April 20, 1954 L. E. MERYDITH 2,676,082

CATCH UNIT FOR RELATIVELY MOVABLE MEMBERS

Filed March 23, 1949 2 Sheets-Sheet 1

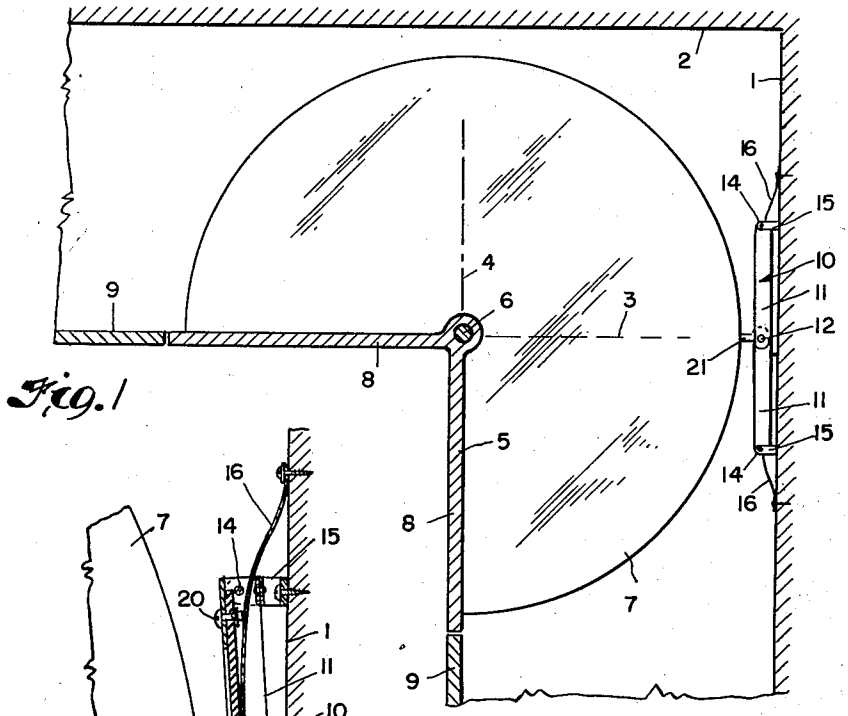

Fig. 1

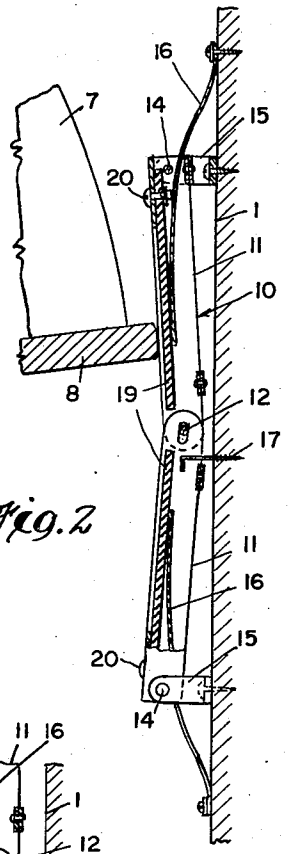

Fig. 2

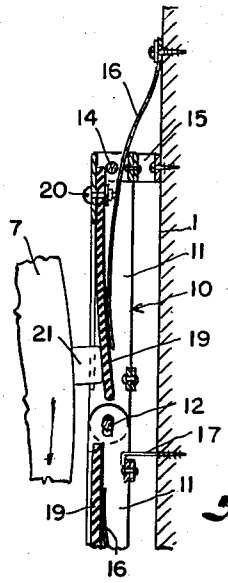

Fig. 3

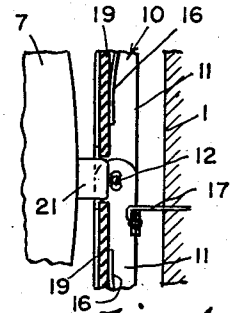

Fig. 4

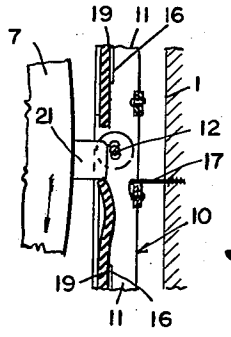

Fig. 5

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CATCH UNIT FOR RELATIVELY MOVABLE MEMBERS

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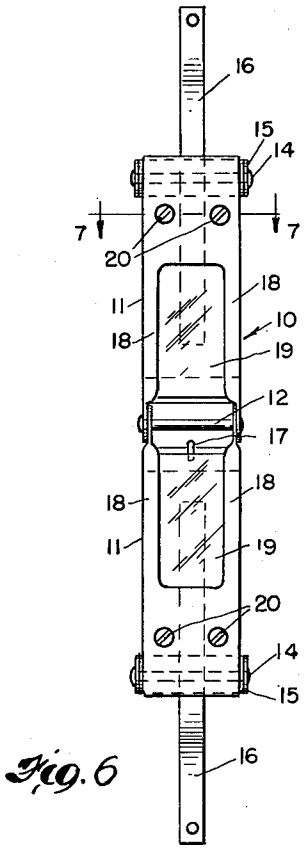

Fig. 6

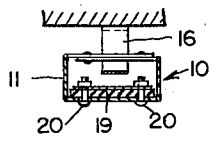

Fig. 7

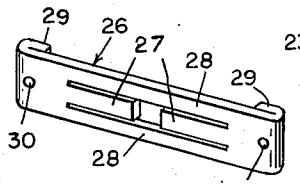

Fig. 10

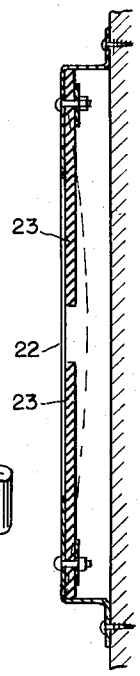

Fig. 8

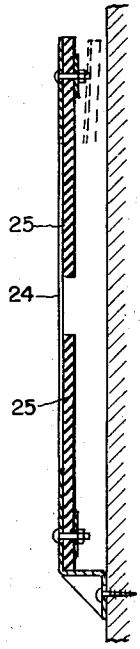

Fig. 9

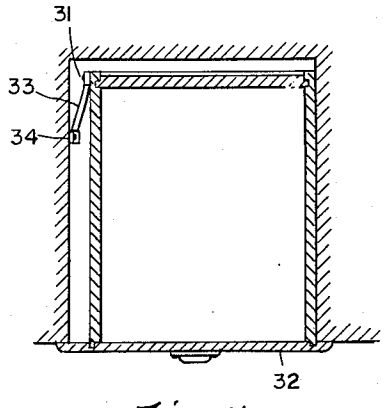

Fig. 11

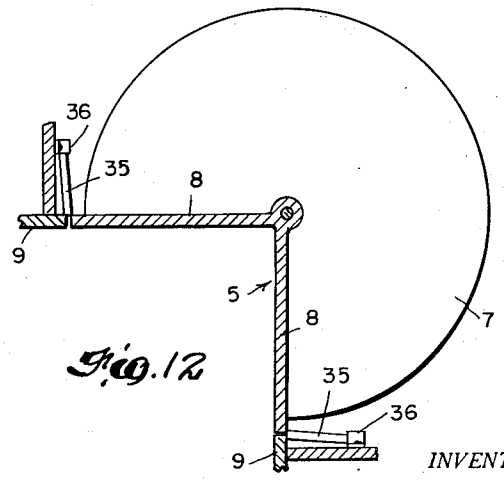

Fig. 12

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CATCH UNIT FOR RELATIVELY MOVABLE MEMBERS

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Application March 23, 1949, Serial No. 83,082

6 Claims. (Cl. 312—238)

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The present invention relates generally as indicated to a catch unit for relatively movable members and is, in its broader aspects, concerned with certain improvements in a catch unit which is operative to permit, without appreciable resistance or opposition, movement of members to a preselected position with respect to each other and to yieldably oppose movement of said members from such preselected position. More specifically, certain forms of the invention have to do with catch units which operate to yieldably arrest relative movement of members in opposite directions but yet enable continued relative movement in the same or opposite directions by the application of a force in excess of the opposition afforded by the units.

In the case of revolving corner base cabinets, for example, it is desired to index or position the revolving cabinet with its front panels flush with the adjacent supporting structure, to rotate the cabinet in opposite directions to expose the bins or shelves carried thereby, and to spin the cabinet in either direction from such open position to a closed position. As evident, the catch element which is carried by the cabinet cannot project beyond the edges of the front panels and the cooperating catch unit carried by or fixed relative to the supporting structure must permit the panels to pass relatively freely in opposite directions and selectively engage the catch element to index the cabinet in a closed position. Likewise, in rotary card file units it is desired to spin the files and have the same stop in selected positions for ready access by different persons seated thereabout. In other installations too numerous to mention the principles of this invention have utility in freely permitting movement of members to preselected positions but yieldably opposing movement of the members away from such positions. For example, drawers in trailers equipped with the present invention are yieldably held closed and thus prevented from falling out due to vibration and typewriter carriages or other movable machine parts can be yieldably stopped at selected positions by installing the catch unit constituting the present invention thereon.

Accordingly it is one primary object of this invention to provide a catch unit which is operative to index or position the relatively movable members with which associated, offering little resistance to movement to such position and greater resistance to movement away from such position.

Another object is to provide a noiseless catch unit.

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Another object is to provide a catch unit which cushions the indexing movement of relatively movable members.

Another object is to provide a catch unit which is of a most simple and economical construction.

Another object is to provide a catch unit in which one of the cooperating catch elements is of a readily laterally deformable form and a more difficultly endwise deformable form, such characteristics being utilized to provide free movement of the members to indexed position and less free movement from such indexed position.

Other objects and advantages will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends, said invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the ways in which the principle of the invention may be employed.

In said annexed drawings:

Fig. 1 is a horizontal cross-section view of a typical revolving corner base unit having one form of catch unit associated therewith and yieldably holding the cabinet in a closed position with its front panels flush with the adjacent supporting structure of the cabinet;

Fig. 2 is an enlarged cross-section view of the catch unit illustrating its operation when the edge of one of the front panels of the cabinet is moving therepast;

Fig. 3 is a fragmentary cross-section view of the catch illustrating its operation when the catch finger on the cabinet is approaching the position shown in Fig. 1;

Fig. 4 is a fragmentary cross-section view illustrating the catch finger on the cabinet in an indexed position in the catch unit, the cabinet then being in the closed position of Fig. 1;

Fig. 5 is a fragmentary cross-section view illustrating the manner in which the catch unit functions to yieldably oppose rotation of the cabinet from the indexed or closed position;

Fig. 6 is an elevation view of the catch unit illustrated in Figs. 1 through 5;

Fig. 7 is a cross-section view taken substantially along the line 7—7, Fig. 6;

Figs. 8 and 9 are cross-section views of modifications;

Fig. 10 is a perspective view of a one-piece two-way catch unit;

Fig. 11 illustrates a modification of the catch unit as employed with a drawer; and

Fig. 12 illustrates a modification requiring two separate units one disposed behind each front panel of the revolvable cabinet.

Referring now to the drawings and first to Fig. 1, the numerals 1 and 2 therein represent the intersecting back walls of a base cabinet structure, such walls being either the cabinet walls as in prefabricated metal cabinets or the room walls as in wood cabinets which are custom built and nailed to the room walls.

One objection to conventional cabinets with drawers or cupboards with hinged doors is that when there are drawers adjacent the internal corners, the space between the lines 3 and 4 is wasted and when there are cupboards with hinged doors, such space is not readily accessible. Accordingly, to utilize a large portion of such space and provide ready access thereto there has been developed a unit 5 which is rotatable on the pivot 6 and which is provided with one or more shelves 7 or the like thereon of three-quarter circular form and front panels 8 adapted when the cabinet is in a closed position as shown in Fig. 1 to be flush with the adjacent front walls 9 of the cabinet structure.

The specific form of the revolving corner base cabinet is not a part of the present invention except insofar as the catch unit to be presently described has utility therewith in improving the operating characteristics of the cabinet so that the latter may be rotated in either direction to expose the shelves 7 simply by pressing on one of the panels 8 as with the knee or hand and closed simply by spinning the cabinet in either direction whereupon the catch unit 10 will stop the cabinet in its closed position as shown.

The catch unit 10 illustrated in Figs. 1 through 7 comprises a pair of generally aligned link members 11 having their overlapping ends pivotally connected together as by a pin 12 and their opposite ends respectively pivotally connected by pins 14 to the brackets 15 adapted to be secured in any known manner to one of the walls 1 or 2 or other structure. Said links 11 are yieldably urged to a generally in-line position as by leaf springs 16 secured to wall 1 and bearing on the respective links. Obviously in some instances one spring 16 bearing on one link will suffice. Moreover, it is contemplated to employ other forms of springs such as a torsion spring around one or both of the pins 14 in the brackets 15 or a coil spring compressed between one link and the wall or a leaf spring extending from one link to the other. The specific form of spring is immaterial inasmuch as the primary function thereof is merely to restore the links to the in-line position after being displaced by the front panels in a manner appearing from the ensuing description.

For the purpose of limiting the outward swinging of the links 11 a screw hook 17 fastened in the wall 1 is positioned to be engaged by one link. Here again any of a multitude of stopping means may optionally be employed, viz. interengaging stops on the links, interengaging stops on one link and its bracket, etc.

Each of the links 11 comprises a front face cut away through one end as best shown in Fig. 6 leaving side or flange portions 18 which are adapted to be engaged by the edges of the front panels 8 during rotation of the cabinet and provided with top and bottom flanges formed with openings for the pins 14 and 12.

Within each ink 11 is a strip 19 of flexible material (preferably rubber or the like) which has one end clamped to the link as by screws 20. The other end of each strip 19 adjacent the pin 12 is disposed behind the front face and free from the portions thereof 18, the opposed ends of said strips being spaced apart a distance substantially equal to the width of the catch finger 21 on the cabinet. Accordingly said strips 19 constitute longitudinally extending tongues disposed generally parallel to the path of movement of the catch finger 21 which is disposed generally transverse to the tongues. Said catch finger 21 is adapted to be disposed between the spaced ends of the tongues when the cabinet is in a closed or indexed position, said finger projecting radially from the cabinet so as to freely pass the front walls 9 of the cabinet supporting structure and being so dimensioned and located as to move between the side portions 18 of the links 11 and thus engage the outside side face of the tongues.

It is now apparent that the cabinet 5 will rotate freely without resistance because the shelves 7 do not touch the catch unit 10 and similarly when the edges of the front panels 8 engage the side portions 18 of the links 11 and move therepast to cause the links to be displaced as shown in Fig. 2 no appreciable resistance to free rotation of the cabinet is encountered.

When the catch finger 21 approaches an indexing position the links 11 will remain essentially in line as in Fig. 3 and the side of the tongue 19 engaged thereby will relatively easily be laterally deformed so as not to offer any appreciable resistance to the rotation of the cabinet. However, when said catch finger 21 reaches a position between the spaced ends of the tongues as in Fig. 4 the cabinet 5 will be brought to a silent and cushioned stop by reason of the application of endwise force on the end of that tongue 19 engaged by the side of the catch finger. The tongue 19 which was initially engaged and laterally deflected by the catch finger will return immediately to the position of Fig. 4 upon disengagement of the finger therefrom whereby both tongues will yieldably resist rotation of the cabinet in either direction.

When it is desired to rotate the cabinet in either direction from a closed position, the force applied on one of the front panels 8 will effect the application of endwise pressure between the catch finger 21 and one tongue 19 and such force will have to be sufficient to buckle or deform the strip as shown in Fig. 5 to allow the finger to disengage therefrom. Upon such disengagement the cabinet can then be freely rotated to expose the shelves 7 and then subsequently spun in either direction to a closed position.

From the foregoing description of the construction and operation of one form of catch unit it is understandable that a two-way catch unit has been provided which allows the relatively movable members with which it is associated to relatively freely move to a preselected position at which position the members are brought to a cushioned and silent stop and yieldably retained thereat.

In the modification illustrated in Fig. 8 the links 11 previously referred to have been replaced by a one-piece flexible metal or plastic member 22 having its opposite ends attached to a supporting wall or structure and adapted to be readily deformed to the dotted position as the front panels of the cabinet move therepast. The strips or tongues 23 again are preferably of rubber or rubber-like material and are arranged to

function in precisely the same manner as the tongues 19 in Figs. 1 through 7, viz. to be laterally deflected when the sides thereof are engaged by the catch finger 21 on the cabinet, to receive the catch finger 21 between the spaced ends of said tongues when the cabinet is in a closed position, and to be deformed or buckled by endwise pressure applied thereon when the cabinet is being moved from such closed or indexed position.

The structure illustrated in Fig. 9 is the same as that illustrated in Fig. 8 except that the tongue supporting member 24 is mounted in the manner of a cantilever beam adapted to be laterally flexed to the dotted position by the front panels of the cabinet. The tongues 25 in Fig. 9 function in exactly the same manner as the previously described tongues 19 and 23.

In Fig. 10 there is shown still another form of two-way catch unit similar in function to those illustrated in Figs. 1 through 9 except being made from one piece of flexible material 26 such as rubber or rubber-like material and slit or moulded to define flexible tongues 27 which are adapted to be laterally deflected by the catch finger of a movable member, to receive the catch finger between the opposed spaced ends thereof, and to yieldably retain the catch finger therebetween. The side portions 28 of the strip are adapted to be engaged and deformed as by the edges of the front panels of a revolvable corner base cabinet, and the re-bent ends 29 or otherwise thickened ends of the strip provide a clearance space for such deformation. The holes 30 through the opposite ends of the strip are for nails, screws, or like fastening means whereby the strip may be secured to a wall or other supporting structure. If desired, said strip 26 when made of rubber or rubber-like material may be treated so as to have a low coefficient of friction with the panel edges and with the catch finger.

In the embodiment of the invention illustrated in Fig. 11 the movable member having the catch or finger therein 31 is exemplarily illustrated as comprising a drawer 32, said finger being engaged with the end of a flexible tongue 33 also preferably of rubber or rubber-like material as in the previously described catch units, such engagement, as apparent, yieldably holding the drawer in a closed position. Said tongue 33 preferably has a metal support 34 or is otherwise formed so as to be capable of being attached at one end in fixed position on a support.

When the drawer 32 is being closed the catch finger 31 will engage the side of the tongue and will laterally deflect the same, such deflection being effected without appreciable resistance to the closing of the drawer. When the drawer is closed, the tongue 33 springs to the position shown and engages behind the catch finger 31 to lock the drawer against opening except by application of endwise pressure on said tongue sufficient to buckle the same, such buckling requiring application of a greater force than required to laterally deflect the tongue. Thus, there is provided a yieldable lock which silently and easily latches through lateral deflection of a flexible tongue and unlocks by the application of endwise pressure on the tongue which buckles the same and requires application of a considerably greater force.

With reference to Fig. 12, the rotary cabinet unit 5 is yieldably retained in a closed position by two catch units, each of which is engaged by the rear face of the adjacent front panel 8 and each of which comprises a flexible tongue 35 mounted in a carrier 36 which in turn is fixedly mounted on the cabinet supporting structure. As apparent, when the cabinet is rotated in either direction to an open position one of the strips or tongues 35 will be subjected to endwise pressure and thereby buckled to permit the adjacent front panel 8 of the cabinet to pass. Likewise, as the cabinet approaches a closed position one of the tongues 35 will be laterally deflected by the edge of the adjacent front panel 8 while the end of the other tongue 35 will function as the cushioning stop. However, one of the shortcomings of a construction such as that illustrated in Fig. 12 is that when the cabinet is open only partway, that is with the cabinet rotated less than 90° from closed position, then further opening again requires overcoming the resistance to buckling of one of the tongues 35 and closing from such part-way open position should be effected in a direction opposite from the opening. Of course, by rotating the cabinet 90° from a closed position in one direction one-third of the shelf 7 will be exposed and the adjacent one-third will be readily accessible, and similarly, by rotating the cabinet 90° in an opposite direction from the closed position, the remaining one-third will be exposed.

As previously indicated, the applications of the catch units herein disclosed are to be regarded merely as exemplary, it being obvious that said units may be applied to any number of devices wherein it is desired to yieldably arrest or cause cushioned stopping of a moving member. The principal feature which provides for no appreciable resistance to movement of a member to a selected position is the provision of a flexible element engaged along its side to laterally deflect the same and subsequently engaged at its end to require application of an endwise force thereon sufficient to buckle or compress the same to an extent permitting disengagement of the moving member therefrom. Other alternatives deemed to be within the spirit of the present invention are the mounting of the catch unit on the moving member and the catch finger or equivalent on the member relative to which the moving member moves. Furthermore, in some cases flexible metal strips or tongues might be substituted for the rubber or rubber-like tongues herein disclosed and similarly coil springs may have utility in that they would be relatively easily deflected laterally of the axes thereof but more difficulty compressed in an axial direction and buckled.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In combination, an angular cabinet support provided with openings at the corner, a cabinet rotatably mounted on said support and provided with front panels of substantially the same size and shape as such openings, a radially projecting catch finger on said cabinet circumferentially spaced from said panels, a catch unit fixed relative to said support comprising a pair of substantially aligned flexible tongues having spaced free ends engaging opposite sides of said finger whereby to hold said cabinet in a preselected position relative to said support with said panels closing such openings, said tongues and finger being so disposed that, during rotation of said cabi-

net to a position with said finger between the free ends of said tongues, said tongues are laterally deflected, said catch unit further including means connected to the other ends of said tongues and extending alongside said tongues, said means being laterally deflected to correspondingly move said tongues, as the edges of the panels of said cabinet move past said catch unit in contact therewith thereby permitting said cabinet to be rotated without positioning of the edges of the panels between the free ends of said tongues.

2. A catch unit providing a yieldable stop for a rotary cabinet and the like, said catch unit comprising an elongated, laterally flexible body having a laterally projecting attaching portion at one end by which said catch unit is adapted to be mounted for lateral deflection of said body as a projecting portion of such cabinet moves therepast in contact therewith, a pair of resilient, laterally flexible tongues extending longitudinally of said body toward each other and terminating in opposed spaced apart free ends, the other ends of said tongues being secured to said body adjacent the ends of the latter, said tongues being adapted to be laterally deflected relative to said body for reception of a projecting cooperating element of such cabinet between the free ends thereof as such element moves in lateral deflecting contact with one of said tongues to a position abutting the free end of the other tongue, said one tongue springing to its laterally undeflected position when such cooperating element is positioned in abutting relation with said other tongue whereby the free ends of both tongues are in abutting relation with respect to such projecting element to thus resist further movement of such rotary cabinet, and said tongues being displaced by lateral deflection of said body by such projecting portion to permit the latter to move therepast without abutting the free ends of either of said tongues.

3. The catch unit of claim 2 wherein said body has a second laterally projecting attaching portion at its other end and wherein said body comprises first and second links pivotally connected together at one end and pivotally connected at their other ends to the respective attaching portions, and resilient means acting on said links to swing the same to substantially aligned, laterally undeflected position.

4. The catch unit of claim 2 wherein said body laterally overlaps one side of said tongues whereby, upon lateral deflection of said body by such projecting portion, said tongues are laterally displaced therewith to permit such projecting portion to move past said catch unit, as aforesaid.

5. The catch unit of claim 2 wherein said body comprises a unitary strip of rubber-like material integrally formed with said tongues.

6. A catch unit comprising an elongated unitary strip of flexible material integrally formed with a pair of laterally deflectable tongues lying substantially in the plane of said strip, said tongues extending longitudinally of said strip toward each other and terminating in free ends spaced apart for reception of a cooperating element therebetween, said strip including a continuous longitudinally extending side portion disposed alongside said tongues and adapted to be laterally deflected by another element to correspondingly displace said tongues whereby such another element may pass said catch unit without abutting the free end of either tongue.

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