

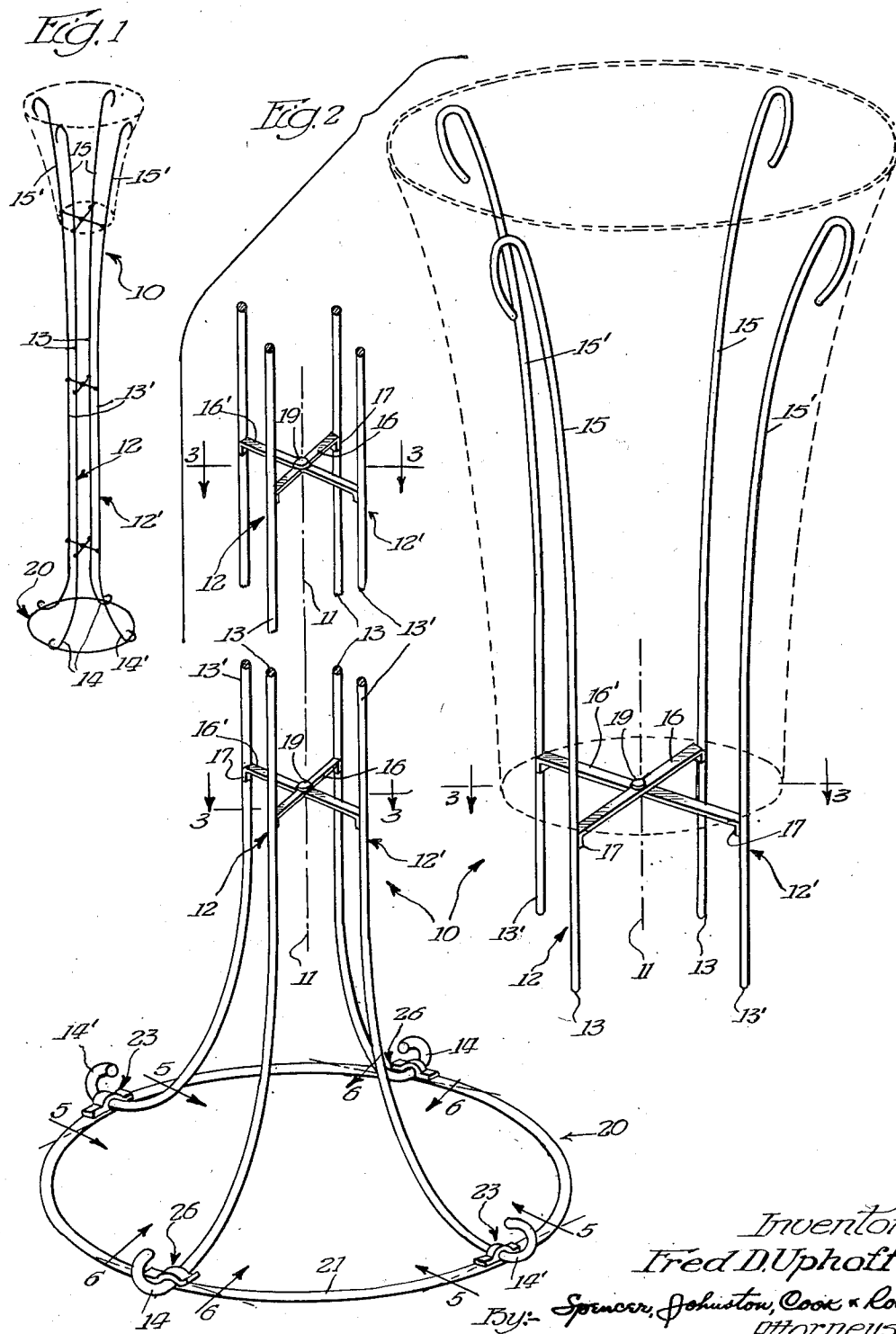
May 7, 1957

F. D. UPHOFF
COLLAPSIBLE STAND

2,791,391

Filed April 22, 1953

2 Sheets-Sheet 1



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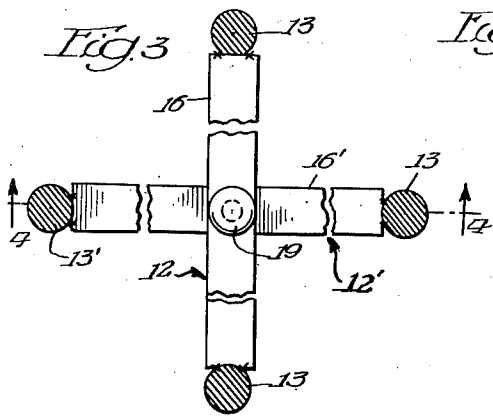


Fig. 7

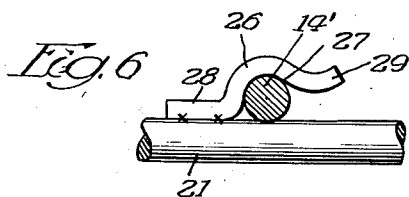
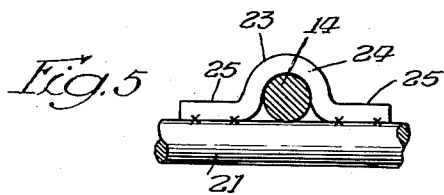
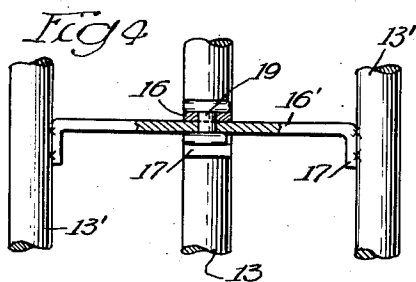
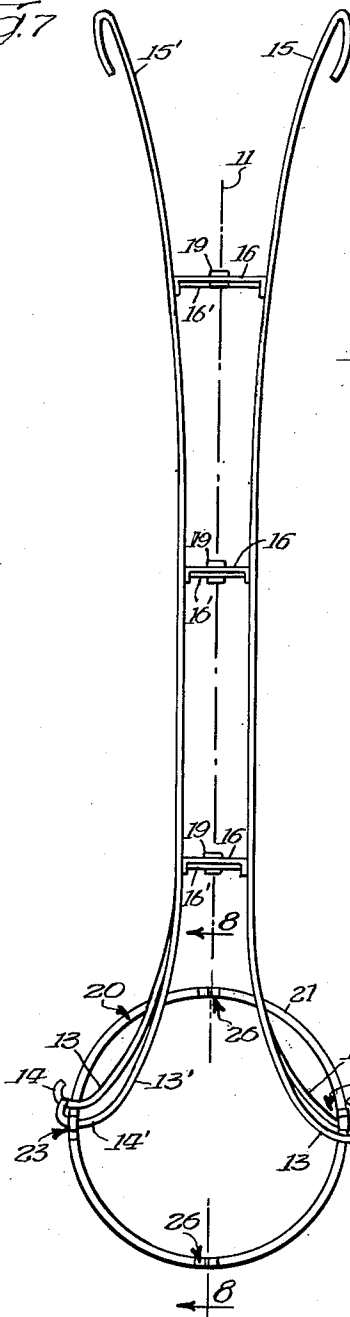
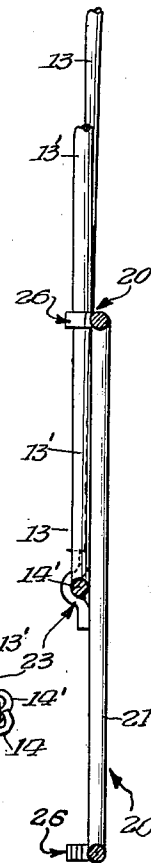


Fig. 8



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COLLAPSIBLE STAND

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2 Claims. (Cl. 248—150)

The present invention relates in general to support stands, and has more particular reference to light weight and readily portable support structures of the sort commonly provided for receiving and supporting a flower basket or vase for the attractive display of flowers, the invention pertaining more especially to display stands comprising pieces of metallic wire or bar stock of appropriate gauge suitably secured together to form a light weight structure of the character mentioned.

Support stands of the sort herein contemplated are adapted to support a load, such as a flower pot or vase, at a substantial elevation above the floor or other basic support means on which the stand is disposed when in use. Such support stands are, of necessity, somewhat top-heavy structures of relatively extensive character, since, in the interests of stability, relatively widely spaced feet have to be provided on the structure to prevent the same from tipping over when topheavily loaded at a substantial distance above the supporting feet thereof. As a consequence, support stands of the character mentioned are necessarily of relatively large overall cubic size, as compared with the weight of the structure, and are consequently unwieldy and expensive to store and to transport. Shipping cartons, of size substantially in excess of the most efficient package size for the shipping weight involved, are required, shipping costs being based upon the package size as well as on the weight of the shipment, and being excessive where the shipping package is of unduly large volume as compared with its weight.

An important object of the present invention is to provide a support structure of the character mentioned having collapsible parts adapted to fold together substantially in a common plane or zone of minimal thickness, whereby to provide a relatively flat package for efficient storage and shipment.

Another important object is to provide a collapsible support stand comprising relatively pivoted frames adapted to be expanded to form a structure of adequate stability.

A further object of the invention is to provide a structure, embodying upstanding frames having supporting feet and adapted to form an upright load supporting standard, and a base frame for the structure preferably in the form of a circular ring upon which the supporting feet of the upstanding frames may be connected in fashion such that, when folded together, the upstanding frames may be pivoted or turned, upon the support ring, substantially into the plane of the ring, to thereby form a thin, flat structure for efficient storage and low cost transportation; yet another object of the invention being to provide for latching the upstanding frames in expanded condition, on the ring-like base frame, and in position extending in planes normal to the plane of the ring-like frame, to thereby provide an upstanding support structure firmly secured upon the ring-like frame for maximum stability.

Another important object is to provide a three-dimensional support structure comprising frames of wire or bar stock, including a base frame and a pair of support

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frames disposable in mutually intersecting planes extending at right angles with respect to the plane of the base frame, the support frames being foldable together into position extending substantially in a common plane, and when so folded being, in turn, foldable on said base frame substantially into the plane thereof to thereby provide a compact collapsed structure of relatively thin, flat configuration, having minimum space requirements for efficient storage and low cost transportation.

Another important object resides in providing a device of the character mentioned comprising a pair of support frames each embodying a pair of spaced apart legs of wire or bar stock and transversely extending bracing and spacing bars rigidly interconnecting the spaced legs of each frame, the spacing bars of the support frames being relatively crossed and pivotally interconnected so that the frames may be folded the one against the other substantially in a common plane or may be extended in mutually intersecting planes, the structure including a base frame preferably comprising a circular ring of wire or bar stock upon which the lower ends of the legs of one of said support frames are pivotally secured at diametrically opposite sides of the ring member, whereby said support frames, when mutually folded together, may be rocked on said ring between collapsed position, substantially in the plane of the ring, and extending in position normal to the ring, said ring having latches for detachably engaging the feet of the other of said support frames when the support frames are disposed in mutually extended position on the base frame.

The foregoing and numerous other important objects, advantages, and inherent functions of the invention will become apparent as the same is more fully understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment of the invention.

Referring to the drawings:

Fig. 1 is a perspective view of a collapsible support structure embodying the present invention, the structure being shown in expanded position;

Fig. 2 is a perspective view showing portions of the structure;

Figs. 3 and 4 are sectional views respectively taken substantially along the line 3—3 in Fig. 2 and the line 4—4 in Figs. 2 and 3;

Figs. 5 and 6 are sectional views taken respectively along the lines 5—5 and 6—6 in Fig. 2;

Fig. 7 is a face view of the structure in collapsed position; and

Fig. 8 is a sectional view taken substantially along the line 8—8 in Fig. 7.

To illustrate the invention, the drawings show a collapsible support structure 10 comprising a plurality of support frames pivotally interconnected for relative turning movement on a common axis 11, whereby the frames may be collapsed by folding the same together, or expanded by disposing them in planes mutually intersecting at substantial angularities. While any desired number of frames may be thus pivotally interconnected to form the support structure 10, the same may comprise a pair of frames 12 and 12' which preferably, though not necessarily, may be of identical configuration. As shown, each of the frames 12 and 12' comprises a pair of spaced apart legs 13, 13' of any desired, preferably curved, configuration, providing relatively closely spaced medial leg portions and end portions which may curve or otherwise incline mutually outwardly to form outwardly extending floor engaging feet 14 and 14' at the lower ends of the support frames 12 and 12', and arms 15 and 15' configured at the upper ends of the frames 12 and 12' to provide for receiving a flower basket or vase, or other object to be supported on the stand, within and between

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or upon said arms 15 and 15', when the structure is in expanded load supporting condition.

The frames 12 and 12' also comprise each a plurality of transverse spacing members 16, 16', the preferably parallel spaced apart members 16 extending between and being rigidly secured to the spaced leg members 13 of the frame 12, while the corresponding spacing members 16' extend between and are secured to the spaced legs 13' of the frame 12'. The members 16 and 16' preferably comprise bars or straps of sheet metal having offset ends 17 secured to the legs 13 and 13' as by welding or otherwise. Each of the members 16 is mutually crossed with respect to a corresponding one of the members 16', and the members 16 and 16' are each formed with a medial perforation 18 so that the cross pairs may be secured together by means of pivot pins 19 forming the axis 11 and extending in the aligned medial openings 18 of each crossed pair of members 16 and 16', whereby the frames 12 and 12' are pivotally interconnected for relative turning movement about the axis 11.

It will be seen from the foregoing that the frames 12 and 12' may be mutually folded together to form a collapsed structure in which a leg of each frame extends adjacent and in lateral contact with the corresponding leg of the other frame, such collapsed structure having thickness equal to the combined diameters of a pair of engaging legs 13 and 13'. Support structures comprising pivotally connected frames accordingly will occupy minimum storage space, when in collapsed condition, and also may be shipped at minimum cost in relatively flat containers.

For optimum stability, it is desirable to provide a base frame 20 to which the outstanding feet 14 and 14' of the support frames 12 and 12' may be secured. As shown, the base frame 20 may and preferably does comprise a circular ring 21 of rod or wire stock, the ring 21 being of diametral size to engage the relatively widely spaced feet of the frames 12 and 12' on opposite sides of the ring. Any suitable or preferred anchoring means may be provided for attaching the feet 14 and 14' of the support frames upon the ring 20. Such anchoring means preferably provides for the detachable or relatively movable connection of the feet 14 and 14' on the ring, in order to allow the structure to be set up for operation or collapsed at will.

As shown, the feet 14' of the frame 12 are turnably or pivotally secured on diametrically opposite sides of the ring 21 by means of anchor straps 23. Each anchor strap 23, as shown, may have a medial portion 24, embracing a corresponding one of the frame feet 14', and offset ends 25, weldingly or otherwise secured upon the ring 21, on opposite sides of the anchored foot, to thus secure the feet of the frame 12' rockingly upon the ring 20 in bearings formed by the medial strap portions 24. The frame 12' is thus secured on the ring 20 for relative turning movement about an axis extending diametrically of the ring and defined by the aligned bearings formed by the medial portions 24 of the anchorage members 23.

Means also may be provided on the ring 21 for securing the feet 14 of the frame 12 detachably upon the ring. To this end, as shown, a pair of anchorage clips 26 may be mounted on opposite sides of the ring between the anchoring members 23. These clips 26 may each comprise a metal strap having a medial portion 27 formed to latchingly receive a corresponding frame foot 14, an end 28 welded or otherwise secured on the ring 21 and an opposite end 29 forming a latch lip resiliently supported in spaced relation with respect to the ring 21. As a consequence, a frame foot 14 may be moved along the ring 21 toward a corresponding latch 26 and latchingly engaged therewith by moving the foot past the lip 29 and into position latchingly engaged with the medial portions 27 of the latch member.

The latches 26 are preferably mounted on the ring in position such that when the feet 14 are engaged with the

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latches 26, the frame 12 will extend in a plane substantially normal to the plane of the frame 12'. When so latched, it will be seen that the planes of the frames 12 and 12' both extend at right angles with respect to the plane of the ring 20. As a consequence, the structure will have strength and rigidity when latched in expanded position. By virtue of the arcuate character of the ring 21, including the outwardly bowed arcuate portions thereof which extend between the latched legs 14 and 14' of the upstanding frames 12 and 12', the structure will have great stability against overturning, even when the upper portions of the standard are topheavily loaded.

In order to collapse the structure for storage or transportation, the frame 12 may be turned on the frame 12' in a direction to release the feet 14 from the latches 26. This may be accomplished by drawing the feet 14 outwardly of the latches past the resilient strap ends 29. Thereafter, turning movement of the frame 12, with respect to the frame 12', may be continued until it has been folded flat against the frame 12'. The frame 12', carrying with it the folded frame 12, may then be rotated, on the base frame 20, through an angle of ninety degrees, whereby the frames 12, 12' and 20, when collapsed in the manner described, extend substantially in a common flat zone having thickness of an order not greater than the sum of the diameters of a leg 13, a leg 13', and the ring 21.

Of course, if desired, the anchorage straps 23 may be formed and arranged to provide latches like the latches 26, so that the frames 12 and 12' may both be entirely detached from the base ring when collapsed. Normally, however, it is preferable to secure at least one of the frames 12, 12' on the ring 21 as by means of anchorage straps 23 applied as shown in Fig. 4 of the drawings, so that the ring may remain connected with at least one of the frames, when the structure is collapsed.

It is thought that the invention and its numerous attendant advantages will be fully understood from the foregoing description, and it is obvious that numerous changes may be made in the form, construction and arrangement of the several parts without departing from the spirit or scope of the invention, or sacrificing any of its attendant advantages, the form herein disclosed being a preferred embodiment for the purpose of illustrating the invention.

The invention is hereby claimed as follows:

1. A collapsible support structure comprising a plurality of support frames each embodying a pair of spaced wire elements forming legs terminating in spaced apart supporting feet, at one end of the structure, and upstanding arms formed to engage and support a load object, at the end of said frames remote from said feet, said frames being pivotally interconnected medially between the wire elements thereof for relative folding movement about a common pivot axis whereby the frames may be selectively folded together to bring the wire elements thereof into side-by-side adjacency and spread apart to dispose the frames in planes mutually intersecting at substantial angularity at said common pivot axis, a base frame comprising a wire member forming a closed loop, feet retaining strips having medial portions embracing the spaced feet of an anchored one of said support frames, said strips being secured on said base frame, on opposite sides of said medial portions thereof, to pivotally secure said strip embraced feet of said anchored frame on said base frame at diametrically opposite sides of said closed loop, and holding means for releasably securing the feet of another and unanchored one of said support frames on said loop forming wire member intermediate said feet retaining strips.

2. A collapsible support structure as set forth in claim 1, wherein said holding means comprise resilient fingers each secured at one end upon said loop forming member, the other ends of said fingers being spaced from said loop forming member to latchingly receive the feet of said

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unanchored support frame to releasably secure the same
on said loop forming member intermediate the spaced
feet of said anchored frame.

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