3 Sheets--Sheet 1.

J. SHAW.

Self-Acting Spinning-Jacks.

No. 134,567. Patented Jan. 7, 1873.

Fig. 1.

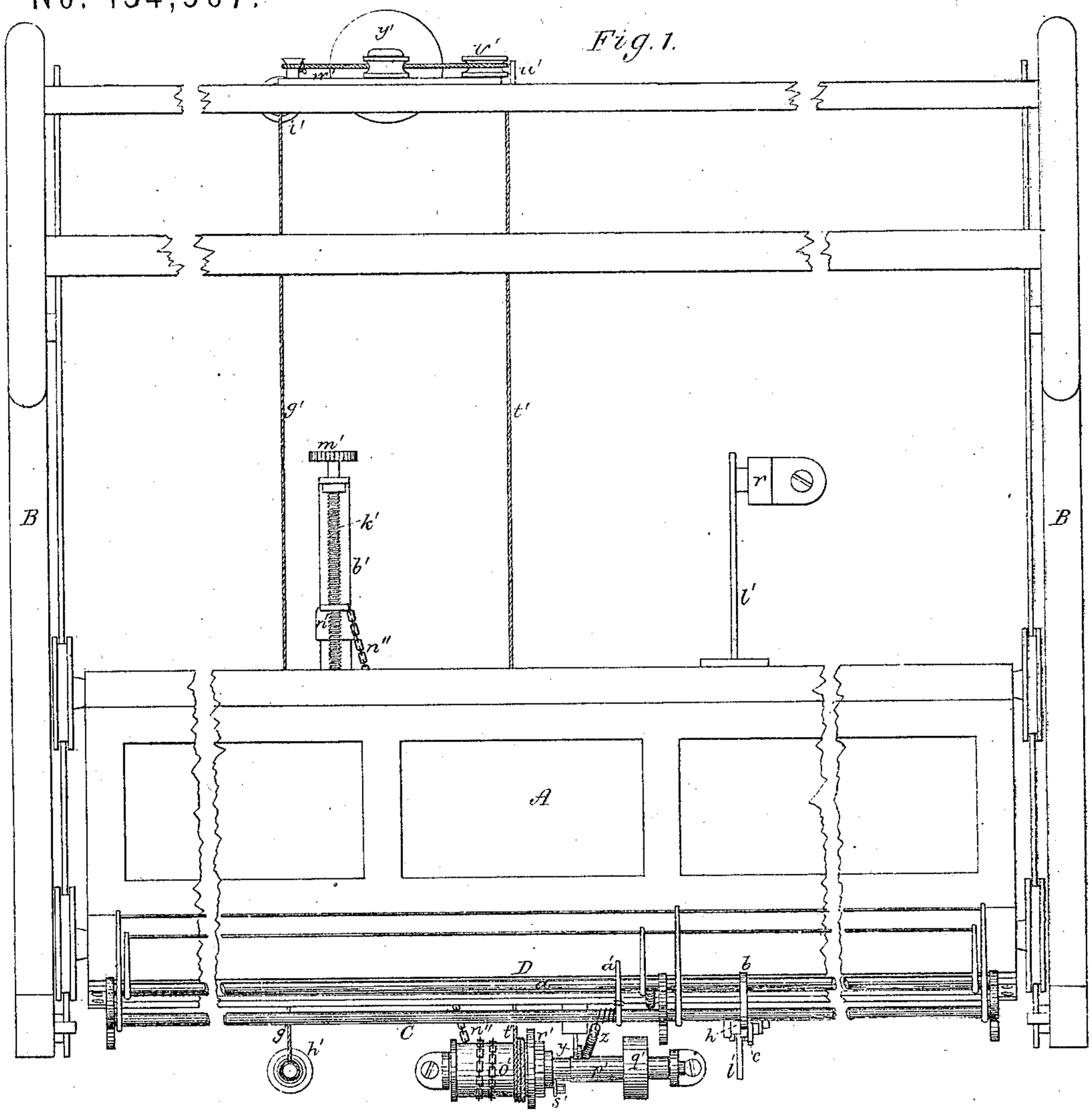
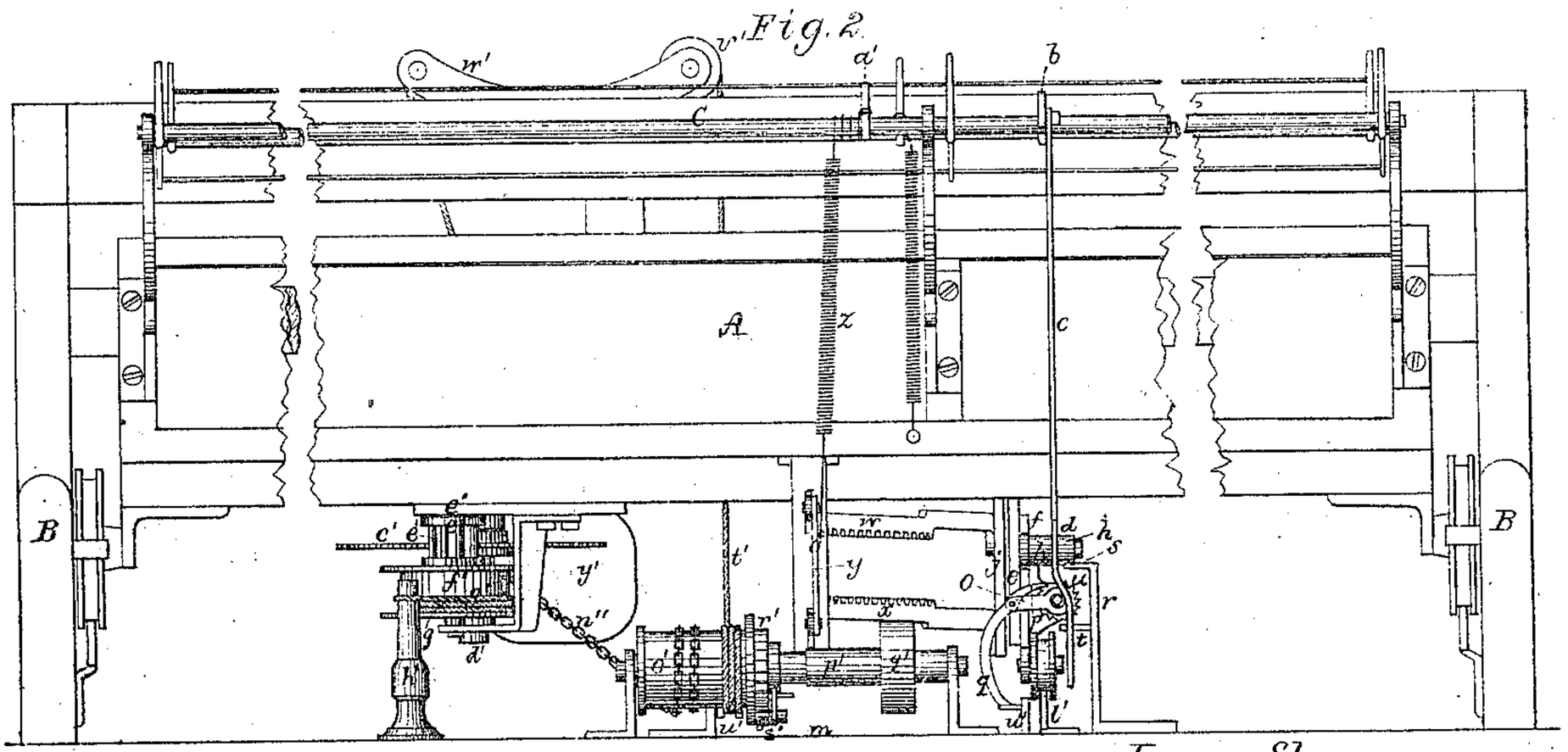


Fig. 2.



Witnesses.
S. N. Pierce.
L. N. Müller.

James Shaw.
by his attorney
R. H. Edeby

3 Sheets--Sheet 2.

J. SHAW.

Self-Acting Spinning-Jacks.

No. 134,567. Patented Jan. 7, 1873.

Fig. 6

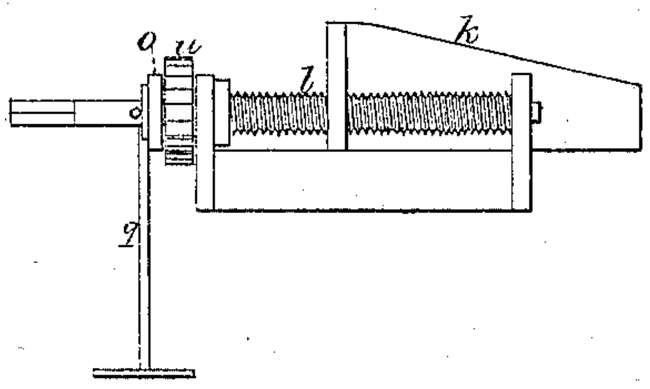


Fig. 7.

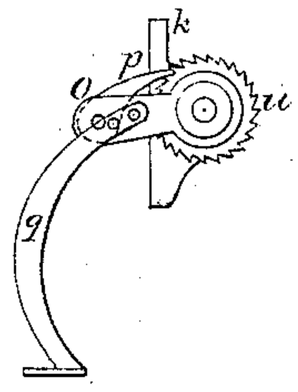


Fig. 8.

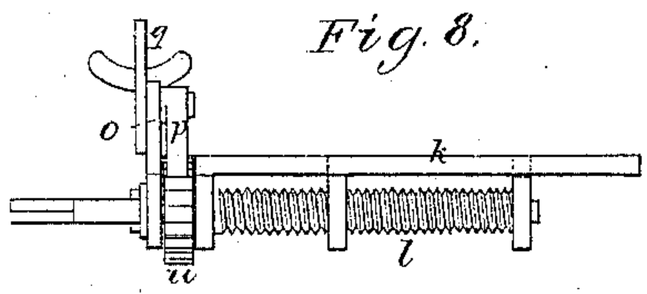
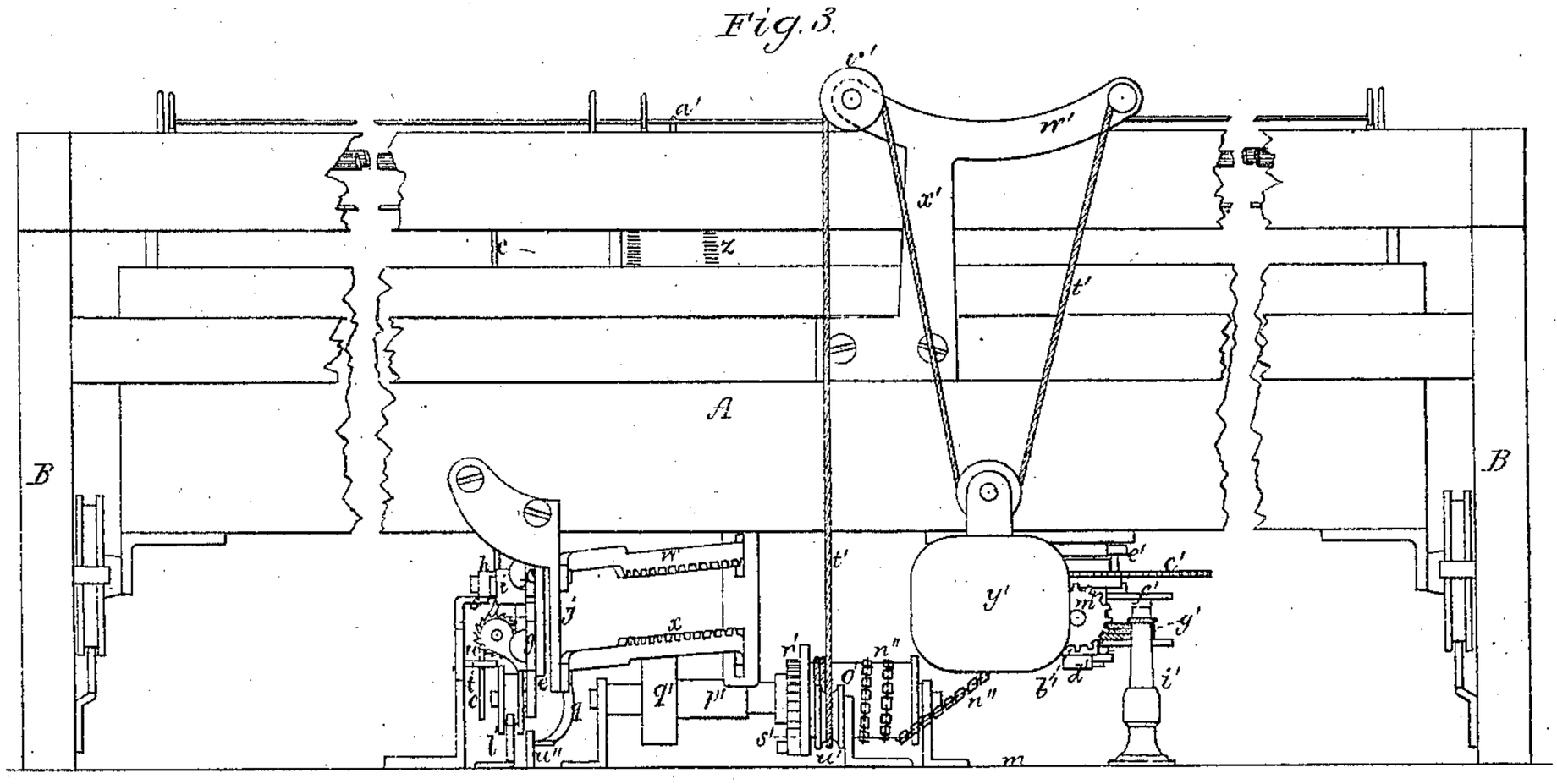


Fig. 3.



Witnesses.
S. N. Piper.
L. N. Moller.

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3 Sheets--Sheet 3.

J. SHAW.

Self-Acting Spinning-Jacks.

No. 134,567. Patented Jan. 7, 1873.

Fig. 4.

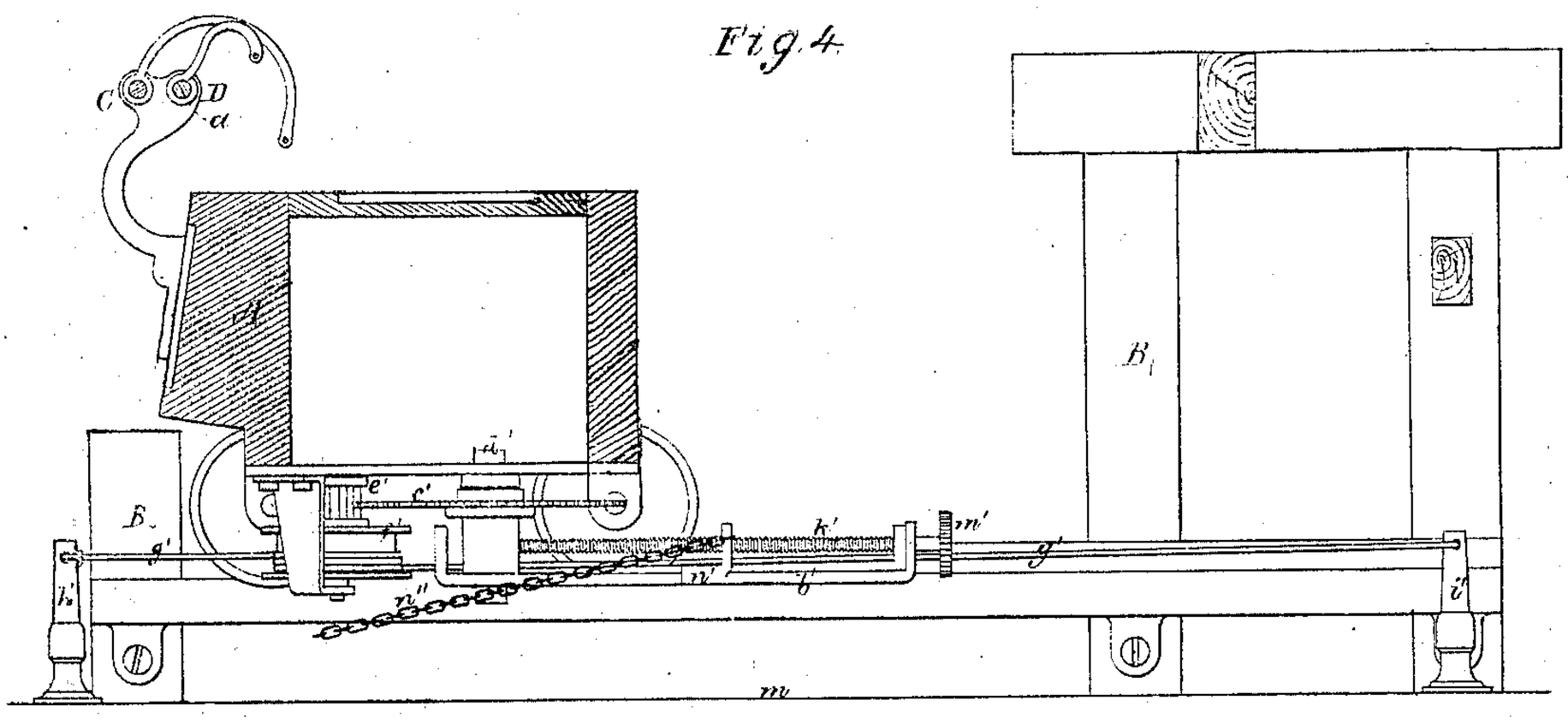
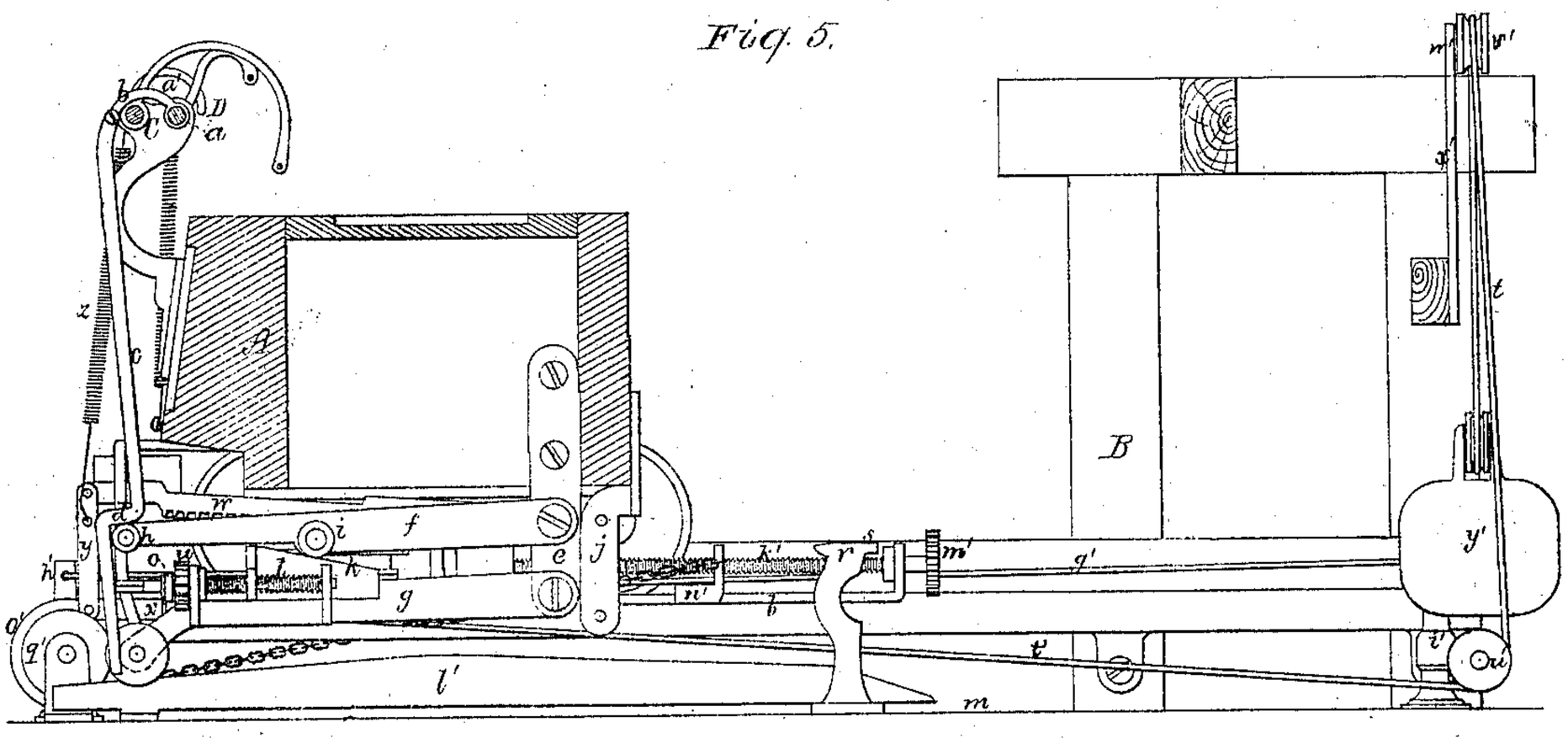


Fig. 5.



Witnesses.
S. N. Piper
L. W. Müller

James Shaw.
by his attorney.
R. H. Eddy

UNITED STATES PATENT OFFICE.

JAMES SHAW, OF BALLARDVALE, MASSACHUSETTS.

IMPROVEMENT IN SELF-ACTING SPINNING-JACKS.

Specification forming part of Letters Patent No. **134,567**, dated January 7, 1873.

To all whom it may concern:

Be it known that I, JAMES SHAW, of Ballardvale, of the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Jacks for Spinning; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figure 1 is a top view; Fig. 2, a front elevation; Fig. 3, a rear elevation; and Figs. 4 and 5 are transverse sections of the jack-carriage and parts adjacent with my invention applied thereto.

My invention has reference to mechanism for effecting and regulating the guiding of the yarns upon the bobbins, and also mechanism for controlling the winding according to the tension of the yarns.

The mechanism to be first described is that for effecting and regulating the guiding of the yarns upon the bobbins.

In the drawing, A denotes the carriage, and B its supporting-frame, all of which is like such parts of common jacks. There are applied to this carriage, as usual, two followers, C D, one being for the tension or taking up the slack of the yarn, and the other for regulating the winding of the yarn upon the bobbins. The spindles and their driving-drum are not shown, such being unnecessary to the represention of my invention. There extends from the shaft *a* of the winding-follower D a curved arm, *b*, which is jointed to a rod, *c*, bent or provided with a shoulder, *d*, as shown. To an arm, *e*, extending downward from the carriage, two levers, *f g*, are pivoted, one being arranged over the other, as represented. The upper of these levers carries two friction-rollers, *h i*, the inner of such rollers resting upon a movable shoe, or inclined plane, or cam, *k*, supported upon the lower lever and provided with a screw, *l*, for adjusting it (the inclined plane) thereon. The friction-wheel of the lower lever rests on the top of an inclined rail, *l'*, fixed upon the floor *m*, and arranged in manner as shown. On the shaft of the screw *l* is a ratchet-wheel, *u*. An arm, *o*, turning freely on the screw-shaft, carries a pawl, *p*, to operate the ratchet, and also has a bent arm, *q*, extended down from it, all being particularly as shown in Figs. 6 and 7, which exhibit on an enlarged scale the above-described mechanism. Fig. 6 shows it in side view and Fig. 7 in front end elevation. Fig. 8 is a top view of the operative screw and parts immediately connected with or adjacent to it. Close to the inner end of the rail *l'* is a standard, *r*, provided with a shelf, *s*, extended from its upper part, as shown. A small stud or pin, *t*, is also projected from the standard, and arranged as represented. Near the front or outer end of the rail *l'* is a stud or pin, *u''*, projecting from the floor.

While the carriage is running in, the shoulder *d* of the rod *c* rests upon the outer friction-roller of the upper lever *f*, and consequently the winding of the yarn upon the bobbin will be regulated by the inclined rail *l'*, which, as the friction-wheel of the lower lever *g* runs upon it, will raise or lower such wheel, and as a consequence the arm *b* will be correspondingly moved. The object of the inclined plane and its operative mechanism is to effect the raising of the follower to cause the yarn to wind higher on the bobbin, as may be necessary. Every time the carriage runs out the bent arm *q* of the arm *o* will be moved against the stud *u''*, and by the latter will be moved so as to move the arm *o* in a manner to cause the pawl to actuate or turn the ratchet-wheel and revolve the adjusting-screw of the inclined plane *k*, thereby causing the inclined plane to be drawn forward a little so as to drop the upper lever *f* a short distance, thereby elevating the follower D, as may be desirable. As the carriage may be approaching the terminus of its inward movement the shouldered rod *c* will be moved against the stationary stud *t* of the standard *r*, and as a consequence will be thrown off the outer friction-roller of the lever *f*, thereby enabling the usual lifter-spring to the follower D to raise the follower up to the proper height. The shelf *s* at the top of the standard *r* is to support the lever *f* after the inclined plane may have been moved fully forward, thereby causing the follower to keep the yarn wound on the bobbin at such time from working or winding loose at the top of the bobbin, and of course the difficulty incident thereto, as well known to spinners. The outer friction-roller of the lever *f*, by resting on the shelf, causes the said lever to be supported by the shelf.

The next part of the mechanism to be described is that for regulating the winding according to the tension or slack of the yarn. There are pivoted to an arm, *j*, projecting downward from the carriage A, two curved racks, *w x*, arranged as shown, and connected at their front ends by a link, *y*, joined with the shaft of the follower C by a helical spring, *z*, the wire of the spring being wound a few turns helically around the shaft of the follower, and also about a short arm, *a'*, extended therefrom. A radial arm, *b'*, pivoted to the carriage on its under side, so as to swing horizontally, has a gear, *c'*, fixed upon it concentrically with its fulcrum *d'*. This gear engages with a lantern-pinion, *e'*, carried by a drum or pulley, *f'*, supported by and pivoted to the carriage. A band, *g'*, wound one or more times about the periphery of the pulley *f'* is supported at its opposite ends by two posts, *h' i'*, all being arranged as shown. Furthermore, the radial arm *b'* supports a long rotary screw, *k'*, provided at its outer end with a gear or pinion, *m'*, to work in either of the curved racks *w x*, or between them. There is upon the radial arm a small nut, *n'*, which slides freely on the arm, the screw *k'* being screwed into and through the said nut. A chain, *n''*, attached at one end to the nut *n'*, extends and is fastened to and wound around a drum, *o'*, turning loosely upon a horizontal shaft, *p'*, provided with a driving-pulley, *q'*, all being arranged as shown. The shaft *p'* carries a ratchet wheel, *r'*, to engage with a lever dog or pawl, *s'*, pivoted to one end of the drum *o'*. Furthermore, there is attached to the drum *o'* a band or rope, *t'*, which, wound around the drum, extends about guide-pulleys *u'* and *v'*, and is fastened to an arm, *w'*, projecting from a standard, *x'*, all as shown. A weight, *y'*, is hung upon that part of the rope which is beneath the arm *w'*.

When the carriage A is nearly "in," should the yarn be too slack the follower C will rise, so as to cause the two curved racks to fall in a manner to bring the upper into engagement with the gear *m'* of the screw *k'*. The further movement of the carriage will cause the rack to move and revolve the gear, thereby causing the screw to be revolved and to move the nut *n'* on the screw in a direction toward the gear *m'*. Should the yarn not be slack enough the racks will be elevated so as to bring the lower into engagement with the gear, whereby a reversed motion of the screw and the nut *n'* will result.

The chain *n''*, the drum *o'*, shaft *p'*, pulley *q'*, ratchet-wheel *r'*, pawl *s'*, rope *t'*, guide-pulleys *u' v'*, arm *w'*, and standard *x'*, and weight *y'* constitute well-known parts of a jack or its mechanism for regulating the winding of the yarns upon the bobbins.

The movement of the nut *n'*, either toward or away from the gear of its screw, either lets out or takes up the chain *n''*, more or less.

In practice an endless band goes around the pulley *q'* and the driving-drum of the spindles. For winding the yarn on the bobbins the said driving-drum derives motion from the shaft *p'* when revolved by the drum *o'*, ratchet-wheel *r'*, pawl *s'*, and the chain *n''*.

The band *g'*, pulley *f'*, pinion *e'*, and gear *c'* serve to move the radial arm back and forth, and keep the chain *n''* from slackening while the carriage A is moving out.

The arrangement of the radial arm underneath, and its application to the carriage A, as explained, causes it to be out of the way of operatives, and not liable to do injury to them, as frequently results from radial arms when attached to the floor.

Those acquainted with the jack and the mechanism usually heretofore employed for effecting the results produced by my mechanism, as hereinbefore described, will, no doubt, readily perceive the simplicity and advantages of mine.

What I claim as my invention is as follows:

1. The combination of the stud *t*, the standard *r*, and its shaft *s*, with the guide-rail *l'*, the two levers *f g*, and the inclined plane *k*, and its adjusting mechanism, as described, all being arranged and applied together and to the shouldered rod *c* of the follower D, as and to operate substantially as set forth.

2. The combination of the two curved racks *w x*, the gear *m'*, the screw *k'*, the nut *n'*, radial arm *b'*, gear *c'*, pinion *e'*, pulley *f'*, and band *g'*, all being applied together and to the carriage A, the chain *n''*, and the follower C, substantially in manner and to operate as described.

JAMES SHAW.

Witnesses:
R. H. EDDY,
S. N. PIPER.