March 20, 1928. 1,663,017

A. M. MARTIN

PARTITION SHEET FOR LOOSE LEAF DEVICES

Filed July 6, 1926

Fig. 1.

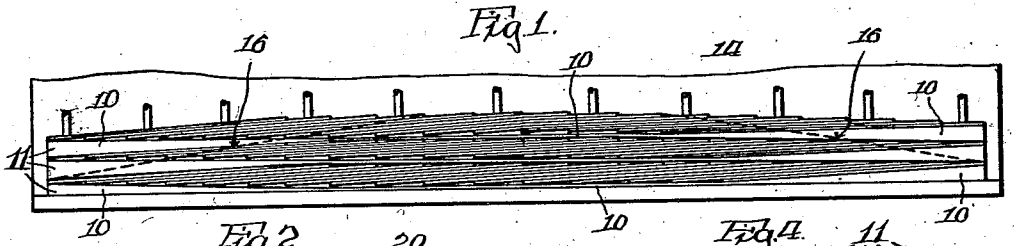

Fig. 2.

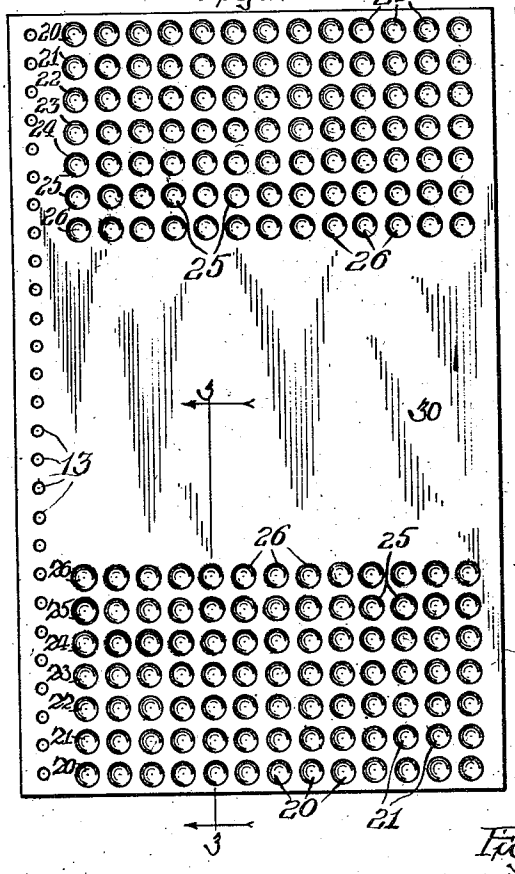

Fig. 4.

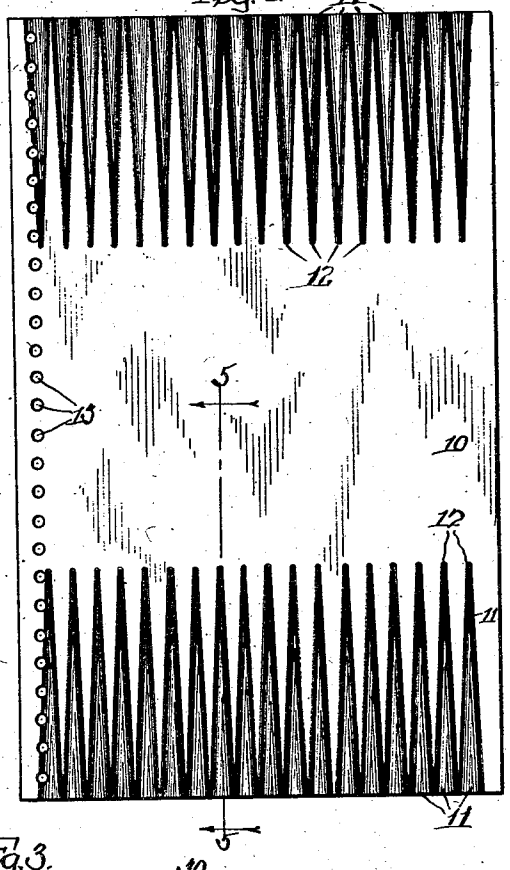

Fig. 3.

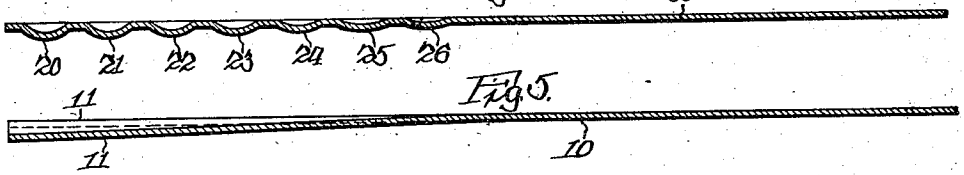

Fig. 5.

Fig. 6.

Inventor:
Alfred M. Martin
By Luther Johns
Atty.

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UNITED STATES PATENT OFFICE.

ALFRED M. MARTIN, OF CHICAGO, ILLINOIS.

PARTITION SHEET FOR LOOSE-LEAF DEVICES.

Application filed July 6, 1926. Serial No. 120,551.

My Patent No. 1,269,479 of June 11, 1918 on loose-leaf binders shows a type of loose-leaf binder with which the present partition sheet is peculiarly advantageous. In that patent Figs. 8 and 9 illustrate a form of partition sheet described therein as an indexed leaf for separating the account leaves.

In the present specification such "account leaves" will be described as cards. In practice such cards are of various sizes and are usually of paper stock of ordinary thickness. Their depth (from top to bottom) is such that they may be applied to the binder prongs in overlapped relation with a narrow portion of each card exposed, thus forming a series of such cards from top to bottom of the binder. Such overlapping of the cards causes the thickness of the series to build up gradually in the direction in which the cards or sheets are applied, reaching its maximum where there is a maximum of such cards overlapping each other, the thickness then diminishing toward the opposite end of the series. Ordinarily the greatest thickness of the series develops near the central portion, measuring from top to bottom.

A single binder may contain a large number of such series of overlapped sheets, say twenty-five or more. With the ordinary flat division or partition sheets between these respective series the book or binder device may be filled solidly throughout the middle portion thereof while at the top and bottom portions there is considerable space. This arises from the fact that at the very top and at the very bottom of the device there may be only say twenty-five of the cards between the two outer covers, while at the same time there may be in the middle two hundred and fifty or more of such cards between the opposed covers.

The object of the present improvements, like that of the device of Fig. 8 of my said patent, is to provide a division or partition sheet for such uses which will occupy space between adjacent series of the overlapped cards, preferably at both the top and bottom portions of the overlapping series, whereby each series will be maintained more nearly flat when the book is opened and therefore be more free of the upwardly bulging effect of the middle portion of the series, with certain advantages in practice such as a more free movement of the cards on the binder prongs, (the cards being relieved of a certain objectionable binding thereon due to the curvature of the series as pointed out), and since the cards lie more approximately flat making notations thereon is facilitated, and, further, one or several complete series of cards may be moved over bodily or en masse from one side of the book to the other more freely and more easily. In this connection it may be mentioned that the maintenance of such a more flat surface at the top of the series is of particular advantage in the act of writing on the upper cards since otherwise this upper portion of the series would slope downward and away from the writer. Such a slope may be to quite a great extent; for instance there may be a difference of more than an inch and a half between the thickness at the middle and at the ends in a binder designed for two-inch capacity.

While I had in mind these advantages in the division sheet shown in Fig. 8 of my said patent, I have found that such applied thicknesses as are therein illustrated have various objections, such as the working loose of the applied parts, the catching thereagainst of the overlapped cards in the device during manipulations, the unnecessary stiffness of the sheet and its lack of pliability in certain directions and at particular places, too great cost, and increased weight. The present improvements have for their specific objects the overcoming of those objections while providing the described advantageous results.

In the drawings Figure 1 is a fragmentary elevation of a binder which may be considered to be of the kind shown in my said patent and containing several series of overlapped cards and division sheets in their normal arrangement, the series of cards being shown in edge view at right angles to the longitudinal direction of the series respectively; Fig. 2 is a face view of a division sheet showing one type of embossed formations therein for increasing the effective thickness of the sheet at upper and lower portions thereof; Fig. 3 is a fragmentary section, on an enlarged scale, of a portion of Fig. 2 as on the line 3—3 thereof; Fig. 4 is a face view similar to that of Fig. 2 showing a division sheet having the preferred construction and arrangement of integral thickening means, here shown as embossed or pressed-up elements in tapered and continuous form; Fig. 5 is an enlarged

sectional view as on the line 5—5 of Fig. 4; and Fig. 6 is a fragmentary bottom edge view of the sheet of Fig. 4.

Referring first to the preferred construction of Figs. 4, 5 and 6, the partition sheet 10 is to be considered as being of paper stock of good quality and of such thickness as is ordinarily used for division sheets in loose-leaf binders. Ordinarily what is known as thirty-pound to thirty-four-pound stock is used for such purposes. At both top and bottom portions of sheet 10 the material is pressed out of its normally flat shape, preferably by means of heated dies and a preliminary application of steam, with rib-like projections 11 extending longitudinally up and down in substantially parallel arrangement and projecting away from the general plane of the sheet, forming a corrugated structure. Fig. 6 shows how the edge of the sheet has a sinuous formation and how these rib-like projections are formed alternately in the opposite sides of the sheet.

These rib-like formations 11 respectively decrease in relative height or projection away from the general plane of the sheet to a point 12, where they merge into the general plane of the sheet. With such an arrangement and construction the end portion of the sheet becomes gradually thickened effectively from some place which may be near the middle of the sheet toward the end. These long and narrow and preferably gradually widening and thickening projections 11 are preferably close together and extend from one side edge of the sheet to the other, excepting that where the holes 13 for the prongs occur the rib-like formation may be omitted, and the right-hand edge as shown in Fig. 4 may also be free of them for the purposes of applying index tabs thereto. The desideratum is to have the whole general area of the sheet at both the top and the bottom portions thereof well covered by such sheet-thickening formations, and to have the thickening effects produced in gradually increasing amounts from nothing to such an amount as is necessary for the desired results.

As to the amount of effective thickness which should be developed in the sheet, the maximum extent thereof, and where it should begin are variables depending upon such factors as the thickness of the cards being employed in a particular book or binder, the depth of such cards, and their particular arrangement with respect to the degree or amount of the part of each card exposed beyond the overlap of the next in the series. With cards of the thickness ordinarily employed the actual amount of effective thickness developed in each sheet is not very great, say only about one-sixteenth of an inch at the top and bottom. This matter of the effective thickness of the division sheets is not highly critical as the main object is to overcome the great disparity between the middle and ends of the book. Small variations from a truly flat shape of the series of cards are not important. It will be clear from a foregoing statement that the partition or division sheets 10 in Fig. 1 are shown there as thickening excessively at their end portions; but since for the sake of clearness the cards in the several series 14 are also shown excessively thick, for the sake of the illustration, the proportions for the sheets 10 are actually such as would be suitable where the proportions of the other parts of the structure are as shown in that figure. The dotted line 16 of Fig. 1 shows approximately how the several series of cards would sag downward at their ends with ordinary flat division sheets between them. Fig. 1 therefore illustrates how this objection is overcome by maintaining the several series of cards in a fairly flat shape through the use of division sheets as herein described.

The modification of Figs. 2 and 3 shows a plurality of circular and rounded projections as 20, 21, 22, 23, 24, 25 and 26 extending on one side only of the general plane of the sheet 30 and gradually decreasing in height from the maximum in the edge line of projections denominated 20 to the innermost line of projections denominated 26.

There are numerous up-and-down lines of such projections 20 to 26 inclusive, and such projections cover the whole general area of the end portions of the sheet. They produce a sheet which gradually becomes effectively thicker both toward the upper and the lower edges.

These circular projections, like those of Fig. 4, may be formed by dies, preferably with steam to soften the paper, according to practices well understood in the paper-forming art. A sheet so formed maintains its general shape quite well under conditions of use. Whether in accordance with Fig. 4 or Fig. 2, it has notable properties of flexibility. The cards do not catch upon such projections, and nothing has been added in weight to the sheet. The manufacturing operations are simple and of low cost.

I am aware of various other forms and arrangements of projections which may be employed, and I contemplate as being included herein all constructions which fall within the scope of the appended claims.

I claim:

1. A partition sheet for loose-leaf binders of the character described, said sheet being substantially rectangular and having side edges and top and bottom edges defining the substantially rectangular shape, the sheet having means at a side edge portion thereof for holding it in the binder, the upper and lower end portions of the sheet adjacent to

the top and bottom edges respectively being formed with integral projections extending over the whole general surface of such end portions respectively between said holding means and the opposite side edge and providing such end portions with an effective thickness greater than that of the normal thickness of the sheet material from which made, the middle portions in the up and down directions of the sheet between said end portions and between said holding means at one side edge portion and the side edge opposite thereto being free of such projections.

2. A partition sheet for loose-leaf binders of the character described, said sheet having means at a side edge portion thereof for holding the sheet in the binder, the upper and lower end portions of the sheet being formed with integral projections extending over the whole general surface of such end portions respectively and providing such end portions with an effective thickness greater than that of the normal thickness of the sheet material from which the partition sheet is made, said projections increasing gradually in height from positions nearer to the medial portion of the sheet toward the upper and the lower ends of the sheet respectively.

3. The combination of claim 2 hereof in which said projections are continuous and rib-like and extend substantially parallel with the side edges of the sheet.

ALFRED M. MARTIN.