Feb. 8, 1927.

R. D. HAYES

1,616,897

INDEX OR FILE

Filed May 1, 1918

2 Sheets-Sheet 1

Fig. 1.

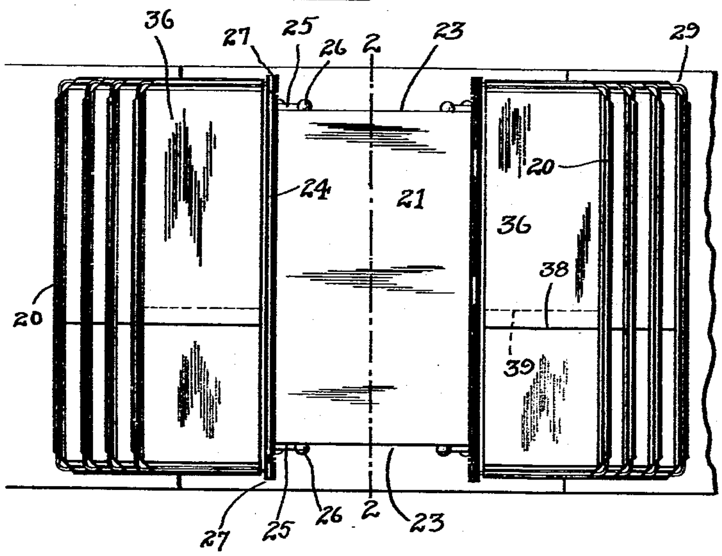


Fig. 2.

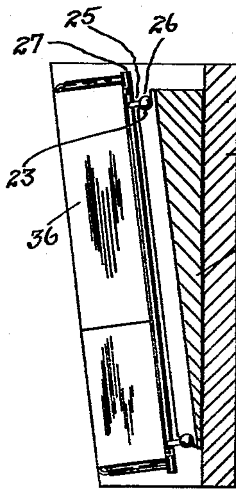


Fig. 3A.

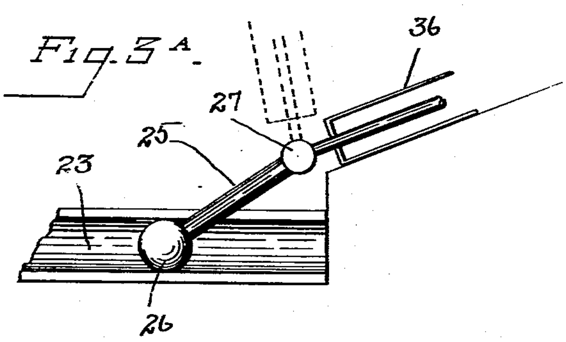


Fig. 8.

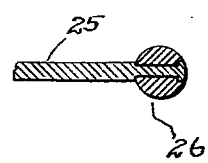
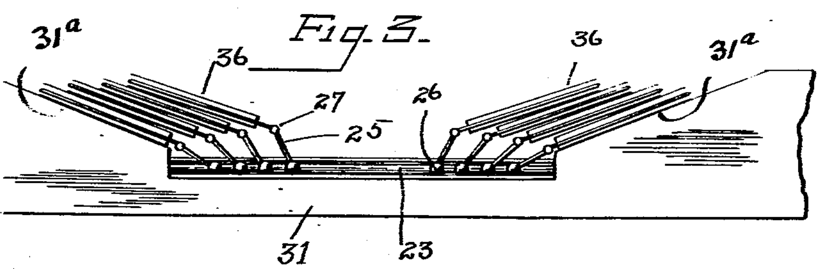


Fig. 3.



Robert D. Hayes INVENTOR

BY [illegible] ATTORNEY

Feb. 8, 1927. 1,616,897

R. D. HAYES

INDEX OR FILE

Filed May 1, 1918 2 Sheets-Sheet 2

Fig. 4.

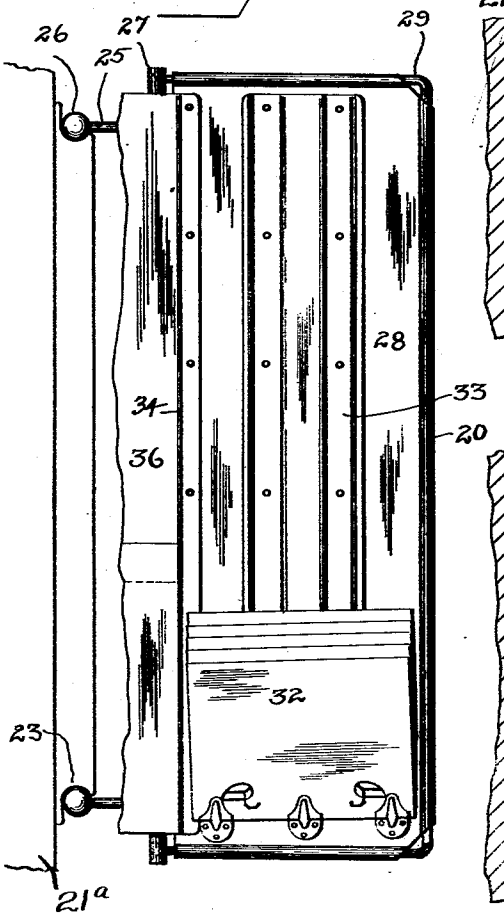


Fig. 5.

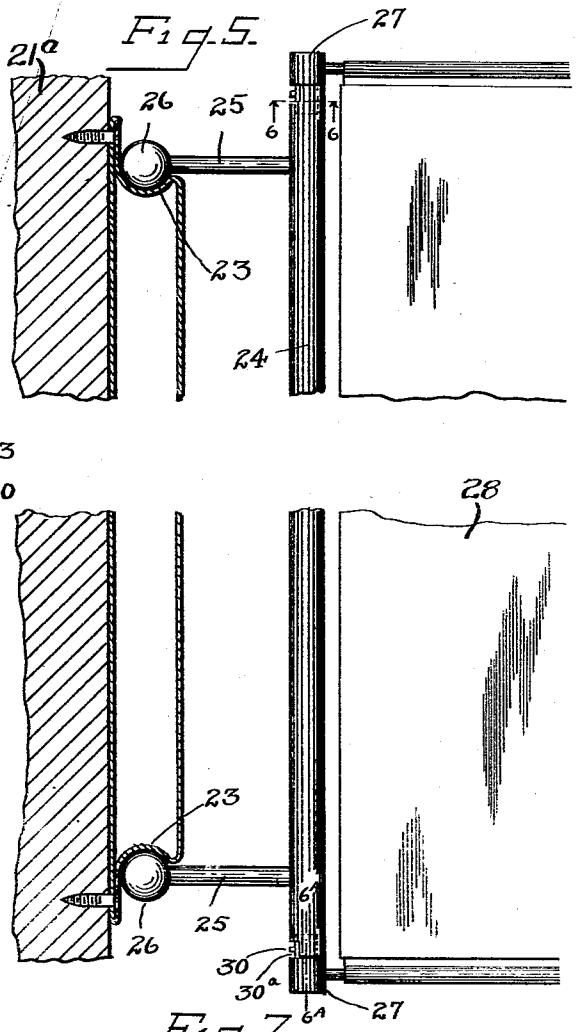


Fig. 6.

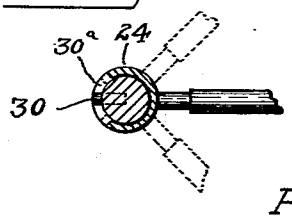


Fig. 7.

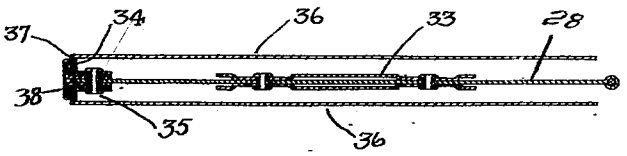
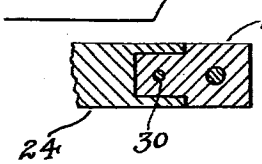


Fig. 6 A



Robert D. Hayes, INVENTOR.
BY
ATTORNEY.

Patented Feb. 8, 1927. 1,616,897

UNITED STATES PATENT OFFICE.

ROBERT D. HAYES, OF NEW HAVEN, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO RAND KARDEX BUREAU, INC., OF TONAWANDA, NEW YORK, A CORPORATION OF DELAWARE.

INDEX OR FILE.

Application filed May 1, 1918. Serial No. 231,836.

This invention relates to indexes or files, and it has particular reference to a visible index of the hinged leaf type, such as shown in my Patent No. 1,223,168, dated April 17, 1917.

One of the primary objects of the present invention is to furnish a hinged leaf index in which the leaves, even if comparatively large and bulky, can be very compactly and accessibly arranged.

Another object of the invention is to provide a device of this character in which each leaf can be very readily swung from one side of the index to the other in manipulating the index, even if the leaf is quite large and is rather heavy due to the fact that it is completely filled with large cards.

Other objects of the invention are to provide an index having means which effectively prevent the tipping or slanting of the cards out of their proper positions; to provide an index in which the cards are effectively covered and protected when not in use; to furnish improved means for connecting each leaf with the support; and to improve generally the construction and operation of devices of the class indicated.

To these and other ends, the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a plan view of an index or file embodying my improvements, said index or file being of the type which is supported approximately horizontally on top of a suitable desk or table;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a side view of the index;

Fig. 3^{A} is a fragmentary view of the connection between one of the leaves and the main support;

Fig. 4 is an enlarged elevation of one of the leaves mounted on a modified type of support, the cover being shown swung away from the cards and partly broken away;

Fig. 5 is an enlarged fragmentary view of Fig. 4, showing the connection between each leaf and the main support;

Fig. 6 is a section on line 6—6 of Fig. 5;

Fig. 6^{A} is a section on line 6^{A}—6^{A} of Fig. 5;

Fig. 7 is a transverse section of one of the leaves with the covers of both sides in the closed position, the cards being omitted; and

Fig. 8 is a detail of one of the spring arms which engages the guide track on the support.

In its general features, the new index is quite similar to that shown in my Patent No. 1,223,168, previously mentioned. The structure shown in that patent is, however, particularly adapted for small, rather light indexes, and the present improvements are particularly designed for use with rather large indexes where the leaves are wide, or long, or both, and where consequently the weight of the leaf is considerable when it is filled at both sides with the cards for which it is designed.

In order to make an index of this kind compact and to facilitate the manipulation thereof, I provide a novel form of hinge connection between each leaf and the track, guide or main support on which the several leaves are slidably mounted, in such a manner that they may be applied to and removed from the track or guide at any desired point in the length thereof, as described in my previous patent. In carrying out the present invention, each of the leaves 20 is applied to the main support 21, having a track or guide comprising the grooved guideways 23, by a double or compound hinge connection. In the particular form shown in the drawings, each of the leaves 20 is hinged at its inner portion to a carrier frame consisting of a supporting rod 24 and the spring arms 25. The carrier frame is, in turn, slidably hinged to the main support by the arms 25. Preferably, the spring arms 25 are comparatively short and extend laterally from the rods 24 near the respective ends thereof. Each of the spring arms is preferably equipped at the end with a freely rotatable ball 26, engaging one of the guide grooves of the track or guide, as in my former patent. Each of the rods 24 is preferably tubular and it is hinged to the corresponding leaf by pintles 27 on the leaf frame. Each leaf proper, or carrier, which, in the embodiment shown, is a card carrier, preferably consists of an aluminum or other light metal panel or sheet 28, three edges of which are lapped over and secured to a wire frame 29. This frame, in connec-

tion with the corresponding supporting rod 24, forms a hollow rectangle on which the sheet or web 28 is supported. The pintles 27 are located at the inner ends of the wire frame member 29 of the card carrier, and the upper pintle extends into the upper end of rod 24, whereas the lower pintle extends into the lower end of said rod. The pintles are free to swing in the tubular ends of the rod, but to a limited extent only, for which purpose suitable stops are provided. In the example shown, each pintle is provided with a laterally extending pin 30, working in a notch 30^a cut in the wall of the tubular rod 24, as shown in Fig. 6. The arrangement is such that when the leaf proper, or card carrier, is aligned with the spring arms 25, said leaf can swing to the same extent in either direction. In the particular form shown, the parts can swing relatively to each other throughout an angle of substantially 90° in all, but considerable variation may be made in details of this nature.

In the embodiment illustrated, the main support 21 is adapted to be mounted in a slightly inclined position on the top member 31 of a table or desk. Each leaf may be held closer to the table top at one end of said leaf than at the other, so that said leaves, when opened out, as shown in Fig. 1, may have a position analogous to that of the leaves of a book placed on a table in slightly inclined position so that it may be read with facility.

Each of the leaves 20 is provided with a longitudinal row of cards or other record members 32. Preferably, I employ cards similar to those shown in my previous patent, which are slidably mounted on each leaf at opposite faces thereof. For this purpose a guide strip 33 is applied to each face of the leaf, and said strip is engaged by tongues on the cards by which the cards are nested together in overlapped relation, as shown in the Fisher Patent No. 1,048,056, dated December 24, 1912. Adjacent its inner edge, the panel 28 of the leaf is provided at each face thereof with a retaining strip 34 extending lengthwise thereof and forming an abutment adapted to be contacted by the inside edges of the cards, so as to prevent them from canting too much on their respective guide strips. The strips 34 will advantageously be made of light sheet metal, and they will preferably be permanently connected to the web or main sheet of the leaf by means such as eyelets 35. Preferably, also, the strips 34 will be of L-shaped cross-section, each presenting a retaining flange for the cards and a securing flange which is fastened to the leaf by the fasteners 35. In the particular form shown, each fastener 35 extends through the securing flanges of both retaining strips, and, therefore, secures both strips to the leaf.

In order to enclose and protect the cards, I prefer to furnish each leaf with a cover somewhat similar to that of a book. This cover may advantageously consist of flaps of heavy paper or like material hinged to the leaf at the inner edge thereof. In the form shown, one flap extends laterally across one face of the leaf and another flap extends laterally across the opposite face of the leaf. These flaps, which are designated 36 in the drawings, may be made of heavy paper with fabric hinge portions 37, each of said hinge portions being retained beneath the corresponding card retaining strip 34. When the flap is in the closed position, it rests on top of the retaining flange of the strip 34, and the fabric hinge portion of the flap extends alongside the retaining flange at the back thereof and then passes under the securing flange, where it is permanently held in place by the eyelets 35. In order to retain the fabric hinge member 37 in contact with the rear face of the card retaining strips 34 a flange member 38 is preferably secured to the rear edge of each leaf 20 as shown in Fig. 7. This member if desired may be made T shaped in cross section with the head of the T having its inner face engaging the fabric hinge, while the fasteners 35 pass through the leg portion of the T member. Preferably, each flap will be divided into an upper section 38 and a lower section 39, said sections being independently movable; and preferably the upper section is the larger of the two and extends downward somewhat beyond the upper edge of the lower section, so as to overlap the latter slightly. It will be understood that by this arrangement, if it is desired to have access to the upper cards only of the leaf, the upper cover section 38 may be swung to the open position to disclose the cards beneath the same without moving the lower cover section, which effectively protects the lower cards while one or more of the upper cards are being written upon or manipulated. In Fig. 4, in which one of the cover flaps is partially shown, both sections are swung to the fully opened position. As the lower section extends underneath part of the upper section, both sections can be readily opened by placing the finger under the lower section and swinging it open.

One of the many advantages of the compound hinge arrangement, that is, of providing the hinge connection between the supporting member 24 and the leaf, as well as between the main support and said supporting member, is that the leaves can be caused to lie quite flat so that the cards thereon are readily accessible when the spring carrier arms 25 with their balls 26 are very compactly arranged. It will be obvious that the supporting parts 24, 25 can be grouped more closely in the guide

grooves 23 if such supporting parts project at approximately a right angle to the face of the main support. The more the supporting members 24, 25 are turned toward the plane of the main support, the more room is taken up in the guide grooves. By my improved construction, the supporting parts of the leaves may be very compactly arranged in the guide, while at the same time the leaves lie quite flat owing to the provision of the hinge connection between the rods 24 and the leaves proper. Again, the manipulation of the leaves is very much facilitated by this construction. In many cases, it is unnecessary to swing the entire leaf structure about the balls 26 as pivots, because a swinging movement on the axis of the rod 24 will suffice. Referring particularly to Figs. 1 and 3A, it will be observed that if a leaf of the right-hand group is to be swung over on top of the left-hand group, the frame 29 carrying the web and cards may be swung from the position shown in the full lines to the position shown in the dotted lines before the lost motion between the two parts of the leaf structure has been taken up. The swinging movement of the panel or carrier for the cards having been started and its inertia being overcome, the supporting part 24, 25 of the leaf structure will be carried along by the action of the stop pins 30 when the card-carrying panel reaches the position shown in dotted lines in Fig. 3A, and said supporting card 24, 25 will be readily moved about the balls 26 as pivots. In other words, in swinging the leaves, which may be quite heavy when filled on both sides with cards, the weight can be picked up gradually, the panel portion being the first to be lifted and the supporting part being then carried along by the action of the stop associated with the lost motion connection between the two hinged parts of the leaf structure. The result is that the manipulation of the index is made very easy.

It will be understood, of course, that the spring arms 25, with the balls 26 thereon, cooperate with the track or guide in substantially the same manner as described in my previous patent. When the leaf is forced against the guide, the arms 25 of the cover frame are sprung apart and snap into the corresponding grooves in such a position as to straddle the track or guide, whereby the leaf structure is slidably hinged to the guide in a detachable manner. Each leaf is free to slide and to swing relatively to the guide, and may be attached and removed independently of the other leaves.

In Figs. 4 and 5, I have shown a main support 21a which differs somewhat from the support 21 shown in Figs. 1 and 2 in that the support 21 holds the leaves 20 in a position slightly inclined to the top of the supporting table or desk, while the support 21a is adapted to hold the leaves in either a horizontal or a vertical position; that is, with the supporting rod 24 extending in either a horizontal or vertical position.

I have not attempted to illustrate or describe the numerous modifications of the construction which may be adopted without departure from the scope of my invention as defined in the claims.

It is understood that the index herein shown is provided with stops for supporting the leaves in two groups, one at the right-hand side and the other at the left-hand side, as in my former patent. In the present instance, however, the stops are formed as inclined abutments 31a on the table itself. These abutments may, however, be carried by some other part, or they may be separately formed. The upper inclined face of each stop or abutment contacts with the lower face of the lower leaf of the corresponding group and supports said leaf, preferably at a slight angle to the horizontal, as shown in Fig. 3.

It has been found in actual practice that the flap-like cover members for the cards are very advantageous indeed, as they serve to keep the cards in the proper position on the leaves or panels. As the leaves are swung about, there is a tendency for the cards to ride up over the retaining flanges 34 when the cover member is in the open position, but when the latter is closed, it automatically forces the cards back off the retaining strip or flange and down into their proper positions against the face of the leaf. Of course, when the cover flap is in the closed position, as shown in Fig. 7, it forms, in connection with the strip 34, a card-retaining element which positively prevents the cards from riding over the retaining strip at the side. If, however, the cards ride over the retaining strip when the cover flap is open, the latter engages the edges or corners of the cards that have become canted on the guide strip 33 and automatically pushes them back to their correct position. This adds very considerably to the convenience of using the improved index.

What I claim is:

1. In an index or file, a guide, a carrier, a supporting device hinged to the carrier, and means for slidably hinging said supporting device to the guide, such that it may be attached to or removed from the guide at any of a number of points.

2. In an index or file, a guide, a supporting device slidably hinged to the guide, and a carrier swingingly mounted on said supporting device.

3. In an index or file, the combination of a support, a device slidably hinged to said support, and a carrier having a lost-motion connection with said device.

4. In an index or file, a guide, a carrier

frame slidably hinged to said guide, and a carrier leaf hinged to said carrier frame.

5. In an index or file, a guide, a carrier frame slidably hinged to said guide, and a carrier leaf hinged to said carrier frame for limited swinging movement relatively thereto.

6. In an index or file, a slidable carrier frame, a carrier hinged thereto, means for limiting the swinging movement of the carrier relatively to said frame, and a plurality of record members mounted on the carrier.

7. In an index or file, a guide, a frame structure straddling said guide, a card carrier having a frame, and means for hinging said card carrier frame to said first frame structure.

8. In an index or file, a rod having sockets in the ends thereof, a carrier having pintles engaging said sockets for hinging the carrier to said rod, and means for supporting the rod.

9. In an index or file, a carrier leaf comprising a rod bent to form three sides of a rectangular frame, a plate secured to the frame thus formed, and a second rod connected to the ends of the frame and forming the fourth side thereof, and means to hingedly connect said leaf to a support.

10. In an index or file, a supporting panel, a strip mounted thereon, cards having tongues engaging said strip, and a retaining strip on the panel in substantial contact with the row of cards at one side of the same.

11. In an index or file, a support, a leaf hinged thereto, a row of cards supported on said leaf, and means adjacent the hinged margin of the leaf for preventing displacement of the cards.

12. In an index or file, a support, a leaf extending at an angle thereto, a card-supporting strip on said leaf, cards having tongues engaging said strip, and a retaining strip for preventing canting of the cards on said first strip, located at the inner portion of the leaf.

13. In an index or file, a card-carrying leaf having cards mounted on the opposite faces of said leaf, and hinged covers for said cards extending over the respective faces of the leaf.

14. In an index or file, a card-carrying leaf, a r w of cards supported thereon, and a hinged cover on the leaf extending over said cards.

15. In an index or file, a card-carrying leaf, a row of cards supported thereon, and a hinged cover on the leaf extending over said cards, said cover divided into sections.

16. In an index or file, a support, a leaf extending at an angle thereto, a plurality of cards on said leaf, and a cover for said cards hinged to the leaf adjacent one edge thereof.

17. In an index or file, a card-carrying leaf having cards slidably mounted thereon, a retaining strip for said cards at one edge of the leaf, and a swinging cover associated with said retaining strip.

18. In an index or file, a card-carrying leaf, a body of cards slidably mounted thereon, a member projecting out from the leaf adjacent one edge of the row of cards, and a hinged cover supported on said member.

19. In an index or file, a support, a plurality of carriers hinged thereto, cards applied to opposite faces of each carrier, and covers for said carrier extending over the respective faces thereof.

20. In an index or file, a support, a carrier frame projecting from said support and swingingly mounted thereupon, and a carrier mounted to swing on said carrier frame about an axis inclined slightly to the plane of the support.

21. In an index or file, a support, a carrier frame projecting upwardly therefrom at an angle, a carrier having a swinging movement on said carrier frame, means for limiting the swinging of said carrier upon its support, and a plurality of cards mounted on said carrier.

22. In an index or file, a flat support, a carrier frame member hinged thereto and movable horizontally thereon, a leaf hinged to said frame member, and a plurality of record members mounted on said leaf.

23. In an index or file, a supporting member, a carrier frame member hinged thereto and projecting upwardly therefrom, a leaf having a limited swinging movement with respect to said frame member, and a plurality of record members carried by said leaf.

24. In an index or file, a flat support, a carrier frame member guided thereon to move longitudinally thereof, a leaf hinged to said frame member, and a plurality of record members carried by said leaf.

25. In an index or file, a support, a group of leaves hinged thereto, cards on each leaf, and a hinged flap on each leaf for covering the cards of said leaf.

26. In an index or file, a support, a group of leaves hinged thereto, cards on each leaf, and a hinged flap on each leaf for covering the cards of said leaf, the hinge of said flap located at the inner part of the leaf.

27. In an index or file, a support, carrier frames slidable thereon, a plurality of leaves hinged to said carrier frames and abutments at opposite ends of the index having inclined faces to contact with the lower faces of the end leaves.

28. In an index or file, a flat support, a carrier frame member slidably engaging the same and disposed at a considerable angle to the p.ane of the support, a leaf carried by

and projecting from said carrier frame member at a relatively slight angle to the plane of the support, and a plurality of record members on said leaf.

29. In an index or file, a card-carrying leaf with a guide strip, a plurality of cards having tongues engaging said guide strip, and means for preventing displacement of the cards beyond the margin of the leaf.

30. In an index or file, a card-carrying leaf with a guide strip, a plurality of cards having tongues engaging said guide strip, and means including a cover member for preventing displacement of the cards beyond the margin of the leaf.

31. In an index or file, a card-carrying leaf, a retaining strip extending along the side of said leaf, and means for preventing the cards from riding over the retaining strip.

32. In an index or file, a card-carrying leaf, a retaining strip extending along the leaf at one side of the cards, and means whereby the cards which may ride over said strip may be returned to their initial position.

33. In an index or file, a supporting member, a body of overlapped cards mounted thereon, a retaining strip extending along said supporting member at one side of the body of cards, and a hinged member for returning the cards to their initial position when they ride over said retaining strip.

34. In an index or file, a supporting member, a body of overlapped cards mounted thereon, a retaining strip extending along said supporting member at one side of the body of cards, and a hinged member for returning the cards to their initial position when they ride over said retaining strip, said hinged member being arranged and formed to overlie and cover a plurality of the cards.

35. In an index or file, a leaf or panel, a body of cards supported thereon, and a hinged cover member for the cards which when moved to the closed position returns to their proper place cards that have become displaced on said leaf or panel.

36. In an index or file, a supporting member, a body of overlapped cards carried thereby, each card mounted on said support so as to be capable of a certain amount of swinging movement thereon, a retaining strip at the side of the body of cards, and a hinged cover member which when closed automatically returns to their proper place cards that have extended over said retaining strip.

37. In an index or file, a carrier frame, a carrier leaf hinged to said frame, and a support for said frame constructed to rest upon a flat horizontal surface and to hold said leaf at a slight angle to said surface.

38. In an index or file, a support, a card-carrying leaf hinged upon said support, said support constructed to rest upon a flat horizontal surface and to hold said leaf at a slight angle to said surface.

39. In an index or file, a carrier frame, a card-carrying leaf hinged to said frame, and a support for said frame constructed to rest upon a horizontal surface and to hold said leaf at a slight angle to said surface to thereby facilitate the inspection of the cards upon said leaf.

40. In an index or file, a card-carrying leaf, a row of cards supported thereon by means at the rear faces thereof, and a cover on the leaf adapted to extend over the cards.

41. In an index or file, a carrier leaf comprising a rod bent to form three sides of a rectangular frame, a plate secured to the frame thus formed, a second rod connected to the ends of the frame and forming the fourth side thereof, and means upon said second rod to connect said leaf to a support.

In witness whereof, I have hereunto set my hand on the 26th day of April, 1918.

ROBERT D. HAYES.