

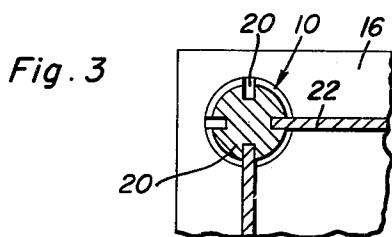
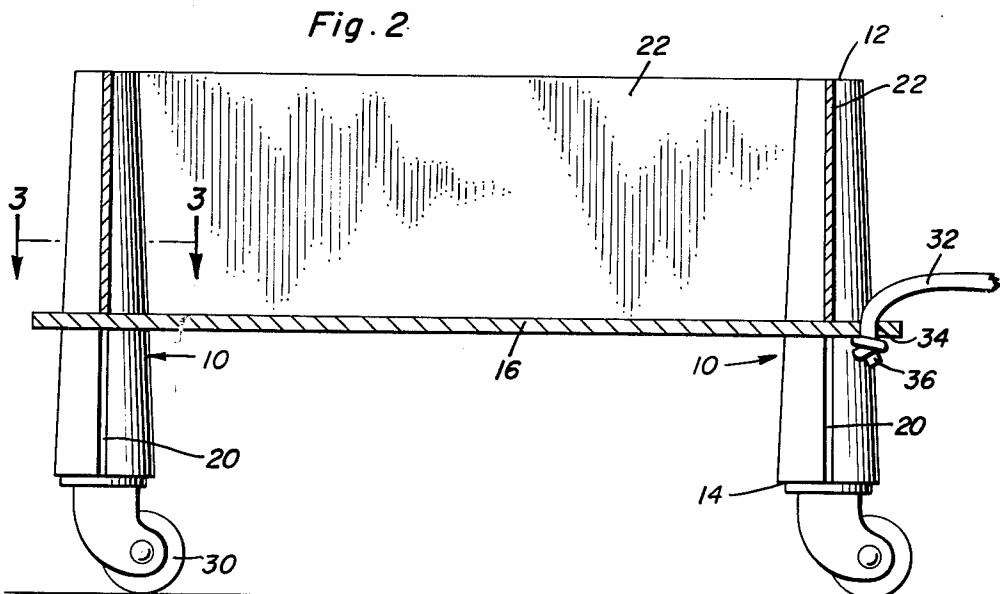
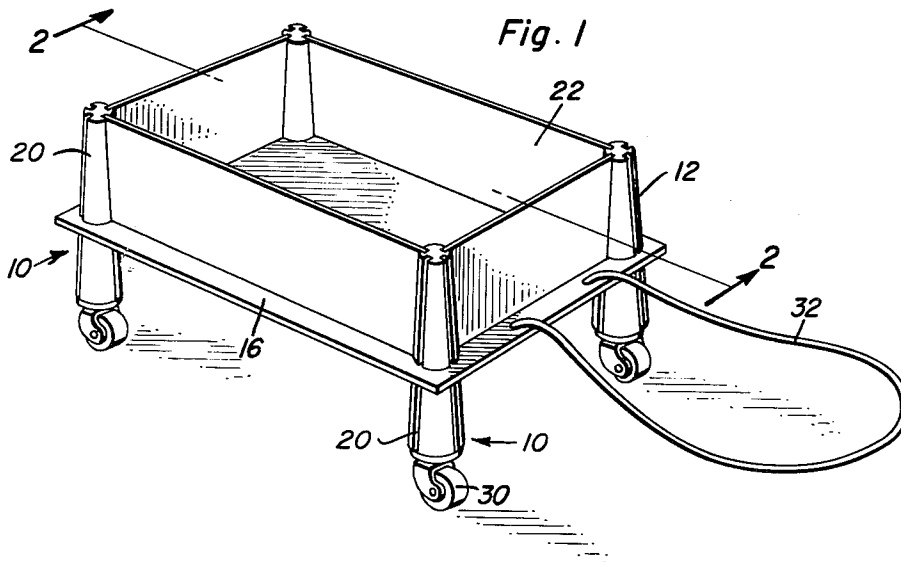
Nov. 30, 1965

A. G. BURNS
MULTIPLE USE KNOCKDOWN UNIT

3,220,773

Filed Feb. 5, 1963

3 Sheets-Sheet 1



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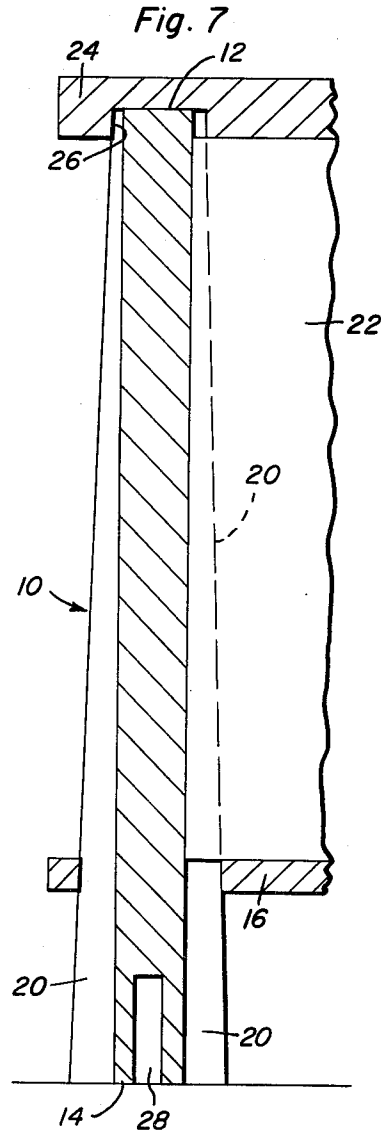
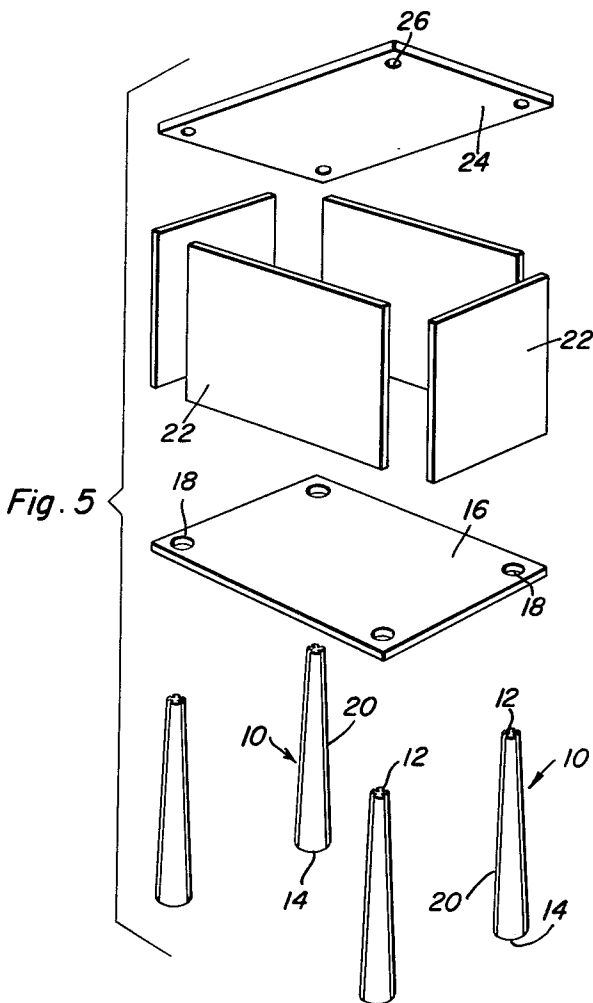
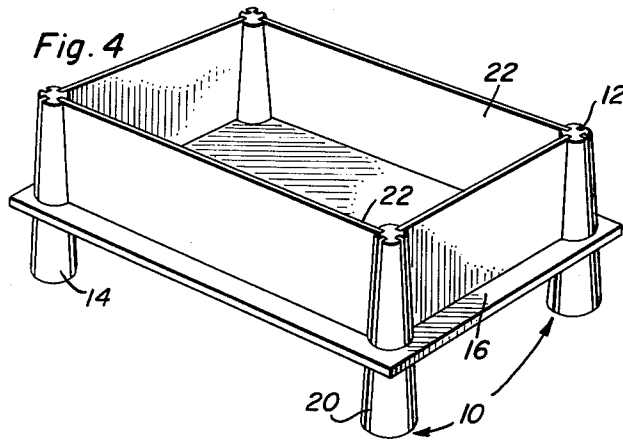
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3 Sheets-Sheet 2



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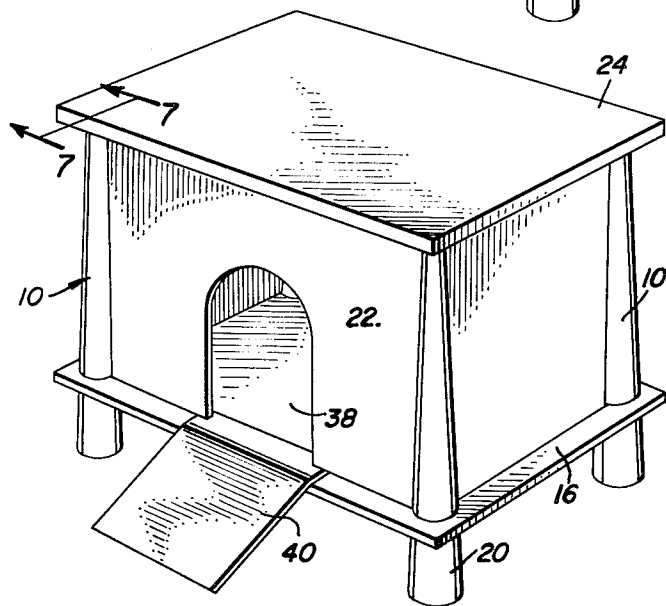
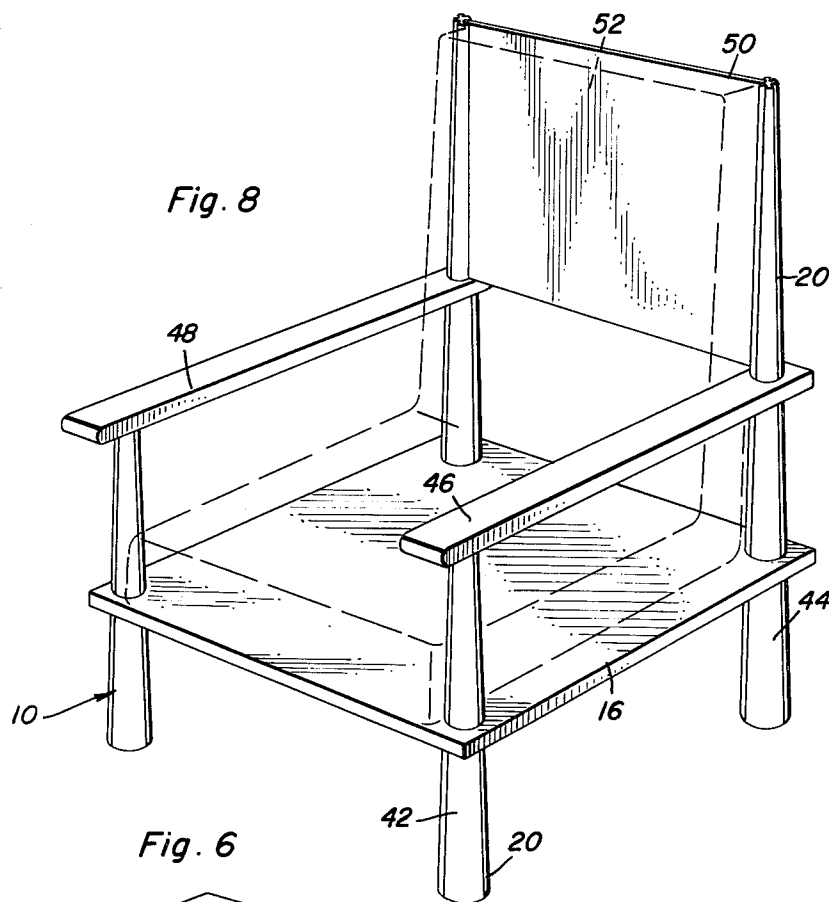
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MULTIPLE USE KNOCKDOWN UNIT

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3 Sheets-Sheet 3



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3,220,773

MULTIPLE USE KNOCKDOWN UNIT

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4 Claims. (Cl. 297-440)

This invention relates, generally classified, to a multi-purpose knockdown unit and, more particularly, to structural toy elements and the substantially self-evident method of assembling the same.

The primary object of this invention is to provide a set of structural elements which may be assembled by a child to provide toys and articles of various configurations.

Another object of this invention is to provide a plurality of structural elements or component parts which may be assembled without the need of conventional fasteners or adhesive media.

A still further object of this invention is to provide a plurality of structural units which may be assembled to provide an article of sturdy construction.

Yet another important object of the present invention is to provide means conducive to setting up a greater variety of replicas of well-known articles, as well as toy articles and even articles or large scale structures which may be used by an adult for diverse purposes.

A still further object of this invention is to provide a simple construction which is arranged to be readily knocked down and reassembled.

A still further object of this invention is to provide a toy having the advantages mentioned, which will also be inexpensive to manufacture, be generally attractive and interesting to children and may be readily adapted to be packed in compact form for shipping purposes.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of one form of assembly of the knockdown unit comprising the subject matter of the present invention.

FIGURE 2 is a sectional view taken substantially along line 2-2 of FIGURE 1.

FIGURE 3 is a detailed fragmentary sectional view taken substantially along line 3-3 of FIGURE 2 and illustrating the manner of attachment of side walls to an assembled structure.

FIGURE 4 is a perspective view of another possible assembled configuration using the structural elements of the present invention and similar to the assembly shown in FIGURE 1.

FIGURE 5 is an exploded perspective view of the structural elements comprising the subject matter of the instant invention and illustrating the method of assembly of another possible configuration within the scope of the present invention.

FIGURE 6 shows another possible assembly using the structural elements of the present invention and which is assembled primarily as shown in FIGURE 5.

FIGURE 7 is a fragmentary sectional view taken substantially on line 7-7 of FIGURE 6 and illustrating certain details of the assembled construction.

FIGURE 8 illustrates yet another possible construction using the structural elements of the present invention and, more particularly shows a chair structure.

Referring now in more detail to the drawings, and more specifically to the structural elements depicted in FIGURE 5, a plurality of tapered legs are designated generally by

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the reference numeral 10. The legs 10 are tapered, the taper decreasing in diameter from the bottom to the top portion of the leg. Due to this construction, each one of the legs is adapted to be self-supporting and to provide a sturdy and rigid base. Each leg is of truncated conical form and comprises an upper truncated end portion 12 and a flat base portion 14. The cross sectional area of the base portion 14 is of sufficient areal extent to allow the legs to be self-supporting. In using these legs as structural elements to form a structural unit of a desired configuration, the legs, usually four legs at a time, are spaced at predetermined points.

A suitable flat panel or base member such as 16 is adapted to be telescoped upon the legs. This flat panel or member 16 is provided at its respective corner portions with a plurality of apertures 18 formed therethrough and each of said apertures 18 being of a shape, usually circular, corresponding to the cross sectional shape of the tapered legs. The apertures 18 may be formed having a diameter intermediate the diameter of the end portion 12 and the base portion 14 of the tapered legs 10. It should be obvious if such is the case, the flat-plate or panel 16 may be telescoped on the tapered legs and slid upon said legs until they wedge upon said legs intermediate the upper end and base portion, so as to provide a rigidly assembled structure. It should also be noted that the apertures 18, if desired, may be of such a diameter as to approximate the diameter of the cross sectional area adjacent the end portion of the leg 12 so that upon fitting the member 16 on the tapered legs, it will seat itself and stay put on the legs.

Each one of said tapered legs 10 has a plurality of circumferentially spaced elongated grooves 20 formed therein. A flat side wall member such as 22 is adapted to be disposed within and extend between grooves on adjacent legs. Due to the side walls and the grooves, a box-like enclosure may be formed using the structural units or a chair structure, such as shown in FIGURE 8, to be later described. A flat top panel member 24 may also be provided wherein the box-like structure may be completely enclosed. For this purpose, a plurality of recesses or apertures 26 are formed in the member 24 which are adapted to seat upon the end portions 12 of the tapered legs 10 as is apparent from FIGURE 7. The cross sectional area of the apertures 26 substantially conform to the cross sectional area of the end portions 12 whereby a tight fit may be maintained between the two elements.

With reference to FIGURE 7, it is seen that a longitudinally extending socket 28 is formed in the base portion 14 of the tapered leg 10. This socket element 28 is adapted to receive casters such as 30 as shown in FIGURE 1 by way of example so that a wheeled structure may be assembled from the structural elements.

With specific reference to the rest of the figures of the drawings, various constructed articles are depicted which may be formed from the basic structural elements shown in FIGURE 5. FIGURE 1 shows a wagon which may be formed from the structural elements comprising the subject matter of the instant invention. Therein, the flat member 16 is wedged on four tapered legs 10 and four partitions or side walls 22 extend between adjacent grooves 20 formed in the legs 10. Suitable caster elements 30 are disposed in the sockets 28 to provide rolling engagement with the ground surface. The suitable rope structure 32 may be disposed within apertures 34 formed in the flat member 16 and knotted as shown at 36 so that a child may pull the constructed wagon.

FIGURE 4 shows a box-like structure which may be used by the child for many suitable purposes such as a doll's bed or the like. The configuration depicted in

FIGURE 4 is similar to that in FIGURE 1 except that the casters 30 have been eliminated as well as the rope 32.

FIGURES 6 and 7 depict another enclosure which may be formed by the structural elements of the present invention and may be utilized for the child as a garage or any type housing structure. Said structure includes the basic elements of a flat plate 16 wedged upon the legs 10 of equal height and further comprises the side walls 22 and a top wall 24. One of the side walls 22 may be formed with an opening such as shown at 38 and have a ramp 40 leading from the ground level to the opening 38 and may be attached either to the side wall 22 adjacent the opening 38 or to the flat member 16 or may be a separate member wedged between the element 16 and element 22. Other uses of such structures may include a bird house or on a larger scale perhaps a dog house or the like.

FIGURE 8 illustrates a chair structure which may be formed using the structural elements of the present invention. The chair is formed by a pair of short legs 42 cooperating with a pair of tall legs such as 44, each leg having the usual grooves 20 formed therein. A flat plate member 16 may be telescoped and wedged in the usual manner intermediate the ends of both pairs of legs. A pair of arm rests comprising flat strips 46 and 48 have recesses or sockets formed therein at their front end similar to the apertures 26 on plate 24 (not detailed) and have apertures such as 18 in the plate 16 formed at the rear end thereof. Hence, the arm rests 46, 48 are adapted to seat upon the end portions of the shorter legs 42 and intermediate the ends and base portions of the tall legs 44. A suitable back rest such as shown at 50 comprising a side wall member similar to member 22 is adapted to be slidably disposed in the elongated grooves 20 of the legs 44 and adapted to abut the rear of the arm rests 46, 48.

A suitable cushioning pad 52 may be disposed between the back rest 50 and the seat portion 16 of the chair to provide cushion support for one seated within the chair.

It should therefore be readily apparent that the structural elements of the present invention may be used for many varied purposes. They may be used by a child in the fashion of an erector set or the like or it may even be used by adults to build various useful structures such as the chair shown in FIGURE 8. Furthermore, although four grooves are shown in each of the tapered legs 10 spaced 90° from each other, it is of course apparent that any number may be so utilized depending on the specific use and the number of side walls or plates needed. The structural elements and method contemplated for assembling the same requires no fastening elements and after a structure is built may be readily disassembled at will. Furthermore, the structural units may be sold in a compact knockdown condition and may be shipped in the same compact state. Also, while the legs have been shown as circular in cross section, any suitable cross section may be used.

Further modifications which are envisaged by this invention include not only using the method of construction and elements disclosed above for miniature articles but for full sized, large scale structures. For example, the principles of this inventions may be utilized to build a full sized carport. It should be readily apparent that the tapered legs of the present invention may be anchored beneath the ground level and a flat plate member of suitable size wedged on said legs at the ground level, thereby permitting a car to be driven onto said plate. An upper plate may be wedged on said legs to provide a roof for protecting the car from the elements. Also, it should be evident that in lieu of a one-piece lower plate, separate plates may be wedged on two adjacent legs, tying said legs together, and the resultant remaining space between said plates may be filled in by tying beams. It should be understood that other large scale structures are also envisaged using the principles of the

instant invention such as for example, a barn, shed, hanger, garage, barracks, dog house or storeroom. Therefore, a unique set of structural elements and method of assembly has been provided by the instant invention, the use of which is limited only by the imagination of the user.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a unit of the class described, a horizontal panel having corner portions each provided inwardly of adjacent marginal edges with leg accommodating, assembling and retaining holes each of the same diameter, and four interchangeable panel supporting legs, each leg being truncated conical in form and gradually and progressively increasing in cross-section from an upper flat end and tapering uniformly downwardly to a lower flat end, said upper and lower ends being horizontal and parallel to each other when in use, the lower flat end of each leg being of an area sufficient that when seated on a support surface it renders the leg self-standing, the peripheral surface of each leg having means including a plurality of selectively usable circumferentially spaced panel-assembling and keying grooves, said grooves being linearly straight from end to end, equidistant from each other and the bottom portions of said grooves being parallel to the leg axis and opening through said upper and lower ends, the peripheral surfaces of the legs between said grooves being uninterruptedly smooth, upper portions of said legs projecting through and beyond the aforementioned holes, lower portions of said legs depending below the plane of said panel, the median portions of said legs being frictionally lodged and wedged in their respective holes in a manner to assemble and join the legs and panel together.

2. The structure defined in claim 1 and wherein each leg is circular in cross-section from end to end, said panel being rectangular in plan and the aforementioned holes being circular, each hole being of a diameter greater than the cross-sectional dimension of the upper ends of the legs but proportionally less than the cross-sectional dimension of the lower ends of said legs, and, in combination, a plurality of individual vertical side wall panels of identical construction disposed at right angles to and having lower marginal edges thereof residing atop the top surface of said horizontal panel and having outwardly disposed end portions slidably and removably keyed in selected cooperating grooves in the upper extending portions of the coacting legs, said side walls being bodily and readily insertable and removably by way of the open upper end portions of the respectively cooperating grooves.

3. The structure defined in claim 2, and wherein the upper extending end portions of the respective legs are of the same height with the upper flat ends in a common plane, and a second horizontal panel disposed in spaced parallelism above the plane of the first-named panel and having a flat underneath side, the respective four corner portions of said underneath side being provided with socket-like recesses, the upper ends of said legs fitting removably into their respectively cooperable recesses and said underneath side of said panel resting atop the upper marginal edges of said vertical side wall panels.

4. The structure according to claim 1, and wherein two of the four legs are taller than the other two legs with upper half-portions thereof projecting above the plane of the upper ends of the shorter legs, a pair of duplicate horizontal relatively narrow flat plate-like members having rearward ends provided with holes snugly encircling and wedge-fitted on median portions of said taller

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legs, having underneath and side surfaces of their forward end portions provided with socket-like recesses, the upper ends of the shorter legs being seated in their respectively cooperable recesses, said plate-like members constituting armrests, and a vertical backrest panel situated between the upper half-portions of said taller legs and having vertical marginal edges removably keyed in the grooves with which said vertical marginal edges are aligned.

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