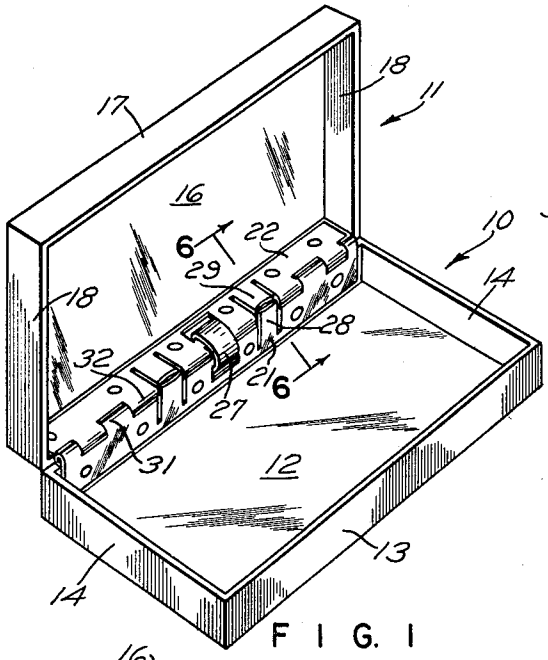
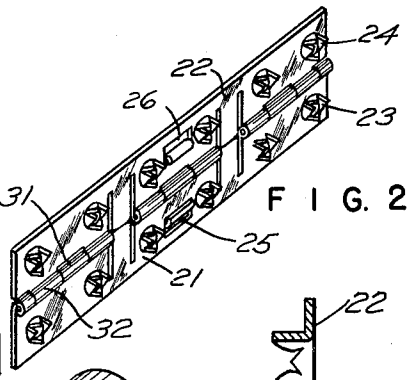
Feb. 25, 1964 L. D. YOUNG 3,121,946

METHOD OF ASSEMBLING A METAL HINGE ON A CARDBOARD BOX

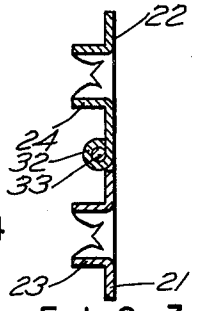
Original Filed Oct. 26, 1960



F I G. 1



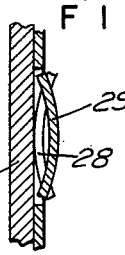
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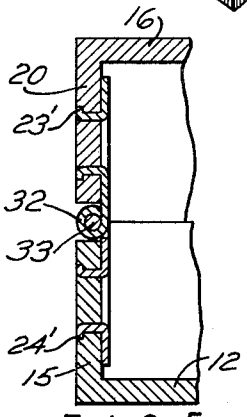
F I G. 3



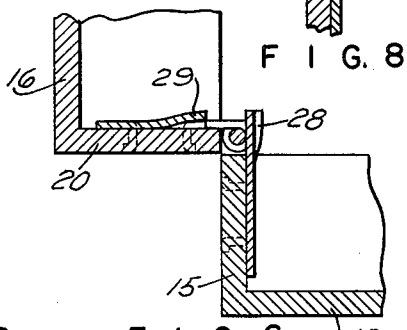
F I G. 4



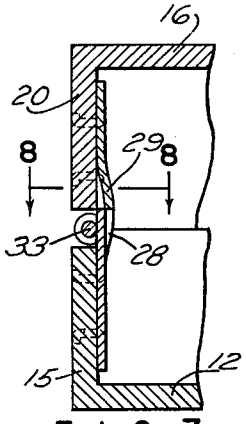
F I G. 8



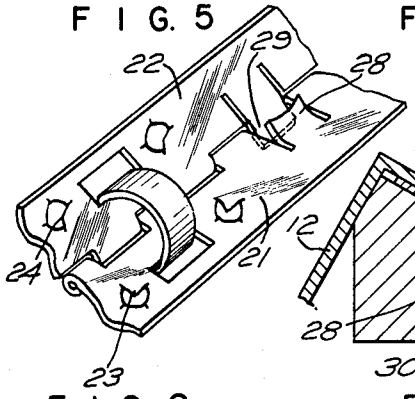
F I G. 5



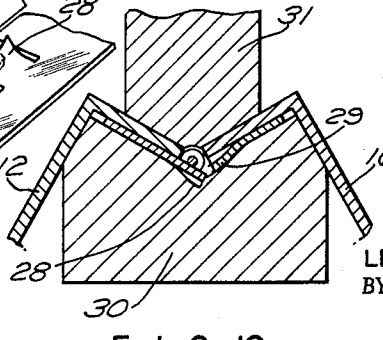
F I G. 6



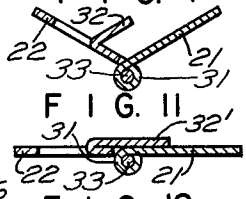
F I G. 7



F I G. 9



F I G. 10



F I G. 11

F I G. 12

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METHOD OF ASSEMBLING A METAL HINGE ON A CARDBOARD BOX

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3 Claims. (Cl. 29—434)

This invention relates to a method of making a cardboard box having a spring hinge to close the same and is a division of application, Serial No. 65,170, filed October 26, 1960.

Heretofore in the use of a metal hinge to hinge together the body and cover sections of a cardboard box, the spring which urged the two plates of the hinge to cause them to move the sections to closed position was frequently so much stronger than the cardboard back walls of the box that the plates of the hinge would swing beyond a single plane and cause an outward bulging of the back walls of the box. Since it was necessary to swing the plates of the hinge beyond the position assumed at closing which is a single plane in order to assemble the spring, no stops had been heretofore put into the hinge plates to cause them to align.

One of the objects of this invention is to provide a method of making a hinge which may have stops so as to prevent the outward bulging of the rear walls of the box.

Another object of the invention is to provide a method of making a hinge which, in its first position, before attaching to the box may have the stop means so that it will permit assembly of the hinge spring but which stop means will be moved into a position to provide a stop as the hinge is assembled in place on the box.

Another object of the invention is to provide a method of making a hinge which may be treated for assembly with the box the same as the usual metal hinge but which will change said relationships as it is assembled so that the hinge will have abutting surfaces as the hinge moves the covers to closed position so as to prevent the spring from moving the hinge plates to concave inwardly and consequently bulge the rear surface of the hinged walls of the box.

With these and other objects in view, the invention consists of certain novel features of construction as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

FIG. 1 is a perspective view of the box in open position with my improved hinge in position;

FIG. 2 is a perspective view of the hinge alone;

FIG. 3 is a sectional view through the attaching spurs of the hinge alone;

FIG. 4 is a perspective view of the spring;

FIG. 5 is a sectional view of the box and hinge through the attaching spurs;

FIG. 6 is a section on line 6—6 through the abutments on the hinge plates;

FIG. 7 is a view similar to FIG. 6 but illustrating the cover and body sections in closed position and the abutments on the hinge plates as in engagement;

FIG. 8 is a section on line 8—8 of FIG. 7;

FIG. 9 is a perspective view of the fragmental portion of the hinge prior to its assembly on the box illustrating the abutting tabs as in a position sufficiently raised out of the plane of the plates to swing clear of each other as the plates are swung toward position for assembly of the spring thereon;

FIG. 10 is a sectional view illustrating the box sections as positioned on an anvil for assembly of the hinge plates

in position which at the same time bends the abutting tabs into a position for engagement one with the other;

FIG. 11 is a sectional view of a modified hinge in position for spring assembly; and

FIG. 12 is a sectional view thereof with the abutment bent into stop position.

In proceeding with this invention I form the hinge plates with attaching spurs and I cut from either one or both hinge plates tabs and raise these tabs out of the surface of the hinge plates sufficiently so that the hinge plates may swing about their pintle pin pivot substantially through 360° so that in one position the spring may be assembled on the hinge plates. The hinge plates with their spurs for assembly to the box sections are then positioned on the anvil, the box sections placed in position and the hammer dropped to secure the spurs in the box and at the same time the shaping of the anvil and hammer is such that the abutment tabs are bent into a position so that they will engage and align the hinge plates in a single plane preventing the plates from moving beyond this plane as the box is moved to the closed position shown in FIG. 7.

With reference to the drawings **10** designates generally the body section of the box and **11** the cover section. The body section has a bottom wall **12**, front wall **13**, side walls **14** and a back wall **15**. The cover section has a top wall **16**, a front wall **17**, side walls **18** and a back wall **20**. The rear walls are designed to be maintained in substantially a single plane, and it is to these rear walls that the hinge is attached.

The hinge comprises a pair of plates **21** and **22** which are of metal with aligned rolled eyes **31**, **32** through which a pintle pin **33** extends to hinge the plates together, and from the sheet metal stock spurs **23** are bent from plate **21** and spurs **24** are bent from plate **22**. There are four evenly spaced spurs shown about each generally circular opening although the number may be varied. Each spur is arcuate in cross section so as to stiffen it and inclines slightly outwardly so as to be deflected outwardly away from the center of the opening as it engages an anvil. These spurs are adapted to pierce the rear walls of the cardboard box and be turned over as at **23'**, **24'** (FIG. 5) for attaching the plates to the inner surface of the rear walls **15** and **20**. The plates are also provided with slots **25** in plate **21** and **26** in plate **22**, in which a C-shaped spring **27** engages by the hook ends of the spring hooking over the edges of the slot.

Additionally, I have formed tabs **28** on plate **21** and **29** on plate **22**, and in the cutting of these tabs which exist in two sets on either side of the spring, they are raised from the general plane of the plate a distance beyond that shown in FIGURES 1 and 7, the distance raised being illustrated in FIG. 9 which is shown as sufficient so that the tabs **28** and **29** will clear each other when the inner surfaces of the plates **21** and **22** are swung toward each other beyond a single plane such as shown in FIGURE 3. By swinging the plates beyond this plane to a position somewhat analogous to that shown in FIG. 9, the hook ends of the spring **27** may be positioned over the edges of the slots **25** and **26**. The plates may then be swung back into a position such as shown in FIG. 10, and the rear walls **15**, **20** of the box sections positioned thereon as shown in FIG. 10, all upon the anvil **30**, and then the hammer **31** may descend so as to force the spurs **23** and **24** through the rear walls **15** and **20** and clinch them over as in FIG. 5, and at the same time the surface of the anvil and hammer will be such that the tabs **28** and **29** will be bent from their raised position such as shown in FIG. 9 to the position shown in FIGURES 1, 7 and 8, thus positioning the tabs so that they will engage and provide an abutment means to prevent the spring from swinging the hinge sections beyond the aligned position

such as shown in FIGURE 7 and preventing the spring from being disengaged, thus preventing rearward bulging of the walls **15** and **20** but rather maintaining the plates **21** and **22** in a single aligned plane.

As an alternate arrangement, a single tab **32** as seen in FIG. 11 may be raised from one plate such as plate **22** and bent to the position shown in FIG. 11 in which position the two plates **21, 22** may be swung with their inner surfaces approaching each other sufficiently for the spring **27** to be assembled in slots **25, 26** (FIG. 2) and thereafter the plates may be assembled on the box section as above described and illustrated in FIG. 10. In the assembly the tab **32** will be bent from the position shown in FIG. 11 to the position shown in FIG. 12 in which latter position **32'** it will engage plate **21** and cause the plates **21, 22** to align in substantially a single plane as shown in FIG. 12, thus maintaining the rear walls **15, 20** as shown in FIG. 7.

I claim:

1. The method of assembling a box and spring metal hinge comprising providing a box with body and cover sections having rear walls to be hinged in edge to edge abutting relation when closed, forming a pair of plates with spurs for attachment to said walls, and an opening to receive a **C** spring and with at least one stop tab for preventing the hinged plates from swinging beyond a coplanar position during closing the box sections, said tab being initially raised to clear the other plate in swinging the plates about the hinge, hinging the plates together, assembling the **C** spring on the hinged plates during the

assembly of the plates on the sections by swinging the plates about their hinge axis beyond the coplanar position they would normally assume when the box sections are closed to allow the **C** spring to be mounted on said hinge plates, assembling the plates with the **C** spring mounted thereon on the inside of the walls of the sections by striking the spurs into the inside of the rear walls and striking the tab to bend it into a position to abut a part carried by the other plate when the rear walls of the sections are aligned and the box is in closed position.

2. The method of claim 1 wherein the spurs are clinched into the rear walls of the box and the tab is bent into a position to engage in the same striking operation.

3. The method of claim 1 wherein the spurs are clinched into the rear walls of the box and two tabs, one of which is said abutment part, are bent into a position to engage in the same striking operation.

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