(No Model.)

E. PRIDMORE.

TENSION DEVICE FOR GRAIN BINDERS.

No. 347,376. Patented Aug. 17, 1886.

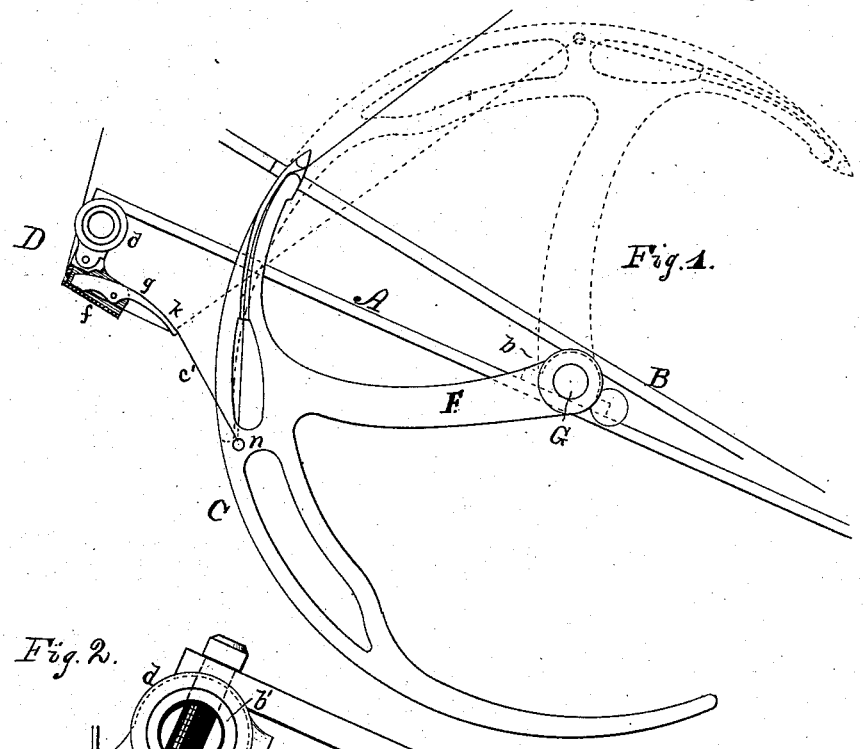

Fig. 1.

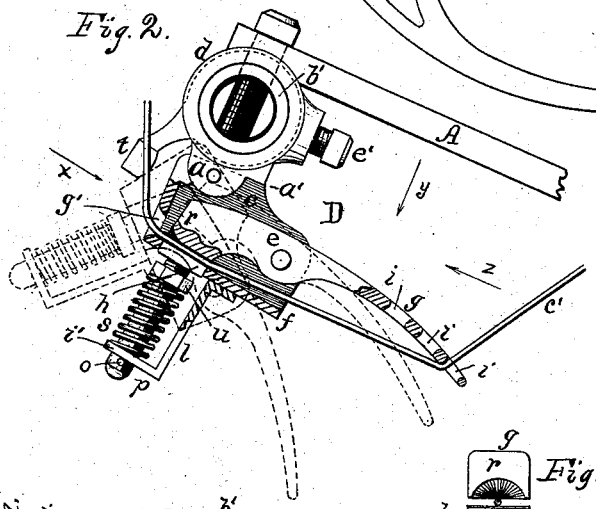

Fig. 2.

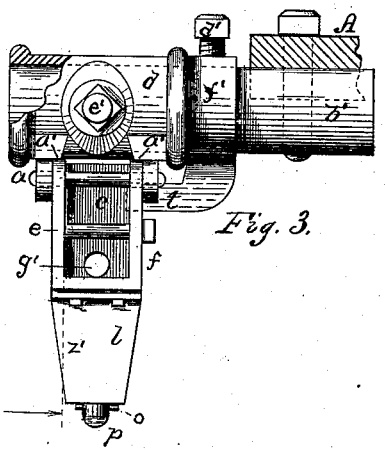

Fig. 3.

Fig. 5.

Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD PRIDMORE, OF BROCKPORT, NEW YORK.

TENSION DEVICE FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 347,376, dated August 17, 1886.

Application filed May 4, 1885. Serial No. 164,403. (No model.)

To all whom it may concern:

Be it known that I, EDWARD PRIDMORE, of Brockport, in the county of Monroe and State of New York, have invented a new and useful Improvement in Tension Devices for Grain-Binders, which improvement is fully set forth in the following specification, and shown in the accompanying drawings.

The object of my invention is to produce an improved tension device for the twine of a grain-binder, by means of which the twine is held taut while being carried around the gavel by the needle, and allowed to run freely when no tension is required, the parts and devices being combined and arranged substantially as hereinbelow specified, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a side elevation of the needle with a part of the frame and binding-platform, showing the relative position of the tension device and the twine leading therefrom to the needle, a part of the tension device being vertically sectioned, parts not essential to the figure being omitted; Fig. 2, a view of the tension device and parts immediately connected therewith, viewed from the same direction from which Fig. 1 is seen, drawn to a larger scale to better show the smaller parts, parts being broken away, the latch-box sectioned as on the dotted line z' in Fig. 3, and the tension-latch sectioned as on the dotted line y' in Fig. 4, parts being also shown in different positions in full and dotted lines; Fig. 3, a view of the tension device, viewed as indicated by arrow z in Fig. 2, serving to further show the form and arrangement of the parts, the tension-latch being omitted and parts broken away and longitudinally sectioned; Fig. 4, a view of the same, seen as indicated by arrow y in Fig. 2, the frame being mostly omitted; and Fig. 5, a view of the inner end of the tension-latch, seen as indicated by arrow x in Fig. 2, showing the twine as held between the latch and spring presser-head.

Referring to the parts, A is a portion of the frame of a grain-binding machine, and B the binding-platform thereof.

C is the binding-needle, secured to a shaft, G, resting in boxes *b*, secured to the frame. The needle moves in a vertical plane upon its axis in binding a bundle of grain, and when at rest stands below the binding-platform, with its nose projecting just through the same. The cut grain presented to the needle to be bound is collected upon the binding-platform. At its outer edge the needle corresponds to an arc of a circle concentric with the axis of its motion.

At D is shown my new tension device, being composed substantially of a suspending sleeve or holder, *d*, latch-box *f*, tension-latch *g*, and yielding or spring presser-head *h*, to co-operate with the tension-latch in holding the twine. The latch-box is joined to the sleeve *d* by a flexible joint at *a*, so that it may move in a vertical plane. The tension-latch *g* rests in part within the cavity *c* of the latch-box, being hung upon a horizontal pivot-pin, *e*, reaching across the cavity of the box and secured to the opposing walls thereof, the latch being permitted moderate play in a vertical plane. The twine is carried into the latch-box of the tension device through an orifice, g', and between the head *r* of the tension-latch and the presser-head *h*, as shown in Fig. 2. In effecting the tension of the twine the latter is moderately pressed between the under surface of the inner end or head, *r*, of the tension-latch and the opposing inner surface of the floor of the tension-box, or, as I have further improved it, between the said surface of the head and the opposing surface of the spring presser-head *h*, forming in part the floor of the box, more fully described further on.

Outside of the box or near its outer end, *k*, the latch *g* is made lighter and formed with orifices *i*, through which the twine is passed as it is carried to the needle, the latter being formed with an orifice, *n*, through which the twine is carried and conducted thence to and through an eyelet in the nose of the needle in a manner substantially common.

The latch as formed and hung substantially balances across its pivot-pin *e*, and any tendency to lift or pull upward on the outer end, *k*, of the same will cause the inner end or head, *r*, to press upon the twine passing beneath it, as above stated, while a tendency to pull downward on the outer end of the latch will cause the head of the latch to be lifted off the passing twine and relieve the tension thereon. It will be observed that whenever the needle is in such position that the orifice *n* is below or

on a line with the latch no tension will be thrown upon the twine; but as the orifice is carried above the latch by the motion of the needle, the head of the latch will be caused to press upon the twine and produce a tension thereon, as stated. By the relative position of the parts, as seen in Fig. 1, it will appear that tension is brought upon the twine to the greatest degree while the latter is being carried around the gavel, and the twine is allowed to run substantially free through the tension at all other times.

The degree of tension brought upon the twine by the latch can be regulated by carrying the twine through the different holes *i* of the latch, thus increasing or decreasing the leverage thereof at pleasure.

The tension device is secured to a part, *b'*, projecting from the frame, which part may be a piece of gas-pipe secured to the frame or other piece projecting therefrom. The sleeve *d*, which is fitted to the part *b'*, is provided with a set-screw, *e'*, by means of which it may be held rigidly in place in any position of adjustment upon the part *b'*. By means of the movable joint *a*, between the sleeve and latch-box, the latter may swing through a moderate arc, being stopped in its movement toward the needle by contact with the parts of the sleeve at *a' a'*, and limited in its movement away from the needle by a stop, *t*, secured to the part *b'* by a set-screw, *d'*, said stop *t* being formed with a band, *f'*, fitted to encircle the part *b'*. By means of the set-screw and band the stop *t* may be adjusted to limit the motion of the latch-box, as required, or be brought down snugly against the box to hold it rigid against the stops *a'*. The swinging of the latch-box away from the needle permits the latch to draw upon the twine when the latter is slack, to act as a take-up for the same.

To enable the tension device to hold the twine with a yielding pressure, I cut out a part of the floor of the latch-box immediately beneath the head *r* of the latch and insert therein a presser-head, *h*, held to meet the head of the latch, which presser-head, when occupying the cavity in the floor, forms substantially a part thereof. The presser-head is provided with a stem, *p*, passed down through the foot *i* of a bracket, *l*, secured rigidly to the nether surface of the latch-box, which bracket assists to hold the presser-head in place. The stem *p* is threaded for a distance under the head *h*, and furnished with a piral spring, *s*, and an adjustable nut, *u*, near the head *h*, between which nut and foot *i* of the bracket said spring is held, the tendency of which spring is to push the presser-head *h* upward against the head *r* of the latch, and thus hold the intervening twine with a yielding pressure. The power of the spring can be regulated by turning the nut *u* upward or downward along the threaded stem *p*. A pin, *o*, thrust through the stem *p* beneath the foot *i'* of the bracket, forms a stop for the stem and prevents the presser-head from being thrust through the floor into the cavity of the latch-box by the spring. The employment of the yielding presser-head admits twine that is uneven or knotty to pass comparatively smoothly through under the latch. Beside, by its use there is no danger of overstraining or breaking the twine as it is being drawn through in under the latch.

What I claim as my invention is—

1. In combination with the frame and binding-needle of a grain-binder, a tension device for the twine, formed of a part, *d*, held adjustably to the frame, a part, *f*, connected with the part *d* by a pivot-joint, and a stop, *a'*, and adjustable stop *t* for said part *f*, substantially as shown.

2. A tension device for the twine of a grain-binder, formed with a part, *d*, held adjustably to the frame of the binder, a tension-box, *f*, pivoted to the part *d* to turn in a vertical plane, and a tension-latch, *g*, pivoted to the box to move in a vertical plane, said latch being held in part within said box and in part without the latter, substantially as shown.

3. A tension device for the twine of a grain-binder, formed of a part, *d*, held adjustably to the frame of the binder, a tension-box connected with said part *d* by a pivot-joint and provided with a tension-latch pivoted to the box and held partly within and partly without the latter, the inner end of said latch being held in position to press the floor of the box, substantially as shown and described.

4. A tension device for a grain-binder, formed with a part, *d*, held to the frame of the binder, a tension-box pivoted to said part *d* and provided with a pivoted tension-latch held to have its inner end press the floor of the box, the latter having an orifice, *g'*, through its side opposite said inner end of the latch, substantially as shown.

5. A tension device for grain-binders, formed with a part, *d*, held to the frame, a tension-box joined to the part *d* and provided with a pivoted tension-latch held in part within and in part without the box, the inner end of the latch being held to press the floor of the box and the outer end of the latch formed with eyelets, substantially as shown, and for the purpose set forth.

6. A tension device for grain-binders, having a part, *d*, held by the frame, a tension-box joined to the part *d* and provided with a pivoted tension-latch held in part within and in part without the box, the inner end of the latch being held to press the floor of the box, a part of said floor beneath said latch being removed and replaced by a yielding part, *h*, substantially as and for the purpose specified.

7. A tension device for grain-binders, having a part, *d*, held by the frame, a box, *f*, joined to the part *d* and provided with a movable tension-latch, in combination with a part, *h*, to meet said latch, provided with an actuating-

spring, and a guide for said part *h*, substantially as described.

8. A tension device for grain-binders, having a tension-box, *f*, joined to the frame, said box being provided with a movable tension-latch, in combination with a yielding part, *h*, to cooperate with the latch, said part *h* being provided with an actuating-spring, a guide or holder, and a stop, substantially as shown.

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Witnesses:
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