Sheet 1, 2 Sheets.

W. Rouse.

Ring Spinning.

No. 5,416.

Patented Jan. 25, 1848.

Fig. 10.

Fig. 12.

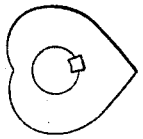

Fig. 8.

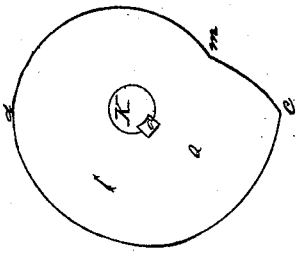

Fig. 11.

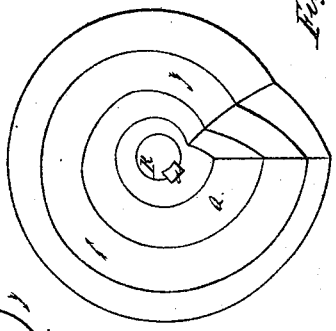

Fig. 7.

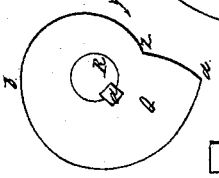

Fig. 1.

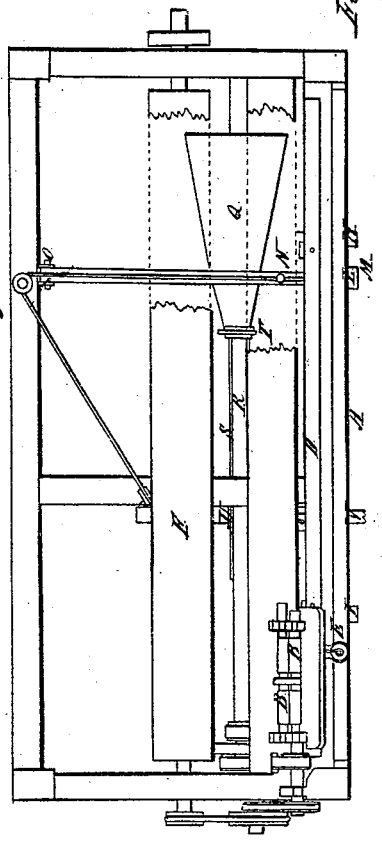

Fig. 2.

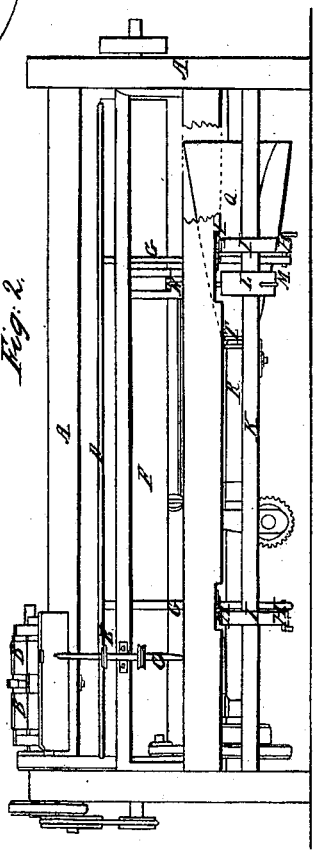

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Fig. 1.

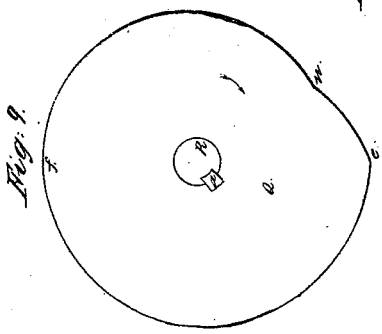


Fig. 3.

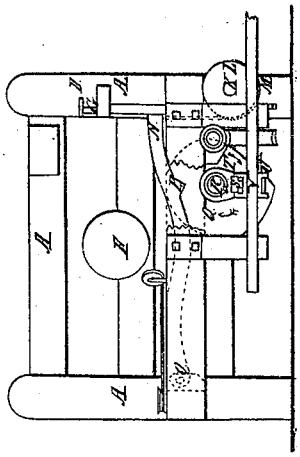


Fig. 4.

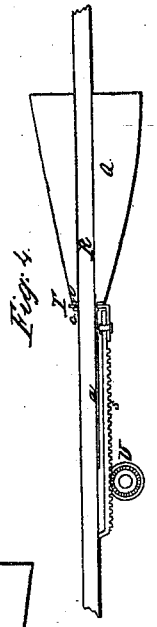


Fig. 5.

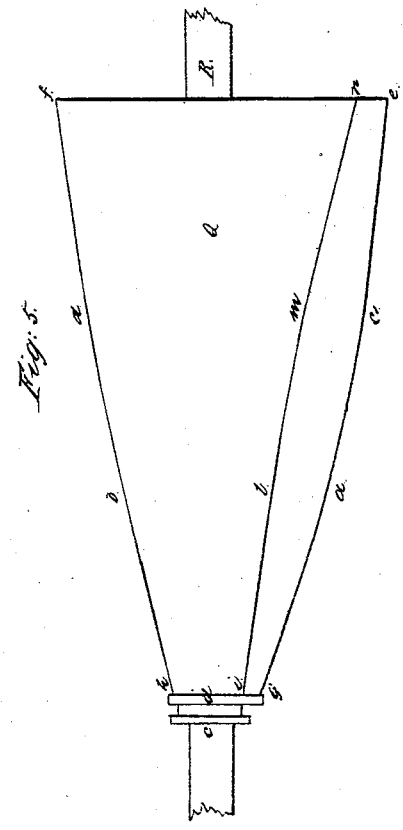
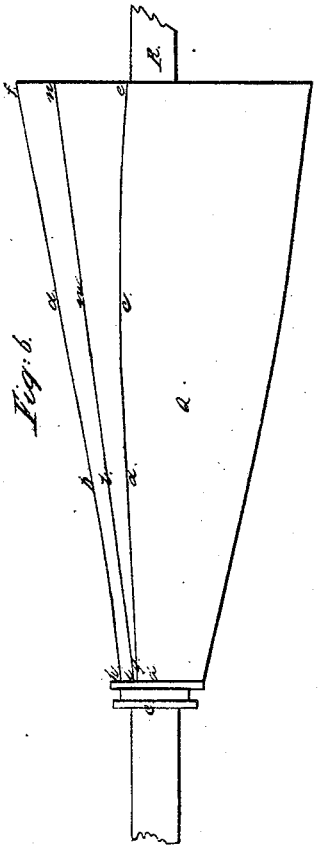


Fig. 6.



UNITED STATES PATENT OFFICE.

WANTON ROUSE, OF THOMPSON, CONNECTICUT.

SPINNING-FRAME.

Specification of Letters Patent No. 5,416, dated January 25, 1848.

To all whom it may concern:

Be it known that I, WANTON ROUSE, of Thompson, in the county of Windham and State of Connecticut, have invented a new and useful Improvement in Spinning-Frames, whereby I am enabled to build the cops with a binding thread or threads; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 exhibits a top view, of a spinning frame, having my improvement adapted to it. Fig. 2 is a front elevation of it. Fig. 3 is a vertical, central and transverse section of it, taken as if the spectator was looking toward the right hand end of the machine.

In the said figures, A denotes the main frame of the machine. B B, the drawing rollers. C the spindle on which the cop is formed.

D is the wave or bar, which sustains the ring E, which surrounds the spindle, and guides the thread upon it, and is made to rise and fall with the wave, in order to distribute the yarn upon the spindle, in the manner required to build the cop thereon.

F is the drum or cylinder, around which the bands pass, which drive the spindles, but one spindle being shown in the drawings—as the cops are built, on all the others respectively in the same, or a similar manner as on the one above designated. The rotary movements of the spindle and other parts which are common to ordinary spinning frames, are affected by any of the common and proper methods of accomplishing the same.

The wave D is sustained in position by upright rods G G, each of which has one end of a strap H attached to its lower end. The upper end of the said strap is secured or fastened to the upper part of the periphery of one of two pulleys I I which are affixed on a long horizontal shaft K as seen in Fig. 2. The said shaft K is sustained so as to revolve in suitable bearings, and has another pulley L placed upon it. A strap or band M is attached to the front part of the pulley L, and passes underneath and partially around the pulley, and is carried upward and attached to the front end of a lever N which moves up and down upon a fulcrum at O. The said lever N has a long angular projection P, extending downward from it, and resting upon the external surface of what may be termed the regulator Q. My improvement is found in the manner in which the said regulator is made and used. It is placed upon a long horizontal shaft R, which is put in revolution by a pulley, and band, or in any other proper manner.

Fig. 4 is a vertical and longitudinal section of the said shaft, and regulator, and rack and pinion by which said regulator is moved or made to slide upon the shaft. The shaft has a spline or feather (*a*) extending from it and passing through the regulator for the purpose of insuring a rotary motion of the regulator with the shaft. A long toothed rack bar S is connected to the small end of the regulator by means of a collar plate T, through which the said end passes and turns. Shoulders or collars *c*, *d*, applied to the regulator in each side of the plate T, serve to confine the said plate thereto.

The rack bar has teeth made upon its under side, the said teeth being made to engage with a pinion U fixed upon a transverse shaft V, which is to be rotated by suitable machinery and in such manner as to cause the pinion to act upon the rack and gradually draw the regulator toward it (the pinion) while the operation of building the cop is being effected. The regulator is to be made of such a shape as when it is revolved and moved toward the pinion U, to impart to the lever N such vertical, ascending and descending movements, as will cause it to operate in the wave D (through the mechanism intervening between them, and hereinbefore described) and impart to it the necessary vertical movements, both upward and downward, to insure the building of the cop of the shape required and in the manner required viz. with a binding thread on it.

In order that it may be understood what is meant by the term binding thread as applied to a cop, I would remark that after the yarn or thread has been regularly wound upward on the spindle for a short distance, the wave is suddenly and quickly dropped or depressed so as to cause the yarn to wind downward, and to or near the point of commencement, and over that before wound on, and in a long helix.

The wave is next raised up with a slower motion and causes the yarn to gradually lay

upward again, and over the binding thread before mentioned. This process is carried on throughout the cop until it is regularly built up in the form required. A cop, so made, may be removed from the spindle, and bent in almost any direction, without falling apart, as the up and down binding threads on it, prevent the horizontal coils from separating from one another. Such cops have heretofore been spun on mules but the binding threads were either put on by the action of the attendant, or by mechanism entirely different from anything herein described. To my knowledge they have never been formed on the common spinning frame.

I shall now describe that part of my invention, or what I have termed the regulator by which I am enabled to build the cop on the spindle and with binding threads.

Fig. 5 represents a side elevation of the said regulator. Fig. 6 is another side elevation taken on a plane supposed to be at right angles to the plane on which the elevation in Fig. 5 is made. Fig. 7 is a transverse section taken in the line *a b*, Fig. 5. Fig. 8 is a transverse section taken on *c d*. Fig. 9 is an end elevation taken on *e f*. Fig. 10 is a section taken on *g*, *h*. Fig. 11 exhibits the sections through *g*, *h*, *a*, *b*, *c*, *d*, and the end view *e f* projected on one plane, in their relative positions with regard to each other.

A regulator of the shape herein described and represented is calculated to make a cop having a cylindrical body and conical ends. If one of any other shape is desired the form of the regulator must be changed accordingly but it must still contain the addition which I consider as my invention—viz—that part which operates to depress the waves at the proper times and in the proper manner to lay the binding threads, it being caused by the remaining curved surface of the regulator to produce the proper wind of the yarn over the binding threads and in such degrees as may be requisite to gradually build up the cop.

The arrows on the sections denote the direction in which the regulator is moved or revolved transversely. By examination of the sections it will be perceived that they are eccentric, the position of the shaft R being shown on them. Consequently if the regulator is revolved, (supposing it cause no longitudinal motion) it will gradually raise the lever N (and the wave D) upward to the extent of the eccentricity of the section, and afterward gradually lower it, as well as the wave D to the position it first held. This will cause a series of horizontal or nearly horizontal layers of thread on the spindle, and some distance upward thereon. A heart or eccentric cam such as is denoted by Fig. 12, would produce movements as aforesaid, in other words it would produce a continuous vertical elevation of the wave to a certain height, and then a corresponding vertical depression of it, to the point of its lowest position. Were a heart cam used and it was kept continually revolving the spindle would be carried by a cylindrical cop only without any binding thread or threads in it. Such a cop when removed from the spindle would easily fall apart.

My improvement consists in forming the transverse section of the regulator with a sudden fall as seen at *k*, *i*, in Fig. 10 *a*, *b*, in Fig. 7 *c m* in Fig. 8 *e n* in Fig. 9 and at *g l m n e c a* in Figs. 5 and 6. This sudden fall causes the lever N when its angular point P passes beyond the point *k* (Fig. 10) of extreme eccentricity, to suddenly or quickly fall down the plane or curve *k*, *i*, and in a corresponding manner cause the wave to drop or be depressed and in so doing to lay a binding thread over the yarn previously wound on the spindle. Were we to employ a simple eccentric of the transverse section denoted by Fig. 10 and give to it any given number of revolutions on its axis—it would elevate and depress the wave in such manner as to produce a cylindrical cop having binding threads—the length of the said cop being equal to the extent of rise or vertical movement of the wave.

Now as we desire to form cops of other shapes, and whole lengths shall be greater than the length of binding thread put into them, it becomes necessary that we should devise some means whereby the wave may not only be made to rise and fall far enough to lay the yarn and a binding thread over it, but that it may gradually rise higher up (having the same fall as it had at starting or a greater or less fall as circumstances may require) so as to build the cop upon the spindle. The manner in which this is effected constitutes the second part of my invention.

The regulator should be increased in length and in its transverse dimensions as represented in the drawings—the transverse section of it perpendicular to its axis at any point or part, of it being made of such eccentricity and shape as will elevate the wave and depress it, so as to put in the binding thread according as circumstances may require.

I am aware that there may be various modes adopted to produce what may be termed the additional raise of the wave, in order to build up the cop. The whole regulator (if made like Fig. 10) and lever over it and wave and parts connecting them, may be arranged in a frame, which frame may be regularly and properly elevated by suitable mechanism applied to it, or instead of such a mode of accomplishing the same, the lever may be raised by a chain and pulley suitably placed and made to act upon it, in which case, it would be necessary to increase the

size of the regulator, and make it move longitudinally, to the degree requisite to bring the drop (*k i* Fig. 10) which puts in the binding thread up to meet the lever.

I wish it to be distinctly understood that I do not intend to limit myself to the precise form of regulator represented in the accompanying drawings, but to vary the same as circumstances may require, I retain the principles of my improvement for making cops of any fibrous substances.

What I claim as my invention is—

Governing the winding of the thread in forming the cop so that it shall bind in its descent by means of the regulator with the drop or fall (as represented at *k i* Fig. 10 and otherwise as above described) in combination with an eccentric curve or periphery substantially as shown at *i j k* Fig. 10 and otherwise as herein before described.

In testimony whereof I have hereto set my signature this 2d day of November A. D. 1846.

WANTON ROUSE.

Witnesses:

JONATHAN NICHOLS,

FRANKLIN BAILEY.