No. 808,892. PATENTED JAN. 2, 1906.

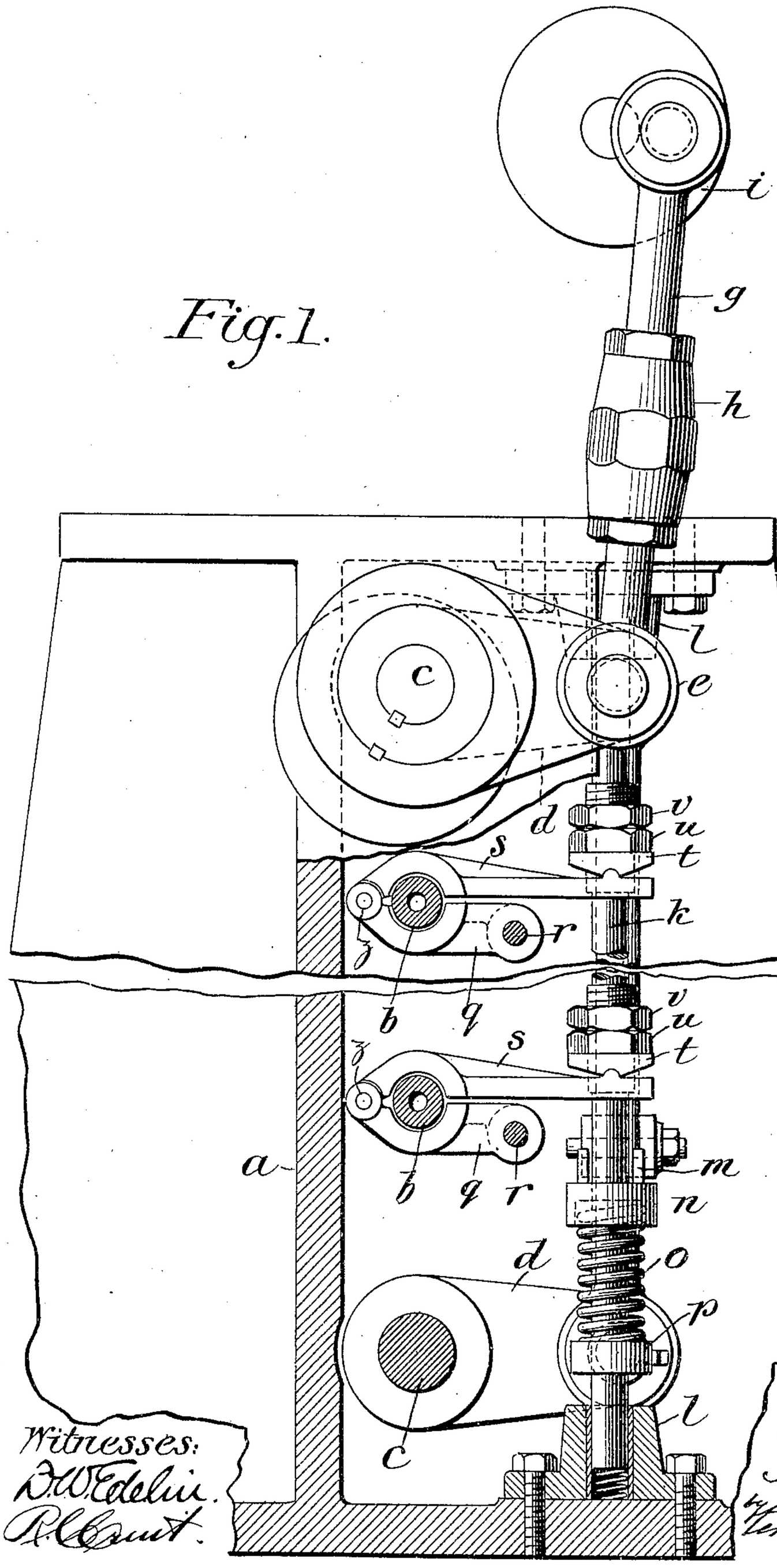
A. F. BACKLIN & I. EKLUND.

SPINDLE BRAKE DEVICE FOR WIRE FENCE MACHINES.

APPLICATION FILED AUG. 21, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



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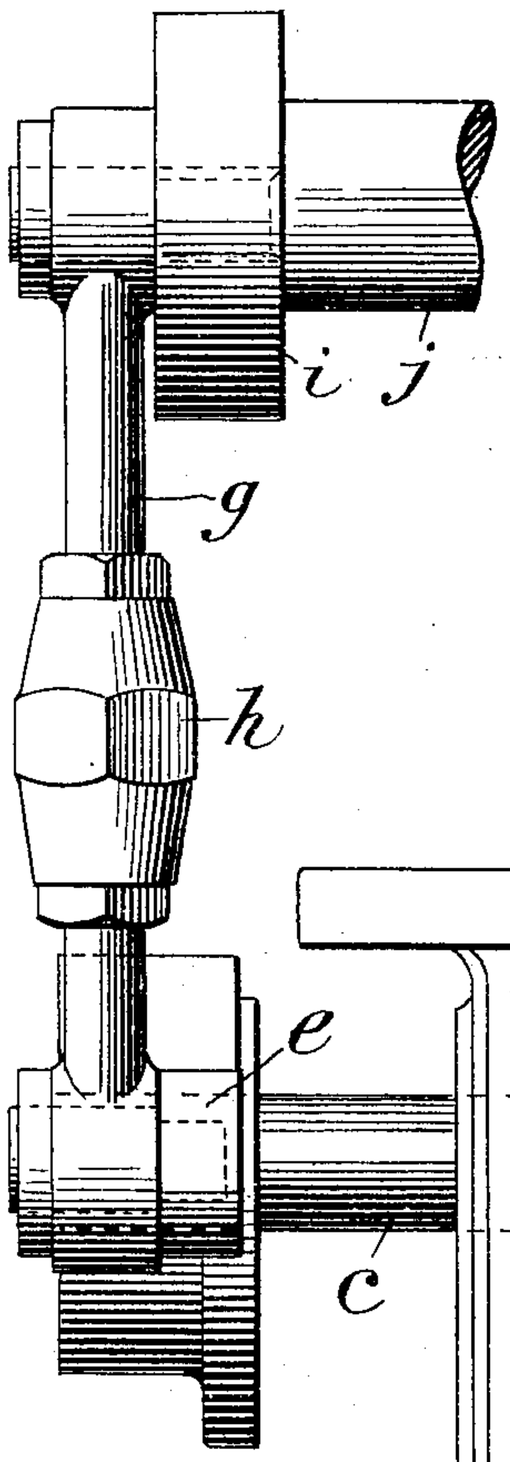
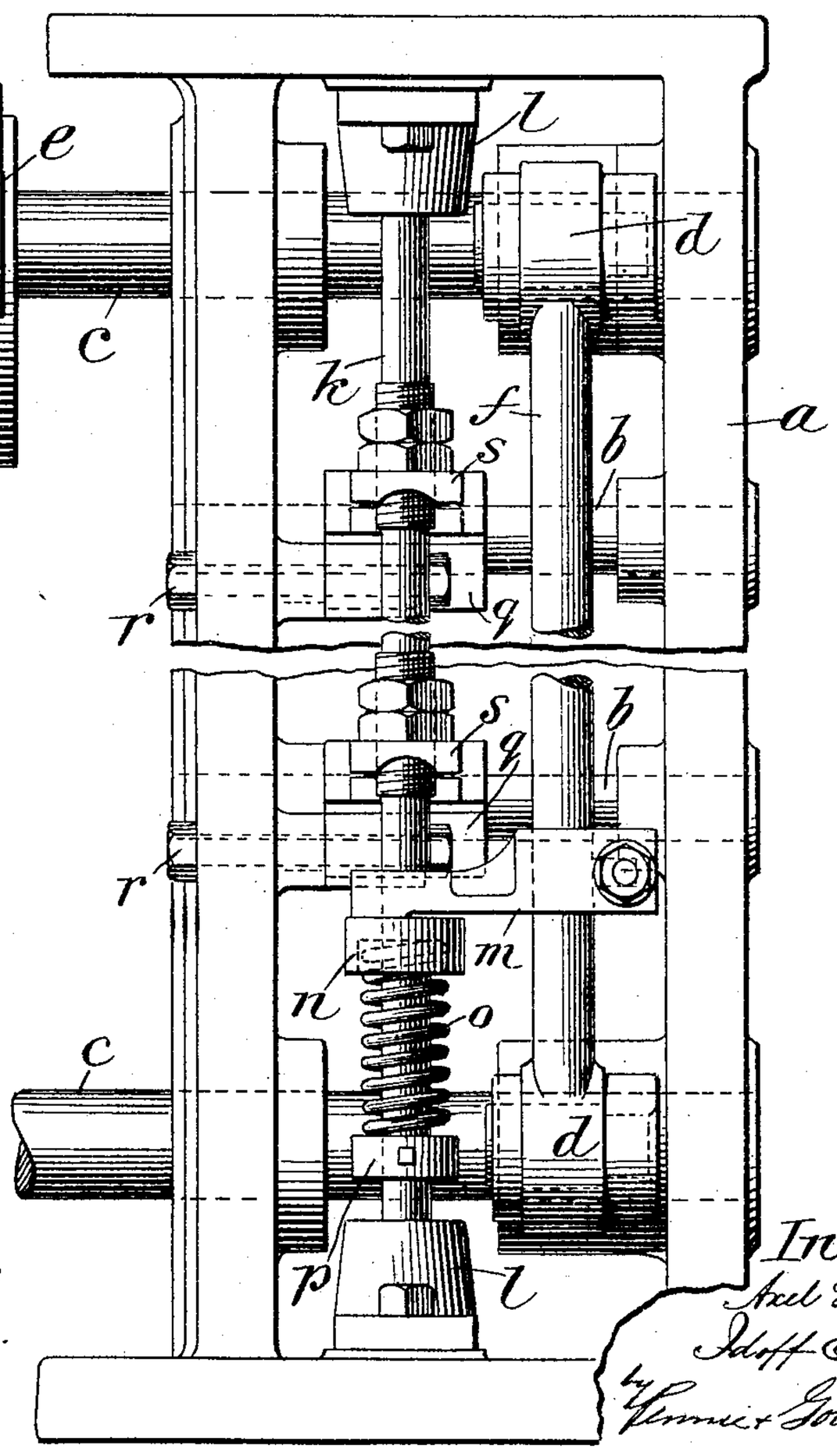


Fig. 2.



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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.

SPINDLE-BRAKE DEVICE FOR WIRE-FENCE MACHINES.

No. 808,892. Specification of Letters Patent. Patented Jan. 2, 1906.

Application filed August 21, 1905. Serial No. 275,004.

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 Spindle-Brake Devices 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 object of the present invention is to provide brake mechanism for the twister-spindles of wire-fence machines of the general type described and claimed in Letters Patent of A. H. Bates, No. 577,639, dated February 23, 1897, and No. 591,996, dated October 19, 1897, which machines are employed for the production of a completed fencing or fence fabric, consisting generally of a plurality of parallel longitudinal strand-wires spaced suitable distances apart and having transverse stay-wires or braces spanning the spaces between the strand-wires and self-secured thereto, said stay-wires consisting of short lengths of wire extending from one strand to the next and having their opposite ends coiled around adjacent strand-wires and preferably intercoiled with each other, so that the stay-wires extend across the width of the fabric in continuous unbroken lines. The junction of the stay-wires with the strand-wires and with each other is effected by means of coiler-spindles, which are fully described as to details of construction and particular mode of operation in the patents referred to. The coiler-spindles are usually operated by means of a reciprocating rack, which is alternately engaged with and disengaged from the respective coiler-spindles. It has been found desirable to apply braking mechanism to the coiler-spindles in order to stop the same immediately after they are disengaged from the driving-rack—that is to say, when the coiling operation has been completed. The brakes heretofore employed for this purpose have been found more or less objectionable, in that they are constantly in engagement with the spindles, and therefore absorb power, even during the coiling operation.

The present invention is designed to provide a brake for each coiler-spindle that is held out of engagement with said spindle during the coiling operation and is applied to check the spindle only when the coiling operation has been completed and when the apparatus for cutting the stay-wires is brought into operation, and preferably the brakes are applied simultaneously with the operation of the stay-wire cutters through suitable connections between each of said brakes and the mechanism for actuating a stay-cutter bar.

In the accompanying drawings, Figure 1 is a partial elevation of the spindle end of a wire-fence machine, showing the invention applied thereto. Fig. 2 is a side elevation showing the same apparatus.

Referring to the drawings, *a* indicates the frame of the machine, which carries the twister-spindles *b*, as will be understood by reference to the patents hereinabove noted. But two of such spindles are illustrated in the drawings in order to avoid confusion, and only so much of the mechanism of the complete fence-machine is illustrated as is necessary to operate the invention and to clearly illustrate its relative arrangement and coöperation with the coiler-spindles.

c c indicate two shafts located at the upper and lower portions of the frame *a*, which shafts are connected with a bar which carries the movable cutters coöperating with the stationary cutters to sever the stay-wires at the proper time. These shafts are connected for simultaneous oscillation by a connecting-rod or pitman *f*, attached to cranks *d d* on the respective shafts, and the upper shaft is provided with a crank *e*, connected by pitman *g* with a crank *i* of shorter throw than the said crank *e*, mounted upon a counter-shaft *j*, which receives rotary motion from the main shaft of the fence-machine.

As will be understood by those familiar with this class of machine, the coiler-spindles *b* serve to twist the ends of the spindles together and about the longitudinal strand-wires, and when this twisting operation is completed the rotatory motion of shaft *j*, derived from the main drive-shaft of the machine, causes crank *i* to rock crank *e* and upper shaft *c*, from which a like rocking motion is imparted to lower shaft *c*, and as these two shafts *c* are suitably connected to the cutter-bar the latter

is moved to bring its knives into coöperative engagement with the fixed knives to sever the stay-wires. During the time the coiling operation is being carried out it is obvious that the coiler-spindles should be perfectly free to rotate, and it is likewise evident that the rotatory motion of these spindles should be arrested as soon as the coiling operation is completed. In order to effect these results, each coiler-spindle *b* is provided with a brake device consisting of two levers or shoes *q* and *s*, which normally surround the spindle without engaging the same and which are pivotally connected with a pin *z*. The lower lever is pivoted on a pin *r*, fastened to the machine-frame. The upper lever has a forward arm or extension by means of which the brake is applied to the spindle when downward pressure is put upon the end of said lever *s*. The several brake devices, one for each spindle, are arranged vertically above each other with the long arms of the levers *s* all projecting in the same direction, so as to operatively engage with a reciprocating rod *k*, mounted in guide-sockets *l l*, fastened to the upper and lower members of the machine-frame. The connections between the levers *s* and the reciprocating rod *k* each comprise a pivot-bearing on the forked end of lever *s*, which embraces the rod *k*, which pivot-bearing is journaled in a wear-plate *t* on the under side of a set-nut *u*, above which is mounted the lock-nut *v*, all engaging suitable screw-threads on the shaft *k*, so as to permit the point of engagement between the shaft *k* and the respective levers *s* to be accurately adjusted. The rod *k* is operatively connected with the connecting-rod or pitman *f*, which joins the cutter-bar-actuating shafts *c c* by means of a yoke *m*, adjustably secured to said pitman *f*, having its forward forked end straddling the rod *k* and engaging the top side of a washer *n*, slidably mounted upon said shaft *k* and held in engagement with the yoke *m* by means of a helical spring *o*, which is supported at its lower end by an adjustable set-collar *p*, secured to the shaft *k* above the lower bearing *l*.

The operation of the apparatus as above described is substantially as follows: During the coiling operation the shafts *e* are moving through the upper part of their oscillations, and correspondingly the yoke *m* is then moved upward, permitting the rod *k* to be elevated, and thereby releasing the several brakes from engagement with the respective twister-spindles, which are then free to be revolved by the mechanism provided for this purpose to properly twist the stay-wires and strand-wires together. As the twisting operation is completed crank *i* in its rotation moves upper shaft *c*, which in turn moves lower shaft *c* through connecting-rod *f* to bring the cutter-bar into position to cause the movable stay-wire cutters to sever the respective stay-wires. The downward motion of connecting-rod *f* causes the yoke *m* to depress the collar *n*, which compresses the spring *o* and imparts a slight downward motion to the bar *k*, the extent of such downward motion being regulated by the tension of the spring *o*, which of course may be varied. This downward motion of the rod *k* brings pressure to bear upon each of the long arms *s* of the twister-spindle brakes, which causes both shoe members of said brake to engage the respective spindles and arrest the rotation thereof. The degree of compression between the brake members and the spindles may be nicely adjusted by varying the tension of the spring *o* and also by adjusting the bearing between the ends of the long levers *s* and the coöperating wear-plate *t* by means of the set-nut *u* on the rod *k*. After the stay-wires have been cut and the shafts *c c* begin to swing in the opposite phase of their oscillation the yoke *m* is moved upward with the connecting-rod *f*, thereby relieving the pressure on the collar *n* and permitting the spindle-brakes to be released.

It will be observed that the apparatus as above described when properly applied and adjusted introduces no friction or braking effect upon the coiler-spindles *b* during the coiling operation, but that immediately thereafter and preferably while the stay-wires are being cut sufficient braking power is applied to all of the spindles to effectively arrest the rotation thereof and that this braking effect can be nicely regulated and adjusted so as to subserve the desired purpose without absorbing unnecessary power and without in any way interfering with the proper operation of the other elements of the machine.

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

1. In a wire-fence machine, the combination of the coiler-spindles, a brake device for each spindle, and means connected with the stay-cutter-actuating mechanism for applying the brakes.

2. In a wire-fence machine, the combination of the coiler-spindles, a pivoted brake device for each spindle, and means connected with the stay-cutter-actuating mechanism for applying the brakes.

3. In a wire-fence machine, the combination of the coiler-spindles, brake devices for the several spindles, and means operated from the main drive-shaft of the machine for alternately engaging and disengaging the spindles and brake devices.

4. In a wire-fence machine, the combination of the coiler-spindles, brake devices for the several spindles pivoted to the machine-frame adjacent to the spindles, and means operated from the main drive-shaft of the machine for causing said brake devices to move into and out of engagement with the corresponding spindles.

5. In a wire-fence machine, the combination

of the coiler-spindles, a brake device for each spindle, a reciprocating bar engaging the several brake devices, and connections between said bar and the stay-cutter-actuating mechanism, whereby the bar is moved to apply the brakes when the stay-wires are cut and to release the brakes during the coiling operation.

6. In a wire-fence machine, the combination of the coiler-spindles, a brake device for each spindle pivoted to the machine-frame, a reciprocating bar engaging the several brake devices, and connections between said bar and the stay-cutter-actuating mechanism, whereby the bar is moved to apply the brakes when the stay-wires are cut and to release the brakes during the coiling operation.

7. In a wire-fence machine, the combination of the coiler-spindles, a brake device for the several spindles, each comprising a pair of pivotally-connected shoes embracing the corresponding spindle and pivoted at one end to the machine-frame, a reciprocating rod engaging the free end of each brake device, and means operated from the main drive-shaft of the machine for operating said rod to apply and release the brakes.

8. In a wire-fence machine, the combination of the coiler-spindles, a brake device for the several spindles, each comprising a pair of pivotally-connected shoes embracing the corresponding spindle and pivoted at one end to the machine-frame, a reciprocating rod engaging the free end of each brake device, and connections between said bar and the stay-cutter-actuating mechanism for moving said bar to apply the brakes when the cutters are operated.

9. In a wire-fence machine, the combination of the coiler-spindles, a brake device for the several spindles, each comprising a pair of pivotally-connected shoes embracing the corresponding spindle and pivoted at one end to the machine-frame, a reciprocating rod engaging the free end of each brake device, rock-shafts for operating the stay-cutter bar, a connecting-rod between said shafts, and a yoke fixed to said connecting-rod and engaging the reciprocating rod to move the latter to apply the brakes.

10. In a wire-fence machine, the combination of the coiler-spindles, a brake device for the several spindles, each comprising a pair of pivotally-connected shoes embracing the corresponding spindle and pivoted at one end to the machine-frame, a reciprocating rod engaging the free end of each brake device, rock-shafts for operating the stay-cutter bar, a connecting-rod between said shafts, a yoke fixed to said connecting-rod, and a spring-pressed collar on the reciprocating rod engaging said yoke, whereby the brakes will be yieldingly applied to the spindles when the stay-cutters are operated.

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

AXEL F. BACKLIN.
IDOFF EKLUND.

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