

- [54] **PORTABLE, COLLAPSIBLE
STEEPLECHASE HURDLE OR FENCE**
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272/59 C**
- [51] Int. Cl. **A01k 15/00**
- [58] Field of Search .. **256/24, 59, 64, 73; 272/59 C;
119/29**

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[57] **ABSTRACT**

A portable, collapsible steeplechase hurdle or fence comprises a barrier member of light weight, reinforced construction which is adapted to rest on the ground, at one longitudinal edge, in the erected condition and which is preferably curved in the direction toward the opposite or uppermost longitudinal edge, support legs pivoted in back of the barrier member to swing between erected positions, in which the legs extend downwardly from the uppermost edge of the barrier member for engagement with the ground, and stored positions in which the legs lie against the barrier member, and bracing link members pivotally connected to the barrier member and legs and being movable between extended and collapsed positions respectively corresponding to the erected and stored position of the legs, with such bracing link members being automatically retained in either their extended or collapsed positions for preventing inadvertent displacement of the legs from either their erected or stored positions, respectively.

10 Claims, 6 Drawing Figures

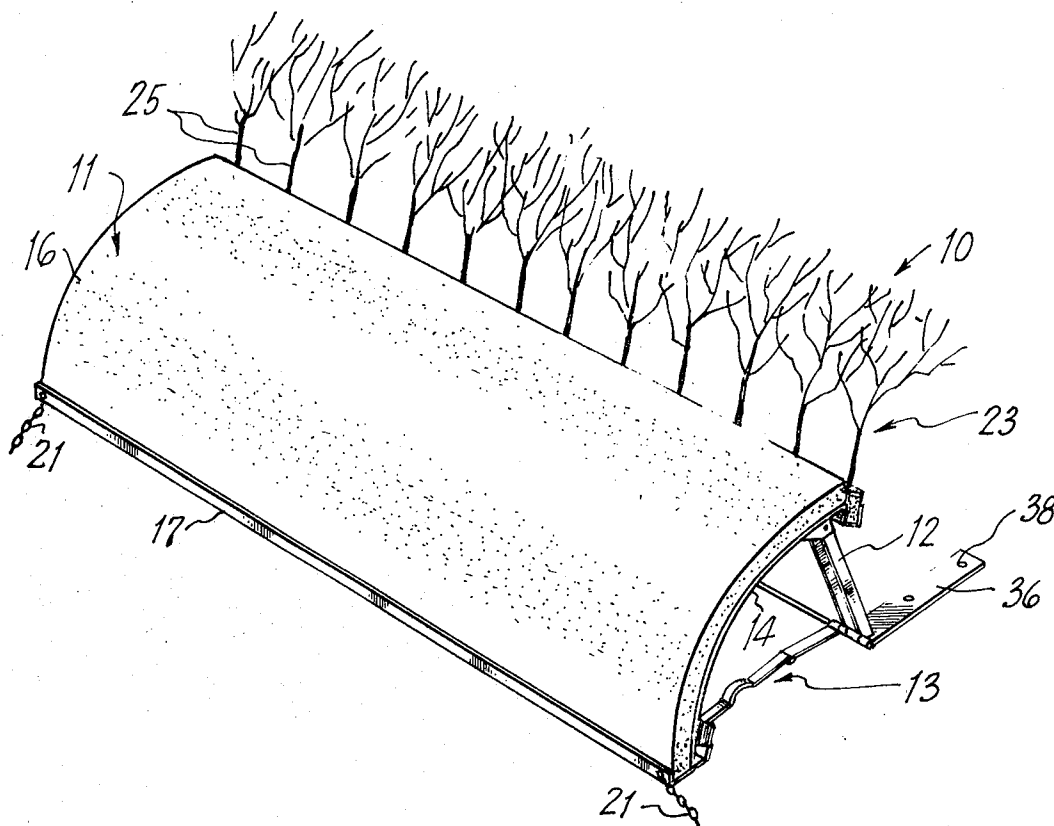


FIG. 1.

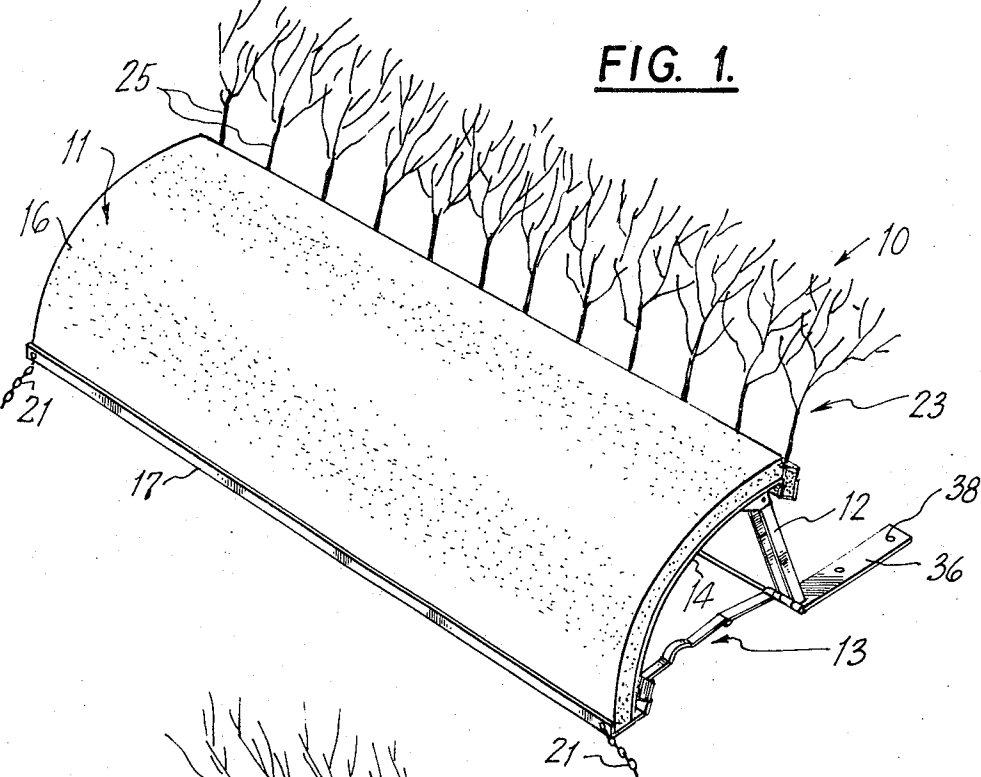
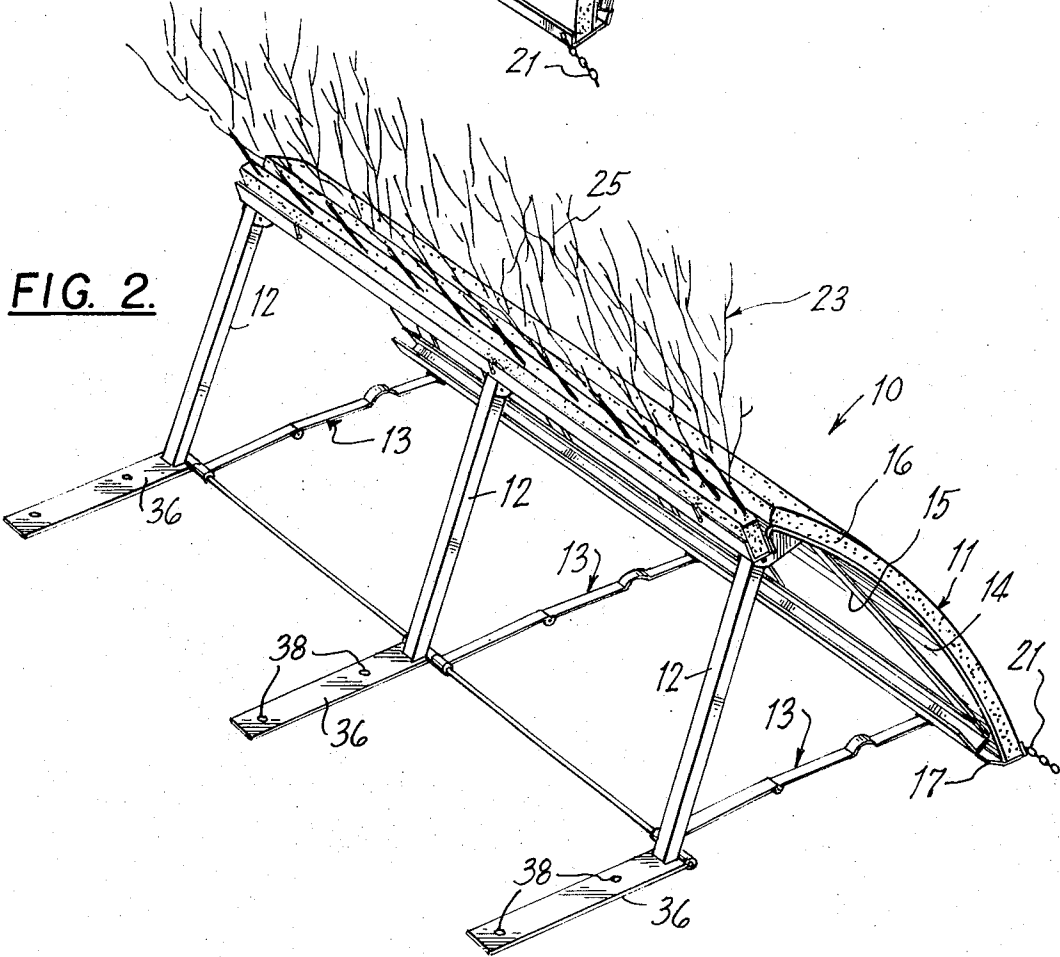
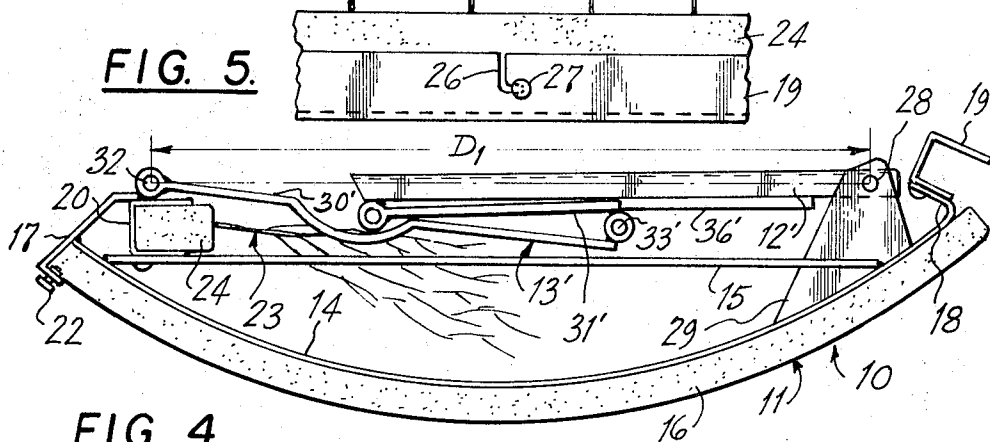
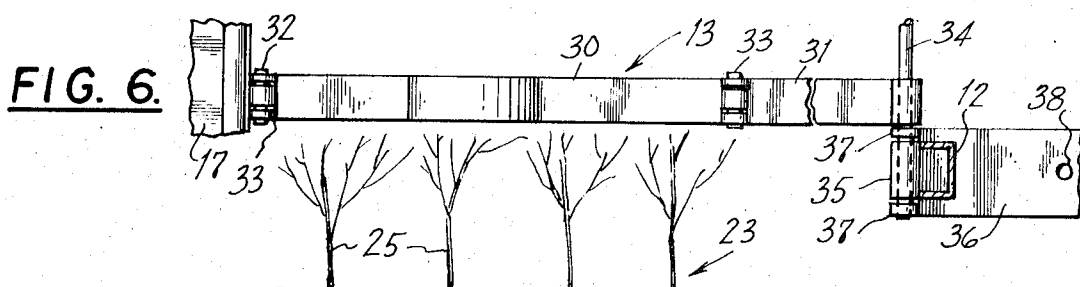
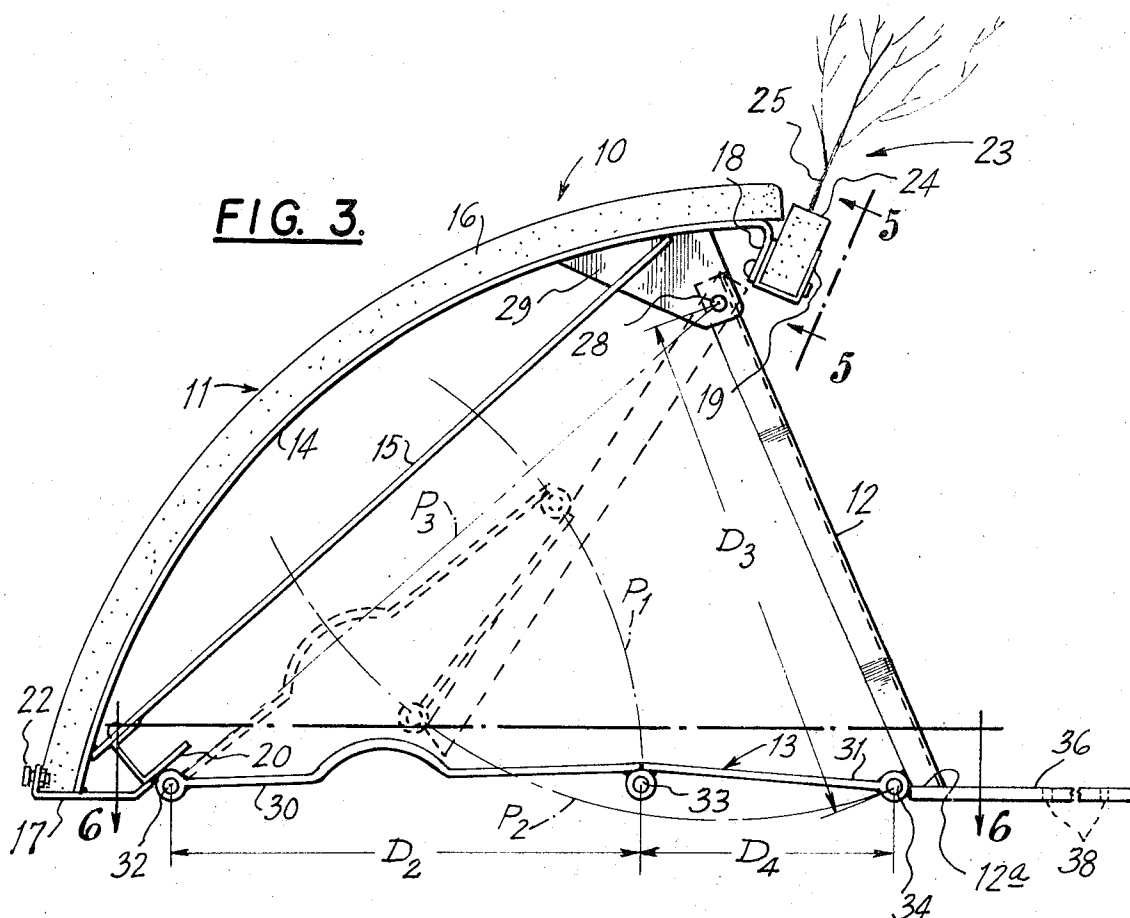


FIG. 2.





PORTABLE, COLLAPSIBLE STEEPLECHASE HURDLE OR FENCE

This invention relates generally to hurdles or fences for use in steeplechase racing, and more particularly is directed to improvements in portable hurdles or fences which can be conveniently stored and transported, when not in use, or erected at any desired sites on a conventional flat racing surface so as to adapt the latter for steeplechase racing.

The fences or hurdles heretofore employed for steeplechase racing are usually permanent structures consisting, for the most part, of hedges growing at the sites of the respective jumps. The use of such permanent hurdles or fences requires that a racing course be maintained for steeplechase racing that is separate and apart from the course or surface employed for normal flat racing. The cost of maintaining a separate steeplechaser racing course is prohibitive in view of the fact that, at least in the United States, it is the usual practice to schedule only a very few steeplechase races as compared with the number of flat races. Further, the existing fences or hurdles are often the cause of serious injury to horse and rider by reason of the lack of uniformity of such fences. More particularly, some of the existing permanent fences are constructed of sparse hedges surmounting a so-called "blackjack" or solid base, so that the horse is encouraged to jump through, rather than over the hedge portion of the fence, whereas other fences on the same course may be of comparatively sturdy construction throughout the height thereof which will cause the horse to fall if it attempts to jump through the upper portion of such fence. The foregoing factors introduce uncertainties into steeplechase races which have no relationship to the abilities of the horses and riders, and which have led to a decline in the popularity of steeplechase racing.

It has been proposed, for example, in British patent No. 1,204,998, dated Sept. 9, 1970, to provide portable hurdles or fences which can be located at any desired sites on a flat racing surface or course so as to adapt the latter for steeplechase racing. Such previously proposed portable steeplechase hurdles or fences are made up of several units which are juxtaposed in side-by-side relation and each comprised of a ground supported base having arcuate tracks extending downwardly and rearwardly thereon, an upper framework slidable along the arcuate tracks from a forward, elevated position to a depressed, rearwardly displaced position, and springs which, at all times, resiliently urge the upper framework to its forward, elevated position. The foregoing portable hurdles or fences are disadvantageous in that the described units thereof have the same configuration when in use and when being transported or stored. Such hurdle or fence units are relatively bulky or cumbersome and thus occupy a relatively large space when being transported or stored.

Accordingly, it is an object of this invention to provide a portable steeplechase hurdle or fence which can be conveniently located at any desired site on a flat racing surface, and which is conveniently collapsible so as to be easily transported and further to occupy a relatively small space during its storage or transport.

More specifically, it is an object of this invention to provide a portable steeplechase hurdle or fence which is conveniently collapsible to afford a compact configu-

ration for its transport or storage, and which is automatically retained in either its erected condition or its collapsed condition.

A further object is to provide a portable steeplechase hurdle or fence, as aforesaid, in which the hurdle or fence is conveniently retained in either its erected condition or its collapsed condition without requiring the use of locking pins or other elements which might become lost or separated from the portable hurdle or fence structure.

Still another object is to provide a portable steeplechase hurdle or fence, as aforesaid, which can be conveniently and rapidly changed from its erected condition to its collapsed condition, or from its collapsed condition to its erected condition, whereby to facilitate the preparation of the course for either steeplechase or flat racing.

In accordance with an aspect of this invention, a portable, collapsible steeplechase hurdle comprises a barrier member having an edge adapted to rest on the ground in an erected condition of the hurdle in which the barrier member extends substantially upward from the ground, for example, so as to constitute the so-called "blackjack" of the hurdle or fence, support legs pivotally connected, at one end, to the barrier member for swinging relative to the latter between erected positions, in which the legs extend downwardly from the barrier member for supportive engagement with the ground to the rear of the barrier member edge engaging the latter, and stored or collapsed positions, in which the legs lie close against the barrier member, and bracing linkage members pivotally connected to the barrier member and the legs and being movable between extended and collapsed positions respectively corresponding to the erected and stored positions of the support legs, with such bracing linkage members passing through an intermediate stressed position in being moved to their collapsed position for retaining the bracing linkage members against inadvertent removal from such collapsed position thereof.

The above, and other objects, features and advantages of this invention, will be apparent in the following detailed description of an illustrative embodiment thereof which is to be read in connection with the accompanying drawings, wherein:

FIG. 1 is a perspective view of a unit of a portable, collapsible steeplechase hurdle or fence in accordance with an embodiment of this invention, as viewed from the front or approach side of the hurdle or fence;

FIG. 2 is a perspective view of the hurdle or fence unit of FIG. 1, but as viewed from the rear thereof;

FIG. 3 is an enlarged side elevational view of the hurdle or fence unit which is shown, in full lines, in its erected condition, and with the support legs and bracing linkage members of the hurdle or fence unit being further shown in broken lines at a position intermediate the erected and stored or collapsed positions thereof;

FIG. 4 is a side elevational view of the hurdle or fence unit shown in its collapsed condition for convenient storage and transport;

FIG. 5 is a fragmentary elevational view of the mounting for hedge-simulating member which forms part of the hurdle or fence as viewed in the direction of the arrows 5-5 on FIG. 3; and

FIG. 6 is a detailed sectional view taken along the line 6-6 on FIG. 3.

Referring to the drawings in detail, and initially to FIGS. 1-3 thereof, it will be understood that each unit 10 of a portable steeplechase hurdle or fence in accordance with an embodiment of this invention is of a conveniently transportable size, and may be assembled together in end-to-end relation with other similar units so as to extend across the width of the usual flat racing surface or course. Each of the hurdle or fence units 10 is shown to generally comprise a barrier member 11 which is adapted to rest on the ground at one longitudinal edge of the barrier member, support legs 12 which are pivotally connected to barrier member 11 for swinging relative to the latter between erected positions (FIGS. 1 and 2 and solid lines on FIG. 3), in which legs 12 extend downwardly and rearwardly from the barrier member for supporting engagement with the ground to the rear of the ground engaging edge of the barrier member, and stored or collapsed positions, as indicated at 12' on FIG. 4, in which the legs lie closely against barrier member 11, and bracing linkage assemblies 13 pivotally connected to barrier member 11 and legs 12, as hereinafter described in detail, and being movable between the extended and collapsed positions shown on FIGS. 1-3 and FIG. 4, respectively, and which respectively correspond to the erected and stored or collapsed positions of support legs 12.

In the illustrated embodiment, barrier member 11 is shown to include a laterally elongated, preferably lightweight metal sheet 14 of aluminum or steel which is arcuate in the direction between its longitudinal edges so as to curve upwardly and rearwardly in the erected condition of hurdle or fence unit 10. The concave surface of metal sheet 14 is spanned by a plurality of laterally spaced reinforcing straps 15 which are welded or otherwise suitably secured at their ends, to metal sheet 14 adjacent the opposite longitudinal edge portions of the latter. The convex surface of metal sheet 14, that is, the surface facing forwardly in the erected condition, is cushioned by a slab of foamed rubber or plastic 16 which may be adhesively secured to metal sheet 14. A channel member 17 extends along, and is secured, as by welding, to the longitudinal edge of metal sheet 14 which is lowermost in the erected condition, and such channel member 17 provides a ground-engaging of load bearing surface at the front of the erected hurdle or fence unit 10. The opposite or uppermost longitudinal edge portion of metal sheet 14 is reverted, as at 18 (FIGS. 3 and 4), and a channel member 19 is riveted or otherwise suitably secured to reverted edge portion 18 so as to extend along the latter and open upwardly in the erected condition (FIG. 3). A similar channel member 20 extends along the lower edge portion of metal sheet 14 between reinforcing straps 15 and the rear flange of channel member 17 to which channel member 20 is suitably secured, as by welding, so that channel member 20 opens in the direction toward the opposite or reverted edge portion 18 of metal sheet 14.

Lengths of chain 21 (FIGS. 1 and 2) are secured to the opposite end portions of channel member 17, for example, by bolts 22 (FIGS. 3 and 4) extending through the front flange of channel member 17. Stakes (not shown) may be driven into the ground through links of the lengths of chain 21 for anchoring the approach or front side of each hurdle or fence unit 10, and the lengths of chain 21 may be further employed

for securing each hurdle or fence unit 10 to adjacent similar units at the abutting ends of the latter.

The illustrated hurdle or fence unit 10 is further shown to include a hedge-simulating member 23 which may include an elongated bar 24, for example, of plastic, dimensioned to be selectively received in either channel member 19 (FIG. 3) or channel member 20 (FIG. 4) and having embedded therein a series of natural or simulated brush or twit elements 25 which are arranged along bar 24 so as to project upwardly from the latter above the uppermost edge of barrier member 11 when bar 24 is disposed in channel member 19 and hurdle or fence unit 10 is in its erected condition. As shown on FIG. 5 in respect to channel member 19, provision is made for releasably securing bar 24 in either channel member 19 or channel member 20. More specifically, as shown, each of channel members 19 and 20 may be provided with one or more bayonet slots 26 formed in a flange of the channel member so as to open at an edge of such flange for receiving a respective pin 27 projecting from bar 24.

In the illustrated embodiment of the invention, the hurdle or fence unit 10 is shown to have three of the support legs 12 (FIG. 2) which are respectively disposed adjacent the opposite ends and middle of barrier member 11. Each of support legs 12 is pivotally connected, at one end, to barrier member 11 by means of a pivot pin 28 (FIGS. 3 and 4) which defines a first pivot axis and is carried by a respective mounting bracket 29 welded or otherwise secured to the concave surface of metal sheet 14 adjacent the reverted edge portion 18 of the latter. Further, in the illustrated embodiment, each of the support legs 12 has a related one of the bracing linkage assemblies associated therewith, and each of the bracing linkage assemblies 13 is shown to include first and second bracing links 30 and 31, respectively. Each bracing link 30 is pivotally connected, at one end to the barrier member 11 for swinging relative to the latter about a second pivot axis defined by a pivot pin 32 that is supported by a bracket 33 (FIG. 6) welded or otherwise secured to the flanges of channel members 17 and 20 at the rear of barrier member 11 in the erected condition. The other or swingable end of each bracing link 30 is pivotally connected, as by a pivot pin 33 defining a third pivot axis, to the adjacent end of the respective bracing link 31 which, in turn, has its other end pivotally connected to the respective support leg 12, as by an elongated rod 34 defining a fourth pivot axis and being mounted in hinge barrels or sleeves 35 (FIG. 6) which are welded or otherwise secured to legs 12 adjacent the free or swingable ends of the latter.

The hurdle or fence unit 10 is further shown to have a ground-engageable load bearing plate 36 associated with each of the support legs 12. Each load bearing plate 36 has a pair of laterally spaced apart, apertured ears 37 extending from one end and receiving pivot rod 34 at opposite sides of the hinge barrel or sleeve 35 associated with the respective support leg 12 (FIG. 6). Thus, each load bearing plate 36 is swingable relative to the associated support leg 12 between a normal rearwardly directed, horizontal position (FIG. 3) when the hurdle or fence unit is in its erected condition, and a stowed or collapsed position, as indicated at 36' on FIG. 4, in which the load bearing plate is folded flat against the respective support leg 12. When each load bearing plate 36 is in its rearwardly directed, horizontal

position (FIG. 3) such plate bears against the adjacent end edge 12a of the respective support leg 12 which thereby limits the swinging of plate 36 relative to leg 12. The load bearing plates 36 are preferably provided with apertures 38 through which stakes can be driven into the ground for anchoring the rear portion of hurdle or fence unit 10 when the latter is in its erected condition.

It will be seen that, in the erected condition of hurdle or fence unit 10 (FIG. 3), bracing links 30 and 31 of each bracing linkage assembly 13 are extended so as to be substantially longitudinally aligned with each other. Bracing links 30 and 31 are longitudinally dimensioned so that, when extended in the erected condition, the respective support legs 12 are inclined downwardly and rearwardly from the first pivot axis defined by pivot pins 28. Thus, the load carried by support legs 12, in the erected condition, tends to move the lower end portions of such legs rearwardly relative to barrier member 11 and thus tends to retain bracing links 30 and 31 in their extended longitudinally aligned relationship for preventing inadvertent collapsing of the bracing linkage assemblies 13 and thereby providing a secure supporting structure for barrier member 11. With the described unit 10 in its erected condition, as shown on FIGS. 1-3, the cushioned and upwardly and rearwardly curved barrier member 11 defines the so-called "black-jack" of the hurdle or fence which is surmounted by the natural or simulated brush 25 of member 23.

When it is desired to collapse the hurdle or fence unit 10 into a compact configuration for convenient storage and transport, load bearing plates 36 are initially turned about pivot rod 34 so as to lie flat alongside the respective support plates 12, and then pivot pins 33 of bracing linkage assemblies 13 are displaced upwardly, that is, toward barrier member 11, so as to each move along an arcuate path P_1 (FIG. 3) about the pivot axis defined by pin 32. During such movement of each pivot pin 33 along arcuate path P_1 , the respective bracing link 31 induces pivot rod 34 to move along an arcuate path P_2 (FIG. 3) about the pivot axis defined by pivot pins 28. Thus, as the movement of each pivot pin 33 progresses along arcuate path P_1 , for example to the position shown in broken lines on FIG. 3, the bracing links 30 and 31 of each assembly 13 and the respective support leg 12 are relatively folded until such elements attain their fully collapsed positions indicated at 30', 31' and 12' on FIG. 4 where the bracing links and support legs are substantially accommodated in the concavity defined at the concave side of metal sheet 14 for affording a compact configuration to hurdle or fence unit 10 in its collapsed condition. If desired, prior to the displacement of the bracing link assemblies and support legs to their collapsed positions, the hedge-simulating member 23 can be removed from its operative position in channel member 19 and installed in channel member 20, as shown on FIG. 4, so that such hedge-simulating member as well as the collapsed bracing linkage assemblies and support legs, are substantially accommodated in the concavity defined by the barrier member.

In accordance with an important feature of the present invention, the distance D_1 (FIG. 4) between the first and second pivot axes defined by pivot pins 28 and 32, respectively, is dimensioned so as to be slightly smaller than the amount by which the sum of the distances D_2 and D_3 (FIG. 3) between the second and

third pivot axes defined by pivot pins 32 and 33 and between the first and fourth pivot axes defined by pivot pins 28 and pivot rod 34, respectively, exceeds the distance D_4 (FIG. 3) between the third and fourth pivot axes defined by pivot pins 33 and pivot 34, that is, D_1 is slightly smaller than $D_2 + D_3 - D_4$. By reason of the foregoing dimensional relationship, the arcuate paths P_1 and P_2 along which pivot pins 33 and pivot rod 34 respectively move during collapsing of bracing linkage assemblies 13 and legs 12 diverge in the direction toward the plane P_3 (FIG. 3) extending between the first and second pivot axes defined by pivot pins 28 and 32 and then converge beyond plane P_3 in the direction toward metal sheet 14, with the maximum distance between arcuate paths P_1 and P_2 at the plane P_3 being slightly greater than the distance D_4 , that is, the distance between the pivot pins 33 and pivot rod 34 at the opposite ends of bracing links 31. Thus, as pivot pins 33 near plane P_3 during collapsing of bracing linkage assemblies 13 and legs 12, such elements are longitudinally stressed to resist further collapsing movement of the bracing linkage assemblies and support legs. However, the structure is sufficiently resilient so that pivot pins 33 can be forced past plane P_3 , whereupon the longitudinal stressing of links 30 and 31 and support legs 12 urges pivot pins 33 further along arcuate path P_1 to dispose links 30 and 31 and legs 12 at their final collapsed positions shown on FIG. 4 where the bracing linkage assemblies and support legs are retained by the stressing thereof. Thereafter, the bracing linkage assemblies and support legs are automatically retained in their collapsed positions without the necessity of tying or locking such elements in their collapsed positions.

When it is desired to restore hurdle or fence unit 10 to its erected condition, it is only necessary to forcibly displace pivot pins 33 in the direction away from metal sheet 14 beyond plane P_3 and, thereafter, pivot pins 33 can freely move to the position shown on FIG. 3 for returning bracing linkage assemblies 13 and support legs 12 to their erected positions.

It will be apparent from the foregoing that the fence or hurdle unit 10 according to this invention is easily disposed in either its erected or collapsed condition and is automatically retained in each of such conditions. Further, when collapsed, the unit 10 is compact so that it can be easily carried or transported and will occupy only a small space when being stored.

Although an illustrative embodiment of the invention has been described in detail herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to that precise embodiment, and that various changes and modifications may be effected therein by one skilled in the art without departing from the scope or spirit of this invention.

What is claimed is:

1. A portable, collapsible steeplechase hurdle comprising a barrier member having an edge adapted to rest on the ground in an erected condition of the hurdle in which said barrier member extends substantially upward from the ground, support legs pivotally connected, at one end, to said barrier member for swinging relative to the latter between erected positions in which said legs extend downwardly from said barrier member for engagement with the ground in back of said edge and stored positions in which said legs lie against said barrier member, and bracing linkage means pivotally connected to said barrier member and said legs and

being movable between extended and collapsed positions respectively corresponding to said erected and stored positions of said support legs, said bracing linkage means passing through an intermediate stressed position in being moved to said collapsed position for retaining said bracing linkage means against inadvertent removal from said collapsed position.

2. A portable collapsible steeplechase hurdle according to claim 1, in which said barrier member has a first channel member opening upwardly at the edge of said barrier member which is uppermost in said erected condition of the hurdle, and a second channel member extending along said edge which is adapted to engage the ground and opening toward said first channel member, and further comprising a hedge-simulating member adapted to be secured selectively in said first channel member in said erected condition of the hurdle and in said second channel member when the hurdle is collapsed for convenient storage and transport.

3. A portable, collapsible steeplechase hurdle comprising a barrier member having an edge adapted to rest on the ground in an erected condition of the hurdle in which said barrier member extends substantially upward from the ground, support legs pivotally connected, at one end, to said barrier member for swinging relative to the latter about a first pivot axis that is parallel to, and spaced from said edge of the barrier member, first bracing links pivotally connected, at one end, to said barrier member for swinging relative to the latter about a second pivot axis that is parallel to said first pivot axis and spaced a predetermined distance from the latter in the direction toward said edge of the barrier member, second bracing links each pivotally connected, at one end, to the other end of a respective one of said first bracing links for swinging relative to the latter about a third pivot axis that is parallel to said second pivot axis, the other ends of said second bracing links being pivotally connected to said support legs for swinging relative to the latter about a fourth pivot axis that is parallel to said first pivot axis and spaced from the latter in the direction toward the other ends of said support legs, the pivotally connected first and second bracing links being substantially longitudinally aligned with each other in said erected condition for directing said support legs downwardly from said first axis with said other ends of said legs spaced rearwardly from said edge of the barrier member, and said predetermined distance between said first and second pivot axes being slightly smaller than the amount by which the sum of the distances between said second and third pivot axes and between said first and fourth pivot axes, respectively, exceeds the distance between said third and fourth pivot axes so that, when said third pivot axis is displaced toward said barrier member beyond a plane extending through said first and second axes, said first and second link members and said support legs are relatively folded to collapsed positions adjacent said barrier member and retained against inadvertent removal from said collapsed positions.

4. A portable, collapsible steeplechase hurdle according to claim 3; in which said barrier member is curved in the direction extending from said edge adapted to rest on the ground to the opposite edge which is uppermost in said erected condition with the concave side of said barrier member facing rearwardly, and said first and second pivot axes are respectively disposed adjacent said uppermost edge and said edge adapted to engage the ground, with the concavity of said barrier member affording space to accommodate said link members and legs in said collapsed positions thereof.

5. A portable, collapsible steeplechase hurdle according to claim 4; in which said barrier member has a first channel member extending along said uppermost edge and opening upwardly in said erected condition of the hurdle, and a second channel member extending along said edge adapted to engage the ground at the concave side of the barrier member and opening toward said first channel member; and further comprising a hedge-simulating member adapted to be secured selectively in said first channel member in said erected condition of the hurdle and in said second channel member when the hurdle has said link members and legs in said collapsed positions for convenient storage and transportation.

6. A portable, collapsible steeplechase hurdle according to claim 3; further comprising ground engageable load bearing plates pivoted at said other ends of the leg supports for swinging relative to the latter between rearwardly directed horizontal positions, when said legs are directed downwardly from said first pivot axis, and stowed positions folded against the respective support legs, when the latter are in said collapsed positions thereof.

7. A portable, collapsible steeplechase hurdle according to claim 5; in which said load bearing plates have apertures for receiving stakes by which the hurdle may be anchored in position.

8. A portable, collapsible steeplechase hurdle according to claim 6; in which said load bearing plates are pivoted on said fourth pivot axis and are engageable with said other ends of the respective support legs for limiting the swinging of said load bearing plates to said rearwardly directed horizontal positions.

9. A portable, collapsible steeplechase hurdle according to claim 3; in which said first and second pivot axes are disposed adjacent opposite edges of said barrier member, and said fourth pivot axis is disposed adjacent said other ends of the support legs.

10. A portable, collapsible steeplechase hurdle according to claim 3; in which support legs are inclined downwardly and rearwardly from said first pivot axis when said first and second bracing links are longitudinally aligned so that the load of said barrier member on said legs tends to retain said bracing links in said aligned relationship.

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