Aug. 21, 1951 K. E. MAXON 2,565,182

CARTON CONSTRUCTION

Filed Oct. 24, 1947 3 Sheets-Sheet 1

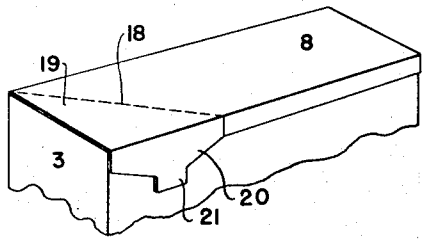

FIG. 1

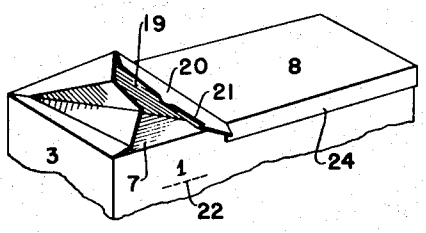

FIG. 2

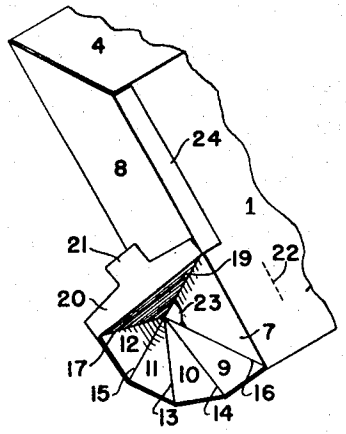

FIG. 3

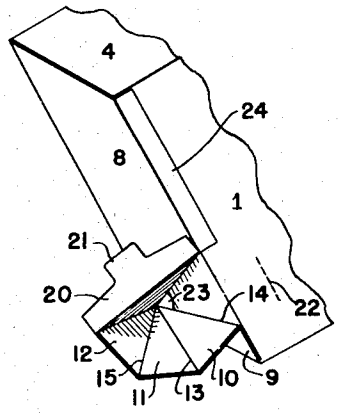

FIG. 4

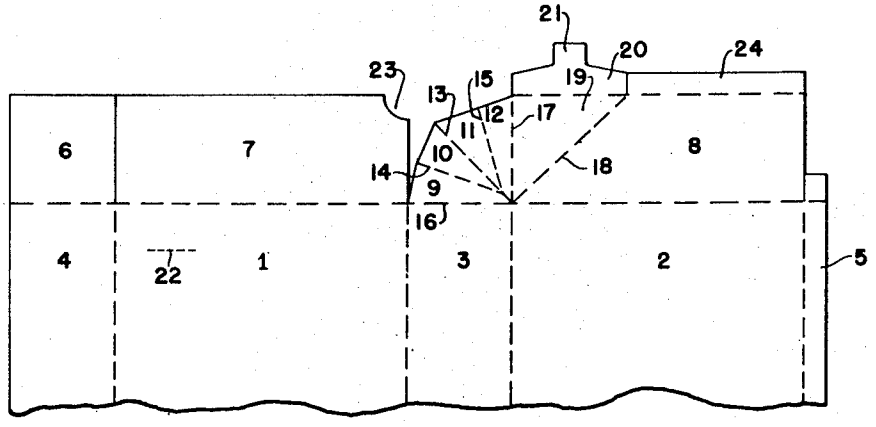

FIG. 5

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CARTON CONSTRUCTION

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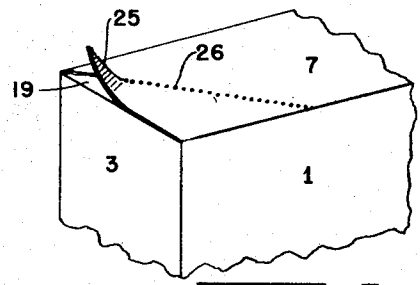

FIG. 6

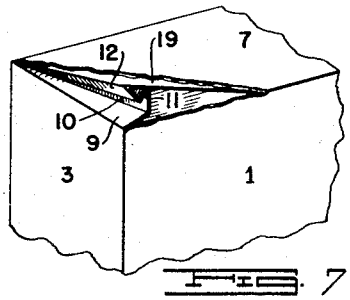

FIG. 7

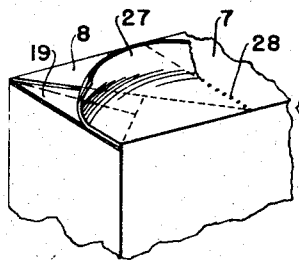

FIG. 8

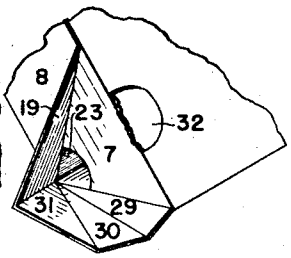

FIG. 10

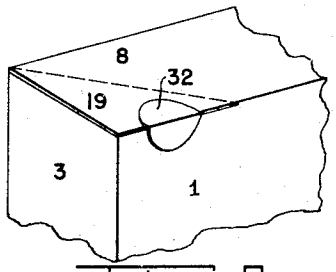

FIG. 9

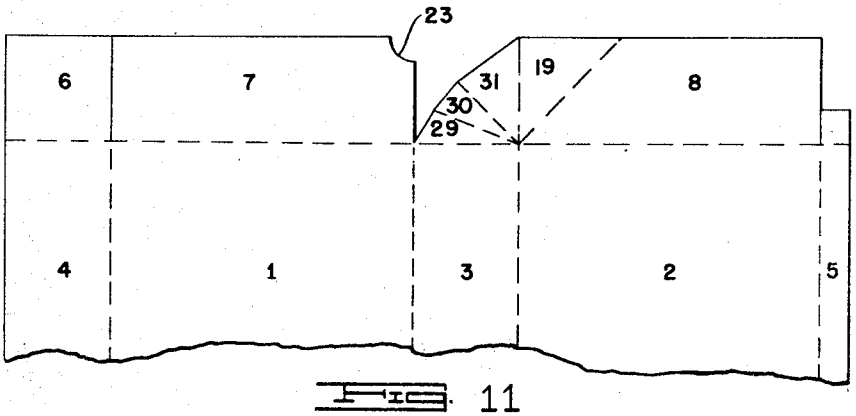

FIG. 11

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CARTON CONSTRUCTION

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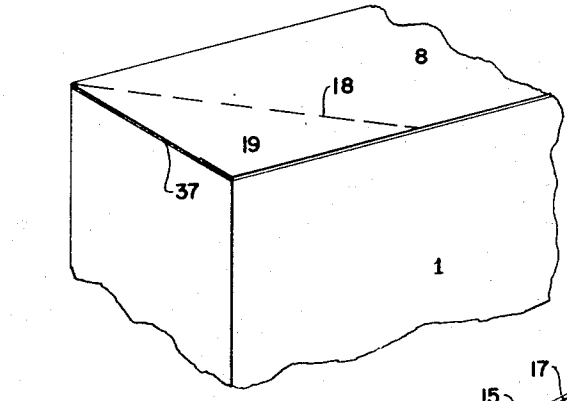

FIG. 12

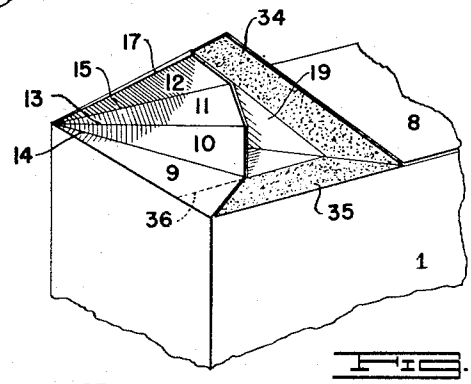

FIG. 13

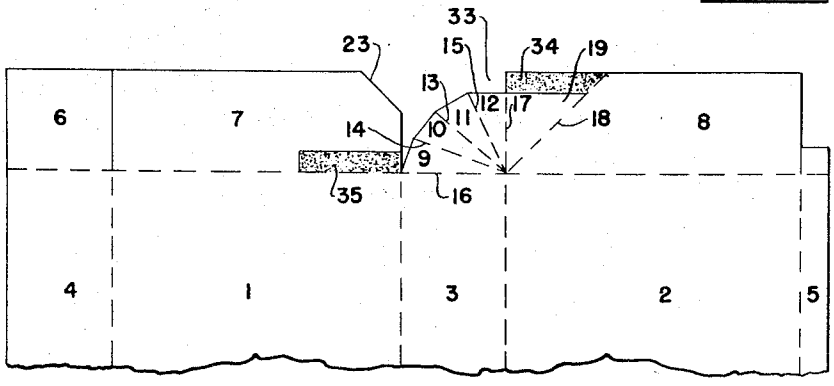

FIG. 14

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Patented Aug. 21, 1951

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UNITED STATES PATENT OFFICE

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CARTON CONSTRUCTION

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Application October 24, 1947, Serial No. 781,977

14 Claims. (Cl. 229—17)

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My invention relates to carton constructions, more particularly to carton constructions which are provided with pouring spouts. Included in the objects of my invention are:

First, to provide a carton having a pouring spout which is formed integrally in the carton blank and which, apart from normal alteration in the carton-forming machinery, adds no appreciable cost to the manufacturer of the carton.

Second, to provide a carton of this character in which the pouring spout is foldable and when folded is flush with the surface of the carton so that the external dimensions of the carton are unchanged.

Third, to provide a carton having a folding pouring spout which, when extended, has generous proportions so that pouring of the contents may be easily controlled and in the event an excess amount is poured or remains in the spout, the spout provides a convenient means for quickly returning such excess without danger of spilling.

Fourth, to provide a pouring spout for cartons which incorporates several radiating V troughs, any one of which may serve to guide the contents so that the angle to which the carton is held while pouring is not critical but instead the most convenient angle may be selected.

Fifth, to provide a pouring spout carton which may be rendered "sift-proof"; that is, the contents of the carton, even if in powder form, may be retained without danger of sifting through the pouring spout prior to initial opening of the carton, and even after the carton is once opened, the pouring spout may be effectively closed to prevent loss or spilling of the contents.

Sixth, to provide a pouring spout carton which, although suitable for powdered material, is equally suitable for the packaging of coarse or flake material.

Seventh, to provide a pouring spout carton which, by reason of the complete seal which may be afforded and an inherently large pouring spout provided, may by the use of liquid-proof materials be adapted to the packaging of liquids.

With the above and other objects in view, as will appear hereinafter, reference is directed to the accompanying drawings, in which:

Figure 1 is a fragmentary perspective view showing one end of a carton incorporating my novel pouring spout, the spout being shown sealed prior to initial opening.

Figure 2 is a similar fragmentary perspective view showing the spout partially opened.

Figure 3 is a fragmentary perspective view showing the spout fully opened and in pouring position.

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Figure 4 is a fragmentary perspective view similar to Figure 3 showing a modified arrangement of the pouring spout.

Figure 5 is a fragmentary developed view of the carton blank as it appears before folding.

Figure 6 is a fragmentary perspective view showing a modified form of my carton construction in which the pouring spout is initially concealed by a tearable tab, this tab being shown in the process of removal.

Figure 7 is a similar fragmentary perspective view showing the pouring spout partially opened.

Figure 8 is a fragmentary perspective view illustrating a modified arrangement of the tearable tab.

Figure 9 is a perspective view of a still further modified form of my carton wherein the spout is initially closed by a sealed tab.

Figure 10 is a perspective view thereof showing the spout open.

Figure 11 is a fragmentary view of a carton blank corresponding to the construction shown in Figures 9 and 10.

Figure 12 is a fragmentary perspective view of a further modified form of my carton construction showing the carton in its initial or sealed position.

Figure 13 is a similar fragmentary perspective view showing the pouring spout partially open.

Figure 14 is a fragmentary view of a carton blank corresponding to the construction shown in Figures 12 and 13.

Except for the end or side at which the pouring spout is placed and the adjacent portions of a carton my carton is conventional in construction, that is, the carton includes a front panel 1, a back panel 2, and intermediate side panel 3 between panels 1 and 2, an extreme side panel 4 which is adapted to be joined to a glued flange 5 provided at the extreme edge of panel 2. The side panel 4 is provided with a top end flap 6 and panels 1 and 2 are provided with top side flaps 7 and 8 respectively. Similar flaps not shown but conventional in construction are provided at the bottom of the carton.

My pouring spout is incorporated in the top flaps 7 and 8 and the intervening portion above the intermediate side panel 3. The top flap 8 is connected to the side panel 3 by an articulate web comprising substantially triangular sections 9, 10, 11 and 12. These sections are joined by a center crease 13, intermediate creases 14 and 15 and side folds 16 and 17. The crease 16 defines the upper extremity of the panel 3 while the crease 17 defines the adjacent extremity of the

top flap 8. An angular crease line 18 extends from the intersection of the crease lines 16 and 17 diagonally across the flap 8 preferably at approximately a 45° angle. The crease line 18 defines the hypotenuse of a triangular portion 19 which forms a cover for the spout sections 9, 10, 11 and 12 as will be brought out hereinafter.

The cover portion 19 is provided with a flange 20 which, when the carton is folded, overlies the front panel 1. The flange 20 is adapted to be temporarily or lightly glued to the front panel 1 and may include a tab 21 adapted to be grasped in order that the flange 20 may be broken free of the front panel 1. Under the tab 21 the front panel may have a weakened portion 22 capable of forming a slit into which the tab 21 may be inserted after the carton is initially opened.

When the carton is folded, the top flap 7 is folded under the flap 8. The corner of the top flap 7 which lies adjacent the confronting corners of the panel 3 and top flap 2 is notched as indicated by 23 so as to provide an opening through which the contents of the carton may be poured.

When the carton is folded, the spout sections 9 and 10 are folded under spout sections 12 and 11 respectively so that the creases 14 and 15 lie unfolded adjacent each other and crease 13 which is thus folded underlies the crease line 18 defining the cover portion 19. When it is desired to open the carton and utilize the spout, the tab 21 is raised to free the cover portion 19, as indicated in Figure 2. The cover portion is folded about the crease line 18 until virtually doubled back upon the top flap 8. This frees the pouring spout comprising the sections 9, 10, 11 and 12. When the cover portion 19 is returned to an intermediate or vertical position, such as that shown in Figure 3, the sections tend to form with the cover portion and the underlying flap 7 a pyramidal spout structure at the apex of which is a hole formed by the notch 23.

It will be observed that the several sections form V troughs, any one of which may serve to guide the contents of the carton. Also, it will be observed that the spout forms a funnel of general proportions to facilitate return of excess contents or to contain excess contents during the course of pouring from the package.

In some instances, it is desirable that the section 9 be cemented to the top of flap 7, as shown in Figure 4. This is particularly desirable for finely powdered materials as it tends to insure firm contact between not only section 9 but section 10 and the flap 7 when the spout is folded.

While the various crease lines, particularly 14 and 15, may radiate from exactly the same apex as the crease lines 16, 17 and 18, this is not mandatory, particularly if it is desired that crease line 13 form the apex of the main pouring trough. Furthermore, by slightly offsetting the crease lines 14 and 15 the spout formed by the four sections tends to have an "over center" action, that is, when the cover portion 19 is folded back on the top flap 8, the sections comprising the spout tend to snap outwardly to take the desired shape. After using the spout, it is merely necessary to press inwardly on the crease line 13 to cause the reverse snap action so that the cover portion may be returned to its initial position.

It has also been found that while the crease line 13 may extend it approximately 45° relative to crease lines 16 and 17 it may be offset slightly toward crease line 17 so that sections 9 and 10 are slightly wider than sections 11 and 12. This has the effect of forcing the crease line 13 slightly under the crease line 18 when the cover portion 19 is folded so that sections 9 and 10 tend to lie flat and snug against the under flap 7 and thus provide a tighter closure for the carton.

While the tab 21 and weakened portion 22 are illustrated, it is, of course, obvious that these members may be omitted. The flaps 7 and 8 may be glued together in their areas not occupied by the spout sections and cover portion. In addition, or alternatively, the flap 8 may be provided with a glued flange 24 which overlies the upper edge of the front panel 1 and continue from the flange 20. This flange, of course, may be omitted, if desired.

Reference is now directed to the constructions shown in Figures 6, 7 and 8. The arrangement here shown is essentially the same as in the previously described structure except that top flap 7 is placed over instead of under top flap 8 to form a cover panel. In the construction shown in Figures 6 and 7 the top flap 7 is provided with a triangular tear flap 25 which may be torn free along perforations 26. Alternatively, as shown in Figure 8, the tear flap 27 may be rectangular and bordered by perforations 28. In either case the pouring spout and cover portion 19 is completely covered by the tear flap 25 or 27. Upon removal of the tear flap the spout may be opened and operated in the manner shown in Figures 2 and 3. It will, of course, be observed that the entire triangular area under the cover portion 19 forms the opening between the interior of the carton and the pouring spout and is thus suited for packages containing relatively large-sized objects. This does not, however, preclude the use of the construction shown in Figures 1 and 4 for similar contents inasmuch as the notch 23 may be made as large as desired.

Reference is now directed to the construction shown in Figures 9, 10 and 11. This construction is essentially the same as that shown in Figures 1–5 except that flanges 20 and 24, as well as tab 21, have been omitted. In addition, the spout portion is shown as comprising three spout sections 29, 30 and 31 in place of the four spout sections previously employed. In effect, crease line 15 is omitted. The spout sections, however, fold under the cover portion 19 as in the previously described structure. In this case the cover portion is initially held closed by means of a label or sticker 32. While the size of the spout formed by the sections 10, 11 and 12 or 29, 30 and 31 may vary, depending upon the contents for which the carton is designed, it is preferred that the extreme edges of the spout defined by these sections extend beyond a line between the remote extremities of the crease lines 16 and 17; that is, the spout preferably occupies the major portion of the square or rectangle defined by flaps 7 and 8 and side panel 3.

Reference is now directed to the construction shown in Figures 12, 13 and 14. The construction here shown is particularly designed to minimize the alteration required in conventional packaging machinery. In this construction the panel 12 is notched as indicated by 33 so that it terminates short of the extremity of the flap 19. The projecting portion of the flap 19 is provided with adhesive 34 which extends along the margin of the flap and is adapted to overlie the area 35 of the end member 7 as well as a corner of the

panel 9. Alternatively, this portion of the panel 9 may be notched along the broken line 36 shown in Figure 13 so that direct contact is had between the flap 19 and the end member 7. It is preferred, however, to extend the panel 9 the full width of the edge 3 to improve the "sift-proof" qualities of the container.

When the carton is sealed as shown in Figure 12 the folded edges 16 and 17 confront each other and form the reinforced sides of a slit 37 in which one's finger nails or an implement may be inserted to pry apart the sealed extremity of the flap 19 so that the package may be opened for use.

It should be noted that members 1, 2, 3, 7 and 8 may be termed "panels"; that members 3, 7 and 8 may be termed "edge panels"; that the cover 19 functions as and may be termed a "flap" or a "monoplanar flap" and that the spout sections 9, 10, 11 and 12 of Figures 1 through 5 or the corresponding sections in the other figures may be considered as portions of a radially articulated web.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details herein set forth, but my invention is of the full scope of the appended claims.

I claim:

1. A carton involving: side and edge panels, the edge panels being foldably connected to the side and top extremities of said side panel and having corners contiguous to a corner of said side panel and, when folded, having adjacent extremities; a bellows member foldably connected to the adjacent extremities of said edge panels and having crease lines radiating from the contiguous corners of said panels; one of said edge panels having a crease line also radiating from said contiguous corner to the extended margin of said edge panel to define a monoplanar flap bordering said bellows member; said bellows member foldable under said flap, and cooperating with said flap when open to form a pouring spout.

2. A carton involving: panel members so connected as to define when folded a box of rectangular form; a monoplanar flap integral with one of said panel members occupying a corner thereof, said flap having edges substantially coinciding with edges of said panel member, and a foldable edge traversing said panel; an articulated member joined to said panel and to an edge of said flap, said articulated member movable between a folded position under said flap when said flap lies substantially in the plane of said panel and an extended position when said flap is folded outwardly from said panel along said foldable edge, said articulated member and flap cooperating to form a pouring spout.

3. A carton involving: an underlying and an overlying end panel; a side panel connecting said end panels; an articulated web, including triangular sections radiating from substantially a common point, foldably connected between said side panel and one of said end panels, and, when folded, adapted to fit under said end panel; said end panel incorporating a monoplanar flap continuing from its folded connection with said web and occupying the area thereover, said flap being foldable about an axis radiating from said common point outwardly from the plane of said end panel to open said web and form therewith a pouring spout; the other of said end panels extending under said web and defining a cutout portion occupying the region adjacent said common point.

4. A carton involving: side and edge panels, the edge panels being foldably connected to the side and top extremities of said side panel and having corners contiguous to a corner of said side panel; a bellows member foldably connected to those extremities of said edge panels which, when folded, are adjacent each other, said bellows having crease lines radiating from the contiguous corners of said panels; one of said edge panels having a crease line also radiating from said contiguous corner to define a monoplanar flap bordering said bellows member; said bellows member foldable under said flap, and cooperating with said flap when open to form a pouring spout; and a further edge panel underlying said bellows member and defining an opening in the region adjacent the contiguous corners of said panels for discharge of the contents of said carton through said spout, said opening occupying a minor portion of the area under said flap whereby said bellows member and flap may form a funnel for return of excess contents to the carton through said opening.

5. A carton involving: side and edge panels, the edge panels being foldably connected to the side and top extremities of said side panel and having corners contiguous to a corner of said side panel; a bellows member foldably connected to the adjacent extremities of said edge panels and having crease lines radiating from the contiguous corners of said panels; one of said edge panels having a crease line also radiating from said contiguous corner to define a flap bordering said bellows member; said bellows member foldable under said flap, and cooperating with said flap when open to form a pouring spout; and a further edge panel overlying said flap and perforated to form a section covering said flap, said section being removable to expose said flap thereby to permit opening of said pouring spout.

6. A carton involving: side and edge panels, the edge panels being foldably connected to the side and top extremities of said side panel and having corners contiguous to a corner of said side panel; a bellows member foldably connected to the adjacent extremities of said edge panels and having crease lines radiating from the contiguous corners of said panels; one of said edge panels having a crease line also radiating from said contiguous corner to define a flap bordering said bellows member; said bellows member foldable under said flap, and cooperating with said flap when open to form a pouring spout; said flap having a tab continuing therefrom and overlying said side panel, and a weakened portion in said side panel adapted when ruptured to form a slit for receiving said tab.

7. A carton as set forth in claim 2, wherein: a tab is foldably connected to said flap and occupies an initial position overlying a side of said box.

8. A carton as set forth in claim 2, wherein: a tab is foldably connected to said flap and occupies an initial position overlying a side of said box; and said side is provided with a rupturable slit-forming portion to receive the extremity of said tab.

9. A carton as set forth in claim 2, wherein: a cover panel overlies said flap and includes a removable tear flap at least coincidental in area to the flap thereunder.

10. A carton as set forth in claim 2, wherein: a flap member underlies said flap and a portion of said articulated member; said flap extends beyond said articulated member whereby said

flap and flap member have confronting portions; and adhesive on said confronting portions.

11. A carton as set forth in claim 1, wherein: a tab is foldably connected to said flap and is adapted to overlie said side panel.

12. A carton as set forth in claim 1, wherein: said side panel is provided with a slit adapted to receive the extremity of said tab.

13. A carton as set forth in claim 1, wherein: a cover panel overlies said flap and includes a removable tear flap at least coincidental in area to the flap thereunder.

14. A carton as set forth in claim 1, wherein: a flap member underlies said flap and a portion of said articulated member; said flap extends

beyond said articulated member whereby said flap and flap member have confronting portions; and adhesive on said confronting portions.

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The following references are of record in the file of this patent:

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