April 20, 1954 E. G. FERRIS 2,675,981

COLLAPSIBLE STAND

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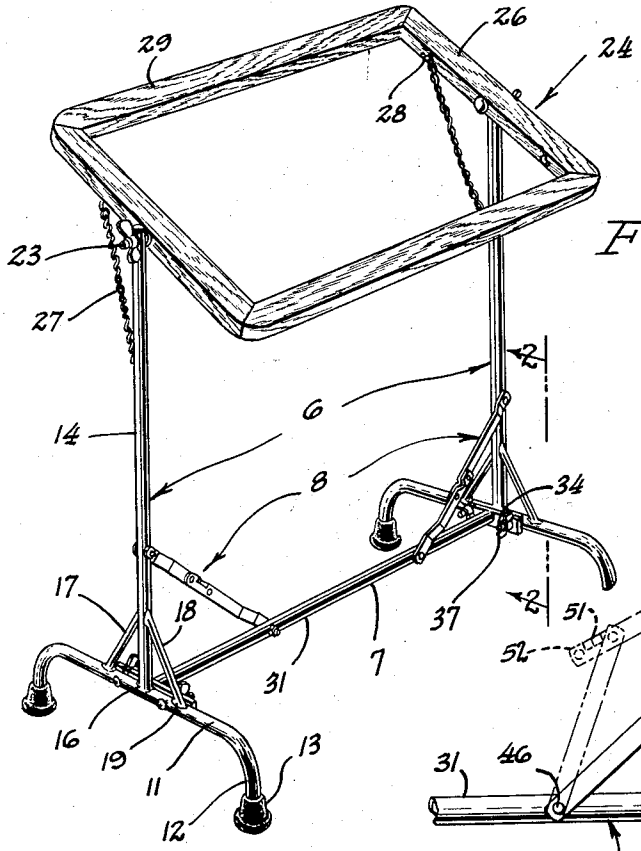


FIG. 1

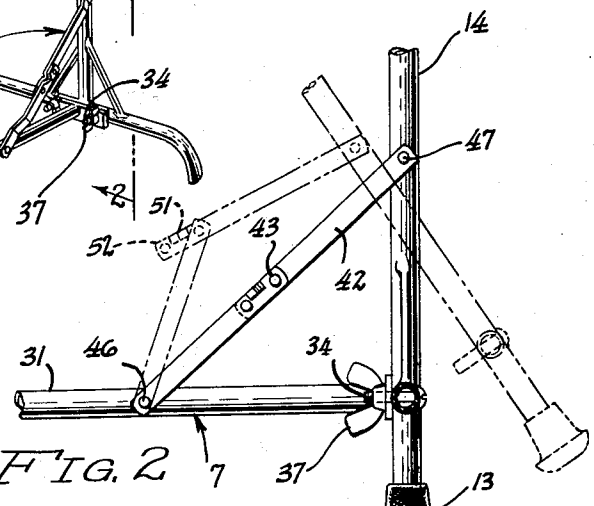


FIG. 2

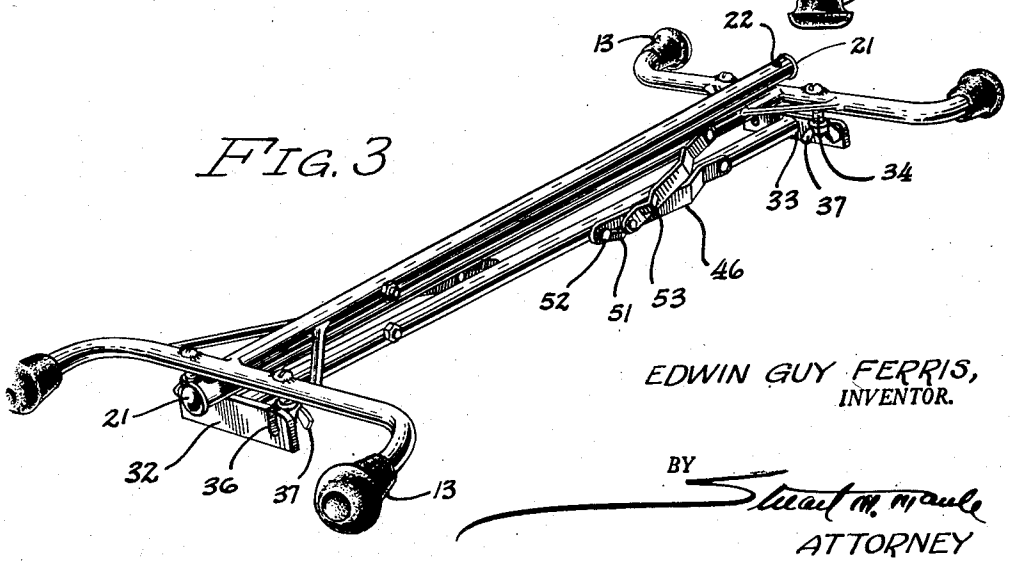


FIG. 3

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COLLAPSIBLE STAND

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1 Claim. (Cl. 248—166)

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This invention relates to stands for supporting special articles, and more particularly to collapsible or folding stands.

The art of "hooked-rug" making has been developed largely as the hobby, or avocation, of persons who, deriving their principal source of income from some other source, look to hooked rug making as a means of relaxation and/or of supplementary income, to which they can turn in their spare time. The equipment which they employ is therefore preferably of a readily portable nature, permitting it to be stored away, as in a suitable closet, between the periods of its use; and it is with this desirable characteristic of apparatus of the general type indicated in mind that the collapsible stand of the present invention has been developed.

It is, therefore, an object of my present invention to provide a collapsible stand for supporting a frame of the type commonly employed in the production of hooked rugs, the stand being so constructed that when erected to its operating arrangement, it is possessed of ample strength and rigidity to enable it to support the frame and the relatively heavy hooked rug in the production of which it is being employed, and yet which is so light that it can be collapsed, opened, and moved about with a minimum of effort.

Another object of the invention is to incorporate a unique bracing mechanism into the stand, which, when the stand is erect and in operating arrangement, adds materially to its strength and rigidity, and which, when the stand is collapsed, serves to interconnect the several parts thereof permanently, thus presenting a single, unitary structure having no loose parts apt to become lost when the stand is not in use.

A further object in this connection is to design the bracing mechanism already referred to, and to connect it to the other parts of the stand, in such a manner that it affords especial convenience by permitting the stand to be folded to the smallest possible over-all dimensions, thus permitting its being shipped in the smallest possible carton and permitting its being stowed away in a relatively small space.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of my invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood that I do not limit myself to the showing made by the said drawings and description, as I may adopt variations of the preferred form within the scope of my invention as set forth in the claim.

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Referring to the drawings:

Figure 1 is a perspective view of a collapsible stand incorporating the principles of the present invention and illustrating the manner of its use in supporting a conventional frame of the type commonly employed in the manufacture of hooked rugs.

Figure 2 is an enlarged, detail view in vertical section taken upon the line 2—2 of Figure 1, with the direction of view as indicated.

Figure 3 is a perspective view of the stand of Figure 1 in its collapsed arrangement.

Specifically describing that embodiment of my present invention which has been chosen for illustration and description herein, my improved, simplified, collapsible stand consists essentially of two end members 6, a rail member 7 whereby the end members 6 are interconnected and two combined link and brace members 8 each of which is associated with one of the end members 6 and serves to permanently connect that end member 6 to one end of the rail member 7 so that all parts of the entire stand are incorporated into a unitary structure having no loose parts, thus avoiding the danger of any parts becoming separated from the others and misplaced even when the stand is collapsed and stowed away between periods of use.

Each of the end members 6 comprises a transverse bar 11, each end of which is provided with a supporting foot 12 preferably in the form of a resilient tip 13 fitted upon the down-turned end of the piece of tubing of which the bar 11 preferably is composed. A rigid post 14 extends upwards, preferably vertically, from the mid point of the bar 11 of each end member 6, preferably being welded thereto at the lower end of the post 14 as indicated at 16, and also preferably being provided with angularly extending braces 17, each of which is welded at its upper and lower ends to the post 14 and the bar 11 respectively, as indicated at 18 and 19 respectively. Inasmuch as each of the posts 14 also is preferably composed of suitable metal tubing, I prefer to provide a closure cap 21 for the upper end of each post 14, which not only adds to the finished appearance of the entire stand, but also provides a suitable, smooth upper terminal capable of avoiding snagging the fabric of a rug being produced with the aid of the stand.

Adjacent the upper end of each post 14 a small hole 22 is provided for the reception of threaded

pins or bolts 23, thus making it possible to mount a conventional frame 24 of the type commonly employed in the production of hooked rugs. Such frames 24 are commonly provided with axially aligned bolts 23 at the midsection of the end members 26, these bolts 23 being rigidly secured to the end members 26. Consequently, the holes 22 are large enough for the bolts 23 to rotate freely therein, permitting the frame 24 to be rotated about the common axis of the two bolts 23 so that the operator can move it to any desired position of pivotal adjustment.

As a further item adapted to afford convenience to the user, I attach one end of a short length of chain 27 to each post 14 a short distance below the upper end thereof, each chain 27 being of such length that its other end can be engaged upon a hook 28 which is provided for that purpose upon the inner edge of the associated end member 26 of the frame 24 between the axis of the bolts 23 and the top member 29 of the frame 24 and thereby limit the tilting motion of the frame toward the operator to that position in which the frame slopes at approximately 30° or 40° from the horizontal.

The rail member also preferably is composed of a suitable length of tubing 31 and a short length of preferably flat plate 32 secured as by welding 33 to each end thereof in position extending across the end in a plane to which the axis of the tubing 31 is perpendicular and for a sufficient distance both to the back and front of the tubing 31 for bolts 34 carried by the transverse bars 11 of the end members 6 to be seated within slots 36 in the plates 32. This permits nuts, preferably wing nuts 37, carried by the bolts 34 to be tightened against the plates 32 and thereby to clamp the ends of the rail member 7 rigidly into engagement with the inner faces of the bars 11 of the end members 6 and thereby to rigidly interconnect the end members 6 and the rail member 7 with the posts 14 extending vertically upwards parallel with each other and spaced apart by a distance substantially equal to the length of the frame 24.

In addition to their function of permanently uniting all parts of the stand into a unitary structure, the members 8 also serve as braces to add rigidity and strength to the posts 14 in their described vertical positions when the end members 6 are securely clamped to the ends of the rail member 7. With this added function of the members 8 in view, each member 8 comprises two links 41 and 42 pivotally interconnected adjacent their proximal ends as by rivets 43 and with their distal ends pivotally attached as by rivets 46 and 47 respectively to the rail member 7 and to the associated post 14 respectively. When the stand is erect, i. e., in its operating arrangement, the two links 41 and 42 of each member 8 are substantially in axial alignment and sloping at substantially 45° downwards from the associated post 14 toward the mid portion of the rail member 7; but when it is desired to collapse the stand, after the frame 24 has been removed therefrom, the end members 6 can be released from their rigid engagement with the clamping plates 32 by loosening the wing nuts 37 and then raising each end member 6 with respect to the associated end of the rail member 7 in pivotal motion about the axis of the lower rivet 46 and, preferably, without completely removing the wing nuts 37 from their associated bolts 34. The stand can then be collapsed by continuing the pivotal motion of each lower link 41 about the axis of its

associated lower rivet 46 until it lies substantially in the horizontal plane of the rail member 7. However, inasmuch as the preferred proportionate dimensions of the constituent portions of my frame are such that the length of each post 14 is substantially the same as the length of the rail member 7, if the folding motion of each end member 6 were to be completed without pivoting the links 42 and 41 out of their axially aligned arrangement (in which they are illustrated in full lines in Figures 1 and 2) the stand would be collapsed with the top end of each post 14 projecting for a considerable distance beyond the opposite end of the rail member 7. However, by swinging the upper link 42 of each member 8 about the axis of the rivet 42 whereby it, the upper link 42, is pivoted to the proximal end of the lower link 41 of the associate member 8, as illustrated in broken lines in Figure 2, and in the opposite direction of rotation from that in which the lower link 41 is swung and until the distal ends of the two links 41 and 42 are disposed closely adjacent each other (as illustrated in Figure 3) the end members 6 will come to rest in neatly stacked relationship with each other and with the rail member 7 with the entire collapsed frame occupying a space the length of which is only slightly greater than any one of the members 6 or 7. This arrangement of course makes for economy of space both in the matter of stowing the collapsed frame away between periods of use and also in the matter of packaging for shipment, inasmuch as it permits the use of a considerably smaller shipping carton than would be required if the parts of the frame did not nest in the described compact arrangement.

When unfolding the stand so as to permit the frame 24 to be mounted thereupon in operating position, of course the reverse procedure is followed, care being exercised when the end members 6 assume their final positions with their posts 14 erect, to press the links 41 and 42 into axial alignment and slightly therebeyond, i. e., past their "dead center" position as illustrated in full lines in Figure 2. Preferably a shoulder 51 is provided upon the end 52 of the link 42 which projects beyond the pivot pin 43, which shoulder 51 comes to rest within a socket 53 or other suitable abutment carried by the link 41 as this "past dead center" position is achieved, so as to retain the links 41 and 42 in their bracing position and thereby preventing accidental collapsing of the stand.

I claim:

In a collapsible stand of the character described, a pair of spaced end members, each comprising a transverse bar, a supporting foot associated with each end thereof and a post rigid with and upstanding from said bar, a rail member, a frame, means associated with each of said end members for releasably securing it to said rail member for pivotal motion about an axis extending through said bars adjacent their upper ends, means associated with each of said end members for releasably securing it to said rail member, each of said securing means comprising a plate rigidly secured to the associated end of said rail member and extending in a plane to which the axis of said rail member is perpendicular, said plate having an aperture therein on each side of said rail member, bolts carried by said bar of the associated one of said end members in position to extend through said apertures, and a nut threaded on each of said bolts whereby said plate can be clamped rigidly but releasably

against a side of said bar, and a combined link and brace member permanently connecting each of said end members to said rail member and thereby uniting all of said members into a unitary structure, each of said combined link and brace members being pivotally connected at one end thereof to said associated end member and at the other end thereof to said rail member whereby said associated end member can be swung from erect position to collapsed position substantially parallel to said rail member, and each of said combined link and brace members comprising a pair of links pivotally connected to each other for movement optionally into folded relation with their distal ends adjacent each other whereby the associated ends of said rail member and the associated one of said end members can be brought into close proximity as said end member is swung to said collapsed position, or into

substantial alignment with each other whereby they co-operate with each other to define a brace extending obliquely between said rail member and said associated end member to rigidly interconnect them while extending angularly with respect to each other, and a stop on one of said links engageable with the other of said links to limit pivotal movement thereof with respect to each other when they have swung only slightly past their said aligned position.

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