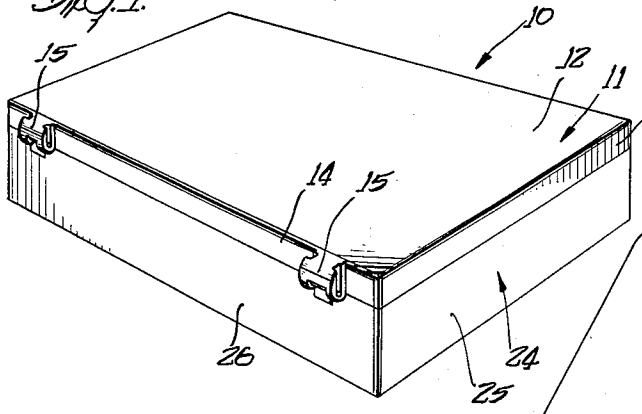
Nov. 15, 1960 J. Y. KIBA 2,960,253

CRADLE HINGE FOR PLASTIC RECEPTACLES

Filed Jan. 8, 1959

Fig. 1.



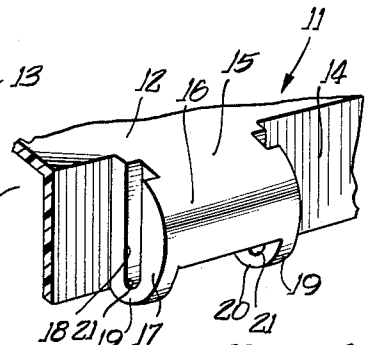


Fig. 2.

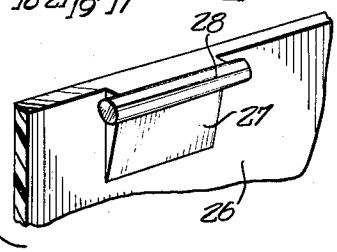


Fig. 3.

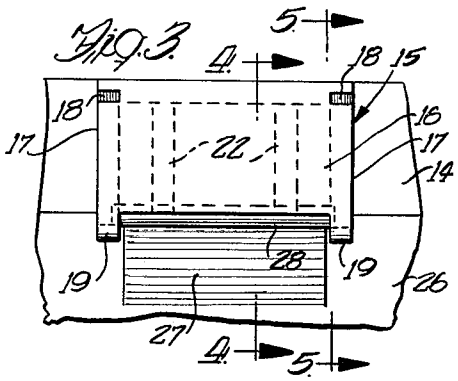


Fig. 6.

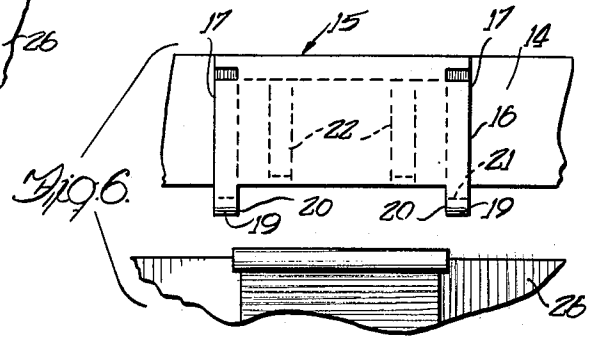


Fig. 4.

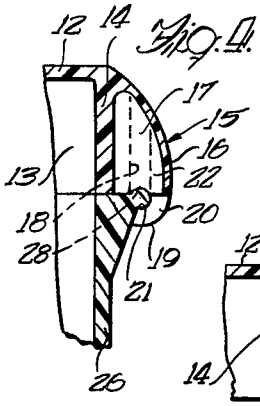


Fig. 5.

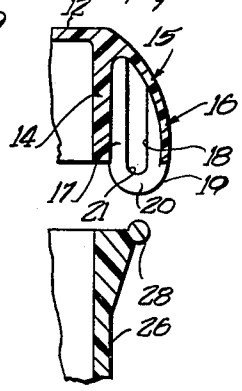
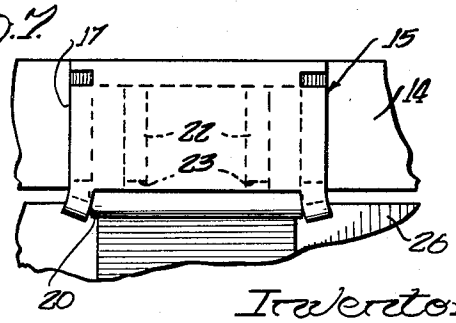


Fig. 7.



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CRADLE HINGE FOR PLASTIC RECEPTACLES

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4 Claims. (Cl. 220—31)

This invention pertains to plastic boxes or receptacles. More specifically the invention relates to an improved hinge construction particularly adapted for plastic molded boxes.

This invention concerns plastic boxes wherein the box consists of a cover having an integral hinge portion and a receptacle also likewise having an integral hinge portion. These boxes are molded of a plastic material which has, immediately after molding, an inherent resiliency which generally decreases later on during the life of the box. The hinge parts of boxes of this type are generally designed to accommodate this inherent resiliency, and therefore the hinge parts are designed so that the cover and the receptacle parts may be easily and quickly assembled immediately after molding. The parts are so designed that complemental hinge parts may be sufficiently sprung by various means to inter-engage and then become firmly locked in hinging position. After the plastic material has aged a short time these parts then become permanently connected together. It is a prime object of this invention therefore to provide an improved hinge designed for plastic molded boxes.

It is a further object of this invention to provide an improved hinge designed for plastic boxes the said hinge design including hinge parts respectively connected to the cover and receptacle portions of a box in a manner wherein the parts may be readily inter-engaged and assembled immediately after a plastic molding operation whereupon the hinge parts then become permanently engaged.

Another specific object of the invention is the provision of a plastic molded box having a cover including a hinge member having flexible ear portions readily spread apart immediately after molding to permit the entry of a hinge pin to secure a permanent hinge construction.

These and further objects will become more readily apparent from a reading of the description when examined in connection with the accompanying sheets of drawings.

In the drawings:

Figure 1 is a perspective view of a plastic box or receptacle having an improved hinge design;

Figure 2 is an enlarged perspective view, showing in detail in exploded fashion, two hinge parts just prior to their assembly into an assembled structure;

Figure 3 is a fragmentary view in elevation of a pair of hinge members in assembled relation;

Figure 4 is a sectional view taken along the line 4—4 of Figure 3;

Figure 5 is a sectional view taken along the line 5—5 of Figure 3 showing however, hinge parts just prior to their assembly;

Figure 6 is a fragmentary elevational view similar to Figure 3, showing however, a pair of hinge parts just prior to their assembly; and

Figure 7 is an elevational view of a pair of hinge parts similar to Figure 6, showing the parts in a stage during their assembly.

Referring now to Figure 1 a plastic box is generally designated by the reference character **10**. The plastic box **10** comprises a cover **11** having a top **12**. The top **12** includes side walls **13** and a back wall **14**. A pair of first hinge members are generally designated by the reference character **15**.

As best shown in Figures 2, 4 and 5 each first hinge member **15** comprises a central curved wall **16** integral with the back wall **14** and projecting outwardly with respect thereto. The first hinge members **15** are integrally formed with the cover **11** and further each include a pair of laterally spaced end walls **17** which are best shown in Figures 2, 6 and 7. The end walls **17** are also integrally formed with the central curved wall **16**. Each end wall **17** comprises a normally vertically extending slot **18** which extends all the way through each wall **17**. Each slot **18** extends vertically downwardly and terminates in a flexible ear **19** projecting downwardly below the wall **16**. Each flexible ear **19** includes an inner surface **20** and each of the flexible ears **19** at the lower ends of the slot include a bearing portion **21**. The ears **19**, as indicated above, are flexible in that they are formed of relatively thin wall section and by virtue of the slots **18** can easily flex immediately after a molding operation.

Each first hinge member **15** further includes a cradle comprising a pair of spaced gussets or bearing members **22**, each of which has at its lower end an arcuate or curved bearing portion also identified as indentations **23**.

The plastic box **10** also comprises a boxlike receptacle generally designated by the reference character **24**. The receptacle **24** comprises side walls **25** and a rear wall **26**. The rear wall **26** as best shown in Figures 2, 6 and 7, also comprises a pair of spaced pin supports **27** integrally formed with the rear wall **26**. Each pin support **27** comprises an elongated hinge pin **28** integrally formed with the hinge support **27**. The said hinge pins **28** extending substantially parallel to the rear wall **26** and are spaced laterally therefrom as best shown in Figure 2.

The cover **11** is connected to the receptacle **24** in hingeing relation immediately after the molding operation when the plastic material is still sufficiently flexible to permit certain portions of the hinge member **15** to flex apart. These portions, have above been identified as the ears **19**. Figures 5 and 6 show a hinge member **15** in position to be assembled with a hinge pin **28**. In Figure 7 it can be seen that the ears **19** have their surfaces **20** engaged by the hinge pin **28**, the said ears flexing outwardly whereupon during upward movement of the hinge pin **28** the said ends of the hinge pin **28** become engaged in bearing portions **21**. The flexibility of the ears is greatly enhanced by the slots **18** which extend downwardly into the ears **19** so as to permit them to flex apart sufficiently for the assembling operation. The assembly of the parts is best shown in Figures 3 and 4 wherein the hinge pin now is in bearing relation with the bearing portions **21**. As best shown in Figures 3 and 4, the hinge pin is restrained against further upward movement in the slots **18** by virtue of the gussets **22** which have their indentations **23** in bearing relation against the peripheral surface of the hinge pin **28**. Thus the parts are firmly permanently assembled while the assembly itself is easily accomplished. It can be seen that the overall dimension or length of each hinge piece is greater than the dimension between the surfaces **20** so that when the pin is forced between the ears **19**, the ears **19** flex outwardly and upon assembly return to their original position. Thus the objects of the invention have been fully achieved and it can be seen that a new and improved hinge construction has been described. Further modifications may be made without departing from the spirit of the invention as disclosed or the scope thereof as defined in the appended claims.

What is claimed is:

1. A hinge structure for molded plastic boxes including a receptacle part and a cover therefor both having side walls in substantially the same plane; a first hinge member connected integrally to the side wall of the cover, said hinge member comprising a central curved wall projecting outwardly and vertically, the major portion of said central wall being laterally spaced from the side wall of said cover, said hinge member also including end walls projecting laterally outwardly from the side wall of said cover, said end walls being integrally connected to said central wall, each end wall having a vertically extending slot, each said end wall having at its lower end a flexible ear, each slot terminating at its lowermost end in each said ear and having a bearing portion, each said ear also having an inner surface, a pair of vertically extending gussets connected to said central wall and to the side wall of said cover between said end walls, said gussets having lower indentations forming pin bearing members, a pin support on said wall of the receptacle between said ears, and hinge pins being co-axial on said support and extending parallel to said side walls of said receptacle, the overall length of said hinge pins being greater than the dimension between the inner surfaces of said ears of said end walls whereby during assembly said pins are forced between said flexible ears to momentarily flex them apart and said pins engage said bearing portions and said indentations whereby said hinge structure is assembled in substantially permanent relation.

2. A hinge structure for molded plastic boxes including a receptacle part and a cover therefor both having side walls in substantially the same plane; a first hinge member connected integrally to the side wall of the cover, said hinge member comprising a central wall projecting outwardly and vertically, the major portion of said central wall being laterally spaced from the side wall of said cover, said hinge members also including end walls projecting laterally outwardly from the side wall of said cover, said end walls being integrally connected to said central wall, each end wall having a vertically extending slot, each said end wall having at its lower end a flexible ear, each slot terminating at its lowermost end in each said ear and having a bearing portion, each said ear also having an inner surface, a pair of gussets connected to said central wall and to the side wall of said cover between said end walls, said gussets having lower indentations forming pin bearing members, a pin support on said wall of the receptacle between said ears, and hinge pins on said support extending parallel to said side walls of said receptacle, said hinge pins being co-axial and the overall length of said hinge pins being greater than the dimension between the inner surfaces of said ears of said end walls whereby during assembly said pins are forced between said flexible ears to momentarily flex them apart and said pins engage said bearing portions and said indentations whereby said hinge structure is assembled in substantially permanent relation.

3. A hinge structure for molded plastic boxes including a receptacle part and a cover therefor both having side walls in substantially the same plane; a first hinge member connected integrally to the side wall of the cover, said hinge member comprising a central wall projecting outwardly, said hinge member also including end walls projecting laterally outwardly from the side wall of said cover, said end walls being integrally connected to said cover wall and being connected to said central wall, each end wall having a vertically extending slot, each said end wall having at its lower end a flexible ear, each slot terminating at its lowermost end in each said ear and having a bearing portion, each said ear also having an inner surface, a pair of gussets connected to said central wall and to the side wall of said cover between said end walls, said gussets having lower indentations forming pin bearing members, a pin support on said wall of the receptacle between said ears and hinge pins on said support extending parallel to said side walls of said receptacle, said hinge pins being coaxial and the overall length of said hinge pins being greater than the dimension between the inner surfaces of said ears of said end walls whereby during assembly said pins are forced between said flexible ears to momentarily flex them apart and said pins engage said bearing portions and said indentations whereby said hinge structure is assembled in substantially permanent relation.

4. A hinge structure for molded plastic boxes including a receptacle part and a cover therefor both having side walls in substantially the same plane; a first hinge member connected to the side wall of the cover, said hinge member comprising a central wall projecting outwardly, and vertically, the major portion of said central wall being laterally spaced from the side wall of said cover, said first hinge member also including end walls projecting laterally outwardly from the side wall of said cover, each end wall having a vertically extending slot, each said end wall having at its lower end a flexible ear, each slot terminating at its lowermost end in each said ear and having a bearing portion, each said ear also having an inner surface, a pair of gussets connected to said central wall and to the side wall of said cover between said end walls, said gussets having pin bearing members, a pin support on said wall of the receptacle between said ears, and co-axial hinge pins on said support extending parallel to said side walls of said receptacle, the overall length of said hinge pins being greater than the dimension between the inner surfaces of said ears of said end walls whereby during assembly said pins are forced between said flexible ears to momentarily flex them apart and said pins engage said bearing portions and said bearing members whereby said hinge structure is assembled in substantially permanent relation.

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