

Aug. 29, 1944.

J. P. GITS

2,356,926

MATCH CASE

Filed April 22, 1942

2 Sheets-Sheet 1

Fig. 1.

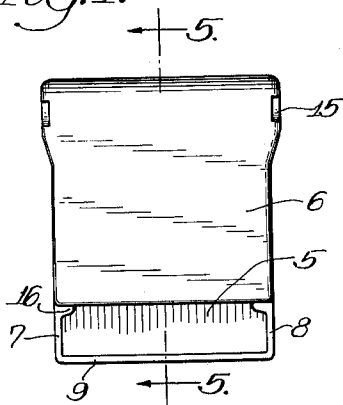


Fig. 4.

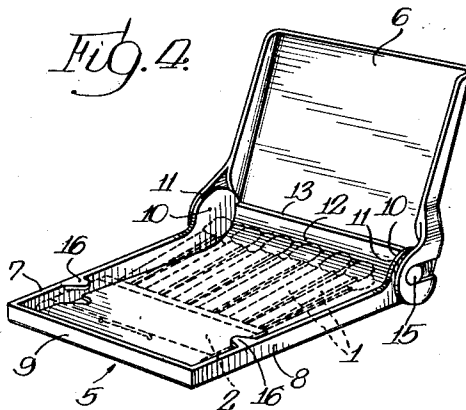


Fig. 2.

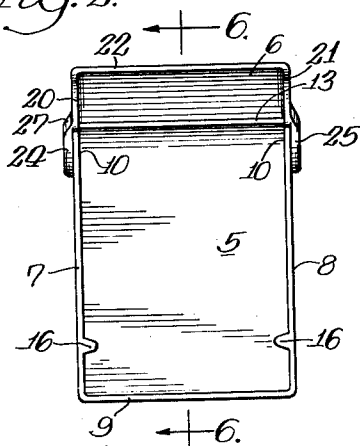


Fig. 5.

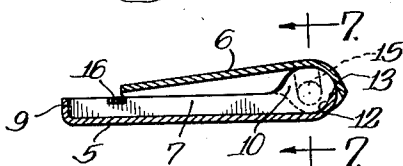


Fig. 6.

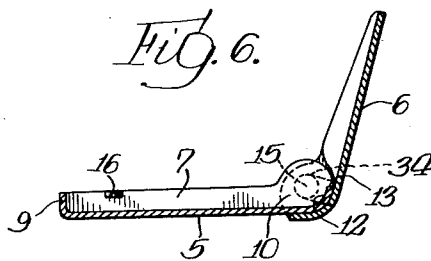


Fig. 3.

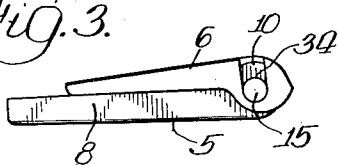
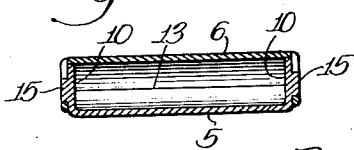


Fig. 7.



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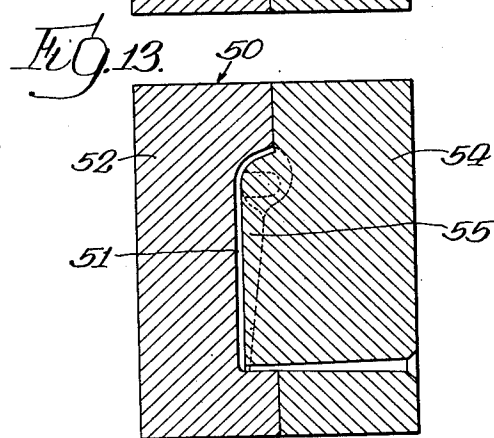
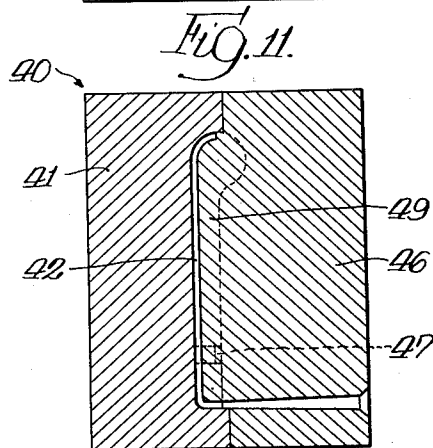
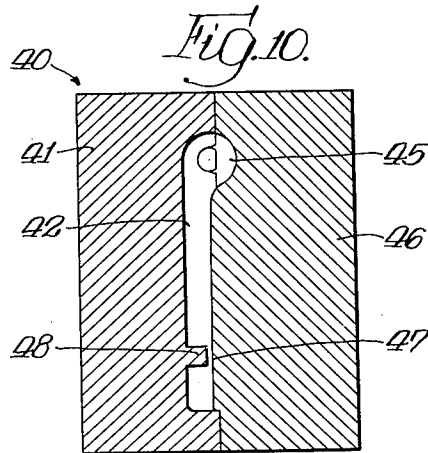
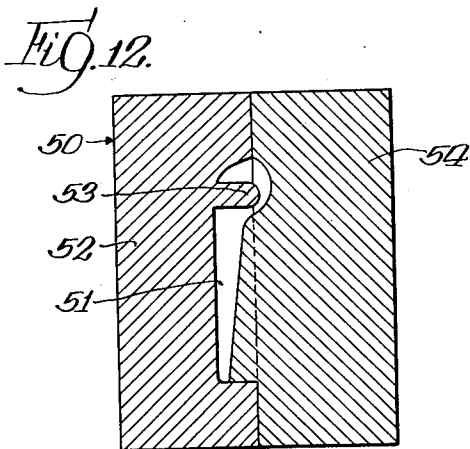
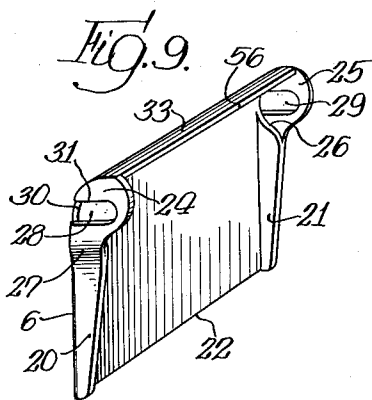
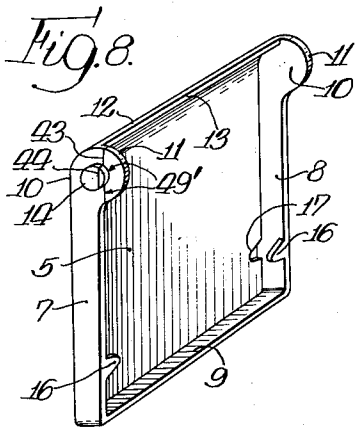
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MATCH CASE

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,356,926

## MATCH CASE

Jules P. Gits, Chicago, Ill., assignor, by mesne assignments, to Joseph A. Gits, Chicago, Ill., and himself

Application April 22, 1942, Serial No. 439,960

5 Claims. (Cl. 220—31)

This invention relates to a new and novel form of match box adapted to be molded of plastic material and designed to carry matches arranged in book form.

An object of the present invention is to construct a match box of this type in a form that is simple and practical and admits of single molding operations for each part by dies of inexpensive and simple construction whereby the cost of producing the same is reduced to a minimum and an efficient structure is obtained. The parts of a device of this type usually comprise a base and a cover arranged in hinged relation at one end to permit opening of the cover when a match is removed. Due to the hinge construction that must be employed, reentrant portions and projections are formed that have heretofore presented a real problem in die construction. The greatest difficulty is the manual labor involved in separating parts of the die after each operation is completed and in replacing them before another operation is commenced. Such reentrant portions and projections compelled the use of complicated and expensive dies which were costly to construct and required a number of manual operations each time a part was molded. These manual operations likewise increased the cost of production and a structure was produced that was not of simple form.

This invention is directed to a molded match box that eliminates such reentrant portions and projections whereby a die may be used that molds each part of the match box by a simple operation, the die merely opening and closing along its line separation between the matrix and patris without requiring separate removable parts, such as pins, or a construction that is expensive and laborious to handle. Hence, merely a simple form of die is needed and the complicated compound dies heretofore required are dispensed with.

A still further object of the invention is directed to the provision of a structure of the type described that will be efficient in use and meet the requirement of a pleasing appearance which devices of this type must have in order to be acceptable commercially.

Other objects and advantages of the invention will be apparent from the following detail description when taken in connection with the accompanying drawings which form a part hereof.

In the drawings:

Figure 1 is a top elevational view of a match box embodying the invention;

Fig. 2 is a similar view but with the cover of the match box open;

Fig. 3 is a side elevational view of the match box;

Fig. 4 is a perspective view of the match box with the cover open and illustrating in dotted lines a book of matches inserted therein;

Fig. 5 is a sectional view taken along line 5—5 of Fig. 1;

Fig. 6 is a similar sectional view taken along line 6—6 of Fig. 2;

Fig. 7 is a transverse sectional view through the hinge construction of the device, the section being taken along line 7—7 of Fig. 5;

Fig. 8 is a perspective view of the base of the match box;

Fig. 9 is a perspective view of the cover of the match box;

Fig. 10 is a sectional view through the die adapted to mold the base, the section being taken through the plane intercepting the die cavity of the side wall or flange;

Fig. 11 is a section of the same die taken in a plane intercepting the cavity forming the main wall thereof;

Fig. 12 is a sectional view of a die adapted to mold the cover, the section taken along a plane intercepting the cavity for forming one of the side flanges; and

Fig. 13 is a similar view of the die along a plane intercepting the main wall of the cover.

The match box disclosed herein is of a type particularly adapted to receive and carry matches arranged in the well known book form of several rows, as shown in dotted lines at 1 in Fig. 4, and attached to a backing provided with a striking surface at the lower front, as indicated at 2. When matches arranged in this manner are inserted in a receptacle of the type herein disclosed, an extension of the backing forming a cover is usually torn away so as to expose the matches when the cover of the receptacle is open.

As illustrated in the drawings, the match box comprises a base 5 of receptacle formation and a cover 6 hingedly connected at one end of this base. Base 5 is provided with opposite inwardly turned side flanges 7 and 8, and a similarly formed bottom flange 9. At the opposite end, flanges 7 and 8 terminate in ears 10 having generally curved edges 11. An inwardly turned flange portion 12 is formed crosswise as a continuation of ears 10, this flange portion 12 ending at edge 13. Edge 13 may lie in a plane substantially intercepting the vertical diameter 55 of a pair of opposed pivot pins 14 and 15 extend-

ing outwardly from ears 10 and at right angles to the outer surface thereof, the vertical diameter as used herein referring to the vertical diameter of these pivot pins when positioned as shown in Fig. 8. For a purpose to be explained later, these pins are, however, of slightly greater dimension along the horizontal diameter, thus causing them to be humped at one point or somewhat elongated in cross section. This is not essential, however, in so far as the general concept of the invention is concerned. The depth of flanges 7, 8 and 9 represents the depth of the base and determines the thickness of the match book that may be inserted.

Locking ears 16 extend crosswise of the base from the lower ends of side flanges 7 and 8 for holding the match box within the base, the openings 17 in base 5 to the rear of these lugs being provided in the forming operation so that these lugs may be formed upon base 5 during the molding operation and a removable core pin not required to form the reentrant portion to the rear of the ears 16. The die used to mold base 5 is shown in Figs. 10 and 11 and will be described later.

Cover 6 is also provided with opposite inwardly turned side flanges 20 and 21 that preferably begin at lower edge 22 and increase in width until they merge with offset ears 24 and 25, the edges of side flanges 20 and 21 continuing at 26 upwardly within these ears and ending against the inside face of the cover. These ears 24 and 25 are offset at 27 with respect to the plane of flanges 20 and 21 to permit ears 10 of base 5 to lie in this plane and have their edges 11 ride upon the edges 26 as the cover 6 is swung about pivot pins 14 and 15. This is accomplished by forming slots 28 and 29 in ears 24 and 25 to receive and retain pivot pins 14 and 15. These slots are open at their ends 30 or at the outer face of the cover and their sides 31 are substantially perpendicular to this outer face. Thus, the cores that form these openings may be carried upon the matrix or patric of the die unit, depending upon the part in which the die cavity is formed, and be integral with this part so that upon the opening of the die, these cores will be moved out and not require separate operations to be removed. An inwardly turned curved portion 33 is also provided crosswise of the cover at this end and formed integral with ears 24 and 25.

When cover 6 is pivotally mounted upon base 5, this inwardly curved portion 33 will ride upon curved portion 12 in overlapping relation. Ears 24 and 25 on cover 6 will also overlap ears 10 on base 5, the edges 11 of ears 10 riding upon the edges 26 adjacent the inside faces of ears 24 and 25. As previously explained, pins 14 and 15 are of slightly greater dimension along one of their diameters, being the horizontal diameter as shown in Fig. 8, which, however, lies lengthwise of the slots 28 and 29 when cover 6 is in closed position as shown in Fig. 3. Consequently, when the cover 6 is moved to open position, as shown in Figs. 4 and 6, the portions 34 of these pins 14 and 15 representing the added material producing this elongation will cause the pins to bindingly engage the sides 31 of the slots 28 and 29 and thus hold the cover in open position. The pliable character of the plastic material that may be used to form base 5 and cover 6 will cause yielding of the parts sufficiently to present any permanent deformation, and consequently, the parts will return to normal position when the cover is closed and the binding action

is released. The same action occurs at the time the cover 6 is mounted upon base 5 and pins 14 and 15 are forced beyond ears 24 and 25 into slots 28 and 29.

From the foregoing description of the device, it will be observed that a simple structure is provided that has reentrant portions and projections that are of the kind that permit the molding of the base 5 and the cover 6 in a single operation of the die without requiring removable core pins, etc., that require separate operations in order to be removed.

The dies used for molding base 5 and cover 6 have been rather diagrammatically illustrated in Figs. 10 to 13, inclusive. Figs. 10 and 11 represent transverse sections through two different planes of the die 40 for molding base 5. Matrix 41 is designed to carry the cavity 42 which forms base 5 and its flanges 7, 8, 9 and 12, including a portion of the ears 10 that lies to the left of line 43 shown in Fig. 8, as well as a portion of pins 14 and 15 that likewise lies to the left of line 44. The portions of ears 10 to the right of line 43 and to the right of line 44 of pins 14 and 15 are formed by cavity portions 45 formed in patric 46. Lugs 16 are formed by recesses 47 in patric 46 while openings 17 and the space directly behind lugs 16 are formed by cores 48 integral with matrix 41. It will be observed that the patric 46 is formed with projections 49 which extend beyond the line of separation between the matrix and the patric but that the design of the parts making up base 5 does not require these projections 49 to be of a shape that will not permit withdrawing them with patric 46 in a single separating movement of this patric from the matrix when the die is opened. In other words, the inner and outer surfaces of such projections as flanges 7, 8, 9 and 12, and ears 10, and the reentrant portions formed thereby are substantially perpendicular to the main wall portion of base 5. The pins 14 and 15 are somewhat cylindrical projections, but they are on the outside of ears 10 and lie at right angles thereto or outwardly therefrom so that their formation may be created by splitting the cavity and placing a portion in the matrix and a portion in the patric. The split may or may not be along the diameter of these pins. The cylindrical formation is still obtained by providing small core projections on the patric which form the reentrant portions 49 at the top and bottom of these pins.

The die 50 used to mold cover 6 is shown in Figs. 12 and 13. The die cavity 51 for cover 6 and its flanges 20, 21 and 33, including ears 24 and 25, is formed in matrix 52. Cores 53 are formed upon the cavity face of matrix 52 to extend in the portion of the die cavity 51 forming the ears 24 and 25 so as to produce slots 28 and 29 in these ears. The line of separation between matrix 52 and patric 54 may occur along the edge 56 of inwardly curved flange 33. The projections 55 on patric 54, which extend beyond this line of separation, form the inner surfaces of flanges 20, 21 and 33, and ears 24 and 25, as well as the reentrant portions which are formed, are substantially at right angles to the plane of the cover so that the patric projections 55 can likewise be moved outwardly in the separation of these die parts without requiring separate manual operations removing core pins, etc., as heretofore required. This novel result is further obtained by virtue of the construction of slots 28 and 29 and cores 53 carried by matrix 52. By forming the slots 28 and 29 with open ends 30,

these cores 53 may be carried by the matrix 52 and not require a separate manual operation to be removed.

Obviously, the construction of match box disclosed herein is simple and designed to permit use of simple forms of dies that enables production of base 5 and cover 6 by single molding operations eliminating any manual operations that were heretofore necessary, after the die parts were separated, to form necessary reentrant portions or projections on the finished product. The cost of not only the dies has been reduced, because compound dies are no longer necessary, but also the cost of labor in producing the product during the molding operation. This labor saving is tremendous when compared to the actual cost of the material used and the total cost of the product. An article of this type must be made cheap if it is to be practical, and consequently, any saving in production costs extends the field of use and hence its utility.

Without further elaboration, the foregoing will so fully explain the gist of my invention that others may, by applying current knowledge, readily adapt the same for use under varying conditions of service, without eliminating certain features, which may properly be said to constitute the essential items of novelty involved, which items are intended to be defined and secured to me by the following claims.

I claim:

1. In a device of the class described comprising a molded base of receptacle formation and a molded cover hinged at one end of said base, said base and said cover having projections and reentrant portions thereon, the projections on said base comprising inwardly turned side flanges perpendicular to the plane of said base and outwardly extending opposed pivot pins on two of said flanges, the projections on said cover comprising inwardly turned flanges along certain of the sides of said cover also extending substantially perpendicular to the plane of said cover, the reentrant portions comprising opposed slots in two of said cover flanges that receive said pivot pins, said slots being open at one of their ends, said open ends intercepting the side of said cover opposite to the side carrying its said inwardly turned flanges.

2. A match bookholder of a plastic material having a resiliency permitting a slight flexing without causing distortion comprising a base and a cover, said base having a rear wall and upstanding flanges lying in planes substantially normal to said rear wall, said cover having a front wall and upstanding flanges lying in planes substantially normal to said front wall, certain of said upstanding flanges on said cover having slots therein with opposed walls extending in a direction perpendicular to said front wall and terminating in an open end at said front wall, and projections on certain of said upstanding

flanges on said base extending perpendicularly to said upstanding flanges, said projections adapted to be inserted in said slots by the flexing of said cover.

3. A match book holder of a plastic material having a resiliency permitting a slight flexing without causing distortion consisting of two parts arranged in hinged relation, said parts comprising a base and a cover each having a wall and upstanding flanges lying in planes substantially normal to said wall, the flanges on one of said parts having slots therein with opposed edges extending in a direction perpendicular to the wall of said part and terminating in an open end at said wall, and projections on certain of the upstanding flanges on the other part extending perpendicularly to said upstanding flanges, said projections adapted to be inserted in said slots by the flexing of one of said parts.

4. A match book holder of a plastic material having a resiliency permitting a slight flexing without causing distortion consisting of two parts arranged in hinged relation, said parts comprising a base and a cover each having a wall and upstanding flanges lying in planes substantially normal to said wall, the flanges on one of said parts having slots therein substantially of uniform width throughout with opposed edges extending in a direction perpendicular to the wall of said part and opening adjacent thereto, and pins on certain of the upstanding flanges on the other part extending perpendicularly to said upstanding flanges, said pins adapted to be positioned in said slots by the flexing of one of said parts and having a larger diameter in a direction longitudinally of said slots when said cover is in closed position, the movement of said cover to open position placing said larger diameter of said pins crosswise of said slots whereby to hold said cover in open position.

5. A match book holder of a plastic material having a resiliency permitting a slight flexing without causing distortion comprising a base and a cover, said base having a rear wall and upstanding flanges lying in planes substantially normal to said rear wall, said cover having a front wall and upstanding flanges lying in planes substantially normal to said front wall, certain of said upstanding flanges on said cover having slots therein with opposed walls extending in a direction perpendicular to said front wall and terminating in an open end at said front wall, and pins on certain of said upstanding flanges on said base extending perpendicularly to said upstanding flanges, said pins adapted to be positioned in said slots and having a larger diameter in a direction longitudinally of said slots when said cover is in closed position, the movement of said cover to open position placing said larger diameter of said pins crosswise of said slots whereby to hold said cover in open position.

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