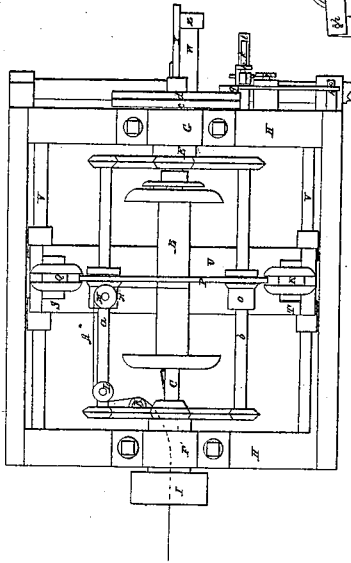


*J McCully.*  
*Spinning Mach.*

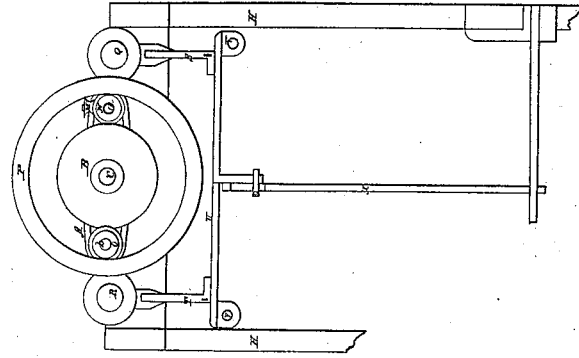
*N<sup>o</sup> 4,638.*

*Patented Jul. 14, 1846.*

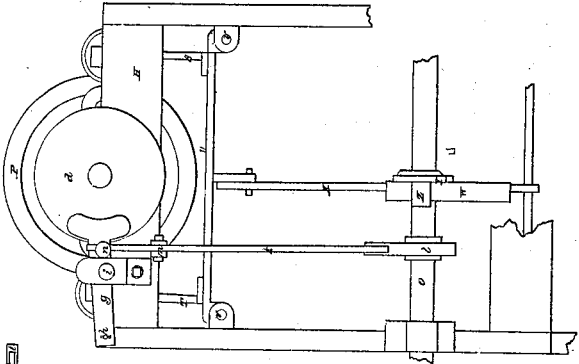
*Fig. 1.*



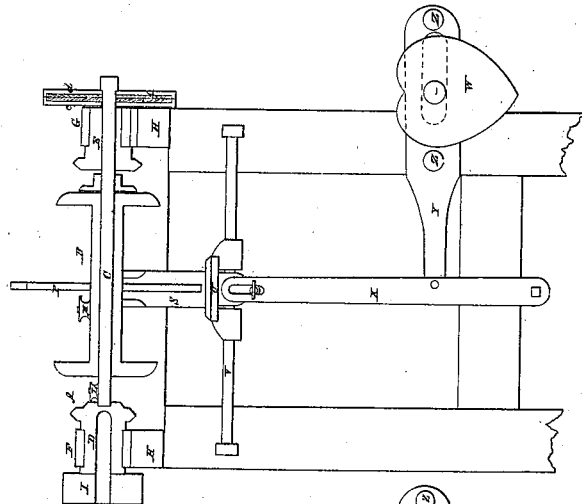
*Fig. 3.*



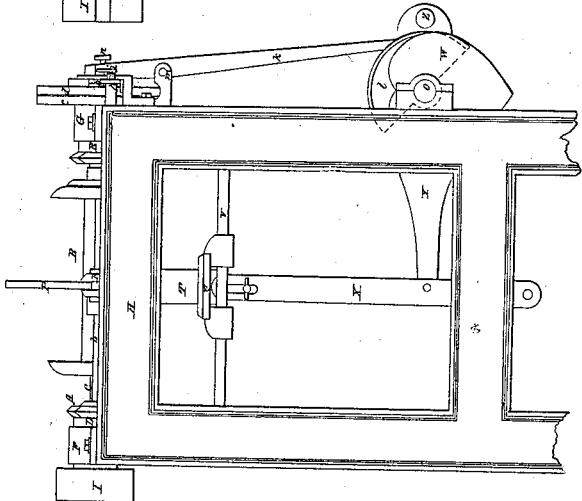
*Fig. 3.*



*Fig. 4.*



*Fig. 2.*



# UNITED STATES PATENT OFFICE.

JNO. McCULLY, OF SALEM, MASSACHUSETTS.

## SPINNING HEMP, &c.

Specification of Letters Patent No. 4,638, dated July 14, 1846.

*To all whom it may concern:*

Be it known that I, JOHN McCULLY, of Salem, in the county of Essex and State of Massachusetts, have made a new and useful invention of certain improvements in machinery for spinning hemp, or various other fibrous materials to which the same may be successfully applicable; and I do hereby declare that the nature of my said invention and the manner in which it is constructed and operated are fully set forth and represented in the following specification, accompanying drawings, letters, figures, and references thereof.

Of the aforesaid drawings, Figure 1, denotes a top view of a flyer and bobbin, having my improvements applied to them, the said figure also showing the supporting frame. Fig. 2 is a side elevation of the same, and the said frame, and various other parts to be hereinafter described. Fig. 3 is an end elevation of the above. Fig. 4 is a vertical, central, and longitudinal section of the flyer, bobbin, etc. Fig. 5 is a transverse and vertical section of the same, taken through the circular annulus or ring, which encompasses the legs of the flier.

A, in the drawings, represents a flier, and B, a bobbin arranged within it, and supported in place by a spindle C, extending through the necks or journals D, E, of the said flier. The said necks are supported and revolve in boxes F, G, affixed upon the upper part of a suitable sustaining frame H.

My first improvement consists in the mechanism by which the yarn is distributed, over the bobbin or from head to head of it during the operation of spinning and winding it on the bobbin. Motion is given to the flier by means of a driving band passing around a pulley I placed upon its neck D. The yarn to be twisted is taken from the usual draw rollers and passed through the neck D of the flier, thence out at the side of the neck, and between two guide pulleys, K, L, and over the latter as represented in the drawings by red lines. From thence the yarn is carried about a pulley M, fixed upon one of two slides, N, O, which are disposed respectively, upon the legs *a*, *b*, of the flier and traverse or play loosely thereon, and carry a circular annulus or ring P, which is attached to them, surrounds the flier legs, and plays (when revolved by the flier), in the grooves of two grooved guide pulleys, Q, R, which are sustained by and

turn in the tops of standards S, T, which project upward from a horizontal carriage U, extending transversely underneath the annulus P, and flier and bobbin, as seen in the drawings. The said carriage U, is supported by and moves upon parallel guide rods V, V. The carriage U has a reciprocating rectilinear movement on the rods V, V, imparted to it by means of a heart cam W, which acts upon an upright lever X through a connecting bar Y, the cam operating against studs Z, Z, projecting from the bar Y as seen in the drawings. As the flier is revolved, it carries the circular annulus around with it, and as the carriage U is moved on its guide bars, it moves the annulus with it. Such a movement of the annulus regularly distributes the yarn over the bobbin. The annulus by embracing the flier legs as it does, serves to counteract the effect of centrifugal force upon them. By the employment of the annulus, in combination with the flier and carriage, I am enabled to make use of a very short flier instead of a long one as commonly employed, when the bobbin is moved backward and forward, in a longitudinal direction through it.

The next part of my invention is that by which I cause the bobbin to take up the yarn, as fast as it is spun or twisted by the flier. *c*, Figs. 1, 2, 3, 4 denotes a circular disk or plate of metal secured or otherwise made fast to the main frame H, in the position represented in the drawings. The spindle C upon which the bobbin B rests, passes and turns freely through the central part of the said disk, and has fixed upon it, and in apposition with the disk, another disk *d*. The inner faces of the two disks are turned out and filled with common "anti" friction composition metal, in order to prevent them from wearing away too fast, the said metal being represented at *e*, *f*. A lever *g* whose fulcrum is at *h*, is applied to the external plate or disk *d*, in such manner as to bear at one end against it and be pressed in contact with it, with the degree of force required, by means of a regulating screw *i*, adapted to the lever as seen in the drawings. When the plate or disk *d* is pressed against the fixed disk *c*, friction will be created during the revolution of the former in such manner as to retard or prevent the rotation of the bobbin, and cause it to take up the yarn as fast as spun. I do not deem the ap-

plication of friction to a bobbin to retard it, and make it take up the yarn, as constituting my invention, but that which I do consider as my improvement, is the manner in which the friction is produced and regulated, when the bobbin and flier are placed horizontally. as by a combination of fixed and movable disks, (applied to the main frame and spindle), and a regulating screw and lever as above specified.

My next improvement is that by which I prevent the yarn from twisting unevenly, or kinking, while the annulus is being moved toward that neck of the flyer, through which the yarn passes. It will be readily seen that when the annulus is moved in an opposite direction, or away from the last mentioned flier neck, it creates a certain drag or draft upon the yarn, which (draft) will be diminished to a considerable degree when it returns toward the said neck. In other machines, such a diminution of the draft creates an unevenness or kinking up of the yarn. In order to prevent such an irregularity in the spinning operation, I employ a lever *k*, and a semicircle or cam *l*. The lever *k* is arranged as seen in the drawings, and turns upon a fulcrum at *m*, and has a regulating screw *n* inserted through its upper end. The said upper end of it is placed so as to bring the regulating screw *n* to act against the lever *g*, as foredescribed. The cam *l* is made semicircular, or has any other proper shape, and is applied upon a horizontal shaft *o*. It should be so arranged upon the said shaft as to meet the lower end of the lever, at the moment the annulus

P commences to return toward the flier neck, through which the yarn is passed. While said annulus is moving toward the said flier neck, the cam or semicircle should continue to press out the lower end of the lever, and thereby force the lever *g* against the revolving disk *d*, so as to produce extra friction upon the bobbin, sufficient to equalize the aforementioned diminution of the draft upon the yarn.

Having thus set forth my invention that which I claim, is—

1. The annulus P, in combination with the flier and carriage beneath it, the whole being constructed and operating substantially in the manner, and for the purpose as described.

2. I also claim, the combination of the fixed and rotary friction disks, and lever *g*, and its regulating screw, as the same is applied to the bobbin spindle and frame, and made to operate substantially as specified.

3. I also claim the lever *k*, and semicircle or cam *l*, in combination with the lever *g* of the disk *d*, the same being for the purpose as described.

In testimony that the foregoing is a true description of my said invention and improvements, I have hereto set my signature, this eleventh day of March in the year eighteen hundred and forty six.

JOHN McCULLY.

Witnesses:

R. H. EDDY,

J. WHITMORE, Jr.