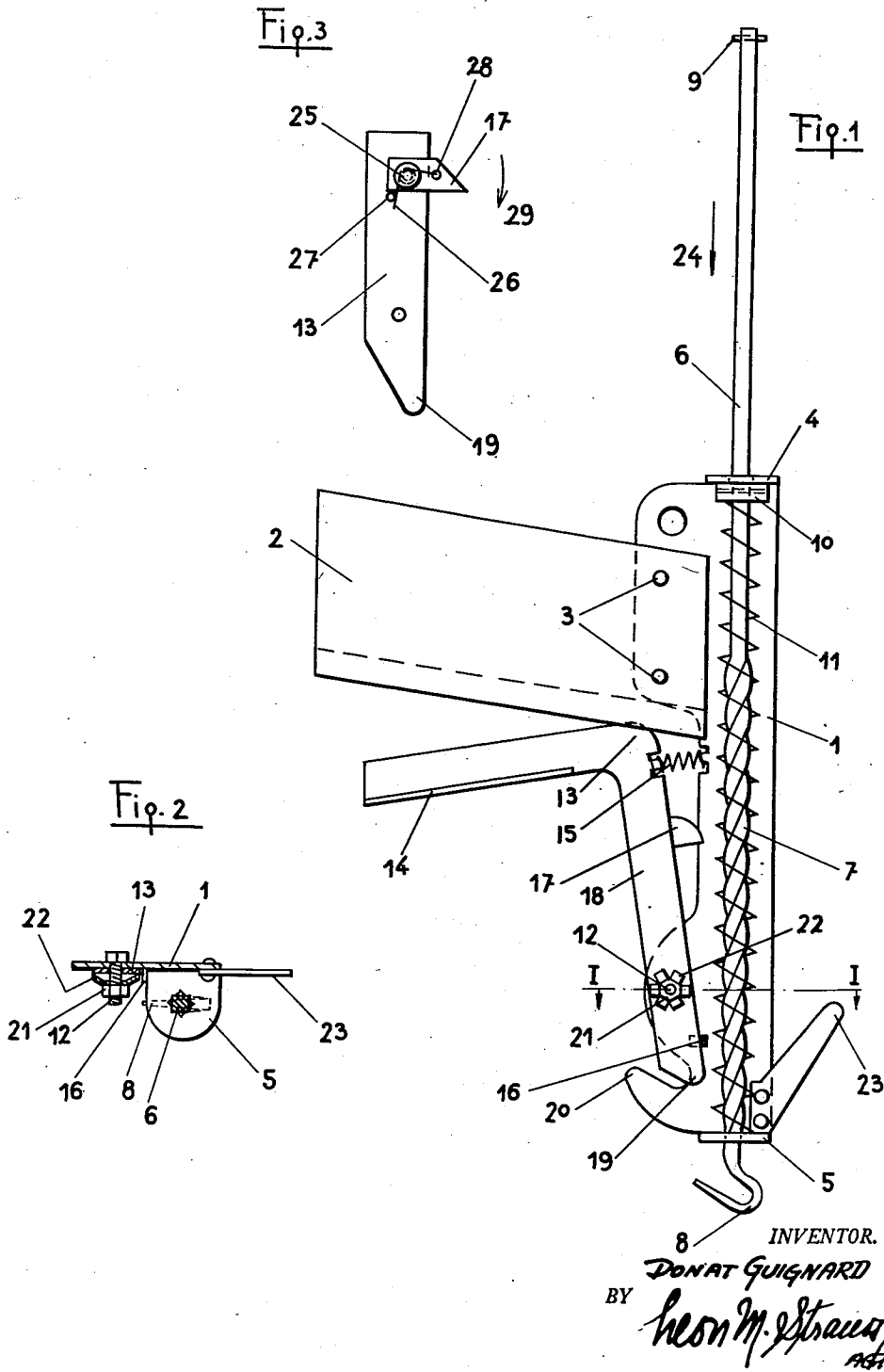


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D. GUIGNARD
BINDING INSTRUMENT
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BINDING INSTRUMENT

Donat Guignard, Sainte-Croix, Switzerland

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My invention has for its object a binding instrument including a body provided with a handle and two lugs registering with each other and carrying a bar adapted to move longitudinally against the action of elastic means, said bar being provided with a hook at one end, while means are provided for imparting a rotary movement to said bar when it is being shifted longitudinally so as to wind over one another the ends of a brace engaging the hook.

I have illustrated in the accompanying drawing, by way of example, a preferred embodiment of my improved binding instrument. In said drawing:

Fig. 1 is a lateral elevational view of the binding instrument;

Fig. 2 is a sectional view through line I—I of the instrument shown in Fig. 1; and

Fig. 3 is a side view of a modified detail of said instrument.

The instrument illustrated in Figs. 1 and 2 includes a body 1 to which is secured a handle 2 that is riveted thereto at 3. The body 1 includes at each end a perforated or apertured lug 4 and 5 respectively, said lugs registering with each other and slidably carrying a square bar 6; a section of the latter is twisted round its longitudinal axis so as to form a screw having a very long pitch and adapted to engage a corresponding tapping or formation provided inside the lug 5. The bar 6 carries at one terminal or end a hook 8 projecting beyond the lug 5 and at the other terminal or end a pin 9 forming an abutment and it carries furthermore, in its untwisted section, a stop 10 adapted to be engaged by one end of a return spring 11 the other end of which engages the tapped lug 5.

To the body 1 is pivotally secured, through the agency of a spindle 12, a bell crank 13 the arm 14 of which is adapted to be grasped by hand together with the handle 2. The handle and the bell crank thus effectively constitute a pistol grip for the body of the instrument. A coil spring 15 is fitted between the body 1 and the other arm 18 of the bell crank so as to urge said parts away from each other. A stud 16 carried by the body 1 limits the angular shifting of the bell crank 13 away from the handle 2, while the arm 18 of said bell crank carries a stop, nose or lock 17 adapted to engage the stop 10 and to hold thus the bar 6 fast temporarily in its foremost position.

The outer or free end 19 of the arm 18 forms the movable arm of pliers the cooperating stationary arm 20 of which is rigid with the body 1. In order to further the angular shifting of the bell crank 13, the latter is clamped over the spindle 12 by means of a nut 21 through the agency of an elastic washer 22 (Fig. 2).

The body 1 carries a cutting blade 23 which may serve for the cutting of a bough if desired.

The instrument illustrated in Figs. 1 and 2 which is intended more particularly for securing the boughs of vine, tomatoes, espalier trees or the like by means of a wire or reinforced string, is operated as follows:

The two ends of a brace surrounding the stems or

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boughs of the plant to be considered, are fitted over the hook 8 on which they are held by hand after which the body 1 is drawn in by means of the handle 2. This causes the hook 8 to revolve as a consequence of the relative longitudinal movement assumed in the direction of the arrow 24 by the bar 6 which is ultimately locked by the crank arm 13, when the latter is shifted by hand so that the stop 17 thereon may engage the rear surface of the stop 10. While the rod 6 is thus held fast in its foremost position, the operator releases the hook 8 with reference to the ends of the brace, which ends said hook has wound over each other. This being done, the operator releases the crank arm 13 which pivots under the action of the coil spring 15 so as to shift the stop 17 back away from the stop 10. Consequently, the bar 6 returns into its starting position under the action of the spring 11 and the operator then engages the ends of the brace between the plier arms 19 and 20 with a view to cutting them therebetween.

Fig. 3 illustrates a modification of the arm 18 of the bell crank 13, which latter carries pivotally the stop 17 through the agency of a pin 25, said stop being urged into the operative position illustrated by the spring 26 wound round the pin. One end of said spring abuts against a pin 27 rigid with the bell crank 13 while its other end engages an opening 28 formed in the stop 17; the latter may be caused to pivot in the direction of the arrow 29 so as to ride over the stop 10, but its return rotation in the opposite direction is stopped by the pin 27 so that overshifting of the stop 10 in a direction opposed to the arrow 29, is prevented.

I have provided in a further modification for the use of a bar 6 having a helical groove engaged by a stud secured to the body 1.

It is also possible to connect the stop 10 with a flange carried by the body 1 through the agency of an elastic return member such as a spring or an elastic wire.

Lastly, it is also possible to secure to the end 19 of the arm 18 of the bell crank an independent removable cutting blade adapted to cooperate with the stationary arm 20 for cutting a brace.

Various changes and modifications may be made without departing from the spirit and scope of the present invention and it is intended that such obvious changes and modifications be embraced by the annexed claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. A binding instrument comprising a body having two ends, a handle projecting from said body, first and second perforated lugs rigid with said ends of said body, respectively, a bar slidably carried in the perforations of said lugs, respectively, and having first and second terminals extending beyond said first and second lugs, respectively, hook means on said first terminal of said bar, pin means on said second terminal of said bar for limiting longitudinal movement of said bar in one direction, stop means on said bar intermediate said lugs for limiting longitudinal movement of said bar in opposite direction, spring means about said bar between said first lug and said stop means, cooperating formations on at least one of said lugs and on said bar, respectively, for causing rotation of said bar when longitudinally displaced relative to said lugs, bell crank means pivotally secured to said body, and lock means on said bell crank means, said bell crank means and said handle together forming a pistol grip for said instrument, whereby upon relative displacement between said body and said bar to compress said spring means and to cause rotation of said bar with said hook means, actuation of said bell crank means brings about engagement of said stop means with said lock means so as to retain said bar and said body in relatively displaced position thereof, deactuation of said

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bell crank means thereafter effecting release of said lock means from said stop means and reverse rotation of said hook means with said bar upon return of the latter to its starting position under the action of said spring means.

2. A binding instrument according to claim 1, including further spring means extending between said bell crank means and said body, said further spring means urging said bell crank means into deactuated position. 5

3. A binding instrument according to claim 1, said lock means including a nose pivotally mounted on said bell crank means and spring-urged into projecting position toward said bar, whereby longitudinal movement of said bar in said one direction causes pivotal depression of said nose by said stop means, while longitudinal movement of said bar in said opposite direction upon actuation of said bell crank means is limited by engagement of said stop means with said nose. 10 15

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4. A binding instrument according to claim 1, said bar being square in cross section, said cooperating formations being formed of a square perforation in one of said lugs and a section of said bar twisted into a helix.

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