March 3, 1959 R. J. SHAW ET AL 2,875,972

COLLAPSIBLE LEG STAND

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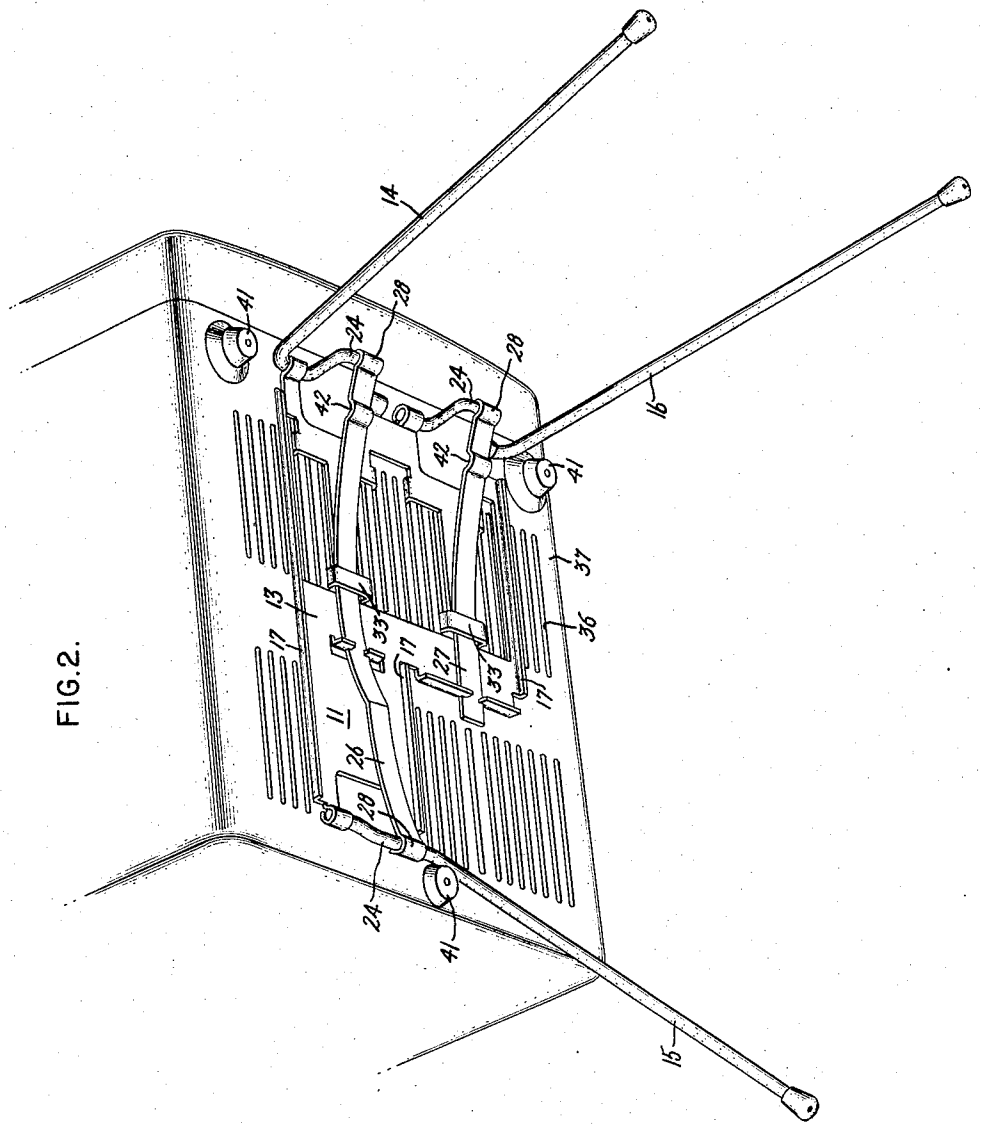


FIG. 2.

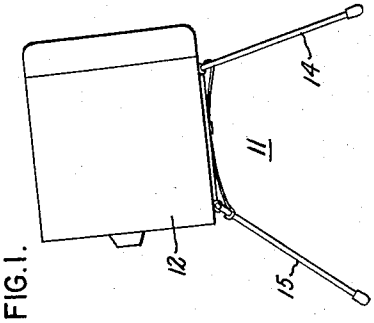


FIG. 1.

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FIG.5.

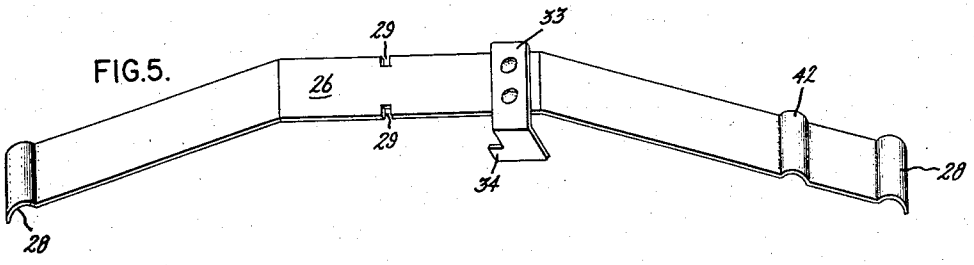


FIG.4.

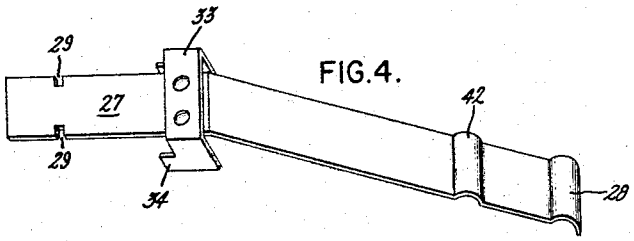
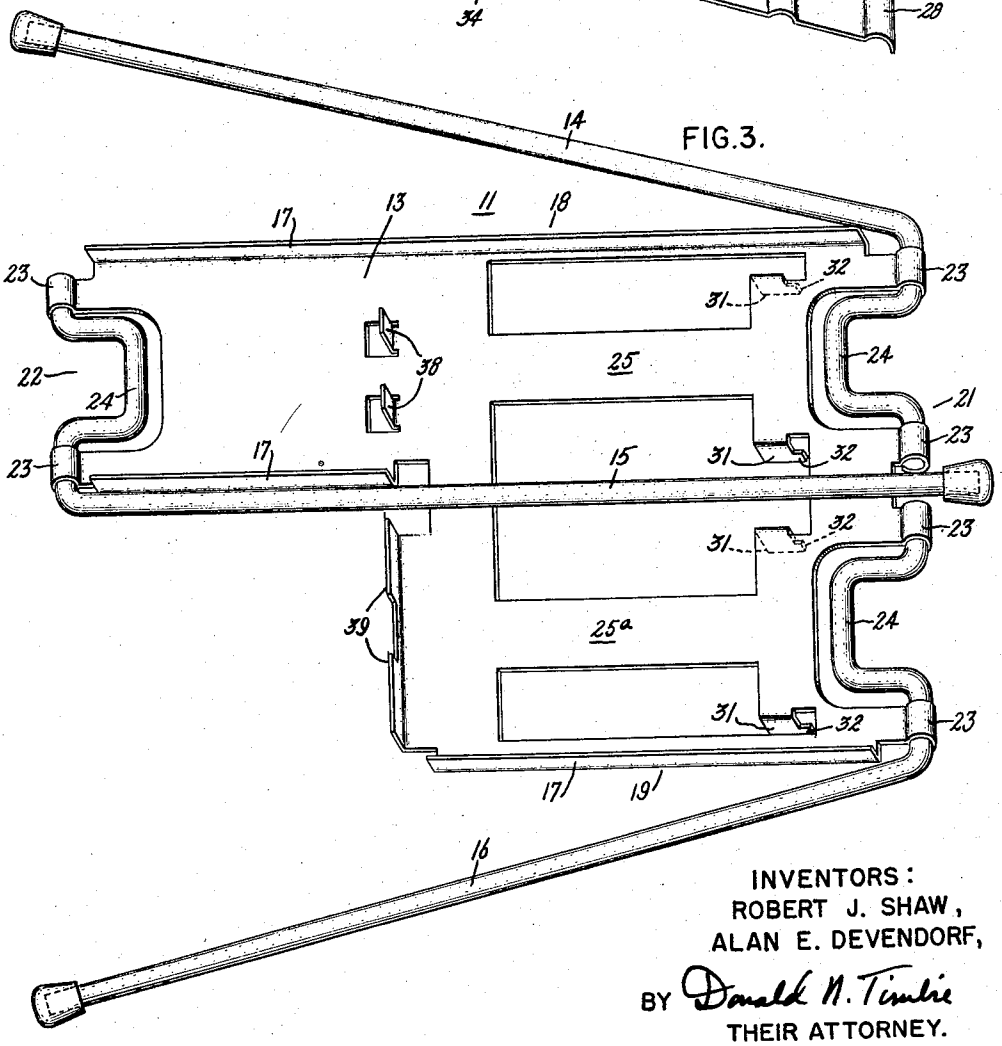


FIG.3.



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FIG.6.

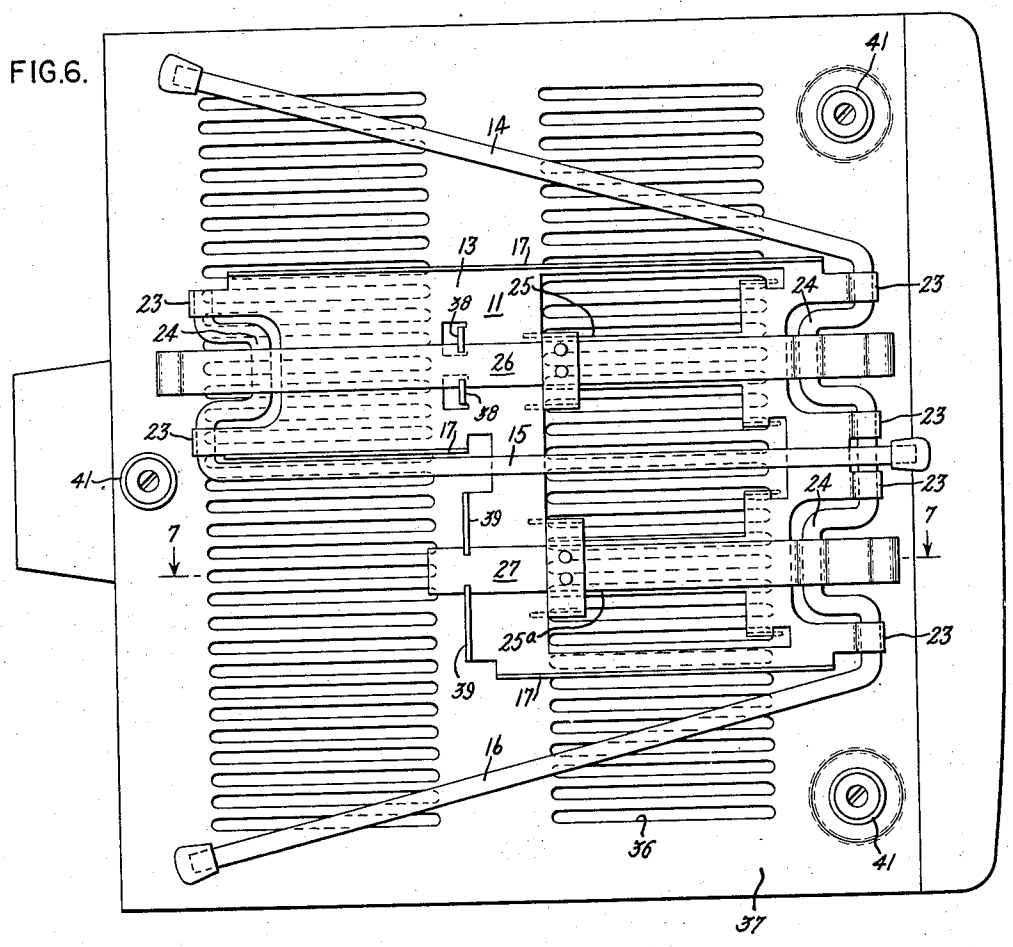
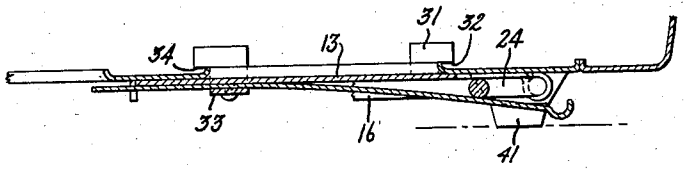


FIG.7.



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COLLAPSIBLE LEG STAND

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Application June 21, 1956, Serial No. 592,891

4 Claims. (Cl. 248—168)

The present invention relates to a collapsible leg stand.

More particularly, the invention relates to a readily detachable, utility collapsible leg stand which may be easily attached to devices, such as a portable television receiving set, to facilitate use of the device without impairing its portability.

In recent years many portable models of known devices, such as television receiving sets, record changers, and the like have come into existence. In almost all instances, it is necessary to place such portable devices on a table or other similar support to use it conveniently, or otherwise the user must go to the inconvenience of placing the device in operation on the ground or floor. In order to overcome necessity of having to follow either one of the above sometimes objectionable procedures while using portable devices, the present invention was developed.

It is, therefore, one object of the present invention to provide a collapsible leg stand which is saleable as an accessory for use with portable devices, such as a portable television receiving set, and which may be easily assembled and placed into use in connection with such portable devices.

Another object of the invention is to provide a collapsible leg stand for use with portable devices, which in its collapsed or retracted position does not impair their portability or the use of existing feet or support permanently secured to such portable devices.

A still further object of the invention is to provide a collapsible leg stand incorporating the above-set-forth features which is relatively inexpensive to fabricate.

Other objects, features and many attendant advantages will be appreciated more readily as the same becomes better understood by reference to the following detailed description, when considered in connection with the accompanying drawings, wherein like parts in each of the several figures are identified by the same reference character, and wherein:

Figure 1 is a side view of a collapsible leg stand constructed in accordance with the invention, and shows the same in its extended position supporting a portable television receiving set;

Figure 2 is a bottom, perspective view of the collapsible leg stand shown in Figure 1, and illustrates the manner in which the stand is secured to the bottom surface of a portable television receiver;

Figure 3 is a plan view of a portion of the collapsible leg stand shown in Figure 2;

Figure 4 is a perspective view of a leaf spring comprising a part of the collapsible leg stand shown in Figures 1 and 2, for use with the assemblage illustrated in Figure 3;

Figure 5 is a perspective view of a second leaf spring for use in the manner similar to the leaf spring shown in Figure 4;

Figure 6 is a close-up, bottom, plan view of a portable television receiver showing a collapsible leg stand constructed in accordance with the invention mounted

therein with the collapsible legs thereof in the retracted position; and

Figure 7 is a cross-sectional view of the structure shown in Figure 6 taken through plane 7—7 thereof.

Figure 1 of the drawings discloses a collapsible leg stand **11** constructed in accordance with the invention having a portable television receiver **12** supported thereon. As is best shown in Figures 2 and 3, the detachable collapsible leg stand **11** comprises a base member **13** thus shown in Figure 3 of the drawings. The base member **13** has a plurality of retractable or folding legs **14**, **15** and **16** retractably secured thereto and comprises a relatively flat, rigid piece of sheet material, preferably sheet metal, having the edges **17** thereof turned downwardly to improve its rigidity. Base member **13** also has a rectilinear stepped configuration defined by a long side portion **18**, a relatively short side portion **19**, a long front **21**, and a relatively short back portion **22**. The retractable legs **14** through **16** are retractably supported on base member **13** by means of a tubular hinge portion **23** which forms a semi-tubular or tubular journal about the retractable legs **14** through **16** that are formed from solid steel rods. Each of the retractable legs **14–16** has a crank portion **24** formed therein located intermediate the two bearing portions thereof which is journalled in the tubular hinge portions **23** of base member **13**. The retractable legs are assembled to base member **13** in a manner such that the crank portions **24** of retractable legs **14** and **15** are aligned with each other, and with a web portion **25** of base member **13**, and similarly, the crank portion **24** of retractable leg **16** is aligned with a second web portion **25***a* of the base member. For protective purposes, small rubber or other plastic pads may be secured to the ends of the legs to prevent damage to any surface on which the stand might be supported.

From a consideration of the above description and Figure 3 of the drawings, it can be appreciated that formation of the web portions **25** and **25***a* in base member **13** leaves large areas of open space in the base member **13** which allow air circulation up through the retractable leg stand to the device it supports, and also lightens the base member. Also, because each of the retractable legs **14–16** is identical in configuration, all may be made from the same die thereby effecting a savings in the cost of manufacture of the stand.

The retractable leg stand shown in Figures 1 and 2 of the drawings further includes a first leaf spring **26** and a second leaf spring **27** shown in Figures 4 and 5 of the drawings. The first leaf spring **26** comprises an elongated strap of spring metal having detents **28** formed on each of the ends thereof, and having its middle portion bowed. The bowed middle portion of the leaf spring **26** has a pair of opposed notches **29** formed therein for a purpose to be described more fully hereinafter. The second leaf spring **27** is likewise formed from an elongated strap of spring metal, but is approximately one-half the length of first leaf spring **26**, and is bowed similarly to first leaf spring **26**. The second leaf spring **27** has a detent **28** formed in one of the ends thereof, and a pair of opposed notches **29** cut in the side thereof in the manner similar to the first leaf spring **26**. From an examination of Figures 4 and 5, it can be appreciated that leaf springs **26** and **27** can be stamped from the same die with second leaf spring **27** being cut off at a point such that the notched portion **29** is included. The leaf springs may be fabricated from any resilient sheet material, for example they may be formed from a spring metal strip three-quarters of an inch wide, 5/100 of an inch thick, and having a Rockwell hardness of C45–50. While this material is identified as comprising one suitable material for use in forming leaf springs **26** and **27**,

it should be understood that the invention is by no means limited to use of that material alone.

Upon assembling the first leaf spring **26** with the base member **13**, leaf spring **26** is disposed parallel and adjacent to the long side **18** of base member **13** with its end overlying the aligned crank portions **24** of the rear retractable leg **15** and front retractable leg **14**. The second leaf spring **27** is disposed on base member **13** parallel to and adjacent the short side **19** thereof so that the end of the leaf spring having detent **28** is disposed over the crank portion **24** of retractable leg **16**. By this arrangement, the leaf springs **26** and **27** serve to resiliently maintain the retractable legs **14** through **16** in either their extended or retracted positions.

In order to secure the leaf springs **26** and **27** to the base member **13**, and both the leaf springs and base member **13** to the bottom surface of a portable television receiving set, or other similar device with which the retractable leg stand is used, detachable fastening means are provided. In the instant embodiment of the invention, the detachable fastening means comprises a first set of fixed bayonet fasteners **31** shown best in Figure 3 that are integral with base member **13**, and are formed by bending a projection from the base member **13** in a direction opposite to that surface of the base member **13** from which the retractable legs **14** through **16** append, and at right angles with respect to the plane of base member **13**. Each of the fixed bayonet fasteners **31** has an integral engaging finger portion **32** extending in a first direction toward the front of base member **13**, and are adapted to cooperate with a set of second movable bayonet fasteners **33**, best shown in Figure 6, to retain base member **13** on a device with which the stand is used. Each of the movable bayonet fasteners **33** comprises a generally U-shaped bracket member that are secured to leaf springs **26** and **27**, respectively, and have integral bayonet engaging finger portions **34**. The movable bayonet fasteners **33** are sufficiently wide to embrace the width of the leaf springs **26** and **27** with the engaging finger portions **34** thereof extending over the sides of the leaf spring, and for convenience in assembling, as well as providing a structurally sound assembly, the movable bayonet fasteners are spot welded or otherwise secured to leaf springs **26** and **27**.

The manner in which the bayonet fasteners **31** and **33** cooperate to retain the retractable leg stand on the bottom surface of a device with which the stand is used, will be described more fully hereinafter.

In first assembling a retractable leg stand constructed in accordance with the invention, the base member **13** is disposed over the louvered openings **36** in the bottom **37** of a portable television receiving set or other device with which the collapsible leg stand is used, as shown best in Figure 6. In doing this, the engaging finger portion **32** of the first fixed bayonet fasteners **31** extend down through the louvered openings **36** in the bottom of the television receiving set. By subsequently sliding the base member **13** into the position shown in Figure 6, the engaging finger portions **32** will extend under the edge of the louvered opening to grip it in the manner shown in Figure 7 of the drawings. With the retractable legs **14** and **15** in their retracted position, the leaf spring **26** is then placed so that each of the ends thereof overlies the crank portions **24** of each of the retractable legs. In this position, the small notches **29** formed in the sides of leaf spring **26** will be aligned with a pair of stops **38** punched out from base member **13** which coact with the notches **29** to prevent too great relative longitudinal movement between the leaf spring **26** and the base member **13**. At this stage, leaf spring **26** is compressed down against the web portion **25** of base member **13**, and then sliding the leaf spring together with the movable bayonet fastener attached thereto over to the edge of the louvered openings **36** through which the engaging fingers **34** extend, to the position shown in Figure 7. The engaging

finger portions **34** of the movable bayonet fasteners **33** will consequently engage the edge of the louvered opening in the manner shown in Figure 7. Thereafter, the tension of the bowed leaf spring **26** will serve to resiliently maintain the engaging finger portions **32** and **34** of both the fixed and movable bayonet fasteners against the under surface of the portable television receiver or other device to thereby retain the base member **13** and leaf spring **26** clamped against the under surface. In a similar fashion, the second leaf spring **27** is assembled by inserting the engaging fingers **34** of the movable bayonet fastener **33** attached thereto through the louvered openings and under the edge of the bottom surface of the television receiver set, or other device. This action compresses leaf spring **27** sufficiently to tension both sets of bayonet fasteners **31** and **33** against the under surface of the television receiver set or other device to thereby firmly secure base member **13** to the bottom surface. The notches **29** formed in the end of the leaf spring **27** then engage a set of stops **39** formed adjacent the short side of base member **13** by folding a portion of the edge of the base member **13** downward on both sides of the leaf spring **27** to prevent too great a relative longitudinal movement between the leaf spring **27** and the base member **13**. It should be noted, that the notches **29** formed in the leaf springs **26** and **27** are dimensioned to allow the freedom of longitudinal movement required to properly position the engaging fingers **34** of movable bayonet fasteners **33** but do not allow too great a freedom of longitudinal movement to make the assembly unstable.

Having assembled the collapsible leg stand comprising the invention on a bottom surface of a television receiver set, or other similar device, in the manner above-described, the collapsible leg stand is then ready for use in service. As is briefly indicated in Figure 7, with the retractable legs **14** through **16** in their retracted position, the entire assembly is supported within the small area intermediate the bottom surface **37** of the television receiving set, or other device, and the ends of the small permanent legs or supports **41** secured to the bottom surface of the set or device. Consequently, it can be appreciated that portability of the television receiving set, or other similar device, is not impaired by securing thereon a collapsible leg stand constructed in accordance with the invention. Further, because the base member and other parts of the collapsible leg stand have been fabricated in such a fashion as to reduce the weight of the stand to an absolute minimum, it is relatively light weight and does not appreciably increase the overall weight of the portable television receiver set, or other device with which it is used. In order to extend the retractable legs **14** through **16** of the collapsible leg stand from their position shown in Figure 6 to the positions shown in Figures 1 and 2 of the drawings, all that is required is that each of the legs **14** through **16** be moved out against the tension of leaf springs **26** and **27** until the crank portions **24** thereof engage the detents **28** formed in ends of each of the leaf springs. In this position, the leaf springs **26** and **27** serve to maintain the legs in their extended position by reason of the coaction of the detent and the tendency of the springs to return to their normal bowed position. Consequently, it can be appreciated that the leaf springs **26** and **27** serve to maintain the retractable legs **14** through **16** in both their extended and retracted positions. If desired, detents, such as **42**, may be formed in each of the leaf springs **26** and **27** to further assure maintaining the retractable legs **14** through **16** in their retracted position.

From the foregoing description, it can be appreciated that the invention provides a new and improved collapsible leg stand which may be sold as an accessory for use with portable devices, such as a portable television receiving set, and which may be easily assembled on such television receiver set or other device with a minimum of

effort. In its retracted position, the new and improved collapsible leg stand fits into an available space upon the under surface of the portable device without greatly adding either to its bulk or weight. Additionally, the collapsible leg stand is relatively inexpensive to manufacture in that it requires a number of identical parts, and utilizes a number of parts which serve dual functions.

Obviously, other modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that changes may be made in the particular embodiment of the invention which are within the full intended scope of the invention as defined by the appended claims.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. A detachable collapsible leg stand comprising a base member formed from relatively strong sheet material and having a stepped configuration so that one side thereof and the front are longer than the remaining side thereof and the back, a pair of retractable legs hinged to the sides of the front of said base member and a single retractable leg hinged to the inside of the back of said base member to form a tripod, each of said retractable legs having integral crank portions adapted to be disposed adjacent the under surface of said base member upon said retractable legs being placed in a retracted position, a first leaf spring having detents formed in each end thereof disposed parallel and adjacent to the long side of said base member for resiliently engaging the crank portions of one of said front retractable legs and the crank portion of said back retractable leg, a second leaf spring disposed parallel and adjacent to the short side of said base member for resiliently engaging the crank portion of the remaining front retractable leg, and fastening means for detachably fastening said leaf springs to said base member and said base member to the bottom surface of an object to be supported by said collapsible leg stand.

2. A detachable collapsible leg stand for use with a portable device having louvered openings in the under surface thereof for cooling purposes comprising a base member having a plurality of folding legs retractably secured thereto, at least one leaf spring for selectively maintaining the folding legs in either the extended or retracted position thereof, a first set of fixed bayonet fasteners secured to said base member on the side thereof opposite said folding legs and having engaging fingers extending in a first direction, and a second set of movable bayonet fasteners secured to said leaf spring and having engaging fingers extending in a direction opposite from said first set of bayonet fasteners for coacting with said first set of bayonet fasteners to engage opposite ends of the louvered openings in the bottom surface of the portable device to be supported by said collapsible leg stand for securing said base member thereto.

3. A detachable collapsible leg stand for use with a portable television receiving set having louvered openings in the under surface thereof for cooling purposes comprising a base member formed from relatively strong sheet material and having a stepped configuration so that one side thereof and the front are longer than the remaining side thereof and the back, a pair of retractable legs hinged to the sides of the front of said base member and a single retractable leg hinged to the inside of the back of said base member to form a tripod, each of said retractable legs having integral crank portions adapted to be disposed adjacent the under surface of said base member upon said retractable legs being placed in the retracted position, a first leaf spring having detents formed in each end thereof disposed parallel and adjacent to the long side of said base member for resiliently engaging the crank portions of one of said front retractable legs and the crank portion of said back retractable leg, a second leaf disposed parallel and adjacent to the short side of said base member for resiliently engaging the crank portion of the remaining front retractable leg, said leaf springs serving to maintain the retractable legs in either the extended or retracted positions thereof, a first set of fixed bayonet fasteners secured to said base member on the side thereof opposite said retractable legs and having engaging fingers extending in a first direction, and a second set of movable bayonet fasteners secured to said leaf springs and having engaging fingers extending in a direction opposite from said first set of bayonet fasteners for coacting with said first set of bayonet fasteners to engage opposite ends of the louvered openings in the bottom surface of the portable television receiving set for securing said detachable collapsible leg stand thereto.

4. The structure set forth in claim 3 further characterized by means for preventing substantial longitudinal movement of said leaf springs relative to said base member.

References Cited in the file of this patent

UNITED STATES PATENTS

568,321	Whiting	Sept. 22, 1896
1,600,823	Hess	Sept. 21, 1926
1,709,927	Whitney	Apr. 23, 1929
1,938,370	Bodkin	Dec. 5, 1933
1,962,396	Katz et al.	June 12, 1934