Sheet 1 - 4 Sheets.

# B. Brundred.

## Spinning Mach.

No. 4,179

Patented Sept. 9, 1845.

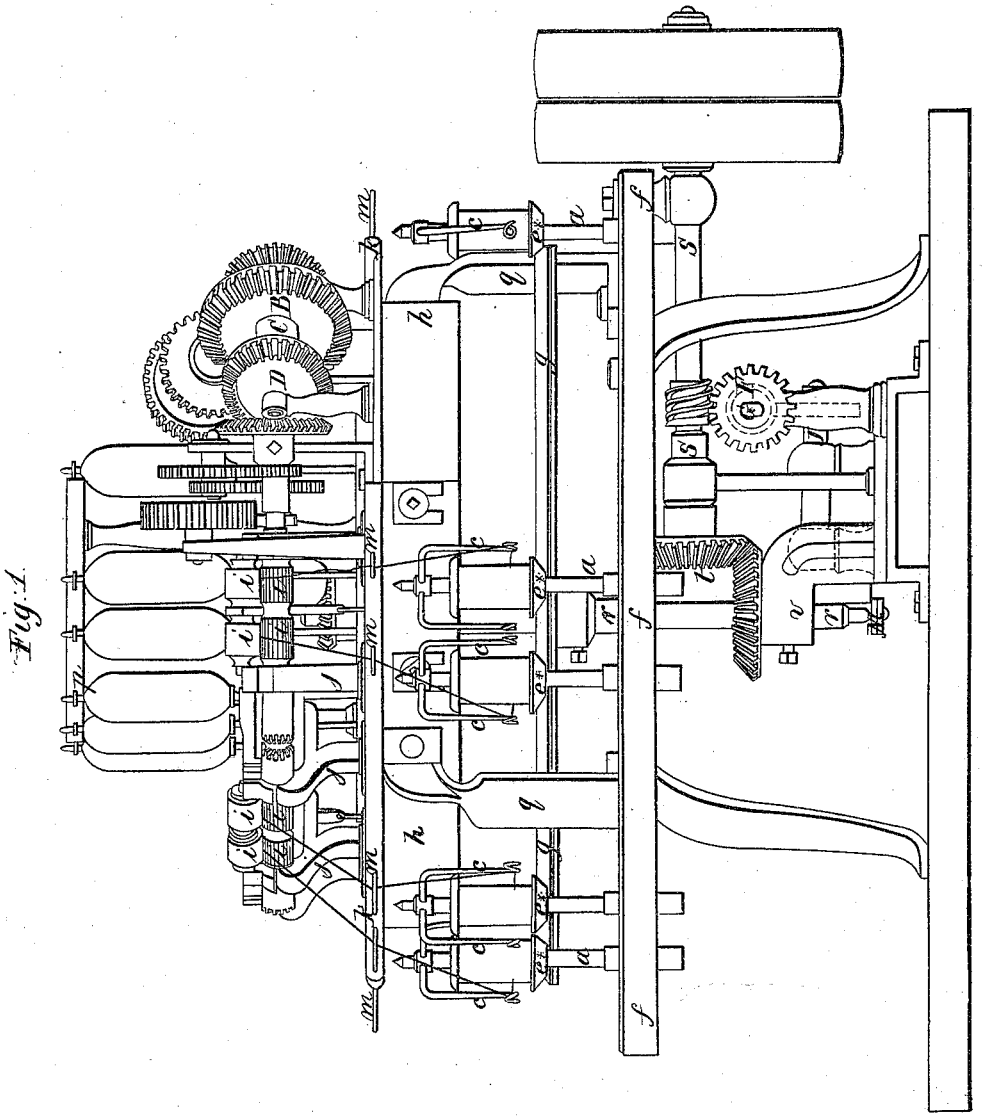

Fig. 1.

Sheet 2. - 4 Sheets.

# B. Brundred.

## Spinning Mach.

No. 4,179. Patented Sept. 9, 1845.

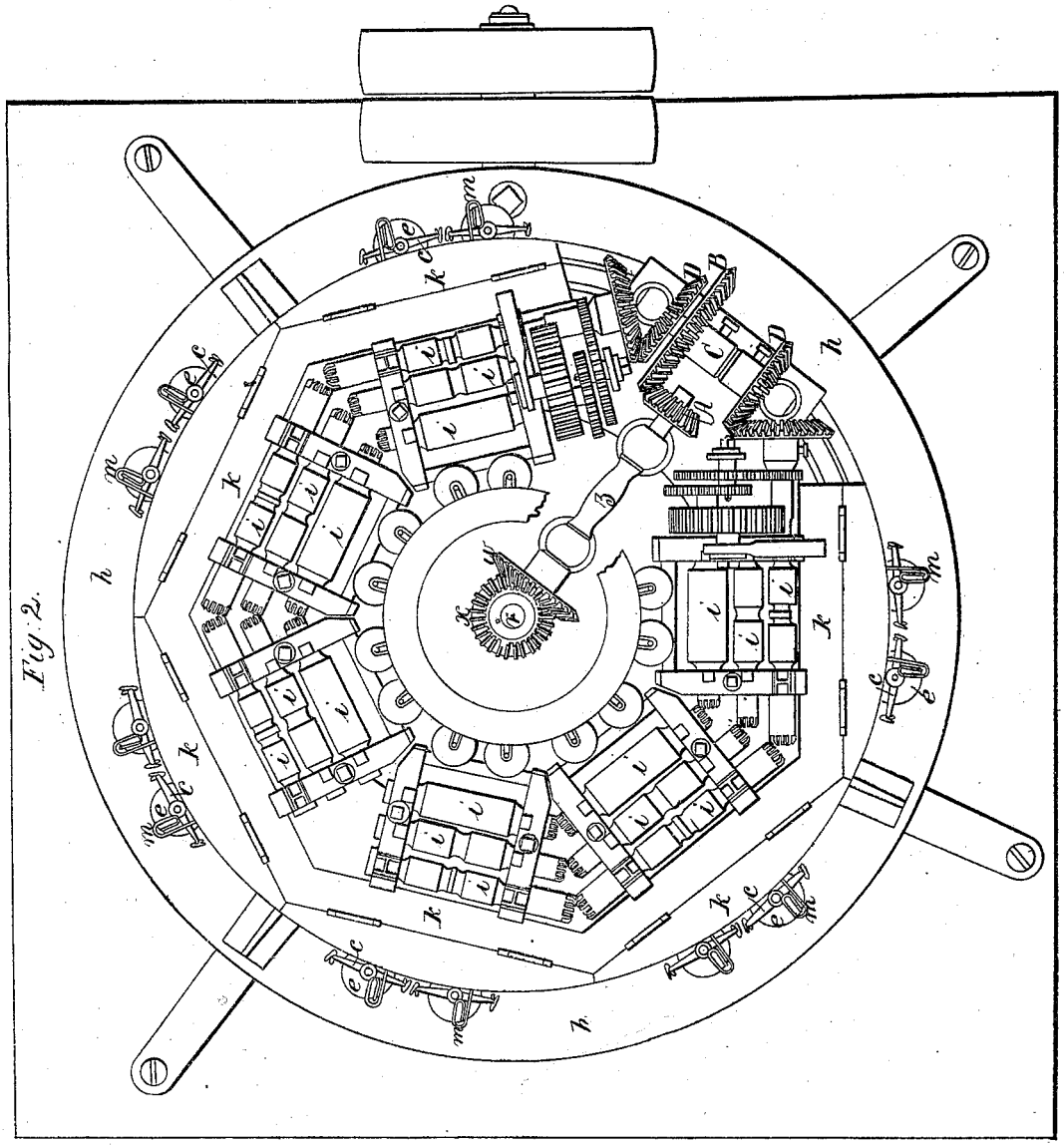

Fig. 2.

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## Spinning Mach.

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Fig. 5.

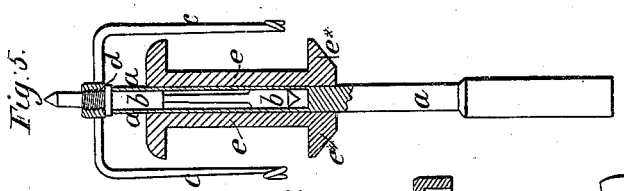
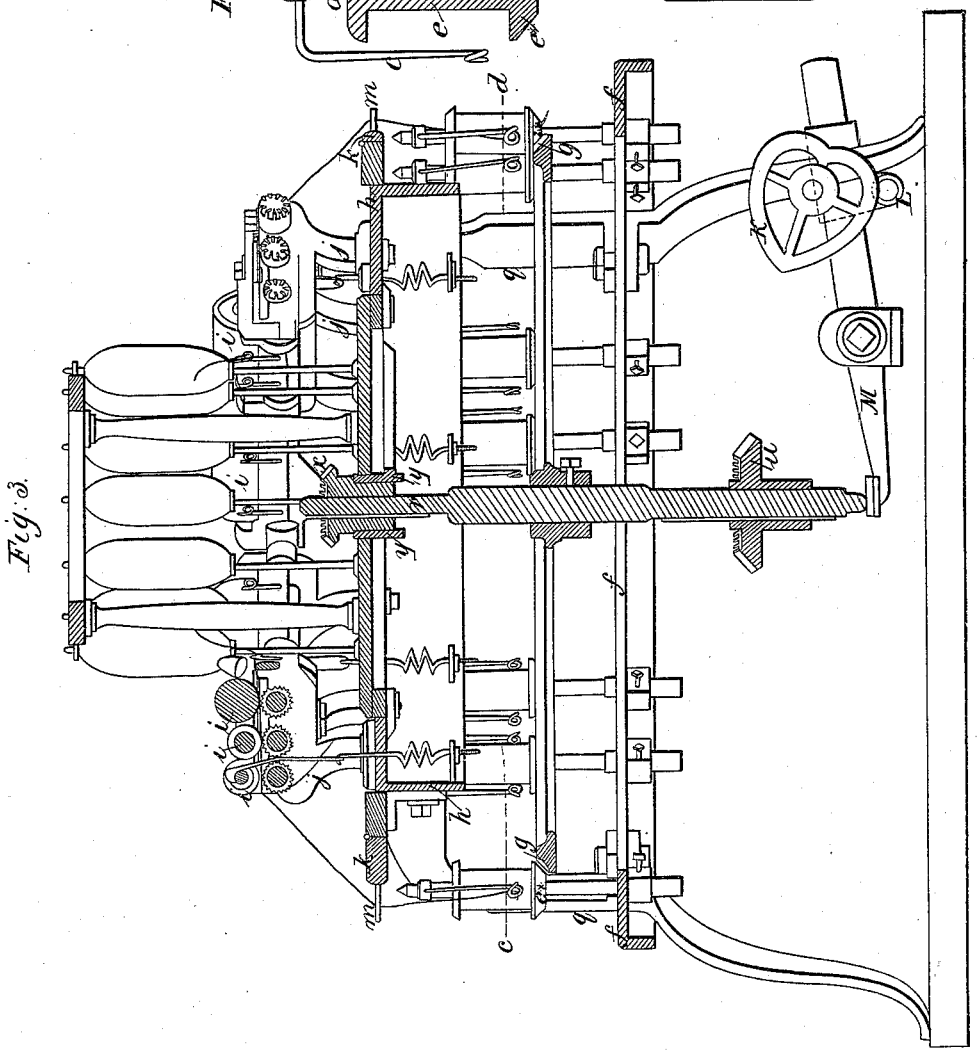


Fig. 3.



Sheet 4-4 Sheets.

# B. Brundred.

## Spinning Mach.

No. 4,179. Patented Sept. 9, 1845.

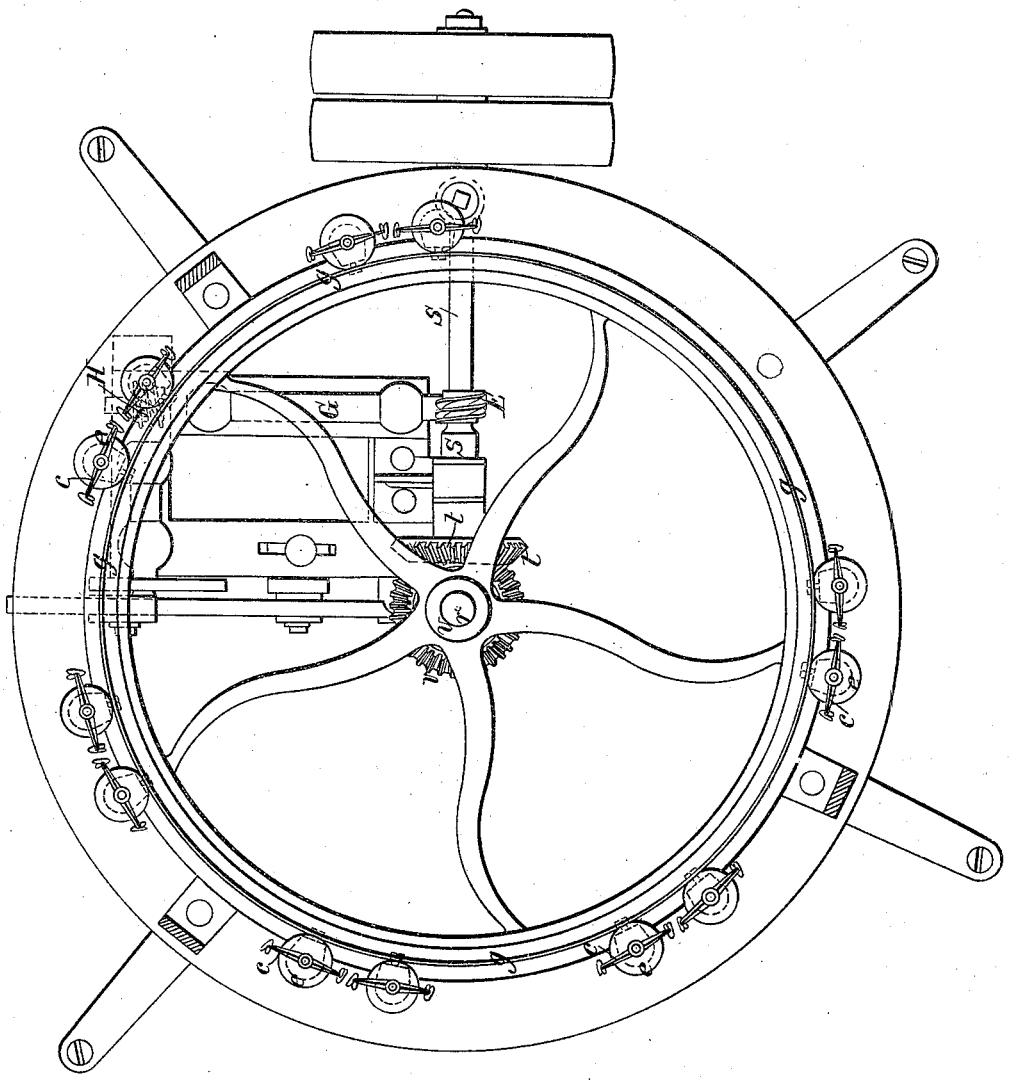


Fig. 4.

# UNITED STATES PATENT OFFICE.

BENJAMIN BRUNDRED, OF PATERSON, NEW JERSEY.

## THROSTLE-SPINNER.

Specification of Letters Patent No. 4,179, dated September 9, 1845.

*To all whom it may concern:*

Be it known that I, BENJAMIN BRUNDRED, a citizen of the United States of America, of Paterson, in the county of Passaic and State of New Jersey, but at present in the city of Mexico on business, have invented or discovered a new and useful Manner of Constructing Throstles Applicable to the Spinning of Cotton and other Fibrous Substances.

This invention consists in a peculiar combination, or arrangement, of machinery constituting what is commonly called a throstle; such arrangement having the bobbins, spindles and fliers, disposed in a circular range, in contradistinction to the ordinary arrangement, according to which, those parts are always situated in right lines. This disposition of the parts admits of my adopting a mode of driving the bobbins, spindles and fliers of spinning machinery by means of friction, through the intervention of a bevel-edged, horizontal wheel without the assistance of bands, or riggers.

I have, in this my specification, described the manner of driving bobbins, only, by means of my new application of the horizontal friction wheel to this purpose; as the manner of applying the same to the driving of fliers and spindles will be obvious to any competent workman.

In the accompanying drawings, Figure 1, represents a side elevation of the improved arrangement of the throstle frame; Fig. 2, a horizontal view of the same as seen from above. Fig. 3, is a vertical section taken about the line *a*, *b*, in Fig. 2, looking toward the left hand end thereof, and Fig. 4, is a horizontal section showing the lower part of the machine taken through the line, *c*, *d*, in Fig. 3; in all of which figures, the same letters of reference denote the same parts.

The spindles, fliers and bobbins used in this machine do not differ materially from some of those commonly employed, but a slight difference which exists I will now point out. Fig. 5, represents one of the spindles, with its bobbins, in vertical section. The spindles *a*, *a*, when affixed to the machine, are intended to be stationary, (though it may be advisable, under certain circumstances, to drive the live spindle) and each of them to be provided with a cylindrical cavity in its upper end, which receives the rotary stem. Upon this the flier *c*, *c*, is screwed, the stem *b*, being provided with a shoulder *d*, which bears upon the top edge of the stationary spindle *a*, *a*.

The bobbin shown at *e*, *e*, is placed loosely upon the spindle *a*, *a*, and is capable of revolving freely thereon; it is of the usual construction, with the exception of the bottom flange, *e**, *e**, which is here formed as the frustum of a cone, for the purpose hereinafter described. The spindles, bobbins and fliers thus constructed, are mounted upon the large, circular rail *f*, *f*, *f*, as shown at Figs. 1, and 3; the spindles, *a*, *a*, *a*, being firmly secured to the rail *f*, *f*, *f*, *f*, by screws, as represented in the drawings. The roller heads, or brackets, *j*, *j*, *j*, which carry the drawing rollers, *i*, *i*, *i*, are affixed to an upper, circular rail, or annular plate, *h*, *h;* that plate is supported by arms *q*, *q*, extending upward from the circular rail *f*. The front and second drawing rollers *i*, *i*, *i*, turning in the roller heads, or brackets, *j*, *j*, *j*, *j*, *j*, *j*, are arranged in this figure in pairs, and disposed in a polygonal form, as shown in Fig. 2, in order to accommodate them to the circular arrangement of bobbins and fliers upon the circular rail *f*, *f;* but, of course, three or four rollers may be made and conjoined upon the same axis.

A frame *k*, *k*, *k*, *k*, is attached to the roller plate, *h*, *h*, parts of which are capable of turning up on hinges in segments corresponding to each set of rollers, in order to admit of doffing. To each of these segments is affixed a series of eyes, or thread guides, *m*, *m*. The lower, conical flanges, *e**, of the bobbins *e*, *e*, *e*, bear against the wheel, or disk, *g*, *g*, *g*, *g* fixed on the vertical shaft *r;* which wheel, or disk, is made conical on its upper surface, in such manner as to cause it to correspond with the beveled ends of the bobbins flanges *e**, *e**, *e**. The vertical shaft *r*, carrying the disk, or wheel, *g*, is capable of being moved up and down by the action of a lever M, which supports it below.

Motion is communicated to the mechanism by the following means. The horizontal, main driving shaft S, S, in Figs. 1, and 4, is provided with the usual fast and loose pulleys to be driven by a band from any first mover. On the inner extremity of this shaft S, is affixed the beveled wheel *t*, which takes into another beveled wheel *u*, supported by the part *v*, which wheel gives motion to the vertical shaft *r*, by a projection or feathers, on the shaft working in a groove through the wheel *u*. By these means, ro-

tatory motion is communicated from the horizontal shaft *s*, to the vertical shaft *r*, and through the wheel, or disk, *g*, *g*, to the bobbins. The upper end of the shaft *r*, passes through, and by means of a projecting rib gives rotary motion to, the beveled wheel *x*, in the bush *y*. The wheel *x*, at the top of the shaft *r*, gears into a wheel *w*, affixed to the inner end of a horizontal shaft *z*, seen best in Fig. 2. At the outer extremity of this shaft *z*, there is a beveled wheel A, taking into the wheel B, on the tangent shaft C, on which shaft are also mounted the bevel wheels D, D, which drive corresponding wheels on the ends of the front drawing rollers *i*, *i*. The two inner tiers of drawing rollers are driven at suitable speed by means of the ordinary gear, as shown in the drawings. Rotary motion is thus communicated to the first set of rollers at each end of the tangent shaft C; and by teeth cut in the ends of the rollers, corresponding motion is communicated to the remaining bottom rollers in the series.

The copping motion which I have employed is the following: Upon the main driving shaft S, S, is affixed the worm, or endless screw, E, taking into the worm wheel F, (see Figs. 1, and 4) which worm wheel is mounted upon a tangent shaft G; at the reverse end of this tangent shaft G, is a worm H, shown by dots in Fig. 4, taking into the worm wheel I, affixed to the shaft J, seen by dots in Fig. 1, and in section in Fig. 3. Upon this shaft is also fixed the heart wheel K, which, in revolving by means of the train of gear above described, operates upon the roller L, on a stud in the lever M, vibrating upon a fulcrum in the standard shown in Fig. 3. The lever M, will thus be caused to rise and fall upon its fulcrum, and by so doing to lift the vertical shaft *r*, *r*, which bears upon the end of its shorter arm. The shaft *r*, *r*, with the horizontal wheel *g*, *g*, is raised, and suffered to descend by the action of the heart wheel K; and the bobbins, being supported by the wheel *g*, *g*, rise, or fall, with it, and thus effect the copping of the yarn.

Having thus, fully described the nature of my improvement in the manner of driving the bobbins, spindles and fliers of a throstle, for the spinning of cotton, or other fibrous substances; what I claim therein as new, and desire to secure by Letters Patent, is—

The giving motion to such bobbins, spindles and fliers by means of a horizontal friction wheel, beveled on its upper edge, so as to adapt it to the lower ends of the flanches of the bobbins, or some analogous device, on the spindles, which are also duly beveled; by which means I am enabled to give them the requisite motion, and to dispense with the use of bands for that purpose.

I do not claim to be the inventor of the method of communicating a revolving motion from one body to another by means of friction, this having been frequently done in machinery of various kinds; but I do claim the manner of applying this principle to the driving of the bobbins, or spindles, of a throstle, or other similar spinning machine, under an arrangement of the respective parts, and for the purpose herein fully made known; by means of which arrangement and combination the use of bands is dispensed with, and the motion is more advantageously communicated than in the ordinary mode, while the revolving and traversing motions necessary to the winding of the yarn upon the spools are given thereto.

BENJAMIN BRUNDRED.

Witnesses:
JOHN JAMES TOBIN,
WILLIAM J. BRUNDRED.