(No Model.)

W. R. COATS.

Grain Binder Tension.

No. 238,354. Patented March 1, 1881

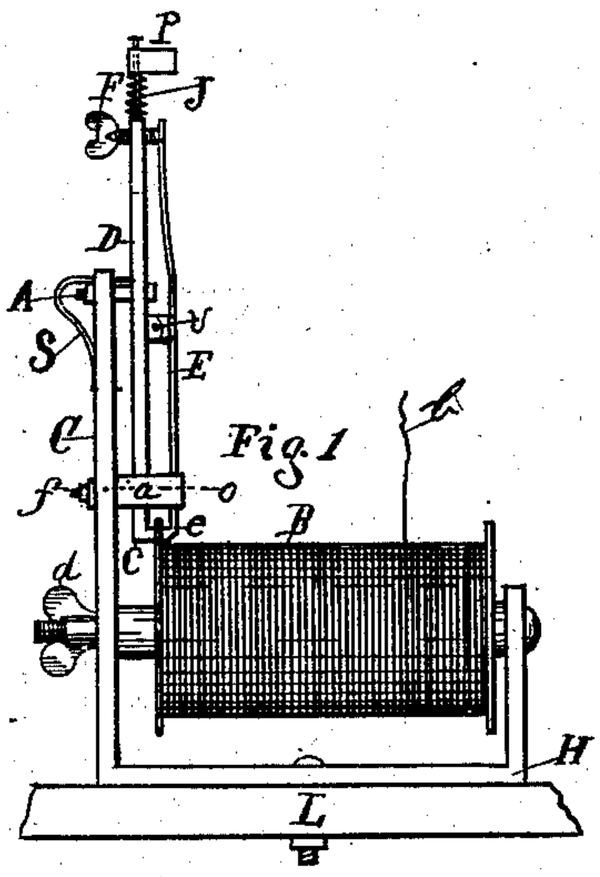

Fig. 1

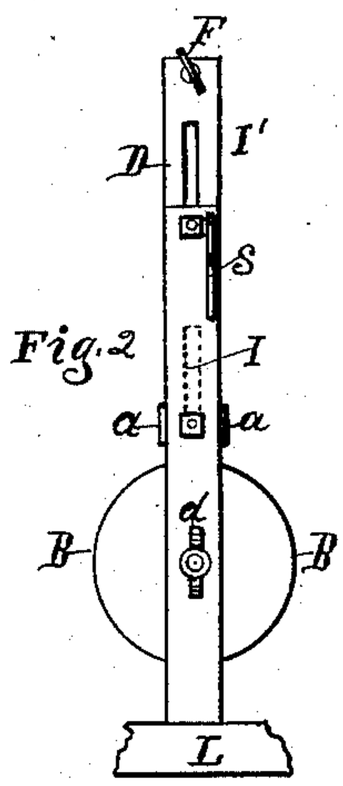

Fig. 2

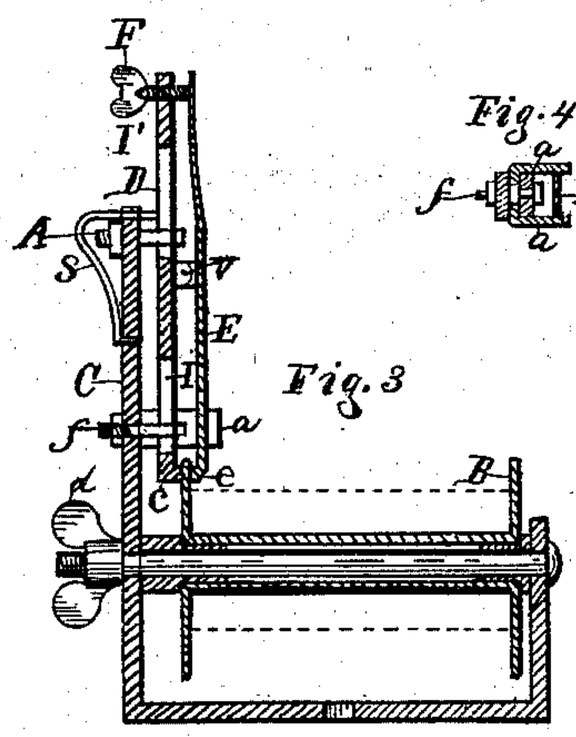

Fig. 3

Fig. 4

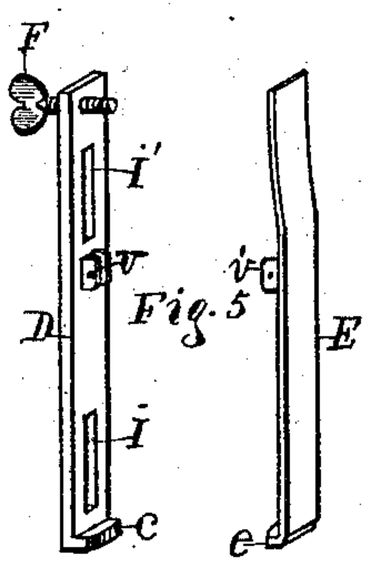

Fig. 5

Attest.

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UNITED STATES PATENT OFFICE.

WILLIAM R. COATS, OF KALAMAZOO, MICHIGAN.

GRAIN-BINDER TENSION.

SPECIFICATION forming part of Letters Patent No. 238,354, dated March 1, 1881.

Application filed August 2, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. COATS, of Kalamazoo, Michigan, have invented new and useful Improvements in Grain-Binder Tensions, of which the following is a specification.

My invention relates to tensions of all grain-binders adapted for using revolving spools for holding the band cord or wire; but it more especially relates to the McCormick binder. It has for its object certain improvements in self-adjusting clamp-tensions, acting in conjunction with the band-spool, whereby the tension device automatically adjusts itself in a manner to effect the same degree of tension on the band whether the spool carrying the same is full or partially filled; and to this end my invention consists in the peculiar construction and arrangement of the parts, as hereinafter more fully set forth.

In the drawings forming a part of this specification, Figure 1 is a side elevation; Fig. 2, a rear elevation; Fig. 3, a longitudinal section of Fig. 1; Fig. 4, a cross-sectional cut on the dotted line from f^0 in Fig. 1; and Fig. 5, detached bars of the clamp.

L illustrates the beam or table upon which the tension frame and spool are located.

D E are the tension-bars forming the clamp. The bar E is made of elastic material adapted for yielding or springing. These two bars are hinged together at *v*, and connected to the supporting-standard C by means of bolts *f* A, the headed inner ends of said bolts being loosely located in slots I I′ of bar D, by which arrangement the clamp, when in a perpendicular position, moves freely up and down.

Guards *a a* are stationed at each side of the lower portion of the clamp by being secured to standard C by bolt *f*. The object of these guards is to prevent lateral displacement of the clamp when the spool revolves. The lower ends of the bars forming the clamp terminate in jaws *c e*, their lips or friction-edges being elliptical in form, to prevent them from cramping against the rim of the spool should the clamp be thrown out of a true position. (See Fig. 5.) These jaws engage the rim of the spool B, the end of the inner jaw resting against the band. Spool B is revolubly supported on an axle, and is held by set-screw *d*.

In the top of bar D is a set-screw, F, by means of which the jaws *c e* of the tension-clamp are set at a given degree of friction on the rim of the band-spool.

Spring S is provided, to engage or lock with bar D of the clamp when said clamp is located perpendicularly, in order to hold it at a given position when changing the spools. When the clamp is located at other angles a slight modification of the supporting-frame may be necessary to accommodate the change. The jaws of the tension-clamp, when said clamp is located at a perpendicular angle, as the band-spool revolves, travel toward the axis of said spool; hence one of the jaws always rests against the band whether the spool is full of band material or partially filled.

I find this traversing of the jaws toward the axis of the spool is also effected, in most instances, when the tension is located at other angles; but should it need assistance in given positions and conditions, I have provided a pressure-spring for the purpose, my idea being illustrated at J in Fig. 1. Any suitable spring may be used.

In Fig. 1, I have shown a coiled spring, J, as the pressure-spring, the upper end bearing against any convenient part, P, of the frame of the machine, and its lower end bearing against the upper end of the clamp-bar D, the spring forcing the clamp toward the axis of the spool.

The further utility and operation of my device I explain as follows: In binding grain, to avoid breaking the band the tension on said band must always be the same. When the spool is full of wire or cord it revolves easier than when partially filled, with the same degree of power in both instances drawing the band; hence, if my tension-jaws, having been set at a given degree of friction on the spool's rim, were to remain in the position till the spool was nearly emptied which they occupied when the spool was full the tension would not then be the same on the band; but as the bar E of the clamp is elastic, the wear of the jaws and the spool-rim does not affect the degree of friction of said jaws, and as said jaws are carried toward the axis of the spool as fast as the band is unwound, the tension remains the same, for the reason that as the leverage of the power exerted to revolve the spool is di-

minished as the band is consumed the leverage of the retarding power of the tension device also is correspondingly diminished by the travel of its point of application toward the axis of the spool.

What I claim and desire to secure is—

1. In a grain-binder, the automatically-adjustable tension device consisting of the clamp-bars E D, one of which is elastic, said bars hinged together near their centers, and provided with elliptical jaws at their lower ends and set-screw at their upper ends, in combination with a supporting-frame and band-spool, substantially as specified and shown, for the object set forth.

2. The tension-clamp herein described, consisting of the slotted bar D and elastic bar E′, hinged together, and provided with jaws *c e*, guides *a*, set-screw F, and bolts A *b*, substantially as described, and for the purpose set forth.

3. The combination, with the tension-clamp D E, constructed as set forth, of the supporting-frame C, band-spool B, and spring J, bearing against the outer end of the tension-clamp and the frame of the machine, substantially as described, and for the purpose set forth.

4. The combination, with the band-spool B, of the sliding tension-clamp D E, adapted to bind the rim of the spool between its jaws, and having the lower end of one of its jaws resting on the wire or cord on the spool, substantially as described, and for the purpose set forth.

WILLIAM R. COATS.

Witnesses:

JOHN F. CHASE,

LEWIS SCHILLING.