Sheet 1. 2 Sheets.

C. W. Brown.

Spinning Mach.

No. 1,242. Patented Jul. 16, 1839.

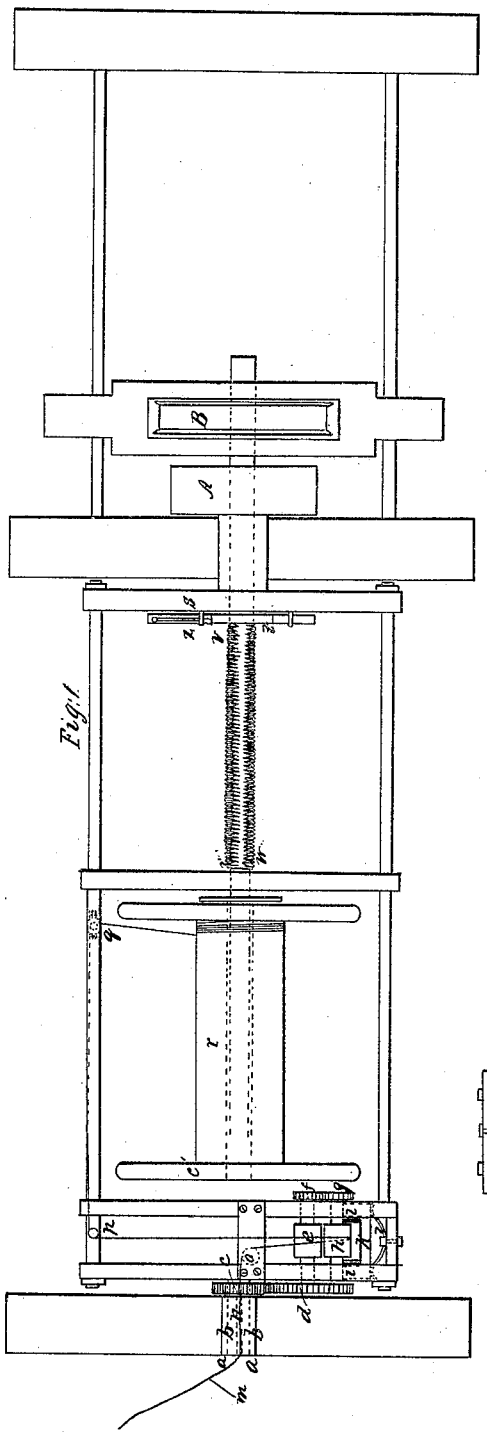

Fig. 1.

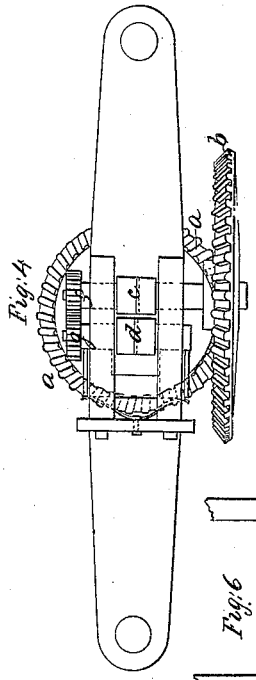

Fig. 4

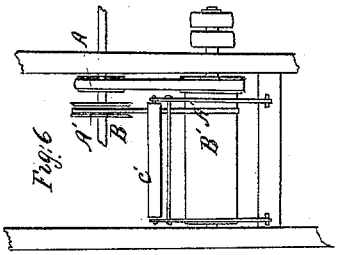

Fig. 6

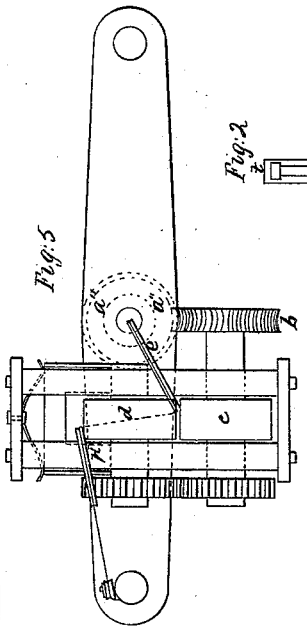

Fig. 5

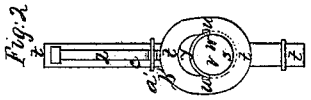

Fig. 2

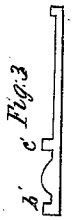

Fig. 3

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Fig. 1

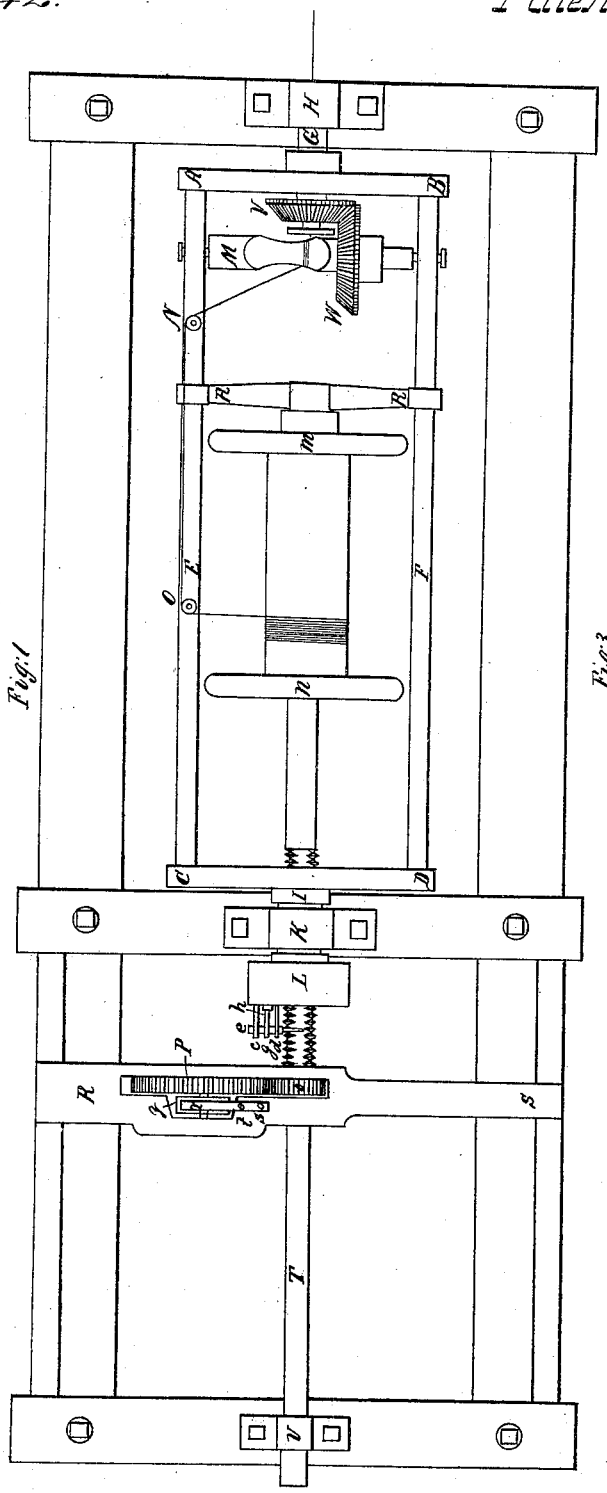


Fig. 2

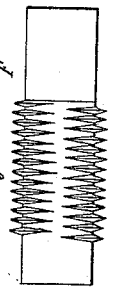


Fig. 3

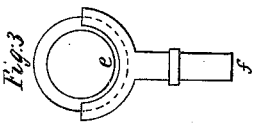
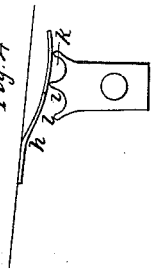


Fig. 4



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UNITED STATES PATENT OFFICE.

CHARLES W. BROWN, OF ROXBURY, MASSACHUSETTS.

MACHINE FOR SPINNING HEMP AND OTHER FIBROUS MATERIALS.

Specification of Letters Patent No. 1,242, dated July 16, 1839.

To all whom it may concern:

Be it known that I, CHARLES W. BROWN, of Roxbury, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Machinery to be Used in Spinning Hemp and Such other Fibrous Materials to Which the Same May be Applicable.

The said improvements, the principles thereof, and manner in which I have contemplated their application, together with such parts or combinations I claim to be my inventions and hold to be original and new, I have herein set forth and described; which description, taken in connection with the accompanying drawings herein referred to, composes my specification.

My invention is for the purpose of regulating the winding of the yarn or twist on the bobbin.

Plate I, Fig. 1, represents one portion of my improved machinery.

The flier is formed of two heads A, B, C, D, united by cylindrical or other proper shaped metallic rods E, F. The axis G of the head A, B, turns in a suitable box H. The axis I of the other head, turns in the box K. The flier is caused to revolve by a belt passing over a pulley L on the axis I.

The yarn is introduced through the axis G, and is passed around the drawing apparatus in the usual way, as seen on the barrel M; and from thence over the two small pulleys, N, O, attached to the side E, of the flier; continuing to the bobbin P resting on the spindle Q. The spindle Q has a cross bar R, R fitted on its end, so that the end of the spindle may revolve in the bearing of the cross bar. The rods E, F, of the flier pass through the ends of the cross bar R R, so that the cross bar will slide freely back and forth on the rods E, F; and at the same time serve to support the end of the spindle and render its motion steady. The spindle passes through a cylindrical hole in the neck I of the flier. On that portion which slides back and forth through the neck I a right and left threaded screw is cut, as seen at *a b*, Fig. 1, and more particularly in Fig. 2.

To the side of the pulley L, two studs or projections *c*, *d*, are attached, and serve to support the forked piece of metal *e*, *f*, the shape of which is more particularly denoted in Fig. 3, which is a side view of the same. The forked piece *e*, *f*, rests in the groove of the screw *a*, *b*. A small cam *g* is fixed on the cylindrical part of the fork *e*, *f*. This cam is shaped as seen in Fig. 4, or may be otherwise properly formed. It rests against a spring attached to the side of the pulley L in a manner shown in Figs. 1 and 4, the two points *i*, *k*, being at one time in contact with the spring and the two points *h*, *i* at the next, the spring operating to preserve the cam in either position.

As the pulley L and flier revolve, the fork *e*, *f*, resting in the left groove of the screw and held in that position by the projections *l*, *i*, of the cam *g*, resting against the spring *h*, pushes the spindle backward and distributes the yarn over the bobbin, until the end *m* of the bobbin arrives opposite the pulley O, when the fork *f* arrives at the end of the groove of the screw, turns itself, so that the other projections *i*, *k*, come in contack with the spring *h*, and is thus shifted into the right groove of the screw, so as to move the bobbin back again to its original position. A similar operation takes place at the end *b* of the screw. This will be readily understood by mechanics, who make use of right and left threaded screws for obtaining a reciprocating rectilinear motion.

A small cogged pinion *o* is fixed on the spindle. Into this pinion a cogged wheel *p* operates. A small pulley is attached to the side of the wheel *p*, and on the same axis. A spring *r*, confined at *s* to the sliding frame R S, lays upon the circumference of the pulley *q*; and is pressed down on the same as much as may be necessary to give the requisite degree of friction, by means of a screw *t*. The spindle turns easily in the frame R S, this frame resting on proper rails or supports, and moving to and fro with the spindle. The end T of the spindle slides and is supported in a box *v*. The object of the spring *r* is to produce friction on the spindle, to cause the bobbin to be retarded so as to take up the yarn as it is spun. The wheels V, W, and axis M are commonly used to draw the thread through the neck of the bobbin, and being no part of my improvement, need not be described particularly, only so far as they are used in combination with other parts.

Fig. 1, Plate 2, represents the second of my improvements. To the end of the tubular bearing which supports the neck *b*, *b*, of the flier, a spur pinion *c* is affixed so as to move with it. This pinion engages with or

plays into a gear wheel *d*, on the extremity of the axis of the draw roller *e*. On the opposite end of the axis of this roller is a small spur gear *f*, which matches into and turns another spur gear *g* on the extremity of the axis of another and similar draw roller *h*, placed by the side of, and acting with the roller *e;* the rollers *e*, and *h*, have suitable bearings *l' l'* in the cross bars of the flier. The roller *h* is pressed against the roller *e*, by a spring *i* (situated as seen in the drawings or otherwise properly placed and formed), acting against the side of a cross piece *k* whose right-angular ends *l*, *l*, are formed semi-circular to receive and press on the journals of the axis of the roller *h*. Thus should any portions of the thread be longer than others, or should knots or any foreign matters be presented in the thread, as they pass between the rollers *e*, *h*, the spring *i* will admit the roller *h* to recede from the roller *e*, so as to allow the thread to pass without any interruption. The course of the yarn *m* is thus described. Passing through a cylindrical or other suitable shaped hole *n*, in the neck *b*, *b*, of the flier, it is received on the circumference of a small pulley *o;* from thence between the draw rollers *e* and *h*, returning over the latter, and passing over the small pulleys *p*, *q* to the bobbin *r*.

Instead of the apparatus described and represented in Figs. 1, 3, 4, Plate 1, which, in connection with the right and left threaded screw, causes the bobbin to move back and forth, for the purpose hereinbefore described, I can employ another mode of effecting the same object. To the side of the lower cross head S of the flier, I affix by straps, or in any other suitable manner, the double sliding fork *t*, Fig. 1, and *t*, *t*, *t*, *t*, Fig. 2, Plate 2. This fork may be shaped as therein denoted, or may have any other proper form, which shall cause it to operate as I shall hereinafter describe. It has two notches *u*, *u*, Fig. 2, on its interior edge. At each extremity of the right and left screw *v*, *v*, Figs. 1, 2, a small pin is inserted. A spring or latch *z*, Figs. 1, 2, 3, is attached to the sliding double fork *t*. This latch is formed with two notches *b*, *c*, as seen in Fig. 3; which, (as the double fork *t* is moved to and fro,) are forced upward by the action of the spring *z*, and receive the strap *a'*, and thus lock or confine the fork *t* in either position.

As the pulley A, which gives motion to the flier revolves, one side *x*, Fig. 2, of the fork *t*, *t*, resting in the left groove of the screw *v*, *v*, and held in that position by the notch *b* of the spring *z*, pushes the spindle backward and distributes the yarn over the bobbin, until the end *c'* of the bobbin arrives opposite the pulley *g;* when the opposite side *y* of the fork *t*, arriving at the end of the groove of the screw, is slid forward, by the pin *w*, acting on the notch *u*, so as to engage the opposite interior side *y* of the fork, with the right thread of the screw *v*, so as to move the bobbin back again to its first position. A similar operation takes place at the other end of the right and left screw, and thus the bobin will move to and fro, and the yarn be distributed thereon.

In order to cause the bobbin to take up the yarn, I affix a pulley B, on or near the end of the spindle, over which pulley I intend a band, A' A', Fig. 6, Plate 2, shall proceed to another pulley or suitable drum B, properly placed beneath the same, to give the required motion. Then by means of a heavy cylindrical roller C', resting against the band, with any suitable contrivances to cause it to regulate the pressure on the band, the friction may be increased or diminished in order to cause the bobbin to take up the yarn as it is spun.

The next of my improvements is exhibited in Fig. 4, Plate 2. Instead of a spur gear *c*, Fig. 1, I affix to the end of the tubular bearing *a*, *a*, an eccentric toothed beveled pinion *a*, Fig. 4, into which a beveled gear *b* operates, the center to which the teeth of these two wheels converge, being the center point of the two drawing rollers *c*, *d*. The gear *b* is fitted on the end of the axis of the draw roller *c*, and gives motion to the set of draw rollers *c*, *d*, which are geared together by the spur wheels, *f*, *g*, and placed as seen in the drawings or otherwise suitably arranged. By this arrangement of the draw rollers they may be placed immediately in front of the neck of the flier so as to receive the yarn directly from the neck without previously passing it over the pulley as at *o*, Fig. 1. After the thread is passed through and around these draw rollers in any suitable manner, it proceeds from thence to and around small pulleys in the side of the flier, similar to *p*, *q*, Fig. 1, and from them to the bobbin.

My next improvement will be understood by reference to Fig. 5, Plate 2. Instead of the spur wheel *c*, Fig. 1, I affix on the end of the tubular bearing *a*, *a*, an endless screw *a''*, Fig. 5, Plate 2. The tube *a* is extended of such length as to allow a gear wheel on the axis of one of a set of draw rollers *c*, *d* to be connected with the endless screw, so that when the flier revolves the gear wheel *b* will turn by the action of the thread of the endless screw *a*, thus giving action to the draw rollers. After passing through the neck of the flier the yarn is received on a pulley *e*, suitably placed. From thence it passes between the draw rollers *c d*, and partly around the roller *d*, from whence it goes over another pulley *f'* suitably placed,

passing from this latter over the small pulleys on the side of the flier to the bobbin situated as before described.

The parts of the above machinery are to be constructed of any suitable material or materials, whether wood, iron or other proper metal, and the whole may be shaped as seen in the drawings or otherwise varied in form, preserving the main principles of operation, which I have in each case explained.

By varying the proportions of the gear wheels which operate the draw rollers, the twist of the yarn may be regulated, that is to say, increased or diminished at pleasure, for it is evident, that if the size of the fixed pinion is decreased, the draft of the yarn will be slower, and more twist imparted to the same and vice versa.

Having thus described my improvements in spinning machinery, I shall proceed to specifically point out such parts, separate or combined with each other, together with such arrangements as I claim as my invention and hold to be original and new. They are as follows, viz:

1. The employment of a right and left screw (the threads of which cross each other) on the spindle of the bobbin for giving a rectilinear reciprocating motion to the bobbins as above described.

2. The method of giving to the spindle the rectilinear reciprocating motion, by means of the fork attached, either to one of the heads of the flier, or to the pulley attached to the shaft of the flier, and by which it receives its rotary motion, for the purpose and in the manner above described.

3. The arrangement of the double fork *t*, and spring-latch *z*, in combination with the double threaded screw, in the manner and for the purpose described.

4. The employment of the cam *g* and spring *h* to retain the fork *e*, *f*, when shifted by the end of the double screw in the manner described.

In testimony that the above is a true description of my said inventions I have hereto set my signature this twenty ninth day of June,—in the year eighteen hundred and thirty nine.

CHARLES W. BROWN.

Witnesses:
EZRA LINCOLN, Jr.
JOHN NOBLE.