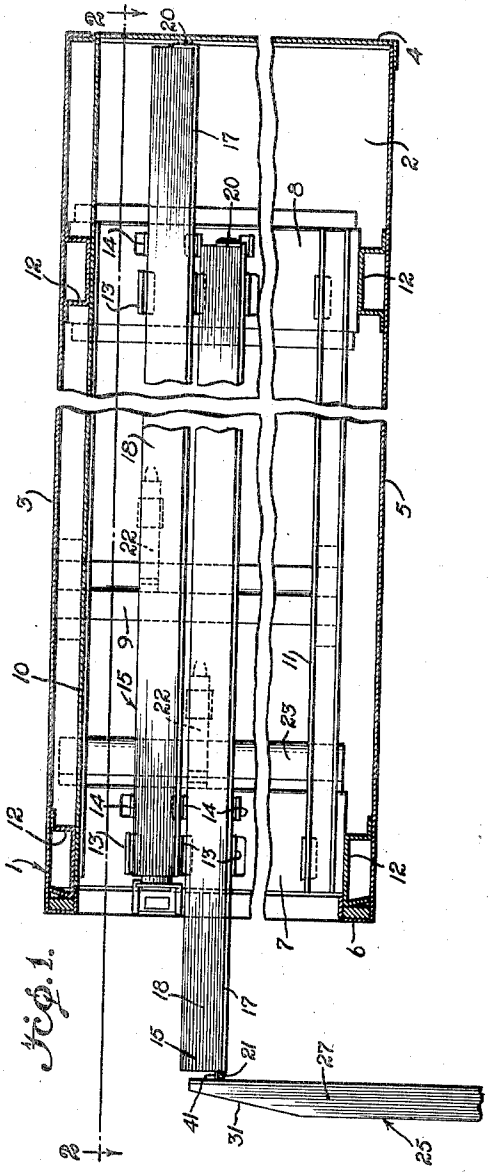


Fig. 1.

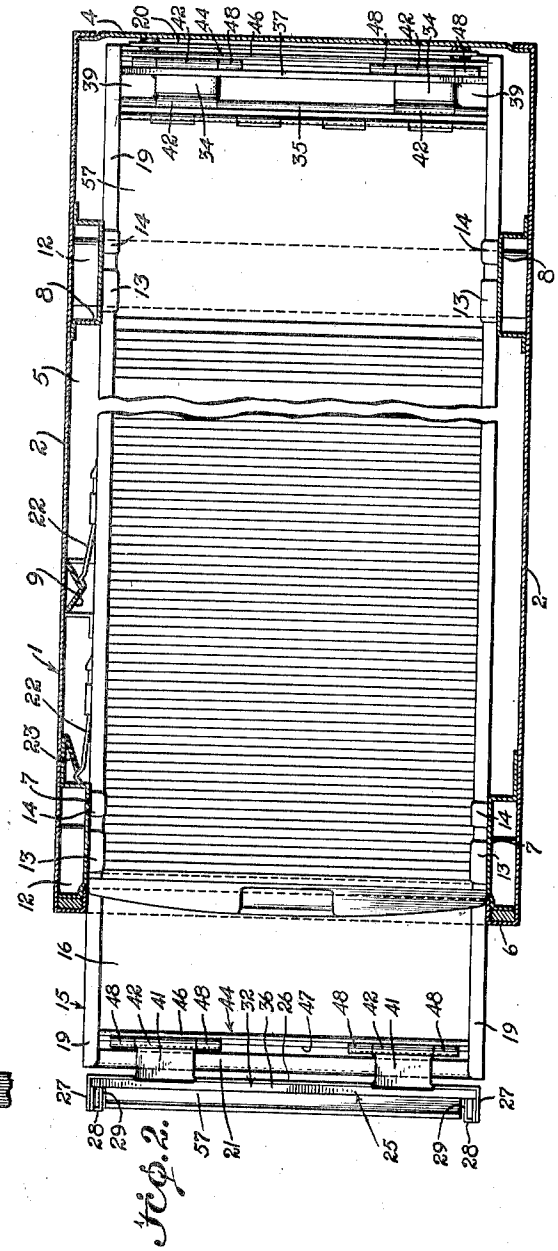


Fig. 2.



Fig. 3.

Inventor

Carl F. Wolters,

By

Attorney

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Fig. 3.

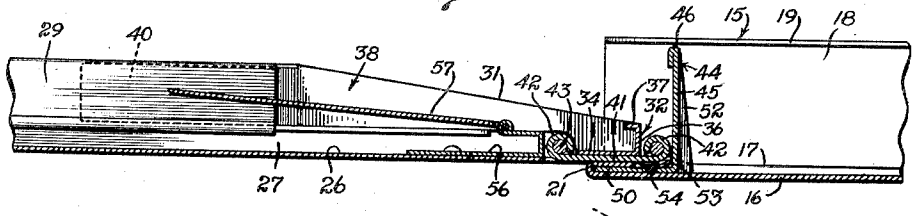


Fig. 4.

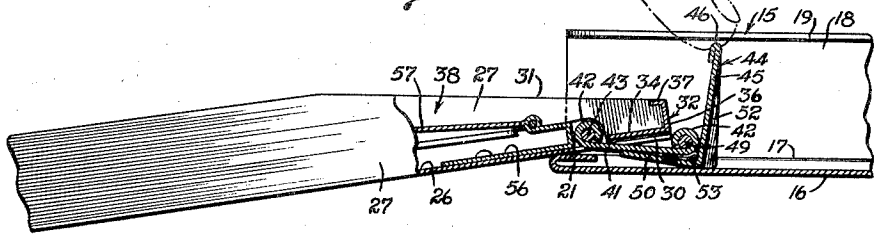


Fig. 6.

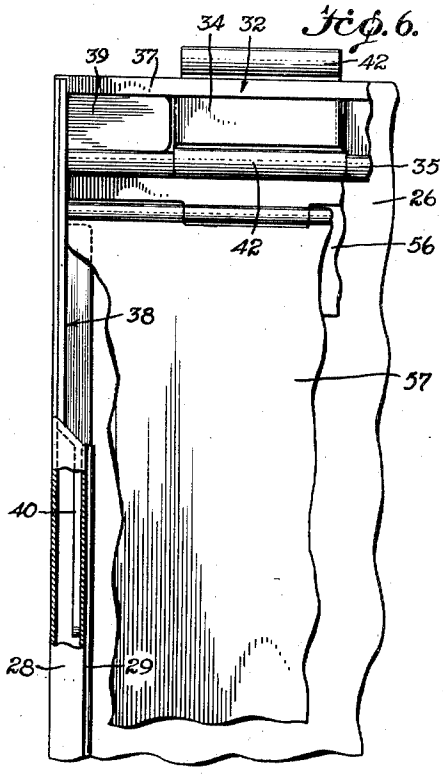
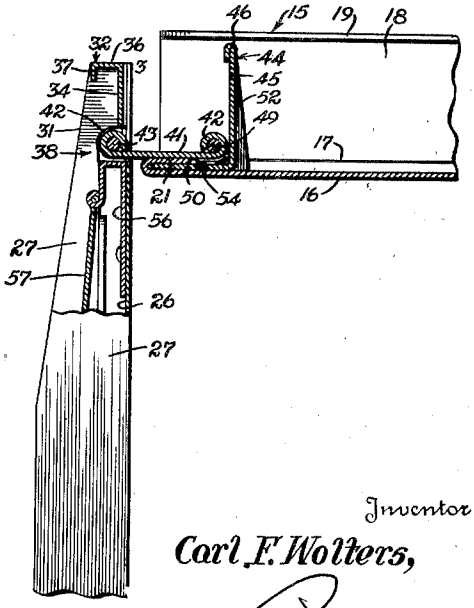


Fig. 5.



Inventor

Carl F. Wolters,

By

Attorney

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Fig. 7.

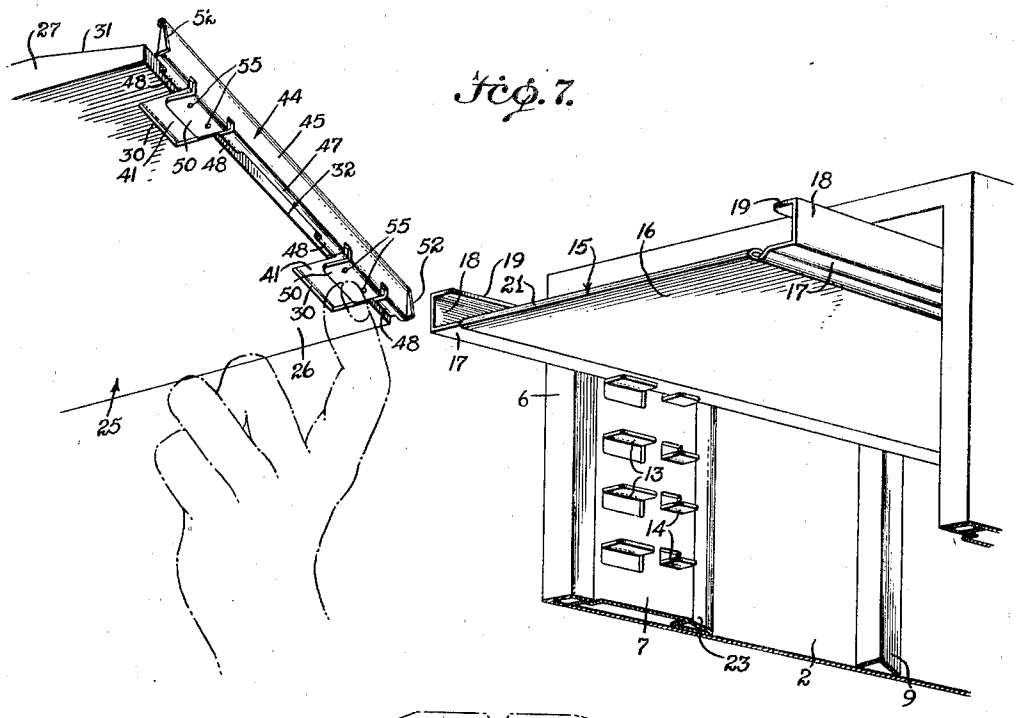
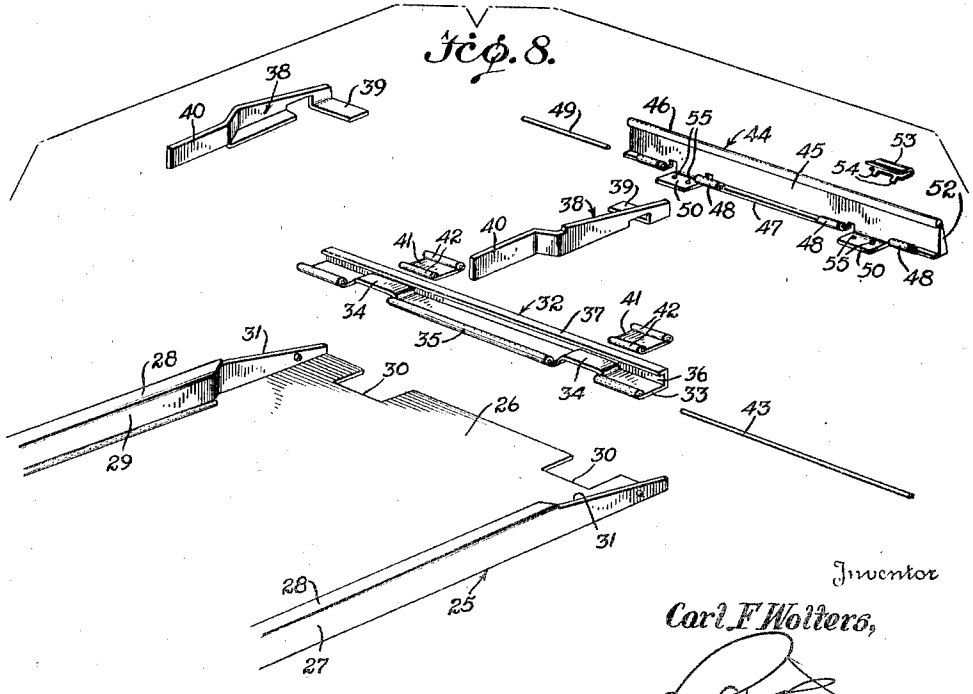


Fig. 8.



Inventor

Carl F. Wolters,

By

Attorney

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UNITED STATES PATENT OFFICE

2,238,005

CARD INDEX CABINET

Carl F. Wolters, Kenmore, N. Y., assignor to Remington Rand Inc., Buffalo, N. Y.

Application August 18, 1938, Serial No. 225,596

13 Claims. (Cl. 45—2)

This invention relates to improvements in the construction of cabinets for visible card indexes.

The invention provides an improved tray and follower construction arranged so that a tail piece is freely movable in operation relative to the tray so as to retain the tray against complete detachment from the cabinet, provide a tail piece that occupies less space in comparison with previous devices, provide a tail piece that is manually operable in a convenient manner for quick detachment of the tray and tail piece from connection with the cabinet, and also provide for ready re-insertion of the tail piece and tray into the cabinet after it has been detached.

The invention further comprehends the provision of a rear end construction for the card index tray that will facilitate the mounting of the tail piece thereon for efficient operation and at the same time distribute the load on the tray over a substantial area to prevent breakage or damage of parts, at the same time providing a compact structure that reduces loss of filing space in the cabinet to a minimum.

In the drawings:

Fig. 1 is a vertical longitudinal cross section through a cabinet constructed according to the invention with portions broken away, illustrating one slide member and tray in its housed position in the cabinet and another slide member and tray in its extended position, with the tray hanging downwardly from the slide member and the lower end omitted.

Fig. 2 is a horizontal cross section taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary view showing the front portion of a slide member and the rear end of a tray in vertical longitudinal cross section on an enlarged scale, to illustrate details of construction of the tray, tail piece and slide member, the tray being shown in its extended position from the slide member and the tail piece at the forward limit of movement in the slide member.

Fig. 4 is a view similar to Fig. 3, illustrating how the tray can be moved slightly rearwardly from the position of Fig. 3 and the tail piece operated to disengage the projections thereon from the stop means on the slide member when it is desired to disengage the tray and tail piece from the slide member and cabinet.

Fig. 5 is a view similar to Fig. 3 showing the tray hanging downwardly.

Fig. 6 is an enlarged fragmentary plan view of the card index tray with portions broken away to illustrate details of construction at the rear end of a tray.

Fig. 7 shows in perspective, a fragment of the front end of a cabinet with a slide member at its outward limit of sliding movement and the rear end of a tray in detached position from the cabinet and slide member, illustrating how the tail piece is manipulated in inserting the tray and tail piece into the slide member.

Fig. 8 shows in disassembled relation in perspective, a fragment of the rear end of a card index tray, its rear end member, rear end bracket, the tail piece, and other associated parts.

Fig. 9 shows the tail piece actuating spring in perspective.

A cabinet indicated at 1 has an outer casing formed of side walls 2, top wall 3, rear wall 4, bottom wall 5, and front wall 6. This casing has the several walls formed of sheet metal constructed and assembled in the manner disclosed in applicant's copending application Serial No. 126,015, filed February 16, 1937.

Side frames are mounted on the inside of each side wall 2 of the cabinet and comprises a front vertical member 7, a rear vertical member 8 and a vertical stop member 9. The vertical members are connected together at the upper and lower ends by top member 10 and bottom channel 11, see Fig. 1. Top and bottom cross members 12 extend between vertical members 7 and 8 of the side frames at opposite sides of the cabinet for securing them in position in the outer casing. Front and rear vertical members 7 and 8 are formed with two rows of struck-out tongues 13 and 14 respectively, arranged in spaced vertical relation. The tongues on the rear frame member are in horizontal alignment with the corresponding tongues on the front frame member and tongues 14 are offset slightly from tongues 13.

Tongues 13 slidably support slide members 15. Slide members 15 are formed with sheet metal having a partition forming section 16 at the bottom extending transversely between the side walls of the cabinet, with offset margins 17 at opposite sides terminating in upwardly extending side walls 18 formed with inwardly extending top flanges 19 at the upper edges. The rear end of partition section 16 is formed with an upwardly extending rear wall 20, see Fig. 2, while the front portion is formed with a return bend to provide stop means 21 in the form of a hook.

Each slide member 15 is slidably supported by the side frames through having offset side margins 17 slidably supported by tongues 13 on the front and rear vertical frame members at each side of the cabinet. Tongues 14 operate to retain each slide member in sliding engagement

with tongues 13 and to prevent vertical movement of the slide member in the cabinet. Each slide member provides a tray compartment in the casing open at the front end.

One side wall 18 of each slide member carries a spring latch 22 that engages with vertical stop member 9 as shown in Fig. 2 for releasably retaining slide member 15 in its housed, rearmost position in the cabinet. When a card index tray carried by the slide member is pulled out of the cabinet, slide member 15 can be pulled forwardly to a limited extent as shown in Figs. 1 and 2 and in such operation, spring latch 22 is forcibly cammed over stop member 9 into engagement with inclined latching flange 23 carried at the rear edge of front vertical member 7, as illustrated in Figs. 1 and 2 showing spring latch 22 on one of the trays engaged therewith. It will be seen that spring latch 22 limits the forward movement of a slide member in the cabinet so that it can not be normally withdrawn beyond the position illustrated in Figs. 1 and 2. When it is desired to detach the slide member from the cabinet, a special tool in the form of a slender piece of spring steel can be inserted under latch 22 in order to move it past vertical front member 7.

The portions of the cabinet and slide member as described above are fully disclosed in applicant's copending application aforementioned.

A card index tray 25 is provided for each slide member and slidably mounted therein. Each tray is formed of sheet metal having a bottom 26 turned upwardly at the side edges to form side walls 27, with inwardly extending top flange portion 28, terminating in inner depending flanges 29, arranged in spaced parallel relation to side walls 27 on the inside thereof. The lower end of flanges 29 terminate in spaced relation to bottom 26 to provide guide channels for receiving visible index card holders, in a manner well known in the art. The rear end of each tray is provided with recesses 30 in bottom 26, opening rearwardly, while side walls 27, top section 28 and flanges 29 are cut away at the rear end of the tray as shown in Fig. 8 to provide an inclined edge on side wall 27 indicated at 31 inclining downwardly toward the bottom 26 as the incline progresses rearwardly to the rear edge of the tray.

A rear end member 32 is formed to provide a base section 33 seated on the rear margin of bottom 26. Base section 33 is provided with offset portions 34 over recesses 30. The forward edge of base section 33 is formed with a cylindrical portion 35 at the ends and between offset sections 34 as clearly shown in Fig. 8 to provide one portion of a hinge. The rear edge of base section 33 is provided with an upstanding rear wall extension 36 terminating in a forwardly directed top flange 37. Base section 33 is seated on the rear margin of bottom 26 and spot welded or otherwise rigidly secured thereto so as to form the rear wall or end structure of the tray and provide a mounting for the follower construction hereinafter described.

Rear end bracket members 38 are formed in pairs, each bracket of a pair being formed opposite to the other, to provide a securing foot 39 spot welded or otherwise rigidly secured to the top face of base section 33 throughout each end thereof, a pair of brackets being mounted one along each side of a tray. The remaining portion of each rear end bracket 38 extends along the inner face of one of the side walls 27 in contact therewith, and has an inclined upper edge corresponding to the inclined upper edge 31 of the side wall. The forward end of each rear end bracket 38 is formed with an offset extension 40 projecting along the inner face of flange 29 at the rear end thereof, to which it is suitably secured by spot welding or the like. These brackets 38 provide a rigid rear end structure in cooperation with rear end member 32, that effectively distributes the load on the rear end of the tray.

A pair of links 41 are formed at opposite ends to provide tubular portions 42, the portions 42 at the forward end of each link being inserted into one of the recesses 30 and engaged between the ends of tubular portions 35 on base member 33 terminating adjacent offset sections 34, in which position a hinge pin 43 may be inserted through tubular portions 35 and 42 to hingedly secure the front ends of the pair of links 41 on rear end member 32. The opposite ends of links 41 extend to the rear of the tray through recesses 30 and offset section 34 where they hingedly mount tail piece 44.

Tail piece 44 is formed of a strip of sheet metal 45 provided with a folded upper edge 46 and a lateral flange 47 on the lower edge extended forwardly and formed at intervals with hinge knuckles 48 in spaced aligned relation. Pairs of hinge knuckles 48 are arranged to receive each cylindrical end 42 on the rear end of each link 41 therebetween, so that when the cylindrical portion 42 is aligned with hinge knuckles 48, hinge pin 49 may be inserted through the aligned hinge portions to hingedly secure tail piece 44 to links 41.

In line with links 41, the lower edge of strip member 45 is formed with lateral projections 50 that extend forwardly, as clearly shown in Fig. 8. Projections 50 lie underneath and overlap links 41, as clearly shown in Fig. 7, and are adapted to slide on the upper face of partition section 16 of slide member 15 so that the follower is slidably supported in a slide section for sliding movement back and forth in the slide member in a transversely extending position. The ends of strip section 45 are provided with lateral rearwardly extending flanges 52 adapted to slidably engage side walls 18 of slide member 15 to cooperate in slidably guiding the tail piece in the slide member.

Strip member 45 is arranged to extend transversely in each slide member with the ends terminating in close adjacent relation to side walls 18, while the top and bottom edges are arranged to extend between and terminate adjacent to partition section 16 and flanges 19. Tail piece 44 is freely movable relative to tray 25 and therefore gravitates to its own position in slide member 15 by reason of the double hinge connection of links 41 with the tail piece and tray. This allows the lower faces of projections 50 to slide along the upper face of the bottom of partition section 16 for cooperating in guiding the tail piece in its movement back and forth in slide member 15. The distance between the upper edge of strip section 45 of the tail piece and the forward ends of projections 50 is much greater than the distance between the under faces of flanges 19 and the upper face of partition section 16. It will therefore be understood that any tendency of tail piece 44 to turn over in slide member 15 will be prevented through the cooperation of strip section 45 and tongues 50.

A leaf spring 53 arranged in folded form as illustrated in Fig. 9 has the lower end thereof

provided with projections 54 engaging in openings 55 in projections 50. The fold portion of leaf springs 53 is positioned next to strip section 45 with the leaf springs positioned between projections 50 and links 41, the upper fold of each leaf spring 53 being engaged with links 41. These folded leaf springs normally tend to separate projections 50 from links 41 so as to maintain the lower faces of projections 50 in sliding engagement with the upper face of partition section 16 of each slide member. In this way, when projections 50 reach the forward end of each slide member, they readily engage stop means or return bend hook portions 21 to arrest the forward movement of the tail piece and thereby prevent its detachment from the slide member. Springs 53 normally tend to rotate the tail piece relative to links 41 causing most of the lost motion between the tail piece and slide member to be taken up, and also secure uniform sliding and guiding action of the tail piece in the slide member.

Tail piece 44 rides freely in the tray during rearward and forward movement of the tray into and out of its slide member 15, but as the tray is moved outwardly in front of slide member 15, projections 50 on the tail piece engage hook 21 of the slide member, in the manner illustrated in Fig. 3, so as to limit the forward movement of the tray relative to the slide member. As this operation will take place in the initial pulling of a tray outwardly from its slide member so that the tray will be pulled outwardly from its slide member into the position shown in Fig. 3 until projections 50 engage hooks 21, whereupon with the slide member structure hereinabove described, further forward movement of the tray relative to the cabinet will pull the slide member outwardly to its forward limit of movement. During this operation the parts will retain the position shown in Fig. 3. The card index may then have its card indexes referred to in the usual and well known manner and the tray may be swung downwardly from the position shown in Fig. 3 about its hinge connection with links 41 into the position shown in Fig. 5.

Should it be desired to completely detach the card index tray from connection with its slide member and the cabinet, this may be done by pulling the tray outwardly to the position shown in Fig. 3. Then, the tray and its tail piece is pushed inwardly a slight distance to the position shown in Fig. 4 where the forward ends of projections 50 are disengaged from hook member 21. By manually moving the upper edge of strip portion 45 rearwardly in the slide member, to move it in a clockwise direction as shown in Fig. 4 about its hinged mounting on links 41, the ends of projections 50 will be elevated into the position shown in Fig. 4 while springs 53 will be compressed. This will elevate the forward ends of projections 50 sufficiently high that they will clear stop means or hooks 21, whereupon the tray and its follower construction including the tail piece may be completely withdrawn from attachment to its slide member and the cabinet.

When it is desired to re-insert the tray and its tail piece in the slide member, the procedure illustrated generally in Fig. 7 is followed. The rear end of the tray with its tail piece are positioned in front of the open front end of a slide member in the cabinet arranged in its outwardly projected position, as shown in Fig. 7. Then, by manually engaging one or both projections 50 on the lower side and pressing them upwardly against the bottom of the tray as indicated in Fig. 7, spring 53 will again be compressed whereupon the tail piece with its parts held manually in the relation shown in Fig. 7 can be inserted into the slide member and freely and slidably reengaged with the slide member for sliding movement therein, in the manner above described. Slide member 15 will be retained in its outer limit of movement during inward sliding movement of a tray therein until the front structure of the tray engages the front end of the slide member. When this position is reached, further rearward or inward movement of a tray toward the cabinet will cause the slide member to move rearwardly therewith into the completely housed and innermost position.

The drawings illustrate in Figs. 3 to 6, as well as Fig. 2, a bracket 56 mounted on bottom 26 of the tray in advance of rear end member 32 for hingedly supporting top cover 57. The purpose of this bracket and the top cover are well known in the art.

A tray and follower construction with the tail piece constructed as above described will not only have free hinging movement on the tray relative to the tail piece and its slide member, but can also have lateral shifting movement from side to side to a limited extent due to the fact that one end of the tail piece can move inwardly into slide member 15 a slight distance when the front end of a tray is shifted laterally with respect to its slide member. A limited amount of clearance between the slide member and tray provides for this shifting in conjunction with the structure described.

The invention claimed is:

1. In a card index cabinet, a tray for supporting a card index, means for slidably supporting said tray in said cabinet having a hook at the front end, a tail piece slidably mounted by said means and having a flange to engage said hook, and a link hinged to the tail piece at one end and adjacent the rear end of said tray at the opposite end, for normally retaining the tray against complete detachment from the cabinet when slidably withdrawn therefrom.

2. A card index cabinet, comprising a casing provided with supporting and guide means, a tray slidable into and out of said cabinet on said means, a tail piece slidable in said means in the rear of said tray, cooperating means on said tail piece and said first-mentioned means for interengagement at the front of said cabinet, and a link hinged to said tail piece and tray at opposite ends for normally retaining said tray against complete detachment from said cabinet in withdrawn position, whereby the rear end of the tray overlies a portion of the link when the tray is within the cabinet.

3. A card index cabinet, comprising a casing provided with supporting and guide means, a tray slidably mounted thereon, a tail piece mounted on said means in the rear of said tray, cooperating means on said tail piece and said guide means normally retaining said tail piece against detachment from said cabinet, and flexibly connecting said tray and tail piece for supporting said tray in front of said cabinet for free swinging movement, whereby when the tray is within the cabinet the rear end of the same overlies a portion of said connecting means.

4. A card index cabinet, comprising a casing provided with a tray compartment open at the front end, a tray slidable in said compartment, a tail piece slidable in said compartment back

of said tray, formed of a metal strip extending transversely between the sides, top and bottom of said compartment, projections on said tail piece strip for engagement with complementary means at the front of said compartment normally retaining said tail piece strip against detachment from said cabinet, and a link hingedly connected to said tray forwardly of the rear end thereof and said tail piece strip at the opposite end for supporting said tray in front of said cabinet for free swinging movement, whereby the rear end of the tray overlies a portion of the link when the tray is within the cabinet.

5. A card index cabinet, comprising a casing having spaced partitions extending transversely between the sides to form compartments, a tray slidable in each compartment, a tail piece in each compartment formed of a sheet metal strip extending transversely in said compartment between adjacent partitions and the sides, a projection on the bottom of said strip slidable on the partition below, each partition having a rearwardly directed hook on the front edge for receiving the said projection on said tail piece to normally arrest sliding movement of said tail piece at the front of the compartment to prevent detachment from said cabinet, and a link hinged at its rear end to said tail piece and at its forward end to the tray adjacent the rear end of the latter to attach said tail piece to said tray for free gravitational movement relative thereto on the partition therebelow, and for supporting said tray in front of said cabinet for free movement relative thereto and during movement of the tray into and out of said compartment.

6. A card index cabinet, comprising a casing having spaced partitions extending transversely between opposite sides to form compartments, a tray slidable into and out of each compartment, a tail piece slidable in each compartment formed of a transversely extending strip having a lateral projection, means at the front of the compartment for cooperation with said projection to retain said tail piece against detachment from said cabinet, a link having one end hinged to said strip and the opposite end to the rear end portion of said tray, and resilient means mounted on said tail piece and normally operative to move said tail piece in one direction on its hinge connection to said link to align said projection for engagement with said means when the tray is pulled outwardly from its compartment.

7. A follower construction for trays of card index cabinets, comprising a link having one end hinged to the rear end portion of a tray, a sheet metal strip forming a tail piece having a lateral projection on one edge overlapping said link, a hinge connection between said strip and the opposite end of said link, and resilient means between said projection and link normally moving and holding said tail piece in a position with said projection spaced from said link.

8. A follower construction for a tray of a card index cabinet, comprising a pair of links having one end of each hinged to the rear end portion of said tray, a tail piece formed of a sheet metal strip having laterally extending edge flanges, one of said edge flanges being formed into hinge portions hingedly connected to the opposite ends of said links, projections extending laterally from an edge of said strip for engaging retaining means at the front of a cabinet, said projections and links overlapping, and resilient means between said projections and links normally operative to move said projections away from said links.

9. A card index cabinet, comprising a casing formed with compartments each having top, bottom and side walls and open at one end, a tray slidably mounted in each compartment, a tail piece slidable in each compartment in the rear of the tray, and formed of a sheet metal strip extending transversely in said compartment with the edges terminating in proximity to said walls for guidance thereby in sliding movement, lateral projections on said strip for slidable engagement with one of said walls to normally hold said strip in transversely extending relation in said compartment, a link hinged at one end to the tray forwardly of the rear end of the latter and at its opposite end to said tail piece, and stop means at the front end of the tray for engaging said tail piece to retain said tail piece and said tray against detachment from the compartment when said tray is withdrawn from its compartment, whereby the rear end of the tray overlies a portion of the link when the tray is within the cabinet.

10. A card index cabinet, comprising a casing formed with compartments each having a partition separating one compartment from adjacent ones, stop means at the front end of each compartment, a tray for each compartment slidably mounted therein, a tail piece for each compartment slidable therein in the rear of the tray, said tail piece having a sheet metal strip extending transversely in said compartment and formed on one edge with a pair of spaced lateral projections operable to guide said tail piece in sliding movement in said laterally extending position and to cooperate with said stop means for preventing complete detachment of said tray from said cabinet, a pair of links each hinged at one end to said strip in superimposed relation over one of said projections and having a hinged connection at the opposite end adjacent the rear end of said tray to provide a freely movable attachment of said tail piece to said tray for operation therewith to support said tray on the cabinet for free movement in withdrawn position, and resilient means between said links and said projections normally operating to separate said projections from said links and for directing them into engagement with the stop means at the front of the compartment as the tray is withdrawn therefrom, said tail piece being manually operable against the tension of said resilient means to move said projections out of line with said stop means whereby said tray and tail piece may be detached from said cabinet.

11. A card index cabinet, comprising a casing formed with compartments each having a partition separating each compartment from adjacent ones, stop means at the front end of each compartment, a tray for each compartment slidable therein and formed of sheet metal provided with a bottom and side walls, a rear end member mounted on the rear margin of said bottom wall to form a rear end for said tray and extending between said side walls of the tray, a link hingedly mounted at one end on said rear end member and having the opposite end extending to the rear thereof, a tail piece for each compartment slidable therein, said tail piece comprising a sheet metal strip extending transversely in its compartment and having one edge portion hingedly connected to the rear end of said link, said last mentioned edge of said strip having a lateral projection overlapping said link and cooperating

therewith to retain said tail piece in sliding relation in said compartment for limited relative movement thereto, resilient means between said link and projection for normally holding said projection in separated relation to said link, and stop means at the front of said compartment for cooperative engagement with said projection when the tray is withdrawn from said compartment for preventing complete detachment of said tray from said cabinet.

12. A card index cabinet, comprising a casing formed with compartments each having a partition separating each compartment from adjacent ones, stop means in the front of each compartment, a tray for each compartment slidable therein, a tail piece for each compartment slidable therein in the rear of said tray, said tray being formed of sheet metal to provide a bottom and side walls, a rear end member mounted on the rear margin of said bottom, rear end brackets securing said end member to the side walls, said rear end member forming a rear wall in said tray and having a hinge portion formed therein, a link having one end hingedly mounted on the hinge portion of said rear end member and the opposite end extending to the rear of said member and said tray and hingedly secured to one margin of said tail piece, said tail piece having a transversely extending strip portion terminating in adjacent relation to the sides of said compartment and to said partition and having a projection overlapping said link and adapted to cooperate with the stop means at the front of said cabinet, and resilient means between said projection and said link for normally urging said link and projection apart for guiding the end of said projection into engagement with said stop means to prevent complete detachment of said tray from said cabinet when withdrawn from said compartment.

13. A card index cabinet, comprising a casing formed with guideways, slide members slidable in said guideways for limited sliding movement relative to said cabinet so that the forward end may project outwardly beyond the front of the cabinet to a limited extent, a card index tray slidable in each slide member, each slide member providing a transversely extending partition between adjacent trays and guideways at the side edges thereof, a tail piece slidable in each slide member in the rear of the tray therein, said tail piece being formed of a sheet metal strip extending transversely in said slide member and having opposite ends engaged in the guideways at the sides thereof with the lower edge portion slidably engaged with the transversely extending partition portion of said slide member, a projection on the lower edge of said strip member extending laterally and forwardly relative thereto for maintaining said strip member in said transversely extending relation in said slide member and adapted to have the front end thereof engage with a return bent hook portion on the front end of the partition portion of said slide member to normally prevent detachment of said tail piece from said slide member, and a link hingedly connected at one end to said tail piece and at the opposite end to said tray for securing operation of said tail piece with said tray in sliding movement relative to said slide member and for preventing complete detachment of said tray from said slide member and cabinet when said tray is withdrawn from said slide member.

CARL F. WOLTERS.