2 Sheets—Sheet 1.

G. E. TAFT.

Spinning-Frame.

No. 222,330. Patented Dec. 2, 1879.

Fig. 1.

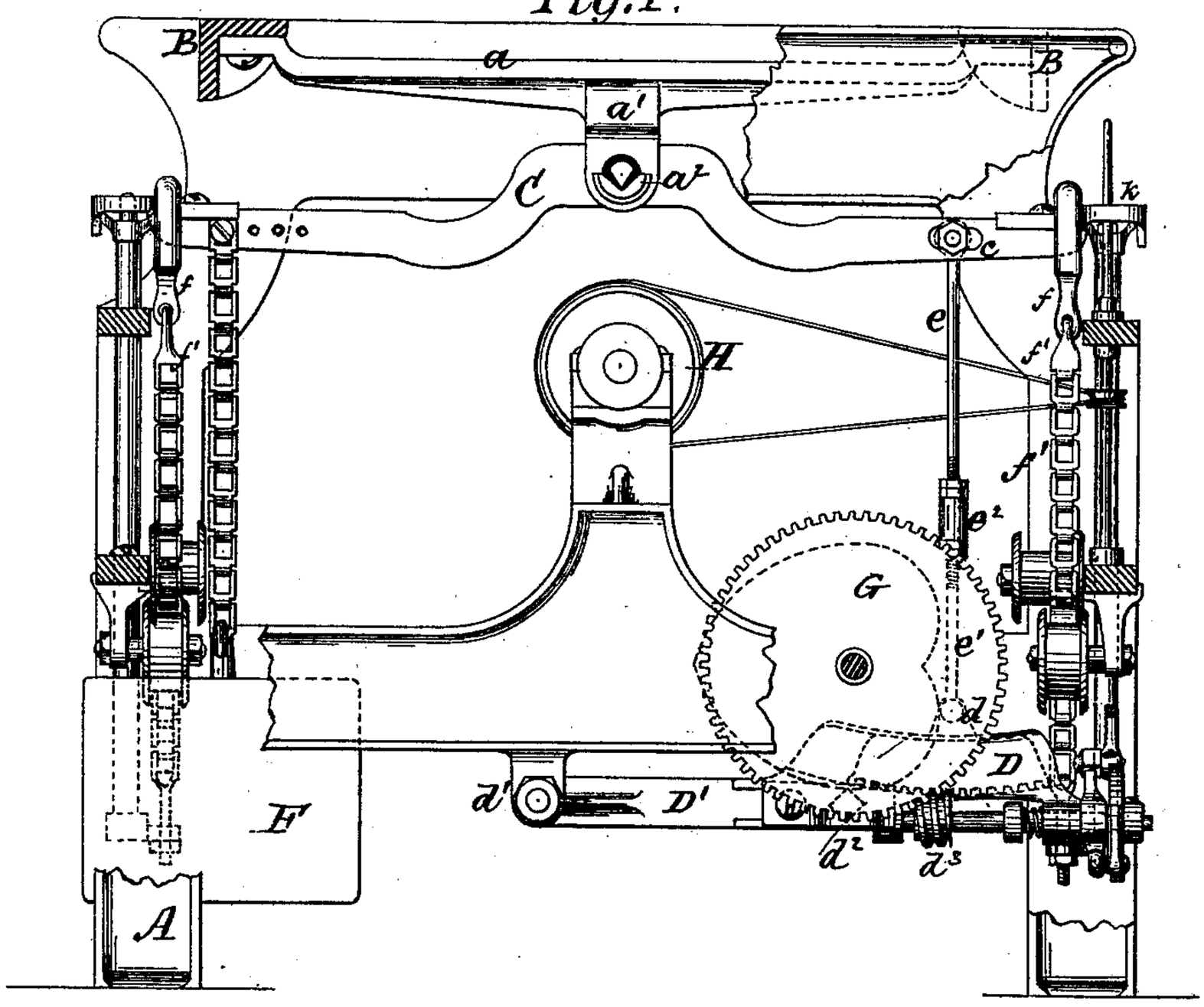
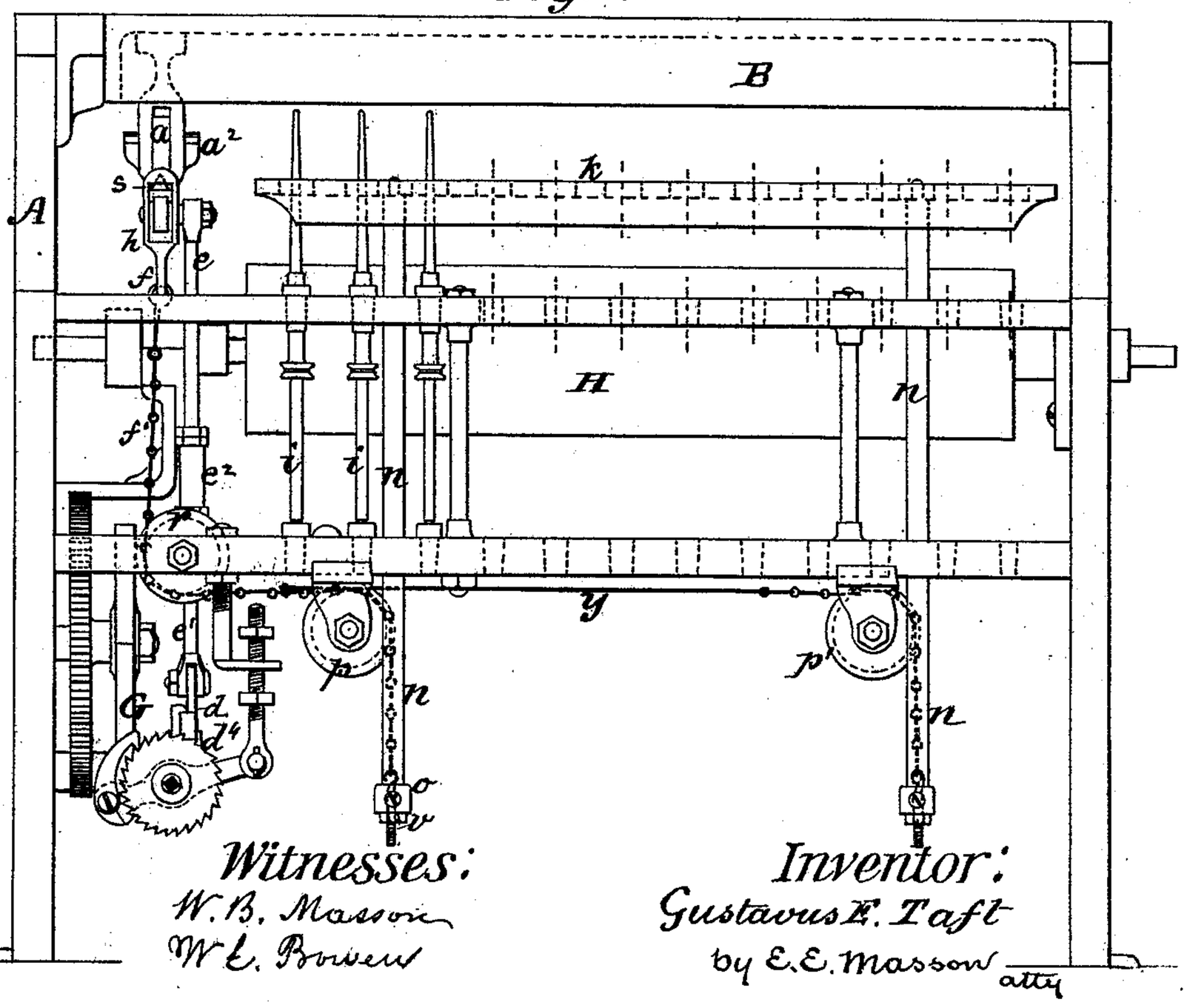


Fig. 2.



Witnesses:
W. B. Masson
W. E. Bowers

Inventor:
Gustavus E. Taft
by E. E. Masson atty

2 Sheets—Sheet 2.

G. E. TAFT.

Spinning-Frame.

No. 222,330. Patented Dec. 2, 1879.

Fig. 3.

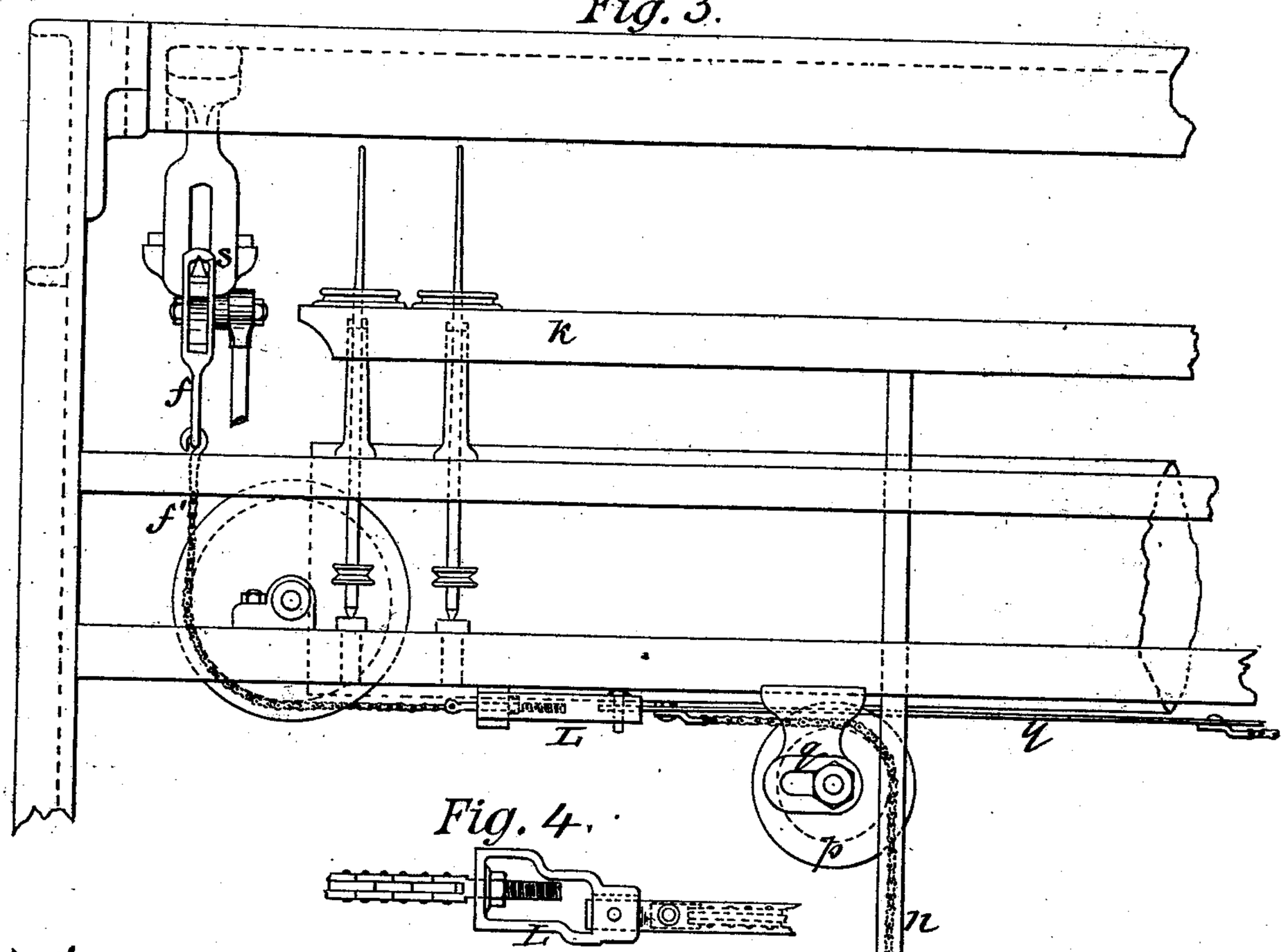


Fig. 4.

Fig. 5

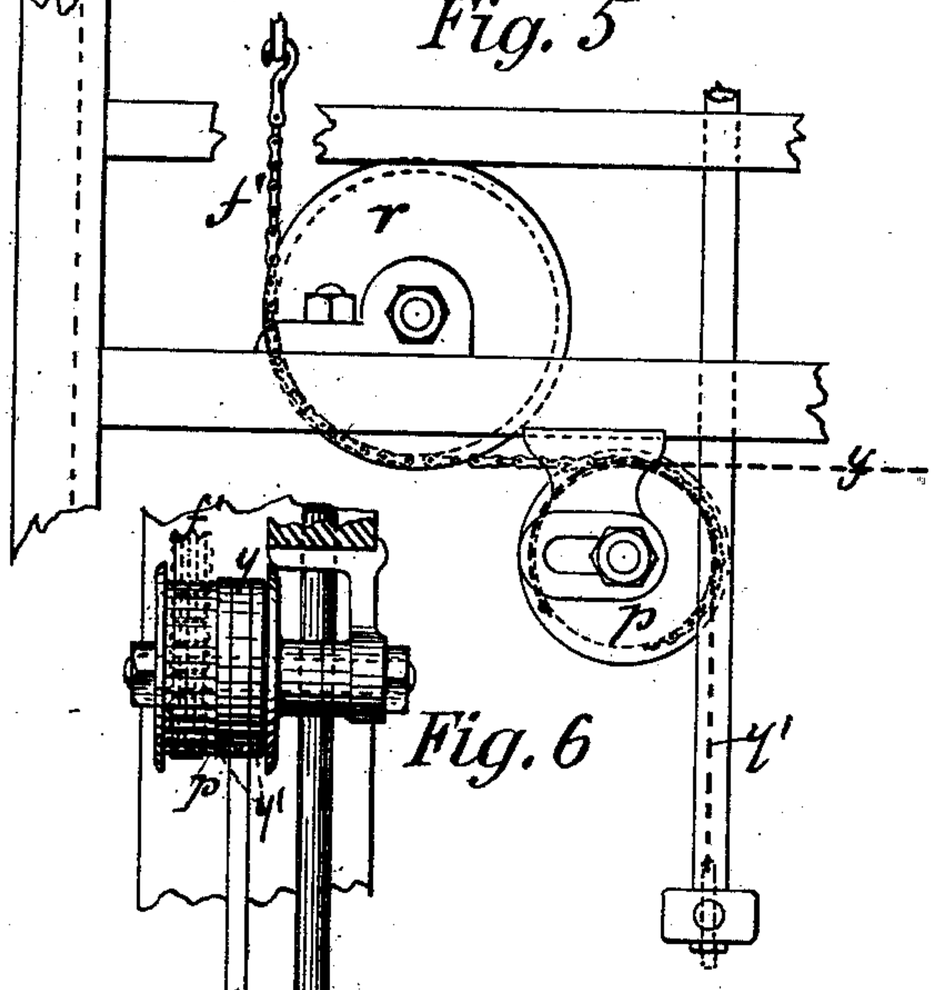


Fig. 6

Fig. 7.

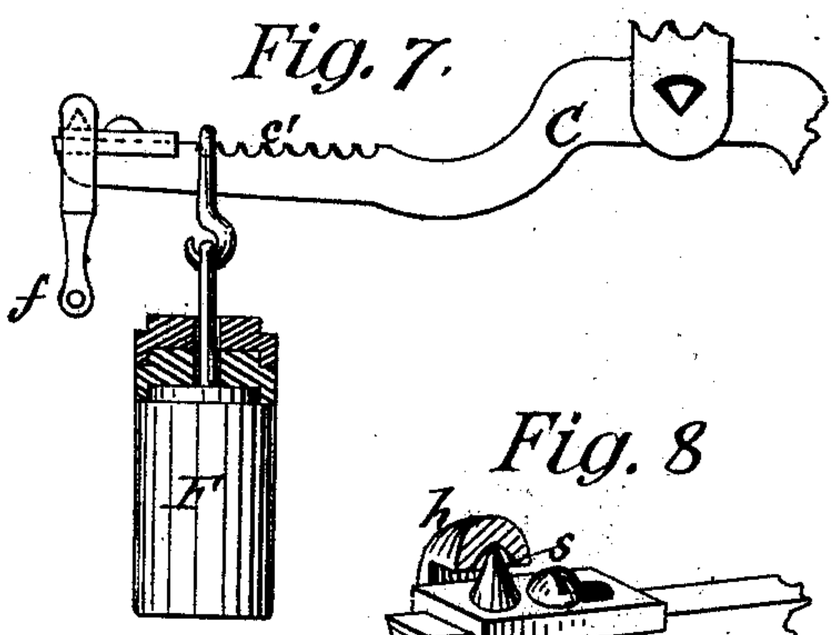
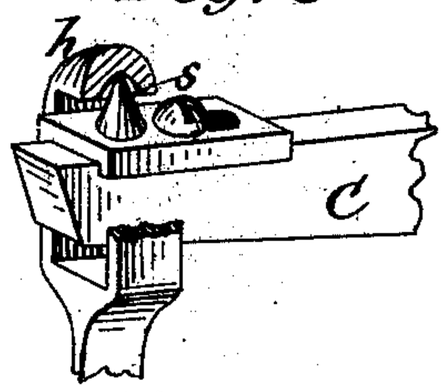


Fig. 8



Witnesses:
W. B. Masson
W E. Borden

Inventor:
Gustavus E. Taft
by E.E. Masson atty

UNITED STATES PATENT OFFICE.

GUSTAVUS E. TAFT, OF WHITINSVILLE, MASSACHUSETTS, ASSIGNOR TO THE WHITIN MACHINE WORKS, OF SAME PLACE.

IMPROVEMENT IN SPINNING-FRAMES.

Specification forming part of Letters Patent No. **222,330**, dated December 2, 1879; application filed August 28, 1879.

To all whom it may concern:

Be it known that I, GUSTAVUS E. TAFT, of Whitinsville, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Spinning-Frames; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification.

This invention relates to improvements in spinning-frames—namely, to the means hereinafter described for providing a more regular and steady traverse of the ring-rails, the attainment of greater precision in the laying of yarn on the bobbins, the avoidance of any crossing of the yarn in winding, and the laying of the yarn firm and hard upon the bobbins, for the avoidance of waste, and for the production of filled bobbins of more uniformity and comeliness than heretofore.

A common way of effecting the traverse is as follows: The ring-rail is supported by a series of vertical rods resting upon rolls on one end of series of bell-crank levers secured on shafts extending across the spinning-frame and resting in hangers from the step-rail. These levers are provided with weights to overbalance the weight of the ring-rail and its series of vertical rods, pushing them constantly upward, retained only by a chain connected to the sector, until brought down again by their own weight and by the heart-cam through said chain or rod, attached to the upper end of the bell-crank lever, and leading over a pulley to the toothed sector, lifting said weights off the bell-crank levers. This pushing up of the ring-rail by means of the lift-rods does not produce as marked evenness in the winding of the bobbins as is obtained by pulling them up from above.

The invention will first be described in connection with the drawings, and then pointed out in the claims.

In the drawings, Figure 1 represents an end elevation of a spinning-frame having my improvements for traversing the ring-rail from the heart-shaft. Fig. 2 is a side elevation of a short spinning-frame, with a longitudinal view of the parts for traversing the ring-rail. Fig. 3 is a side elevation of a portion of a long spinning-frame, showing the lift-rod connections and one of the links uniting two lengths of chain and a metallic strap. Fig. 4 is a top view of the same link. Fig. 5 represents, in side elevation, a modification of the lift-rod connections. Fig. 6 represents an end elevation of the same. Fig. 7 represents a detached view of a portion of the working-beam and its adjustable weight. Fig. 8 represents a perspective view of one end of the working-beam, with its hooded cap in section.

In said drawings, A represents the frame; B, the roller-beams. *a* is a cross-beam, preferably fixed to the under side of the roller-beams, although it may be secured otherwise to the top of the frame. Two ears, *a'*, of this cross-beam extend down, and are provided with steelyard-like bearings a^2 for the working-beam C. This beam C has a slot, *c*, through which passes a stud on the upper end of the rod *e*, and the lower end of this rod is connected with one end of the rod *e'* by a coupling, e^2, having a right and left screw-thread to facilitate adjustment. The lower end of the rod *e'* is connected by a pin to a lug, *d*, at or near the middle of the toothed sector D, the latter being carried in the usual manner by the arm D' pivoted to the frame at *d'*. When the heart-cam G is throwing the sector down, by pressing upon the pin d^2 of its carrying-arm D', the rod *e e'* will pull its end of the beam C down. When the heart has passed its point of greatest throw or depression, the weight F, on the other end of the beam C, will cause the pin d^2 to follow up on the heart. Now, if rods or chains *f'* are fixed to pins or studs at the outer ends of the beam C, and connected at their lower ends to the lift-rods *n* of the ring-rail *k*, and the mechanism put in motion, the rail *k* must move if nothing breaks or bends. If the beam C has a large hub, and one of these beams C be put after every second pair of lift-rods upon a hollow iron shaft running nearly the length of the spinning-frame, and rods or chains from the ends of the beam C are connected with the lift-rods, the use of the horizontal rods, straps, or chains, chain-

pulleys, levers, cross-shafts, and weights could be avoided, and many of the parts for traversing the ring-rail would be out of sight.

The objection to this method is, that some of the spinning-frames are very long, and the torsion of the shaft prevents uniformity of action in the traverse of the rail; but as cast-iron is unyielding in its nature, a shaft or pipe of large diameter would obviate the twist in a great measure.

In the drawings is shown a method that I have tried and applied to spinning-frames, and find to work well in practice.

At each extremity of the beam C is placed an adjustable casting provided with a cone or spur, *s*, extending upward, and over each end of said beam C is placed a cap or hood, *h*, made dishing, so as to receive the point of spur *s* and pivot freely upon it. The hoods *h* extend down on each side of the beam C, and terminate in ears *f* for the chains *f'* to hook onto. Said chains pass around a quadrant or pulley, *r*, and thence in a horizontal direction until they come to pulley *p*, pass over its face, and are secured to screw-bolts engaging with dogs *o*, and the latter are adjustably attached by set-screws to the lower ends of the ring-rail lift-rods *n*, as shown in Figs. 1 and 2.

To the horizontal portion of the chain *f'* is attached the thin strap *y*, ending in another chain passing over the pulley *p'*, to operate in a similar manner upon the next lift-rod *n*. The strap *y* may be of steel or brass, or it may be a chain, or any suitable material that will not stretch. This non-elasticity is essential to secure uniformity in the traverse of the ring-rail along its whole length.

Various ways can be used to connect the chain *f'* with the lift-rods *n*. In Fig. 3 is shown the kind of lift-rod connections that I use in long frames, and in which the chain *f'* is connected to one end of the link L, (shown also in top view in Fig. 4,) and the strap *y* is secured at the other end, the offset of the chain and straps being made at this link instead of on the pulleys.

To produce uniformity of action of each lift-rod *n*, it is necessary that they should be well adjusted with relation to the chains *f'*. I have shown three modes of accomplishing the adjustment—either by turning the nut on the end of the chain-bolt *v*, or by means of the collar *o*, capable of sliding and being adjusted on the lower end of the lift-rod, or by means of the stud of the pulley *p*, made adjustable in its slotted bearing *q*.

In the modification shown in Figs. 5 and 6 the pulley *p* is made wide enough to receive, besides the chain *f'*, the thin strap *y*, extended horizontally, and the strap *y'*, which passes over the pulley *p* and down until it reaches the screw *v* in the collar *o*. In this case the lower end of the chain *f'* and one end of the strap *y*, and also of the strap *y'*, are secured to the pulley *p*, the strap *y'* being preferably forked over the pulley for the passage of the strap *y* on a straight line leading to the next pulley and lift-rod.

In order to regulate the lifting-power of the weight F, it is either made adjustable on the beam by providing the latter with notches *c'* to retain its bail, as shown in Fig. 7, or by providing the weight with removable leaves, as shown in said figure.

In operating this machine, the toothed sector D, common to spinning-frames, is also used here. As the worm d^3 moves the sector back toward the pivot *d'* of the arm or sector-case there will be less and less rise and fall of the lifting-rod, and consequently less to the ring-rail, and the bobbin will be formed with tapering ends. As the sector-arm rises and falls by the action of the heart-cam the ratchet-wheel d^4 turns the worm d^3 and causes the sector to move in toward the pivot *d'*, and after the bobbins are filled the sector is run out again by hand.

In some spinning-frames and spoolers the traverse of the yarn on the bobbins is effected by means of a beam pivoted in the center, the ends rising and falling alternately like beam C; but by placing it high the board covering on the top of the frame protects it from lint and dust, and I am enabled to pull up on the lift-rods, instead of pushing up from the bottom, as heretofore. This pulling gives a better and more steady movement of the traversing rail, and more uniformly filled and firm bobbins.

Having now fully described my invention, I claim—

1. In a spinning-frame having two series of spindles, the combination, with the roller-beams B B, cross-beam *a*, and working-beam C, pivoted to said cross-beam, of the hoods *h*, ears *f*, chain *f'*, pulleys *p* and *r*, lift-rods *n*, ring-rails *k*, and mechanism for imparting to said working-beam a vibratory movement, as and for the purpose set forth.

2. The combination of the roller-beams of a spinning-frame with the cross-beam *a*, provided with pendent ears *a'*, and a working-beam pivoted to said ears, and having steel-yard-bearings, substantially as and for the purpose described.

3. The combination, with the roller-beams, of a cross-beam, and a working-beam, C, suspended therefrom, and the adjustable conical pivots secured to the ends of said working-beam, and the hooded caps over said pivots, substantially as and for the purpose described.

4. In a spinning-frame having a working-beam suspended, in the manner described, from its roller-beams, the combination of the angular bearings a^2 in the center of said working-beam, the adjustable pivots upon its ends, the caps, the adjustable connecting-rod of the sector, and the counterpoise-weight, located and adapted to operate substantially as shown and described.

5. In combination with working-beam C, adjustable connecting-rod, sector, heart-cam, and

weight, the caps *h* and adjustable conical bearing at each end of the beam, chains *f'*, and lift-rods *n*, substantially as and for the purpose described.

6. In combination with the working-beam C, provided with pivots at each end, hooded caps over said pivots, chains suspended from said caps, and vertical lift-rods of the ring-rail, the pulleys, straps, and chains, substantially as described, whereby said lift-rods are pulled from above rather than pushed from below, as and for the purpose specified.

GUSTAVUS E. TAFT.

Witnesses:

CYRUS A. TAFT,

HENRY B. OSGOOD.