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ADJUSTABLE COUNTERWEIGHTED HURDLE

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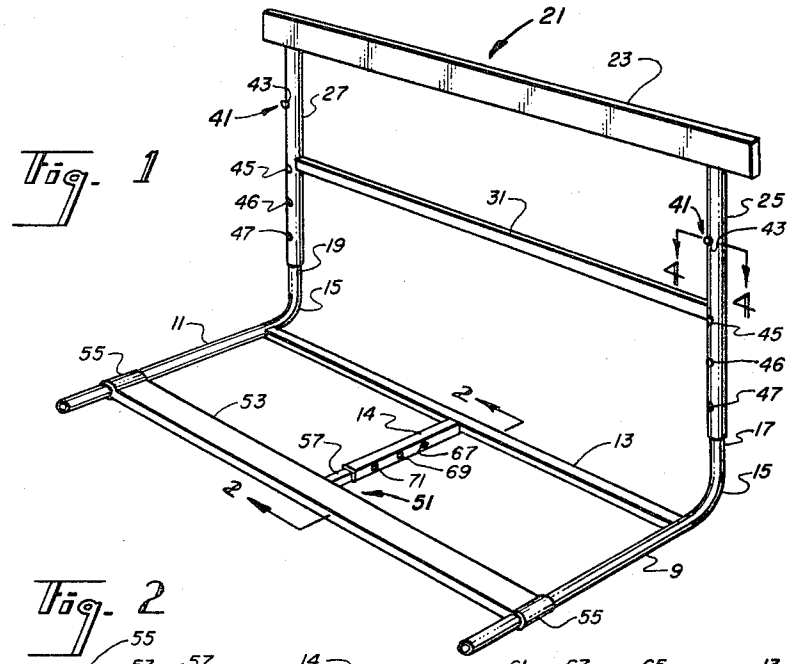


Fig. 1

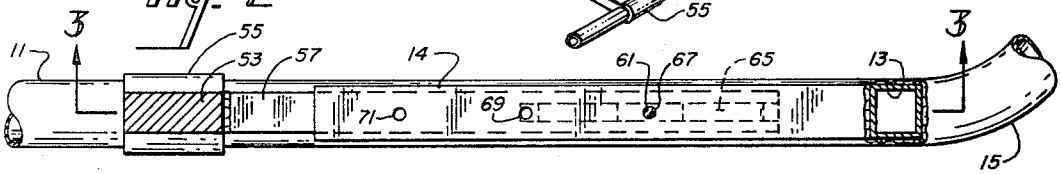


Fig. 2

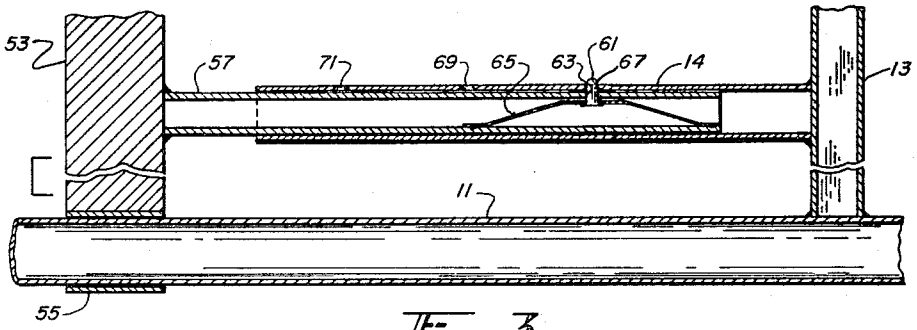


Fig. 3

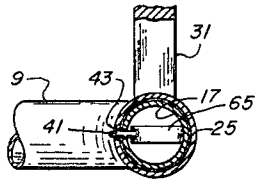


Fig. 4

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# ADJUSTABLE COUNTERWEIGHTED HURDLE

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This invention relates to athletic hurdles for running tracks and particularly to adjustable height hurdles of the type which will tip over or can be pulled over if struck by an athlete jumping thereover and striking the same.

It has heretofore been proposed to provide an adjustable height hurdle having adjustable counterweight means so that as the height of the hurdle is adjusted, the counterweight means can be adjusted accordingly so that the pull-over or tip-over force of the hurdle remains constant, or at a desired value for each height adjustment.

However, some of the prior hurdles of which I am aware have been difficult to adjust rapidly, and thus, the job of adjusting the height and counterweight means of a series of hurdles has been time-consuming. Other hurdles have had dangling weights that tended to crush the fingers of the person adjusting the weights, and in addition, at the intermediate height position, the required pull-over force could be obtained only by disposing one weight in a forward position and the other in a rearward position. This condition created a side-to-side unbalance which is undesirable for reasons known to those skilled in the art.

It is a main object of the present invention to provide a hurdle of the general type under consideration but which is constructed so that the counterweight can be adjusted easily and rapidly, and specifically more rapidly than prior counterweight means.

A more specific object is to provide such a hurdle having a single counterweight located symmetrically with respect to the hurdle so that the hurdle is balanced insofar as pull-over force is concerned.

A further object of my invention is to provide a hurdle which is constructed so that the movable counterweight is disposed parallel to the top cross bar to give maximum effectiveness to the counterweight, thereby keeping the total weight of the hurdle at a minimum.

Another object of my invention is to provide a hurdle having a single counterweight that can be readily and easily adjusted to at least three positions so that a constant pull-over force can be achieved at the three standard heights, low, intermediate and high.

My hurdle has in the preferred embodiment a T-shaped counterweight member slidably engaging the base structure of the hurdle and telescopically engaging a cross structure of said hurdle, wherein spring biased lock means detachably connect the counterweight member and cross structure whereby adjustment of the counterweight can rapidly and easily be effected, in a definite and predetermined relationship to adjustment in height of the cross bar of the hurdle.

Various other objects of the invention will be apparent from the following description taken in connection with the accompanying drawings wherein:

FIG. 1 is a perspective view of a hurdle incorporating my invention;

FIG. 2 is an enlarged sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2; and

FIG. 4 is a horizontal section on an enlarged scale taken along line 4—4 of FIG. 1.

Referring to the drawings, FIG. 1 shows that the hurdle comprises a pair of tubular base members 9 and 11 held in parallel relation to one another primarily by a cross



member 13 which is rigidly secured at its ends to said base members. A first tubular guide element 14, whose purpose will be presently explained, is rigidly secured at one end to the central portion of the cross member 13. The cross bar 13 and guide element 14 can be considered as parts of a T-shaped cross structure.

The base members are bent upwardly at 15 to provide parallel vertical tubular inner legs 17 and 19. A cross bar structure 21 is provided for the hurdle and includes a cross bar 23 secured to the upper ends of a pair of outer legs 25 and 27 which telescope over inner legs 17 and 19 respectively. The outer legs 25 and 27 are rigidly joined intermediate the length thereof by a horizontal cross member 31. The cross bar structure 21 functions to maintain a parallel relation between inner legs 17 and 19, and thus also functions to aid the cross bar 13 in maintaining a parallel relation between the base members 9 and 11.

The height of the cross bar structure 21 may be adjusted so that the cross bar 23 is at the proper official height for the particular event to take place. To achieve such adjustment, I provide a spring lock 41 (to be presently described in detail) for each of the inner legs 17 and 19, such locks adapted to selectively fit in a plurality of pairs of holes 43 (FIG. 4), 45 (FIG. 1), 46 and 47. When the parts are adjusted so that the spring locks engage in the holes 43 (as shown) the cross bar is at the proper height for high school hurdle events; when they are in holes 45, the cross bar is at the proper height for collegiate intermediate hurdle events; and when they are in holes 47, the cross bar is at the proper height for collegiate high hurdle events. When the spring locks 41 are in the holes 46, the cross bar is at a proper level for special high school hurdle events.

As the height of the cross bar 23 is changed, obviously the tip-over or pull-over force of the hurdle will change; the higher the cross bar, the greater the effective vertical lever arm thereof, and thus the more effective is the pull-over force applied to the cross bar.

I have provided an adjustable counterweight structure 51 whose position can be accurately correlated to that of the cross bar 13 so that the pull-over force is the same regardless of which of the three main height positions the cross bar is set.

The adjustable counterweight is best shown in FIGS. 2 and 3 and is generally of a T shape and includes a weight member in the form of a solid cross bar 53 having sleeves 55 secured to the ends thereof and slidably receiving the base members 9 and 11.

A second guide member 57 is secured at one end to the center of the weight bar 53 and projects therefrom and telescopically projects into the first guide member 14. The telescopic fit of the guide members 14 and 57 prevents cocking of the weight bar 53 relative to the base members 9 and 11 and thus facilitates rapid adjustment of the weight bar relative to the base members.

A spring lock is provided for releasably holding the counterweight structures 51 in any one of three positions of adjustment. The spring lock is best shown in FIG. 2 and includes a detent or keep 61 slidably projecting through a hole 63 in the wall of the second guide member 57 and secured at its lower end to a leaf spring 65. The latter is permanently deformed to assume approximately the bowed condition shown in FIG. 3. The leaf spring is dimensioned so that the ends thereof press against and slidably engage the inner surface of the guide member 57 thereby to urge the detent 61 outwardly so that it will project through a selected hole in the first guide member 14. The latter member has three such holes 67, 69 and 71, corresponding in adjustment position to holes 43, 45 and 47.

It is evident from FIG. 3 that the detent 61 is rounded at its outer end so that when pressed inwardly under finger pressure, the rounded portion will assume a position next

to the edges of the associated hole in the first guide member **14**. Therefore, when shifting force is simultaneously applied to the counterweight structure, such edges will cam the detent further inwardly to facilitate movement of the detent from one hole to the next.

The spring lock **41** is identical in construction to lock **61**, **65**, and both locks function to securely and firmly lock the cross bar and counterweight, respectively, in place, yet facilitate rapid adjustment of the cross bar and counterweight. I have found it useful to label the holes **67**, **69** and **71** with the letters HS (for high school), IH (for intermediate heights) and HH (for high hurdle) so that there is no need for guess work as to where the counterweight should be located for the three main cross bar heights.

Of particular importance to my invention is the side-to-side balance of my hurdle insofar as concerns pull-over forces, this advantage being achieved because of the use of a single symmetrically disposed counterweight member **53** which remains symmetrically disposed despite the fact that it is adjustable to any one of three different positions.

In operation, when the cross bar structure **21** is adjusted to the FIG. 1 position, with spring locks **41** fitting in holes **43** so that the cross bar is at its low level position, the counterweight structure **51** will be correspondingly adjusted so that the spring lock **61** engages in the hole **67**. When the cross bar structure **21** is adjusted so that the spring locks **41** fit in the holes **45**, the cross bar is at intermediate height, and the counterweight structure **51** will be adjusted so that the spring lock **61** fits in the medially located hole **69**. When the cross bar structure **21** is adjusted to its high hurdle position so that the spring locks **41** fit in the holes **47**, the counterweight structure **51** will be adjusted so that the spring lock **61** engages in the outermost hole **71**. The parts are so dimensioned that when they are adjusted as above recited a constant pull-over force is achieved for each of the three height positions. For instance, in one hurdle incorporating the concepts of my invention, I utilized a pull-over force of eight pounds which was maintained constant for each of the three main height positions of the cross bar structure by appropriate adjustment of the counterweight structure.

The counterweight **53** also serves a dual function, the first being to act as a counterweight, and the second being as a structural member of the overall framework.

Having described the invention in what is considered to be the preferred embodiment thereof, it is desired that it be understood that the invention is not to be limited other than by the provisions of the following claims.

I claim:

**1.** A hurdle comprising,

a pair of spaced, horizontal base members of elongate form,

each base member being bent to provide an upright leg, said legs being parallel to one another,

a horizontal cross member structure of T shape having as the head of the T a rigid horizontal elongate cross member rigidly and permanently secured at its ends to said base members at places near said upright legs,

said cross member structure having as its shank of the T an elongate first guide element extending in a direction away from said legs,

a cross bar unit engaging said upright legs and adjustable to a number of predetermined vertical positions to locate the cross bar unit at predetermined desired vertical locations,

an adjustable counterweight structure for said base members,

said adjustable counterweight structure comprising a horizontal T shaped member having as the head of the T an elongate counterweight extending transversely between said base members at a place spaced from said horizontal cross member in a direction remote from said legs,

said counterweight having a sleeve at each end slidably receiving the associated base members,

said T shaped counterweight member having as the shank of the T an elongate second guide element projecting toward said cross member structure and telescopically engaging said first guide element,

and means for releasably locking said guide element against relative movement and adjustable to lock said guide elements in a number of different relative positions thereby to locate said counterweight at different distances from said legs and thereby varying the force necessary to pull said hurdle over.

**2.** A hurdle as in claim **1** in which there are spring lock means for releasably locking said cross member structure in its various vertical positions.

**3.** A hurdle as in claim **2** in which said spring lock means and the last named means in claim **1** are each in the form of a spring leaf carrying a detent and wherein each leaf is disposed within one hollow member and its detent projects through the hollow member into any one of a plurality of holes in an outer telescopically related hollow member.

**4.** A hurdle comprising,

a framework of angular form having spaced upright portions and spaced ground engaging horizontal portions,

a horizontal cross bar,

means mounting the cross bar on said upright portion for vertical adjustment to any one of a plurality of vertically spaced positions,

a T-shaped counterweight element disposed in a horizontal plane, the head of said element comprising a weight extending between said horizontal portions and slidably engaging said horizontal portions at the ends of said head, the shank of said element adjustably engaging the framework, means releasably locking said element in various adjusted positions relative to said upright portions.


**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,583,786 | 1/1952 | Marzucco | 272—59 |
| 2,805,062 | 9/1957 | Holmes | 272—59 |
| 2,878,018 | 3/1959 | Fischer | 272—59 |

FOREIGN PATENTS

| | | |
|---|---|---|
| 819,145 | 8/1959 | Great Britain. |
| 953,046 | 3/1964 | Great Britain. |


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