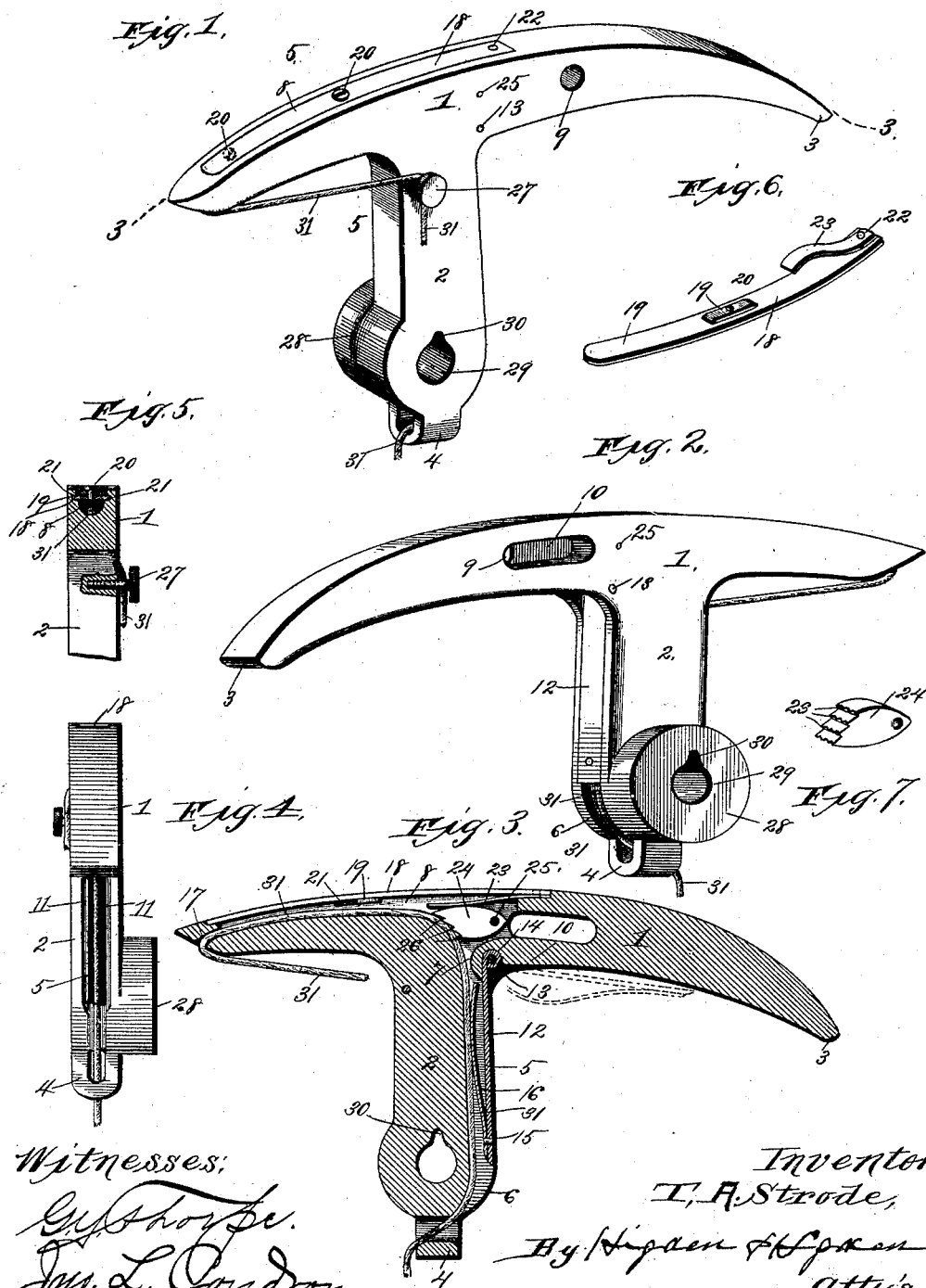


(No Model.)

T. A. STRODE.
TENSION NEEDLE FOR HARVESTER BINDERS.

No. 492,444.

Patented Feb. 28, 1893.



UNITED STATES PATENT OFFICE.

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TENSION-NEEDLE FOR HARVESTER-BINDERS.

SPECIFICATION forming part of Letters Patent No. 492,444, dated February 28, 1893.

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To all whom it may concern:

Be it known that I, THOMAS A. STRODE, of Johnstown, Bates county, Missouri, have invented certain new and useful Improvements in Tension-Needles for Harvester-Binders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to needles for use in the binding-mechanism of self-binding harvesters, and also to tension mechanism for imparting the required tension to the binding twine or wire, and the objects of my invention are to produce a needle which shall be simple, durable, and inexpensive in construction, and capable of attachment to all kinds of self-binding mechanism, and also to produce a tension-mechanism which shall also be simple, durable, and inexpensive in construction, and which shall be carried directly by the needle itself so as to prevent the binding twine or wire from being pulled out of the needle if such twine or cord be broken by the knotting-mechanism.

A still further object of my invention is to produce a tension-mechanism which, in addition to being carried by the needle itself and also to the other advantages above enumerated, shall enable the tension-devices which are usually applied to the twine-box, or wire-reel to be entirely dispensed with.

To the above purposes, my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which;

Figure 1 is a perspective view of my improved binder-needle and its tension-mechanism. Fig. 2 is a similar view of the same, viewed toward the opposite side from that presented in Fig. 1. Fig. 3 is a longitudinal section of the same, on the line 3—3 of Fig. 1. Fig. 4 is a rear elevation of the same. Fig. 5 is a transverse vertical section of the same, on the line 5—5 of Fig. 1. Fig. 6 is a detached perspective view of the upper or outer tension-spring and its carrying-plate. Fig. 7 is

a detached inverted perspective view of the pivotal tension stop or dog.

In said drawings, 1 designates the outer or body-portion of the needle; the said body-portion being of segmental form and beveled at its two extremities; the rear end of the needle being pointed, as shown at 3. From the under side of this body-portion 1 extends the shank 2 of the needle, the said shank being of elongated form and formed integrally with said body portion 1, and also joining the body-portion of the needle nearer its end than its rear or pointed end, as shown. The lower end of the shank 2 is formed with an integral guide-loop 4 the opening of which extends in alignment with the longitudinal axis of the body-portion 1, and that side of the shank 2 which is toward the rear or pointed end of the body-portion, is formed with a longitudinal groove 5 which extends from the point of juncture of the shank 2 with the body-portion 1 of the needle to near the lower end of the shank. From the lower end of this groove 5 extends a curved channel 6 which opens at the lower extremity of the shank. The upper end of this groove 5 communicates, through a second channel 7, with the bottom of a groove 8 which is formed in the upper or outer surface of the body-portion 1 of the needle. This groove 8 extends longitudinally of the body-portion 1 and begins at a point near the front end of said body-portion and terminating at a point somewhat to the rear of the juncture of the rear side of the shank 2 with the body-portion of the needle. An opening 9 is formed transversely through one side of the body-portion of the needle, at a point about midway between the rear or pointed end of said body-portion and the point of juncture of the shank 2 with said body-portion. The inner end of this opening 9 communicates with a recess or cavity 10 in the opposite side of the body-portion 1, said opening 10 being elongated and extending longitudinally of the said body-portion 1. The two sides or longer margins of the groove 5 are counter-sunk, as at 11 to support the sides of a plate 12 which corresponds in length with said groove, and the upper end of which is turned outward, as at 14 to embrace a pin or pintle 13; said pin or

pintle being inserted transversely through the body-portion 1, at a point near the point of juncture of the rear side of the shank 2 with the under side of the body-portion 1.

5 The plate 12 is thus hinged so that it may be thrown upward, as shown in dotted lines in Fig. 3, and the turned upper end of said plate bears with sufficient friction upon the surrounding wall of the socket to hold the plate in any position in which it is placed, or a button set screw or catch of any kind may be employed if found preferable.

To the inner side of the plate 12, at the lower end thereof, is secured, by a rivet 15 or equivalent means, a leaf or plate spring 16 which extends upwardly and inwardly within the groove 5 (when its plate 12 is in closed position). The purpose of this spring will be hereinafter explained.

20 Through the front end of the body-portion 1 of the needle is formed a short longitudinal channel 17, the inner or front end of which communicates with the front end of the groove 8 and the outer end of which opens through the front end of the body-portion 1 of the needle. The groove 8 is closed by a plate 18 which corresponds with the groove in length and width, and which is removably retained in position by a turn-plate 19 which normally extends transversely of the plate, at the under side thereof, and the extremities of which engage in two recesses 21 which are formed in opposite sides of the groove 8. This turn-plate is retained in position by a screw 20 which extends through a plate 18 and also through the turn-plate.

To the under side of the plate 18, at the rear end thereof, is secured by a rivet 22, or equivalent means, a leaf or plate spring 23 which extends forwardly and downwardly within the groove 8. This spring presses upon the upper side of a tension-stop or dog 24 which is located in the rear end of the groove 8, and which is of approximately elliptical form, as shown. This stop or dog is pivoted within the groove 8 by a pin or pintle 25 which passes transversely through the body-portion 1 of the needle and also similarly through the rear end of the stop or dog 24. The under side of this stop or dog 24 is formed with a number of serrated ribs 26 which extend parallel with each other and transversely of the stop or dog. The purpose of this stop or dog will be hereinafter explained.

55 Into the upper end of the shank 2, at that side which corresponds with the side of the body-portion 1 in which the opening 9 is formed, is inserted a clamp or tension-screw 27 for a purpose to be hereinafter explained, and the lower end of the shank 2 is also formed with a hub or boss 28, through which is formed an opening 29 having a radial recess 30; the said opening and recess extending also transversely through the lower end of the shank, through which a splined stud axle passes, and is supported in suitable bearings upon the binder frame.

31 designates the binder-twine, and it is to be understood that while this needle and its tension-mechanism are designed particularly to operate with twine, they are also adapted to operate with wire.

In threading the needle, the twine is first passed through the loop 4, and, the plate 12 being opened, is then passed through the channel 6 and groove 5. The twine is then passed through the groove 7 and beneath the rear end of the dog or stop 24, and thence forwardly in the groove 8, and out through the channel 17. From the channel 17, the twine is carried rearwardly to and around the screw 27. The plate 12 is now closed, so that its spring 16 shall press upon the twine within the groove 5, at all times as it comes from the spool and the plate 18 is placed in position so that its spring 23 shall press upon the dog 24 and cause the serrations of the latter to bind upon the twine. The clamp or tension screw 27 is employed to hold the end of the twine in suitable position when starting for the cord holder, of the revolving knottor to catch the cord, when carried over the disk by the needle; then the cord-holder disk releases the cord from the clamp 27 which latter is not used again until the needle is threaded at another time. The spring 16 and dog 24 permit the twine to be drawn readily through the rear end of the needle, and impart the required tension to the twine. At the same time, if the binder-twine be broken by the knottor, the serrations of the dog 24 prevent the twine from being drawn through the needle thus preventing the latter from being unthreaded.

It is to be understood that the needle and tension-mechanism are designed to be applied to the McCormick and other types of binders, and that when the needle is applied to the McCormick type of binders, the attaching-plate 19 of the plate 18 is preferably secured to the rear end of the said plate 18, as shown in dotted lines.

From the above description, it will be seen that I have provided a needle and tension-mechanism which can be applied to all types of binder-mechanisms, and which entirely obviate the necessity of using tension devices for the twine-boxes or for the wire reels. It will be further seen that I have produced a tension-mechanism which, in addition to being carried directly by the needle itself, is so constructed as to automatically clamp the twine when the latter is severed by the knottor, and thus prevent the needle from being unthreaded. It is to be further understood that the needle above described is so constructed, and its attachments are of such nature that there is no possibility of the straw in the gavel being drawn into the needle by the twine, thus breaking the twine, and injuring the needle and its attachments.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. A needle for binding mechanisms, comprising body-portion provided with a shank, a longitudinally extending groove in said body-portion, and a spring-pressed clamp pivoted within said groove to give elastic yielding tension to the twine as it comes from the spool, and serving to prevent the unthreading of the needle when the twine is severed, substantially as set forth.
2. A needle for binding-mechanisms comprising a shank having a longitudinal groove in the rear side thereof, a hinge plate covering said groove and having its side margins to frictionally engage the sides of said groove and a tension spring carried by the plate and extending into the groove so as to press upon the twine in said groove, substantially as set forth.
3. A needle for binding-mechanisms comprising a body-portion provided with a longitudinal groove, a serrated catch or dog, pivoted within the groove and arranged to come into contact with the twine in the groove, and a plate closing said groove and having a spring to press upon the stop or dog, substantially as set forth.
4. A needle for binding mechanisms, comprising a body-portion provided with a shank, and a screw or stud secured to the side of the needle and adapted to hold one end of the thread and deliver it to the cord-holder, substantially as described.
5. In a needle for grain binders, the body portion provided with a shank, a longitudinal groove formed on one side of the shank, a longitudinal groove formed in the body portion, a channel connecting said grooves, and a loop formed upon the lower end of the shank to conduct and shield the twine in its passage from the lower end of the shank to the point of the needle, in combination with a tension spring to cover the shank groove and serrated catch or dog, acted upon by the spring plate covering the groove in the body portion, substantially as described.
6. In a needle for grain binders, comprising a body portion provided with a shank, a longitudinal groove formed in the rear side of the shank, a longitudinal groove formed in the body portion, a channel connecting said grooves, and a loop formed upon the lower end of the shank, and a groove connecting the shank groove and the loop, and a channel communicating with the forward end of the body groove and extending through the forward end of the needle, substantially as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

THOMAS A. STRODE.

Witnesses:

J. W. CRABTREE,
B. W. O'NEAL.