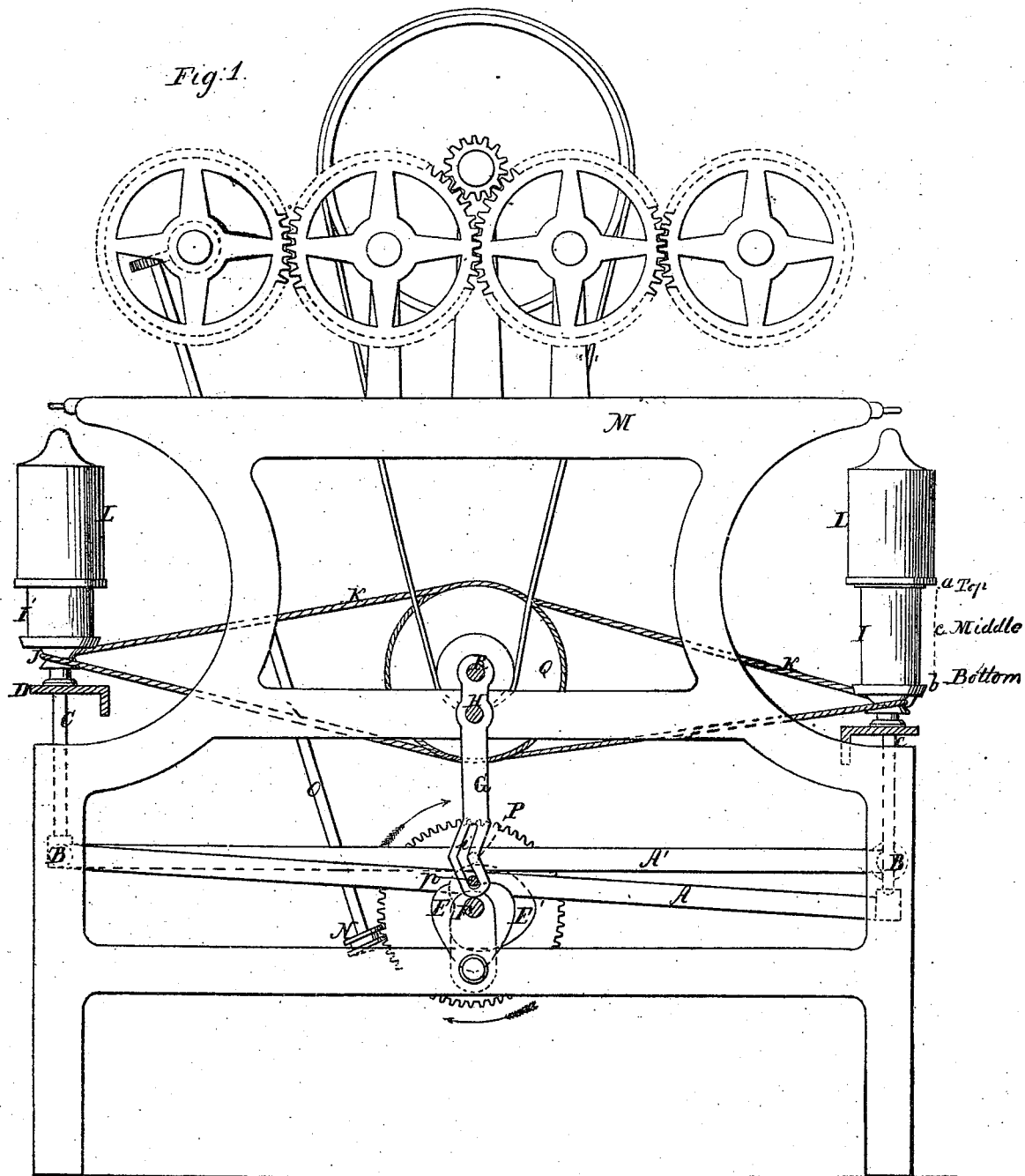


J. Turner.  
Spinning Mach.

N<sup>o</sup> 5,455.

Patented Feb. 22, 1848.

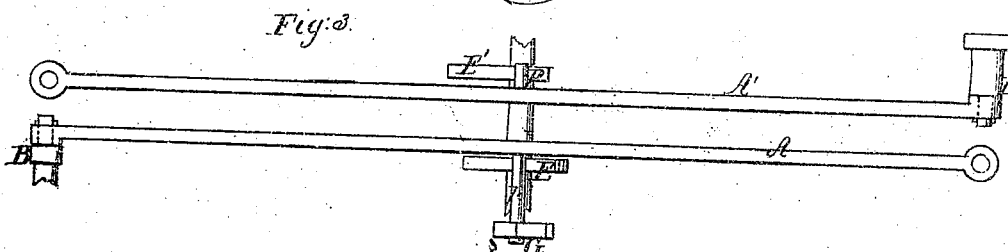
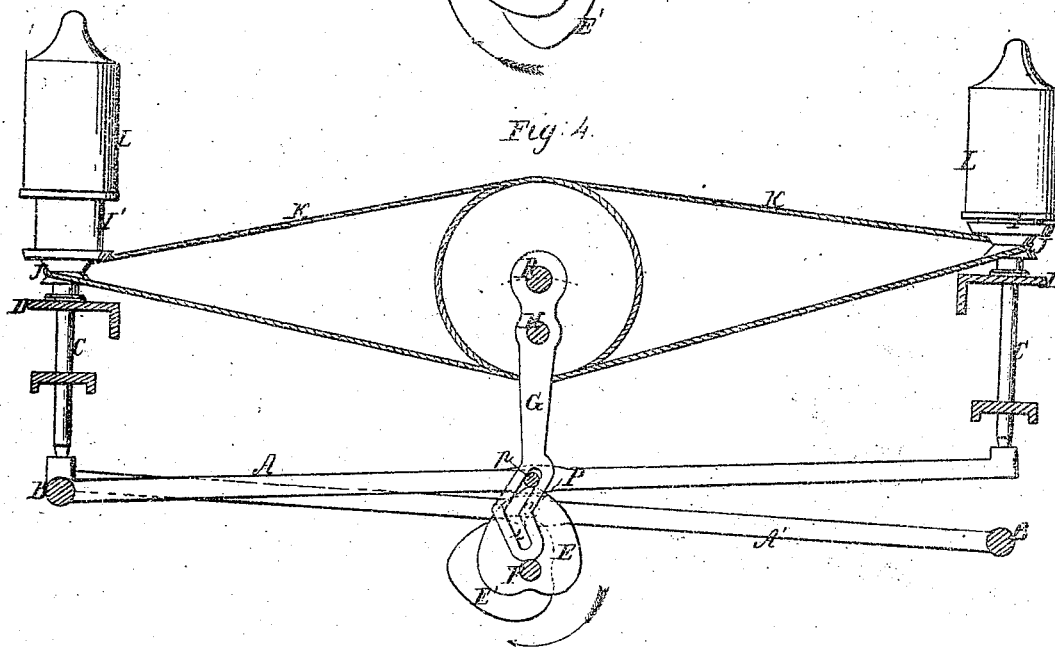
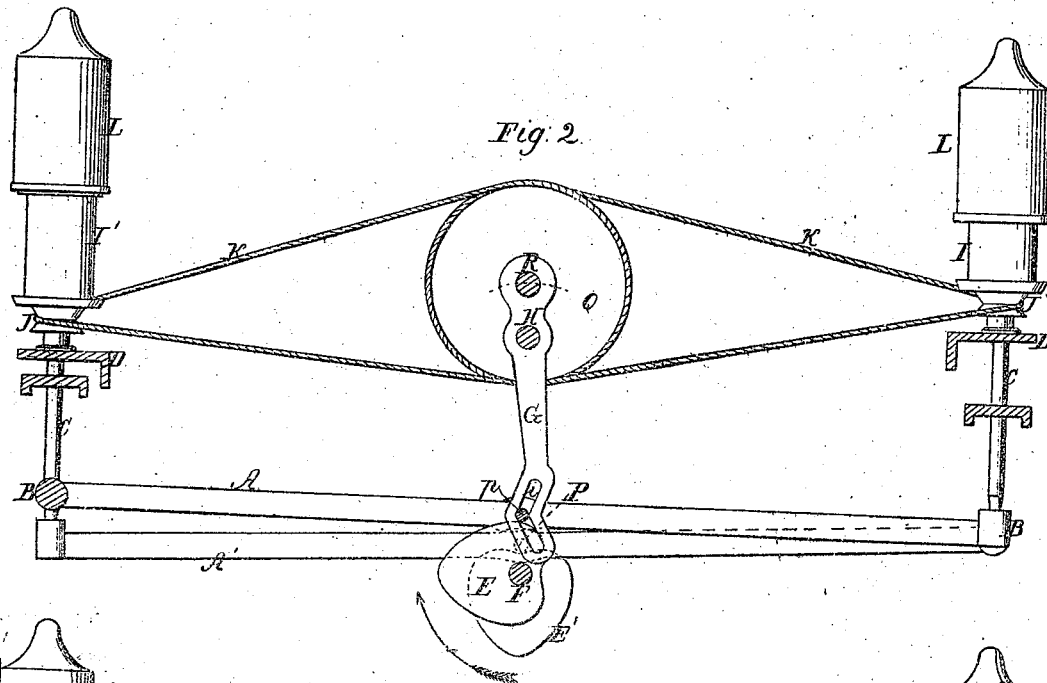
Fig. 1.



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# UNITED STATES PATENT OFFICE.

JOSEPH TURNER, OF KENSINGTON, PENNSYLVANIA.

## SPINNING-MACHINE.

Specification of Letters Patent No. 5,455, dated February 22, 1848.

*To all whom it may concern:*

Be it known that I, JOSEPH TURNER, of Kensington, in the county of Philadelphia and State of Pennsylvania, have invented a  
5 new and useful Improvement in the "Danforth Spinning-Machine," which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

10 Figure 1 is an elevation of one end of the machine, showing the pin near the bottom of the < groove and one of the bobbins at the middle of its traverse and other at the bottom. Fig. 2 is a vertical sectional view,  
15 showing the combination of parts, for traversing the bobbins vertically and vibrating the cylinder in the arc of a circle, detached from the frame, the pin being in the middle of the < groove of the vibrating lever. Fig.  
20 3 is a horizontal sectional view, showing the two lifting levers and hearts or cams for operating the same, detached from the frame. Fig. 4 is an elevation showing the heart in contact with the pin inserted into  
25 the < slot of the vibrating arm and into the lifting lever attached to the lifting rail, the pin being at or near the top of the < groove producing a change of position of the cylinder and "warves."

30 Similar letters in the several figures refer to corresponding parts.

In many machines for spinning now in use the cylinder (around which are passed the bands that turn the bobbins) revolves  
35 in the same position in the frame while the bobbins, around whose pulleys the propelling bands are passed rise and fall vertically, on either side, without possessing the requisite means of retaining the bands at a  
40 uniform tension, as they pass the middle of the traverse.

My invention and improvement is designed to remedy this defect and consists in causing the band cylinder to move gradually toward the spindles when the bobbins  
45 are approaching the bottom and top of their traverse; and to recede gradually from the spindles when the bobbins are approaching the middle of their traverse, the bobbins on one side of the frame being at half lift when the bobbins on the other side of the frame  
50 are at either the lowest or highest part of the traverse of the bobbins, so that by the combined action of these two movements, the  
55 bands for driving the spindles are always at or nearly at the same degree of tension in

every part of the traverse of the bobbins. In order to produce these combined movements of cylinder and bobbins at the required intervals of time, to effect the object  
60 proposed, of producing a uniform tension of bands, I make use of lifting levers placed parallel to each other, and at a convenient distance apart, hearts or cams arranged at right angles to each other on a horizontal  
65 shaft, and crooked vibrating arms or levers, perforated each with a < shaped slot into which plays a horizontal pin projecting from the side of one of each pair of the  
70 levers, for the purpose of vibrating the cylinder, whose axle turns in the upper extremities of said crooked arms or levers which have for their fulcrum pins, passed through them into the frame near their  
75 upper ends. Similar mechanism being in the middle and at each end of the spinning frame.

A A' represent a pair of the parallel lifting levers, vibrating on separate studs B B, projecting from the frame in the usual manner, the stud of one lever being at one side  
80 of the frame, while the stud of the other lever is at the opposite side and the usual lifting rods C, C, of the lifting or traverse rails D, D, are attached to the loose ends  
85 of these lifting levers. E, E', are the hearts or cams for vibrating said levers. These hearts are fixed on a revolving axle F at right angles to each other, about as far apart as the levers are distant the one from  
90 the other.

F is the axle of the hearts, being also the axle of the driving cog wheel and made to turn in the frame in suitable bearings. The heart E' acts against a pin P, inserted into  
95 lever A'. The heart E acts on a pin p projecting from the side of the lever A, and which pin enters a <-shaped groove or slit in the vibrating crooked lever G.

G is the vibrating crooked lever, for causing the cylinder to traverse in the arc of a circle to the right and left as the bobbins  
100 traverse vertically. H is its fulcrum, which is a round pin inserted into the frame. There is a similar crooked lever in the middle and at the opposite end of the frame arranged in like manner, operated by a similar arrangement of levers, hearts and pins.  
105

Q is the band cylinder.

R is its axle.

I I' are the bobbins turning on dead  
110 spindles. J are the pulleys or warves for

turning the bobbins. K are the bands leading from the pulleys to the cylinder Q.

L are the caps which are stationary.

M is the frame.

5 N is a worm for turning the cog wheel on the shaft or axle of the hearts, operating in the usual manner.

O is the inclined shaft of the worm arranged and turned in the usual manner.

10 a, b, is the traverse of the bobbin, a being the top and b the bottom of the traverse and c the middle of the traverse. The arrows indicate the direction in which the cog wheel, heart shaft, and hearts revolve, simultaneously, being in the same direction.

15 Operation: The machine being in operation, the revolving of the shaft F will cause the hearts to turn and operate the levers A, A', and the hearts being arranged at right angles, will move the levers A, A' in such manner as to cause one of the bobbins on one side of the frame to be at the middle of its traverse (or at half lift) when the bobbin on the opposite side of the frame is at the top or bottom of its traverse; and simultaneously with these movements of the levers, the upper end of the crooked lever G containing the axle R of the band cylinder Q will be caused always to move the cylinder from the bobbins at half lift, by means of the pin p of lever A, acting on the < slot i of the crooked lever G, by which it is vibrated on its fulcrum H to the right or left according to the position of the heart or cam, and caused to move the cylinder gradually toward the spindles as the bobbins approach the top or bottom of the traverse a, b, and sweep the cylinder from the spindles as the bobbins approach the middle c of the traverse, alternately, on both sides of the frame; by which means the bands are maintained always at the same degree of tension throughout the reciprocal movements of the band cylinder and warves or pulleys of the spindles, or nearly at the same tension.

45 When the heart E is in the lowest part of the lift, (as shown in Fig. 1) the pin p which projects from the lever A will be at or near the bottom of the < shaped slot and the bobbin I will be at the bottom of its traverse, while the bobbin I' will be at half lift, or middle of its traverse, effected by the agency

of the heart E' acting on the pin P on the lever A', the simultaneous movement of the lever G causing the cylinder Q to recede 55 from the bobbin I'; and as the heart E turns to its half lift position, it will lift the pin p, of the lever A, till it reaches the angle or middle of the slot i, as shown in Fig. 2, causing the cylinder to gradually recede 60 from the bobbin I, and approach bobbin I'; the bobbins simultaneously changing their positions vertically, the bobbin I reaching the middle of its traverse, and the bobbin I' the bottom of its traverse, and as the heart 65 E continues to turn to its highest lift the cylinder Q will be caused to gradually recede from bobbin I', and again approach bobbin I, which will be then reaching the top of its traverse and the bobbin I' again 70 approaching the middle of its traverse, and when this bobbin I' is at the top of its traverse, the bobbin I will be at the middle of its traverse, and so on continually, thus keeping the bands at a uniform tension the 75 distance between the center of the band cylinder and the warves or pulleys on both sides of the frame being always the same during the rise and fall of the warves and the right and left movement of the cylinder 80 in the arc of a circle described from the center on which the levers vibrate, produced by the before described combination and arrangement of hearts, levers, pins, and < 85 slotted levers.

What I claim as my invention and desire to secure by Letters Patent is—

Keeping the spindle bands at or near a uniform degree of tension by causing the band cylinder to move alternately toward 90 and from the bobbins as they traverse vertically on the spindles, the bobbins on one side of the frame being at the middle of their traverse while those on the opposite side are at the top or bottom of their traverse, 95 whether these combined and reciprocal movements of the cylinder and bobbins be produced by the means before described, or any other means substantially the same.

JOSEPH TURNER.

Witnesses:

WM. P. ELLIOT,  
A. E. H. JOHNSON.