(No Model.) 2 Sheets—Sheet 1.

E. P. GLEASON.

DEVICE FOR CONTROLLING THE TENSION OF BELTS OF SPINNING FRAMES OR MULES.

No. 426,440. Patented Apr. 29, 1890.

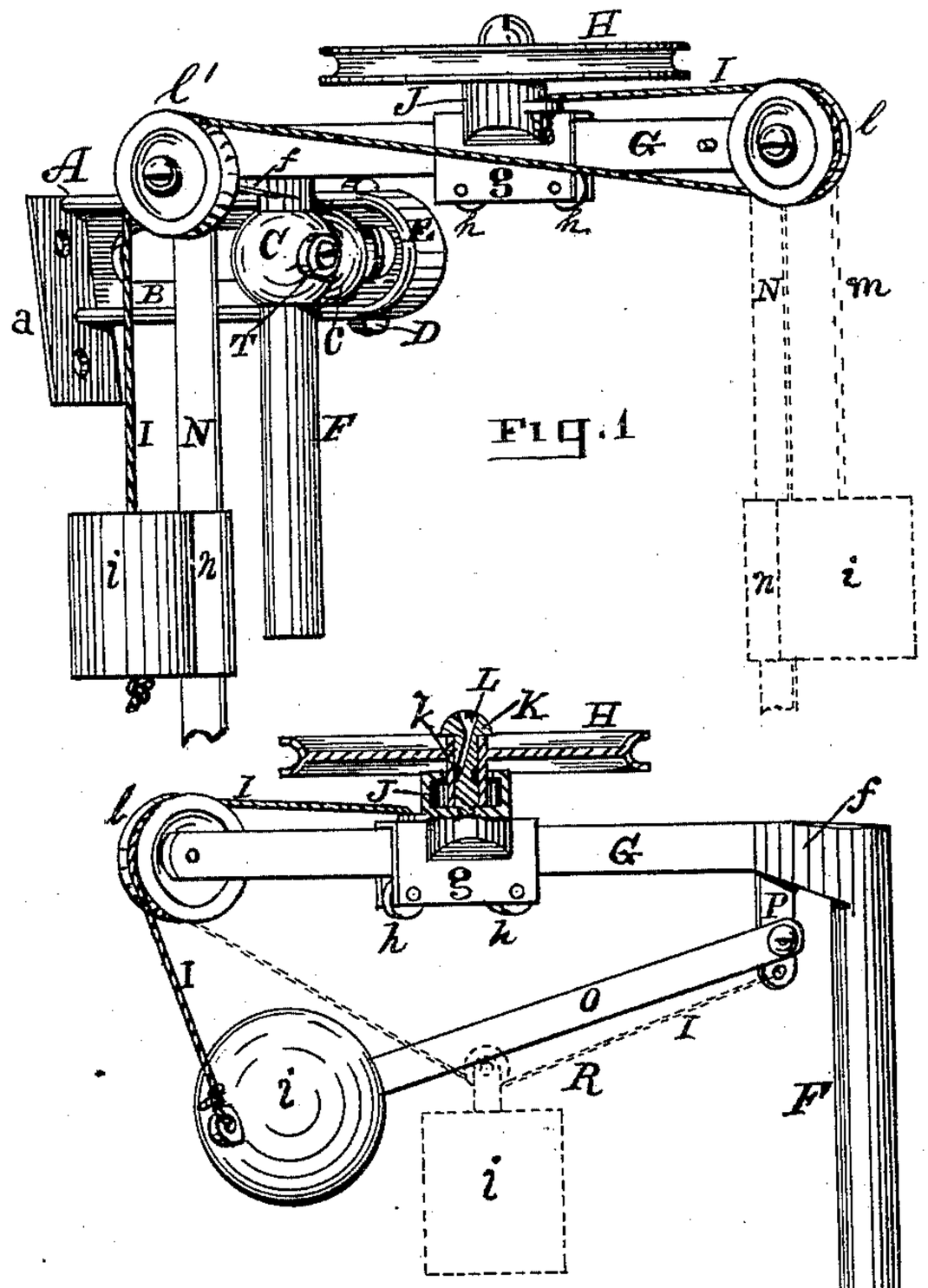

Fig. 1

Fig. 2

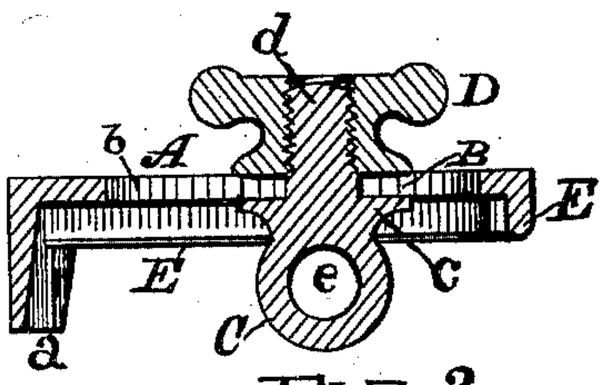

Fig. 3

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(No Model.) 2 Sheets—Sheet 2.

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DEVICE FOR CONTROLLING THE TENSION OF BELTS OF SPINNING FRAMES OR MULES.

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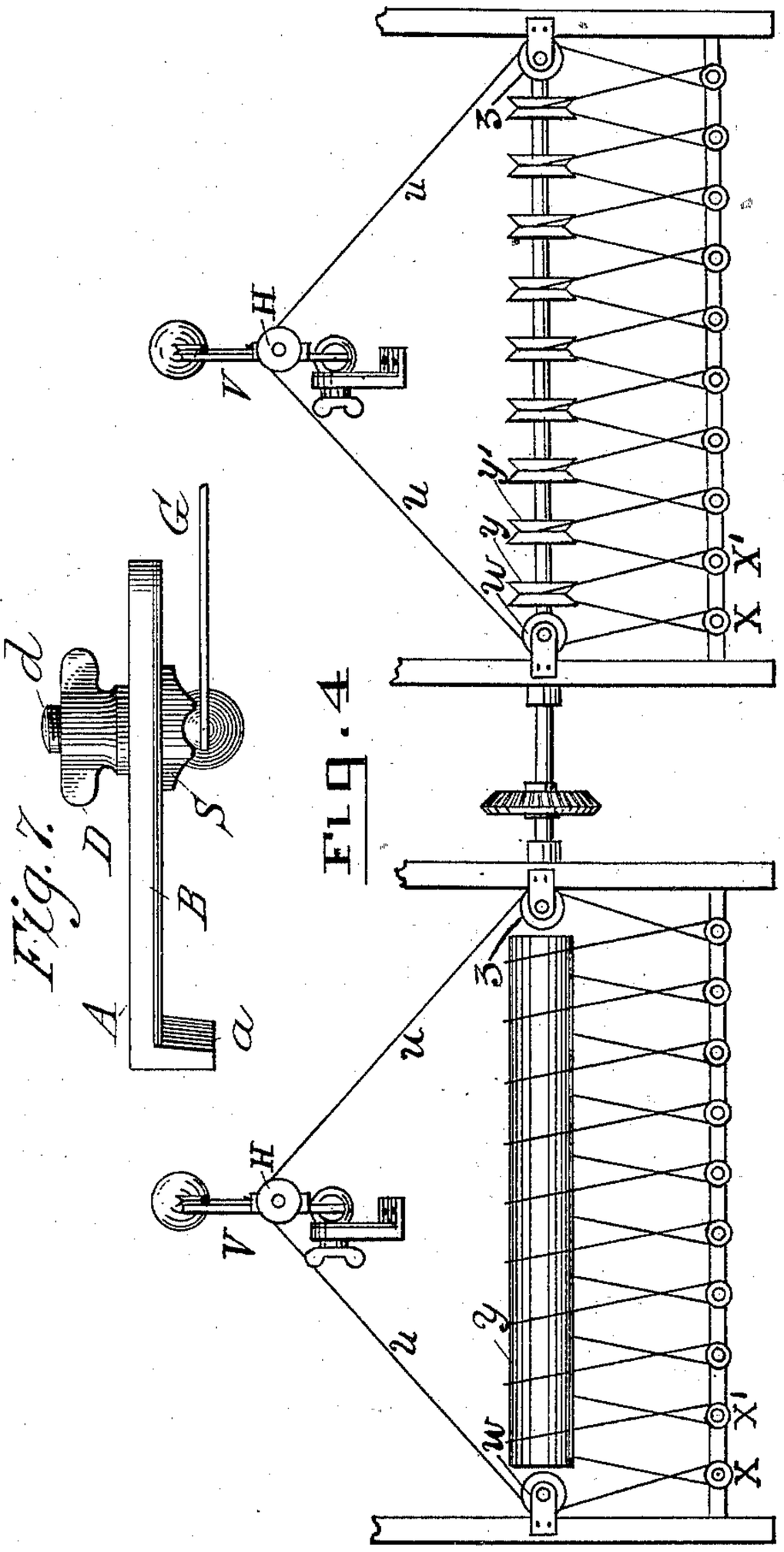

Fig. 4.

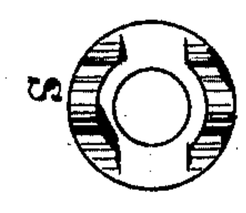

Fig. 6.

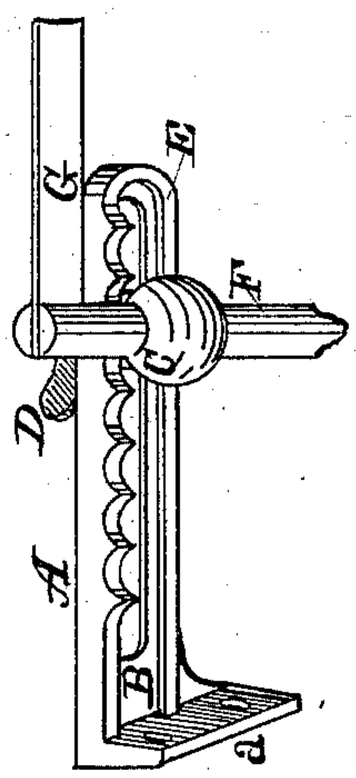

Fig. 5.

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UNITED STATES PATENT OFFICE.

ELLIOTT P. GLEASON, OF NEW YORK, N. Y.

DEVICE FOR CONTROLLING THE TENSION OF BELTS OF SPINNING FRAMES OR MULES.

SPECIFICATION forming part of Letters Patent No. 426,440, dated April 29, 1890.

Application filed June 3, 1889. Serial No. 312,952. (No model.)

To all whom it may concern:

Be it known that I, ELLIOTT P. GLEASON, a citizen of the United States of America, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Devices for Controlling the Tension of the Spindle-Belts of Spinning Frames or Mules, of which the following is a specification.

My invention appertains to spinning frames or mules, and relates more particularly to the devices for controlling the tension of the belts used in driving the whirls or spindles.

Tension devices which are actuated by springs are now known and used in connection with an endless band that drives a series of spindles. These are objectionable, in that the tension produced is variable accordingly as the spring varies in tension. Moreover, when a spring breaks it involves the stopping of the several spindles until the tension device can be taken off, repaired, and replaced.

It is a common practice to employ weights as the actuating means for controlling the tension of belts used on stationary machinery; but I am not aware that any attempt has heretofore been made to use weights in connection with the spindle-belt tension devices of a spinning-mule, which, being a moving machine that travels back and forth on a track with considerable speed and is arrested with more or less suddenness at each end of the track, would cause a weight suspended by a cord in the ordinary way from any part of the machine to vibrate so violently that a jerky tension would be produced and other parts of the mechanism of the machine interfered with. Now, the object of my invention is to overcome these difficulties and to produce a tension-controlling device for the spindle-belts of spinning-mules having a weight as an actuating force, thus securing not only evenness of tension, but avoiding liability to accidental breaking of any part which cannot be quickly replaced and without removing the device.

My invention consists in the means whereby hurtful vibration of the weight is prevented, and in the construction, arrangement, and combination of parts, as hereinafter described, and pointed out in the claims.

In the drawings herewith, forming part of this specification, Figure 1 is a perspective view of the preferred form of a complete belt-tension-controlling device. Fig. 2 is a perspective view of a portion of the same, showing other forms of construction of means for preventing vibration of the weight. Fig. 3 shows one form of construction of the supporting-bracket, eyebolt, and thumb-nut. Fig. 4 represents a plan view of two sections of a spinning-mule with my belt-tension-controlling devices connected. Fig. 5 shows another form of supporting-bracket. Fig. 6 shows a form of friction-washer which may be used on the eyebolt. Fig. 7 shows another form of eyebolt.

Like letters represent similar parts in all the figures.

A is a bracket provided with the flange *a*, whereby it is secured to the frame of the spinning-mule. The arm B, projecting from this flange a suitable distance, is slotted to receive the eyebolt C, the slot *b* being long enough to permit considerable backward or forward adjustment of the eyebolt C, which is so made that it may be adjusted either lengthwise of the seat or in rotary direction and firmly clamped to the arm B in the desired position by means of the thumb-nut D, with which it is provided, a shoulder-flange *c* being formed for this purpose between the eye and the screw-threaded portion *d* of the bolt. In order to retain strength and obtain lightness, I make the arm B of the bracket with a rib or flange E around its edge. The eye *e* in the eyebolt is adapted to receive the shank F, attaching the arm B and slide-bar G, and in such manner that the shank may be adjusted either in rotary or longitudinal directions and firmly secured in the desired position. It will be seen that this construction and arrangement admit of universal movement of the slide-bar G, so that it may be set in any position or inclination required. This slide-bar G carries the slide-box *g*, to which the belt-tightening pulley H is pivoted. This slide-box *g*, I prefer to make, as shown, by bending a piece of sheet metal to form three sides of a parallelogram fitting free but snugly to the slide-bar, but with its sides extending below a sufficient distance to receive the anti-friction rollers *h h*. It is provided with suitable means for attaching a cord I, which con-

nects the weight *i*. An oil cup or chamber J, the interior bottom of which forms the step or seat bearing for the end of the hub of the pulley H, is firmly fixed to this slide-box *g*, the stud or screw K, forming the pivot for the pulley H, being fixed concentric within the chamber. This stud K has an oil-groove *k* around it, forming an annular chamber, communicating with which is the oil-channel L, the outer end of which may be enlarged to afford convenience for inserting the spout of an oil-can. This channel L passes through the interior of the head and upper portion of the stud K. The cord I is carried from the slide-box over one or more pulleys *l l'*, as the case may be, whether it is desired to drop the weight from the inner or the outer end of the slide-bar. If from the outer end, but one pulley *l*, fixed at the outer end of the slide-bar, is required, the weight then being suspended just beneath, as indicated by the dotted lines at *m*, Fig. 1; but if from the inner end, as is preferable in most cases, then the other pulley *l'* is required, and in either case a guiding-rod N, upon which the weight *i* is made to slide, is firmly fixed to the corresponding end of the slide-bar, and this guiding-rod N serves to prevent the vibration of the weight, notwithstanding the shocks consequent upon the change in motion of the spinning-mule, the weight being provided with a guiding channel or casing *n*, which slips snugly but freely over the guiding-rod N.

Other forms of guiding the weight, and to a greater or less extent effecting the same result, are shown in Fig. 2, where *o* represents a lever pivoted at one end to a fixed stud P, the free end of which carries the weight *i*, and at the dotted lines R showing also how the effect may in a measure be secured by the arrangement of the cord I through a pulley on the weight *i*.

It will be apparent that when the eyebolt C and shank F are in proper position they must be rigidly secured so that they will remain so. A set-screw, as shown at T, Fig. 1, made to screw through the eye-body of the eyebolt against the shank F, will hold said shank firmly in position, and the nut D, when screwed up tight, will clamp the bracket between itself and the shoulder C of the eyebolt, thus holding the eyebolt firmly in position; but I prefer either of the forms shown by Figs. 5, 6, and 7, which are modifications of the bracket and eyebolt that may be used, if desired.

S is a washer having projections raised on one side, said projections having curved indentures in their outer faces made to fit the curve of the shank F. This washer (shown by Fig. 6) may be, as shown in Fig. 7, used instead of the set-screw T (shown in Fig. 1) to clamp the shank firmly in position by placing it between the slotted arm of the bracket A and the shank F, the shank F resting in the curved indentures of the said projections. Thus arranged, it will seem that when the nut D of the eyebolt C is screwed up tight the washer S will be firmly clamped between the arm B and the shank F. Thereby the shank will be held firmly in whatever position it may be placed by reason of the clamping-pressure.

At Fig. 5 another construction of the arm B is shown. This construction somewhat limits the range of movement of the shank F. In this case rim E of the bracket-arm B is provided on one or both sides with a series of curved depressions corresponding to the curved surface of the shank F, into one of which the shank itself is clamped against the side of the bracket-arm B by the screwing up of the nut on the eyebolt D, and thus is firmly held in position.

The complete tension-controlling device (indicated by V in Fig. 4) is attached to the frame of the spinning-mule in such position that the belt U can be trained around its pulley H, thence successively around an idler *w*, a spindle-whirl *x*, the driving drum or pulley *y*, back around another spindle-whirl *x'*, then again around the drum or pulley *y'*, and so on until the whole series of spindle-whirls are embraced, then around another idler *z*, and back to the pulley H, there joining in one continuous belt, which is maintained in even tension by the gravitation of the weight actuating the slide-box *g* through the cord I, so that it is drawn outward on the slide-bar G whenever any stretching of the belt occurs.

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

1. A device for controlling the tension of the spindle-belts on spinning frames or mules, consisting of a slotted bracket, as A, an eyebolt, as C, having the nut D, a shank, as F, supporting the slide-bar G, a slide-bar, as G, provided with the pulley *l*, a slide-box, as *g*, carrying the belt-tightening pulley H, a cord, as I, connecting the slide-box to a weight, and the weight, as *i*, the said parts all being combined and arranged substantially in the manner and for the purpose described.

2. In a device for controlling the tension of the spindle-belts of spinning frames or mules, a tightening-pulley, as H, pivot, as K, having the groove *k*, forming an annular chamber, and an interior oil-channel L, in combination with a sliding support, as the box *g*, having an oil-cup J, the chamber-bottom of which serves as the seat or bearing for the hub of the pulley H, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 15th day of February, 1889.

ELLIOTT P. GLEASON.

Witnesses:
F. W. BELMONT,
F. A. WETTACH.