April 4, 1967 L. W. WASSON 3,312,128

WIRE GRIPPER

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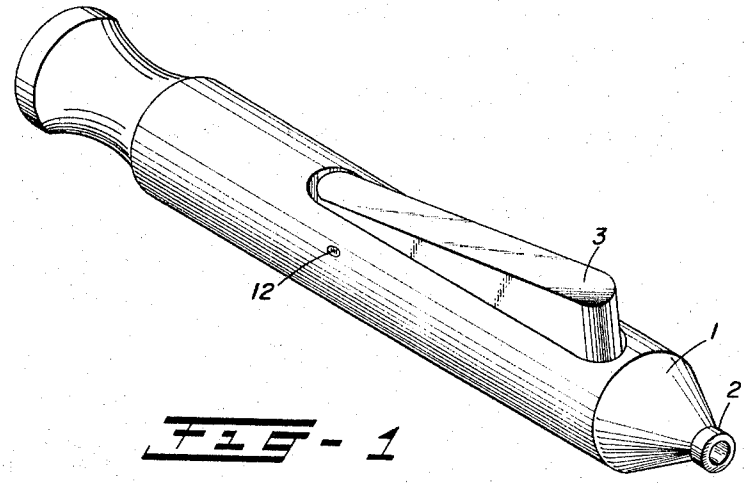


FIG - 1

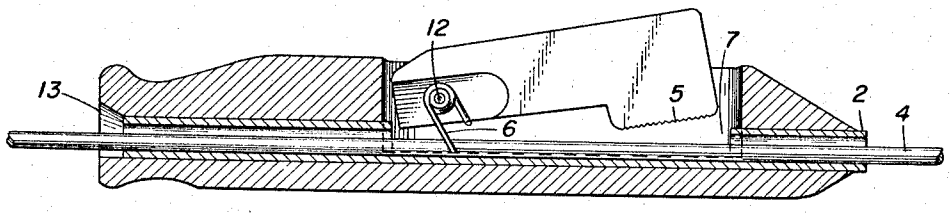


FIG - 2

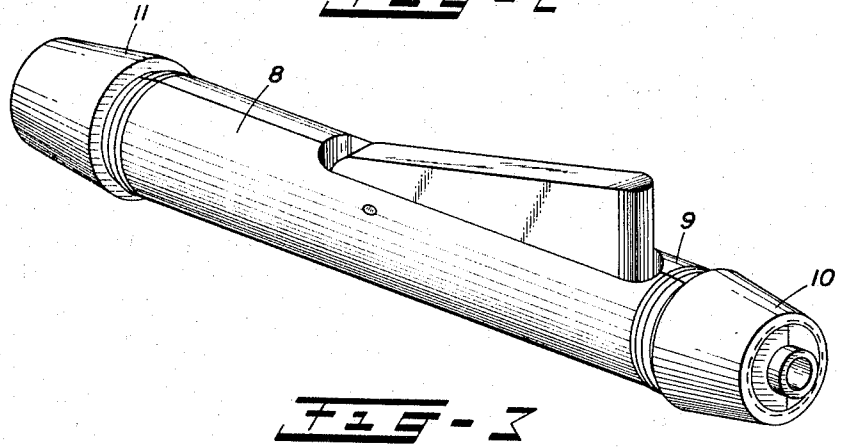


FIG - 3

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WIRE GRIPPER

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This invention relates to a unitary wire gripper for gripping hard wire and more particularly for gripping steel wire for tying reinforcing rods for reinforced concrete, said gripper being provided with a pivot lever pivoted in the unitary case, the lever being provided with hardened teeth and capable of gripping the wire when grasped firmly by hand, the lever being provided with means for releasing its grip when the hand grasp is relaxed.

In reinforced concrete construction, before the concrete is poured it is frequently customary to tie the reinforcing rods at suitable points with steel wire. The wire is usually carried on a reel attached to the workman's belt; a typical reel is described in my prior Patent No. 3,134,556, May 26, 1964. The workman pulls out a suitable length of wire, ties it around the rods, fastening with a twist, and then cuts off the wire with heavy cutting pliers. The operation requires handling a very stiff steel wire, and as considerable force is exerted in making the tie, the operation is hard on a workman's hands or, if he wears gloves, the wear on the gloves is a serious factor. It is with the solution of this problem that the present invention deals.

Essentially the invention includes a unitary structure either of one piece of metal or rigidly fastened together through which the wire is fed in a suitable channel. A spring released, toothed lever permits the wire to be readily pulled through the channel and then when the lever is firmly grasped by the workman's hand the teeth bite into the wire and it is rigidly held for the tying operation, even though a considerable pull is exerted. The unitary structure is shaped so that it can be conveniently gripped by the workman and all wear on the workman's hands or gloves is eliminated. At the same time the convenient shape and size of the wire grip is far less tiring on the hand than gripping the much smaller dimensioned wire. It is possible, therefore, to make ties of reinforcing rods more rapidly and for a longer period of time without tiring the muscles of the hand and without discomfort to hand or excessive wear to gloves. At the same time, the extremely firm grip provided permits making ties uniformly and accurately so that a higher production of uniformly satisfactory ties is possible in a given time.

The present invention is directed to a practical article. It is not directed to the broad concept of grips for cords or even for wire. It has been proposed for cords such as clotheslines to use a casing with a slot and a flat spring with sharp edges and a bowed portion extending up through a slot. In the ordinary position the spring presses its sharp ends, which can also be bent down, into the cord which then does not slip. Pressure on the bowed portion of the flat spring releases the ends from contact with the cord so that it can slide freely through the casing. Such a device is completely useless for gripping wire for tying rods for reinforcing concrete because the wire is smooth and hard and no spring with reasonable strength can produce a satisfactory grip. Also, the grip is released by gripping instead of by relaxing grip and this makes the feeding through of an extra length of wire inconvenient.

It has also been proposed to attach a hinged framework with toothed jaws on the end of an insulating handle for grasping trolley wires or other live wires which have broken and are lying on the ground. Pulling the handle causes the jaws to grip the wire and it is then pulled to some safe position without danger of fatal shock to the operator. Such a construction is completely useless and unsuitable for wire tying. The present invention, therefore, is directed to a definite form of grip which produces new and desirable results in the gripping of wire for operations which require a tight grip on the wire itself.

The invention will be described in greater detail in conjunction with the drawings in which:

FIG. 1 is an isometric view of a grip;

FIG. 2 is a longitudinal section through the grip, and

FIG. 3 is an isometric view of a modified grip structure.

The grip shown in FIGS. 1 and 2 consists of a casing **1** shaped for easy and comfortable gripping by the hand and preferably, although not necessarily, of light material such as aluminum. Through the center there is a channel **2** of hard material such as steel pipe, which is provided with a slot **7**. Wire **4** from a suitable reel is threaded through the channel as shown in FIG. 2. When gripped the lever **3** turns on its pivot **12** and causes the hardened teeth **5** to bite into the wire holding it firmly so that it can be pulled by the grip. The great leverage of the lever **3** permits a completely tight grip on the wire with only moderate grip by the hand of the workman. As soon as the tie is made, the wire is cut off with heavy cutting pliers and the grip of the workman's hand is relaxed, the lever **3** moving up to the position shown in the drawings under the influence of its return spring **6**. A new length of wire can then be drawn out and the sequence of operations described above repeated.

It is necessary that the present grip present a unitary structure so that it is strong and does not become misaligned on the wire. It is, however, in no sense necessary that the outer casing of the grip be a single piece of material. It may be formed of two halves bolted together or otherwise fastened, as is illustrated in FIG. 3. In this modification the two halves **8** and **9** are forced together by tapered threaded ends **10** and **11**. When these ends are tight the grip is a single unitary whole just as truly as if it were one piece of material.

The modifications shown in the drawings, in which a casting of light metal such as aluminum is provided with a hard steel channel for the wire, present many advantages. They are light, easily formed and machined, and operate satisfactorily. However, of course, if the whole casting is of hard material such as, for example, steel, a separate hard pipe forming a wire channel is not necessary. However, such a construction, although included within the broader aspects of the present invention, is much heavier and so it is preferable to use a lighter and softer material for the main body of the grip with a hard channel, such as a steel pipe, for the wire. This preferred structure is illustrated in the drawings, which show only one typical form that the grip of the present invention may take.

The grip has been described as made up of an outer casing of metal, such as aluminum. This has many advantages as the metal is strong and light, but other materials, such as wood, plastic and the like, may be used provided they are of sufficient strength. When plastic is used it is cheaper to form the grip in two pieces and, therefore, for such materials the modification illustrated in FIG. 3 presents some advantage. Even when there is an outer casing made of plastic it is ordinarily advantageous, although not essential, that the tapered threaded sleeves be of metal because of their superior unit strength. However, where the material is of sufficient strength they may also be of plastic.

FIG. 2 shows a tapered opening **13** on one end of the casting. This is a refinement which makes it somewhat easier to thread the wire through the channel initially but is in no sense necessary to the invention. FIG. 2 also illustrates a steel channel which is a press fit in an aluminum housing. This is an economical and satisfactory form of construction but, of course, if desired the channel may carry threads which screw into corre-

sponding threads of the casting. The only thing needed is that the grip finally be a unitary structure, and other equivalent forms are therefore included.

I claim:

1. A tool for gripping wire for tying and twisting the wire to fasten together reinforcing rods for reinforced concrete comprising in combination,

(a) a unitary casing of size and shape adapted for convenient gripping in one hand, and having an elongated slot in one side of the casing,

(b) a channel through the center of the casing adapted to have wire threaded therethrough,

(c) a grippable lever pivoted at one end in the casing and lying in the slot with the other end projecting slightly above the outer surface of the casing, said lever being provided with a wire engaging jaw having sharp hard teeth and positioned to engage wire threaded through the casing on gripping the casing, and

(d) means for releasing the lever jaw from contact with the wire on relaxation of the grip on the lever.

2. A wire grip according to claim 1 in which the casing is of relatively soft, light material and a channel adapted to receive the wire of hard material extends through the casing and is provided with an opening through which the wire engaging lever jaw can move into contact with the wire.

3. A wire grip according to claim 2 in which the casing is of aluminum and the channel is of steel.

4. A grip according to claim 1 in which the casing is in a plurality of pieces rigidly fastened together to form a unitary whole.

5. A grip according to claim 3 in which the casing is in a plurality of pieces rigidly fastened together to form a unitary whole.

References Cited by the Examiner

UNITED STATES PATENTS

230,435	7/1880	Pitney	24—134
418,413	12/1889	Johns et al.	24—134
1,684,797	9/1928	Howson	81—3
1,844,433	2/1932	Markowitz	81—3
1,959,490	5/1934	Mistelski	254—134.3

FOREIGN PATENTS

954,875	6/1949	France.

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