Jan. 7, 1964 G. P. NISSEN 3,116,809

SUPPORTING STAND FOR REBOUND TUMBLING APPARATUS

Filed June 1, 1961 2 Sheets-Sheet 1

Fig. 1.

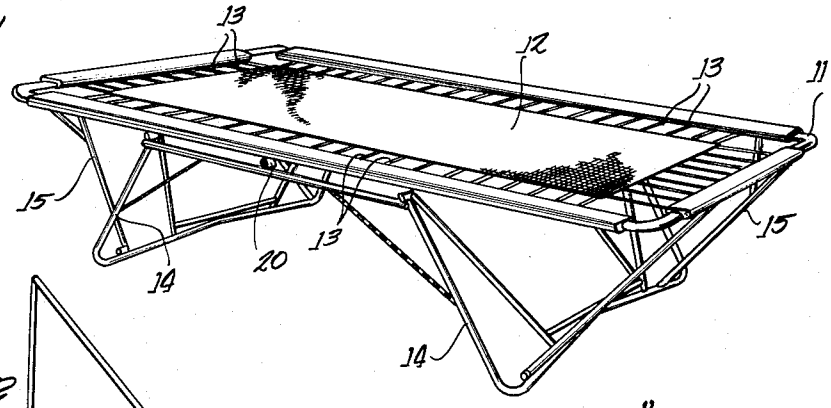


Fig. 2

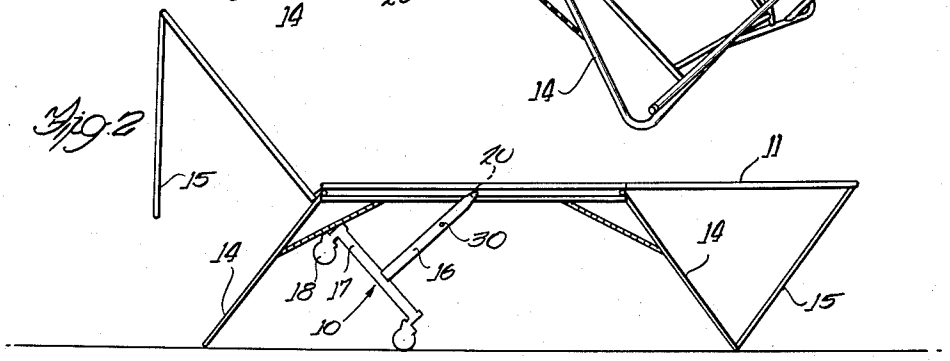


Fig. 3

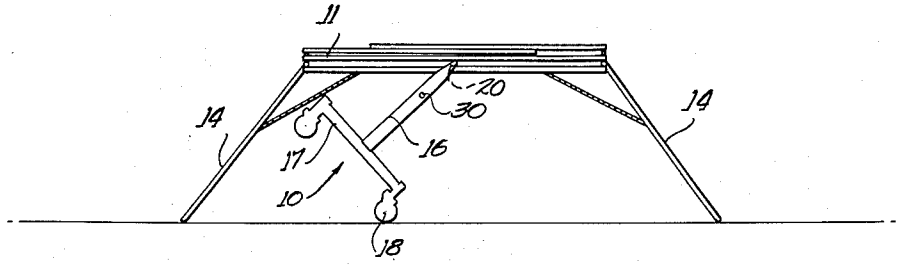


Fig. 5

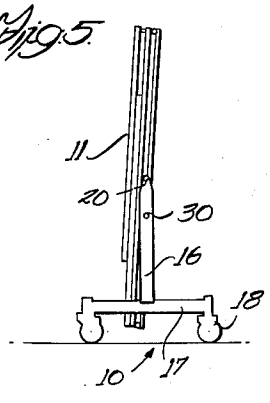
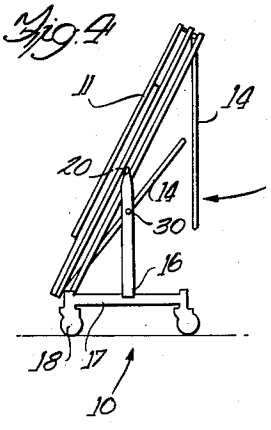


Fig. 4



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Filed June 1, 1961 2 Sheets-Sheet 2

Fig. 6.

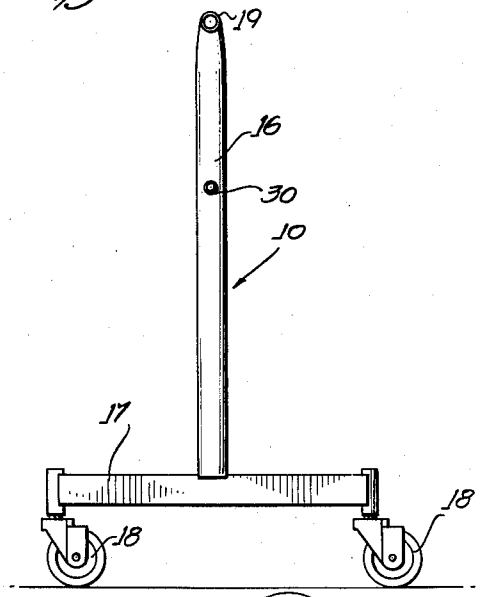


Fig. 7.

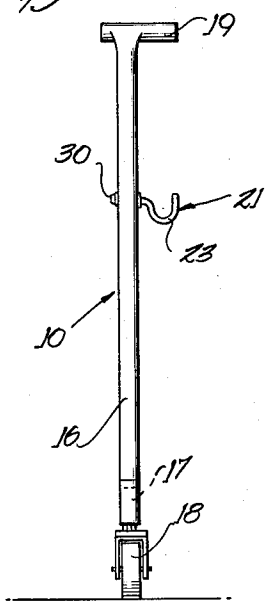


Fig. 8.

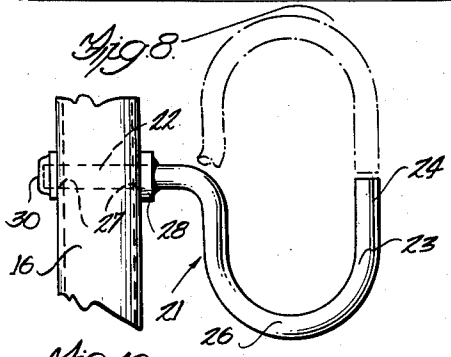


Fig. 9.

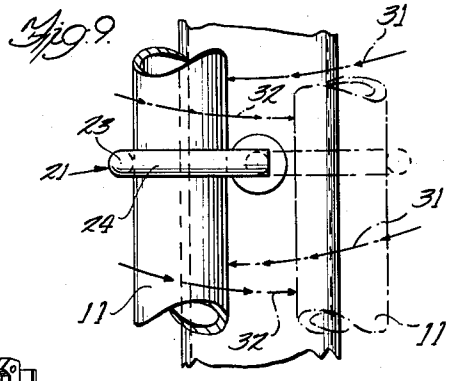
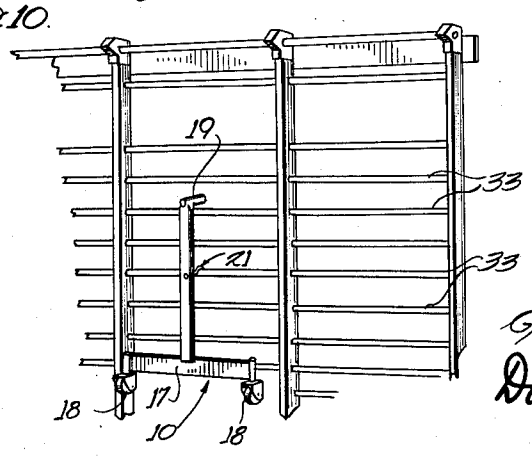


Fig. 10.



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SUPPORTING STAND FOR REBOUND TUMBLING APPARATUS

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3 Claims. (Cl. 182—224)

This invention relates generally to a supporting stand for rebound tumbling apparatus having a frame and supporting leg structure collapsible into a flat rectangular unit. More particularly, the invention relates to a supporting stand having a post upstanding rigidly from a wheeled base and adapted at its upper end for pivotal connection with the folded unit along a central bisecting axis so that two such stands pivotally connected to the unit on opposite sides support the unit with the axis in a horizontal position and permit swinging of the unit about the axis.

The primary object of the invention is to provide, on a roller stand of the above character, stop means which limit swinging of the folded unit about its central axis to an upright position and which is constructed in a novel manner to accommodate the unit when swinging in either direction while facilitating removal and replacement of the stop means in the event of damage.

Another object is to mount a stop member releasably on the post of the supporting stand and construct the member in a novel manner to insure that it is properly positioned with respect to the folded unit to limit swinging of the unit properly with respect to the stand regardless of the direction of swinging.

A more detailed object is to swivel the stop member on the post and distribute the weight of the member in a novel manner to receive the swinging folded unit from either one of opposite directions.

Other objects and advantages of the invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

FIGURE 1 is a perspective view of rebound tumbling apparatus of the type adapted for use with a supporting stand embodying the novel features of the present invention;

FIG. 2 is a side view of the apparatus of FIG. 1 with a supporting stand in operative position;

FIG. 3 is a view similar to FIG. 2 with the apparatus partially collapsed;

FIGS. 4 and 5 are side elevational views similar to FIG. 3 and showing the apparatus supported entirely by two stands and in progressive conditions of collapse;

FIG. 6 is a side elevational view of the stand;

FIG. 7 is an end elevational view of the stand;

FIG. 8 is an enlarged fragmentary view similar to FIG. 7 and showing the stop;

FIG. 9 is a fragmentary enlarged view of the end of the stop; and

FIG. 10 is a perspective view showing the stand suspended by the stop from a stall bar.

The invention is shown in the drawings for purposes of illustration embodied in a supporting stand **10** for rebound tumbling apparatus comprising a rectangular frame **11** which supports a bed or tumbling surface **12** through the medium of elastic members such as rubber cables **13** and is supported above a horizontal surface by leg members **14**. The frame is divided lengthwise into three sections, the end ones of which are connected to the supporting leg members by releasable braces **15** when the apparatus is in use. When it is desired to store the apparatus, the frame is collapsed by first disconnecting the end braces for one end section of the frame from the

supporting leg member and folding the braces against the end section. The latter then is folded individually as shown in FIG. 3 into overlapping relation with the center frame section. Next, the other end braces and end section are folded in a similar manner into overlapping relation with the first end section as shown in FIGS. 4 and 5.

Once, the frame sections are folded together, two supporting stands **10** are connected to the center frame section on opposite sides and the folded frame **11** is elevated so as to be supported on the stands alone as shown in FIGS. 4 and 5. Next, the leg members are folded against the collapsed frame as shown in FIG. 5 to form a rectangular folded unit. This unit is pivotally supported by the stands to swing about a horizontal axis bisecting the unit and normally is stored on the stands in a generally vertical position.

Each of the supporting stands **10** is of inverted T shape and comprises an upright post **16** and a crossbar **17** secured to and extending perpendicular to the post at its lower end. Caster wheels **18** are mounted at opposite ends of the crossbar to engage a horizontal supporting surface for the apparatus and to swivel about axes paralleling the post. To form the pivotal connection between the upper end of the post and the folded unit, a cylindrical projection **19** extending rigidly and normally from the post telescopes within a sleeve **20** secured to one side of the folded unit. A similar sleeve is located on the other side of the unit to receive a cylindrical projection of the other supporting stand. The two sleeves define the horizontal axis of swinging of the folded unit when the stands engage the horizontal supporting surface and space the folded unit above such surface with the posts in upright positions. Swinging of the folded unit about the axis defined by the sleeves is limited by stop members **21** extending inwardly from the post on the same side as the cylindrical projections to engage the underside of the frame when the frame is in a generally vertical position as shown in FIG. 5.

In accordance with the present invention, the stop member **21** of each supporting stand **10** is constructed and is mounted on the post **16** in a novel manner to facilitate its removal and replacement in the event of damage and, at the same time, to insure that it always is in the proper position to receive and limit swinging of the folded unit about the axis of the sleeves **20** regardless of the direction of such swinging. To these ends, the stop member comprises a shank portion **22** releasably mounted in the post to swing about a transverse axis generally parallel to the axis of the cylindrical projection **19** and connected to a hook portion **23**. This portion includes a bar **24** extending transversely of the shank portion and spaced from the shank and post to receive the frame **11** of the rebound tumbling unit and limit movement of the frame away from the post. Location of the hook in a position to receive the frame regardless of the direction of swinging of the frame is insured by offsetting the hook to one side of the shank as shown in FIG. 8. With this arrangement, the hook normally swings by gravity into a position below the axis of turning of the shank as by the swivel mounting of the shank.

The hook portion **23** of the stop member **21** in this instance is of U shape and, in addition to the transverse outer bar **24**, comprises a laterally spaced leg portion **25** formed by bending the shank laterally and connected to the bar by curved part **26** at the closed end of the U. To take full advantage of gravity to swing the hook into a vertical plane, substantially the entire hook is to one side of the shank and its axis of turning (see FIG. 8). In this instance, and to simplify the construction, the shank and the hook are integrally connected as parts of a single metal rod of circular cross section.

To facilitate replacement of the hook **23** in the event it is damaged, the stop member **21** is releasably mounted on the post **16**. For this purpose the shank **22** is formed as a straight portion of the rod for the stop member and telescopes through and is rotatable within holes **27** cut through opposite sides of the post. Movement of the shank through the post is limited by a washer **28** which is welded to the shank at a point adjacent the hook and spaced from the free end of the shank to permit projection of such end slightly beyond the opposite side of the post. This end is releasably maintained in place with respect to the post by a washer **29** and a closed end fastener **30** of the so-called "push nut" type. As is well known in the art, such fasteners telescope over parts to which they are to be secured and move easily in one direction along such parts while having teeth or flange members (not shown) which engage the part to prevent movement in the opposite direction.

When the stop member **21** is assembled to the post **16** and the latter is in an upright position, the hook **23** swings by its own weight into a vertical plane as shown in FIG. 8. In this position, it is ready to receive between the bar **24** of the hook and the spaced leg **25** an upright portion of the frame **11** of the folded unit. As soon as the frame engages the cross bar at the lowermost portion of the hook, the hook is swung thereby into a horizontal plane and acts as a stop, preventing further movement of the frame. The action is the same, regardless of the direction of swinging of the frame into engagement with the hook. Referring to FIG. 9, the hook will be swung to the left as shown in full lines upon engagement with the frame member moving in the same direction indicated by arrows **31**. Upon engagement by the frame member moving in the opposite direction indicated by arrows **32**, the hook will be swung to the right as shown in dotted outline in FIG. 9.

Once disposed within the hook **23** movement of the frame **11** away from the post **16** is prevented by engaging the transverse bar **24**. In the event the hook becomes bent or otherwise damaged, it may be removed simply by forcing the fasteners **29** and **30** off the free end of the shank and withdrawing the shank from the holes **27** in the post. A new hook then may be assembled to the post easily projecting its shank into the holes and beyond the post for receipt of the "push nut" fasteners which hold it assembled to the post.

In addition to accommodating the frame **11** in both directions of swinging about the axis of the sleeves **20** and facilitating removal and replacement of the hook **21**, the swivel mounting of the stop **23** is advantageous in storing of the support stand. This is especially true in gymnasiums which are equipped with stall bars **33** secured in parallel horizontal relation along a vertical wall. The hooks thus may be turned a half revolution from their normal position and into a position in which they open downwardly as shown in dotted outline in FIG. 11 to hook over the top of one of a stall bar and thereby suspend the supporting stand from such bar.

I claim as my invention:

1. A roller stand for rebound tumbling apparatus having a plurality of sections collapsible into a flat rectangular folded unit with a central bisecting axis, said stand comprising, in combination, a support of inverted T shape with a post and crossbar normal to the post at one of its ends, caster wheels disposed below and mounted adjacent opposite ends of said crossbar to swivel about upright axes when said post is in an upright position, a member secured to the upper end of said post and adapted for pivotal connection with said folded unit at one side of the unit and along said axis whereby two stands so connected at opposite sides of the unit locate the axis horizontally and support the unit for swinging about the axis when the wheels of the two stands engage a horizontal supporting surface and the posts are upright, a stop on said post engageable with said folded unit to limit swinging thereof in either direction about said horizontal axis and comprising a shank journaled in the post to swing about an axis normal to the post and parallel to the horizontal axis and a hook of U shape extending first laterally in one direction from one end of the shank, then transversely and longitudinally of the shaft and finally reversely to provide spaced legs joined by a cross portion and disposed transversely of the shank, and releasable means holding said shank assembled rotatably in said post while permitting selective removal and replacement of the shank.

2. A roller stand for rebound tumbling apparatus having a plurality of sections collapsible into a flat rectangular folded unit with a central bisecting axis, said stand comprising, in combination, a support for inverted T shape with a post and a crossbar normal to the post at one of its ends, caster wheels disposed below and mounted adjacent opposite ends of said crossbar to swivel about axes when said post is in an upright position, a member secured to the upper end of said post and adapted for pivotal connection with said folded unit at one side of the unit and along said axis whereby two stands so connected at opposite sides of the unit dispose the axis horizontally and support the unit for swinging about the axis when the wheels of the two stands engage a horizontal supporting surface and the posts are upright, a stop on said post engageable with said folded unit to limit swinging thereof in either direction about said horizontal axis and comprising a shank journaled in the post to swing about an axis normal to the post and parallel to the horizontal axis and an end portion extending laterally of the shank and spaced from the post to receive a part of the frame and limit movement thereof away from the post, and releasable means holding said shank assembled rotatably in said post while permitting selective removal and replacement of the shank.

3. A roller stand for rebound tumbling apparatus having a plurality of sections collapsible into a flat rectangular folded unit with a central bisecting axis, said stand comprising, in combination, a support of inverted T shape with a post and a crossbar normal to the post at one of its ends, caster wheels disposed below and mounted adjacent opposite ends of said crossbar to swivel about upright axes when said post is in an upright position, a member secured to the upper end of said post and adapted for pivotal connection with said folded unit at one side of the unit and along said axis whereby two stands so connected at opposite sides of the unit dispose the axis horizontally and support the unit for swinging about the axis when the wheels of the two stands engage a horizontal support surface and the posts are upright, and a stop on said post engageable with said folded unit to limit swinging thereof in either direction about said horizontal axis and comprising a shank journaled in the post to swing about an axis normal to the post and parallel to the horizontal axis and a hook of U shape extending first laterally in one direction from one end of the shank and then transversely and reversely in the opposite direction to provide spaced legs joined by a cross portion and disposed transversely of the shank with the cross portion spaced from said shank axis whereby the hook tends to swing into a vertical plane due to its weight.

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