United States Patent [19]

Balasic

[11] **3,833,180**

[45] **Sept. 3, 1974**

[54] **PAPER ROLL HOLDER**

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[22] Filed: **Sept. 20, 1972**

[21] Appl. No.: **290,674**

[52] **U.S. Cl.** **242/55.2**

[51] **Int. Cl.** **A47k 10/16**

[58] **Field of Search** 242/55.2, 55.53, 55.3, 242/68, 129.6, 129.7, 129.8; 211/123

[56] **References Cited**

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[57] **ABSTRACT**

A roll holder which can be locked to an anchoring device which supports the holder. The anchoring device has outwardly extending arms with first and second channels formed therein. A tubular member is adapted to mate with the channels formed in the outwardly extending arms. The tubular structure has an annular channel formed in one end and an axial extension formed on the other end, such that a locking device can pull the tubular structure toward one end of the outwardly extending arms and fixedly lock it thereto.

13 Claims, 9 Drawing Figures

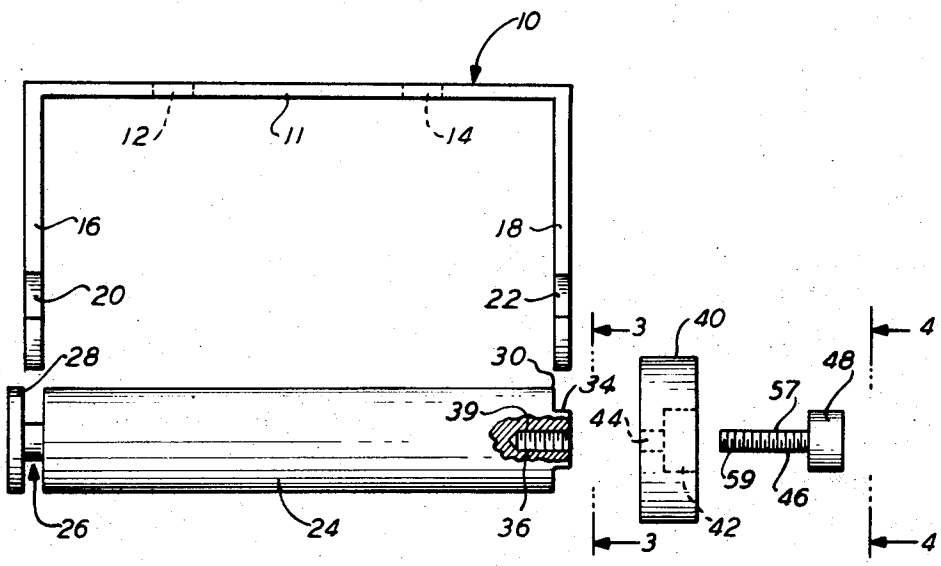


FIG. 1

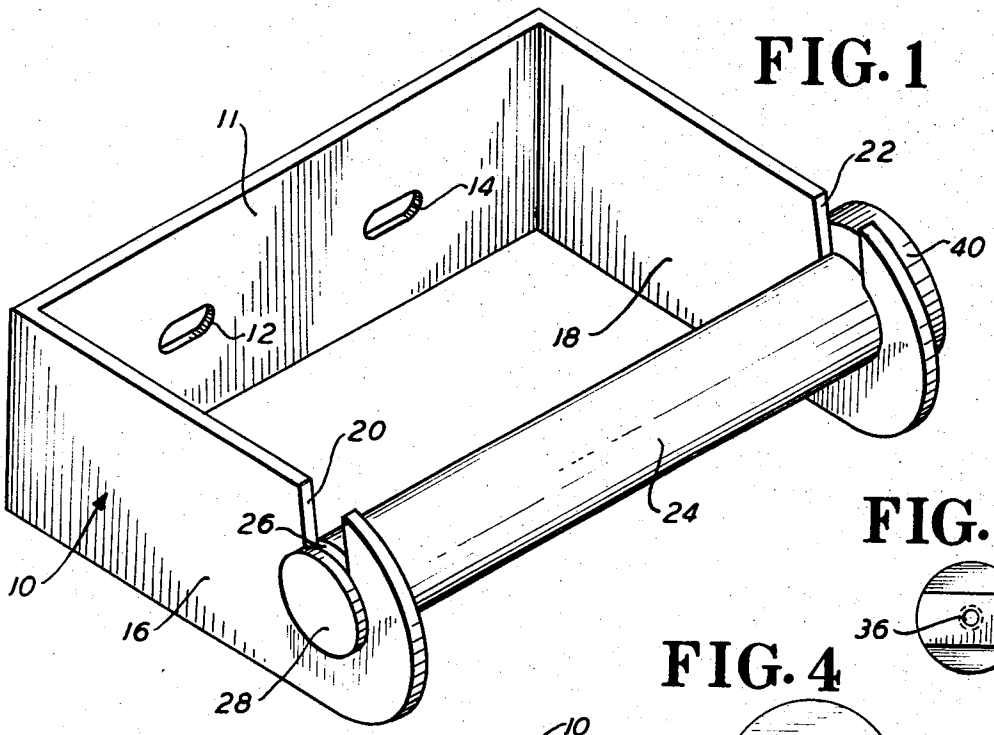
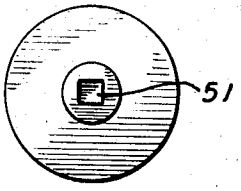


FIG. 3

FIG. 4



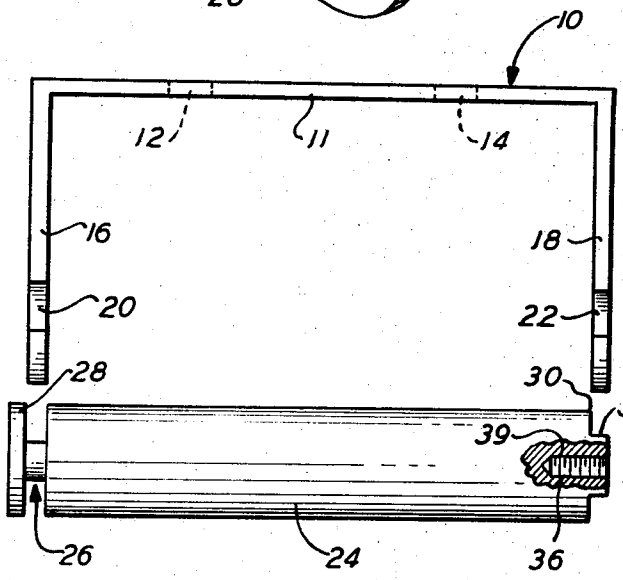


FIG. 2

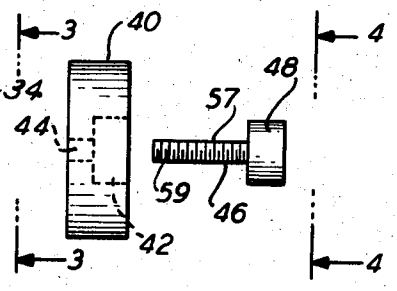


FIG. 5



FIG. 7



FIG. 8

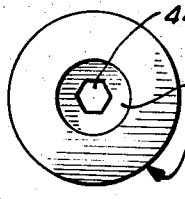


FIG. 9

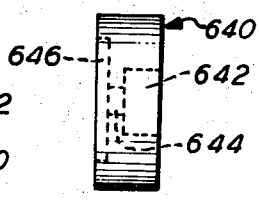


FIG. 6



PAPER ROLL HOLDER

BACKGROUND OF THE INVENTION

This invention pertains to a locking roll holder such as might be used to hold rolls of paper towels, toilet paper or any other expensible paper, cloth or other light material.

In public places where such rolls of material are displayed, it is quite common for the rolls to be stolen, thereby denying them to the use of persons properly needing them. In addition to the expense of replacing the material sold and the inconvenience to the potential user, of such devices in public places, often the removal of the roll is the preclude to pranks, demonstrations or to the use of the rolls and the holders for them as weapons.

In an era when demonstrations in public places are common and when it is common to wreck or destroy public facilities in protest to some action taken by a public body, it is more important than ever to secure the simple items such as toilet paper and paper towels and the like to prevent them from being used against the institution and the people within it by those on the outside or inside.

Those devices taught in the prior art include U.S. Pat. No. 3,038,677 issued to A.C. Schermerhorn; U.S. Pat. No. 2,324,796 issued to Neptune; and U.S. Pat. No. 1,345,190 issued to Hutchison.

The Schermerhorn patent teaches a dual roll holder in which there is a latch locking device. The latch may be lifted by a straight key or screwdriver type instrument which rotates the latch backwardly and releases the dowel pin latch.

Naturally, any small instrument which fits into the slot including a tie pin, pencil, large paper clip or any similar instrument would be sufficient to press against the spring and release the latch.

The Neptune and Hutchison patents teach tension devices which present the rapid unwinding of rolls. In Neptune, a screw member can be tightened or loosened to maintain or release the pressure on the roll, while in Hutchison a threaded member can be tightened down against a resilient member to increase or reduce the pressure against the roll.

Other holders are illustrated in U.S. Pat. No. 1,308,912 issued to MacCormic and U.S. Pat. No. 1,299,413 issued to Anable which show locking devices internal into the roll mechanism. In such types of mechanisms it is necessary to completely use the roll of material in order to remove the tube on which the roll is wound or to place another roll on the holder. In many cases, it is necessary to change the roll prior to its complete use. This may occur if the roll is dampened or damaged in some way such that it is no longer servicable for its purpose. In the Anable and MacCormac devices, it is necessary that you cut the roll away or in some fashion remove it before the locking devices can be unlocked and a new roll placed on it. This can be an annoying burden in public institutions or private which requires time and effort for someone to remove that roll of material.

Yet other devices are shown in U.S. Pat. No. 2,215,053 issued to Reese and U.S. Pat. No. 1,158,577 issued to Spall.

The Reese and Spall devices employ padlocks to hold the roll of material onto its frame. In such devices, the locks are generally small and fragile and may be picked or broken easily by a screwdriver or pliers or a good, swift kick.

It can be easily seen from the review of the prior art that it falls into three basic categories:

1. There are known tensioning devices for roll holders.

2. There are known locking devices which use the material itself as a shield for the lock but that do not allow for change of the roll until it is substantially finished; and

3. There are external locking mechanisms which use padlocks which are relatively vulnerable to breakage or being picked.

SUMMARY OF THE INVENTION

None of the solutions in the prior art were entirely satisfactory. The tensioning devices were readily subject to outside tampering and easy removal permitting removal of the roll and the holders for the roll. The devices which lock within the roll of the material being held did not provide for easy access to change the roll if it were damaged or improper material or for any other reason which required its changing. The padlock devices were subject to ready destruction at the hands of people who wanted to remove the roll of paper and wanted to use its support as a weapon.

The present invention solved these other problems in a very simple and unique manner. That solution in one embodiment requires a total of only four major parts: the anchoring device, a tubular device which fits in the channels formed in the anchoring device, and a locking mechanism which grips firmly the tubular device to the anchoring device, and a key which can be used to unlock the mechanism.

Because the key is applied externally to the tube device, it is not required to utilize the entire roll or to destroy the roll before it is removed and another placed on the holder.

Because the locking device anchors the tubular device to the anchoring member and uses an internal surface as a part of the locking structure, it is not subject to easy destruction such as padlocks.

It is an object of the present invention to provide a self locking roll holder which is openable only by an uncommonly carried and unpickable but simple key-lock mechanism.

It is an object of the present invention to provide a relatively non-destructable locking mechanism for a roll holder.

It is an object of the present invention to provide a locking device for a roll holder which does not require the destruction or use of the entire roll prior to release of the lock.

It is an object of the present invention to provide a unique, simple four-piece self-locking roll holder device.

It is an object of the present invention to provide a very strong light-weight, simple to manufacture roll holder which is self-locking.

BRIEF DESCRIPTION OF THE DRAWINGS

Additional objects and advantages of the present invention may be more fully understood by reference to the drawing and description following the drawing.

In the drawing:

FIG. 1 shows a downward perspective view of the device of the present invention;

FIG. 2 shows an exploded plan view partially in section of a preferred embodiment of the device of FIG. 1;

FIG. 3 shows an end view of the tubular member of FIG. 2 viewed from 3—3;

FIG. 4 shows an axial view of one embodiment of the locking structure viewed at 4—4;

FIG. 5 shows one embodiment of a portion of the locking structure and a key therefore;

FIG. 6 shows a second embodiment of a portion of the locking structure;

FIG. 7 shows a third embodiment of a portion of the locking structure;

FIG. 8 shows a further embodiment of the locking structure view from 4—4;

FIG. 9 shows a side elevational view of the annular cap of FIG. 2.

In the Figures, like numerals are used to designate like parts with a hundreds number prefix indicating a different embodiment of that part.

FIG. 1 shows a perspective view of one embodiment of the present invention. An anchoring member indicated generally by the numeral **10** has a first outwardly extending arm **16** and a second outwardly extending arm **18.** Channel **20** is provided in arm **16** and channel **22** is provided in arm **18.** Arms **16** and **18** are joined by support plate **11.** Slots **12** and **14** are provided in plate **11** so that screws or bolts or other mechanisms may be used for fastening the anchoring device to a wall or other structure.

A tubular member generally formed as cylinder **24** is shown adapted to mate with channels **20** and **22.**

A cap member **40** is adapted to be engagable with tubular member **24** in order to lock tubular member **24** between arms **16** and **18.**

End **30** of tubular member **24** has a channel **36** axially journaled thereinto. An axial member **46** is attached to cap member **40.** Axially extending member **46** is lockably engagable with channel **36.**

In the preferred embodiment of this invention member **46** comprises a shank portion **57** and a head portion **48,** preferably shank portion **57** has threads **59** cut therein. In this embodiment channel **36** has threads **39** cut therein. Threads **39** and **49** being mutually engagable.

In the preferred embodiment of the invention, annular cap member **40** has a central channel **44** formed therethrough which has an enlarged annular section **42** therein having an axial depth less than the axial thickness of cap member **40.** The diameter of central channel **44** is predetermined to readily receive shank portion **57** of member **46** there-through and the diameter of the enlarged annular section **62** is predetermined to receive head portion **48** therein.

In one of the preferred embodiments of the present invention a clearance between the inner circumference of channel **42** and the outer circumference of head **48** is just sufficient for head **48** to be readily rotatable therein. Preferably, the axial depth of head **48** is substantially equivalent to the axial depth of channel **42.** The head portion **48** of member **46,** has, in one embodiment of the present invention, a key-way **51** of predetermined dimensions formed axially therein. The dimensions of this key-way are not critical and may be chosen at convenience, however, a hexagonal key-way **151** is illustrated in FIG. **5,** a triangular key-way **251** is shown in FIG. **6** and a Phillips-head key-way **351** is shown in FIG. **7.**

In an alternate embodiment of the present invention, as shown in FIG. **8,** the wider channel **444** which in the previously described embodiment is of substantially the same axial diameter as head **48** is provided having a somewhat greater diameter, said diameter being sufficient to permit the insertion of a socket wrench or similar female type key-way between head **448** and the inner surface of said wider channel **442.** In this embodiment the outer circumference of head **448** is formed in a predetermined gripable shape, suitably having at least one planar surface parallel to the axis of member **446.** While the actual shape chosen is not critical, it is found practical to provide head **448** with a cross-section in the plane perpendicular to the axis of a square, triangle, or, as shown in **448,** a hexagon.

Although members **40** and **46** are shown as separate members those skilled in the art will recognize that they can be formed as one member. In this circumstance head **48** becomes an integral part of cap member **40.** However, it has been found that while the device is operable in this fashion, the security of the device is greater when members **40** and **46** are separate, and production of the device is more economical when members **40** and **46** are separate. Since the head portion **48** is subject to substantially tangential stress, it is preferred to utilize a hard metal such as steel or iron, while the cap member may be formed of an inexpensive and readily machined, comparatively soft metal such as aluminum or alloys thereof.

Tubular member **24** has an annular channel **26** formed in end **28** thereof so that the portion of extending arm **16** surrounding channel **20** or arm **18** surrounding channel **22** are adapted to engage in annular channel **26.** Annular channel **26** having an axial width slightly greater than the thickness of arm **16** or **18.**

The other end **30** of member **24** has an axially extended portion formed thereon which is adapted to engage channels **20** or **22** of extending arms **16** and **18,** suitably, in a manner which will prevent the rotation of member **24** about its axis.

In the preferred embodiment of the present invention the width and dimensions of extended portion **34** correspond substantially to the width of the channel with which they are engagable. Thus, in FIG. **3** the extended portion is defined between **2** parallel cords and the circumference joining said cords. It will be recognized by those skilled in the art that where, for example, channel **22** is V-shaped, the cords partially defining extended portion **34** will correspondingly mutually subtend an acute angle.

In utilizing the device of the present invention, the anchoring member **10** is fixedly secured to some structure in the building in which it is to be used, such as a wall, door, or partition. Where the device is to be anchored in a partition, it has been found most useful to anchor two devices of the present invention to each other through the partition. Such a mode of anchoring makes removal of the device from the partition virtually impossible. The cylinder member **24** is placed through the axial portion of a roll of paper to be dispensed from the device, and member bearing the roll thereupon, is placed upon the anchoring member in such a manner that annular channel **26** engages with channel **20** and extending portion **34** engages with

channel **22.** It should be noted that it is preferred to provide channels **20** and **22** with the same dimensions so that channel **26** is engagable in channel **22** and extended portion **34** is engagable in channel **20.**

It should be noted that the axial depth of extended portion **34** may be the same as or less than the width of the outwardly extending arm with which it is engaged. It should be noted that if the axial depth of extended portion **34** is even slightly greater than the width of the outwardly extending arm, the locking mechanism of the device of the present invention would not be operative.

It may be anticipated that in the course of production of the devices of the present invention, variations may occur in the thickness of the material utilized for anchor **10** and the extending arms **16** and **18** thereof. If, for example, a replacement roll were to be provided for an anchor of a previous production run wherein the width of the outwardly extending anchor arm is less than the axial depth of extension **34,** the device would not lock using cap **40.** This undesirable effect can be readily avoided, as shown in FIG. **9** utilizing cap **640** which is provided with a counter-channel **646** having a diameter slightly greater than the diameter of tubular member **24** and a depth sufficient to receive therewithin any portion of member **34** which extends beyond the outer surface of outwardly extending arm **18.**

Cap member **40** is placed over the axially extending portion **34** with channel **44** located co-axially with channel **36.** Axially extended member **46** is passed through channel **44** and engaged with channel **36.** Where shank portion **57** has threads **59** thereupon engagable with threads **39** in channel **36,** member **46** is screwed into channel **36** engaging cap member **40** thereto. In the embodiment of FIG. **5,** key **100** is placed in key-way **151** in head **148** and the member **46** tightly engaged with channel **36** so that arm **16** is drawn by end portion **28** toward arm **18,** and arm **18** is drawn towards arm **16** by cap member **40.** It is especially preferred that the axial depth of channel **42** be equal to or slightly greater than the axial depth of head portion **48** of axially extended member **46** so that when member **46** is fully engaged with cylinder **24** all or substantially all of head portion **48** is received within channel **42.**

Where head **448** is provided with a predetermined circumferential gripable surface, a corresponding female key is utilized to accomplish the same result.

Because the tubular member will not rotate, no person would be able to release the lock thus attained by attempting to rotate the cylinder member **24** to cause the screw member **46** to rotate relative to the cylinder member **24.** Therefore, without a key such as the hex key, or in the appropriate case a socket member, no one can remove the cylinder from the arms and therefore remove the roll or the tube to use either in a destructive way or to remove them to steal them.

Because the head portion **48** is recessed within the cap member **40** no other external device can grip it and rotate the member to release the tubular member **24** from the anchoring device **10.**

Notice that annular slot **26** must be of sufficient axial dimension to allow tubular member **24** to move axially with respect to the holder member or anchoring member **10.**

It is clear that the present invention accomplishes all of its stated objects and that a novel and simple locking device can be made for a roll holder out of four major parts, which is virtually impossible to remove without a key and yet which does not require the use of the entire roll in order to get at the releasing mechanism.

The present invention is simple to manufacture, easy to use, and accomplishes all of its stated objectives.

I claim:

1. A roll holder comprising,

an anchor means having a pair of outwardly extending arms, each of said arms including a slot formed therein,

a tubular means having a first and second end adapted to be received by said slots, at least one of said ends having an axially threaded channel extending inwardly thereof,

a rotation prevention means associated with one of said ends for preventing said tubular means from revolving with respect to said anchor means,

an axially extending member having a wide head portion and a narrower threaded shank portion, said head portion including an engageable section adapted to engage a suitable tightening tool, and

a cap means having a bore extending therethrough, said bore comprising a first axial channel of diameter sufficient to receive therethrough the shank portion of said axially extending member but having a diameter less than the head portion of said axially extending member, said annular cap means further including a second wider channel coaxial with said first channel and extending thru less than the thickness of said cap, said second channel being of a diameter sufficient to receive said head portion of said axially extending member, said second channel further having an axial depth at least as great as the axial height of said head portion of said axially extending member, so that said axially extending member is recessed within said cap when said axially extending member is fully threadably received by said tubular means,

wherein said tubular means may be locked to said anchor means by locating said cap means adjacent said anchor means, extending said axially extending member through said cap means into said axially threaded channel and engaging said axially extending member with said suitable tightening tool and then rotating said tool until said axially extending member ceases to rotate.

2. The invention of claim **1** wherein said rotation prevention means comprises an axially extended portion at one end of said tubular means which is received by at least one of said slots, said axially extended portion having at least one dimension greater than the width of said slot, thereby preventing said tubular means from rotating within said slot.

3. The invention of claim **2** wherein the axially extending portion of said tubular means has a width less than the thickness of one of said arms, and further

wherein said tubular means includes a peripheral channel in its other end, said channel having a width greater than the width of the outwardly extending arm.

4. A device according to claim **1** wherein the engageable section of the head portion of said axially extending member includes a key-way of predetermined cross section.

5. A device of claim **1** wherein the cross section of the key-way is hexagonal.

6. A device of claim 1 wherein the cross section of the key-way is square.

7. A device of claim 1 wherein the cross section of the key-way is triangular.

8. A device of claim 1 wherein the cross section of the key-way is pentagonal.

9. A device according to claim 1 wherein the engageable section of the head portion of said axially extended member is shaped to receive a Phillips-Head screwdriver.

10. A device according to claim 1 wherein said annular cap includes a third annular channel cut in the face of said cap opposite to the face having the second channel cut therein, said third channel being co-axial with said first channel and said second channel and having a diameter greater than the diameter of the tubular means, wherein the sum of the axial depths of said third channel and said first channel are less than the axial width of said annular cap.

11. A device of claim 1 wherein the outer circumference of the head portion of said axially extended member includes at least one planar surface parallel to the axis of the axially extended member.

12. A device of claim 11 wherein the head of the axially extended member possesses a square cross section in a plane perpendicular to its axis.

13. A device of claim 11 wherein the head of the axially extended member possesses an hexagonal cross section in a plane perpendicular to its axis.

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