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RETRACTING REEL APPARATUS

Filed Feb. 15, 1960

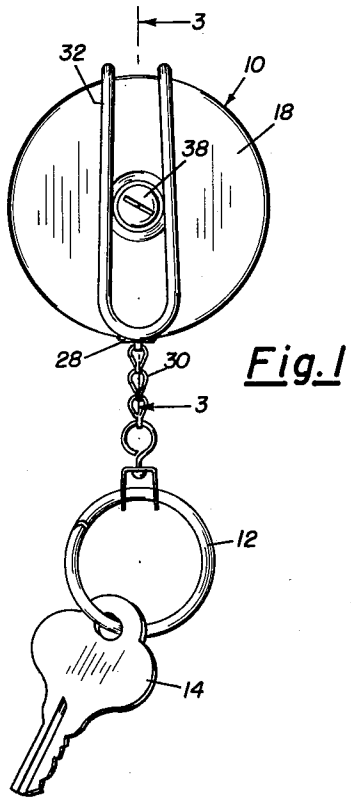


Fig. 1

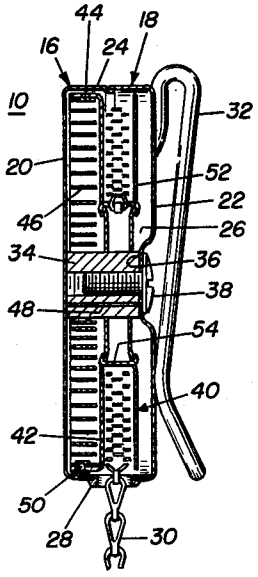


Fig. 3

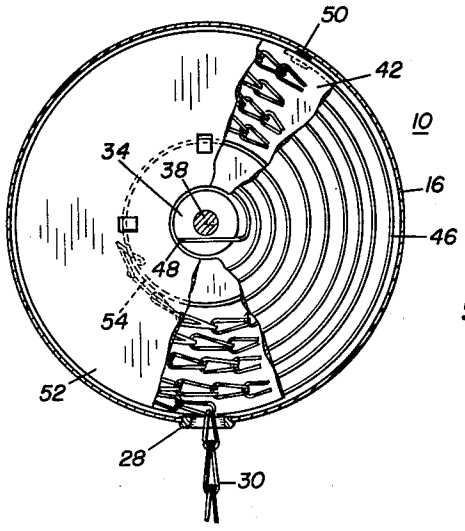


Fig. 2

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RETRACTING REEL APPARATUS

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The present invention relates to a retracting reel apparatus and more particularly to such an apparatus for use with key chains and the like. According to the present invention there is provided a pair of casing elements which are formed to provide a hollow casing compartment within which a transverse shaft is disposed. One end of this shaft is secured to one casing element and the other end of the shaft is secured to the other casing element by an appropriate fastening device. In addition, a hook or the like is secured to the casing element through which the fastening device is disposed. This hook is adapted to fit over the belt or pocket of the user, it being noted that the exterior of the other casing element is completely flush so that the front of the present reel apparatus is attractive and unbroken by screws, rivets, or other fastening elements.

A reel is carried by the shaft for rotation in the casing compartment formed by the casing elements, and this reel includes a pair of spaced apart disks which are connected by a hub. A flexible chain is arranged about this hub between the pair of disks, one end of the chain being secured to the hub and the other end of the chain being trained outwardly through an opening in the casing. One of the disks is formed at its free margins into a peripheral flange for spacing that disk from the adjacent casing element. A helical spring is arranged within this space, the width of the flange preferably being greater than the width of the spring to prevent binding between the spring and the adjacent casing element and disk during rotation of the reel. One end of the spring is secured to the shaft and the other end of the spring is secured to the peripheral flange of the adjacent casing element.

The other disk is preferably centrally indented to provide a boss for limiting axial travel of the reel to thereby prevent undesirable engagement between the hub and the adjacent disk. Thus, the present invention provides a form of reel which is characterized by a small area of frictional contact with adjacent parts so that a desirable free rotation of the rell about the shaft is provided.

Other objects and features of the present invention will be readily apparent to those skilled in the art from the following specification and appended drawings wherein is illustrated a preferred form of the invention, and in which:

FIGURE 1 is a side elevational view, of the retracting reel apparatus of the present invention, as viewed from the rear thereof, and illustrating the apparatus in association with a key ring and key;

FIGURE 2 is an enlarged cross sectional view of the apparatus of FIGURE 1, portions thereof being cut away for clarity; and

FIGURE 3 is a view taken along line 3—3 of FIGURE 1.

Referring now to the drawings, there is illustrated a retracting reel apparatus **10** for use with a usual key ring **12** carrying a key **14**. Key reel apparatus **10** comprises, generally, a pair of casing elements **16** and **18** which are preferably stamped or otherwise formed out of sheet material. Casing elements **16** and **18** are arranged in complemental relationship, and include a pair of parallel, spaced apart side walls **20** and **22**, respectively, which have their free margins formed to provide a peripheral wall **24** to define a hollow casing compartment **26**. The formed free margins of casing elements **16** and **18** are

conveniently abutted by providing a ledge or lip at the free margin of one of the casing elements and which is adapted to slidably receive the formed free margin of the other casing element, as illustrated.

Casing elements **16** and **18** are cut away to provide an opening within which is positioned a grommet **28** through which the flexible key chain **30** is trained. A tab or hook **32** is secured to the outer face of casing element **18** by any suitable means, such as by brazing, to facilitate mounting of the present apparatus **10** to the belt or pocket of the user.

A mandrel or shaft **34** is centrally located within casing compartment **26** and is secured at one end, as by brazing or the like, to the inner face of side wall **20**, the other end of shaft **34** abutting against a boss **36** formed in side wall **22** by indenting the central portion thereof. Fastening means secure casing element **18** to shaft **34**, such means conveniently taking the form of a machine screw **38** fitted within a threaded opening in shaft **34**. It is noted that this arrangement of shaft **34** provides a smooth, aesthetically attractive front surface for the present apparatus **10**. No screws, rivets, or the like need be disposed through side wall **20** to hold any of the components of apparatus **10** in position. Further, as will be seen, the provision of boss **36** provides adequate clearance between casing element **18** and the rotating portions of apparatus **10**.

A reel **40** is carried by shaft **34** for rotation in casing compartment **26**, reel **40** including a disk **42** having its tree margins formed into a peripheral flange **44** to define a spring space with casing element **20**. A helical spring **46** is arranged in this spring space, one end of spring **46** being disposed within a suitable slot **48** provided in shaft **34**. This end of spring **46** is bent over into a tab for retention in slot **48** during operation of apparatus **10**. The other end of spring **46** is secured to flange **44** of disk **42** by any suitable means such as by a rivet **50**. Flange **44** is preferably made wider than the width of spring **46** to prevent undesirable binding which might otherwise occur between side wall **20**, spring **46** and the main body portion of disk **42**.

Reel **40** also includes a disk **52** which is arranged in spaced relationship adjacent disk **42**, and a hub **54** is arranged concentric with shaft **34** between disks **42** and **52**. Hub **54** conveniently takes the form of a strip of metal formed into an annular shape and provided at its periphery with a plurality of tabs which are disposed through suitable openings in disks **42** and **52** and bent over to maintain hub **54** in position. It is again noted that hub **54** and disk **52** are desirably spaced from side wall **22** of casing element **18** by the provision of boss **36**. Thus, undesirable friction is substantially reduced.

Flexible chain **30** is wound upon hub **54** in the space between disks **42** and **52**, one end of chain **30** being secured in any suitable fashion through an opening in hub **54**, the other end of chain **30** being trained outwardly of apparatus **10** through grommet **28**.

It will be observed from FIG. 3, that the disks **42** and **52** of the reel **40** are each provided with a circular portion. These portions are disposed equal distances radially from the axis of the shaft **34** and extend toward one another. These portions strengthen the disk about the area where they are subjected to the heavy strain, namely at the hub sections thereof.

In use, apparatus **10** is customarily hooked on the belt of the user by means of hook **32**, and key **14** is pulled to unreel chain **30**. The pull on chain **30** causes reel **40** to rotate, unreeling chain **30** to permit use of key **14**. As reel **40** rotates, spring **46** is wound to develop a strong bias or force tending to rotate reel **40** in a direction opposite to the direction of rotation caused by the unreeling of chain **30**. When key **14** is released, spring **46** exerts

its bias to rotate reel 40 in an opposite direction and wind chain 30 back upon hub 54.

While certain preferred embodiments of the invention have been specifically disclosed, it is understood that the invention is not limited thereto as many variations will be readily apparent to those skilled in the art and the invention is to be given its broadest possible interpretation within the terms of the following claim.

I claim:

Retractable reel apparatus for key chains and the like, said reel apparatus comprising:

(A) a first casing element;

(B) a second casing element,

(1) said first casing element and said second casing element providing spaced side walls having their free margins formed to provide a peripheral wall to define a casing compartment, said peripheral wall having an opening;

(C) a constant diameter shaft secured at one end to said first casing element;

(D) fastening means secured between said second casing element and the other end of said shaft to secure together said first casing element and said second casing element;

(E) a reel carried by said shaft for rotation about said shaft and in said casing,

(2) said reel including a first circularly shaped disk having its free margin formed into a peripheral flange to define a spring space with said first casing element,

(3) said reel including a second circularly shaped disk,

(4) said disks each having a circular portion disposed radially at equal distance from the axis of the shaft, said portions extending toward one another,

(5) said disks each having a plurality of circularly arranged openings disposed adjacent said inwardly disposed circular portions,

(6) and means forming a hub arranged concentric with said shaft between said first disk and said second disk, said hub comprising a strip of metal arranged as an annulus and including a plurality of tabs extending therefrom and into the openings in the disks for securing said annulus to said disks;

(F) a helical spring arranged in said spring space, one end of said spring being connected to said shaft and the other end of said spring being connected to said peripheral flange;

(G) and a flexible chain arranged within said casing, one end of said chain being secured to said hub, the other end of said chain being trained through the opening in said peripheral wall to the exterior.

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