No. 810,695. PATENTED JAN. 23, 1906.

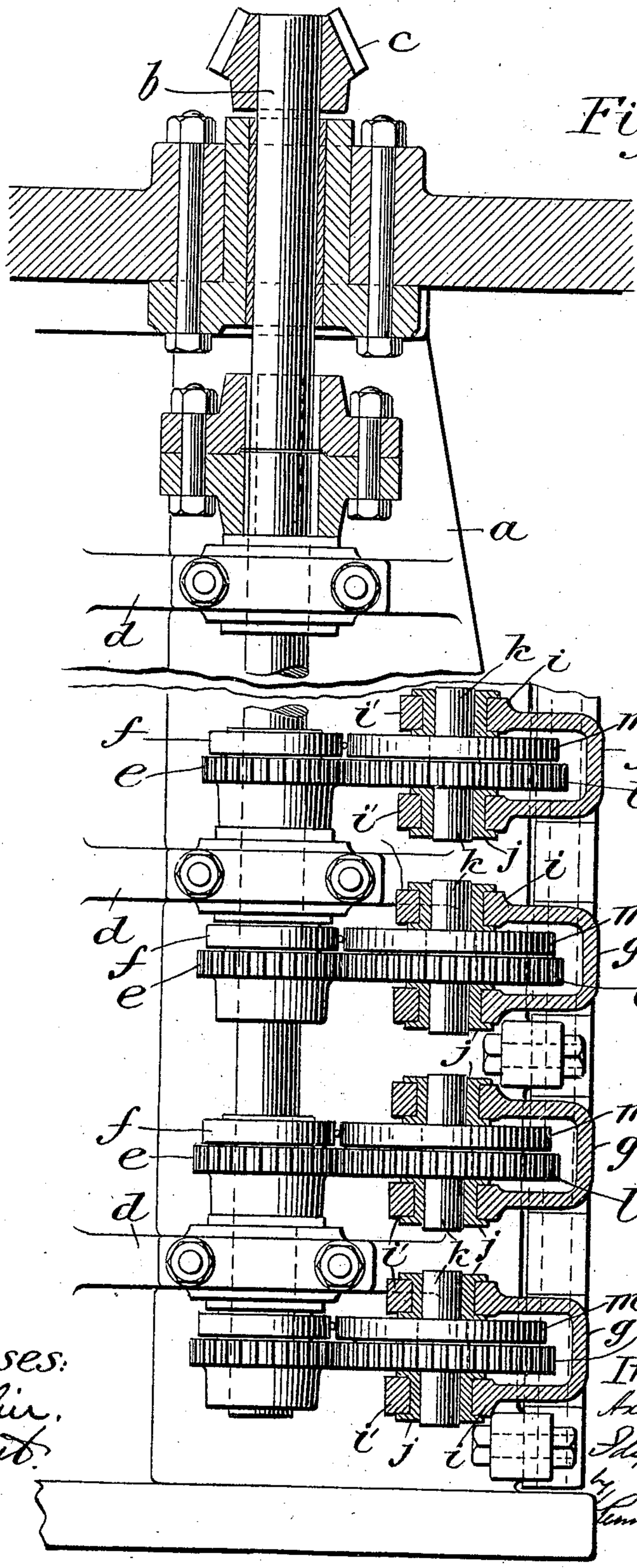
A. F. BACKLIN & I. EKLUND.

TENSION MECHANISM FOR WIRE FENCE MACHINES.

APPLICATION FILED AUG. 21, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 3.

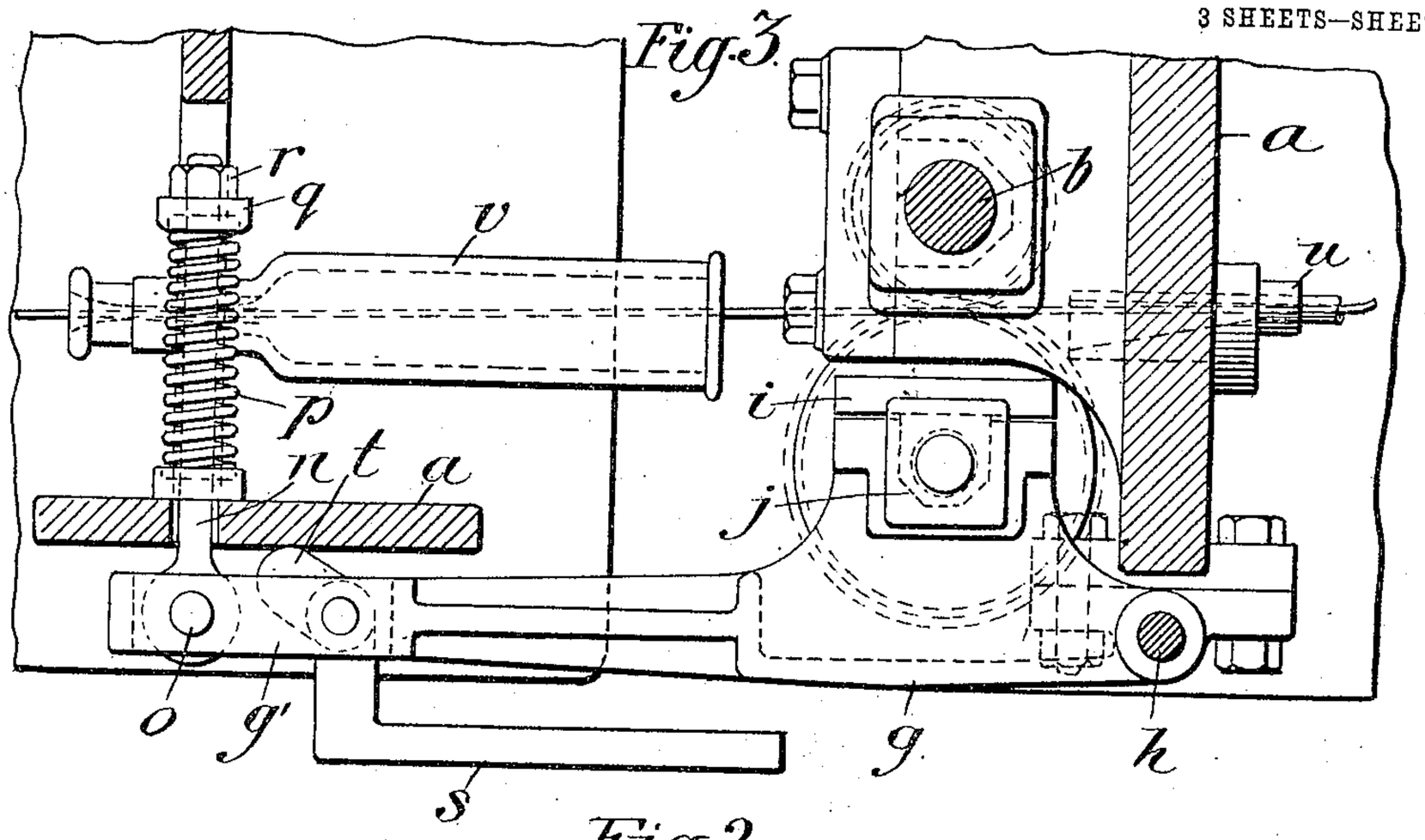
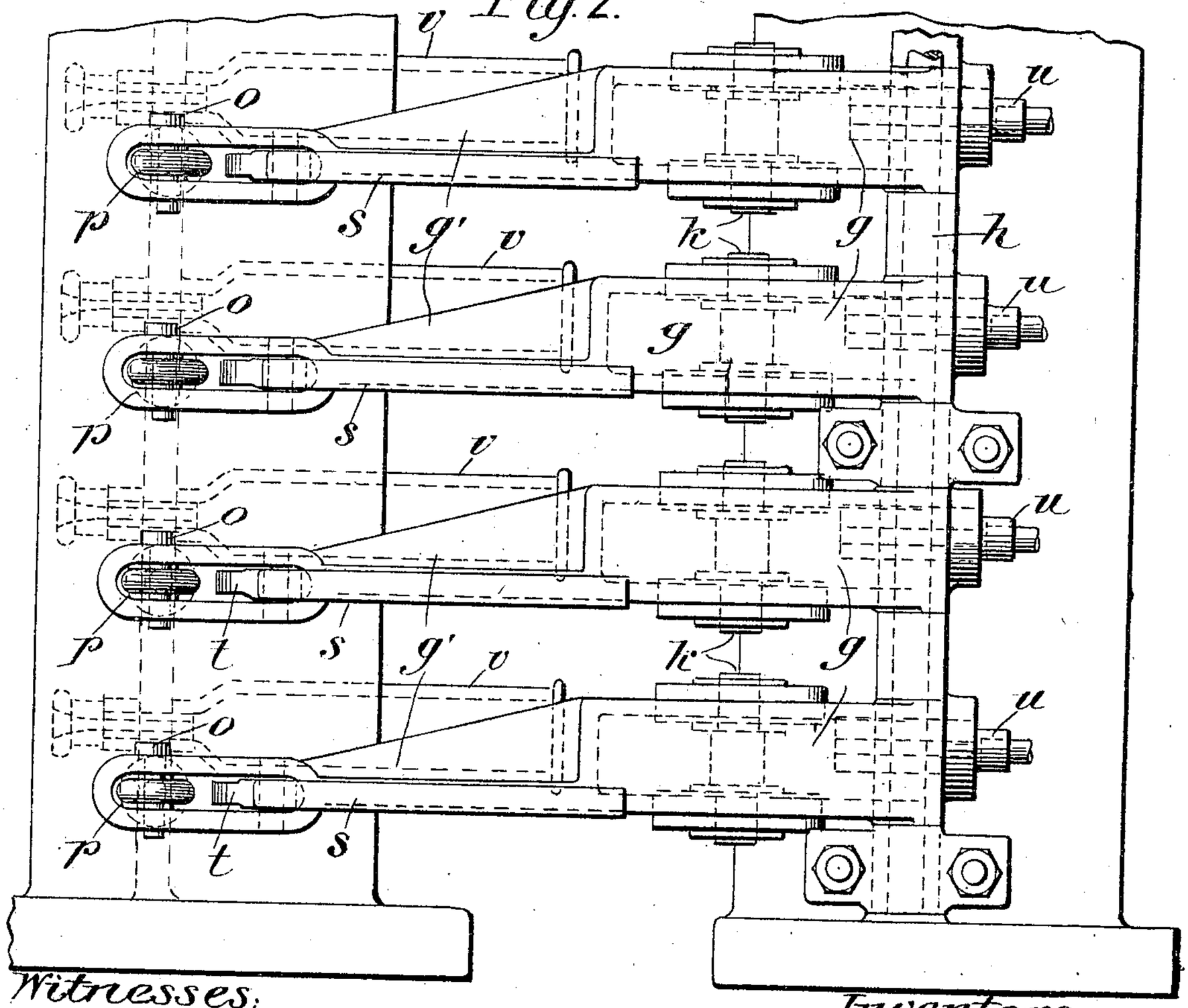


Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

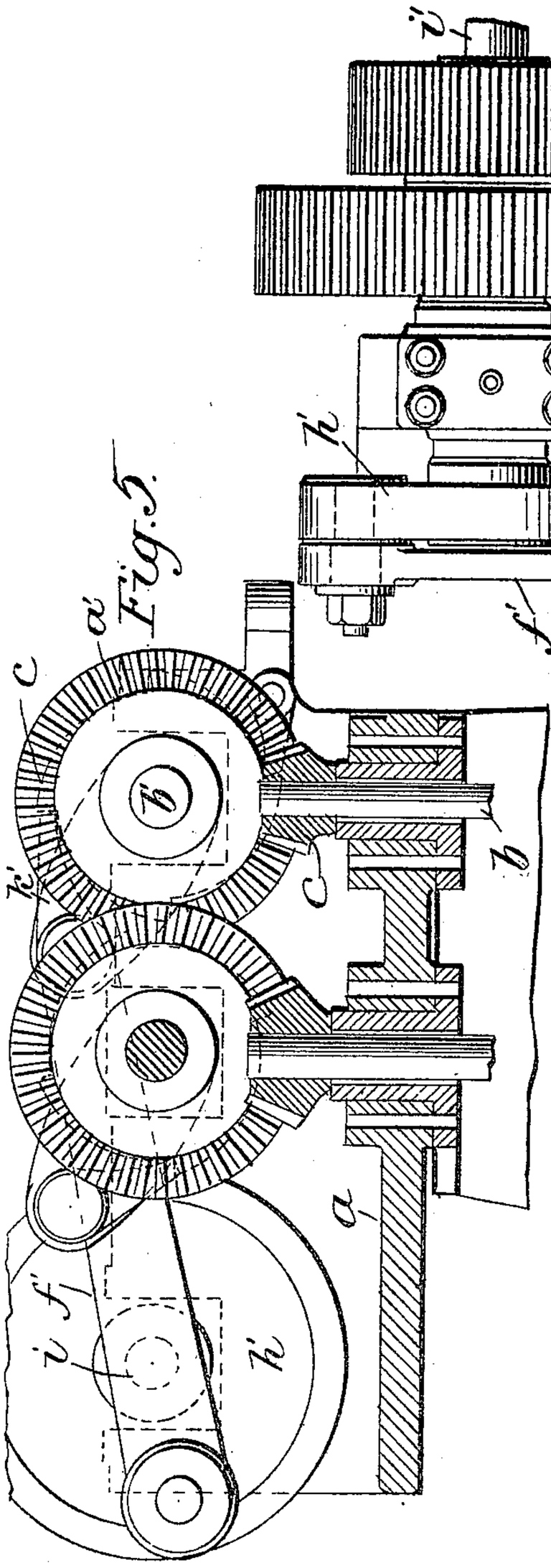

Fig. 4.

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UNITED STATES PATENT OFFICE.

AXEL F. BACKLIN AND IDOFF EKLUND, OF WORCESTER, MASSACHUSETTS, ASSIGNORS TO THE AMERICAN STEEL & WIRE COMPANY OF NEW JERSEY, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

TENSION MECHANISM FOR WIRE-FENCE MACHINES.

No. 810,695. Specification of Letters Patent. Patented Jan. 23, 1906.

Application filed August 21, 1905. Serial No. 275,006.

To all whom it may concern:

Be it known that we, AXEL F. BACKLIN and IDOFF EKLUND, citizens of the United States, residing at Worcester, county of Worcester, State of Massachusetts, have invented certain new and useful Improvements in Tension Mechanism for Wire-Fence Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to improvements in wire-fence machines of the type covered by patent to A. J. Bates, granted October 19, 1897, Serial No. 591,996, and more particularly to the tension mechanism by means of which the stay-wires are fed into position to be interlocked with each other and with the strand-wires through the operation of the twisters. In machines of this general type which are adapted for making different spaces between the stay-wires the necessary adjustments of the feed and tension devices could not be effected with expedition, as in the old forms of machine it required time and involved much difficulty to substitute different sizes of feed-rolls for varying the rate of feed of the stay-wires and also for regulating the tension thereof, and, furthermore, as the feed-rolls became worn it was found extremely difficult to make quick tension-adjustments. The present invention was designed to obviate these difficulties by providing a feed and tension device for the stay-wires of such a character that the necessary changes for different spacing between the stays may be effected with great facility and the tension of the feed-rolls may be quickly and accurately adjusted at all times. To this end the tension mechanism comprises a shaft having feed-rolls thereon, a series of pivoted levers each having a feed-roll thereon coöperating with a corresponding feed-roll on the shaft, and means for adjusting the pivoted levers relatively to said shaft to vary the tension of said rolls, the common feed-roll shaft and the various feed-rolls mounted upon the pivoted levers being readily removable to permit other rolls of different sizes to be applied.

In the accompanying drawings, Figure 1 is a front elevation, partly in section, of the forward end of a wire-fence machine, showing the invention applied thereto. Fig. 2 is a side elevation thereof. Fig. 3 is a horizontal section. Fig. 4 is a plan view showing the mechanism for operating the feed-roll drive-shaft, and Fig. 5 is a vertical section on line 5 5 of Fig. 4.

Referring to the drawings, *a* indicates the framework of the machine, having the usual top and bottom plates.

b indicates the vertical shaft, journaled on the machine-frame and preferably formed of sections united by a suitable coupling to facilitate the removal of the portion thereof containing the feed-rolls.

Secured to the upper end of the shaft *b* above the top plate of the machine is a bevel-pinion *c*, by means of which intermittent rotatory movement is imparted to said shaft, as will be more particularly explained hereinafter.

Mounted at suitable intervals along the shaft *b* are series of feed-rolls *f*, having formed therewith spur-gears *e*.

Pivoted upon a common shaft *h*, mounted on the side of the machine-frame, are a series of levers *g*, each comprising two lateral projections *i*, forming, with cap-pieces *i'*, suitable stub-shaft bearings, and a rearwardly-extending arm *g'*, provided with a slot at its end. Mounted in the yoke-like portions of each lever *g* is a stub-shaft *k*, journaled in bearings or brasses *j*, and upon each of said stub-shafts is mounted a feed-roll *m*, coöperating with the corresponding feed-roll *f* on the shaft *b*, and below said feed-roll *m* is a pinion *l*, meshing with and driven by the spur-gear *e*, corresponding thereto, on the shaft *b*.

Secured to the forward slotted end of each lever *g*, by means of a pin *o*, is an eyebolt or rod *n*, which passes through a suitable hole in the side wall of the machine-frame and has mounted thereon a helical spring *p*, which is confined between the machine-frame and a washer *q* on the bolt by a set-nut *r*, by means of which the tension of said spring may be varied at will to correspondingly vary the tension on the feed-roll *m*. By increasing the tension of the spring *p* it will be seen that the feed-roll *m* will be held with greater force in contact with the wire strand that is being

fed between said feed-roll *m* and its mating roll *f*, and, correspondingly, if the tension thus impressed upon the wire is found to be too great it may be readily regulated by slacking up the set-nut *r* and relieving the tension of the spring *p*.

In order to introduce the stay-wires between the respective sets of feed-rolls, special means are provided for throwing each set of feed-rolls temporarily out of gear. In its preferred form this means consists of a lever *s*, pivoted in the slotted end of lever *g* and having a camming end *t*, which engages the side wall of the machine-frame when said lever *s* is moved outwardly, to swing lever *g* laterally away from the machine-frame against the tension of spring *p*, thereby moving feed-roll *m* sufficiently far away from its mating roll *f* to permit the wire to be introduced between said feed-rolls. After this has been accomplished lever *s* is moved back to its normal position, whereupon spring *p* swings lever *g* inward to bring feed-roll *m* into proper relation to engage the wire between its peripheral edge and that of its mating roll *f*.

When it is desired to change the spacing between the stay-wires, it will be necessery, of course, to change the rate of feed of said stay-wires, which in turn will involve a change in the relative sizes of the feed-rolls. To effect this, the lower section of shaft *b*, with its attached feed-rolls, is removed and a similar shaft having rolls of the proper size thereon substituted. Each of the stub-shafts *k* is removed from its bearings in the corresponding levers *g* and other stub-shafts having the proper-sized feed-rolls thereon to coöperate with the substitute rolls *f* slipped in position. To effect this latter operation expeditiously, the levers *g* are swung out on their pivotal connections with the shaft *h* by releasing the bolts *n* from their connections with the ends of the said levers by simply lifting out the pins *o*, connecting said bolts to the respective levers. The various cap-pieces *i'* are then removed and the stub-shafts with their attached feed-rolls taken out of the bearings and the substitute rolls inserted, after which the levers are severally reconnected to their tension-bolts *n*. Should the feed-rolls become worn and the tension on the wire be decreased for this reason, it may be regularly brought up to the required point by increasing the tension on spring *p*, as heretofore described.

It will be understood that the feed-rolls *f* and *m* are driven with an intermittent motion to feed the stay-wires forward during the intervals while the coilers are idle and to remain themselves idle during the coiling operation. The intermittent motion of the feed-rolls is effected by means of a bevel-gear *a'*, meshing with the pinion *c* at the end of shaft *b*, said gear *a'* being mounted upon a counter-shaft *b'*, journaled in stand-bearings on the top plate of the machine-frame. Said shaft *b* is given a partial rotation for each operation of the machine by means of a ratchet *c'*, fixed to said shaft, which is picked forward one quarter of a turn for each operation by means of a pawl *k'*, mounted upon arms *e'* of an oscillatory sleeve *d'*, surrounding said shaft *b'*, which arms *e'* are likewise connected by a pitman *f'* to a crank-disk *h'*, mounted upon the shaft *i'*, which is directly driven from the main power-shaft of the machine.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. Tension mechanism for wire-fence machines, comprising a shaft, feed-rolls thereon, a series of pivoted levers each having a feed-roll thereon coöperating with a corresponding feed-roll on the shaft, gears connecting the respective lever-supported feed-rolls with the shaft, and means for adjusting the pivoted levers relatively to said shaft to vary the tension on said rolls.

2. Tension mechanism for wire-fence machines, comprising a shaft, feed-rolls thereon, a series of pivoted levers each having a feed-roll thereon coöperating with a corresponding feed-roll on the shaft, gears connecting the respective pairs of rolls, and means for adjusting the pivoted levers relatively to the shaft to vary the tension on said rolls.

3. Tension mechanism for wire-fence machines, comprising a shaft, feed-rolls thereon, a series of pivoted levers each having a feed-roll thereon coöperating with a corresponding feed-roll on the shaft, gears connecting the respective lever-supported feed-rolls with the shaft, and a yieldable adjustable connection between each lever and the machine-frame to vary the tension on said rolls.

4. Tension mechanism for wire-fence machines, comprising a shaft, feed-rolls thereon, a series of pivoted levers each having a feed-roll thereon coöperating with a corresponding feed-roll on the shaft, a yieldable adjustable connection between each lever and the machine-frame to vary the tension on said rolls, and a cam device coöperating with each lever and the machine-frame to move said lever independently of said connection.

5. Tension mechanism for wire-fence machines, comprising a shaft, feed-rolls thereon, a series of pivoted levers each having a feed-roll thereon coöperating with a corresponding feed-roll on the shaft, a yieldable adjustable connection between each lever and the machine-frame to vary the tension on said rolls, and means independent of said connection for moving each of said levers to separate the corresponding rolls.

6. Tension mechanism for wire-fence machines, comprising a shaft, feed-rolls thereon, a series of pivoted levers each having a feed-roll thereon coöperating with a corresponding feed-roll on the shaft, gears connecting

the respective lever-supported feed-rolls with the shaft, a bolt connected to each lever and passing through the machine-frame, and an adjustable spring connecting each bolt with the machine-frame, whereby the tension of said rolls may be varied.

7. Tension mechanism for wire-fence machines, comprising a shaft, feed-rolls thereon, a series of pivoted levers each having a feed-roll thereon coöperating with a corresponding feed-roll on the shaft, a bolt connected to each lever and passing through the machine-frame, an adjustable spring connecting each bolt with the machine-frame to vary the tension of said rolls, and a cam-lever pivoted to each lever and coöperating with the machine-frame to move said lever in opposition to the spring-and-bolt connection.

8. Tension mechanism for wire-fence machines, comprising a series of driving feed-rolls, a coöperating series of driven feed-rolls, and pivoted adjustable bearings for varying the distance between the axes of the respective series of rolls, whereby said rolls may be replaced by other rolls of different diameters.

9. Tension mechanism for wire-fence machines, comprising a series of driving feed-rolls, a coöperating series of driven feed-rolls, and pivoted levers supporting the latter series of rolls, whereby the distance between the axes of the respective series of rolls may be varied to permit rolls of different diameters to be substituted.

In testimony whereof we affix our signatures in presence of two witnesses.

AXEL F. BACKLIN.
IDOFF EKLUND.

Witnesses:
WM. A. BACON,
CHAS. M. BOOTH.