

No. 823,934.

PATENTED JUNE 19, 1906.

F. B. DAVIDSON.
PAPER TRAY.

APPLICATION FILED AUG. 22, 1904.

2 SHEETS—SHEET 1.

Fig. 1

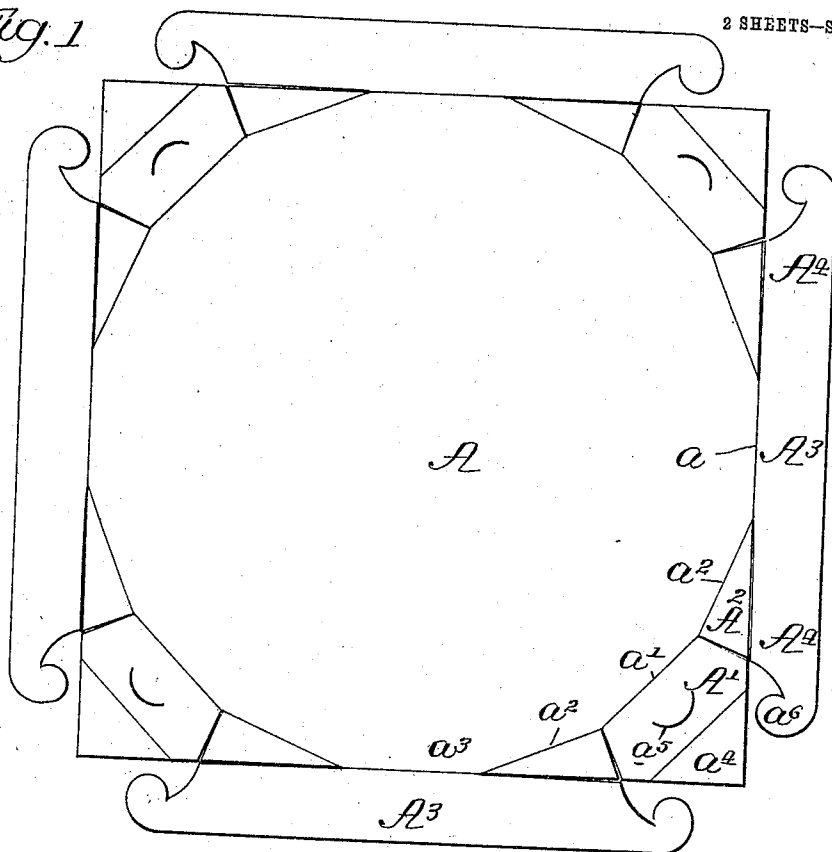
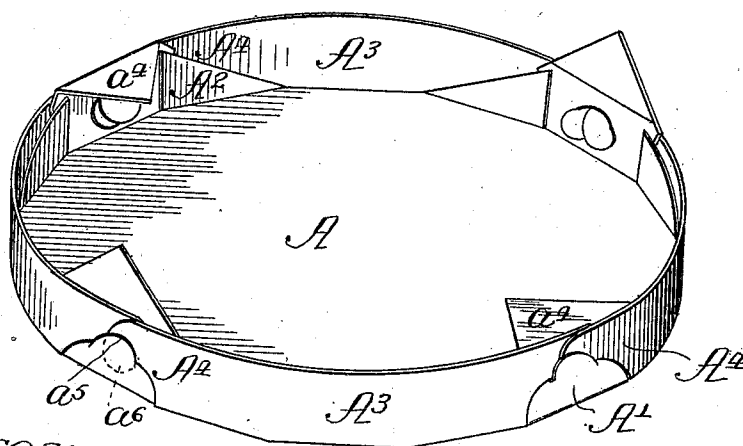


Fig. 2



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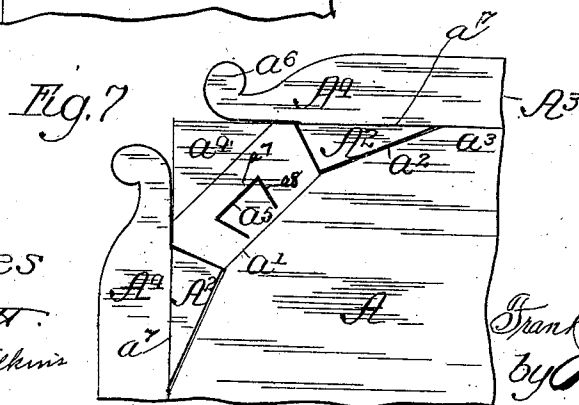
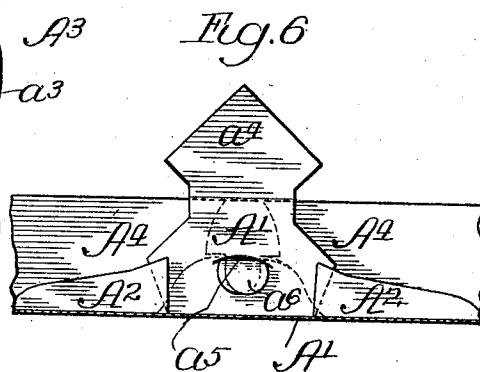
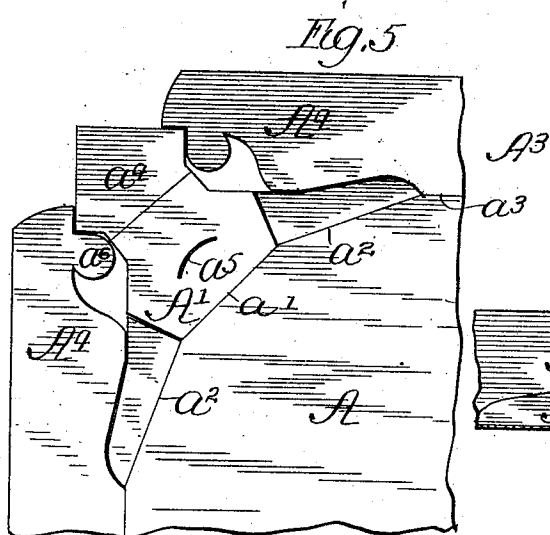
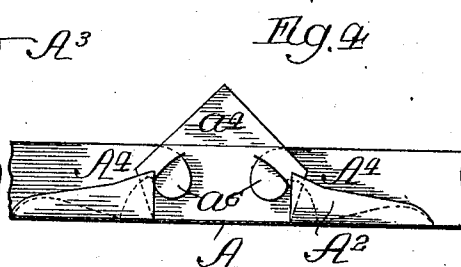
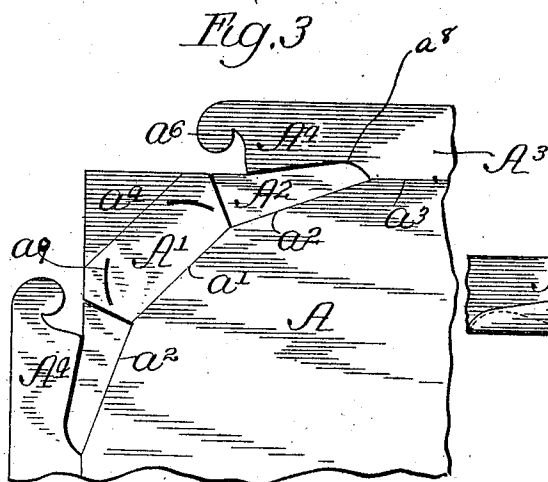
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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PAPER TRAY.

No. 823,934.

Specification of Letters Patent.

Patented June 19, 1906.

Application filed August 22, 1904. Serial No. 221,677.

To all whom it may concern:

Be it known that I, FRANK B. DAVIDSON, a citizen of the United States, residing at Marseilles, in the county of Lasalle and State of Illinois, have invented certain new and useful Improvements in Paper Trays; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in trays or like receptacles made of paper or other flexible material and provided with a flat bottom and a rim surrounding said bottom, the invention relating more particularly to that class of such trays in which the bottom and surrounding rim are made or constructed of a single flat piece, sheet, or blank.

The invention includes the blank from which such trays are made as well as the tray itself.

The tray herein illustrated is especially applicable for use in packing candies and like merchandise in pails, and when used in this manner the trays are filled and placed in a candy-pail one over the other, said trays thus serving as horizontal separators or partitions by which the layers of candy in the pail are separately supported. Trays having the same features of construction herein-after described may, however, be used for other purposes.

As shown in the accompanying drawings, Figure 1 is a plan view of a cut and scored blank from which my improved tray is formed. Fig. 2 is a perspective view of the finished tray. Fig. 3 is a view of part of a blank, showing a modified construction in the same. Fig. 4 is a sectional view taken through the bottom of the tray made from the blank shown in Fig. 3, illustrating one of the sets of flaps when folded to make the rim as viewed from the inner face of said rim. Fig. 5 is a view like Fig. 3, showing a blank slightly different from that shown in Figs. 1 and 3. Fig. 6 is a detail sectional view showing a part of the tray-rim made from the blank shown in Fig. 5 when the flaps are folded and interlocked as viewed from the inner face thereof. Fig. 7 is a view of part of

a blank differing slightly from that shown in the preceding figures.

As shown in said drawings, A, Fig. 1, designates a blank in flat form from which my improved tray is made. The blank is provided on its margin with a plurality of sets of marginal flaps which are symmetrically arranged and uniformly disposed about the margins of the blank, the particular blank illustrated having four of such sets of flaps. It is to be understood, however, that more or less than four sets may be employed, if desired. Each set of flaps consists of five flaps—namely, a center flap A', two intermediate flaps A² A² at either side of the center flap A', and two external flaps A³ A³, said flaps A³ A³ also co-acting with and serving as the external flaps of adjacent like sets of flaps. The said flaps A', A², and A³ are separated from the central or body part of the blank which constitutes the bottom of the finished box by means of straight score-lines a', a², and a³, arranged at right angles to radial lines of the blank and which are made of equal length and are arranged at equal distances radially from the center of the blank. The several flaps are adapted to be folded upwardly at right angles to the body of the blank along said score-lines to constitute the rim of the tray. Said score-lines being of equal length and arranged at uniform distances from the center of the blank, it follows that when the flaps are so folded upwardly along said score-lines the bottom of the tray will be substantially circular. The flaps A³ A³ are provided with straight lateral extensions A⁴, which when the blank is flat stand in line with each other and project tangentially from the margin of the blank outside of the shorter flaps A² A'. Said intermediate flaps A² A² are separated from the extensions A⁴ of the flaps A³ by lines of severance extending from the ends of the score-lines a³ in a direction generally parallel with the outer margins of the said flaps A³. The said intermediate flaps A² are separated from the main or central flap A' of the set by cuts or lines of severance which extend outward from the meeting ends of the score-lines a' and a² and which are shown as radially disposed, although they need not necessarily be radial. Said central flap A' is, moreover, made longer at its central part

than the other flaps or extends a greater distance radially from the center of the blank, so as to form an extension or tab a^4 , which is preferably separated from the body of the flap by a transverse score-line a^5 , located at a distance from the score-line a' equal to the width of the rim. The central flap A' is provided with a locking-slit a^5 , which in said Figs. 1 and 2 is shown as made of U form, while the ends of the projections A^4 on the flaps A^3 are provided with laterally and inwardly extending locking-tongues a^6 a^6 , adapted to engage the locking-slit a^5 .

When the tray is to be set up or formed from the blank cut and scored in the manner shown in Fig. 1, the intermediate sections A^2 A^2 are bent upwardly at right angles to the bottom along the score-lines a^2 a^2 , the central flap A' is then bent upwardly along the score-line a' , and the flaps A^3 A^3 are then bent upwardly along the score-lines a^3 a^3 and their extensions A^4 A^4 are brought into overlapping relation with the flaps A' and A^2 and are secured to the central flap by inserting the locking-tongues a^6 a^6 in the locking-slit a^5 .

It will be manifest from the above that when the flaps are folded upwardly and interlocked in the manner described a complete rim is formed on the bottom, as illustrated in Fig. 2, the interlocking connection of the ends of the extensions A^4 A^4 with the central flaps A' preventing the spreading apart of the meeting ends of the extensions A^4 A^4 , and thereby holding or locking the parts of the rim in a manner to hold all of the flaps in a position at right angles to the bottom and to prevent any outward movement thereof under pressure which may come upon the inner surface of the rim, as by contact of the contents of the tray therewith. The tabs a^4 when the central flaps are folded upwardly extend above the general line of the top of the rim formed by the several flaps and constitute lifting-handles by which the tray may be lifted from its place in the pail or inserted therein, as clearly seen in the perspective view, Fig. 2. The score-lines a^5 enable said tabs to be folded inwardly, as illustrated in the case of two of the flaps in Fig. 2, so that when the tray is placed in a pail the said tabs will not interfere with the placing of another tray in superposed relation thereto. The presence of the infolded tabs prevents a superposed tray from entering the top of a tray beneath it, or, in other words, said tabs when folded inwardly constitute supports for a superposed tray, preventing the latter from crushing the contents of the tray on which it rests. When the blank, as shown in Fig. 1, is provided with four sets of flaps, its exterior lines conform practically to a square figure, so that the blank may be cut from sheets of rectangular form with very little waste.

In the slightly-modified construction shown in Figs. 3 and 4 the parts are made generally in the same manner as hereinbefore described. In this instance the line of severance forming the external margins of the flaps A^2 are not made in the form of straight continuations of the score-lines a^2 , but are deflected or curved outwardly, as indicated at a^8 , from the meeting ends of the score-lines a^2 and a^3 , so that the said outer margin of the flaps A^2 intersect the score-lines a^2 at the bases of the said flaps at angles much less acute than in the case of the construction shown in Fig. 1. This construction considerably facilitates the folding upwardly of said intermediate flaps A^2 , because making the narrower ends of the said flaps wider and therefore more rigid than in the construction shown in Fig. 1. In the construction shown in said Figs. 3 and 4, moreover, the central flap A' instead of having a single locking-slit is provided near its ends with two separate locking-slits a^9 a^9 , while the extensions A^4 of the flaps A^3 are made correspondingly shorter and of such length that the locking-tongue a^6 thereon will come into position to engage said slits a^9 a^9 when the parts are brought into folded position, as shown in Fig. 4. The result obtained in the construction shown in Figs. 3 and 4, so far as the interlocking of the flaps is concerned, is manifestly the same as that obtained by that illustrated in Figs. 1 and 2 of the drawings, it being manifest that in all forms of device the extensions A^4 A^4 are held in place by the interlocking engagement of the ends of said extensions A^4 A^4 with the central flap A' .

In the construction shown in Figs. 5 and 6 the same features of construction shown in Figs. 1 and 2 are present; but the central flap A' and the flaps A^3 are made longer and the extensions A^4 A^4 wider, so as to make a deeper rim on the tray. The parts of said central flap A' between the tabs a^4 and the body of the flap are made narrower than the tab, and the locking-tongues a^6 are cut from the parts of the sheet at the sides of said narrowed portion, while the said tab is formed from the corner portion of the sheet located between the ends of the extensions A^4 A^4 .

In the blank shown in Fig. 7 the parts are made generally as hereinbefore described. In this case the locking-tongues a^6 on the extensions A^4 project outwardly instead of inwardly, while the slit in the central tongue A' is formed by a straight slit a^7 and two inwardly-converging slits a^8 a^8 , forming an outwardly-extending dovetail tongue. In this construction the inner margins of the locking-tongues a^6 engage the ends of the main slit a^7 , and the free end of the tongue is adapted to be readily pressed inward with the finger, so that said locking-tongues may be readily engaged with said slit. Fig. 7 also illustrates a modified feature of construction in the flaps

$A^2 A^2$, which may be applied to any of the forms of the blank and tray shown in the drawings. Said flaps $A^2 A^2$, as shown in Fig. 7, are joined to the extensions $A^4 A^4$ and are separated or severed from the central part or body of the tray. Score-lines $a^7 a^7$, forming straight extensions of the score-lines $a^3 a^3$, separate the said flaps $A^2 A^2$ from the extensions $A^4 A^4$, and in setting up the tray the flaps $A^2 A^2$ are folded inwardly along the said score-lines $a^7 a^7$, so as to overlap and rest upon the upper surface of the tray-bottom. The general result obtained when the flaps $A^2 A^2$ are thus joined to the extensions $A^4 A^4$ is manifestly the same as when the said flaps $A^2 A^2$ are joined to the central part of the blank or tray-bottom.

I claim as my invention—

1. A tray of substantially circular outline made of a single square sheet and comprising a flat bottom and four sets of marginal flaps, all of which are folded upwardly from the bottom at right angles thereto on folding-lines of equal length which are equidistant from the center of the bottom and at right angles to radial lines thereof, each set embracing a central flap located at one corner of the sheet, intermediate flaps adjacent to said central flap at opposite sides thereof, and exterior flaps, each of which is located at the center of one side of the sheet, and is provided with lateral straight extensions, which in the flat sheet extend outside of said intermediate flaps, and which in the completed tray are arranged in overlapping relation with the intermediate flaps and the central flap and the ends of which are secured to and joined by said central flap, so as to form a substantially continuous rim extending entirely around the said bottom.

2. A tray of substantially circular outline made of a single square sheet and comprising a flat bottom and four sets of marginal flaps all of which are folded upwardly from the bottom at right angles thereto on folding-lines of equal length which are equidistant

from the center of the bottom and at right angles to radial lines thereof, each set embracing a central flap located at one corner of the sheet, intermediate flaps adjacent to said central flaps at either side thereof, and exterior flaps, each of which is located at the center of one side of the sheet and is provided with lateral straight extensions which in the flat sheet extend outside of said intermediate flaps, and which in the completed tray are arranged in overlapping relation with the intermediate flaps and the central flap, the ends of said straight extensions on the exterior flaps and the central flap being provided with slits and tongues by which said extensions may be interlocked with said central flaps, to constitute a substantially continuous annular rim extending entirely around said bottom.

3. A blank for a tray which is substantially square in form and is provided with four sets of marginal flaps separated from the central part or body of the blank by score-lines of equal length arranged at equal distances from the center of the blank and at right angles to radial lines of the blank, each set of flaps comprising a central flap located at one corner of the blank, intermediate flaps adjacent to and at opposite sides of said central flap, and exterior flaps each of which is located at the center of one of the straight sides of the blank and is provided with oppositely-projecting lateral extensions located outside of the said intermediate flaps and separated from the said intermediate flaps by outwardly-deflected lines of severance adapted to give considerable width to the narrower ends of said intermediate flaps.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 19th day of August, A. D. 1904.

FRANK B. DAVIDSON.

Witnesses:

FRANCIS M. IRELAND,
MINA MASSEY.