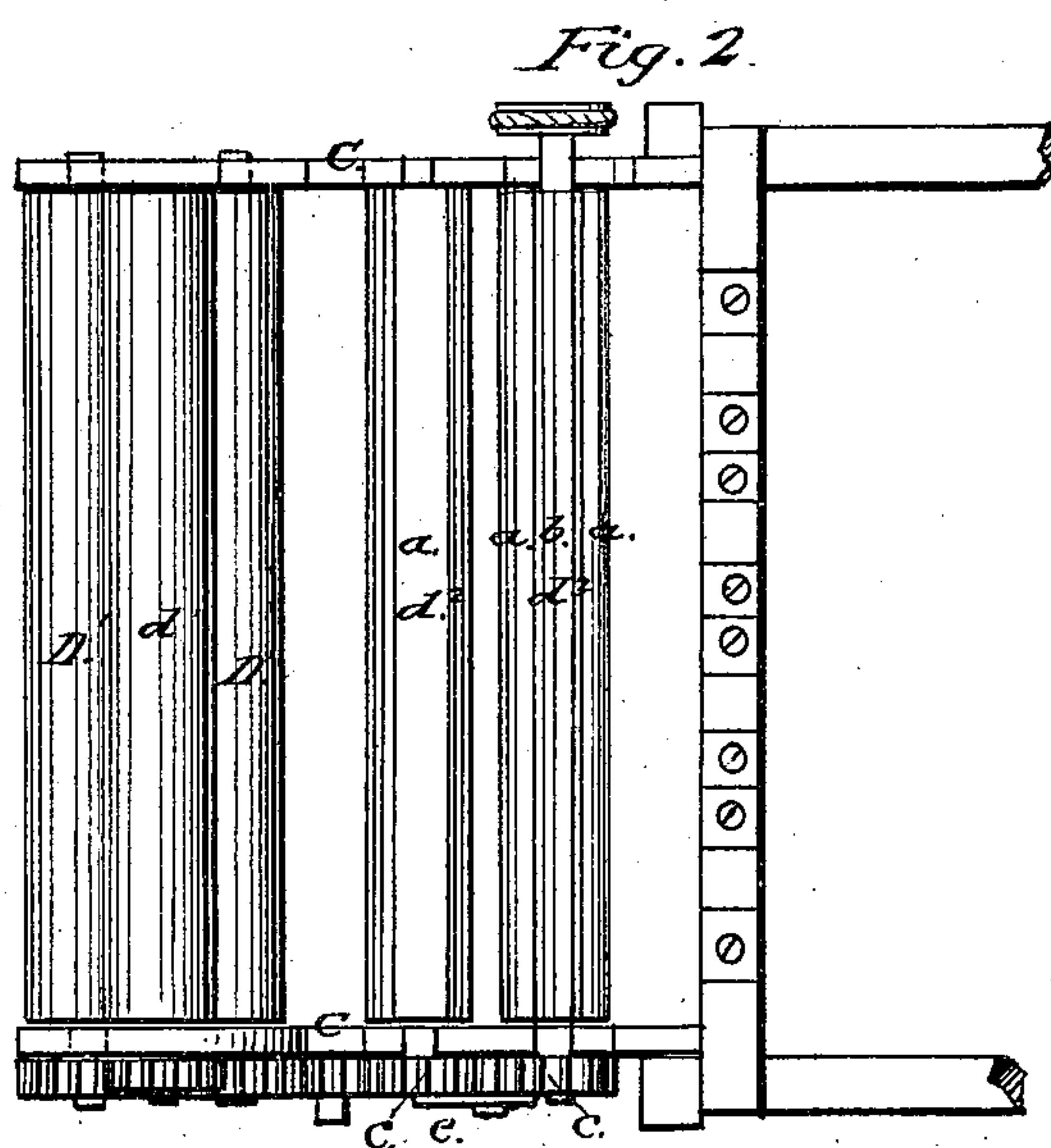
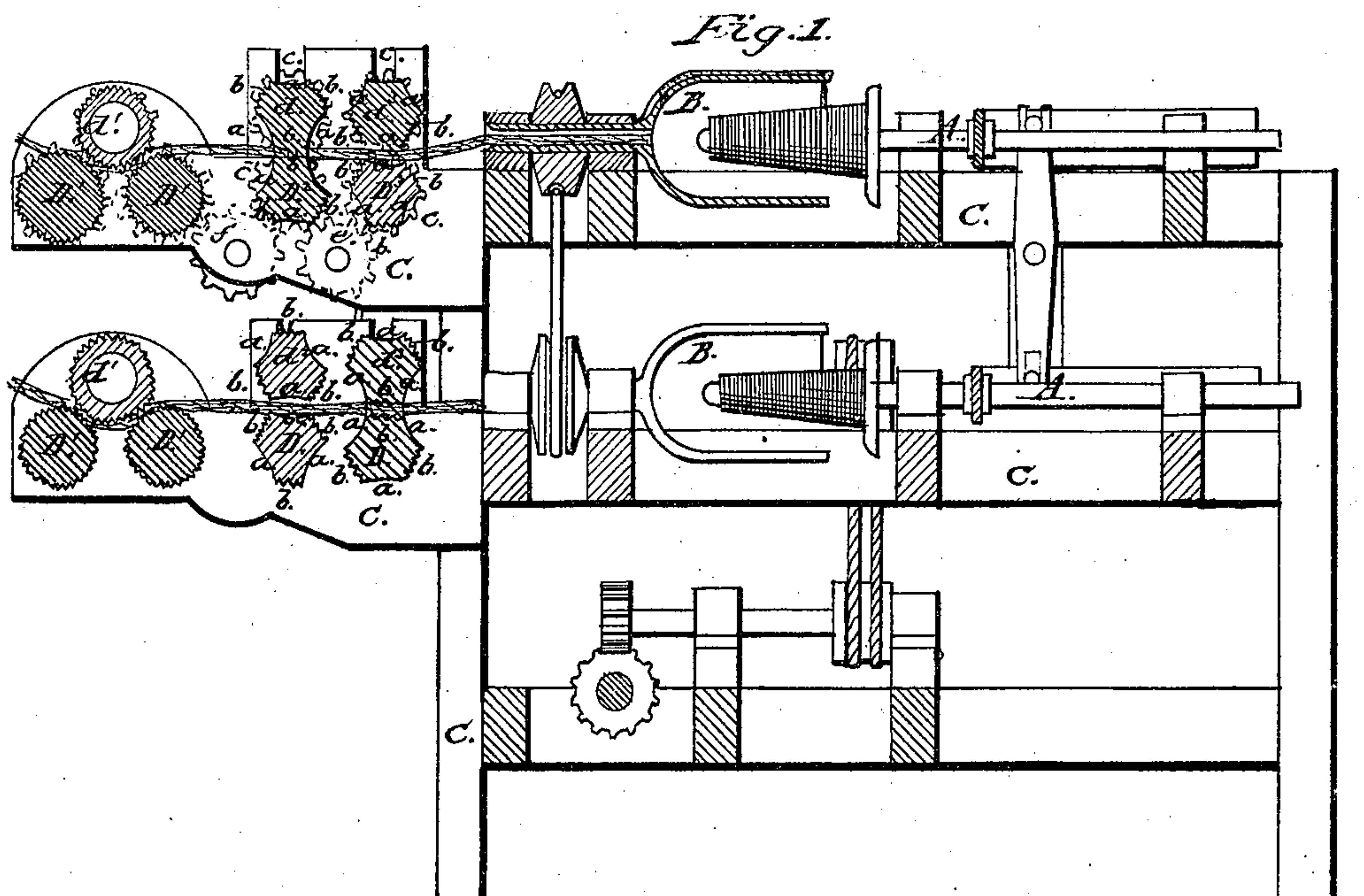


J. E. Crowell,

Throostles & Caps

Nº 24,010.

Patented May 17. 1859.



Witnesses:
David Gould
Susan J. Gould

Inventor:
James E. Crowell

UNITED STATES PATENT OFFICE.

JAMES E. CROWELL, OF CHELSEA, MASSACHUSETTS.

DRAWING-HEAD FOR SPINNING-MACHINES.

Specification of Letters Patent No. 24,010, dated May 17, 1859.

To all whom it may concern:

Be it known that I, J. E. CROWELL, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Machinery for Drawing and Spinning Fibrous Materials; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of a spinning frame with my improvement applied. Fig. 2 is a plan of the drawing rollers.

Similar letters of reference indicate corresponding parts in both figures.

The principal object of my invention is to draw and spin a sliver as it is delivered from the doffer of a carding machine. To effect this it is necessary that a portion of the twist be allowed to run back as far as the back drawing rollers, in order that the sliver may have some twist in it at the time of the drawing operation; and my invention consists in so constructing and gearing the pair of drawing rollers which are arranged next the spindles, commonly known as the third drawing rollers, and the pair behind them commonly known as the second pair, that each pair will operate intermittently in turn with the other pair, each pair letting go as the other pair take hold of the sliver, by which means the twist is allowed to pass the said rollers and run back to those which first receive the sliver, and from which the drawing takes place.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

In the example of my invention represented in the accompanying drawing the spindles, A A, and fliers, B B, are represented as arranged horizontally in the frame, C, but this arrangement is not necessary to the successful application of my invention, and the frame is represented as double, that is to say with two rows of spindles and fliers and two sets of drawing rollers.

D' D' d', D² d² and D³ d³ are the drawing rollers. The first rollers, D' D' d', or those furthest from the spindles are or may be of the usual kind and driven in the usual, or any suitable manner. The second and third pairs, D² d² and D³ d³, are all of metal or other suitable material of smaller size

and fluted longitudinally, and have each the same number of longitudinal grooves, *a a a*, of a width equal to the concentric portions, *b b b*, remaining between the said grooves. The lower rollers, D² D³, have their journals supported in fixed bearings on the frame, and the upper ones, d² d³, have theirs fitted to suitable guides, and are to be suitably weighted. Each of the upper rollers, d² d³, is geared with its corresponding lower one by gears, *c, c*, equal size, in such a manner that the concentric portions *b, b, b*, and the grooves, *a a a*, of one meet the corresponding portions of the other in their revolution; and the rollers, D² D³, are geared together by an intermediate gear, *e*, to rotate both in the same direction and at similar velocities, and are so arranged that as the concentric portions, *b b*, of the pair D² d² are presented to each other the grooves of the pair, D³ d³, are presented to each other and vice versa. The roller, D², is geared by an intermediate gear, *f*, with one of the rollers, D', in such manner as to cause the rollers, D² d², D³ d³, to be driven at such velocity greater than D' D' d', as is necessary to produce the requisite amount of drawing.

To spin the sliver as it comes direct from the doffer of the carding machine, the spinning frame must be arranged with the rollers, D' D' d', contiguous to the doffer of the carding machine. The sliver or roping from the doffer is conducted between the rollers as it would be in an ordinary roving or spinning frame, and from thence to the fliers or spindles, and on the machine being set in motion the sliver or roping is drawn and twisted continuously. While the grooves, *a a a*, of either pair of rollers D² d² or D³ d³ are passing each other, that pair of rollers do not take hold of the sliver or roping, but owing to the relative arrangement of the grooves in the two pairs, one pair always take hold and draw while the other let go and so, the drawing never ceases but proceeds in a perfectly uniform manner. It is the alternate letting go, or release of the roping or sliver by the rollers, D² d² and D³ d³, that permits a portion of the twist to run back to the first rollers, D' D' d', for every time those, D³ d³, release it, the twist runs past them direct from the spindles back to D² d², and as soon as D² d² release it and D³ d³ take hold again the twist that passed the latter when they released the sliver or roping runs back to the rollers D'

D' d'. In this way a certain amount of twist is always kept up as far back as the first rollers, D' D' d', and the sliver is caused to have a twist all through the portion which is being subjected to the drawing process.

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

So constructing and gearing the two pairs
10 of drawing rollers, D² d² and D³ d³, that

each pair will draw and release the sliver or roping in turn and so allow the twist to pass and run back to the first rollers, D' D' d', substantially as and for the purpose herein set forth.

JAMES E. CROWELL.

Witnesses:

DAVID GOULD,
SUSAN G. GOULD.