

C. Danforth.
Cap Spinning Frame.

N^o 2,576.

Patented Apr 21, 1842.

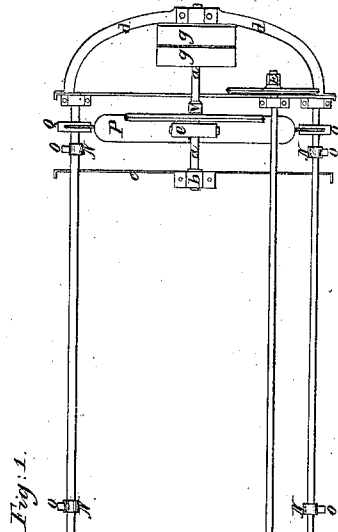
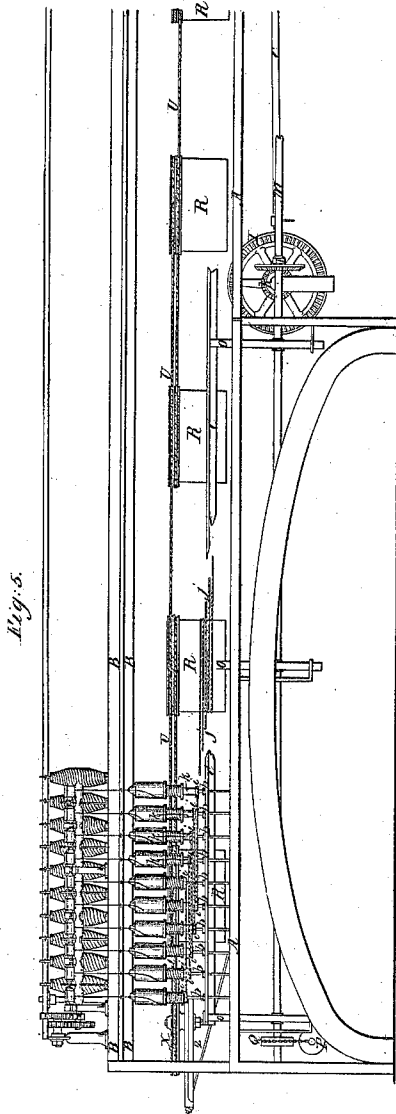
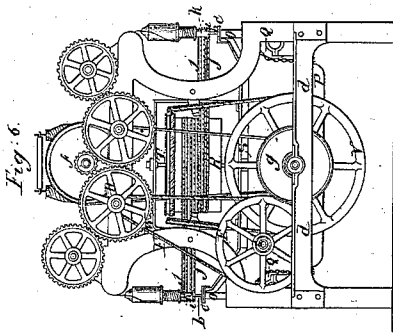


Fig. 1.

Fig. 3.

Fig. 4.

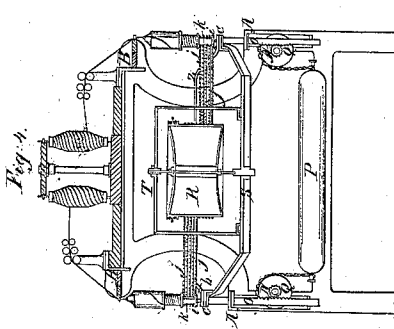
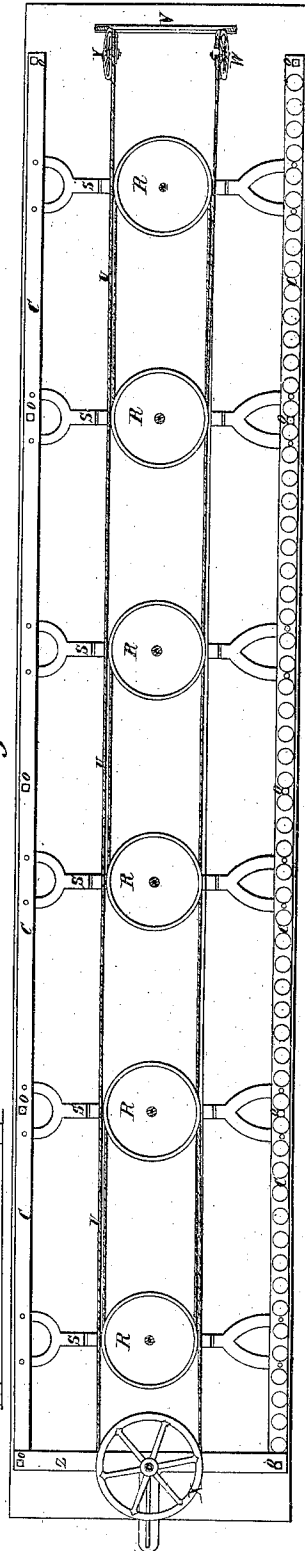


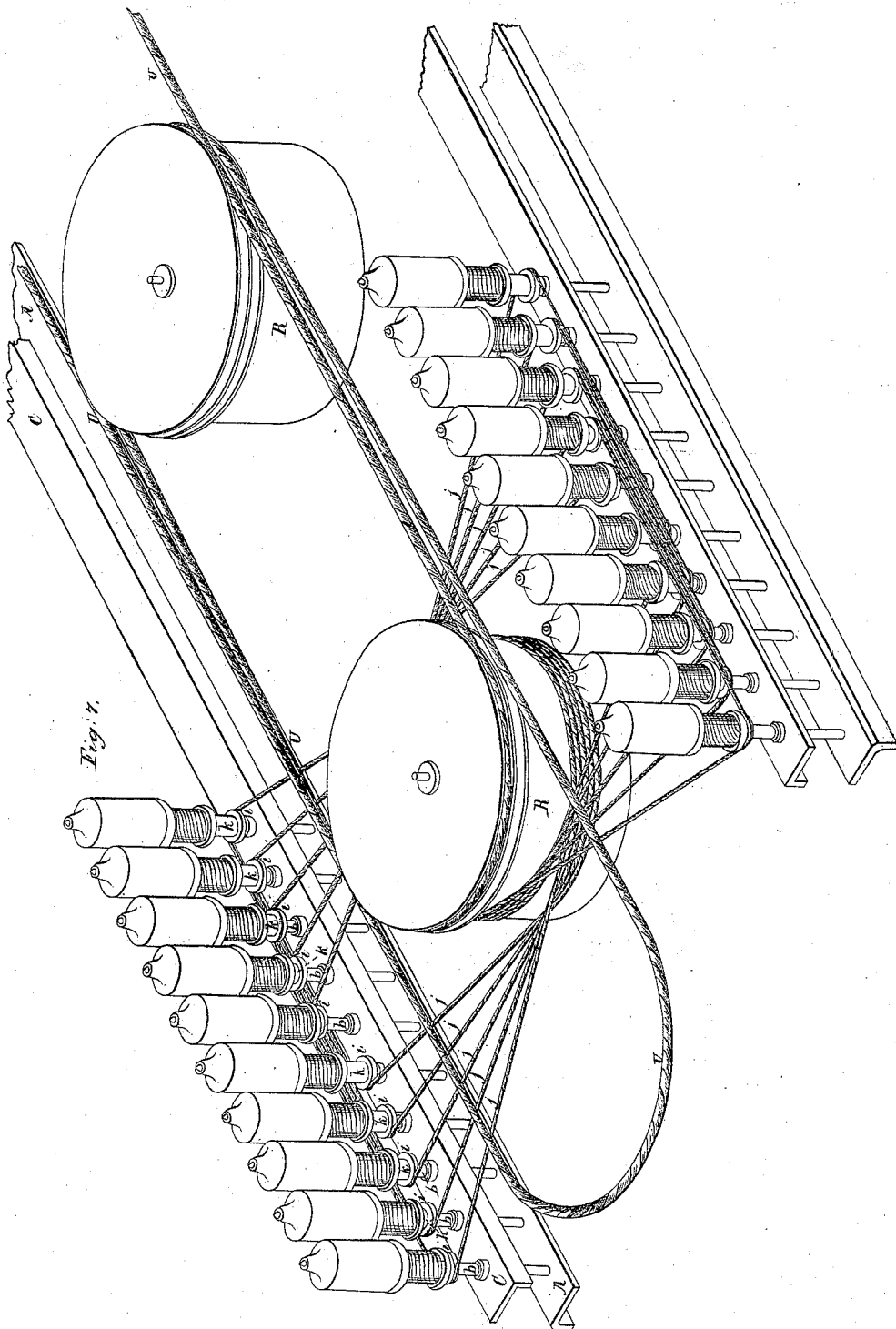
Fig. 2.



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Cay Spinning Frame.

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UNITED STATES PATENT OFFICE.

CHARLES DANFORTH, OF PATERSON, NEW JERSEY.

MODE OF DRIVING BOBBINS IN CAP-SPINNERS.

Specification of Letters Patent No. 2,576, dated April 21, 1842.

To all whom it may concern:

Be it known that I, CHARLES DANFORTH, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in the Method of Driving Bobbins in the Spinning-Machine Commonly Called the "Danforth Frame or Cap Spinners," of which the following is a full and exact description.

The drawings hereunto annexed and which I desire may constitute a part of this specification consist of seven parts and are as follows, viz:

Figure 1 is a horizontal section of the machine (half length) exhibiting the mode of working the lifters, together with the main shaft, &c. Fig. 2 is a ground or horizontal view of the lifters, cross bars, drums, tension pulley, band direction pulleys, drum band pulley and band. Fig. 3 is a ground view of one of the drums showing the mode of banding to drive the wharves, tubes and bobbins. Fig. 4 is a transverse section through the machine at the center of a drum exhibiting the lifting operation together with the counter-balance weight one of which is placed at each end of the machine. Fig. 5 is a front elevation view of the machine showing one drum banded off complete together with the spindles, wharves, bobbins, caps, and rollers. Fig. 6 is an elevation view of the ground end of the machine. All the above figures are drawn to a scale of one and a half inch to the foot. Fig. 7 is an isometrical view showing the mode of banding the drums, wharves, &c.

All the letters and characters in all the figures refer to the same parts of the machine.

In the first place the frame work of the machine should be so constructed that the spindle rails A, A and roller beams B, B on one side of the frame will be about one inch and three-quarters higher than they are on the other side. The traverse rails or lifters C, C may be worked by any of the ordinary means by which lifters are worked on spinning machines in which the lifters on both sides of the machine are made to rise at the same time but the mode which I adopt and recommend for spinning twist is as follows, to wit: Commencing with a grooved pulley about two and a half inches in diameter fixed on the inside hub of intermediate wheel D by which motion is communicated to a grooved pulley E about

twelve inches in diameter by means of an endless band F, the pulley E is fixed to the outer end of the mangle pinion shaft G on the inner end of which is a pinion H of four teeth working into the mangle wheel I which is fastened to the mangle shaft J on each end of which is a bevel pinion K K about four inches in diameter containing thirty-two teeth, these gear into two other bevel wheels L L containing fifty-six teeth each, which are fixed to the lifter shafts M M on which are fastened spur pinions N, N, N, N which are one and five-eighths inches in diameter to their pitch line and contain twenty-six teeth each. These gear into racks on the back side of lifter rods O, O, O, O, on the tops of which the lifters C, C are fixed. It will be perceived that by this arrangement the lifters on both sides of the machine are made to rise at once and fall at once by which it is necessary to use two counterbalance weights P, P one at each end of the machine. These are suspended by chains from pulleys Q, Q, Q, Q about four inches in diameter which are fixed to the lifter shafts M M. It will be perceived that this mode of traversing the lifters is the same as that described in the specification of a patent granted to me on the fourth day of May, A. D. one thousand eight hundred and forty-one with the exception of gearing the bevel wheels so as to make the lifters rise on both sides of the machine at once as aforesaid instead of rising on one side while they are falling on the other.

In the next place the horizontal cylinder commonly made use of for giving motion to the wharves, tubes, and bobbins is dispensed with and in its stead I make use of upright tin drums R, R, R, R, R, similar to those used in mules. They are about twelve inches in diameter having two grooves formed in them at or near their upper ends for the band to run in by which they are driven. These drums are supported by cross bars S, S, S, S, S passing from one lifter to the other to which they are bolted so that the drums are made to rise and fall with the lifters. The top bearings of the drums are supported by brackets T, T which are bolted by flanges to the cross bars S, S, &c. Motion is communicated to the drums by means of an endless band or cord U about the size of a mule drum band, leading around the lower periphery of a grooved pulley V about

eighteen inches in diameter having a strip groove turned in its surface to take hold on the band, thence over the top of direction pulley W to the upper groove of the second drum from the driving end of the machine, thence round said groove to the lower groove of the first drum, passing round which it leads to the lower groove of the fourth drum, from thence to the upper groove of the third drum, from thence to the upper groove of the sixth drum, passing round which it leads on the lower groove of the fifth drum, from thence it leads to a tension pulley X this pulley is about fourteen inches in diameter, has a groove in its surface for the band to run in, from this pulley the band leads in a line nearly parallel with the machine to direction pulley Y passing over the top of which it leads on to pulley V the place of beginning. The direction pulleys W and Y run on center pins or studs which are supported by brackets bolted to the frame end.

The tension pulley X runs on a stud or center pin which is fastened by a screw and nut in a slot formed in cross bar Z, this cross bar is fastened to the lifters C, C and together with the tension pulley which it carries rises and falls with them so as to keep the pulley always level with the drums. The slot in the cross bar Z is made for the purpose of sliding the stud which carries the tension pulley for the purpose of regulating the tension of the band.

The grooved pulley V is fixed to the main shaft *a*. This shaft is supported at its inner end by a plumber block *b* which is fastened to a cross bar *c*, running across the frame and bolted by flanges at its ends to the arches. The outer end of the shaft *a* is supported by a bracket *d* which is bolted to the frame end.

e is a pulley on the main shaft *a* which gives motion to pulley *f* by means of a strap and thus motion is communicated to the rollers.

g, g are the fast and loose pulleys on which the main belt runs and gives motion to the whole machine.

I make some of the drums drive twenty bobbins and others twenty four according to the number of spindles I wish to put in a machine and apply that number to each drum as may most evenly and conveniently divide the whole number. The drum represented as banded off in the drawings has twenty bobbins attached to it, ten on each side of the machine. The whole length of the tubes *b, b, b, b, b* is six inches to which

the wharves are attached and constitute a part of the same piece of metal. The wharves *i, i, i, i, i* are placed on the tubes *b, b, &c.*, at different distances from their lower ends one above another similar to the arrangement of mule wharves on the spindles so that the bands may clear each other as well as the wharves that they do not drive. The lowest wharve is five eighths of an inch from the bottom of the tube and the highest one is one inch and seven eighths, the intermediate ones rising one fourth of an inch as you advance from the lowest to the highest.

There are two tubes with wharves of each height on each side of the machine to each drum and each of the small bands *j, j, j, j, j* drives two wharves, tubes and bobbins.

I have described each drum as driving twenty or twenty four bobbins, but it is obvious that the number may be varied so as to drive more or less by putting in more or less drums without varying the principle of the machine. The height of the wharves may also be so arranged as to band each wharve with a separate band.

As the wharves are not all of one height, I put blocks of wood *k, k, k, k, k* on the tubes for the bobbins to set on about one inch in diameter and of a sufficient length to bring their tops on a level with the top of the highest wharf which has no wood on it. The same end may be effected by casting or fixing metal buttons or blocks on the tubes to sustain the bobbins.

I have described the drums as traversing with the lifters but I sometimes use them stationary in which case they are made of sufficient length to admit the bands that drive the wharves to traverse up and down on them and are supported at their bottoms by cross bars running from one spindle rail to the other to which they are bolted instead of being fastened to the lifters, as described above and at their tops by cross bars fastened to the roller beams.

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

The combination of the tubes (on which wharves are affixed at different heights), with the blocks or buttons (*k*) placed thereon for the purpose of supporting the bobbins at the same height, the whole constructed in the manner, and for the purpose herein set forth.

CHAS. DANFORTH.

Witnesses:

J. H. GODDARD,

J. J. GREENOUGH.