

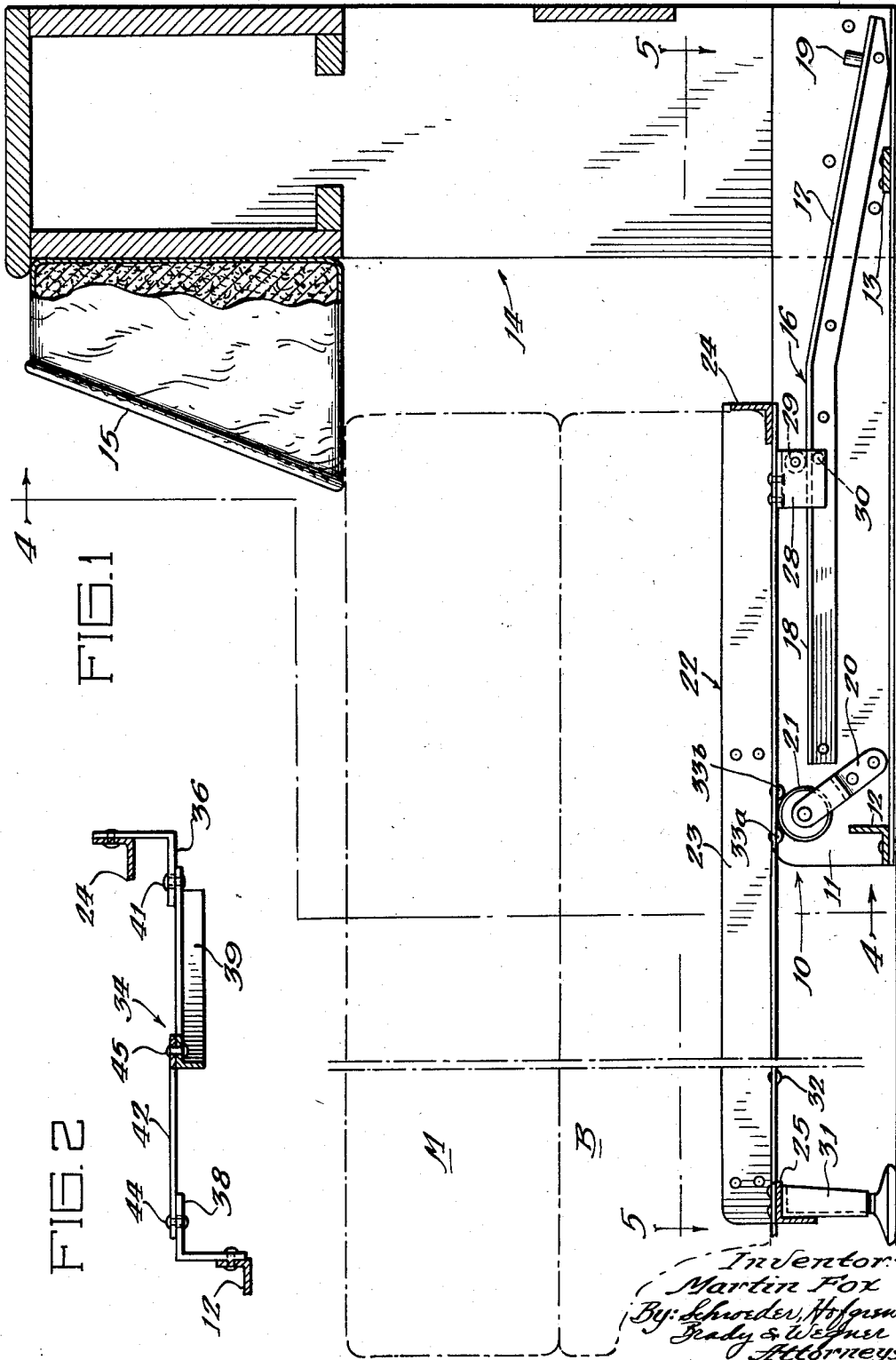
Oct. 6, 1959

M. FOX
SOFA BED

2,907,053

Filed Sept. 9, 1955

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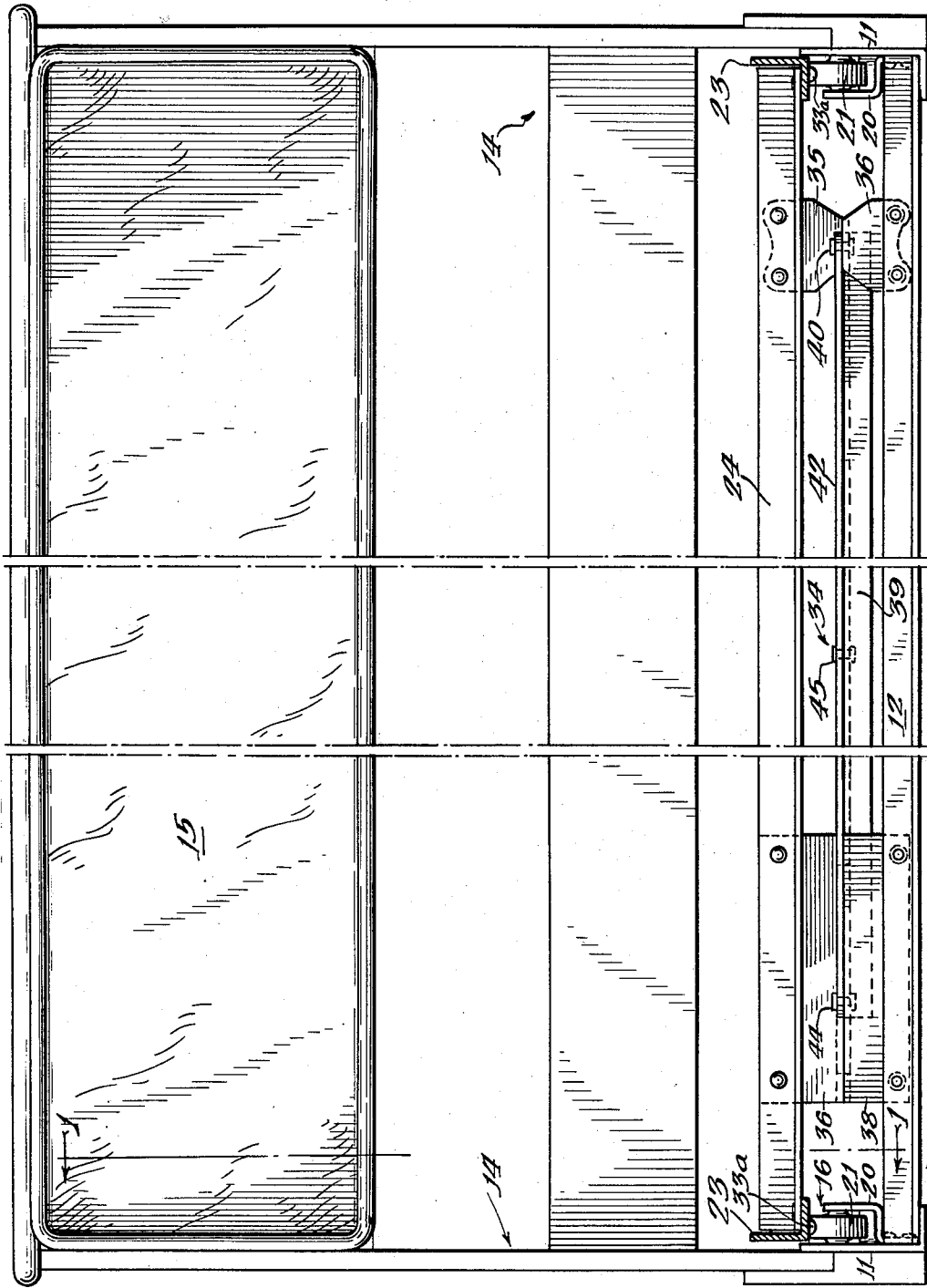


FIG. 4

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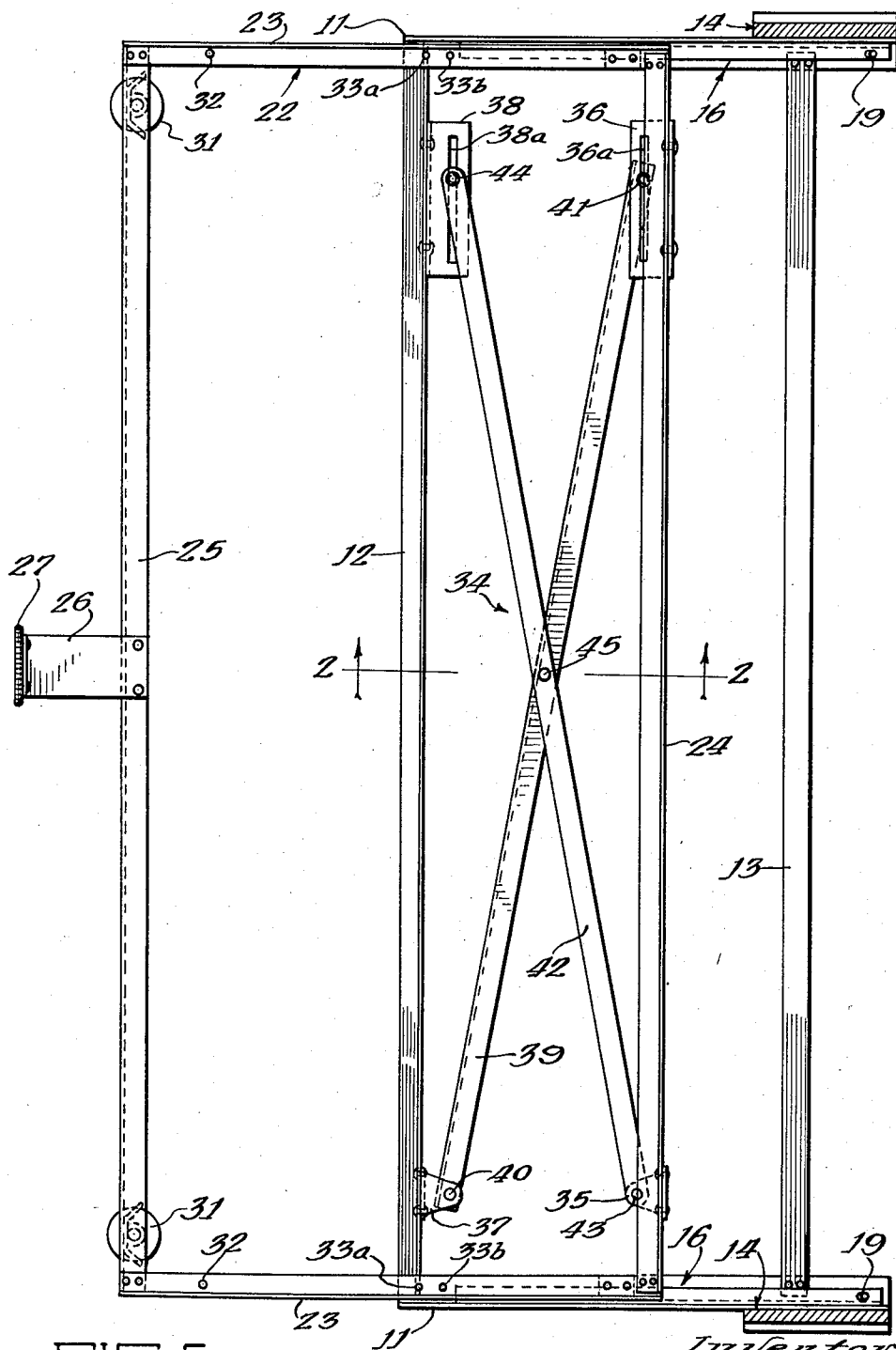


FIG. 5

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Application September 9, 1955, Serial No. 533,486

3 Claims. (Cl. 5-12)

This invention relates to sofa beds, and in particular it relates to a sofa bed in which a seat frame is movable between a retracted rearwardly and downwardly inclined sofa position and a horizontal bed position, and equalizer means are provided for assuring that the movement of the seat frame is parallel to the base frame upon which it is supported.

The principal object of the invention is to provide a sofa bed of extremely simple and rugged construction so as to be suitable for hotel and similar transient use where the handling of the sofa bed is likely to be particularly rough.

A further object of the invention is to provide a sofa bed in which the base frame has a pair of upwardly and forwardly inclined tracks at its two end members upon which the rear of the seat frame is supported and has a pair of rollers at the front of its end members on which the forward portion of the seat frame is supported so that the seat frame may be easily moved between a retracted inclined sofa position and a forwardly extending horizontal bed position.

Yet another object of the invention is to provide a sofa bed which has suitable detents to fix the seat frame in its sofa position and in its bed position.

Yet another object of the invention is to provide a sofa bed construction in which the seat frame may be moved forwardly from bed position so that a person making the bed or cleaning may stand between the rear of the seat frame and the back of the sofa.

Another object of the invention is to provide a sofa bed which has an equalizer assembly to maintain the substantial parallelism between the seat frame and the base frame during movement between bed position and sofa position regardless of where the seat frame is gripped to move it.

The invention is illustrated in a preferred embodiment in the accompanying drawings in which:

Fig. 1 is a fragmentary sectional view of a sofa bed embodying the invention taken as indicated along the line 1-1 of Fig. 4 with the seat frame in bed position;

Fig. 2 is a fragmentary section on an enlarged scale taken as indicated along the line 2-2 of Fig. 5;

Fig. 3 is a view similar to Fig. 1 with the seat frame in sofa position;

Fig. 4 is a fragmentary section taken as indicated along the line 4-4 of Fig. 1; and

Fig. 5 is a section taken as indicated along the line 5-5 of Fig. 1.

Referring to the drawings in greater detail, the sofa bed of the present invention has a rectangular base frame indicated generally at 10 which includes end members 11, an angle member forming a front rail 12 and a flat back rail 13. At the rear of the base frame 10 is a back frame indicated generally at 14 which has a forwardly extending upholstered back 15 at its upper end.

Mounted on the end members 11 is a pair of supporting track members 16 each of which includes a forwardly and upwardly inclined track portion 17 and a horizontal

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forward track portion 18. At the rear of the inclined track portions 17 are stop pins 19. Mounted adjacent the fronts of the end members 11 are roller brackets 20 for seat supporting rollers 21.

5 A rectangular seat frame, indicated generally at 22, has end rails 23 formed of angle members with their upright arms outermost and extending upwardly, an angle member 24 which forms a back rail with its upright arm at the rear and extending upwardly, and an angle member 10 25 which forms a front rail and has its upright arm extending downwardly. As seen in Figs. 1, 3 and 5, the seat frame 22 is narrower than the box spring B and mattress M, shown in broken lines, which rest upon it, and is provided at its center with a forwardly extending arm 15 26 which extends to the front of the box spring and is provided with a pull member 27. The forward portion of the seat frame 22 is supported on the rollers 21 and its rear portion is provided with a pair of depending support brackets 28 each of which has a roller 29 which rides on top of the track 16 and a pin 30 which rides under the track 16. Thus, when the rear supports 28 are at the lower rear ends of the tracks 16 against the stop pins 19 as shown in Fig. 3 the seat frame 22 occupies a rearwardly inclined position which gives it a slope for comfortable sitting. In this position a pair of legs 31 on the front rail 25 of the seat frame are slightly above the floor. In order to move the seat frame from the sofa position of Fig. 3 to the bed position shown in Fig. 1 it is necessary only to grasp the pull member 27 and pull the frame 22 with the box spring B and mattress M supported on it forward so that the rear supports 28 travel up the inclined sections 17 of the tracks 16 and onto the horizontal sections 18 of those tracks. As this movement takes place, the end rails 23 of the seat frame roll on the rollers 21 and rock with respect to the base frame 10 so that in bed position the front legs 31 rest on the floor. As seen in Fig. 3, the end rails 23 are provided with rivets 32 which act as detents to engage behind the rollers 21 in sofa position so that the seat frame may not be inadvertently moved forward; and as best seen in Fig. 1 the end rails 23 also have a pair of closely spaced rivets 33a and 33b which flank the rollers 21 in bed position to prevent accidental movement of the seat frame in either direction from that position.

One of the difficulties in the use of most sofa beds 45 is that a person making the bed must do it entirely from one side, and furthermore there is a space beneath the back cushion and behind the seat frame which is normally inaccessible for cleaning unless the entire sofa is moved. These difficulties are overcome in the present construction by the horizontal track portions 18 which extend nearly to the front of the base frame 10. This permits additional forward movement of the seat frame 22 from bed position until the rear supports 28 strike the rollers 21 which limits forward movement of the seat frame and prevents the rollers 29 on the rear supports from dropping off the fronts of the tracks 16. When the seat frame is in its full forward position a person may stand between the sofa back 15 and the seat frame for convenience in making the bed.

One major difficulty in the operation of sofa beds is that a person moving the seat frame in or out is very likely to take it by one corner, or push it near one end, which tends to skew it on the base frame and cause binding of the supporting members. This difficulty is overcome in the present construction by means of an equalizer assembly which is best seen in Figs. 2, 4 and 5, and is indicated generally at 34. Referring especially to Fig. 5, the equalizer assembly includes a depending pivot bracket 35 near one end of the back rail 24 of the seat frame and a depending slide bracket 36 near the opposite end of the back rail 24 which has a longitudinal slot 36a. On

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the front member 12 of the base frame 10 in line with the depending pivot bracket 35 is an upstanding pivot bracket 37, while opposite the depending slide bracket 36 is an upstanding slide bracket 38 having a longitudinal slot 38a. An angle member 39 is pivoted at 40 on the upstanding pivot bracket 37 and has a pin 41 at its opposite end which engages the slot 36a so that the angle member 39 forms a first equalizer strut. A metal bar 42 is pivoted at 43 on the depending pivot bracket 35 and has at its opposite end a pin 44 which engages the slot 38a in the upstanding slide bracket 38 to form a second equalizer strut. The struts 39 and 42 are pivotally connected at their midpoints by means of a double headed pin 45. The pivoted cross struts 39 and 42 serve to retain the seat frame 22 in its normal position parallel to the base frame 10 during movement of the seat frame on the tracks 16 and rollers 21. Thus, a person moving the seat frame in and out need not use the handle 27 in order to obtain a smooth, non-binding movement of the seat frame on the base frame.

The foregoing detailed description is given for clearness of understanding only and no unnecessary limitations are to be understood therefrom, as some modifications will be obvious to those skilled in the art.

I claim:

1. In a sofa bed: a rectangular base frame having low front and back rails and relatively higher end members; a pair of forwardly and upwardly inclined tracks on the rear portions of said end members; a pair of rollers in front of said tracks; a rectangular seat frame the margins of which are substantially parallel to those of said base frame supported on said tracks and rollers wholly above the plane of the front and back rails for bodily, unitary movement between a retracted sofa position and a forwardly extending bed position; a depending pivot bracket and a depending longitudinally slotted bracket on the rear of the seat frame; an upstanding pivot bracket and an upstanding longitudinally slotted bracket on the front rail of the base frame, the slots and pivots in said brackets being substantially coplanar in bed position of the seat frame; and a pair of crossed struts pivoted at their midpoints, one of said struts being pivoted on the depending pivot bracket and slidably engaging the upstanding slotted bracket and the other of said struts being pivoted on the upstanding pivot bracket and slidably engaging the depending slotted bracket.

2. A sofa bed comprising: a rectangular base frame having low front and rear members and higher end members; a pair of forwardly and upwardly inclined tracks on the rear portions of said end members, the forward portions of said tracks being in a plane substantially above said front member; a pair of supporting rollers on the front portions of said end members; a rectangular seat frame having end rails supported on said rollers, said seat frame having front and rear rails, and end rails which are longer than the base frame end members so the front portion of the seat frame is always in front of the base frame; depending rear support members on said end rails which engage said tracks, said support members and rollers being so positioned and arranged that the seat frame may occupy a horizontal bed position with said support members at the front of the tracks or an inclined sofa position with the support members at the rear of the tracks; fixed legs on said front portion of the seat frame

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which are clear of the floor in sofa position and support the front of said seat frame in bed position; and equalizer means connecting the rear rail of the seat frame to the front member of the base frame, said equalizer means comprising an upstanding pivot bracket and an upstanding longitudinally slotted bracket on the front member, a depending pivot bracket and a depending longitudinally slotted bracket on the rear rail, the pivots and slots in said brackets being substantially coplanar when the seat frame is in bed position, and a pair of crossed struts pivotally connected to each other, each of said struts having one of its ends pivotally connected to a bracket on one of said frames and its other end slidably connected to a bracket on the other of said frames.

3. A sofa bed comprising: a base frame having parallel end members and an upstanding back the forward portion of which is padded; a pair of forwardly and upwardly inclined tracks on the rear portions of said end members, said tracks having horizontal portions at their forward ends which terminate at a point well forward of a vertical plane through the front of the padded back; a pair of supporting rollers on said end members immediately forward of said tracks; a seat frame supported on said tracks and rollers for movement between an inclined sofa position with its rear portion substantially at the rear of the base frame, a horizontal bed position with its rear portion at the rear of the horizontal portions of the tracks and beneath the front of the padded back, and a horizontal forward position with its rear portion at the front of the tracks and substantially forward of the padded back, said seat frame being deeper from front to rear than said base frame and having a front portion always in front of the base frame; fixed legs on said front portion of the seat frame which are always forward of the base frame, said legs being clear of the floor in sofa position so that the front of the seat frame is supported on the rollers, and resting on the floor in bed position and in forward position to support the front of the seat frame in said positions; intermediate detent means which strikes the rear of the rollers to check forward movement of the seat frame when it is in bed position, said detent means being low and rounded to override the rollers for movement of the seat frame to forward position; and end stop means adjacent the rear of the seat frame to abut against the rollers in forward position and positively prevent further forward movement of said frame.

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