

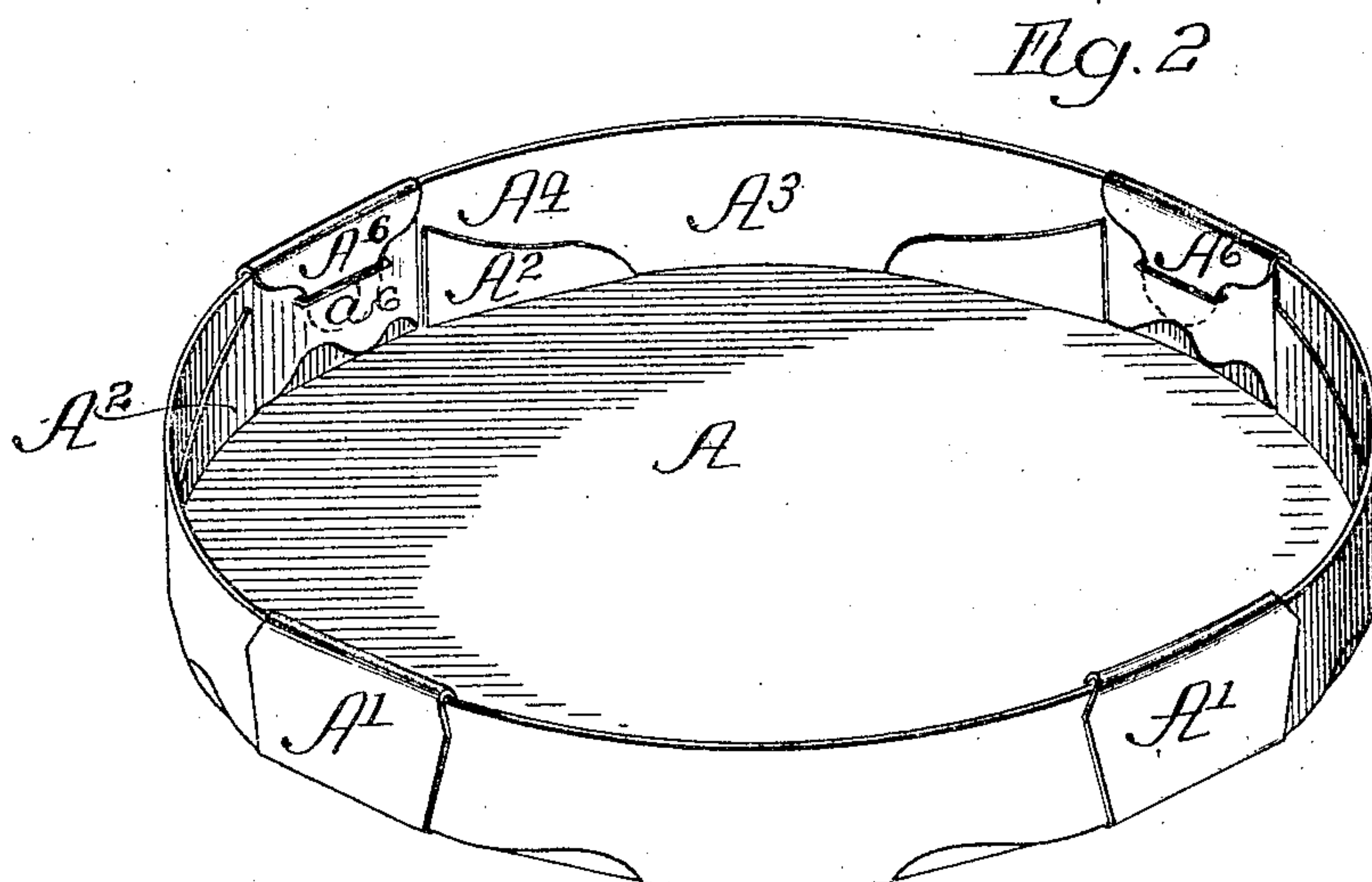
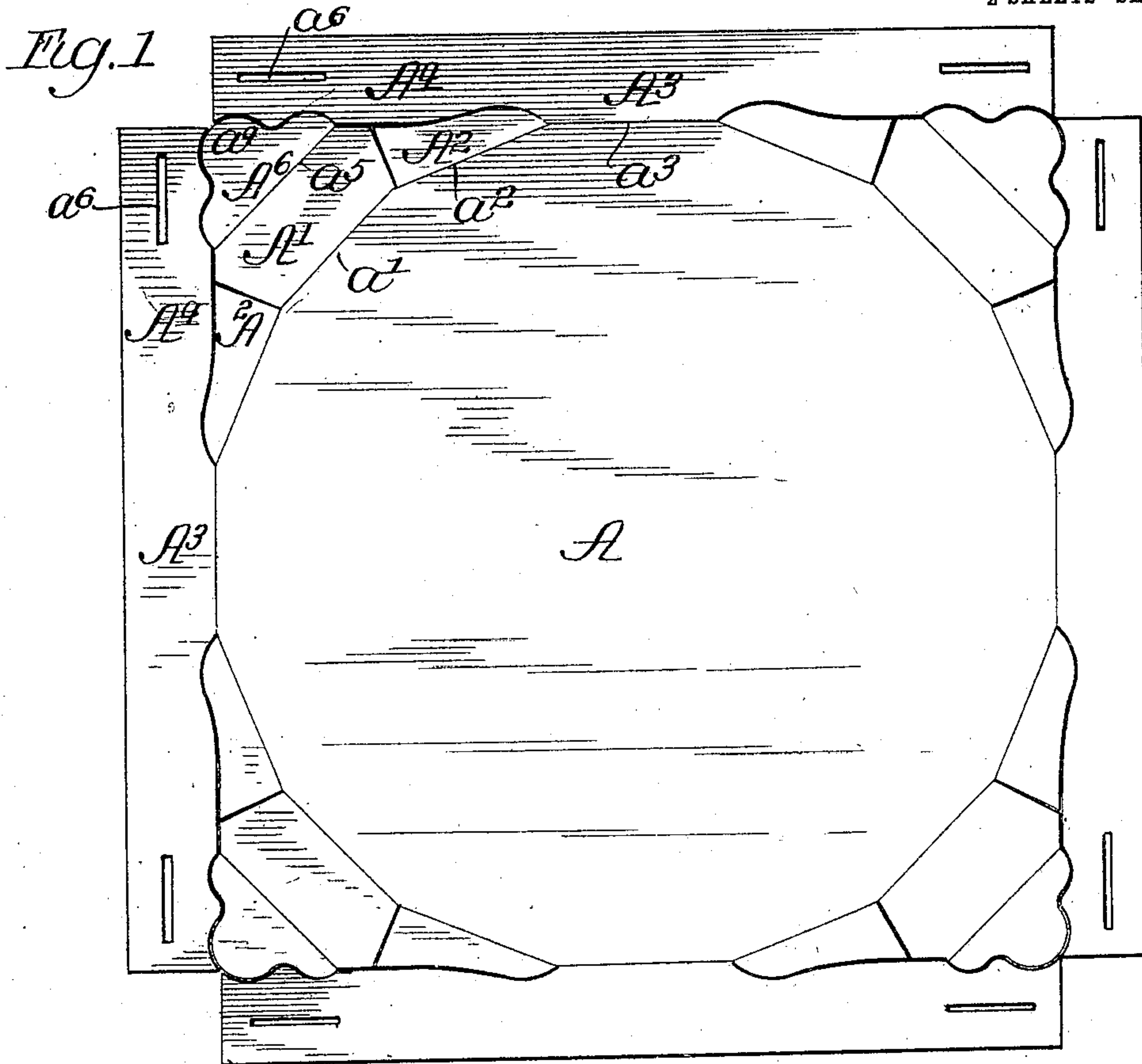
No. 836,923.

PATENTED NOV. 27, 1906.

F. B. DAVIDSON.  
PAPER TRAY.

APPLICATION FILED AUG. 22, 1904.

2 SHEETS—SHEET 1.



Witnesses  
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*George R. Wilkins*

Inventor:  
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his Attys

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Fig. 3

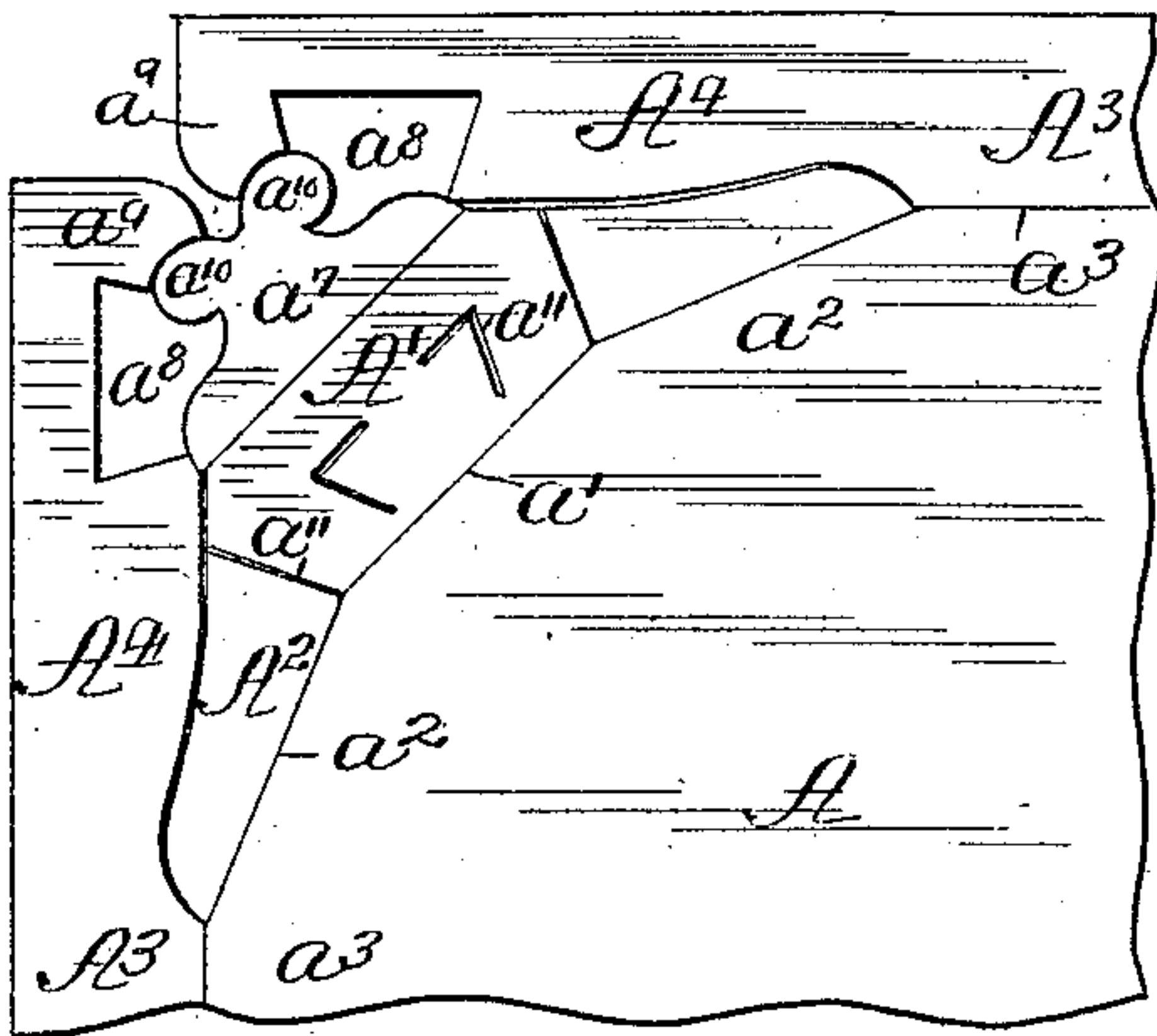


Fig. 4

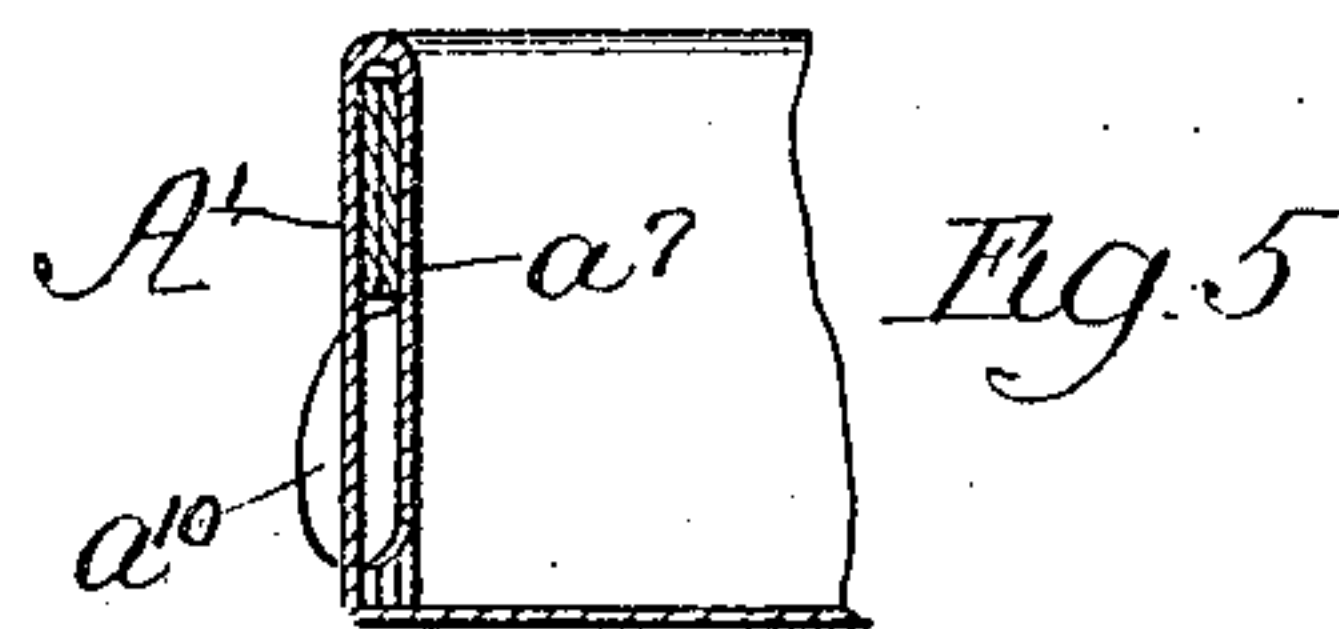
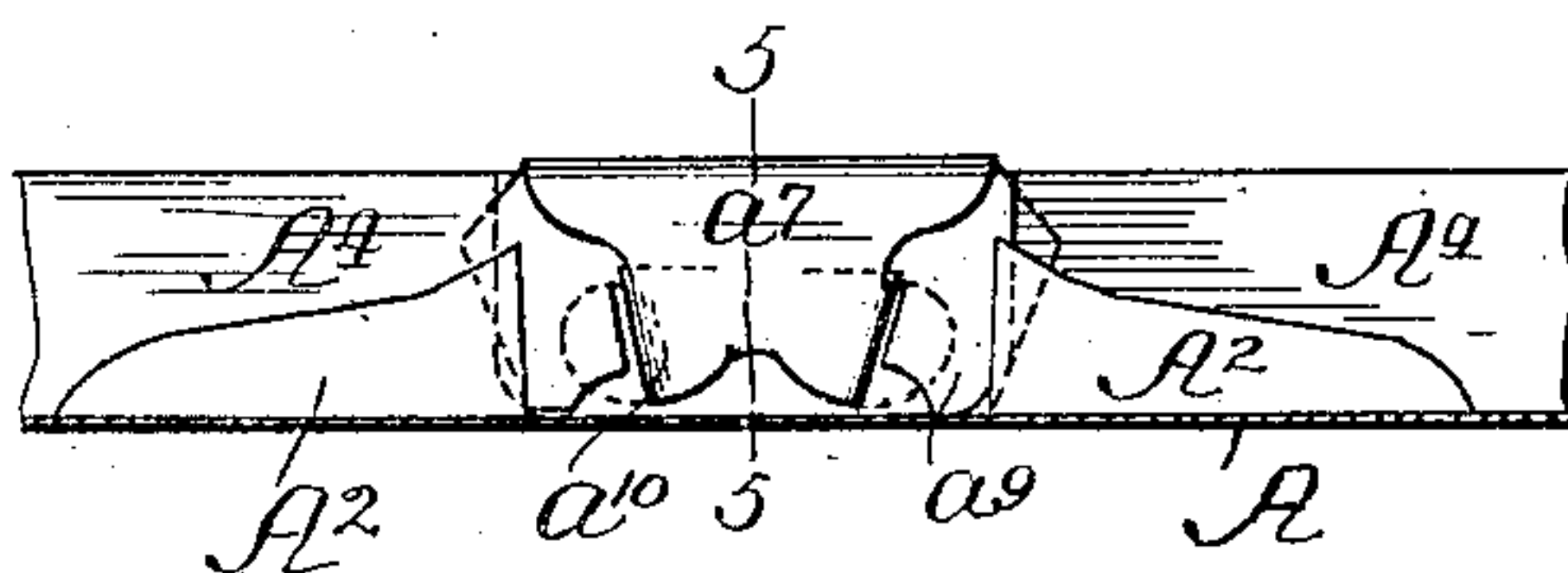


Fig. 6

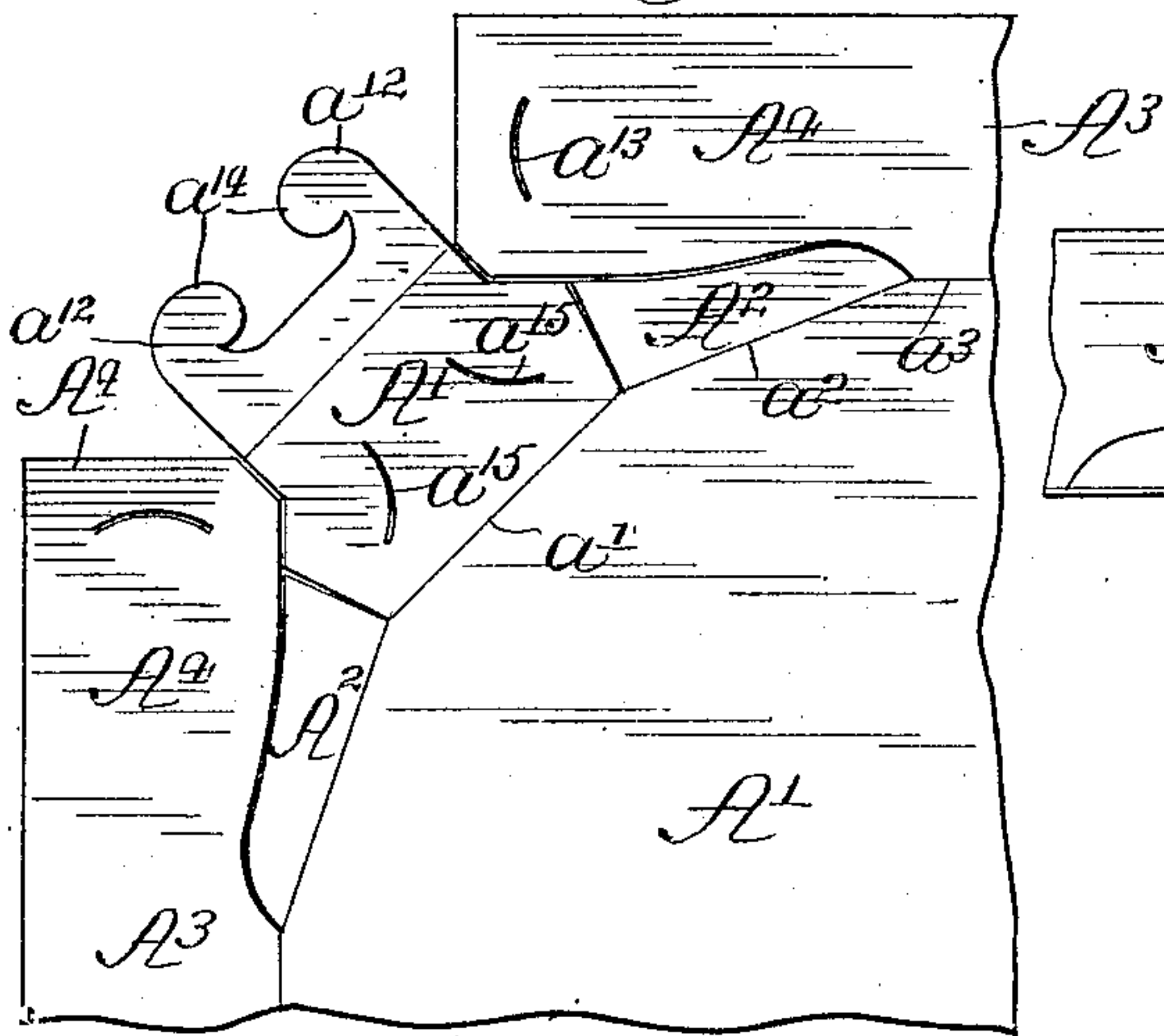


Fig. 7

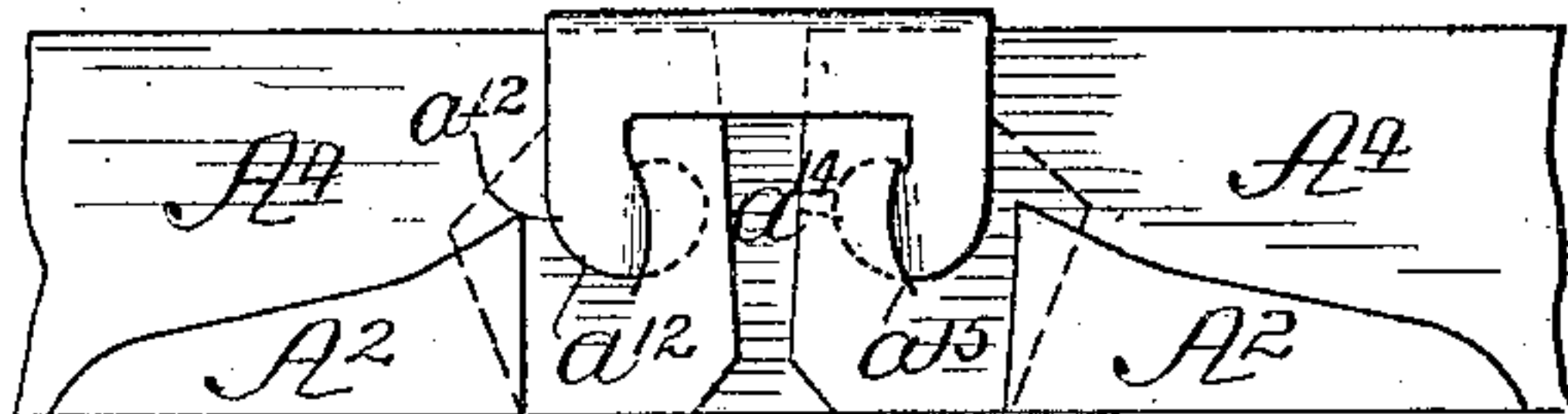
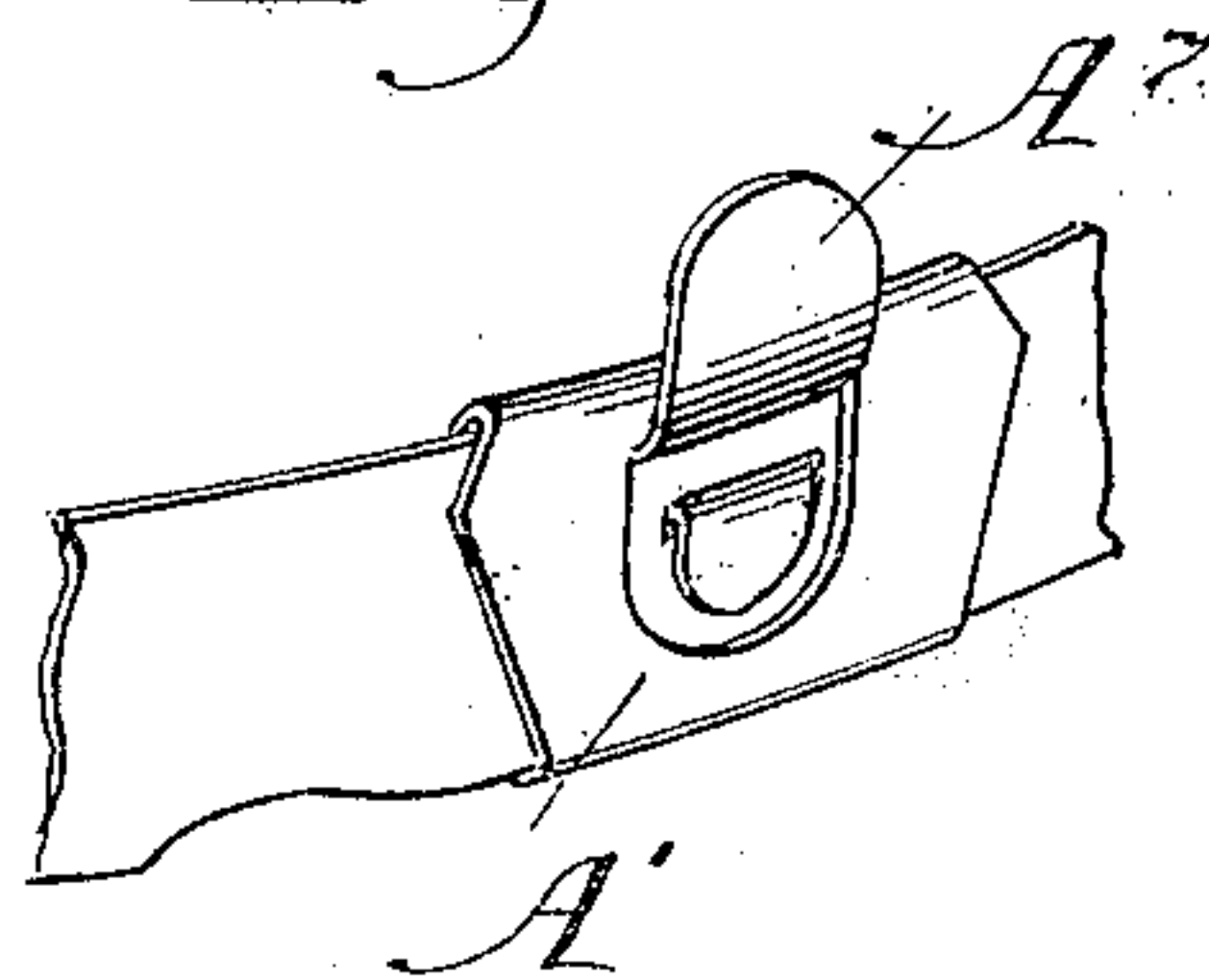


Fig. 8



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# UNITED STATES PATENT OFFICE.

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## PAPER TRAY.

No. 836,923.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed August 22, 1904. Serial No. 221,679.

*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 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 made from the blank shown in Fig. 1. 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 cross-section taken on line 5 5 of Fig. 4. Fig. 6 is a view like Fig. 3, showing a blank slightly different from that shown in Figs. 1 and 3. Fig. 7 is a detail sectional view showing a part of the tray-rim made from the blank shown in Fig. 6 when the flaps are folded and interlocked, as viewed from the

inner face thereof. Fig. 8 is a perspective view of part of the rim of the tray shown in Figs. 1 and 2, showing a lifting-tab cut from the central flap.

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 a corner-flap  $A'$ , two intermediate flaps  $A^2 A^2$  at either side of the corner-flap  $A'$ , and two side flaps  $A^3 A^3$ , said side flaps  $A^3 A^3$  also coacting with and serving as the side flaps of adjacent like sets of flaps. The said flaps  $A'$ ,  $A^2$ , and  $A^3$  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  $a'$ ,  $a^2$ , and  $a^3$ , arranged at right angles to radial lines of the blank. Said score-lines 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 side flaps  $A^3 A^3$  are provided with straight lateral extensions  $A^4$ , which when the blank is flat stand in line with each other and project tangentially from the margin of the blank outside of the flaps  $A^2 A^2$ . Said intermediate flaps  $A^2 A^2$  are separated from the extensions  $A^4$  of the flaps  $A^3$  by lines of severance extending from the ends of the score-lines  $a^3$  in a direction generally parallel with the outer margins of the said flaps  $A^3$ . The said intermediate flaps  $A^2$  are separated from the main or corner-flap  $A'$  of the set by cuts or lines of severance which extend outward from the meeting ends of the score-lines  $a'$  and  $a^2$  and which are shown as radially disposed although they need not necessarily be radial. Said corner-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 a locking-tongue  $a^4$ . Said locking-tongue  $a^4$  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 lateral extensions  $A^4 A^4$  of the flaps  $A^3 A^3$  are provided with locking-slits  $a^6 a^6$  which, in said Figs. 1 and 2, are shown as extending longitudinally of said extensions.

When a 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 corner-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 outside of the intermediate flaps  $A^2 A^2$ , but inside of the corner-flap  $A'$ . The ends of said extensions are adapted to overlap with the slits  $a^6 a^6$  therein opposite or in register with each other and when said ends of the flaps are so placed and overlapped the locking-tongue  $a^4$  is folded downwardly and inwardly and its end is inserted through the said slits  $a^6 a^6$  of both of said extensions, as clearly seen in Fig. 2.

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  $A^4 A^4$  afforded by the insertion through the slits  $a^6 a^6$  of the tongue  $a^4$  on the corner-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.

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 corner-flap  $A'$  is provided with a locking-tongue  $a^7$  and the ends of the extensions  $A^4 A^4$  with notches  $a^8 a^8$ , which extend inwardly from the side margin thereof near their ends and form at the ends of the extensions laterally-extending tongues  $a^9 a^9$ , adapted to engage the opposite side margins of the tongue  $a^7$  when the latter is folded inwardly over the overlapped ends of the said extensions. The notches  $a^8 a^8$  are

made wide enough to receive the tongue  $a^7$  when the same is folded inwardly. To hold the said tongue  $a^7$  in its infolded position, it is notched at its side edges to form laterally-extending tabs  $a^{10} a^{10}$ , which are adapted to enter slits  $a^{11} a^{11}$  in the corner-flap  $A'$ , the parts being so arranged that when the tongue is folded in and the tabs  $a^{10} a^{10}$  inserted in the slits  $a^{11} a^{11}$  the tongues  $a^9 a^9$  on the extensions  $A^4 A^4$  will engage at their inner edges the lateral notches in the tongue  $a^7$ , Fig. 4, so that each tongue  $a^9$  will be interlocked with the side edge of the tongue  $a^7$ , while the said tongue  $a^7$  will be interlocked with the body of the flap  $A'$  by the engagement of the tabs  $a^{10} a^{10}$  with said slits  $a^{11} a^{11}$ . In this construction, as in that shown in Figs. 1 and 2, the meeting ends of both extensions  $A^4 A^4$  will be engaged with an infolded tongue on the corner-flap and will be held thereby from separating or spreading apart.

In the construction shown in Figs. 6 and 7 the corner-flap  $A'$  instead of having a single locking-tongue is provided with two separate locking-tongues  $a^{12} a^{12}$ , while the extensions  $A^4$  of the flaps  $A^3$  are made shorter and of such length that their ends do not meet or overlap, but will come into position to separately engage said tongues  $a^{12} a^{12}$  when the parts are brought into folded position, as shown in Fig. 7. In this case, as in the construction shown in Figs. 3, 4, and 5, the tongues which engage the ends of the extensions  $A^4 A^4$  have interlocking engagement with the flap  $A'$  to hold them in their folded position. As shown, the tongues  $a^{12} a^{12}$  are adapted to engage slits  $a^{13} a^{13}$ , formed in the extensions  $A^4 A^4$  near the ends thereof, the slits  $a^{13} a^{13}$  in the instance illustrated being arranged transversely of the extensions  $A^4 A^4$  and adapted to engage the tongues by the insertion therethrough of lateral inwardly-extending tabs  $a^{14} a^{14}$  on the tongues, while the corner-flap  $A'$  is provided with two slits  $a^{15} a^{15}$ , through which the tabs  $a^{14} a^{14}$  are inserted after passing through the said slits  $a^{13} a^{13}$  in the said extensions.

In Fig. 8 I have shown a modification of the construction shown in Figs. 1 and 2, designed to provide lifting tongues or tabs which project above the upper edge of the rim of the tray to facilitate the insertion of the trays within and their removal from the pail in which they are placed. As shown in said Fig. 8, the corner-flap  $A'$  is provided with a U-shaped line of severance, the ends of which are located near the upper margin of the body of said flap and the central part of which is directed downwardly or toward the bottom of the tray. Such line of severance forms a U-shaped flap  $A^7$ , which when folded upwardly projects above the folded upper edge of the said flap and above the margin of the tray-rim, so that it may be easily grasped by the fingers in lifting the tray.



I claim as my invention—

1. A substantially circular tray 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 on folding-lines of equal length, equidistant from the center of the bottom and at right angles to the radial lines thereof; said flaps embracing four corner-flaps at the corners of the sheet, provided with folding tongues, four side flaps at the centers of the straight sides of the sheet provided with lateral projecting straight extensions, and intermediate flaps located at opposite sides of the said corner-flaps, said corner-flaps and the intermediate flaps in the flat sheet occupying the spaces at the corners of the sheet inside of the said lateral straight extensions and the said lateral straight extensions in the completed tray being arranged in overlapping relation with the intermediate flaps and the corner-flaps and the ends of said straight extensions being interlocked with the tongues of the corner-flaps.

2. A tray of substantially circular outline made of a single square sheet and comprising a flat bottom and four sets of marginal flaps

which are folded upwardly from the bottom on folding-lines of equal length equidistant from the center of the bottom and at right angles to radial lines thereof, said flaps embracing four corner-flaps at the corners of the sheets provided with folding tongues, four side flaps at the centers of the straight sides of the sheet provided with oppositely-projecting lateral straight extensions and intermediate flaps at the opposite sides of the said corner-flaps, said straight, lateral extensions being interlocked with the tongues on the corner-flaps and said corner-flaps being provided with U-shaped lines of severance forming tabs the bases of which are joined to the outer parts of the corner-flaps so that said tabs may be folded upwardly and will extend above the upper margin of the tray-rim.

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.