

(No Model.)

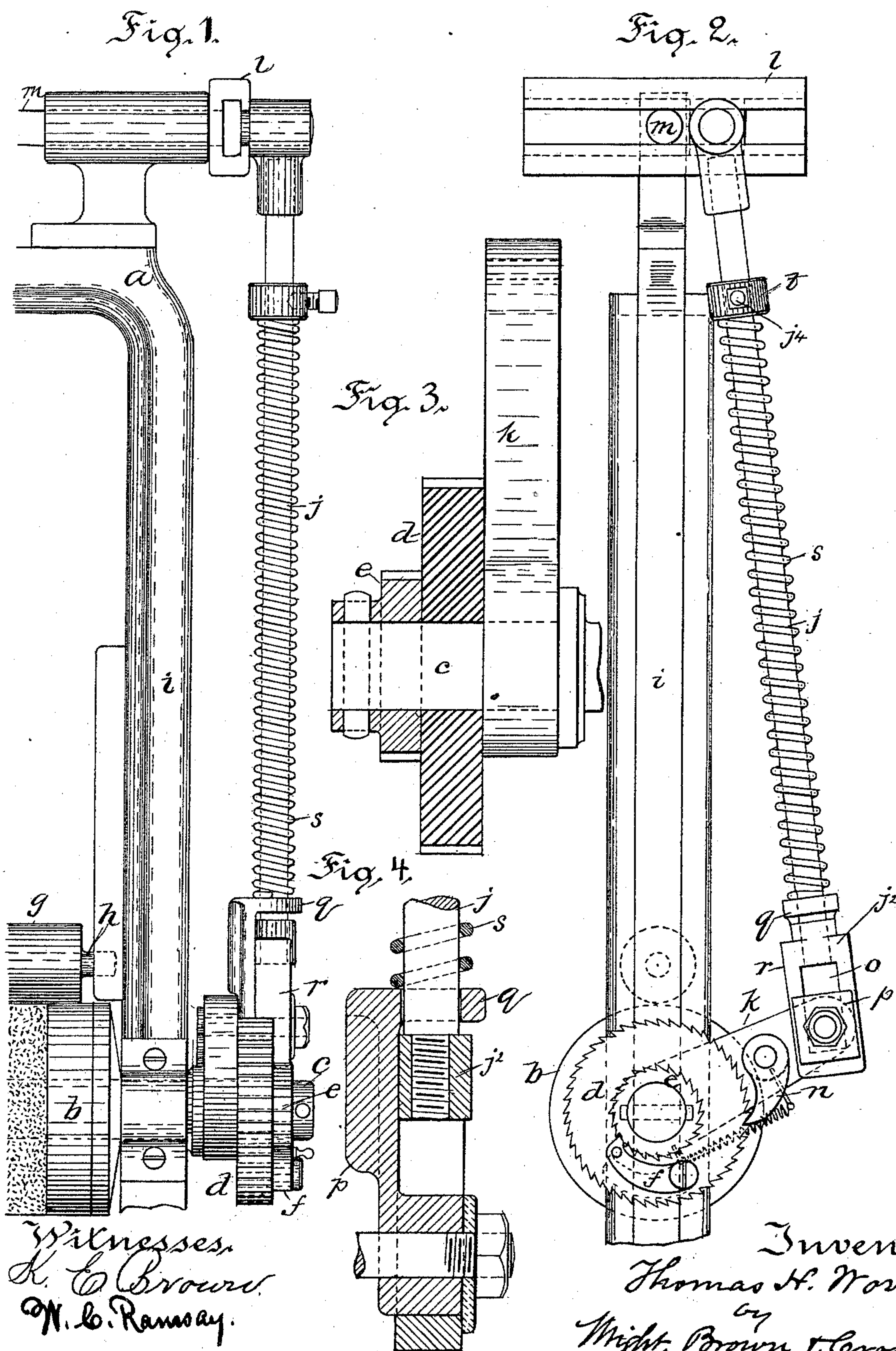
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T. H. WORRALL.

TAKE-UP MECHANISM FOR KNITTING MACHINES.

No. 441,814.

Patented Dec. 2, 1890.



Witnesses,
K. E. Brown
W. B. Ramsay.

Inventor,
Thomas H. Worrall.
By
Wight, Brown & Crossley,
Attys.

(No Model.)

2 Sheets—Sheet 2.

T. H. WORRALL.

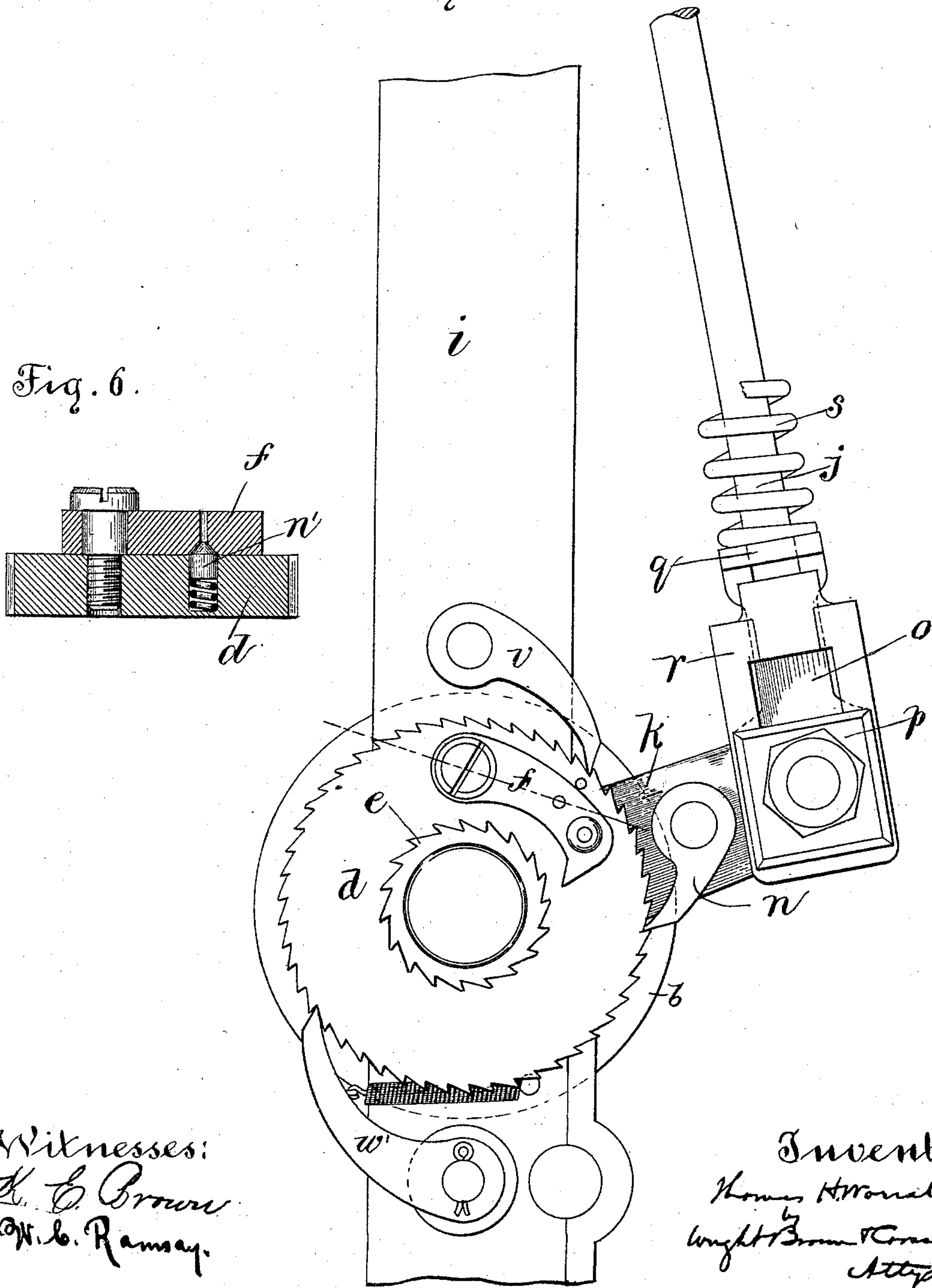
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Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

THOMAS H. WORRALL, OF LACONIA, NEW HAMPSHIRE.

TAKE-UP MECHANISM FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 441,814, dated December 2, 1890.

Application filed November 25, 1889. Serial No. 331,466. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. WORRALL, of Laconia, in the county of Belknap and State of New Hampshire, have invented certain new and useful Improvements in Take-Up Mechanism for Knitting-Machines, of which the following is a specification.

My invention relates to take-up mechanisms generally, and more particularly to mechanisms for taking up a fabric as fast as it is produced on spring-needle knitting-machines.

It is the object of my invention to provide such improvements in the means for operating the take-up rolls of knitting-machines as will enhance their utility and secure evenness of tension on the fabric, as also certainty in their operation.

My invention consists of improved means for operating the pawl-lever of the take-up roll.

My invention also consists of improved means for connecting the pawl-lever with and disconnecting it from the take-up-roll ratchet.

My invention also consists of improved combinations of parts incidental to the foregoing.

Reference is to be had to the annexed drawings and the letters of reference marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 is a front view of one end of a take-up frame equipped with my improvements. Fig. 2 is an end view of the same. Fig. 3 is a sectional detail showing the arrangement of the ratchets on the arbor of the take-up roll. Fig. 4 is a sectional detail. Fig. 5 is a modification of the invention; and Fig. 6 is a sectional detail, herein-after referred to.

In the drawings, *a* designates a take-up frame, in the lower part of which is journaled the take-up roll *b*, the arbor *c*, which extends beyond the frame, and is provided on this projecting end with a large ratchet-wheel *d*, adapted to turn loosely on the arbor *c*, and a smaller ratchet-wheel *e*, rigidly secured to the said arbor. A spring-pressed pawl *f* is pivoted upon the ratchet-wheel *d* and arranged

to engage the teeth of the small ratchet-wheel, and when the parts are so arranged by turning the large ratchet-wheel as it would be turned by a pawl engaging its teeth the small ratchet-wheel and take-up roll will be turned in unison therewith, and when the pawl *f* is disengaged from the small ratchet-wheel *e* the latter and the take-up roll may be turned independently of the large ratchet-wheel.

g designates the usual weight-roll, adapted to travel on the take-up roll, and the trunnions *h* of which are journaled or guided in slots formed in the arms *i* of the take-up frame.

j designates the "connecting-rod," so called, which extends between the outer end of the pawl-lever *k*, fulcrumed on the arbor *c*, and the crank or lever *l* on the end of rock-shaft *m*. A spring-pressed pawl *n* on the lever *k* is adapted to engage the teeth of ratchet *d* and operate the latter. The connected part *j*² at the lower end of the connecting-rod *j* is slotted, as at *o*, and a sliding box *p* is arranged therein, to one end or side of which the outer end of pawl-lever *k* is pivoted. The said sliding box *p* extends up and around the round part of the rod *j*, as at *q*, the lower connected part *j*² of the said rod being understood to be enlarged or squared, as shown at *r*, Fig. 2.

s designates a spiral spring surrounding rod *j* and bearing at its lower end on the upper end of the sliding box *p* and at its upper end against a collar *t*, adjustable longitudinally on rod *j* by means of a set-screw *j*¹. With this construction, as rod *j* is reciprocated by the commonly-employed means—such, for example, as that shown in United States patent to G. Jackson, No. 195,929, dated October 9, 1877, or that shown in the patent to J. S. Crane, No. 195,917, dated October 9, 1877—it will operate pawl-lever *k* and its attached pawl *n*, so as to rotate both of the ratchet-wheels and the take-up roll so as to wind the fabric upon the latter; but should the tension upon the fabric become greater than the resilient force of the spring *s* the said spring will yield against the pressure of the sliding box and the rod *j* will move without operating the pawl-carrying lever, and so, also, without operating the take-up roll. The

tension on the springs, and consequently the degree of pull or tension on the fabric, may be regulated by adjusting the collar *t* on the rod *j*.

5 By releasing the pawl *f* from its engagement with the teeth of ratchet-wheel *e* the cloth wound on the take-up roll may be pulled down for examination, mending, or other purposes and wound up again with great readiness.

10 In Fig. 5 I have shown ratchet-wheel *d* as engaged by two holding-pawls *v w*, the lower pawl *w* being placed in position to be pulled in toward the ratchet-wheel by a spring *w'*.

15 In Fig. 6 I have shown a spring-pressed pin *n'*, having a conical head, which pin is seated in a recess formed in ratchet-wheel *d* and operates to hold pawl *f* in engagement with the teeth of ratchet-wheel *e* when adjusted so to operate and to keep said pawl out of engagement with wheel *e* when moved away therefrom.

20 It is obvious that changes may be made in the form and arrangement of parts comprising my improvements without departing from the nature or spirit thereof.

What I claim is—

1. The pawl-lever of a take-up roll, combined with a reciprocating rod provided with a slot in one end, a sliding box in the said slot, to which the pawl-lever is pivoted, and a spring adjustable on the said rod and arranged to bear upon the said sliding box, as set forth.

35 2. The combination, with the take-up roll, of a fast and a loose ratchet-wheel thereon, a pawl pivoted upon the loose ratchet-wheel and

arranged to engage the teeth of the fast ratchet-wheel, and a lever provided with a pawl adapted to engage the teeth of the loose ratchet-wheel, as set forth.

3. The combination, with the take-up roll, of a fast and a loose ratchet-wheel thereon, a pawl pivoted upon the loose ratchet-wheel and arranged to engage the teeth of the fast ratchet-wheel, a lever provided with a pawl adapted to engage the teeth of the loose ratchet-wheel, a reciprocating rod provided with a slot in one end, a sliding box in the said slot, to which the pawl-lever is pivoted, and a spring adjustable on the said rod and arranged to bear upon the sliding box, as set forth.

4. A pawl-lever-operating rod for take-up mechanism, consisting of the rod *j*, provided with a slot in its end, a sliding box in said slot extending thereabove and embracing said rod, a collar adjustable on said rod, and a spring arranged between the top of the sliding box and the adjustable collar, as set forth.

5. The combination, with the ratchet-wheels *d* and *e*, of pawl *f*, pivoted on wheel *d*, the latter being provided with a recess, and spring-pressed pin *n'*, as set forth.

6. The combination, with the pawl-lever *k*, pawl *n*, ratchet-wheels *d e*, pawl *f*, frame *i*, pawl *w*, and spring *w'*, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 9th day of November, A. D. 1889.

THOMAS H. WORRALL.

Witnesses:

F. L. SMITH,
FRED K. SANBORN.