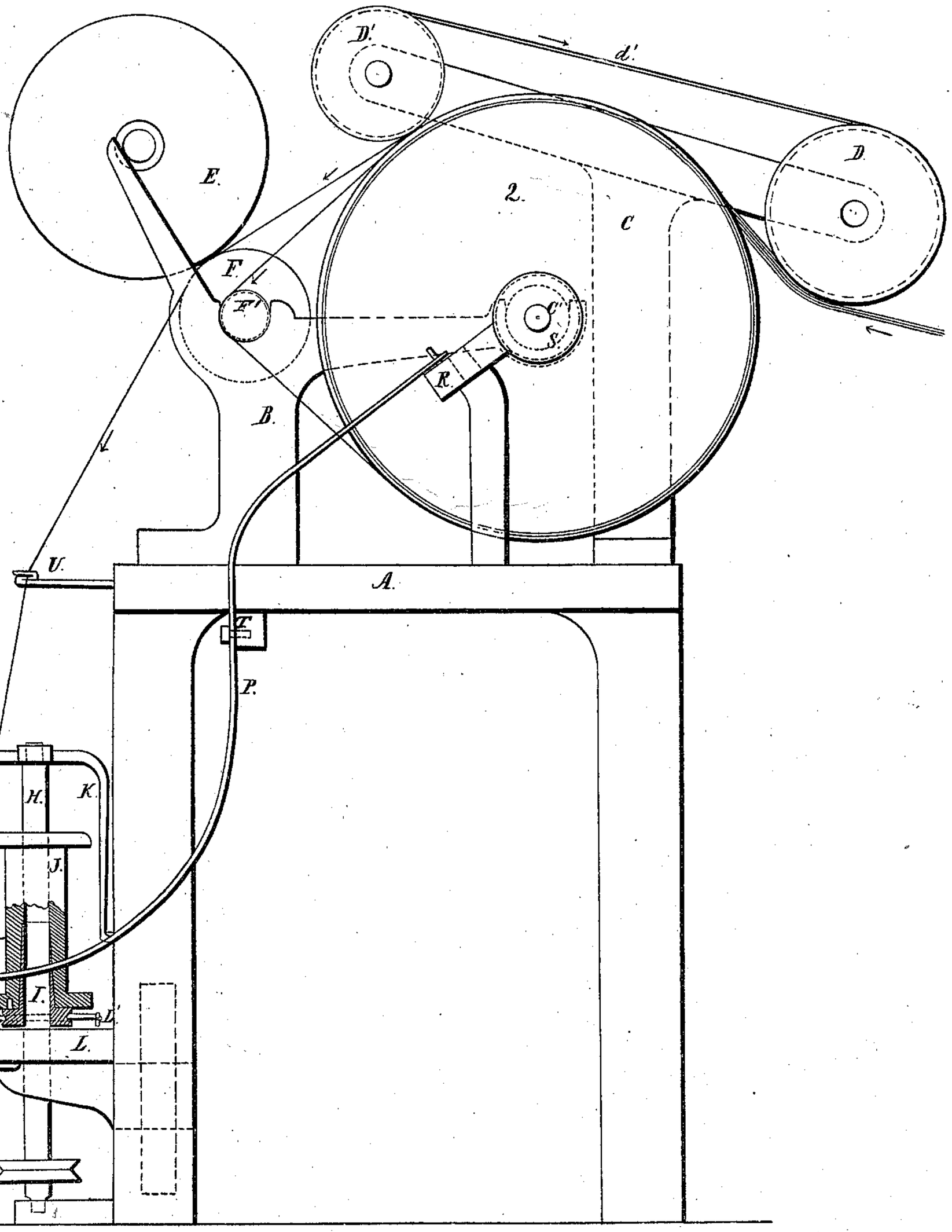
Sheet 1. 2 Sheets.

J. B. Fuller.
Spinning.

No. 81,489. Patented Aug. 25, 1868.

Fig: 1.



Witnesses:
Albert S. Bolles.
Edward H. St. Thomas.

Inventor:
Lim B Fuller

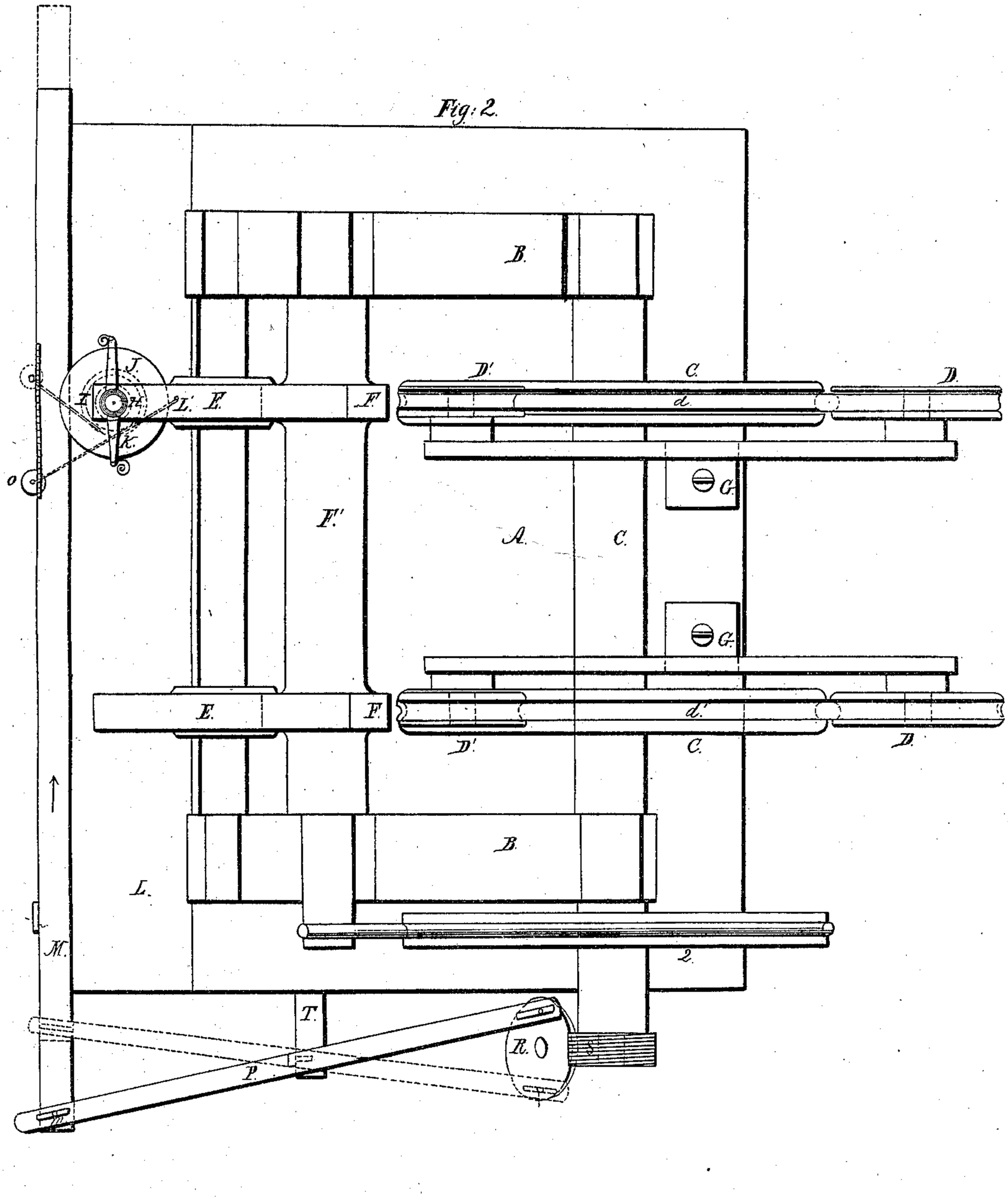
Sheet 2. 2 Sheets.

J. B. Fuller.
Spinning.

No. 81,489

Patented Aug. 25, 1868.

Fig: 2.



Witnesses:
Allen L. Bolles.
Edward H. St. Thomas

Inventor:
Jno B Fuller

United States Patent Office.

JIM B. FULLER, OF NORWICH, CONNECTICUT, ASSIGNOR TO HIMSELF, JAMES P. UPHAM, AND EDWIN T. RICE.

Letters Patent No. 81,489, *dated August* 25, 1868.

IMPROVEMENT IN DRAWING FIBROUS SUBSTANCES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JIM B. FULLER, of Norwich, in the county of New London, and State of Connecticut, have invented a new and useful Improvement in Drawing Fibrous Substances, especially those like hemp, flax, silk, China grass, and other fibres of unequal length; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1 is an elevation, and

Figure 2 is a plan view of an apparatus showing my said improvement.

The same marks of reference indicate similar parts in both figures.

Heretofore the drawing of fibres has been done by passing them between a series of rollers arranged in pairs, the back and middle pairs acting as holding-rollers, while the front pair draws out the fibre.

Fibres have also been drawn from the surface of a large roller, to which the fibres have been held by a series of small rollers bearing and moving upon the surface of the large roller. They have also been drawn from the surface of a gill.

My improvement consists in the employment of a band, so bearing upon the surface of a roller that the sliver or roving of fibres of unequal length may be drawn with uniformity and evenness from between the said band, or its equivalent, and the roller, by the usual drawing-rollers.

In the drawing, A represents the top part of an ordinary spinning-frame; B is the stand which supports the rollers, hereafter described; C is a pulley or roller on the shaft C′. This pulley or roller may have a smooth surface, or the surface may be fluted or grooved, or it may have a regular or broken surface, or such grooved or broken surface may be on the band *d′*.

D D′ are two smaller pulleys or rollers supported and running on studs attached to the stand G. *d′* is an endless band, which passes around the pulleys D D′, and also bears part way around the periphery or surface of the roller C. E F are the front drawing-rollers.

The drawing-rollers E F are so placed and adjusted, with reference to the roller C and the front point where the band, or its equivalent, touches the roller C, that a straight line, which shall be drawn tangent to the point last referred to, shall also be tangent, or nearly tangent, to the nip or bite of the drawing-rollers E F, and in making this adjustment, I prefer that the front point, where the band touches the roller C, shall be at the highest or very near the highest point of the roller C, so that the drawing-rollers may be placed, one directly over the other, but this is not essential, as the relative position of the drawing-rollers may be changed, so as to draw as proposed from any other point of the surface of the roller C. The drawings herewith show the drawing-rollers E F so placed as to draw from a point below the highest point of the roller C.

The drawing-rollers E F are also so placed that the distance from the bite of the drawing-rollers to the point at which the sliver or roving leaves the surface of the roller C, and the band *d′*, shall be the same, or nearly the same, as the length of the shortest fibre of the sliver or roving to be drawn, and the bearing of the band *d′* upon the surface of the roller C at the point of delivery shall be so light that the longer fibres of the sliver or roving will be drawn from between the band *d′*, and the roller C unimpeded, while the shorter fibres are held delicately or lightly until they are seized and carried forward by the bite of the drawing-rollers E F.

The drawing-rollers E F are also so placed that the distance from the bite of the drawings-rollers E F to the point at which the sliver or roving is first received between the band *d′* and the surface of the roller C shall be the same, or nearly the same, as the length of the longest fibres of the sliver or roving to be drawn, and the bearing of the band *d′* upon the surface of the roller C, at the point at which the sliver or roving is first received between them, should be such as to bite or hold the fibres of the sliver or roving firmly at that point, or the pulley D may be placed as is shown by the drawings herewith, and the holding may be effected by a pair of ordinary holding-rollers placed behind the rollers C.

The operation of the improved apparatus is as follows:

Motion is communicated to the lower front roller F, by means of a pulley or gear on the shaft F′. The upper front roller E revolves by friction. The roller C revolves by means of a band running around the shaft F and pulley *l*. The motions are in the directions of the arrows.

The sliver or roving to be drawn passes in between the band *d′* and the surface of the roller C, towards and between the drawing-rollers E F, which run faster than the roller C, causing the sliver or roving to be drawn down finer, the fineness depending upon the difference between the speed of the roller C and the rollers E F.

In drawing, by this apparatus, fibres that tend to adhere or cling together when moist or wet, such as flax or hemp, I pass the sliver through water, or otherwise moisten the fibres, before the sliver or roving reaches the roller C, and I then dispense with all pressure from the band *d′* on the sliver or roving, except at the point at which the pulley D presses upon the surface of the roller C.

By this apparatus, adjusted as described, I find practically the drawing of fibres unequal in length is rendered much more uniform and reliable than by the hitherto known methods of drawing such fibres, for by my apparatus the long fibres can be drawn without breaking, and unimpeded, while the short fibres are held with a gentle and yielding pressure in contact with the longer fibres until they are seized and carried forward by the drawing-rollers.

It will be evident that this method of drawing fibrous substances may be employed upon spinning-frames, speeders, railway-heads, or other machinery for drawing fibres.

I have represented the guide U, spindle H, spool J, and fricton-cord and weight O for spinning and winding the thread on the spool or bobbin; and the lever P, on the fulcrum T, actuated by a crank-pin in the gear R, that is moved by the worm S, is employed to increase friction on the spool as the winding progresses, by moving the bar M and causing the friction-cord L′ to partially wind around the grooved pulley I of the spool J.

I do not claim a belt or belts passing over rollers, and used in combination with a gill-frame or drawing-apparatus, as is described and shown in Newton's English patents, No. 1,336 for 1860, and No. 552 for 1857, in both of which belts are employed, but not in the manner nor for the purpose hereinbefore set forth.

I do not claim supporting the sliver or roving, while being drawn, by lapping the same over or under a portion of the surface of one or more rollers, as is shown in Tatham's English patent, No. 2,227 of 1862, nor do I claim drawing the sliver or roving from between a series of small rollers and the surface of a large roller, as is shown by Kendrew and Porthouse's English patent, No. 1,613, of 1787.

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

The roller C, the band *d′*, and drawing-rollers E F, adjusted and arranged substantially as described, and for the purposes specified.

Dated, July 24, 1867.

JIM B. FULLER.

Witnesses:

FREDERICK M. ATKINS,

D. B. BURNETT.