RETRACTABLE FENCE ASSEMBLY

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ABSTRACT

A retractable fence assembly has an upright container that houses a coil of fencing material, preferably in the form of a foraminous web of synthetic resinous material. The web is wound up on a core within the container that is in turn rotatable upon a normally stationary spindle, there being a full-length helical return spring that circumscribes the spindle and operably interconnects the core and the spindle. Thus, as the fencing is pulled out of the container through a dispensing slot in the sidewall of the container, the return spring becomes progressively loaded with a return biasing force that maintains tension on the web and facilitates wind up and restorage of the web when usage is complete. A handle at the outer free end of the web facilitates withdrawal and return of the web and is also provided with a releasable locking clip to permit the web to be doubled back onto itself into the shape of a loop to form an enclosure. The assembly may be used in a wide variety of situations, including attachment to a work vehicle for use as temporary barricades or enclosures around work sites.
RETRACTABLE FENCE ASSEMBLY

TECHNICAL FIELD

[0001] The present invention relates to temporary fencing and, more particularly, to a retractable fencing assembly having a wide variety of different uses such as, for example, a temporary and reusable fence or barrier at a work site for servicing or repairing water mains, curbs, sidewalks and other utilities.

BACKGROUND AND SUMMARY OF THE INVENTION

[0002] Various types of temporary fencing have heretofore been available for use at job sites and other places for confinement purposes or to serve as barriers to keep unauthorized persons from entering into the region bounded by the fencing. Although molded plastic fencing having a lattice of filaments and apertures is currently commercially available, the material typically is used only a few times before it becomes so dirty and unsightly that it is discarded. Contributing to this practice is the fact that if the material is only loosely supported in an upright condition at the work site by temporary posts or the like, it can easily fall to the ground and be dragged through muck and moisture, making its careful retrieval an unpleasant chore.

[0003] Sometimes, circumstances dictate that fencing exist only at periodic intervals at a site. Between those intervals there must be no fencing at all. For example, utility crews may need to have a certain portion of a roadway or sidewalk cordoned off as they work at night to complete repairs, while during the day the roadway is covered by heavy metal plates to support traffic and all fencing needs to be removed so as to not impede traffic flow.

[0004] The present invention provides a convenient, easy-to-use arrangement for storing and dispensing reusable fencing material, and has particular utility in situations where only a temporary barrier or fencing is needed for a relatively short period of time. The invention contemplates an arrangement in which the fencing remains taut when dispensed from a storage container for the material so as to promote maintenance of the fencing material in an upright, secure orientation out of the mud, water, dirt and debris that might be associated with a temporary work site. The fencing material is preferably, although not necessarily, a plastic web of foraminous configuration having a multiplicity of apertures and intersecting filaments that define the apertures in the fabric.

[0005] A hollow, elongated container having a closed top and bottom as well as a continuous sidewall that is closed except for an outlet slot through which the fencing is dispensed houses the fencing material in a coiled up condition upon a upright core within the container. The core is spring-loaded with respect to a stationary, upright spindle of the assembly so that as the fencing is withdrawn from the container through the dispensing outlet, the spring becomes progressively tensioned so as to yieldably urge the fencing material back into the container in a wound up condition on the core. This constant biasing force from the spring-loaded core provides the means by which the fencing is kept taut and in an upright condition when placed in use outside the container as a barrier or confinement device. One end cap of the container can be released from the sidewall thereof and rotated while still in place on the container, thus simultaneously winding up the spindle of the assembly so as to adjust the tension in the return spring of the core. A special handle on the outer end of the fencing not only facilitates handling of the fencing during withdrawal from the container, but also carries a retaining clip or the like which permits the fencing to be formed into a large closed loop with the fencing doubled back onto itself and the clip on the handle releasably attached to the point of intersection with the inboard section of the fencing so as to lock the loop in place. Preferably, the handle is so configured that it cannot be unintentionally retracted into the interior of the container through the dispensing slot, thus permitting the handle to maintain the loop configuration of the fencing outside of the container.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIG. 1 is an overall perspective view of a retractable fence assembly in accordance with the principles of the present invention showing the fencing material withdrawn from the container and placed in one suggested use as a barrier at a work site, the environmental structure such as a work truck, sidewalk and other structures being shown in phantom;

[0007] FIG. 2 is a somewhat enlarged isometric view of a preferred assembly illustrating the fencing material slightly withdrawn from its storage container;

[0008] FIG. 3 is an enlarged, horizontal cross sectional view through the assembly of FIG. 2 and looking downwardly from a point below the top thereof to show details of construction;

[0009] FIG. 4 is an enlarged isometric view of the assembly of FIG. 2 with parts broken away and shown in cross section to reveal details of construction, the top end cap of the assembly being shown in a separated condition from the rest of the container to reveal details; and

[0010] FIG. 5 is a fragmentary horizontal cross sectional view through the assembly with the fencing material in a fully dispensed position and locked in an open loop with the handle securely clipped onto an inboard portion of the fencing to retain the looped configuration outside of the container.

DETAILED DESCRIPTION

[0011] The present invention is susceptible of embodiment in many different forms. While the drawings illustrate and the specification describes certain preferred embodiments of the invention, it is to be understood that such disclosure is by way of example only. There is no intent to limit the principles of the present invention to the particular disclosed embodiments.

[0012] Referring initially to FIG. 2, the present invention relates to a retractable fencing assembly denoted broadly by the numeral 10. Two major components of the assembly are visible in FIG. 2, namely a web 12 of fencing material and a container 14 for housing web 12 during times of non-use and for dispensing or paying out web 12 when the reusable fencing material is to be placed in use. Container 14 generally comprises an elongated, hollow tube presenting a continuous cylindrical sidewall 16, a bottom end cap 18 that closes the bottom of the container, and a top end cap 20 that
closes the top of the container. An elongated, upright slot 22 in sidewall 16 serves as a dispensing outlet for web 12.

[0013] As illustrated particularly in FIGS. 3 and 4, sidewall 16 and end caps 18,20 cooperate to define an internal chamber that houses web 12 when it is coiled up. An upright spindle 24 is coaxially received within container 14 and is coaxially housed within a tubular core 26. Core 26 has a pair of opposite upper and lower bushings 28 and 30 respectively that are fixed thereto and rotatably receive spindle 24 such that core 26 and spindle 24 can rotate relative to one another. A long, helical return spring 32 coaxially receives spindle 24 within core 26 and is anchored at its lower end to bushing 30 via an anchor screw 34. At its upper end, spring 32 is secured to spindle 24 by means not shown so that spring 32 is operably connected to core 26 and spindle 24. Consequently, when either the spindle 24 or core 26 is rotated relative to the other component in an appropriate direction, return spring 32 becomes tensioned so as to exert a biasing force tending to return spindle 24 and core 26 to their initial unbiased positions.

[0014] Fencing web 12 has an outer free end 36 as well as an inner, anchored end 38 that is secured to the outer surface of core 26 by suitable means such as a long upright clamping bar 40 and screws 42. Web 12 is wrapped about core 26 in a multiplicity of mutually overlapping coils or layers, with outer end 36 passing through slot 22 and projecting outwardly beyond the same.

[0015] The lower end of spindle 24 is rotatably received within a reduced diameter portion 44 of bottom end cap 18. Reduced diameter portion 44 projects upwardly into the chamber defined by container sidewall 16 and receives a plurality of fastening screws 46 spaced about the circumference of sidewall 16 so that bottom cap 18 is fixedly secured to sidewall 16. If necessary, however, screws 46 can be removed and bottom cap 18 disassembled from sidewall 16.

[0016] The upper end of spindle 24 is adapted to be non-rotatably secured to upper end cap 20, in contrast to the relationship between bottom cap 18 and the lower end of spindle 24. In this respect spindle 24 has a flattened tip 48 that is complementally received within a mating socket 50 in the reduced diameter portion 52 of top cap 20. Reduced diameter portion 52 is received snugly down into the open upper end of sidewall 46, while an overhanging, annular lip portion 54 of top cap 20 normally overlies and butts against top edge 56 of sidewall 12.

[0017] Top cap 20 is releasably secured to sidewall 16 via a plurality of fastening screws 58. Thus, normally screws 58 are threaded into aligned holes 60 in the radially outwardly facing part of reduced diameter portion 52 so as to retain top cap 20 in place on sidewall 16. This likewise retains spindle 24 against rotation when fencing web 12 is withdrawn from container 14, causing core 26 to rotate about spindle 24. Such unwinding of fencing web 12, however, has the effect of winding up return spring 32 to create a biasing force tending to rotate core 26 in the opposite direction and return the spring 32 to its non tensioned or only slightly tensioned condition. By removing screws 58 so that top cap 20 is no longer fixed to sidewall 16, top cap 20 can be rotated in place relative to sidewall 16, thus driving spindle 24 in the same direction and thereby adjusting the tension or biasing force in return spring 32. Resecuring top cap 20 to sidewall 16 using screws 58 once again places spindle 24 in a stationary condition.

[0018] Web 12 may take a variety of different forms well known to those skilled in the art. In the illustrated embodiment, it is in the form of a foraminous sheet of synthetic resinous material presenting a multiplicity of diamond-shaped apertures 62 and intersecting, diagonally extending solid filaments 64. For operating convenience, a handle 66 is affixed to outer end 36 of web 12, such handle 66 preferably having such a configuration and being so dimensioned that it cannot be retracted into and through slot 22 when web 12 is fully wound up on core 26. Thus, even when web 12 is fully wrapped and stored inside container 14, handle 66 lies on the outside edge of slot 22 in position to be readily grasped by the user. Preferably, handle 66 extends the full vertical height of web 12 and is generally cylindrical in cross sectional configuration as illustrated in FIG. 3. Opposite upper and lower ends of handle 66 may project beyond corresponding upper and lower ends of slot 22 to help prevent unintentional retraction of handle 66 into the interior of container 14.

[0019] It is contemplated that web 12 may be formed into an essentially closed loop to, for example, circumscribe a certain defined area. Thus, it is desirable in this situation to provide a means for securing outer end 36 of web 12 to a more inboard portion thereof after the loop has been formed so as to maintain the integrity of the loop, even though return spring 32 continuously seeks to pull web 12 back into the interior of container 14. To this end, handle 66 is provided with a plurality of releasable fasteners 68 at spaced intervals along its length, such fasteners preferably taking the form of spring-loaded projections or clips that are integral with the remaining portion of the handle. As illustrated in FIG. 5, each fastening clip 68 is adapted to project through a selected aperture 62 in web 12 and to clamp onto a proximal filament 64 so as to essentially hook handle 66 onto web 12 at that location. Clip 68 is inherently resilient so as to retain a clamping grip on web 68 yet permit forcible release therefrom by manual action.

[0020] FIG. 1 illustrates one exemplary use for the retractable fence assembly 10 of the present invention. In this particular embodiment container 14 is mounted securely on the frame of a work vehicle 70 at a convenient location, such as immediately behind the passenger side door. Container 14 is placed in an upstanding condition with slot 22 facing outwardly. When the vehicle 70 arrives at a work site, the workman may utilize a number of upright posts 72 to define margins of the site and then, grasping handle 66, pull enough of the web 12 out of container 14 to adequately wrap around posts 72 to form an enclosure or barrier. Tension will be maintained on web 12 by return spring 32 during this time, so the outer end of web 12 is preferably anchored by some suitable means to an appropriate one or more of the posts 72.

[0021] Alternatively, instead of using posts 72, or in addition thereto without anchoring web 12 to such posts, web 12 maybe looped around in a complete loop and then anchored upon itself in the manner illustrated in FIG. 5. In this manner, fencing web 12 may be quickly unhooked from its looped configuration and wound back up into the container 14 when it is time for the crew to depart the work area. This type of set up is particularly convenient when a
barricade or enclosure is only needed for a relatively short period of time, perhaps even at several different locations throughout the day.

[0022] Retractable assembly 10 can also be utilized in a number of other situations where no vehicle is utilized and the assembly is best suited for use as an independent, essentially freestanding unit. Such uses might include, for example, simply separating one area from another on a temporary basis, using the fencing as a fence for a children’s play area, or as one piece of necessary equipment in the supply of tools made available to a work crew.

[0023] In all such uses, it will be seen that having the web 12 storable within a protective container during periods of non-use promotes cleanliness and order as well as avoiding waste occasioned by simply discarding the fence. Moreover, the tension provided by return spring 32 not only facilitates clean up operations at a work site or the like, but also helps keep the web 12 in an upright condition with or without the use of posts such as the posts 72 during times of use.

[0024] Although preferred forms of the invention have been described above, it is to be recognized that such disclosure is by way of illustration only, and should not be utilized in a limiting sense in interpreting the scope of the present invention. Obviously modifications to the exemplary embodiments, as herein above set forth, could be readily made by those skilled in the art without departing from the spirit of the present invention.

[0025] The inventor(s) hereby state(s) his/their intent to rely on the Doctrine of Equivalents to determine and assess the reasonably fair scope of his/their invention as pertains to any apparatus not materially departing from but outside the literal scope of the invention as set out in the following claims.

1. A retractable fence assembly comprising:
   a spindle;
   an elongated, hollow core encircling said spindle and rotatable relative thereto about the axis of the spindle;
   a web of fencing material wound around said core in mutually overlapping, concentrically disposed layers,
   said web having an outer free end and an inner end anchored to the core;
   a return spring operably connected between the spindle and the core and adapted to exert a progressively increasing return biasing force against the core as the web is unwound from the core by rotating the core relative to the spindle in a web-dispensing direction; and
   a container that houses said spindle, core, web, and return spring,
   said container having an outlet through which the free end of the web may pass as the web is dispensed from the core,
   said spindle being anchored to said container such that the container holds the spindle stationary relative to the core as the web is being unwound from the core whereby to progressively increase the biasing force in the return spring.

2. A retractable fence assembly as claimed in claim 1, said container including a sidewall defining an internal chamber of the container and an end cap closing one end of the chamber,
   said end cap being coupled with said spindle in a manner to prevent rotation of the spindle with the core when the web is being unwound from the core.

3. A retractable fence assembly as claimed in claim 2, said end cap being releasably secured to the sidewall.

4. A retractable fence assembly as claimed in claim 3, said sidewall having an end edge,
   said end cap including an annular lip portion overlying said edge of the sidewall and a reduced diameter portion projecting into the chamber defined by said sidewall,
   said reduced diameter portion having a socket receiving the proximal end of said spindle,
   said socket and said proximal end of the spindle being so configured as to prevent rotation of the spindle relative to the end cap.

5. A retractable fence assembly as claimed in claim 4, said end cap being rotatable relative to the sidewall when the end cap is released from the sidewall whereby to permit rotation of the spindle relative to the core for adjusting the biasing force in the return spring.

6. A retractable fence assembly as claimed in claim 1, said outer end of the web having a handle to facilitate withdrawal of the web from the housing,
   said handle being so dimensioned relative to the outlet in the container as to prevent the handle from being drawn into the container by the return spring.

7. A retractable fence assembly as claimed in claim 6, said handle having a fastener associated therewith that is operable to permit the handle to be releasably fastened to the web when the web is formed into a closed loop whereby to retain the web in the loop.

8. A retractable fence assembly as claimed in claim 7, said web being foraminous presenting a multiplicity of apertures and a multiplicity of intersecting filaments that define the apertures,
   said fastener comprising a projection on the handle adapted to be inserted into a selected aperture and engaged with a proximal filament.

9. A retractable fence assembly as claimed in claim 8, said projection being inherently resilient and yieldably biased into engagement with the handle for clamping a filament of the web against the handle.

10. A retractable fence assembly as claimed in claim 1, said web being foraminous.

11. A retractable fence assembly as claimed in claim 1, said web being constructed from a foraminous sheet of synthetic resinous material.

12. A retractable fence assembly as claimed in claim 1, said assembly being mounted on a self-propelled vehicle.

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