Sept. 22, 1959 E. N. LUNDE 2,905,498

PICKING AND GRAPPLING DEVICE

Filed Sept. 26, 1956

FIG. 1

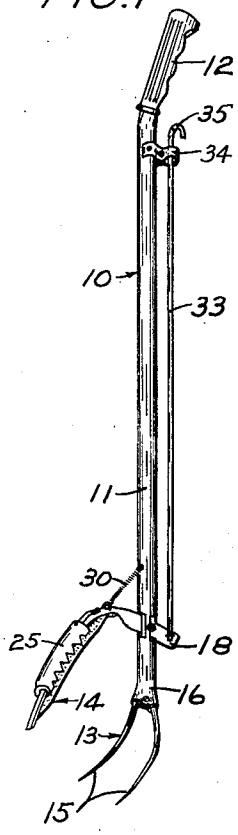


FIG. 2

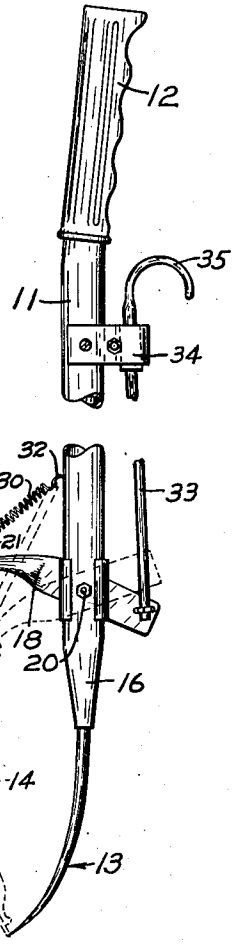
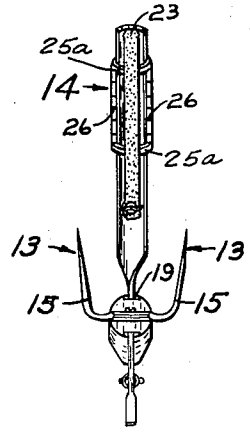
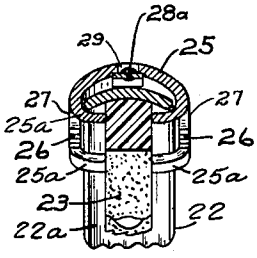


FIG. 3



3 — 3

FIG. 4



INVENTOR.
EARL N. LUNDE
BY
Williamson, Schroeder,
Adams + Meyers
ATTORNEYS

United States Patent Office 2,905,498
Patented Sept. 22, 1959

2,905,498

PICKING AND GRAPPLING DEVICE

Earl N. Lunde, Park Rapids, Minn.

Application September 26, 1956, Serial No. 612,185

4 Claims. (Cl. 294—19)

This invention relates to grasping or gripping mechanisms and more specifically relates to a grappling device for picking up and securely holding objects.

An object of my invention is to provide a new and improved grappling device of simple and inexpensive construction and operation.

Another object of my invention is the provision of a novel device for gripping an object and restricting movement and slipping thereof in multi-directions so as to prevent losing hold of the object.

A still further object of my invention is the provision of an object-picking or grappling device which conforms to the general shape or contour of the object in order to engage a maximum surface area thereof and thereby eliminate the exerting of excessive compressive pressures on the object.

A further object of my invention is the provision of a novel object-picking device which adapts itself to the general contour of the object being picked up and which increases the grip on the object by exerting localized pressures on certain areas of the surface of the object.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings wherein like reference characters refer to the same parts throughout the several views and in which:

Fig. 1 is a perspective view of the grappling device;

Fig. 2 is an enlarged elevation view, partly broken away, of the device;

Fig. 3 is a bottom end view of the device as viewed from approximately 3—3 as indicated in Fig. 2; and

Fig. 4 is a detail section view of a portion of the device as indicated at 4—4 in Fig. 2.

One form of the present invention is shown in the accompanying drawings and is described herein.

The picking or grappling device indicated in general by numeral **10** includes an elongated body or shank portion **11** having an offset handle **12** on the upper end thereof and having a pair of jaws indicated in general by numerals **13** and **14** on the lower end thereof. Jaw **13** comprises a pair of elongated and curved object-engaging elements or sharpened tines **15** which are spaced from each other and which are affixedly secured to the shank **11**. The ends of tines may be slightly hooked. In the form shown, the tines are inserted into the end portion **16** of the shank **11** and the end portion is crimped inwardly onto the tines and rigidly holds the same.

Jaw **14** includes an elongated rigid backing or supporting element **17** which may be constructed of a rigid bar. The inner end portion **18** of bar **17** is disposed in a vertical plane and extends through a slot opening **19** in the lower end portion of shank **11**. The inner end portion **18** of the jaw **14** is pivoted in the slot opening by a bolt **20**. Bar **17** is twisted at **21** so that the outer end portion **22** thereof provides a mounting surface **22***a* in opposed relation with the jaw **13**. Means are provided on jaw **14** for engaging an object and conforming to the general configuration or contour of the object for engaging a substantial surface area thereof in order to exert very substantial gripping force on the object without localizing the pressure thereon. In the form shown, such means include an elongated strip of soft and easily compressible foam rubber material **23** which extends along the outer end portion **22** of the jaw backing **17** and which is affixed thereto. Strip **23** has an object-engaging outer surface **24** which engages the object as the jaws are swung relative to each other.

Means are also provided on jaw **14** for exerting localized pressure on the object to be picked up in order to prevent movement of the object in multi-directions and particularly in a direction longitudinally of the jaw. In the form shown, such means include a channel member **25** receiving the outer end portion **22** of jaw frame **17** therethrough. Channel **25** has a plurality of teeth **26** formed in the side flanges **27** thereof. It will be noted that the ends of the teeth **26** are disposed behind the object-engaging surface **24** of the compressible strip **23**. Channel **25** is slidably mounted to facilitate ready and easy removal thereof. Means are provided for releasably securing the channel **25** on the jaw **14** and in the form shown such means include inturned ears **25***a* which bear against the lower side of bar **17**, and a leaf spring **28** secured as by rivets on the jaw frame **17** and having an upwardly protruding bead **28***a*, best seen in Fig. 4, extendible into an aperture **29** in the channel **25**. It will be noted that the spring **28** is normally urged upwardly away from jaw backing **17** and may be manually urged inwardly to remove the bead **28** from the aperture and thereby facilitate ready and easy removal of the channel **25** and teeth **26**.

Means are provided for controllably operating the relatively movable jaws **13** and **14** and in the form shown such means include a tension spring **30** having one end secured to an eyelet **31** on the jaw **14** and having the other end secured to an eyelet **32** on the shank **11**. The spring **30** is arranged to normally bias the jaws to open position. Finger controlled rod **33** extends along the shank **11** and through a slide bearing **34** at the upper end. Rod **33** has a finger-receiving trigger **35** at the upper end thereof and is swingably secured at the lower end thereof to the inner end portion **18** of the swingable jaw **14**.

When an object is to be picked up, the jaws are allowed to be in open position and then the jaws are oriented on opposite side of the object. By pulling upwardly on the finger-controlled rod **33** jaw **14** is swung downwardly and toward the curved tines of the other jaw. Because the jaw **14** is located between the tines **15**, the jaws will tend to bend the object when it is being picked up and the object is thereby prevented from moving transversely of the jaws. This function is particularly useful in picking up or grappling fish and the like which are somewhat yieldable in nature. As the jaws **13** and **14** are disposed in substantially encompassing relation around the fish's body the jaws tend to bend the fish's body and he can move neither forwardly nor rearwardly out of the grappling device. It will be noted that as the jaw **14** is brought into registration with the object, the compressible strip **23** conforms to the general contour of the object to engage the object over a very substantial surface area and thereby eliminate the need for exerting high pressure on the object in a particular location. Of course the foam rubber material restricts movement of the object because of the highly frictional relation between the rubber and the objects. If desired, additional pressure may be exerted on the object causing the strip **23** to be compressed sufficiently to cause the teeth **26** to bear against the surface of the object. The teeth **26** localize pressure on small surface areas of the object and restrict movement of the object in multi-di-

rections relative to the jaws and particularly in a direction longitudinally of the jaws to prevent downward slipping of the object. When it is desired to prevent the exerting of localized pressures on the object in order to prevent damage to the exterior surface of the object, the channel 25 may be released and slipped off the end of jaw 14.

It should be particularly noted that the present invention is especially well designed for picking up beer cans, bottles and other containers and objects commonly found along roadways, parkways and in parks. The cylindrical beer cans and bottles are gripped in the manner hereinbefore set forth by the jaws and the operator of the grappling device may conveniently walk along and operate the grappling device to pick up such cans and bottles without having to stoop over. Of course, these bottles and cans and the like will then be deposited in a suitable trash container by merely releasing the finger trigger 35.

It should also be noted that the grappling device is extremely well adapted for picking up other types of loose trash such as papers, rags and the like. The pointed tines may be projected through such paper and rags and a substantial quantity of such trash can be carried on the sharpened tines. It should also be apparent that when substantial quantities of such trash are on the tines, the movable jaw 14 will hold the same on the tines in clamping relation. In addition, the grappling device may be simultaneously used for picking up trash of the type of papers and rags and objects such as beer cans, bottles and the like. While the tines are projected through such papers and rags, the movable jaw may be brought to bear against a can to hold the same against the jaw 13. When a substantial quantity of paper is on the tines, it is particularly important that the jaw 14 have the readily compressible strip 23 thereon and the teeth 26 for securely engaging and holding the object between the jaws because it may be that the paper or other trash material on the tines is somewhat slippery. Because the jaw 14 is provided with the compressible strip 23, a very substantial gripping pressure may be exerted against the bottle or can sidewall without fear of breaking the bottle because the pressure exerted is spread over a substantial area.

It will be seen that I have provided a new and improved picking and grappling device which grasps an object and prevents movement thereof in multi-directions and which conforms to the general contour of the object as pressure is exerted thereagainst and subsequently localizes pressure on certain areas of the object to provide a highly frictional gripping relation between the object and the jaws.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts without departing from the scope of my invention which consists of the matter shown and described herein and set forth in the appended claims.

What I claim is:

1. An object-picking and grappling device comprising a pair of elongated and opposed jaws interconnected for relative movement toward and away from each other, means connected with said jaws for producing relative movement thereof toward and away from each other, one of the jaws including an object-engaging portion comprising an elongated strip of soft and readily compressible foam rubber, said strip having an object-engaging surface, a plurality of teeth secured on the last mentioned jaw, the tips of the teeth being disposed behind the object-engaging surface of said strip for engaging the object when the strip is compressed, the other of said jaws including a pair of elongated object-engaging tines spaced from each other and disposed on opposite sides of the other jaw to receive the object-engaging strip and teeth therebetween, whereby the jaws tend to bend the object to prevent slipping thereof transversely of the jaws and said compressible strip conforms to the general contour of the object and the teeth will engage the object to prevent slipping thereof longitudinally of the jaws.

2. An object-picking and grappling device comprising a pair of elongated and opposed jaws interconnected for relative movement toward and away from each other, means connected with said jaws for producing relative movement thereof toward and away from each other one of the jaws having an elongated strip of soft and easily compressed foam rubber with an object-engaging surface facing the other of said jaws, a plurality of teeth, means removably mounting the teeth on the last mentioned jaw, the tips of said teeth being disposed behind said surface for engaging the object when the strip is compressed, releasable means securing said teeth on the jaw, and the other of the jaws including a pair of elongated object-engaging tines spaced from each other to receive the object-engaging strip and teeth of the other jaw therebetween, whereby the jaws are adapted to securely grip any of a number of types of objects.

3. An object-picking and grappling device comprising an elongated handle having an upper end portion and having a lower end portion, a pair of jaws on the lower end of the handle cooperatively arranged in object-gripping relation, one of said jaws being movable toward and away from the other of the jaws, and having a plurality of teeth removably mounted thereon and facing the other jaw, control means connected with said last mentioned jaw and including a manually operable control element at the upper end portion of the handle, one of said jaws having a pair of spaced apart elongated tines and the other of the jaws being located centrally of said tines for securely gripping different portions of an object.

4. An object picking and grappling device, comprising an elongated handle having an upper end portion and having a lower end portion, a pair of jaws on the lower end portion of the handle cooperatively arranged in object gripping relation, one of said jaws being stationary with the handle and having a pair of spaced apart tines projectible through rags, paper and the like, the other of said jaws being movable toward and away from the stationary jaw and having an elongate channel longitudinally movably mounted thereon, the channel having longitudinally extending side flanges with teeth formed therein and facing the stationary jaw, control means connected with the movable jaw and including a manually operable control element at the upper end portion of the handle, whereby the device may be used for simultaneously picking up and carrying various objects and rubbish.

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