

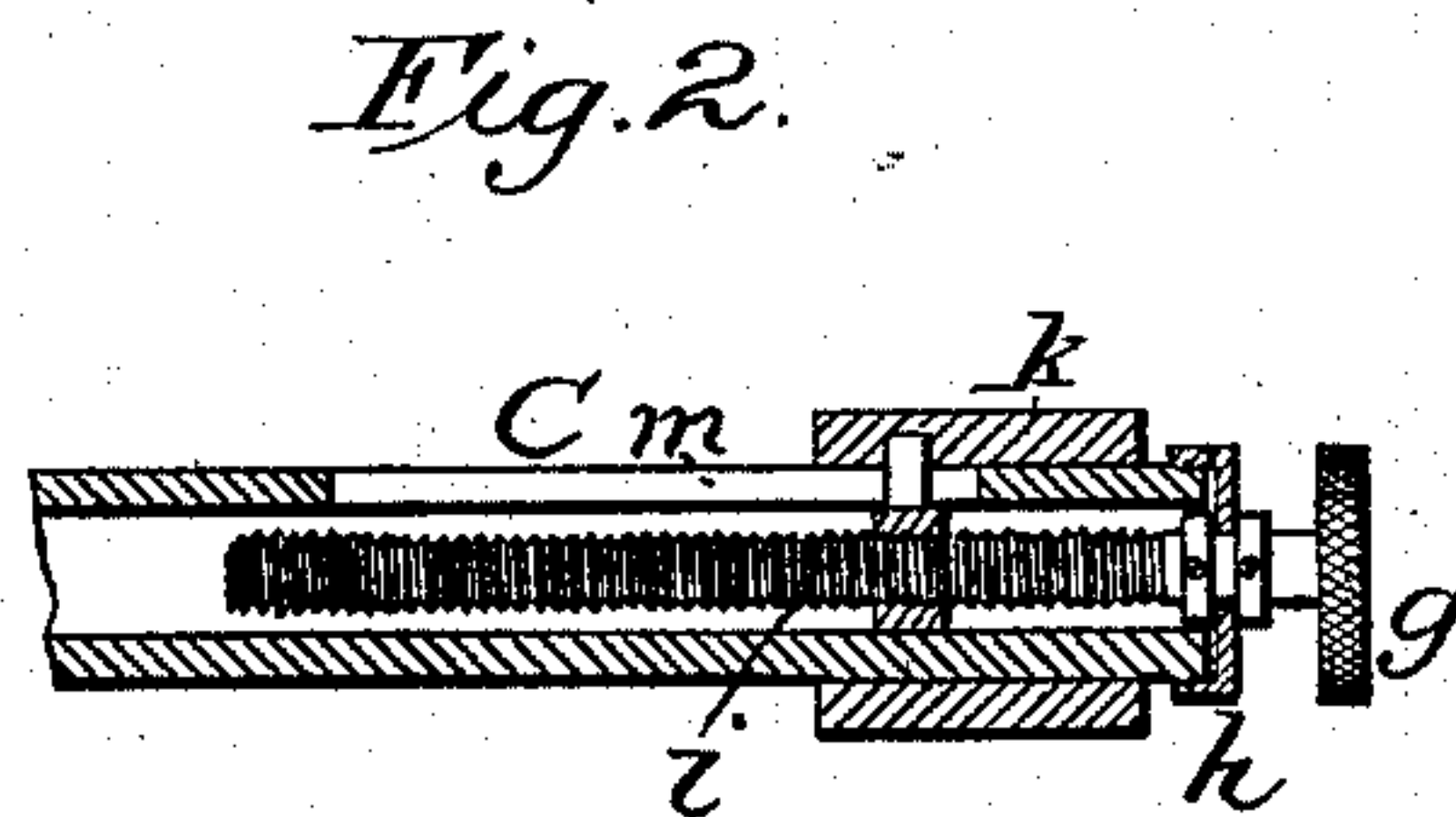
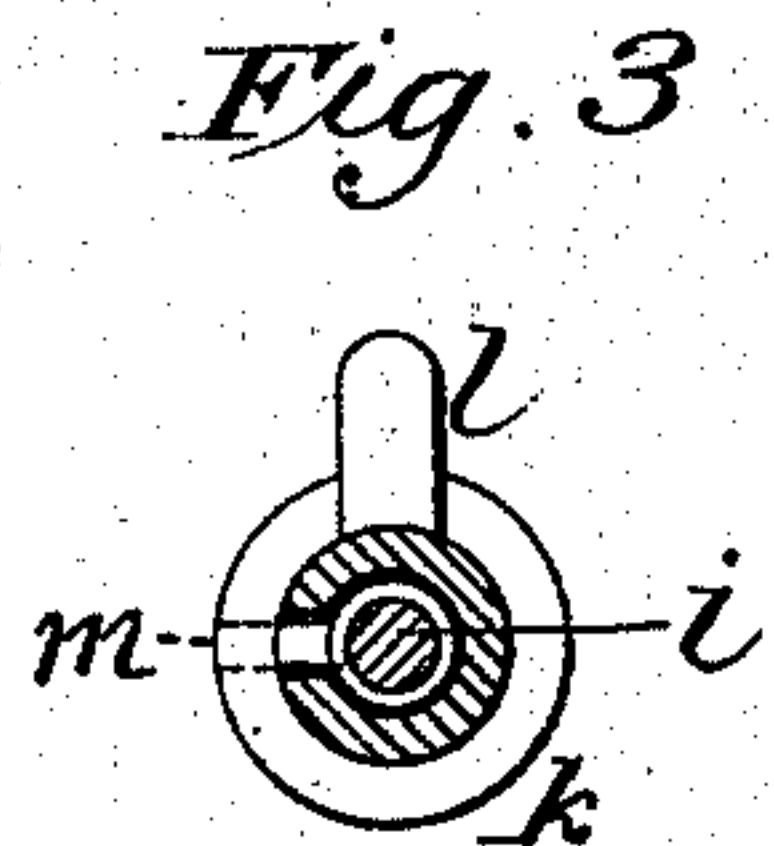
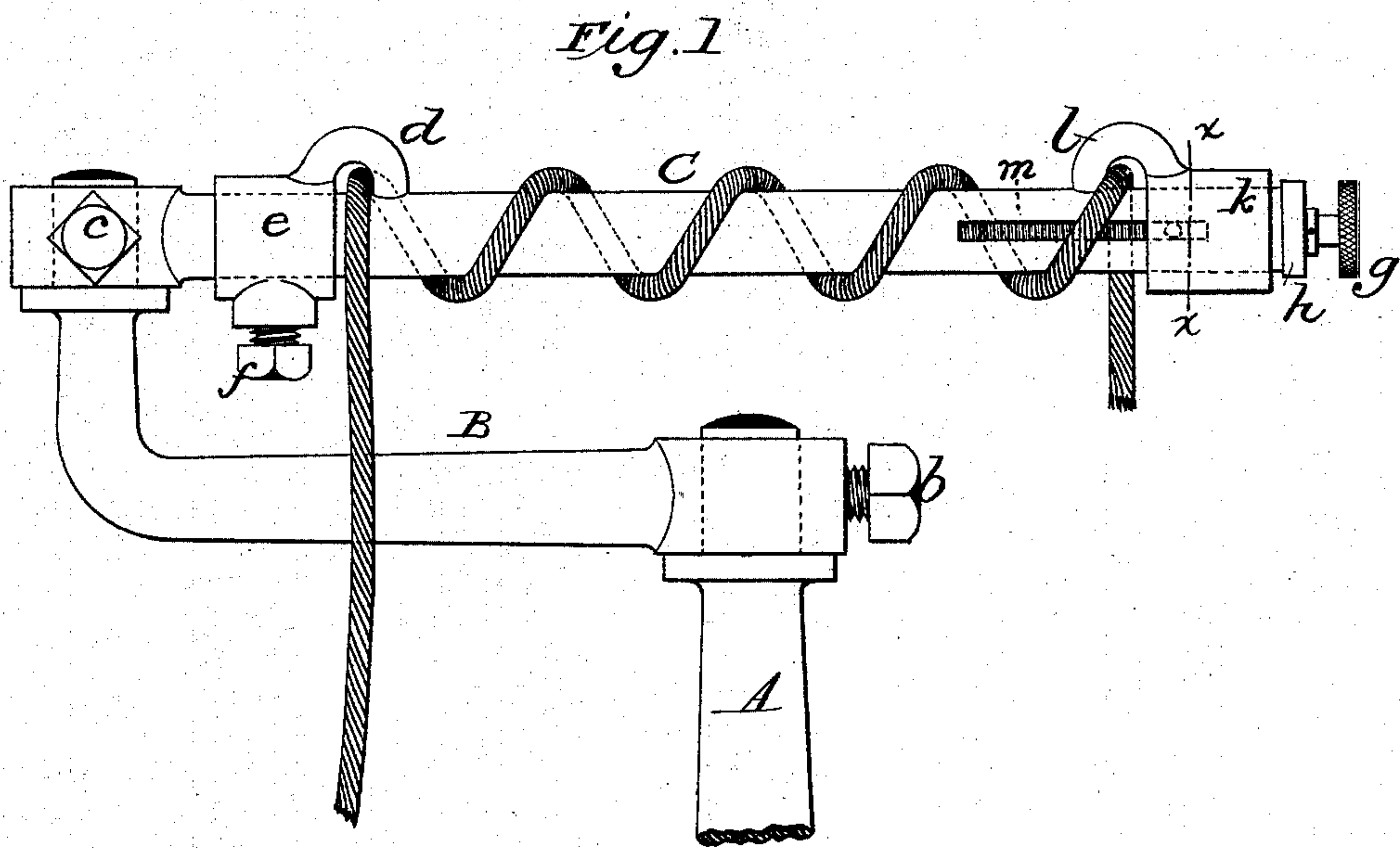
(No Model.)

C. COLAHAN.

TENSION FOR GRAIN BINDERS.

No. 252,018

Patented Jan. 10, 1882.



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TENSION FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 252,018, dated January 10, 1882.

Application filed July 11, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES COLAHAN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Tensions for Grain-Binders and other Machines, of which the following is a specification.

In the practical use of cord-binders a difficulty is found in the tendency of the cord to kink or double up at a point between the spool or ball and the eye of the needle or cord-carrying arm, owing to a change or modification of the twist in the cord induced by the action of the mechanism or the mode in which the cord is drawn from its source of supply. With the usual form of tension devices this kink is further complicated either by the unraveling of the cord when its turned against its twist or by the presence of linty or fuzzy matter scraped off by the tension-jaws.

My invention has for its object to obviate these defects by the employment of means which act to retain the twist in its normal condition or to restore it thereto in opposition to said tendency, and also to provide a better, more facile, and convenient tension device; and it consists in the employment of a cylindrical rod or spindle, about which the cord is wound, provided with means for adjusting the pitch of the coils of said cord prearranged thereupon to determine the friction with which it is pulled therefrom; in combining with a cylindrical rod or spindle, about which the cord is wound as it is led from the spool to the binding-arm, means whereby it may be adjusted radially upon its support to produce a deflection or angle of greater or less extent in the line of the cord as it is drawn, or to adapt itself to the position of the cord box or spool, and means independent of the first whereby it may be adjusted bodily as to its distance from the source of cord-supply; in the mode of preserving the twist in the cord, consisting in laying its coils upon the spindle in the same direction in which its strands are twisted; and in various combinations and details of construction hereinafter pointed out and claimed.

In the drawings, Figure 1 is a side elevation of my improved tension device and its supporting-frame. Fig. 2 is a longitudinal section through the outer end of the spindle, and

Fig. 3 is a transverse section through said spindle on the line *xx* of Fig. 1.

A is a standard or support attached to any suitable part of the harvester-frame. At the head of this standard is pivoted an arm, B, in such manner that it may be swung horizontally or radially, and be secured in any given position in its orbit by means of a clamping-screw, *b*, or other locking device. The outer end of this arm is bent to form a pivotal support for one end of the tension bar or spindle C, which is also locked in any given adjustment in its radial orbit by means of a clamping-screw, *c*, or equivalent, independently of the above-described adjustment of its support.

At the inner end of the spindle, upon its periphery, is an eye, *d*, which may be fixed or adjustable. In the present instance I have shown it as a curved finger projecting from a sleeve, *e*, adjustable along the spindle, and have provided this sleeve with a clamping-screw, *f*, whereby it may be fixed in position.

The outer end of the spindle is made tubular to receive a thumb-screw, *g*, which is held against longitudinal movement by a cap, *h*, or other suitable means, and which takes into a nut or traveler within said tubular portion. Mounted upon the spindle at this end is also a sleeve, *k*, similar to the one first described, and, like it, carrying an eye or eye-forming finger, *l*, closing against the periphery of the spindle. This sleeve is fixed to the block or traveler within the tubular portion by means of a pin or neck passing through a longitudinal slot, *m*, in the wall thereof, so that as the traveler is moved back or forth by the rotation of the screw the sleeve and eye will partake of its motion and be adjusted within the limits determined by the length of the slot, thus being brought nearer to or moved farther away from the opposing eye. The cord from the spool is led first through the eye *d*, then given a number of turns around the spindle, less or more, according to the amount of tension desired, and finally passes out through the eye *l* to the binding-arm or needle. The tension may now be nicely adjusted by means of the screw and movable sleeve, either by shortening the distance between the eyes, which will lessen the pitch of the coils and increase their friction upon the spindle, or by lengthen-

ing said distance, which will have the opposite effect and reduce the friction and consequent tension. The tension may also be modified by the adjustment of the spindle radially, causing a bend or angle in the general trend of the cord, or by adjusting the supporting-arm B, or by a resultant adjustment of these two; or these latter adjustments may be used to bring the cord into proper line for the binding-arm to take it.

In order to prevent kinking, I so wind the cord upon the spindle that the action of the latter as it is drawn thereover has a tendency to preserve or restore the twist—that is, if the tendency to kink is between the spindle and the spool and the cord has a right-hand twist, I wind it upon the spindle in right-hand coils; but if the tendency is between the spindle and the gavel it should under like condition be wound in left-hand coils. With this construction no lint is raised upon the cord, and the tension obtained is very smooth and even and well under control.

It is not necessary that the spindle should have a perfectly cylindrical surface, as good results may be obtained with a spindle oblong or elliptical in cross-section. It should, however, be free from edges or angles which can catch and scrape the cord.

I claim as my invention—

1. In a tension device, the combination of a spindle about which the thread or cord is wound and means for adjusting the pitch of the coils of said cord prearranged thereupon to determine the friction with which it is pulled therefrom.

2. In a tension device, the combination of a rod or spindle about which the cord is wound, means whereby said spindle may be adjusted radially upon its support, and means independent of the first whereby it may be adjusted bodily as to its distance from the source of cord-supply, substantially as and for the purpose described.

3. In a tension device, a spindle about which the cord is wound, eyes at each end of the spindle, between which the coils are confined, and means for adjusting one of said eyes longitudinally of the spindle to increase or diminish the pitch of said coils.

4. The combination of the spindle C, the eyes *d* and *l* thereon, the sleeve *k*, and the adjusting-screw *g*, whereby the latter eye may be moved longitudinally of the sleeve.

5. The combination of the tension-spindle C, its pivotal support B, and the clamping-screw *c*, substantially as described.

6. The combination of the tension-spindle C, its pivotal support B, and clamping-screw *c*, the standard A, to which the latter support is pivoted, and the clamping-screw *b*, whereby their connection is rendered fast.

7. The mode of preventing kinking or unraveling of the cord in its passage from the spool to the binder-arm, consisting in winding it about a tension-spindle in a direction having the described relation to the direction of its twist.

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