United States Patent [19]

Foust

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[54] **DEVICE FOR PICKING UP LITTER**

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[52] **U.S. Cl.** ..... **294/61,** 294/19 R

[51] **Int. Cl.** **B08b 1/00**

[58] **Field of Search** ..... 294/61, 110 A, 50, 50.5, 294/50.6, 19 R

[56] **References Cited**

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2,191,170	2/1940	Keehn et al.	294/110 A
2,642,306	6/1953	Beeler	294/61
2,804,336	8/1957	Thompson	294/50
2,864,196	12/1958	Rohan	294/61

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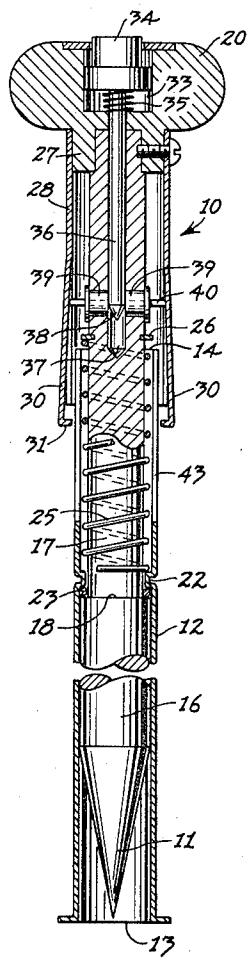
[57] **ABSTRACT**

A pick-up device including a tubular body and a shaft telescopingly received within the tubular body having a handle member on one end and a pick-up tool, such as a spike or gripping fingers, on the other end. A coil spring between the shaft and tubular body normally biases the shaft to a raised retracted position relative to the tubular body. Latch elements on the shaft and tubular body are adapted to automatically engage when the shaft has been forced through the tubular body, compressing the spring, to a protracted position. A manually actuated operating element within the shaft and handle member cooperates to release the latch elements upon actuation, causing the shaft to move to its retracted position.

7 Claims, 6 Drawing Figures



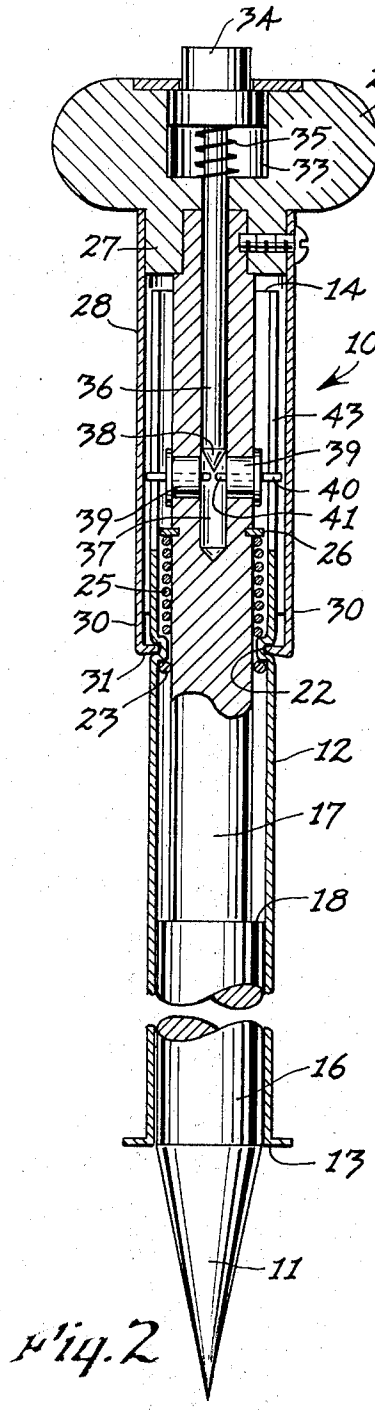


Fig. 2

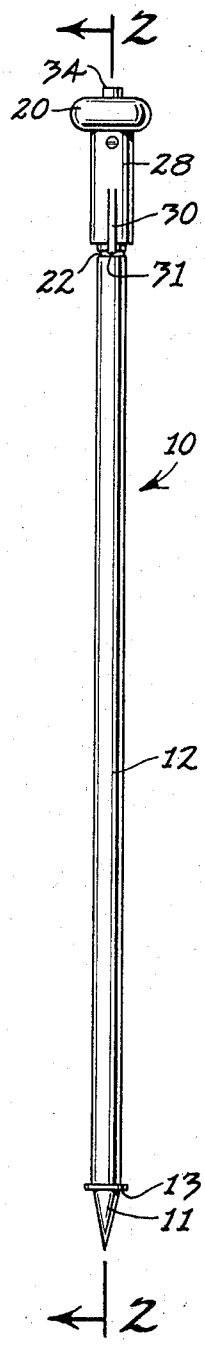


Fig. 1

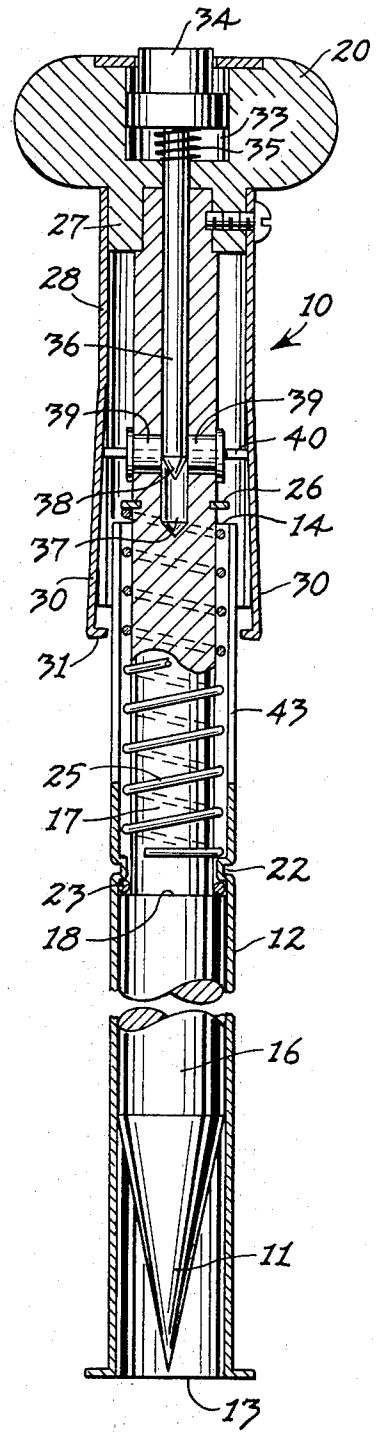


Fig. 3

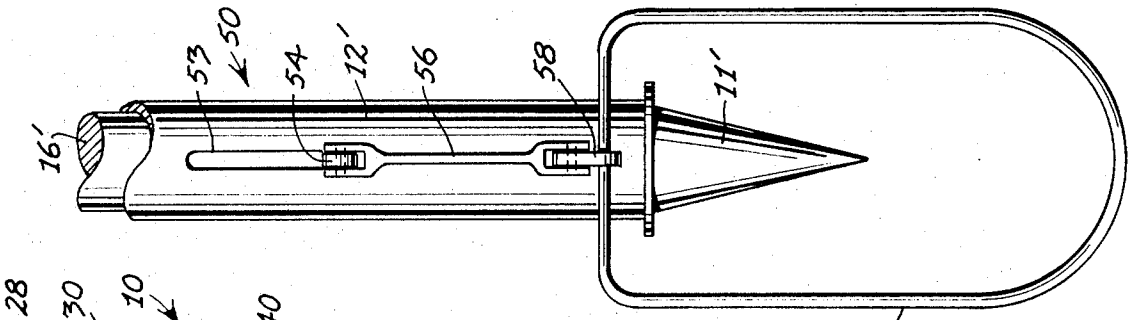


Fig. 5

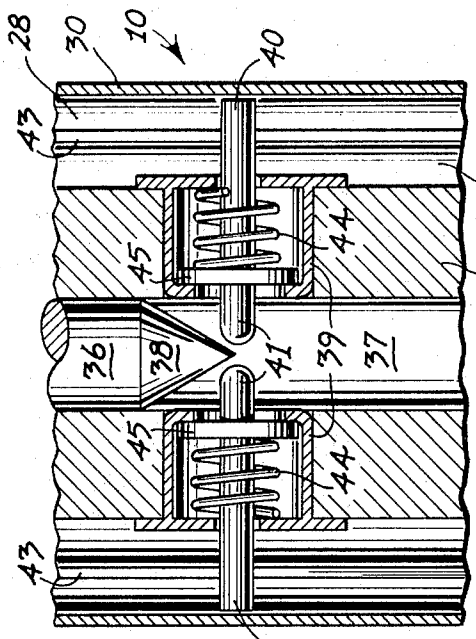


Fig. 4

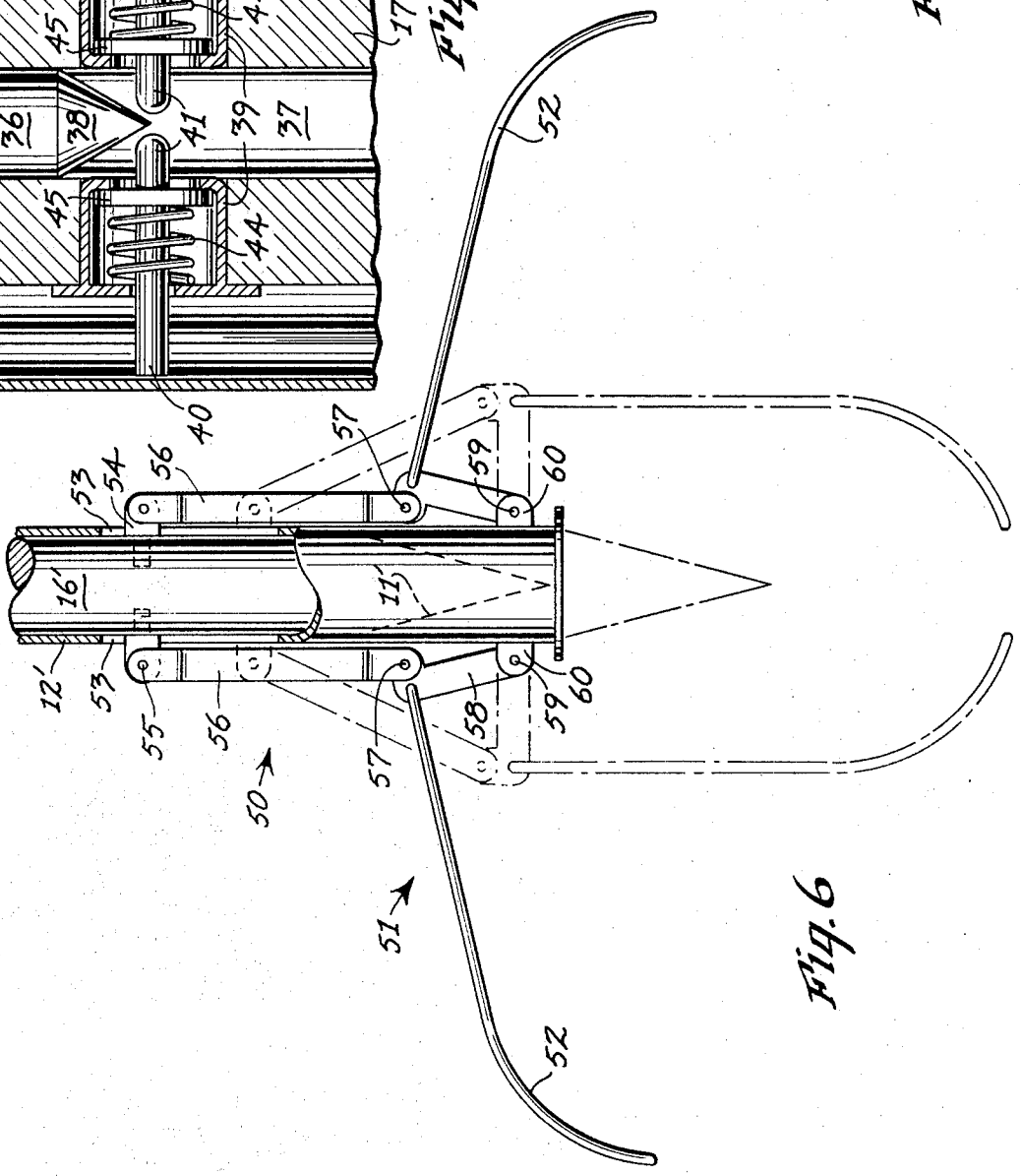


Fig. 6

DEVICE FOR PICKING UP LITTER

BACKGROUND OF THE INVENTION

This invention relates to a pick-up device, and more particularly to a manually operated pick-up device for retrieving litter.

Pick-up devices including telescoping shaft members and manually actuated pick-up tools, such as tongs or gripping fingers and pointed rods or spikes, are known in the art. Examples of such devices are disclosed in the following U.S. patents:

3,105,715	Happ	Oct. 1, 1963
3,183,031	Haberstick	May 11, 1965
3,446,525	Jones	May 27, 1969

Combination canes and extensible tools or retrievers are also known, as disclosed in the following U.S. patents:

889,035	Newsom	May 26, 1908
3,093,402	Sisson	June 11, 1963

However, none of the devices in any of these U.S. patents disclose a pick-up device in which the pick-up tool is latched against the action of a compressed spring in a protracted position. Moreover, these patents do not disclose a simple, manually actuated, release mechanism completely operable by one hand for unlatching the tool to automatically retract.

SUMMARY OF THE INVENTION

It is therefore an object of this invention to provide a pick-up device capable of operating different types of pick-up tools, and which is completely operable by one hand to protract and lock the tool under compression and to release the tool to a retracted position.

The pick-up device made in accordance with this invention includes an open-ended elongated tubular body telescopingly receiving an elongated shaft having a handle member on one end and the pick-up tool on the opposite end. A coil spring operative between the shaft and the tubular body normally biases the shaft member to a raised position relative to the tubular body causing retraction of the pick-up tool. However, when the shaft member is forced down into the tubular body, the pick-up tool is latched in a protracted position, simultaneously compressing the coil spring.

This device further includes an operator element extending through the handle member and into the shaft cooperative with spring biased radial plungers. The radial plungers, when actuated, project radially to force outward the latch element fixed to the shaft to disengage the cooperating latch element on the tubular body, and thereby release the energy in the compressed coil spring to rapidly retract the pick-up tool.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a side elevation of one embodiment of the pick-up device made in accordance with this invention in protracted position;

FIG. **2** is an enlarged section, partially broken away, taken along the line **2—2** of FIG. **1**;

FIG. **3** is a view similar to FIG. **2** showing the device in retracted position;

FIG. **4** is a much enlarged fragmentary section, illustrating the latch-releasing mechanism;

FIG. **5** is a fragmentary side elevation of a modified form of pick-up tool in protracted position; and

FIG. **6** is a view taken at right angles to FIG. **5**, with portions of the tubular body broken away, illustrating the pick-up tool in retracted position in solid lines and protracted position in phantom.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings in more detail, FIGS. **1 - 4** disclose the pick-up device **10** made in accordance with this invention, incorporating the pointed impaling member or spike **11** as a pick-up tool.

The pick-up device **10** includes an elongated tubular body **12** having an open, flanged, lower end **13** and an open upper end **14.**

Telescopingly received longitudinally and coaxially within the tubular body **12** is the shaft **16,** terminating at its lower end in the spike **11.** The upper portion **17** of the shaft **16** is of a reduced diameter to form the shoulder **18.**

The upper end of the shaft portion **17** terminates in a handle member, such as the enlarged knob **20.** Formed circumferentially within the tubular body **12** is an annular groove **22** which provides an abutment for the shoulder **18** in order to limit the upward movement of the shaft **16** relative to the tubular body **12.** An O-ring **23** is placed between the lower wall of the groove **22** and the shoulder **18** as a shock absorber.

A coil spring **25** is coiled around the reduced shaft portion **17** and extends from the upper wall of the channel groove **22** to a spring retainer ring **26** fixed around the shaft portion **17.** The size of the coil spring **25** and the distance between the annular channel **22** and the spring retainer **26** is such that the spring **25** biases the shaft **16** upward relative to the tubular body **12** until the shoulder **18** engages the O-ring **23.** In this retracted position, the spike **11** is disposed entirely within the lower portion of the tubular body **12.**

The lower portion of the knob **20** forms a boss **27** to which is fixed an elongated depending cylindrical skirt or collar **28** of a diameter slightly larger than the external diameter of the tubular body **12.** The upper portion of the tubular body **12** is adapted to be telescopingly received within the skirt **28.**

Struck out of the lower portion of the skirt **28** are diametrically opposed, longitudinal, resilient or elastic latch fingers **30** having lower hooked ends **31** pointing inwardly toward, and biased against, the tubular body **12.** When the device **10** is in its protracted position compressing the coil spring **25,** the hooked ends **31** engage the annular channel groove **22,** as best disclosed in FIG. **2.** It will be understood that the latch fingers **30** do not have to be struck out of the skirt **28,** but may be formed separately and fixed to the skirt **28,** so long as they perform the above-described latching function.

Mounted within a recess **33** in the top of the knob **20** is a manually actuable button **34** biased into a raised position by the coil spring **35** and provided with a depending operating rod **36** extending through a corresponding longitudinal hole **37** coaxially within the handle member **20** and the shaft portion **17.** The lower end of the operator rod **36** terminates in a conical cam element **38.**

Projecting in diametrical alignment from the rod hole **37** outwardly through the upper shaft portion **17** adjacent the conical element **38** are a pair of cartridges **39**

containg springloaded latch release elements or stems **40.** The inner ends **41** of the release stems **40** are adapted to be engaged by the downward protracting cam **38** in order to force the stems **40** radially outward through corresponding longitudinal slots **43** in the wall of the tubular body **12** and into engagement with the latch fingers **30.** The range of the stems **40,** when radially protracted, is great enough to force outward the resilient latch fingers **30** until their hooked ends **31** have disengaged the annular channel groove **22,** thereby permitting the stored energy within the coil spring **25** to force the shaft **16** and the pointed pick-up tool **11** upward to their retracted position.

Each of the stems **40** is normally urged or biased to its inner retracted position by means of the coil spring **44** within the cartridges **39** and biased against the retainer flange **45** fixed to each stem **40.** Thus, when the operator rod **36** is biased upward to its inoperative position by the button spring **35,** then the release stems **40** will also be retracted inward to disengage the respective latch springs **30** causing the hooked ends **31** to be biased by the inherent resilience of the material in the fingers **30** toward and against the tubular body **12.**

As best disclosed in FIGS. **5** and **6,** the pick-up device **50** may be modified as disclosed, to operate a pick-up tool **51** including a pair of looped gripping fingers **52.** for grabbing and releasing objects, such as bottles, cans, etc.

The pick-up device **50** includes all of the elements of the device **10,** including the shaft **16'** and optionally the pointed tool or end **11'** telescopingly received within the tubular body **12'.** However, the lower portion of the tubular body **12'** is provided with diametrically opposed longitudinal slots **53.** Projecting radially through the slots **53** are a pair of ears **54** fixed to the shaft **16'.** Pivotally connected to the ears **54** by means of pins **55** are link arms **56,** the opposite ends of which are pivotally connected by pins **57** to another set of link arms **58.** The other ends of the link arms **58** are pivotally connected by pins **59** to ears **60** fixed to the lower end of the tubular body **12'.** Thus, the link arms **56** and **58** form a toggle connection having a knee joint at the journal axis **57.** Fixed to the link arms **58** adjacent the journal pins **57** are the upper ends of the gripping fingers **52.**

Thus, when the shaft **16'** is in its protracted position, as disclosed in FIG. **5,** and in phantom in FIG. **6,** the gripping fingers **52** are in their closed position for gripping an object. Upon pushing of the button **34** to release the latch fingers **30,** and thereby retract the shaft **12',** the toggles **56** and **58** are extended or flattened, as disclosed in solid lines in FIG. **6,** to immediately open or separate the gripping fingers **52** in order to release the object.

In the operation of the pick-up device **10,** initially, the device is in its retracted position as disclosed in FIG. **3.** The operator grasps the knob **20** and places the open bottom end **13** of the tubular body **12** upon the ground over the piece of litter or scrap paper. He then forces the handle **20** down, thereby moving the shaft **16** down, compressing the spring **25** and forcing the pointed spike **11** down through the paper and into the ground. When the shaft **16** reaches the position disclosed in FIG. **2,** the spring fingers **30** biased against the tubular body **12** latch the tubular body as the hooked ends **31** register with the annular channel recess **22,** as disclosed in FIG. **2.** The coil spring **25** as well as the tubular body **12** and the shaft **16** are then latched in the protracted position. By grasping the skirt **28** or knob **20,** the entire device **10** is lifted from the ground with the paper impaled upon the spike **11.** The device is carried to a waste receptacle where the pointed end **11** is placed over the receptacle. The operator then depresses the button **34** to release the latch arms **30** causing the shaft **16** to retract, or rather causing the tubular body **12** to protract or move downwardly relative to the shaft **16** to force the paper off of the spike **11** into the waste receptacle. The device **10** is then in position and ready for the next pick-up operation.

It will be noted that the entire operation of impaling the litter paper and extracting it from the spike **11** is carried out entirely by one hand of the operator.

Moreover, the stored energy of the coil spring **25** is utilized to extract the paper from the spike **11,** or in other words to retract the spike **11** within the tubular body **12,** rather than to protract the spike **11.** The reason for this is that it is easier for the operator to push the knob **20** down and thereby force the spike **11** into the paper or the ground, than it is to perform the reverse operation. Accordingly, the stored energy of the coil spring is utilized to perform the more difficult task.

What is claimed is:

1. A pick-up device comprising:

a. an elongated tubular body having open upper and lower ends,

b. an elongated shaft telescopingly received longitudinally within said body,

c. said shaft having an upper end portion terminating in a handle member, and a lower end portion terminating in a pick-up tool,

d. compressible spring means cooperative between said shaft and said tubular body to bias said tubular body downward relative to said shaft to place said pick-up tool in a normal retracted position,

e. said spring means being adapted to be compressed by the movement of said shaft downward relative to said tubular body to place said pick-up tool in a protracted position,

f. a first latch element attached to and movable with said shaft, said first latch element depending exteriorly along said tubular body,

g. a second latch element fixed to the exterior of said tubular body for engagement by said first latch element to hold said pick-up tool in said protracted position,

h. a manually actuated operator element on said handle member,

i. operative means connected to said operator element and cooperative with said first latch element to force said first latch element away from said second latch element when said operator element is actuated, permitting said tubular body to move downward relative to said shaft.

2. The invention according to claim **1** in which said operator element comprises an elongated operator rod extending longitudinally from said handle member through said shaft, said operative means comprising a release element within said shaft and cooperative with said operator rod for lateral movement through said tubular body for engagement with said first latch element.

3. The invention according to claim **2** in which said release element comprises a spring-loaded plunger projecting radially through said shaft and said tubular

body, said operator rod being adapted to force said plunger radially outward when actuated.

4. The invention according to claim 3 in which said operator rod has its upper end portion terminating in a spring-loaded, manually depressible, button in said handle member.

5. The invention according to claim 4 further comprising a longitudinal slot in said tubular body receiving said spring-loaded plunger for guiding said shaft and tubular body in a non-rotatable telescoping relationship.

6. The invention according to claim 1 in which said first latch element comprises an elongated elastic finger having a lower hooked end projecting toward said tubular body, said second latch element comprising a groove formed in the exterior of said tubular body for receiving the hooked end of said first latch finger.

7. The invention according to claim 1 in which said pick-up tool comprises a pointed impaling element, said pointed impaling element being adapted to be sheathed within said tubular body above said open lower end in said retracted position, and adapted to depend below the lower end of said tubular body in protracted position.

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