

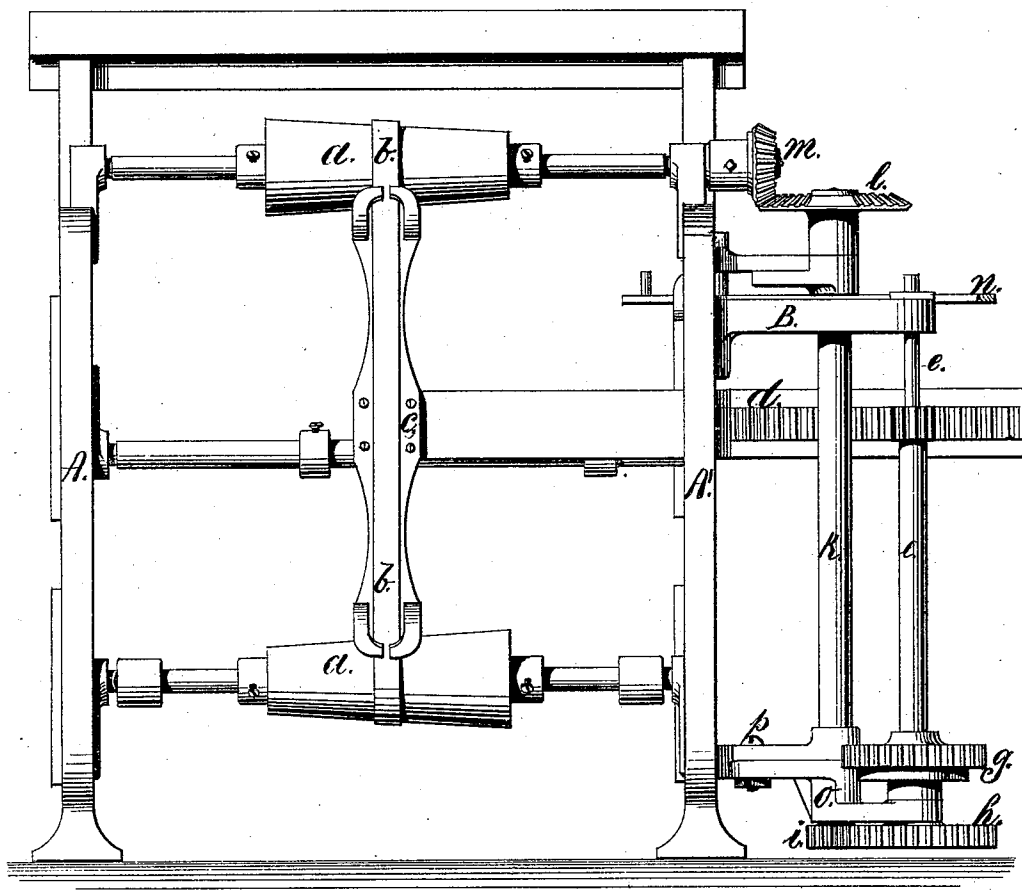
T. MAYOR.

SPEEDER AND FLY FRAMES.

No. 174,918.

Patented March 21, 1876.

Fig. 1.



WITNESSES.

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Fig. 3.

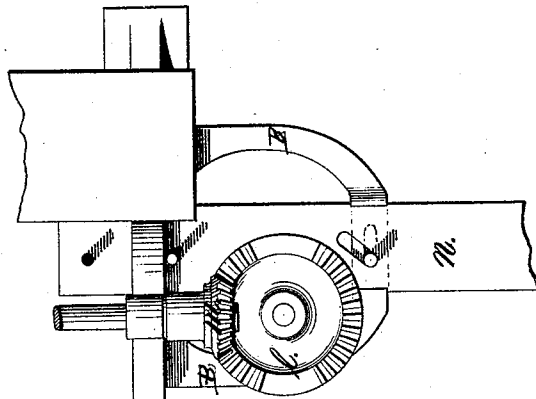


Fig. 2.

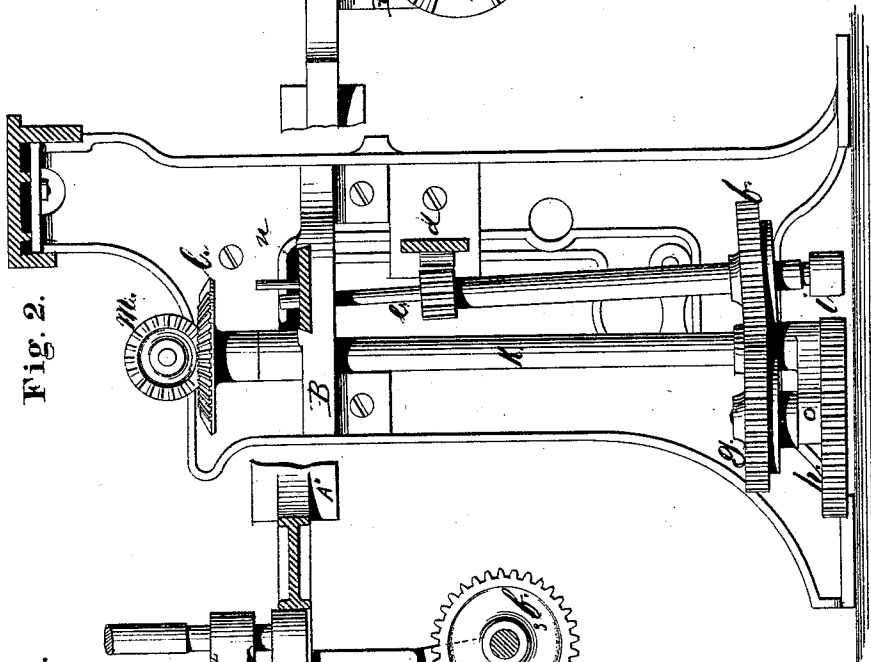
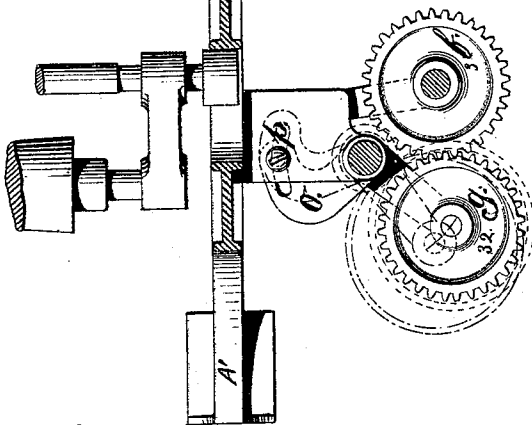


Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS MAYOR, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN SPEEDERS AND FLY-FRAMES.

Specification forming part of Letters Patent No. **174,918**, dated March 21, 1876; application filed November 17, 1875.

To all whom it may concern:

Be it known that I, THOMAS MAYOR, of the city and county of Providence, State of Rhode Island, have invented certain new and useful Improvements in Speeders and Fly-Frames; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a side view of a portion of a speeder, showing my improved change motion attached to the same. Fig. 2 is a vertical cross-section, showing the change motion in view. Fig. 3 is a top view, showing the space-gear and the shipper-bar; Fig. 4 shows the arrangement of the gears and the quadrant supporting the change-gear.

Similar letters of reference indicate corresponding parts.

This invention has reference to a novel arrangement for changing the speed of the bobbins in speeders and fly-frames, with reference to the amount of twist, quality of cotton, and atmospheric condition, and consists: First, in securing to the lower end of the space-gear shaft a quadrant supporting the change-gear, so that by substituting one change-gear for another larger or smaller the speed of the contact-shaft carrying the pinion which engages with the rack, is changed, and the speed of the bobbin increased or diminished. Second, in the novel arrangement by which the contact-shaft and the shipper-bar and all the parts of the change motion are secured to and supported from one standard or spring piece or frame.

In the drawing, A and A' are two standards or spring pieces, or frames forming the supports for the cones, shafts, gears, and other mechanism of speeder or fly-frames. B is a yoke secured to the standard or spring piece, and projecting outward to form a bearing for the shipper-bar and the contact-shaft. *a a* are the cone-pulleys. *b* is the belt, and *c* the belt-shipper. *d* is the shipper-rack. *e* is the contact-shaft, carrying the pinion which engages with the shipper-rack when in contact, and thus gradually moves the belt *b* on the cones, to allow for the taper of the bobbins. *f* is a gear-wheel secured to the contact-shaft *e*, and *g* is the change-gear. *h* is a gear se-

cured to the same shaft to which the change-gear is secured. *i* is the pinion secured to and revolving with the space-gear shaft *k*, the space-gear *l* being secured to the upper end of the same. *m* is a beveled pinion secured to the upper cone-shaft. *n* is the shipper-bar, provided with a beveled slot, in which the contact-shaft *e* revolves, and by which the same is brought in contact with the shipper-rack, or disengaged from contact with the same. *o* is a quadrant, forming a portion of a bracket secured to and turning on the space-gear shaft *k*, and held in any required position by the lock-bolt *p*. The bracket forming part of the quadrant *o* carries the gear-wheel *h*, the shaft of which projects upward, and is provided with a feather, so that any desired change-gear may be placed on the same, and thus the speed of the contact-shaft *e* may be changed with great facility.

In spinning machinery, where fine work is to be done at high speed, it is important that all moving parts requiring nice adjustment should be firmly supported in bearings secured, as much as possible, to one part of the machine, so that any settling of the floor, or any vibration of the frame, shall not affect the accurate motion of such parts. In change motions, as heretofore constructed, the different parts, gears, shafts, and rack were supported by two or more spring-pieces, and the motion transmitted from the upper cone-shaft conveyed by a complicated arrangement of shafts and gears to the shipper-rack at considerable distance from the end of the cones, liable to be deranged by the slightest vibration or settling of the frame, costly in construction, and difficult to change from one speed to another. In my improved change-gear the motion is imparted by the bevel-gear *m* to the space-gear *l*, and from that to the shaft *k* carrying the pinion *i*, and from this communicated to the gear *h*, to the shaft of which the change-gear *g* is secured, by simply placing the same on the shaft, and adjusting the quadrant so as to allow the same to gear into and communicate motion to the gear *f*, secured to the contact-shaft *e*, on which a pinion gears into the shipper-rack *d*, and thus moves the belt on the cone-pulleys by the belt-shipper *c*, secured to the end of the rack *d*.

All the parts are firmly supported by one standard or spring-piece, *A'*, and must always be in line and work with the least friction, while any desired change in the speed can be effected by simply exchanging one change-gear for another, and thus compensate for any variation in the twist, length of staple, and condition of the atmosphere, in speeders or fly-frames built for any particular line of work. In my improved change motion the same patterns and parts may be used to build speeders and fly-frames for various kinds of work, or speeders and fly-frames may thus be changed from one line of work to another by exchanging the gears *i* and *h* for gears having a different relative diameter, and thus greatly change the speed, while the change-gear *g* will allow a ready adjustment to the various changes above described.

The contact shaft *e* is supported by a bearing secured to the spring-piece *A'*, and by a slot in the yoke *B*, and the beveled slot in the shipper-rod *n*. A much shorter shipper-rod, and also a much shorter belt-shipper-rack, are required by thus placing the contact-shaft *e* close to the space-gear shaft *k*, saving expense in first cost, wear and friction, and preventing all liability of derangement by settling or vibration.

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

1. The combination, with the space-gear shaft *k*, and contact-shaft *e*, of the quadrant *o*, arranged to support the gear *h* and change-gear *g*, substantially as and for the purpose described.

2. The combination, with the shipper-bar *n* and contact-shaft *e*, of the supporting-yoke *B*, arranged to support the shipper-bar in guides directly over the said contact-shaft, substantially as and for the purpose set forth.

3. The combination, with the space-gear *l*, and shipper-rack *d*, of mechanism substantially as described, by which the motion of the space-gear is transmitted to the shipper-rack at any desired speed, varied by the interchange of gears, as and for the purpose described.

4. The combination, with the shafts *k* and *e*, of the gears *i h g*, and the quadrant *o*, the whole arranged and supported from one spring piece or standard, substantially as described.

THOMAS MAYOR.

Witnesses:

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