CHILDREN'S BOUNCING APPARATUS
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ABSTRACT OF THE DISCLOSURE
A vertically and circularly movable cylinder slidable mounted on two fixed, vertically spaced posts and having a compression spring constrained therewithin, the cylinder sustaining at its lower end a foot support upon which a child may stand as he utilizes his weight to move the cylinder vertically and circularly.

This invention relates to improvements in children's bouncing devices and is primarily directed to bouncing devices that may be permanently or semi-permanently installed in such appropriate and diverse locations as children's playgrounds and indoor playrooms.

It is, therefore, an object of the present invention to provide an improved children's bouncing device adapted for secure, permanent or semi-permanent installation.

It is another object of the present invention to provide a permanently or semi-permanently installed children's bouncing device having improved, strengthened supporting structure.

It is a further object of the present invention to provide a permanently or semi-permanently installed children's bouncing device that is economical, durable and capable of convenient installation.

Having in mind the above and other objects that will be evident from an understanding of this disclosure, the invention comprises the devices, combinations and arrangements of parts as illustrated in the presently preferred embodiment of the invention which is hereinafter set forth in such detail as to enable those skilled in the art readily to understand the invention, operation, construction and advantages of it when read in conjunction with the accompanying drawings in which:

FIG. 1 is a perspective view of the bouncing device and support structure of the present invention,
FIG. 2 is a front elevational view with a portion in section and enlarged view along line 2—2 of FIG. 1,
FIG. 3 is an elevational view of a modified form of support for the lower guide pipe of the present invention, and
FIG. 4 is an elevational view, partially in section, of a modified form of support for the upper guide pipe of the present invention.

The structure of the present invention is well suited to economy minded public playground directors, school supervisors and family heads because, for example, the bouncing device of this invention may be conveniently secured to existing frames utilized for children's 'swings,' as described below.

As can be readily appreciated a bouncing device in the hands of healthy children of all ages, all of whom are endowed with boundless energy, is subjected to severe stresses and strains, and, therefore, must be very stable and capable of withstanding a great amount of "punishment." In the present invention the construction of the supporting structure and of the bouncing device itself provides strength and durability for years of rugged playground fun and dependable, troublefree service.

In normal use the vertical elements of the bouncing device must withstand not only the vertical forces developed by the vertical movement of the slide cylinder but also the horizontal forces produced as a result of energetic children running and leaping onto the bouncing device, pushing and pulling the vertical elements and swinging the slide cylinder around in a circular motion, as described below. In the apparatus of the present invention the overhead support in combination with the ground level support provide such a high degree of stability that children cannot displace the bouncing device by any of the forces produced while using it.

Safety is another important factor that must be considered by manufacturers of children's playthings. In the present invention, in addition to the safety provided by the high degree of stability, it should be noted that the construction shown is devoid of any sharp or pointed surfaces upon which the children may injure themselves or tear their clothing. Moreover, the coil spring is housed completely within the slide cylinder thus obviating the possibility of fingers or toes being pinched between the spring coils.

As will be more clearly seen in FIG. 2, a bouncing device includes an open-ended metallic slide cylinder adapted to slide over and along a vertically positioned metallic upper guide pipe having a cap welded to its lower end, and a vertically positioned metallic lower guide pipe having a cap welded to its upper end. The slide cylinder, the bobbin which functions as a guide channel, has secured to its bottom portion by any suitable method a pair of diametrically opposite U-shaped foot rests. The slide cylinder is divided, in effect, into an upper section and a lower section whose bores provide tubular sleeve portions which are parallel and function as guide channels for the upper guide pipe and the lower guide pipe, respectively. A stop pin is diametrically disposed and suitably secured within the slide cylinder intermediate the slide cylinder ends.

With the bouncing device assembled as shown in FIG. 1, an expanded helical compression spring fits within the slide cylinder and normally rests upon the upper guide pipe cap. One end portion of the lower guide pipe is fixedly secured in a concrete foundation or block positioned in a hole in the instance where the installation is set up outdoors. The top surface of the block is flat and when the block is positioned properly, the surface should be level with or slightly below the surface of the ground to prevent any possibility of a child tripping on an exposed concrete block. The lower guide pipe is positioned to extend vertically upwardly, at right angles to the surface of the block, preferably but not necessarily directly beneath and in axial alignment with the upper guide pipe.

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A metallic support frame includes two inverted, substantially U-shaped pipes having legs and a horizontal overhead support member or pipe securely connected, as by welding, at each end to the juncture of the legs and. The end portions are anchored in concrete blocks similar to the blocks. The upper guide pipe is secured at its end portion to a bolt and nut to a short length of pipe which is secured, as by welding, to depend from the overhead support pipe.

Referring to FIG. 2, it can be seen that when the bouncing device is assembled as shown, in its rest position the coil spring is encompassed by the slide cylinder and has one end resting upon the cap of the lower guide pipe while the other end supports the slide cylinder through the medium of a stop pin. When a child grasps the slide cylinder with his hands and steps onto the foot rests his weight will force the slide cylinder downwardly compressing the coil spring.

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pressed spring thereupon exerts an upwardly directed force on the slide cylinder through the stop pin, which force assists the child to "bounce" upwardly. When the cylinder 12 slides back down the spring again compresses and tends to urge the cylinder upwardly. Therefore, said child may repeatedly propel himself up and down on the slide cylinder simply by "throwing" his weight upwardly and taking advantage of the resiliency of the coil spring. In addition, since the cylinder 12 may slidably rotate on the guide pipes 14 and 16 when they are arranged in vertical alignment, the child while he is bouncing up and down can also simultaneously turn the cylinder and himself around in a gyratory motion simply by shifting his weight.

FIGS. 3 and 4 illustrate a modified form of means to support, respectively, the lower and upper guide pipes 16 and 14. Thus, in FIG. 3 the bottom end of lower guide pipe 16 is secured, as by welding to a metallic plate 52. The metallic plate in turn is firmly secured to a cement floor or block 54 by bolts and nuts 56. This arrangement could also be used for attaching the bouncing device to a wooden floor.

In FIG. 4 the upper guide pipe 14 is secured to the horizontal overhead support pipe 36 through the agency of a U-shaped clamp 58. A bolt and nut 60 is employed to secure the upper guide pipe 14 to the clamp 58 and the pipe 14 may be formed with a shallow notch 61 so as to contact the support pipe 36 at each end thereof. Thus, the standard of commonly used for children's swings may be utilized to support the bouncing device 10 without any alteration to the pipe frame, thereby significantly reducing the cost of such an installation.

It will be understood that while the spring 21 is shown as a compression spring, a similar coil spring used in tension could be employed by simply connecting the upper end of the spring to the lower end of the guide pipe 14 and the lower end of the spring to an element quite like the pin 20, connected to the slide cylinder but located at a level such that appreciable vertical movement of the slide cylinder would not be prevented.

Having set forth the nature of this invention, what we claim herein is:

1. A bouncing apparatus comprising a pair of axially aligned cylindrical guide elements having opposed free extremities, means providing a rigid support for each of said cylindrical guide elements in vertically spaced relation, a movable member formed integrally with axially aligned tubular sleeve portions each slidably embracing one of said cylindrical guide elements, spring means substantially constrained within said lower one of said said tubular sleeves between said abutment means and one of said cylindrical guide elements, and said upper abutment means carried exteriorly of said movable member.

2. A bouncing apparatus for use with a conventional swing frame including a horizontal swing supporting member, said bouncing apparatus comprising, an upper cylindrical guide element, means for rigidly attaching said upper cylindrical guide element in vertically depending position from the horizontal swing supporting member, a lower cylindrical guide element, fixed support means rigidly sustaining said lower cylindrical guide element to extend upwardly parallel to said upper cylindrical guide element, a movable member formed integrally with parallel tubular sleeve portions each slidably embracing one of said cylindrical guide elements, spring means substantially constrained within one of said tubular sleeve portions and engaging said cylindrical guide element therein, spring abutment means carried within one of said tubular sleeve portions and engaging said spring means, and user supporting means carried externally of said movable member.

3. Bouncing apparatus particularly suitable for use by children comprising a fixed support, a lower cylindrical guide secured at one end to said fixed support and extending vertically upward, a frame having an overhead support, said overhead support being disposed above said lower cylindrical guide, an upper cylindrical guide fixedly secured at one end to and depending vertically from said overhead support in axial alignment with but spaced from said lower cylindrical guide, a vertically movable open ended tubular member adapted to slide over and along said upper and lower cylindrical guides, a stop pin diametrically secured within said tubular member intermediate the tubular member ends, a helical compression spring positioned within said tubular member between said stop pin and the upper end of said lower cylindrical guide whereby said compression spring rests on the upper end of said lower cylindrical guide and said stop pin rests on said spring; and a pair of diametrically opposite foot rests secured to the lower portion of said open ended tubular member whereby a child by stepping onto said foot rests will cause said vertically movable tubular member to slide downwardly along said cylindrical guides compressing said spring thereby providing an upwardly directed force which tends to propel said tubular member and child vertically upwardly.

4. A bouncing apparatus comprising a conventional swing frame including an overhead horizontally disposed support member provided with inverted substantially U-shaped legs adapted to be fastened into the ground or onto a supporting floor, an upper guide element depending from said horizontally disposed support member, a lower guide element disposed parallel to said upper guide element and having its lower end adapted to be fixedly secured to the ground or to a supporting floor, a movable member formed with guide channels embracing said upper and lower guide elements to constrain said movable member for endwise bouncing movement parallel to said guide elements, spring means constrained within at least one of said channels and operatively connected at one end to one of said guide elements and at its other end to said movable member, and means secured to said movable member for supporting a user of said bouncing device thereon.

References Cited

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Date</th>
<th>Inventor</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,709,079</td>
<td>5/1955</td>
<td>Bubb et al.</td>
<td>272—57.2</td>
</tr>
<tr>
<td>2,729,271</td>
<td>1/1956</td>
<td>Hayes</td>
<td>272—57</td>
</tr>
<tr>
<td>2,897,217</td>
<td>8/1958</td>
<td>Adams et al.</td>
<td>272—57.2</td>
</tr>
</tbody>
</table>

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