July 15, 1958 W. SIMPKINS 2,843,392

STANDS OR TABLES HAVING RETRACTABLE CASTERS

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FIG. 1.

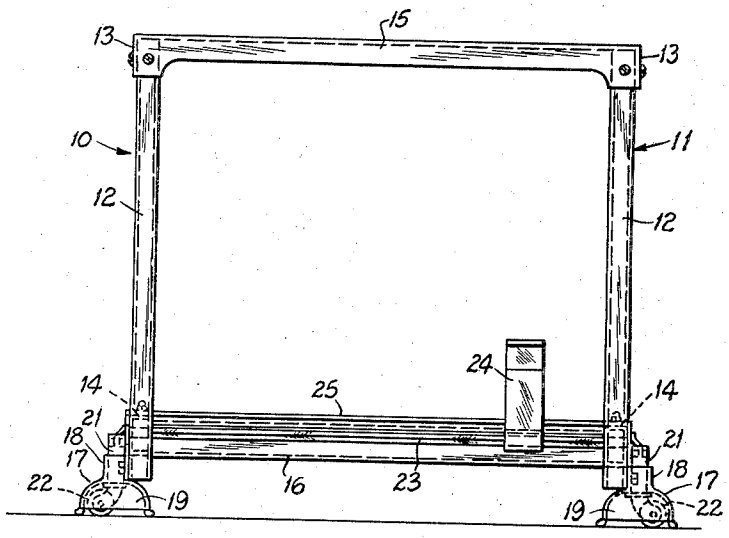

FIG. 2.

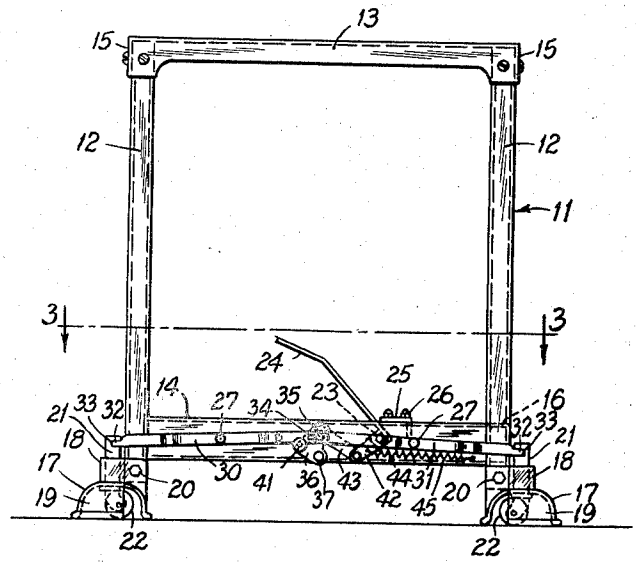

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FIG. 3.

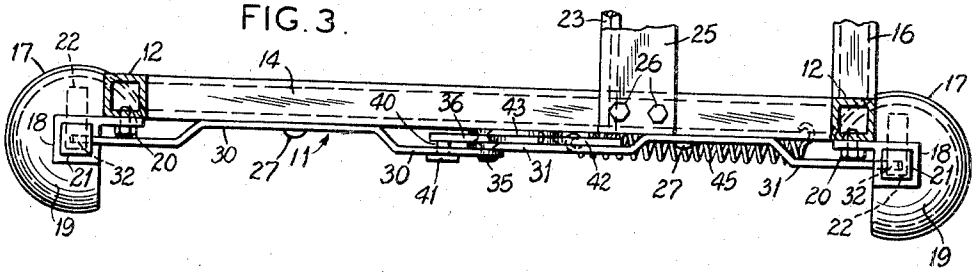


FIG. 4.

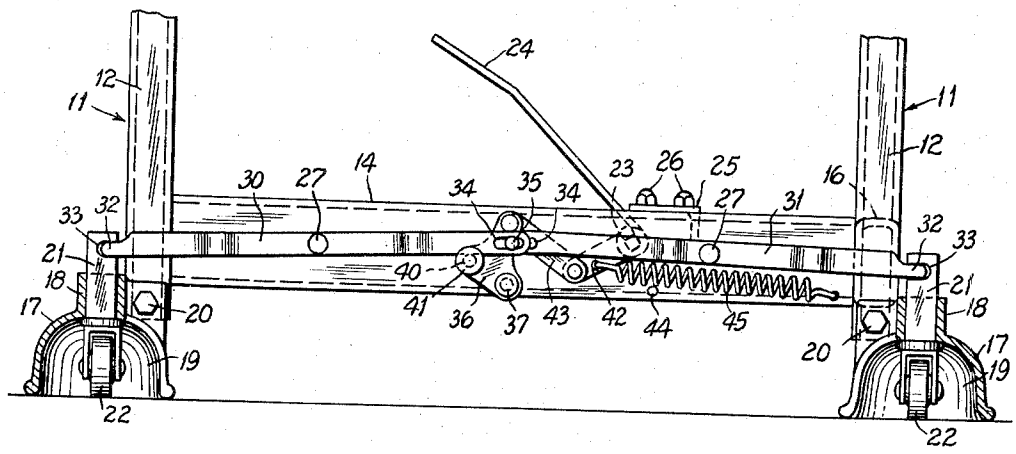
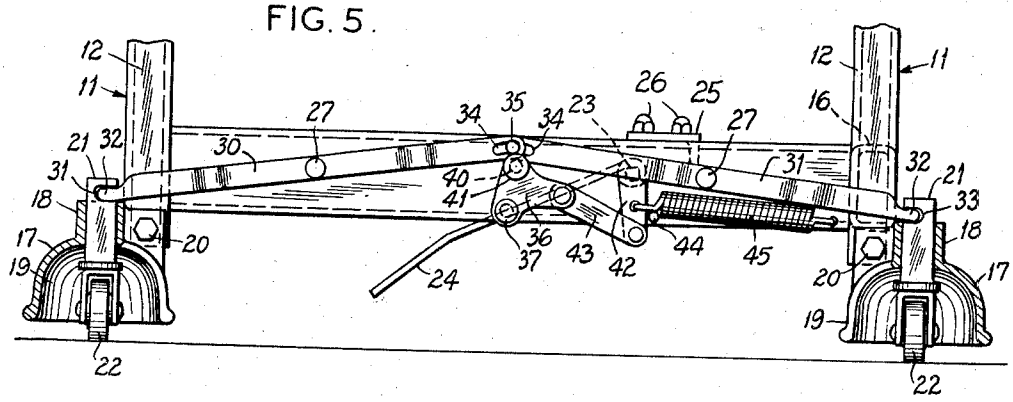


FIG. 5.



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STANDS OR TABLES HAVING RETRACTABLE CASTERS

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Application February 11, 1957, Serial No. 639,529

6 Claims. (Cl. 280—44)

This invention relates generally to stands or tables and more particularly to stands or tables having retractable casters.

It is an important object of the present invention to provide a stand or table of the type described which includes improved means for raising it onto and lowering it from its casters.

Another important object is achieved by the provision of improved means for selectively maintaining the mechanism in caster-projecting position.

Other important advantages are realized by a resilient spring operatively connected to mechanism for causing the caster projection, the spring being adapted to faciliate raising of the stand onto its casters and to cushion the lowering movement of the stand from such casters.

Still another important objective is realized in providing a caster-actuating mechanism that is simple and durable in construction, efficient and positive in operation, and economical to manufacture.

The foregoing and numerous other objects and advantages of the invention will more clearly appear from the following detailed description of a preferred embodiment, particularly when considered in connection with the accompanying drawings, in which:

Fig. 1 is a front elevational view of the stand with the casters retracted;

Fig. 2 is a side elevational view of the stand shown in Fig. 1;

Fig. 3 is an enlarged fragmentary view of one end frame as seen along line 3—3 of Fig. 2, showing the mechanism for raising the stand on its casters;

Fig. 4 is a side elevational view of the end frame and mechanism shown in Fig. 3, the casters being shown in retracted position, and

Fig. 5 is a side elevational view of the end frame and mechanism shown in Fig. 4, but showing the casters in projected position.

Referring now by characters of reference to the drawings, it is seen that the stand is comprised of a pair of end frames generally indicated at **10** and **11** in Fig. 1, each end frame consisting of a pair of upstanding legs **12** interconnected at the top by a horizontal cross piece **13**, Fig. 2, and interconnected at the bottom by a cross piece **14**. The end frames **10** and **11** are connected at the top by horizontal cross pieces **15** located at the front and back of the stand assembly. It will be noted that cross pieces **13** and **15** form a support for a tray top. A lower cross piece **16** (Figs. 1 and 3) joins one of the pair of legs **12** joined at their tops by one of cross pieces **15**. The other pair of legs **12** is not directly joined by a lower cross piece, leaving an open well bridged at the top by a cross piece **15** as shown in Fig. 1, into which the legs of a person sitting at the stand may project.

The legs **12** are equipped with feet indicated at **17** having an uppermost square-sectioned sleeve portion **18** and an open bottom cup portion **19** that is adapted to seat on a subjacent surface such as a floor as shown in Figs. 1, 2

and 4. The feet **17** are secured by bolts **20** to the lower ends of legs **12**.

Slidably received in foot sleeve portion **18** is a square bearing block **21** having a portion extending above sleeve portion **18**. The bearing blocks **21** are drilled to receive and retain the shanks of casters **22**.

A cross rod **23** is rotatively mounted on and bridges lower cross pieces **14**, the rod **23** being of square section for reasons which will later appear. Attached to cross rod **23** and located between cross pieces **14** is a treadle **24** adapted to be manipulated by the foot of the person utilizing the stand. A brace **25** is secured by bolts **26** to the top of cross pieces **14** in the region immediately overlying cross rod **24**, the brace **25** engaging treadle **24** to limit rotation of rod **23** as the frame is lowered from casters **22** as is more clearly shown in Fig. 4 of the drawing. Of course, the brace **25** serves in addition to reenforce the connection of end frames **10** and **11**, and hence provides a more rigid structure.

Attached by pivot pins **27** to each of cross pieces **14** is a pair of arms **30** and **31**. The outer ends **32** of arms **30** and **31** are reduced to interfit compatible sockets **33** provided in the uppermost ends of bearing blocks **21**. The inner ends of arms **30** and **31** overlap, such inner ends being provided with aligned slots **34** through which a pivot pin **35** is received. The pin **35** and coacting slots **34** constitute a slidable pivot connection for the inner ends of arms **30** and **31**.

A cam element **36** is mounted on each cross piece **14** by a pivot pin **37**. The cam element **36** includes a bearing portion **40** spaced from the pivot pin **37** and adapted to engage one arm **30** along the lower margin of its inner end. A shoulder **41** is provided on bearing portion **40** to assure engagement of bearing portion **40** with arm **30** upon rotation of cam element **36**. The caster-projecting mechanism further includes a first link element **42** attached at one end and rotatable with cross rod **23**, and pivotally connected at the other end to a second link element **43**, the second link element **43** being in turn pivotally connected to cam element **36** at a point spaced from the pivot pin **37** and the bearing portion **40**.

In operation, assuming the stand to be resting on its feet **17**, the inner ends of arms **30—31** are down, the outer ends **32** up, and the caster blocks **21** are raised. The cam elements **36** are arranged so that the bearing portions **40** are located to the left of the vertical passed through pivot pins **37** as is shown in Fig. 4, such at-rest position of cam elements **36** being determined by the abutment of treadle **24** with brace **25** when in a raised position.

To raise the stand onto the casters **22**, treadle **24** is simply depressed, which rotates cross rod **23** and attached link elements **42**. Such action causes rotation of cam elements **36** about their pivot pins **37** through interconnecting links **43**. As cam elements **36** are rotated clockwise (Fig. 4) the bearing portions **40** engage arms **30** and operate through the slidable pivot connections **34—35** to raise the inner ends of both arms **30—31**, and hence depress bearing blocks **21** and raise the stand. As cam elements **36** rotate, the bearing portions **40** pass through the vertical determined by pivot pins **37**, and locate on the other side of such vertical in caster-projecting position as is clearly shown in Fig. 5. This caster-projecting position of cam elements **36** is determined by a stop member **44** on each cross piece **14** located to engage first link element **42**. Because bearing portions **40** engage arms **30—31** at points located at the right hand side (Fig. 5) of a vertical plane passed through pivots **37**, the weight of the stand is transmitted by the arms **30—31** to bearing portions **40**, and hence transmitted by cam elements **36** and linkages **42—43** to the stop members **44**. The mech-

anism above described provides a positive retention of the stand in the raised position.

A tension spring **45** is attached to each cross piece **14** and is attached to first link element **42**, the springs **45** tending to rotate cam elements **36** to the caster-projecting position through forces applied to the interconnecting links **42—43**. It is seen that this action of springs **45** facilitates lifting of the stand onto the casters **22**.

To lower the stand from casters 22, the treadle 24 is lifted which rotates rod **23** and connected link elements **42**, and hence causes rotation of cam elements **36** in a clockwise direction to the position shown in Fig. 4. The stand is thus permitted to rest on its feet **17**. It will be particularly noted that since springs **45** tend to rotate cam elements **36** to the caster-projecting position, the lowering movement of the stand will thus be cushioned by such springs **45** which serve in a sense as a shock absorber.

Although the invention has been described by making detailed reference to a single preferred embodiment, such detail is to be understood in an instructive, rather than in any restrictive sense, many variants being possible within the scope of the claims hereunto appended.

I claim as my invention:

1. A stand of the character described comprising a pair of end frames having legs with feet and casters mounted on said legs for projection beyond said legs, a cross piece mounted on each end frame between said legs, a rod element mounted on said cross pieces, a caster-projecting mechanism on each end frame including a pair of arms pivoted on the cross piece, said arms being connected at their outer ends to said casters and overlapping at their inner ends, means connecting said inner ends, a cam element, pivot means mounting the cam element to said cross piece, a first link element attached to said rod element and rotatable therewith, a second link element pivotally connected to said first link element and to said cam element, the cam element engaging said arms to project said casters upon rotation of said rod element, and stop means engaging one of said elements to limit rotation of said cam element and to maintain the cam element in a caster-projecting position.

2. The combination and arrangement of elements as recited above in claim 1, but further characterized in that the cam element in the caster-projecting position engages the arms at one side of the vertical through said pivot means.

3. The combination and arrangement of elements as

recited above in claim 2, but further characterized by the provision of a resilient means connected to one of said elements tending to urge said cam element to the caster-projecting position, the resilient means serving to facilitate raising the frames onto said casters and to cushion the movement of said frames from said casters.

4. The combination and arrangement of elements as recited above in claim 2, but further characterized by the provision of a slidable pivot connection between the overlapping inner ends of said arms, and that the cam element engaging one of said arms upon rotation to the caster-projecting position.

5. A stand of the character described comprising a pair of end frames having legs with feet and casters mounted on said legs for projection beyond said legs, a cross piece mounted on each end frame between said legs, a rod element mounted on said cross pieces, a caster-projecting mechanism on each end frame including a pair of arms pivoted on the cross piece, said arms being connected at their outer ends to said casters and overlapping at their inner ends, a slidable pivot connection between the overlapping inner ends, a cam element, pivot means mounting said cam element to said cross piece, a first link element attached to said rod element and rotatable therewith, a second link element pivotally connected to said first link element and to said cam element in spaced relation to said pivot means, the cam element engaging one of said arms to project said casters upon rotation of said rod element, the said cam element in the caster-projecting position engaging the arms at one side of the vertical through said pivot means, and stop means engaging said first link element to limit rotation of the rod element and to maintain the cam element in said caster-projecting position.

6. The combination and arrangement of elements recited above in claim 5, but further characterized by the provision of a tension spring attached to said cross piece and attached to said first link element, the tension spring tending to urge said cam element to the caster-projecting position so as to facilitate raising the frame onto said casters and to cushion lowering movement of the frame from said casters.

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