S. OLOP.

RECORD ASSEMBLING AND DISPLAY DEVICE.

APPLICATION FILED JULY 14, 1920.

1,402,009. Patented Jan. 3, 1922.

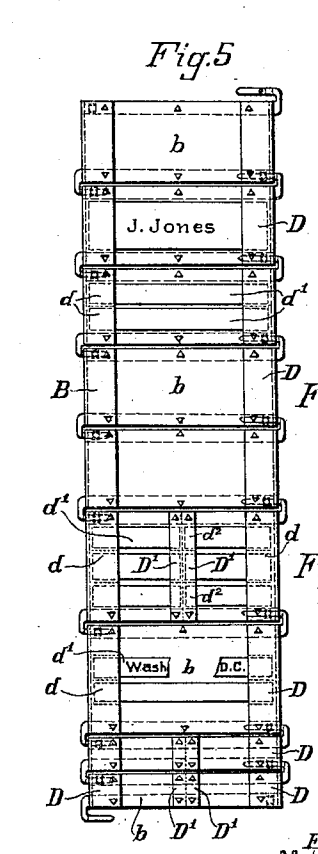


Fig. 5

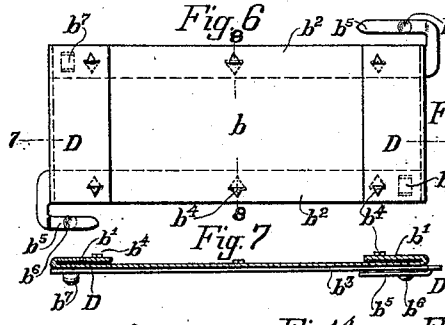


Fig. 6

Fig. 7

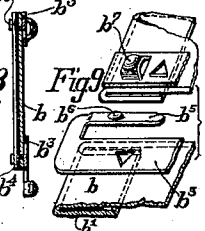


Fig. 8

Fig. 9



Fig. 10

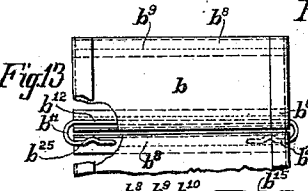


Fig. 13

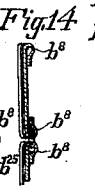


Fig. 14

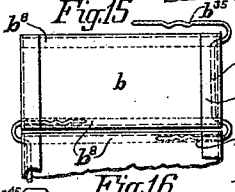


Fig. 15

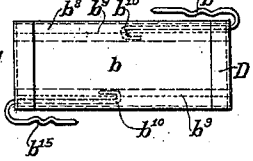


Fig. 11



Fig. 12

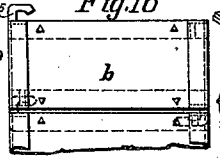


Fig. 16



Fig. 17

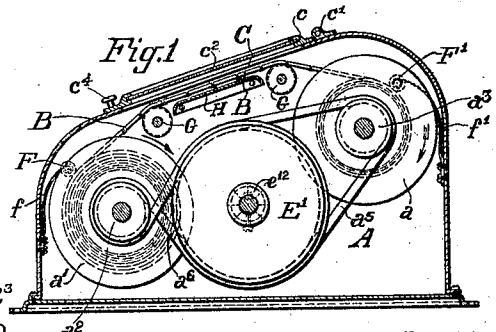


Fig. 1

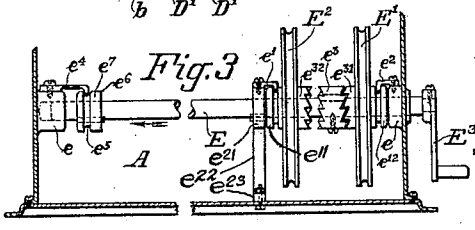


Fig. 3

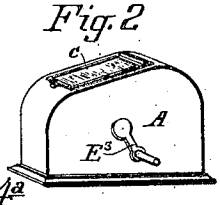


Fig. 2

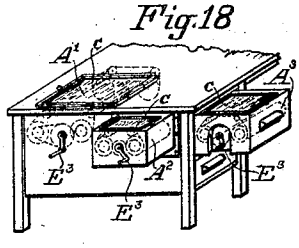


Fig. 18

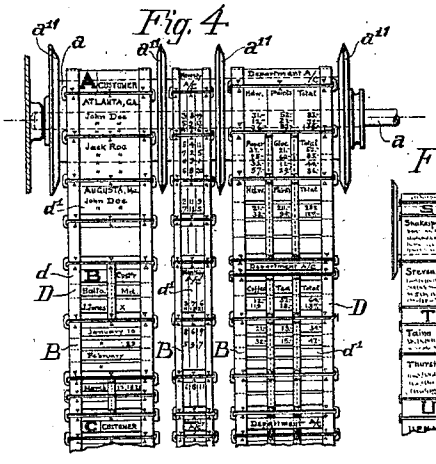


Fig. 4

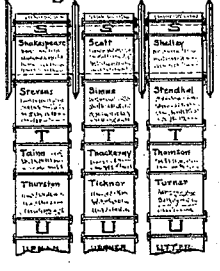


Fig. 4a

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RECORD ASSEMBLING AND DISPLAY DEVICE.

1,402,009. Specification of Letters Patent. Patented Jan. 3, 1922.

Application filed July 14, 1920. Serial No. 396,248.

To all whom it may concern:

Be it known that I, STEPHEN OLOP, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Record Assembling and Display Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to record assembling and display devices and, more particularly, to contrivances of this nature so constituted as to assemble individual correlated or coordinated records, graphic units, such as bookkeeping, address, or catalogue inscriptions, or other indicia in convenient order for rapid inspection of any desired record or group of records, and to readily find and present for inspection the particular unit or class of units desired at any moment.

The aim and object of this invention is principally to provide a device of this character which will facilitate a ready and speedy assembling of record units and also the ready removal of any unit or its replacement by another or others and also the quick insertion of any desired additional unit or units at any point of the assemblage, while at the same time securing the said assemblage against disarrangement.

My invention also has in view to furnish a record assemblage so constituted as to present as desired an entire class of record or indicia units at one time, consistent with compact storage of the record units and with occupying a minimum of space.

To attain these objects my invention comprises a record carrier or band formed of a plurality of carrier sections, each of which sections is removably connected at one edge to the preceding section and at the opposite edge to the following section. In other words the sections are removably connected in series. The sections are each marked or provided with a record or are adapted to have a record or inscription or other item of information mounted on or secured to them, or a number of such records, or inscriptions, or other indicia may be marked or inscribed on or mounted or secured to each section.

These carrier sections when united as above, form a continuous carrier, ribbon or web, bearing a record formed of a series of united and coordinated record units and, according to the character and magnitude of the record, a number of such carriers, ribbons or webs, are arranged side by side to form a complete record. The record carriers may be mounted in various ways for the purpose of bringing the desired record unit or units or other item or items of information to the point where it may be conveniently inspected. Under one form of carrying out my invention, the carriers comprising the connected record sections are each mounted on two rollers so as to be unwound from one roller on to the other and vice versa, in order to bring the desired record unit or units to the inspection point or opposite a display opening. In some cases, where the number of separate entries are comparatively small, a single carrier will suffice to store and display all the necessary units of a record.

The sections of the carrier constituting the record units may be removable or separably connected, as indicated above, in a great variety of ways. I prefer to interlink them by providing each section with a spring or resilient tongue, adapted to engage a catch, socket or other receiving part in the adjacent section. Preferably these spring tongue connections are so arranged that a spring tongue is arranged at opposite edges of a section and at diagonally opposite points, sockets or tongue receiving parts being provided at the two ends of the other diagonal. Any section can thus be united to the preceding and the following section by inserting the tongue at each edge into the corresponding sockets or receivers on the adjoining edges of the adjoining sections.

My invention also contemplates mounting a number of such composite record carriers parallel on a single roller or support and grouping the records, alphabetically or according to topics transversely or laterally on the parallel belts or carriers. Thereby an entire class or group can be brought to the inspection point by one movement of the roller or support.

Other features of the invention will be described hereinafter and pointed out in the claims.

In the accompanying drawings—

Figure 1 represents a vertical section of a record display apparatus embodying one way of carrying out my invention;

Figure 2, a perspective view of the same, on a reduced scale;

Figure 3, a partial transverse vertical section of same;

Figure 4, a detached view of one of the carrier rollers with the carriers; Figure 4ª, a similar view, somewhat modified in arrangement;

Figure 5, a face view of an enlarged scale of a portion of the record carrier or belt forming part of same;

Figure 6, a similar view of one section of said carrier on a more enlarged scale;

Figures 7 and 8, a longitudinal and a transverse section of said section on lines 7—7 and 8—8, respectively;

Figure 9, a detail view in perspective of the separable joint or connecting device between two adjoining carrier sections;

Figure 10, a similar detail view of a somewhat modified form of connecting tongue;

Figures 11 and 12, a face view and a section, respectively, of a modified form of separable connection;

Figures 13 and 14, similar views of another modification;

Figures 15 and 16, face views of two further modifications;

Figure 17, a detail view in perspective of the modification in the latter view.

Figure 18, a perspective view of a table equipped with an assembling and display device according to my invention.

Referring to Figures 1, 2, 3 and 4, it will be observed that the apparatus therein disclosed comprises a casing A, within which are mounted two rollers or reels *a*, *a*. A number of record carriers B in the form of webs or ribbons is secured at each end to one of these rollers, respectively, so that the carriers may be unwound from one of the rollers to the other, and vice versa. An intermediate portion of the carriers B passes over idlers G, G, so as to be brought into position directly behind an inspection opening C of the casing A, and I prefer to make the interval between the idlers and the length of the inspection opening sufficiently large to expose a considerable number of records or entries on the record carriers, comprising for example an entire group or class of such records. The inspection opening is in the example shown closed by a cover *c* hinged at c^1, provided with a transparent window c^2, and adapted to be swung open to obtain access to the interior of the casing, by grasping the handle c^4.

The record carriers B are shown detached with one of the rollers *a* in Figure 4, and a portion of the length of one of these carriers is represented in Figure 5 of the drawing. From the latter figure it will be seen that the record carrier B consists of a plurality of carrier sections, *b*, removably united in series or end to end by separable couplers or connecting devices which I will now describe in detail, special reference being made for this purpose to Figures 6 to 9 in addition to Figure 5.

Figures 6 to 8 show one of the carrier sections *b* detached. It is preferably made of sheet material, such as textile material, paper, leatherette, or the like, in rectangular or other convenient or required shape, as shown, or it may be made of sheet metal, preferably thin and flexible. At the two opposite sides it is folded over to form pockets, b^1, b^1 for the reception of the ends of removable record or indicator or other strips. The transverse edges b^2, b^2 of the section *b* are stiffened by strips b^3, b^3 of sheet material, such as sheet metal, which strips are secured to the material of the section, by triangular claws or rivets b^4 punched out of the body of the strips b^3, and thrust through to protrude beyond the material of the section *b*, and then bent over on the same or clinched, as best shown in Figures 6 and 8.

Each strip terminates at one end in a reversely bent tongue b^5, spaced somewhat apart from the edge of the section and parallel thereto. Said tongue is provided at its outer surface with a protuberance or wart b^6. At the other end, each strip is provided with a catch b^7 for the tongue of an adjacent section, said catch, as shown best in Figure 9, which is detail view of the parts seen from below, being formed in the shape of a housing to receive the tongue, said housing being punched out and struck up from the material of the strip b^3.

As shown in Figures 5 and 6, the two tongues b^5 on each section are arranged diagonally on the same and the catches for the same occupy positions on the other diagonal of the section. It will also be noted that one of the tongues b^5 is somewhat longer than the other on the same section *b*.

From the foregoing, the mode of attachment of one record section to the one which it is to adjoin is apparent. The longer of the two diagonally situated tongues b^5 on the one section is first inserted into the corresponding catch b^7 on the other section until the opening of the catch b^7 on the first section reaches the end of the tongue on the second section, whereupon the first section is pushed forward in the same direction until the two tongues are brought home in the corresponding catches and the protuberance b^6 of each tongue is seated in or has sprung into the corresponding recess of its catch.

Since the tongues b^5 and the catch b^6 are made from thin sheet-material, having a certain degree of resiliency they combine to form a spring catch or connection, which offers sufficient resistance to accidental disengagement and displacement of the connected sections, while, at the same time, they permit the ready withdrawal or removal of

one record section from the adjoining one, whenever the occasion arises.

The removal of any section from between two sections on the record carrier to which it is connected by the couplers or connecting devices thus described is also readily effected. For this purpose the tension on the record carrier is somewhat relaxed, and then the tongue and catch at one edge of the section can be withdrawn from the catch and tongue, respectively, of the adjoining section, the relaxed belt or carrier yielding laterally sufficiently for this purpose. The tongue and catch on the other edge of the section may then be readily withdrawn from the catch and tongue, respectively, of the second adjoining section, as will be readily understood. Obviously, the insertion of a section into the series between any two adjoining sections, may be as readily effected by a reverse manipulation. Where the sections are of very pliable material such removal or interpolation of a section from or into the series may be carried out with still greater facility, as will be understood.

By arranging the two tongues on each section diagonally with respect to one another, the catches occupying the remaining two corners of the said section, the advantage is obtained that all the sections are interchangeable and where they are all of the same width and length, they are identical in form and arrangement. Thereby the cost of manufacture is reduced.

A further advantage arising from this diagonal arrangement of the tongues and, consequently of the catches, is that the tension on the carrier or web will prevent any tendency to displacement or disengagement of one section with respect to its adjoining sections, because any tendency of one tongue on a section to leave its catch would, so long as the carrier is aligned along its length, be counteracted and resisted by the other tongue on the same section.

In Figure 10, I have represented a somewhat modified form of the tongue b^5. It is there shown as provided with an intermediate corrugation b^{16}, which may slip past the catch b^7 of Figure 9 or be held within the same by friction due to the spring action of the parts, according to the relative location of the parts, when tongue is inserted.

In Figures 11 and 12, a carrier section is shown which differs in the following respects from that just described. The transverse edges are in this modification not provided with separate stiffening strips but they are folded over or hemmed, the hems b^8 being secured to the body of the section by a row of stitching b^9. Diagonal tongues b^{15}, b^{15}, are also provided in this modification, said tongues forming part of a piece of wire bent into U-shape, the longer leg of said bent wire being inserted into the sleeve or socket formed by the hem b^8, said leg being provided with a hook b^{10} at its end, which hook straddles the seam, thereby preventing the withdrawal or lateral displacement of the wire. The shorter leg of the wire extends outside the hem, is corrugated or undulated in form, and is parallel to and spaced somewhat apart from the section, extending backward from the side edge thereof. In this case the catch for the tongue consists in the sleeve formed by the hem b^8, into which the tongue of the adjoining section is inserted, being held in place therein by the friction and the resilient action of the corrugated tongue when in place in the sleeve. In other respects the operation and arrangement of the parts is the same as already described in connection with the construction represented in Figures 5 to 10.

In the modification shown in Figures 13 and 14, which is adapted particularly to carrier sections possessing a certain degree of flexibility, the material is again hemmed at the edges at b^8. In this form the connecting tongues b^{25}, b^{25} are not placed diagonally, but both at the same edge of the section, and at the ends of said edge, so that both extend inwardly and parallel to the edge as shown. These tongues are again shown as corrugated or undulating and they constitute the ends of the doubly bent resilient wire b^{11} whose intermediate length b^{12} lies under the hem, b^8, thereby stiffening one edge of the section. To cause these coupling tongues b^{25}, b^{25} to engage the adjoining section, the adjoining edge of the latter is bent, sprung or arched until both openings of the sleeve formed by the hem are opposite and in line with both tongues, whereupon the latter can be readily inserted into the sleeve by straightening out the section or allowing it to resume its flat condition. Or, first one tongue is inserted into the corresponding opening of the sleeve and then by properly bending the section, the other tongue can be inserted into the other opening.

Still further separable or detachable coupling means are represented in Figure 15 and Figures 16 and 17, respectively. In the form shown in Figure 15, two resilient corrugated tongues b^{35} are formed at the ends of a wire b^{13} the intermediate portion of which is secured to one lateral edge of section b, under the lap of pocket D by sewing or otherwise. In this instance the transverse edges of the section b are again reinforced by hemming the same so as to leave a sleeve or socket b^8, for the reception of the resilient coupling tongues of the adjoining sections. The pair of tongues b^{35} in the connected belt or carrier are preferably arranged alternately at opposite edges of the belt or carrier, as shown. The tongues b^{35}

b^{35} are of unequal length, to enable the same to be successively inserted into the sleeves of the two sections to which the section to be added is being attached.

In the modification of Figures 16 and 17, of which the latter represents a detail view in perspective of the coupling members detached seen from below, the construction is similar to that represented in Figures 6 to 9, except that the coupling tongue b^{45} on the strip b^3 terminates in an inwardly extending cam projection, b^{26} rounded off and inclined rearwardly and forwardly, so that, when tongue b^{45} of one section is inserted into the catch b^{27}, it will ride past and through said catch, until the projection has passed the catch, so as to be held in place by the latter. The catch b^{27} is made to have sufficient resiliency to yield during this manipulation and will thereafter spring back to its original position to prevent accidental removal of the projection, but will yield sufficiently to permit the withdrawal of the same, when a sufficient pull is applied to the tongue in withdrawing the same.

All of the detachable connections above described, in view of their arrangement as shown and the resiliency of their parts impart a sufficient amount of flexibility to the record carrier or belt at the lines of connection to permit the said carrier to be compactly wound and unwound from the rollers a. This flexibility of the carrier is, moreover, increased where the carrier sections are made from material having a certain degree of pliability, such as thin cardboard, leatherette, or textile material or combinations of the same.

In Figure 4 I have represented one of the rollers or reels a and the parallel composite carrier webs mounted thereon. Each of these carrier-webs is separated from the adjacent one and held against lateral displacement by the guard flanges or disks a^{12}. In the present example I have shown three such carrier-webs arranged side-by-side, but this number may be varied according to need and so that a sufficient number of records can be grouped or arranged in lateral relation to each other, to make it possible to present an entire class or group of such records at the inspection point or behind the display opening at one and the same time, by properly rotating the roller a.

By reference to Figures 4 to 6 it will be observed that the carrier sections b are provided with lateral pockets D at each side edge, said pockets being formed by folding or bending a suitable width of the material of the section over upon itself as best shown in Figure 7. These pockets are then divided into a number of compartments d by lines of stitching. Thereby a number of record strips d^1 d^1 can be mounted on each section and secured against lateral or longitudinal movement by slipping their ends into said compartments. Intermediate pockets D^1 are also provided in some instances, thereby enabling a number of record strips or cards to be mounted on the section in a transverse or lateral direction. These pockets may also be subdivided into a number of compartments d^2 corresponding to the compartments d.

In some cases the records or other indicia may be inscribed, marked or otherwise applied to the carrier sections b and in that case the pockets may be omitted. Or the two methods of applying records may be combined, in which case the sections b may serve for the primary records and the record strips engaging the pockets for supplementary information or data to be consulted in connection with the primary records.

In Figure 4 I have represented an example of arranging a group of records laterally or transversely across the series of carriers comprised in a record outfit embodying my invention. In this case the records are those of the bookkeeping department of a mercantile house having customers in various parts of the country. As shown in this figure, these records or entries are grouped alphabetically according to the customers' domiciles, and the records and entries for each customer extend transversely across the parallel series of record carriers or belts B B B, so as to form a transverse or laterally arranged group. Since all the record carriers or belts B are mounted on the same roller a, such transverse group can be brought to the inspection point at one movement of the roller, and, in fact, a number of succeeding lateral groups so arranged can be thus coincidently presented to view, an advantage which could not be obtained where the entries are arranged in groups longitudinally on a single carrier or belt. According to the character and extent of each individual group of records, thus transversely arranged, it may occupy only one carrier section b on each belt B, as in the upper entries in Figure 4, or it may occupy several sections b on each belt B, as indicated in the lower entries in said figure.

In the drawing I have shown mechanism in illustration of the means for winding the record carrier or carriers from one roller a to the other and reversely, particular reference being made to Figures 1 and 4. As shown particularly in Figure 1, the rollers or reels a are provided at one end with pulleys a^2, a^3, respectively. Belts a^5, a^6 pass over the pulleys a^2 and a^3, respectively, and thence around the driving pulleys E^1, E^2 loosely mounted on the main axle E, which at the outside of the casing A is provided with a crank E^3. The axle E is rotatably mounted in bearings e, e, and is capable of sliding

longitudinally in these bearings, and the pulleys E^1, E^2, are held against longitudinal displacement or shifting on the axle E by dogs e^1 e^2, engaging annular grooves on the collars e^{11}, e^{12}, respectively, of said pulleys E^1, E^2, respectively. The dog e^1 is mounted on and extends into the groove from a collar e^{21} loosely encircling the main axle E and connected by the standard support e^{22} mounted on and secured to the bottom of the casing A and extending upward therefrom. The dog e^2 is similarly mounted on the bearing e at the right of Figure 3. Keyed or otherwise secured to the main axle, between the two pulleys is a clutch-collar e^3 having serrated surfaces at opposide sides, which is adapted to engage alternately similar serrated surfaces on the clutch bosses e^{31} and e^{32}, respectively, formed on the pulleys E and E^1, respectively. The clutch collar e^3 being so spaced with respect to the said clutch-bosses, that when it is in engagement with one of these bosses, it is released from the other boss, and vice versa. In order to hold the shaft E against accidental longitudinal displacement, a spring dog e^4, mounted on the left hand bearing e extends forward to engage, either an annular groove e^5 or the inner edge e^6 of the collar e^7 keyed to axle E. In the instance shown, the axle being drawn outward, the dog e^4 is represented as engaging the groove e^5. The pulley E^1 is connected with the pulley a^2 by a crossed belt a^6 while pulley E^2 is connected with the pulley a^3 by a simple belt a^5.

The operation of this record carrier winding and unwinding device is apparent from the foregoing. When the axle E, shown in the drawn-out position indicated in Fig. 3, is thrust inward to the left, whereby the clutch-collar e^3 is brought into engagement with the clutch-boss e^{32} on pulley E^2, by turning the crank E^3 in the usual direction, the said pulley, through belt a^5 and pulley a^3, causes the record-carrier or belt B to be wound on the right-hand roller a. To reverse the movement and to wind the carrier B on the roller a^1 at the left in Fig. 1, the axle E is drawn outward until the clutch-collar e^3 clears the clutch-boss e^{32} and enters into engagement with the clutch-boss e^{31}, the spring-dog e^4 being thereby caused to slip into groove e^5 and over the edge e^6 of collar e^7. By then turning the crank in the same direction as before, the record carrier or belt B is reversed and wound on the other roller a. In order to keep the record carrier or belt sufficiently taut during this winding and unwinding operation, brake rollers F, F^1 are caused to bear on the surface of the reeled or wound up portions of the carriers, said rollers being mounted on springs f, f^1 secured to the casing A.

A table or plate H may be arranged below the opening or window C, and that portion of the carrier B which lies between the idlers G, G. This table serves as a support for the carrier, when it is desired to make any entry or inscription on one of its sections.

In Figure 18 I have represented an office or library desk or table equipped with three record assembling outfits according to my invention. These outfits may be arranged each for independent items of information, and placed so as to be manipulated each by a separate operator, or they may serve to receive and display interdependent matters of information and instruction and serving one general purpose, in which case they may be in charge of a single operator. As seen in this figure, the record assembling and displaying outfit A^1 is arranged within the desk or table, the cover c being substantially flush with the top of the same, while the apparatus A^2 is arranged within a casing extending outwardly from the side of the table. The apparatus A^3 is arranged within a drawer, mounted in the table, which may be drawn out for use, or slid back into the table frame when not in use, so as to be out of the way. In this manner an assemblage of records sufficient for all business purposes may be mounted on a desk or table, without encumbering the same and consistent with using the top of the same for other business purposes. This result is materially contributed to by the flexibility of the record carriers and the manner of mounting them according to my invention.

In Figure 4^a I represent another example of a record in which the groups or classes are arranged transversely of a series of parallel record belts or carriers mounted on the same roller. In this case the groups of authors arranged according to the alphabet extend across the series of record carriers, each group being thereby assembled so as to occupy a relatively small part of the length of the carriers. Thereby an entire alphabetical group may be brought to the display point at the same time.

What I claim and desire to secure by Letters-Patent is:

1. In a record assembling and display device, a system of detachable record carrying sections arranged in longitudinal and transverse series, and in fixed relation with respect to each other, each section being independently detachable from the adjoining sections in the longitudinal and in the transverse series.

2. In record assembling and display device a plurality of record carriers arranged side by side, the records being arranged in laterally fixed relation to each other, so as to form groups or classes which extend laterally or transversely on said plurality of carriers, in combination with means for

simultaneously shifting said record carriers longitudinally, to bring the desired group or class of records to the inspection or display point.

3. In a record assembling or display device, a plurality of bands or webs provided with records and arranged side by side and all mounted on a single winding roller and on a single unwinding roller, the records on said bands being arranged in groups or classes extending transversely or laterally across the series of bands or webs, in combination with means for rotating said roller to bring the desired group or class of records to the inspection or display point.

4. In a record assembling and display device, a system of detachable record-carrying sections arranged in longitudinal and transverse series, each section being independently detachable from the adjoining sections in the longitudinal and in the transverse series, in combination with means for simultaneously shifting the longitudinal series longitudinally, and for preventing the separate shifting of the said longitudinal series.

5. A record-carrier section provided with a resilient tongue adapted to engage a catch on an adjoining section and with a catch to engage a resilient tongue on an adjoining section.

6. A record-carrier section provided with a resilient tongue adapted to engage a catch on an adjoining section and a resilient catch to engage a tongue on an adjoining section.

7. A record carrier section provided at diagonally opposite points with coupling devices adapted to engage adjoining sections, the two remaining corners being provided with receivers for coupling devices of adjoining sections.

8. A record carrier section provided at diagonally opposite corners with coupling tongues, the two remaining corners being provided with catches for tongues of adjoining sections.

9. A record carrier section provided at opposite edges with stiffening strips, said stiffening strips each terminating in a coupling device.

10. A record carrier section provided at opposite edges with stiffening strips secured to said edges, each strip being provided at one end with a coupling tongue and at the other with a catch for the tongue of an adjoining section.

11. A record carrier section provided at each opposite edge with a resilient coupling tongue and with a catch for receiving the resilient tongue of an adjoining section.

12. A record carrying web or belt provided at its longitudinal edges with lateral pockets for receiving the ends of record strips or cards.

13. A record carrying web or belt provided with pockets at its edges and with intermediate pockets, said pockets being adapted to receive the ends of record strips or cards.

14. A record carrier section made of flat material and provided with lateral pockets for receiving the ends of removable record strips or cards.

15. A record carrier section made of flat material and provided with pockets at the lateral edges and intermediate pockets, and thereby adapted to receive the ends of a plurality of removable record strips or cards.

16. A record carrier or web comprising a plurality of record carrier sections, each of which sections is removably connected to each adjoining section, each section being provided with lateral pockets for receiving the ends of removable record slips or cards.

17. A record carrier or web comprising a plurality of record carrier sections removably connected in series, each section being formed of flat material bent over at the sides to form lateral pockets to receive the ends of removable record strips or cards.

18. A record carrier or web comprising a plurality of record carrier sections removably connected in series, each section being formed with lateral pockets at the sides and with intermediate pockets to receive the ends of a number of transversely arranged record cards or strips.

19. In a record storing and displaying apparatus, a pair of rollers for carrying a record-bearing web so as to be unwound from one roller to the other and vice versa, in combination with a rotary and longitudinally slidable axle, a pair of pulleys loosely mounted on said axle, coupling means mounted on the axle for alternately engaging one or the other pulley, a connection between one of the pulleys and one of the rollers arranged to drive the roller in the same direction as the axle and a connection between the other pulley and the other roller arranged to drive it in the opposite direction.

20. In a record storing and displaying apparatus, a pair of rollers for carrying a record-bearing web so as to be unwound from one roller onto the other and vice versa, and a rotary and longitudinally slidable axle, in combination with a pair of pulleys loosely mounted on the axle and provided with clutch-bosses facing one another, a simple belt connecting one of the pulleys with one of the rollers and a crossed belt connecting the other pulley with the other roller, and a clutch-collar mounted on the axle between the two clutch-bosses and so spaced as to be in engagement with only one of the clutch-bosses at one time.

21. A web or belt for displaying records or other indicia, and a pair of rollers over

which the web or belt is arranged to travel, in combination with a longitudinally slidable crank-axle, means movable independently of each other for operating each roller separately, and connecting means arranged between the slidable axle and the means for separately operating each roller, so arranged that one or the other of the roller-operating means is actuated according to the longitudinal position of the slidable crank-axle.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

STEPHEN OLOP.

Witnesses:
H. C. ROBB,
C. H. WAGNER.