May 3, 1966 A. J. POKORSKI 3,249,232

FOLDING RACK

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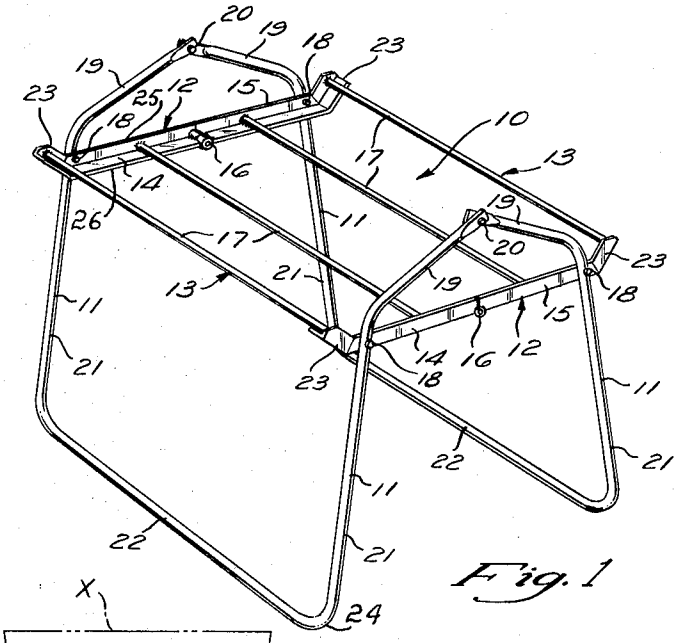


Fig. 1

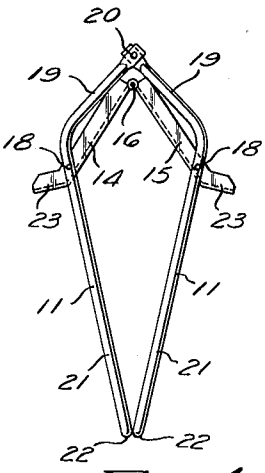


Fig. 4

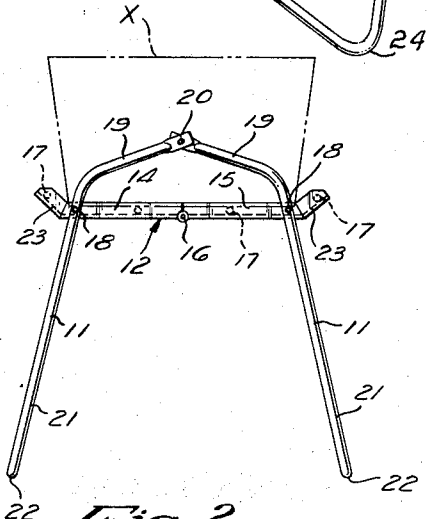


Fig. 2

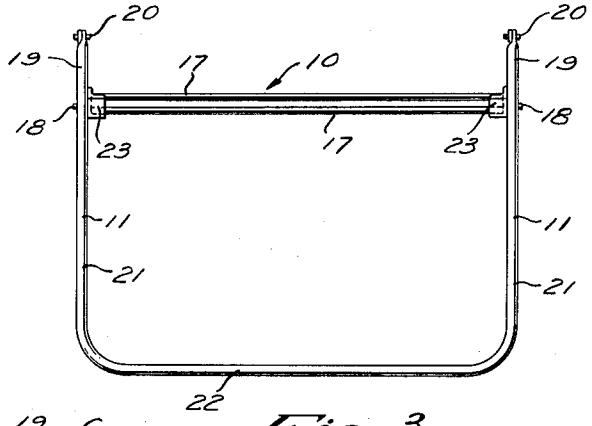


Fig. 3

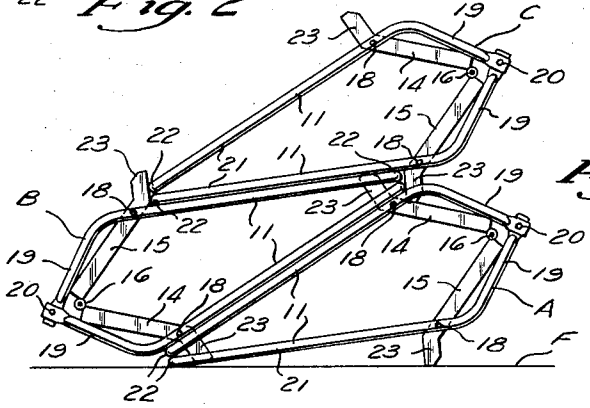


Fig. 5

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# FOLDING RACK

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This invention relates to a supporting stand or rack having a flat platform for holding articles to be supported, which platform stands on legs; and particularly to a stand having a folding platform and pivotally connected legs which are drawn together in a space-saving fashion when the platform is folded and are spaced apart in a widespread, stable, supporting stance when the platform is unfolded.

Stands or racks embodying my invention are useful for supporting articles above the floor or ground and can be employed in a wide variety of applications. They may be made in a wide range of sizes and load-carrying capacities without departing from the concepts and principles of my invention. As an illustrative example, stands or racks embodying my invention may effectively be used for holding and supporting containers of grapes in connection with the harvesting of fruit from a vineyard. I have made and used stands embodying my invention in connection with the operation of a vineyard and will describe below my invention in connection with this embodiment of it.

One of the objects of my invention is to provide a strong, lightweight, easily handled supporting stand having a platform stably positioned above the floor or ground. Another object is to provide such a stand having means for preventing articles placed upon the platform of the rack from sliding off one side thereof. A further object is to provide such a stand which can be folded or otherwise manipulated to a position occupying a minimum of space when the stand is not in use. A further important object of my invention is to provide a stand which can be stacked on its side with others of its kind through cooperation of elements on adjacent stands in the stack so that the folded and compacted stands may be stacked in a space only slightly larger than that occupied by one folded stand lying on its side. Still another object is to provide such a stand which may be conveniently moved even over rough surfaces while it is loaded as by sliding. Another object is to provide such a stand having a convenient and effective means for lifting and/or pulling it.

Other objects and advantages of my invention will become apparent from the following description of a preferred form thereof together with the accompanying drawings in which:

FIGURE 1 is a perspective view of a supporting stand embodying my invention;

FIGURE 2 is an end elevation view of the stand shown in FIGURE 1;

FIGURE 3 is a side elevation view of the stand shown in FIGURE 1;

FIGURE 4 is an end elevation view similar to FIGURE 2 but with the stand manipulated and folded into its storage position; and

FIGURE 5 shows three similar stands folded as shown in FIGURE 4 and stacked on top of each other for storage.

Briefly, my invention consists of a stand having a generally rectangular platform that is divided into two parts pivotally connected together or hinged to provide a folding and unfolding action. Four legs support the platform and are connected generally to the four corners of the platform. The two legs near one end of the platform are additionally pivotally connected to each other as are the two legs at the other end of the platform.



The legs and platform and their interconnections are so arranged that folding of the platform tends to bring the two parts of the platform into a facing relationship as well as draw together the pairs of pivotally connected legs so that the entire stand occupies much less space than when open for use. Unfolding of the platform restores its two parts to a flat supporting position and tends to spread apart and position the legs in a wide and stable stance.

As shown in the drawings, the stand comprising a preferred embodiment of my invention has a platform of generally rectangular configuration indicated generally at **10** and supported upon four legs **11**. Platform **10** has a pair of laterally opposite transverse ends indicated generally at **12** and laterally opposite longitudinally extending sides indicated generally at **13**. As shown, platform **10** is made of angle iron stock and rods or tubes. Each transverse end **12** is formed by a pair of angle elements **14** and **15** arranged end to end and pivotally connected together at their abutting ends by a hinge-like connection **16**. Longitudinally extending rods or tubes **17** are arranged in parallel fashion and extend between and interconnect the pivotally connected pairs of angles **14** and **15** at the laterally opposite ends of the platform **10**.

The axes of connections **16** are coaxially aligned and lie along a line of division separating the two parts of platform **10** so that the platform may fold along that line. The connections **16** are also arranged to permit folding platform **10** in only one direction and especially to prevent its folding by the weight of supported articles applied in the region of the line of division between the two platform parts.

In the embodiment of my invention shown and described here, this one-way folding action is accomplished by arranging angle elements **14** and **15** of each connected pair of them with one leg **25** lying in a vertical plane, one leg **26** in a horizontal plane and having abutting endwise engagement. Connections **16** are located vertically in the lower side or portion of these vertical legs and prevent folding of platform **10** in a direction that would tend to bring together the upper surfaces of its two parts as shown, but permit the lower surfaces to be moved toward facing engagement. Other arrangements which achieve these results may be employed and are intended to be comprehended by my invention.

It will be apparent from the foregoing description that platform **10** may be folded by raising connections **16** from their position shown in FIGURES 1 and 2 and that platform **10** cannot be folded by moving connections **16** and the line of division coaxial therewith downwardly from their position shown in FIGURES 1 and 2. FIGURE 4 illustrates the direction and nature of the action permitted elements **14** and **15** as hinged by connections **16**.

Legs **11** are connected at approximately the four corners of the rectangular plan outline of platform **10**. Each leg **11** is pivotally connected as at **18** to one of elements **14** or **15** and for swinging movement on axes parallel to the axes of connections **16** and the line of division. Each leg **11** is preferably straight below its point of pivotal connection **18** with platform **10** and then bends in the plane of its swinging movement afforded by its pivotal connection with platform **10** toward its laterally opposite and corresponding leg **11**. The two adjacent ends of these upper bent portions **19** of each pair of legs **11** is pivotally connected together as at point **20** for swinging movement on axes parallel to the axes of connections **16** and **18**. The lower straight portions **21** of each pair of legs lying along a longitudinal side **13** of platform **10** are interconnected by a runner-like element **22**. Pref-

erably, each pair of legs **11** lying along and connected to one longitudinally extending side **13** of platform **10** and interconnecting runner-like element **22** is formed of a single piece of tubing, bent as shown in the drawings. Preferably, when the stand is positioned for use as shown in FIGURES 1, 2 and 3, lower portion **21** of each leg **11** is straight and inclined slightly outwardly and downwardly below its point of pivotal connection **18** with platform **10** while upper portions **19** of legs **11** swing easily up and across the transverse ends **12** of platform **10** to provide a convenient handle whose use will be explained more fully in connection with the operation of the supporting stand.

It will be noted that points of pivotal connection **18** between legs **11** and transverse end elements **14** and **15** are spaced laterally away from pivot connections **16** interconnecting elements **14** and **15** and closer to longitudinally extending sides **13**. Thus, when articles, such as container X, shown in broken outline in FIGURE 2, are placed upon platform **10**, there is no tendency of platform **10** to be folded in its intended fashion by the weight of the load and, in fact, the articles placed thereon tend to maintain platform **10** in its flat position as shown in FIGURES 1 and 2 and to lock legs **11** in their stable supporting stance shown in the same figures.

Preferably, means are provided along the sides of platform **10** for preventing articles placed on it from sliding off should the stand be placed on an uneven footing, for example. As shown in the drawings, this is accomplished, in part, by bent-over and connected-together upper portions **19** of legs **11** which serve as a railing along laterally opposite transverse ends **12**. Along laterally opposite longitudinally extending sides **13**, upturned outer ends **23** of elements **14** and **15** and interconnecting rods **17** act as railings. Outer ends **23** are angled up outwardly of points of pivotal connection **18** of elements **14** and **15** and legs **11**. As will be explained more fully below in connection with the operation of the supporting stand shown in the drawings, upturned ends **23** perform another function in connection and cooperation with runner-like elements **22** when a number of like units are folded and stacked.

The various pivotal connections and/or points **16**, **18** and **20** may be made with and provided by any suitable means such as nuts and bolts, for example. The particular means employed forms no particular part of my invention.

In operation, the supporting stand described above and shown in the drawings is positioned for use substantially as shown in FIGURES 1, 2 and 3. Platform **10** is unfolded to a flat position with the abutting ends of the vertical legs of pivotally connected elements **14** and **15** and pivotal connections **16** maintaining the two parts of platform **10** in its flat position and resisting any tendency of the platform to fold by downward movement of connections **16**. Legs **11** are spread apart and runner-like elements **22** interconnecting the pairs of legs under each of the longitudinal sides of the platform are spaced apart and generally parallel to each other.

When used in harvesting grapes, for example, a supporting stand such as I have described and shown above can be used to support a container into which the picker places the fruit as it is removed from the vines. The supporting stand holds the container at a convenient level for the picker. In addition, the supporting stand permits the picker to move the container easily between and along the rows of arbors as the fruit is collected from the vines. Moving the container is accomplished by grasping the upper pivotally connected together end portions **19** of legs **11** and pulling the stand in the direction of parallel spaced apart runner-like elements **22**. With legs **11** and runner-like elements **22** formed of only two lengths of tubing as shown in the drawings, the smoothly rounded, curved portions **24** joining the lower ends of legs **11** and runner-like elements **22** promotes the easy sliding of the stand over even rough ground. The widely spaced stance of the legs and runner-like elements gives good stability to the stand and tends to minimize any adverse effect of unevenness of the surface upon which the stand is used. When a container supported on the stand is completely filled with grapes, it may be easily and conveniently lifted from the platform of the stand because of the convenient height at which it is supported.



When the supporting stand is not in use, it may be folded for storage into the position shown in FIGURE 4. Folding is accomplished by raising pivotal connections **16** at the laterally opposite transverse ends **12** toward the pivotal connection points **20** of upper portions **19** of legs **11**. As platform **10** is thus folded along its line of division, points of pivotal connection **18** of legs **11** of platform **10** are drawn together as are runner-like elements **22**. The stand can be folded until runner-like elements **22** engage each other as shown in FIGURE 4. Preferably, the elements are so sized and proportioned that upper bent portions **19** of legs **11** and their pivotal connection points at **20** do not interfere with the folding of platform **10** and so that the line of division and pivotal connection points **16** do not project beyond the connected ends of legs **11** when runner-like elements **20** are engaged.

A number of similar supporting stands, such as described above, may be conveniently stacked when folded. A stack containing many stands occupies a relatively small amount of floor space not much greater than that occupied by a single folded stand lying on its side. It will be noted that successive stands in the stack lie upon and along the legs of the stand below it, which legs are inclined at various angles. The stack of stands is prevented from sliding and falling by the interengagement of the outwardly projecting upturned elements **23** on the outer ends of elements **14** and **15** and runner-like elements **22** interconnecting the lower ends of longitudinally opposite legs **11**.

Thus, as seen in FIGURE 5, the lowermost stand A lies on its side on floor F and engages the floor along one runner-like element **22** and upturned end portions **23** on elements **15**. Folded stand B next in the stack has its runner-like elements **22** hooked over upturned ends **23** of elements **14** of folded stand A. Also, upturned ends **23** of elements **14** of stand B project into engagement with and behind runner-like elements **22** of stand A. Stand designated C is positioned next in the stack and on top of stand B. Because of the inclination of the uppermost legs **11** of stand B as shown in FIGURE 5, stand C can best be held in the stacking arrangement by the engagement of its runner-like elements **22** beneath upturned ends **23** projecting upwardly from stand B and the engagement of upturned ends **23** projecting downwardly from stand C against the underside of runner-like elements **22** of stand B.

It will be noted from the manner in which stands B and C of the stack of stands shown in FIGURE 5 are interengaged that the upturned ends and cooperating runner-like elements can be related in one of two ways in order to resist sliding apart of adjacent stands in the stack. A fourth stand, if it were added to the stack shown in FIGURE 5, would engage and relate to stand C in the same manner as stand B engages and relates to stand A. It is possible to raise and block the left side of stand A as shown in FIGURE 5 so that its lowermost legs **11** lie parallel to the floor F. In such a case, adjacent ones of the various stands comprising the stack would all interengage and be related in the same fashion as are stands A and B as shown.

It will also be noted that the interengagement of runner-like elements **22** and upturned ends **23** of adjacent stands in the stack not only prevent the elements of the stack from sliding apart from the left to the right as shown in FIGURE 5 but also toward and away from the viewer of FIGURE 5. It will be noted that stand C is primarily prevented from movement toward and

away from the viewer of FIGURE 5 by engagement of its upturned ends **23** and upper bent portions **19** of legs **11** of stand A rather than by interengagement with any part of stand B.

In connection with the stacking of a number of similar stands embodying my invention, it will be noted that the same general result can be accomplished by the interengagement of upturned ends and longitudinally extending elements corresponding to elements **22**, but interconnecting other points of two longitudinally opposite legs **11** than their ends, for example, and my invention is not limited to stands having such longitudinal elements in the form and/or location of runner-like elements **22**.

It will be apparent from the foregoing description that stands embodying my invention provide a simple, effective and stable means of supporting articles above the ground or floor as well as means for conveying and transporting such articles limited distances. The articles to be supported can be maintained at a height convenient to the user of the stand. My invention also provides a stand having convenient handles related to the height of its platform for lifting and/or pulling the stand. Further, a stand embodying my invention is able to be easily and quickly manipulated or folded into a position for storage which occupies much less space than the stand in position for use. While I have described a preferred embodiment of my stand in terms of bent tubing, angle stock and rods or tubes, it is obvious that stands embracing the precepts of my invention can be made of other materials.

Those skilled in the art will appreciate that various changes and modifications can be made in the apparatus described herein without departing from the spirit and scope of the invention.

I claim:

**1.** A supporting stand comprising a generally rectangular two-part supporting platform hinged for folding along a longitudinally extending central line of division between said two parts and having laterally opposite ends and laterally opposite angularly inclined side portions extending generally parallel to said line of division, means pivotally connecting said two parts together and permitting folding in one direction only from a flat position with said two parts generally lying in a single plane and said angularly related side portions inclined away from the general plane of said platform in a direction opposite said one direction of folding to a folded position with said two platform parts angularly related and folded about said line of division therebetween in said one direction and said angularly inclined side portions extending from said folded parts in generally opposed directions, four longitudinally extending legs for supporting said platform, each one of said four legs being pivotally connected at a point intermediate its length to an end of one of said platform parts at a point therealong between said line of division and said angularly inclined side portions so that said inclined side portions lie outwardly and away from said line of division, means pivotally connecting together one end of each of said legs connected to the same end of said platform at points along their lengths spaced in said opposite direction from their respective points of connection with said platform, a longitudinal runner-like member extending between and connecting the opposite ends of said legs connected to the laterally opposite ends of each of said platform parts, whereby when said platform is unfolded and flat it stands supported on said legs, said opposite ends of which and said runner-like members attached thereto are widespread and said pivotally connected-together ends of which extend above said platform along its ends to form a railing and a handle for said platform, and with said angularly inclined side portions extending above said platform to form a railing along its sides and whereby when said platform is folded in said one direction said stand and said opposite ends of said legs and the runner-like elements connecting pairs of them are drawn together substantially reducing the space occupied by the stand and said angularly inclined side portions extend in substantially opposed directions away from the folded stand to a position for cooperating stacking interengagement with a similar and folded stand.

**2.** Apparatus according to claim **1** in which each of said legs is connected to said platform at a point close to one of said laterally opposite sides and away from said line of division of said platform whereby weight supported by said platform in its flat and unfolded position tends to prevent the folding of said apparatus and to stabilize it.

**3.** The combination of at least two apparatuses according to claim **1** in which all of said apparatuses comprising said combination are folded so that their respective runner elements lie together and adjacent each other, said apparatuses being stacked one on top of another with said longitudinally extending laterally opposite sides and said longitudinally extending elements of each cooperating with and engaging each other so as to retain said apparatuses in the stacked relationship.

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