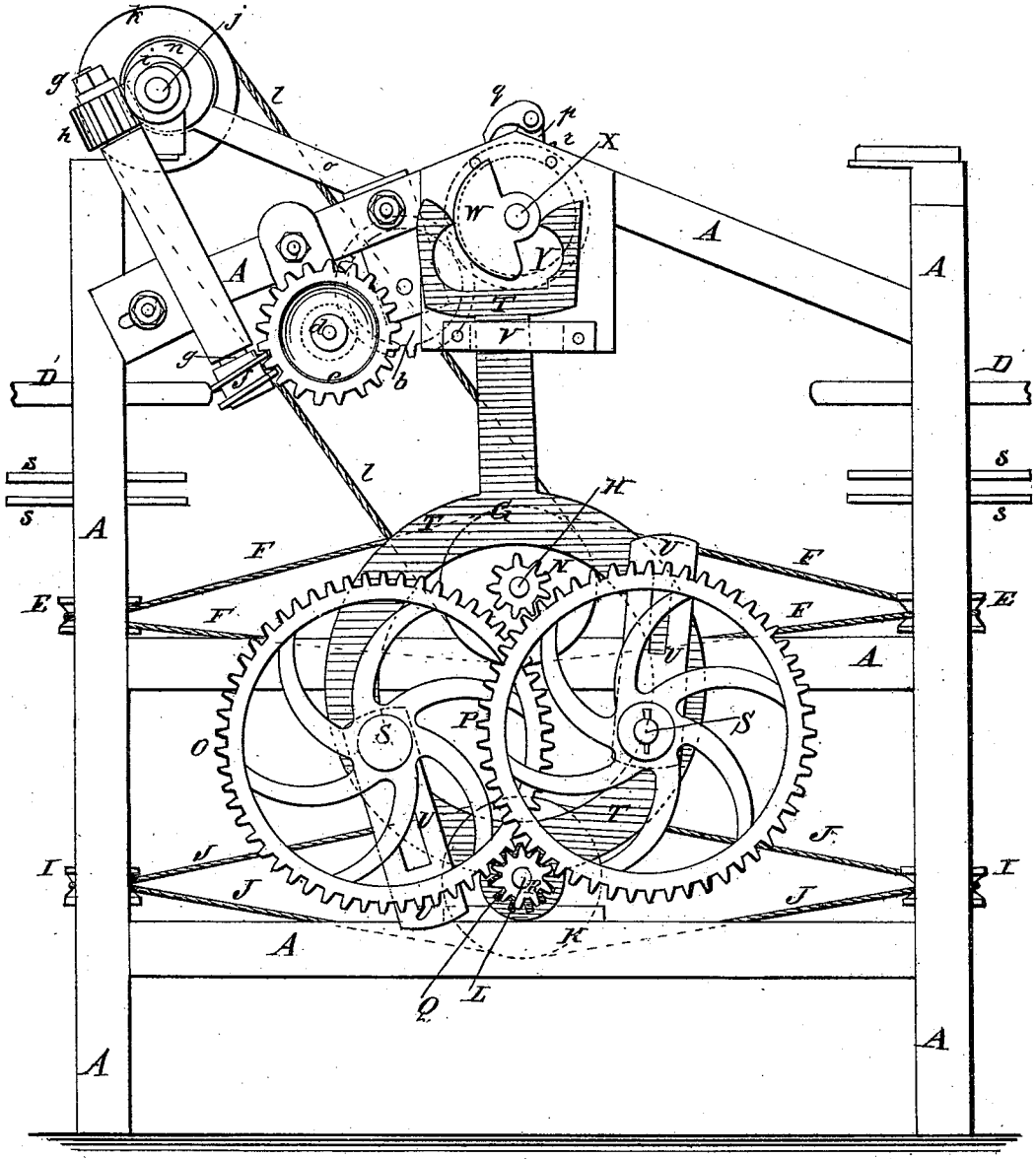
(Model.) 4 Sheets—Sheet 1.

P. TOWNSON.

SPINNING MACHINE.

No. 251,001. Patented Dec. 13, 1881.

Fig. 1.



WITNESSES:

Chas. Nichs.

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(Model.) 4 Sheets—Sheet 2.

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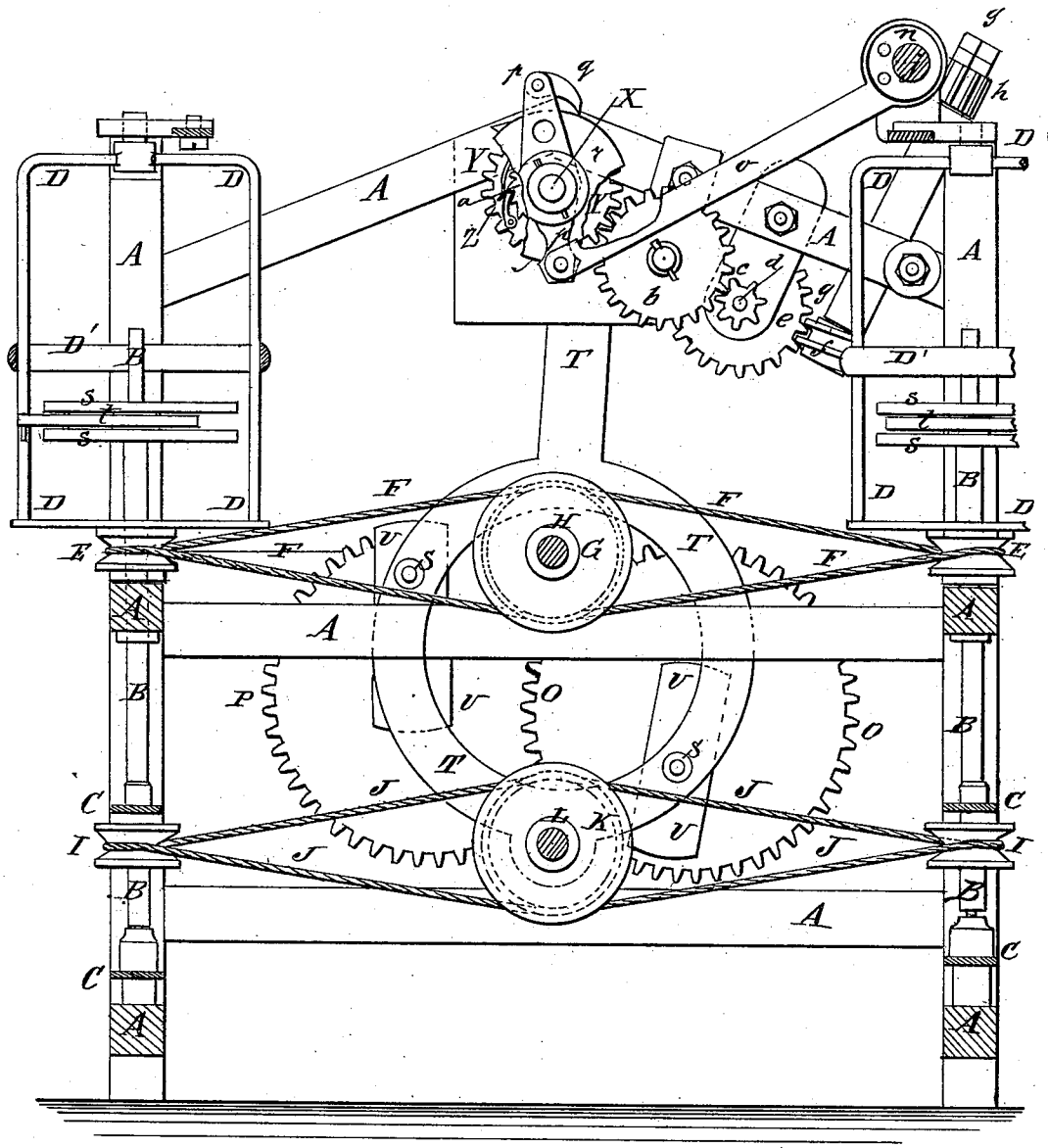
Fig. 2.



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(Model.)

4 Sheets—Sheet 3.

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SPINNING MACHINE.

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Fig: 3.

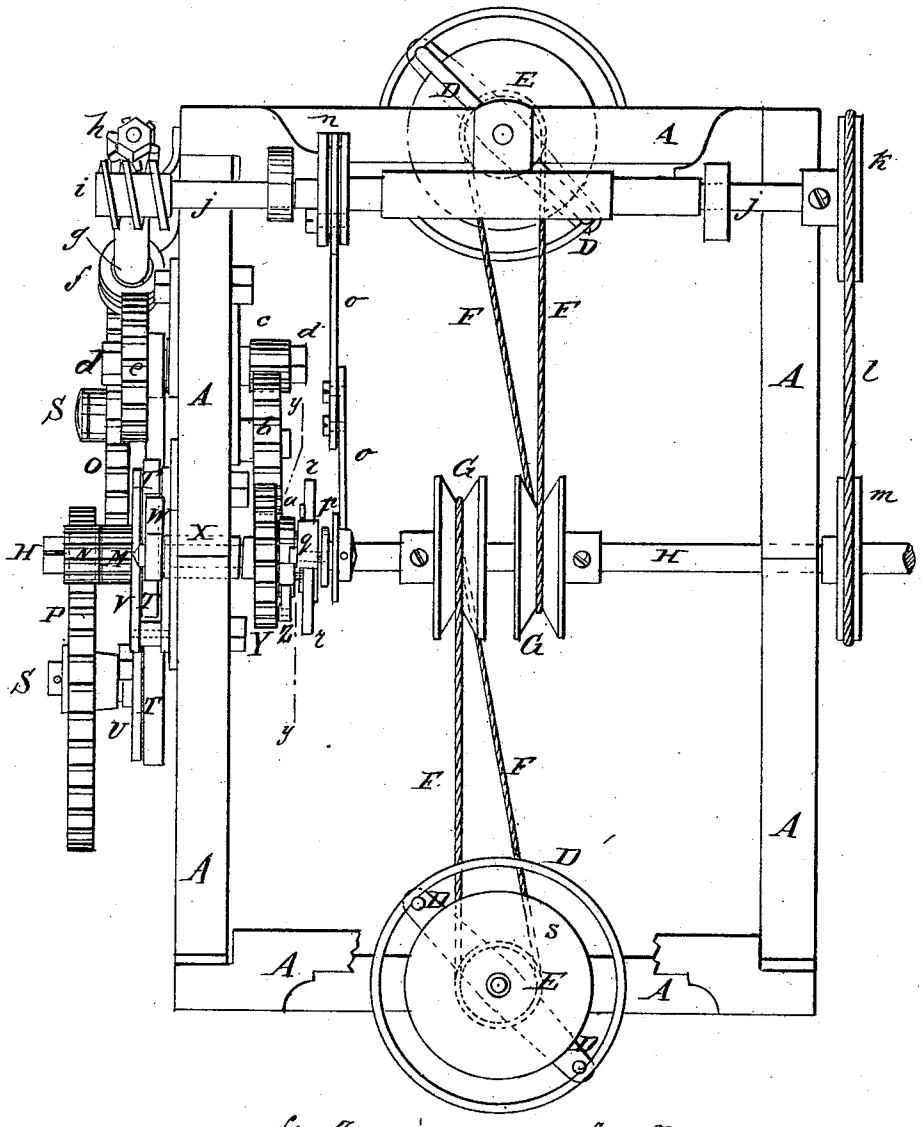


Fig: 7.

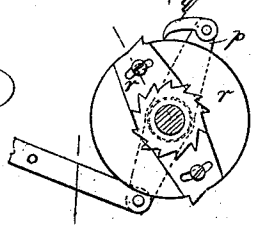
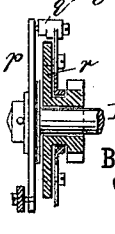


Fig: 8.



WITNESSES:

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(Model.)

4 Sheets—Sheet 4.

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SPINNING MACHINE.

No. 251,001. Patented Dec. 13, 1881.

Fig. 4.

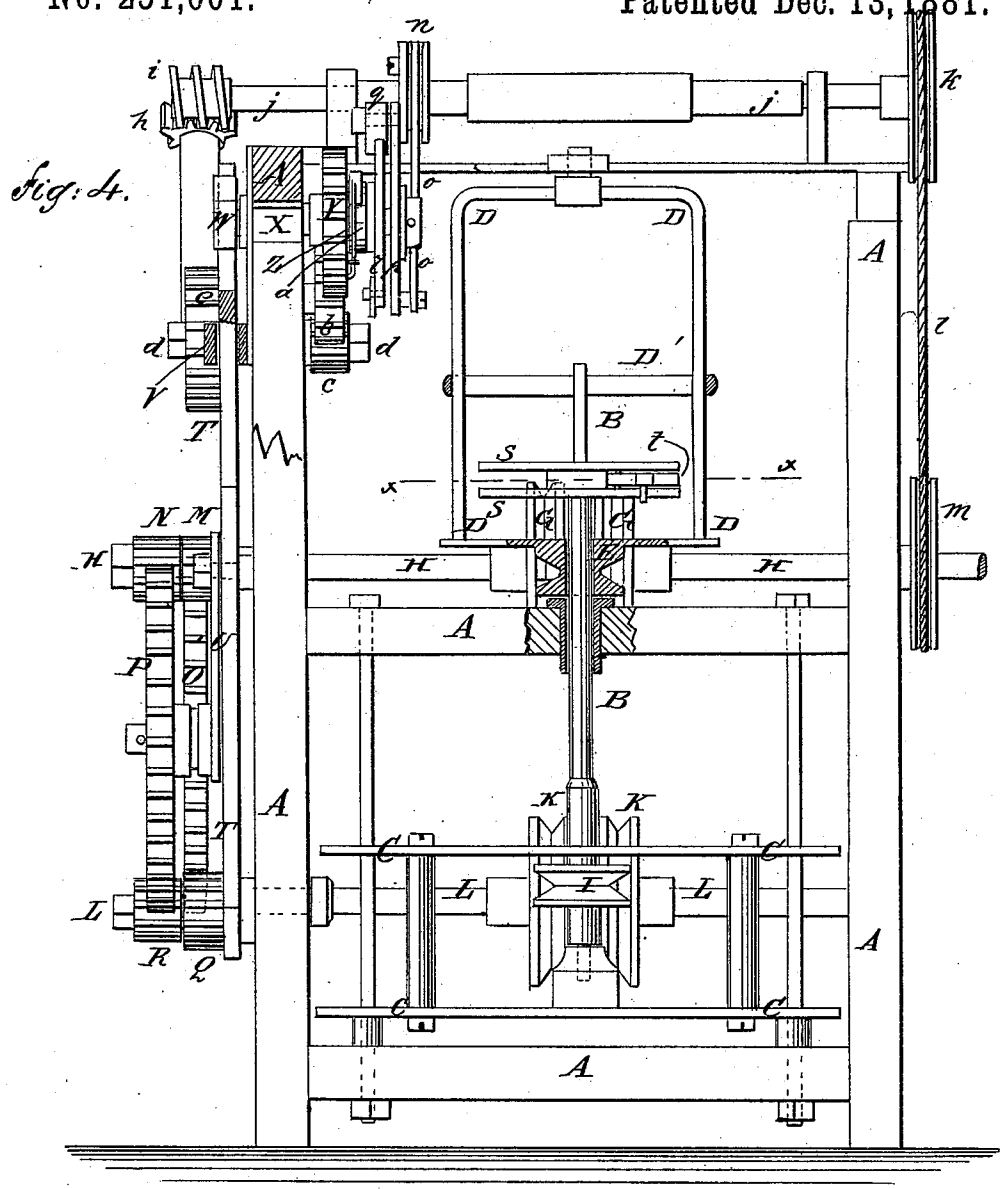


Fig. 5.

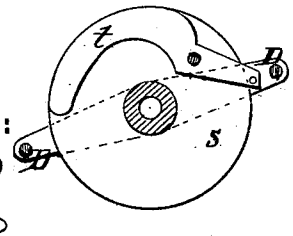
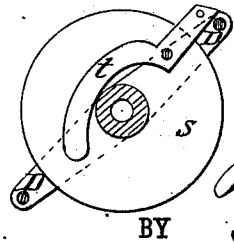


Fig. 6.



WITNESSES:

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UNITED STATES PATENT OFFICE.

PHILIP TOWNSON, OF THOMPSONVILLE, CONNECTICUT.

SPINNING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 251,001, dated December 13, 1881.

Application filed June 9, 1881. (Model.)

To all whom it may concern:

Be it known that I, PHILIP TOWNSON, of Thompsonville, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Spinning-Machines, of which the following is a specification.

Figure 1, Sheet 1, is an end elevation of my improvement. Fig. 2, Sheet 2, is a vertical section of the same. Fig. 3, Sheet 3, is a plan view of the same. Fig. 4, Sheet 4, is a side elevation of the same, partly in section. Fig. 5, Sheet 4, is a sectional plan view of the mechanism for stopping the spindle, taken through the line *x x*, Fig. 4, and showing the position of the stop-lever when the spindle is in motion. Fig. 6, Sheet 4, is the same view as Fig. 5, but showing the stop-lever in position for stopping the spindle. Figs. 7 and 8 are detail views, showing the two-toothed ratchet-wheel and the devices operating in connection therewith.

Similar letters of reference indicate corresponding parts.

The object of this invention is to automatically change the speed of spindles when the bobbins are about two-thirds filled, and also to facilitate the stopping of the spindles when the fliers have been stopped.

In the accompanying drawings, A represents the frame of the machine.

B are the spindles, which revolve in bearings in the frame A and in the frames C, that raise and lower the said spindles B.

D are the fliers, which revolve at their lower ends upon the spindles B and at their upper ends in bearings connected with the frame A.

To the arms of each flier D is attached a ring, D′, to serve as a guard to prevent the threads of adjacent bobbins from becoming entangled. With the lower end of each flier D is connected a whirl, E, around which passes a band, F. The band F also passes around a pulley, G, attached to the main shaft H, to which the power is applied. Upon the spindle B is placed a whirl, I, around which passes a band, J. The band J also passes around a pulley, K, attached to a second shaft, L, so that the spindles B and the fliers D will be revolved at a different speed by giving a different speed to the two shafts H L.

To one end of the main shaft H are attached two small gear-wheels, M N, the teeth of which mesh respectively into the teeth of two large gear-wheels, O P. The teeth of the gear-wheels O P mesh respectively into the teeth of the small gear-wheels Q R, attached to the end of the shaft L. The small gear-wheels M N are made of the same size. The large gear-wheels O P are made of the same size; but the small gear-wheels Q R are made of different sizes, the gear-wheel Q being the larger. The large gear-wheels O P are pivoted to gudgeons S, attached adjustably to a vibrating frame, T, by means of slotted plates U, or other suitable means, so that the gear-wheel O can be thrown into gear with the gear-wheels M Q to give the spindles B a slower movement, or the gear-wheel P can be thrown into gear with the gear-wheels N R to give the spindles B a faster movement.

The frame T, at its lower end, is pivoted to and rides upon the shaft L, near its end. The upper part or arm of the frame T works in a keeper, V, attached to the frame A, or to a support attached to the said frame. The upper end or arm of the frame T is forked to receive the cam W, by which the said frame T is moved to shift the gearing and change the speed of the spindles. The cam W is attached to the outer end of a short shaft, X, which works in bearings in the frame A, or in a support attached to the said frame A.

Upon the inner part of the shaft X is placed a loose gear-wheel, Y, which is made to carry the said cam-shaft X with it in its revolution by a spring-pawl, Z, attached to the said gear-wheel Y, and which engages with a ratchet-wheel, *a*, formed upon or attached to the said cam-shaft X. With this construction the cam-shaft X can be turned forward faster than the gear-wheel Y without interfering with the regular movement of the said gear-wheel Y. The teeth of the gear-wheel Y mesh into the teeth of an intermediate gear-wheel, *b*, pivoted to a support attached to the frame A. The teeth of the gear-wheel *b* mesh into the teeth of a small gear-wheel, *c*, attached to the inner end of a short shaft, *d*, which revolves in bearings attached to the frame A, and to its outer end is attached a worm-wheel, *e*. The teeth of the worm-wheel *e* mesh into the threads of a worm or endless screw, *f*, attached to the end of a

short shaft, *g*, which revolves in a long bearing attached to the frame A.

To the upper end of the shaft *g* is attached a worm-wheel, *h*, the teeth of which mesh into the threads of a worm or endless screw, *i*, attached to the end of the shaft *j*. The shaft *j* revolves in bearings attached to the frame A, and to its other end is attached a pulley, *k*, around which passes a band, *l*. The band *l* also passes around a pulley, *m*, attached to the main shaft H, so that the cam W will be driven from the said main shaft. The gearing connecting the cam W with the main shaft H is so arranged as to turn the cam W through one revolution while the bobbins are being filled.

To the shaft *j* is attached an eccentric, *n*, with which is connected the end of a connecting-bar, *o*. The other end of the connecting-bar *o* is pivoted to the lower end of a lever, *p*, which is pivoted to the inner end of the cam-shaft X.

To the upper end of the lever *p* is pivoted a pawl, *q*, which engages with the teeth of the two-toothed ratchet-wheel *r*, attached to the cam-shaft X, as shown in Figs. 7 and 8. The teeth of the ratchet-wheel *r* are so arranged that the pawl *q* will engage with them successively as the cam W releases each branch of the forked upper end of the frame T. Thus it will be seen that, the wheel Y being loose upon shaft X, the latter may be turned more rapidly than said wheel by means of the mechanism *n o p q r*, of which the ratchet *r* is fast to said shaft, so that the gear-wheels O P will be shifted quickly, to prevent any interruption or irregularity in the movements of the machine.

Upon the spindle B is screwed, or to it is otherwise attached, the hub of the double disk or wheel *s*, between the parts of which, near one side, is pivoted a lever, *t*. The inner part of the lever *t* is made heavy, or is weighted, and is curved, so that it can pass partially around the hub of the double wheel *s*. With this construction, when the spindle B is in motion, the centrifugal force engendered by the revolution of the said spindle will throw the heavy inner part of the lever *t* outward, as shown in Fig. 5, drawing the outer part of the said lever inward toward the rim of the double wheel *s*.

When the operator wishes to stop a flier and spindle, he places the forefinger of his left hand upon the top bearing of the flier, then brings the palm of this hand into contact with the flier, and thereby stops it. Then with a finger of the right hand he touches the double wheel or disk attached to the spindle on its outer edge, thus placing his finger in position to come in contact with the outer end of the lever, which is thus caused to immediately come out into position to catch on the arm of the flier, thus stopping the spindle.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the vibrating frame T, the gear-wheels O P, the gear-wheels M Q N R, shafts H L X, and the cam W, of the loose gear-wheel Y, spring-pawl Z, ratchet-wheel *a*, the gear-wheels *b c*, shaft *d*, worm-wheel *e*, endless screw *f*, shaft *g*, worm-wheel *h*, endless screw *i*, shaft *j*, band *l*, and pulleys *k m*, as and for the purpose specified.

2. The combination, with the vibrating shifting frame T, provided with a forked upper end, of the cam W and its driving mechanism, the two-toothed ratchet-wheel *r*, and the pawl *q* and its operating mechanism, substantially as herein shown and described, whereby the said cam is moved quickly, as it vibrates the shifting frame in changing the gearing, to prevent the movements of the operating parts of the machine from being interrupted, as set forth.

3. The combination, with the spindle B and flier D, of the double wheel *s* and the weighted lever *t*, substantially as herein shown and described, whereby the spindle can be readily stopped, as set forth.

PHILIP TOWNSON.

Witnesses:
JAMES TOWNSON,
LEWIS TOWNSON.