Sheet 1. 2 Sheets.

Apperly & Clissold.

Carding Mach.

No. 18,888. Patented Dec. 22, 1857.

Fig. 5.

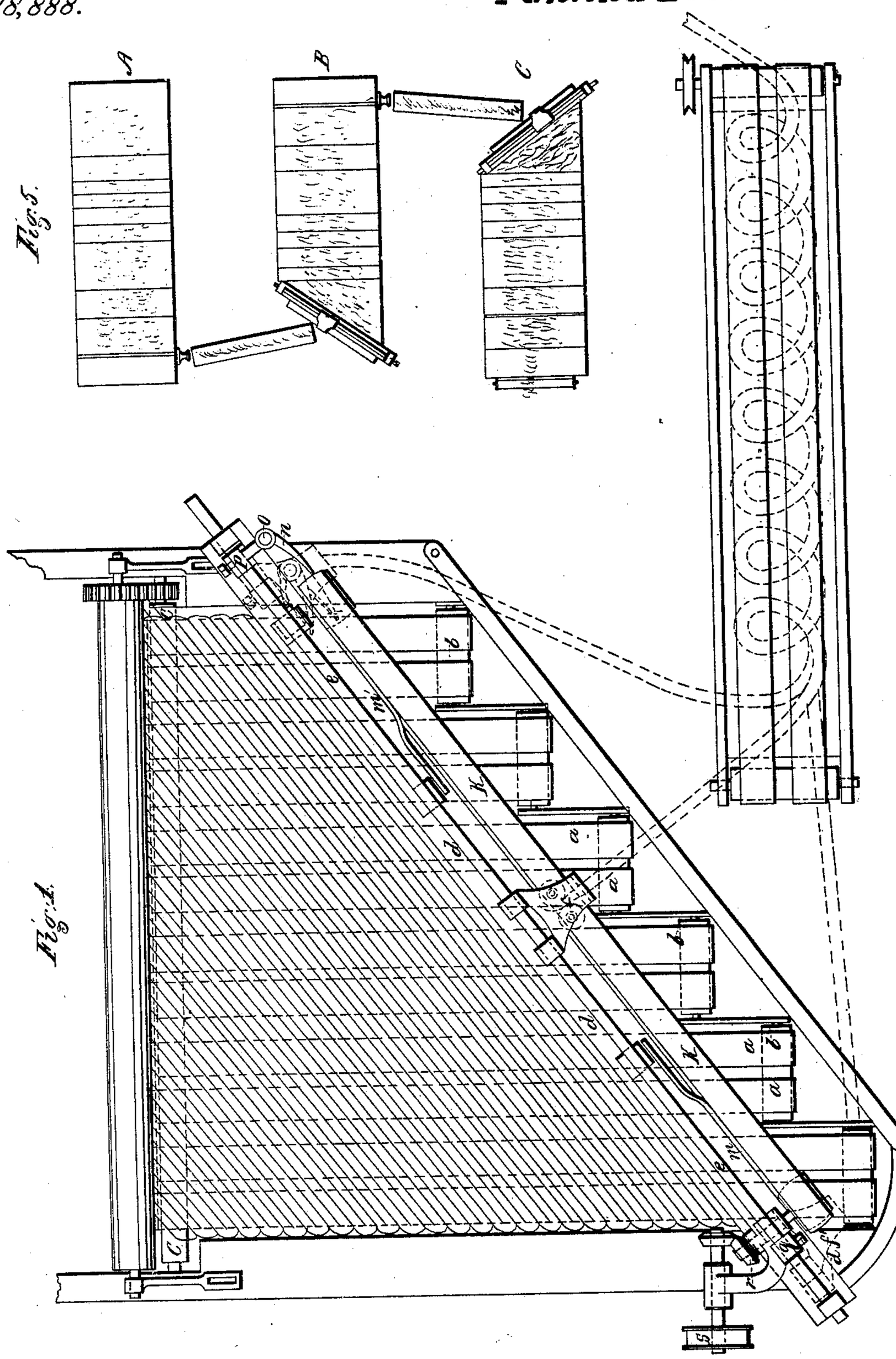

Fig. 4.

Sheet 2. 2 Sheets.

Ajnerly & Clissold.

Carding Mach.

No. 18,888. Patented Dec. 22. 1857.

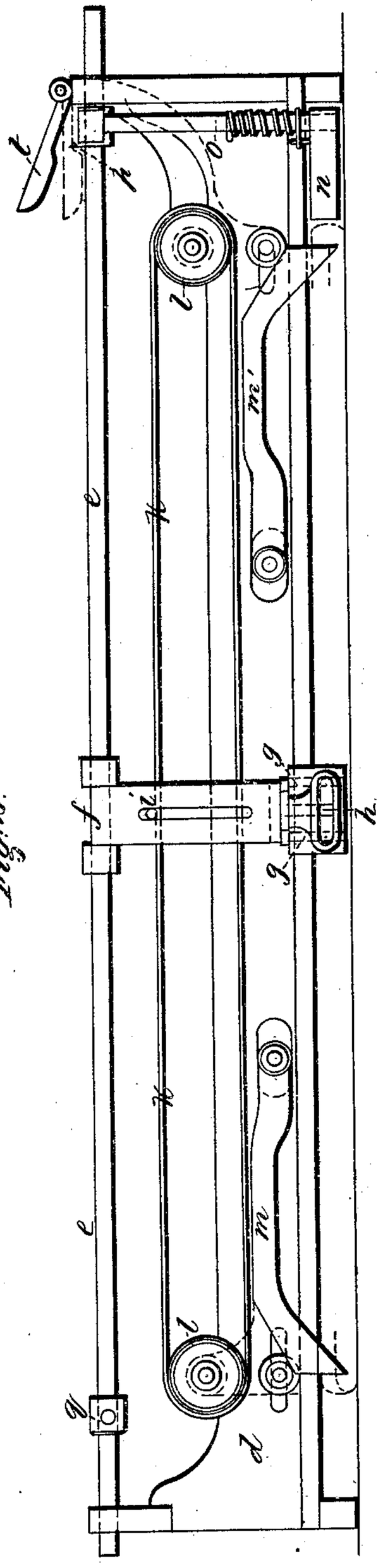

Fig. 2.

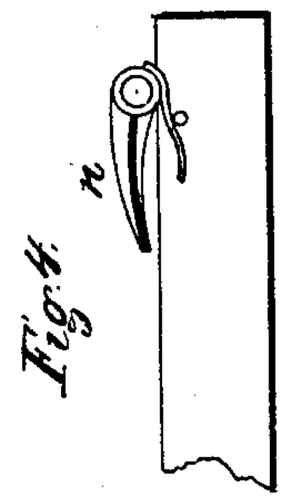

Fig. 4.

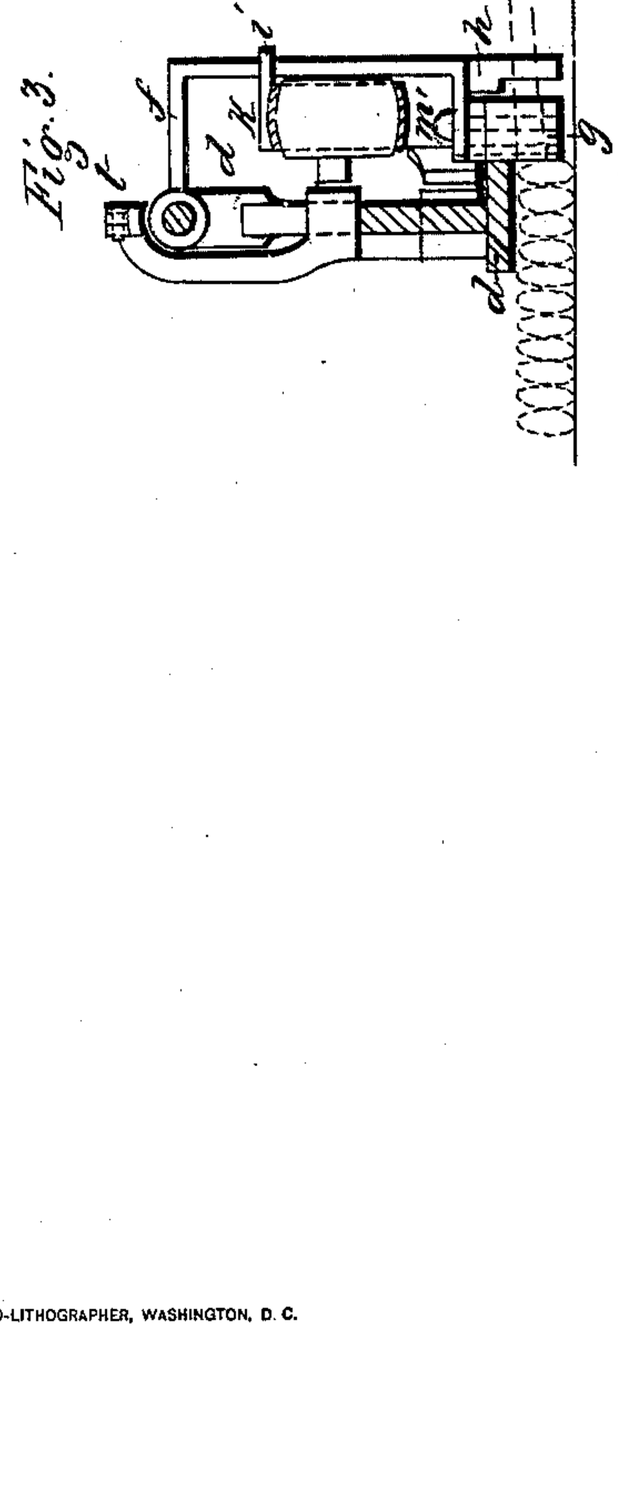

Fig. 3.

UNITED STATES PATENT OFFICE.

JAMES APPERLY AND WM. CLISSOLD, OF DUDBRIDGE, ENGLAND.

MACHINERY FOR PREPARING FIBROUS SUBSTANCES FOR SPINNING.

Specification of Letters Patent No. 18,888, dated December 22, 1857.

To all whom it may concern:

Be it known that we, JAMES APPERLY, cloth manufacturer, and WILLIAM CLISSOLD, engineer, both of Dudbridge, in the county of Gloucester, England, have invented Improvements in Preparing Fibrous Substances for Spinning; and we do hereby declare that the following is a full and exact description of our said invention.

This invention relates to a novel mode of delivering the sliver from one preparing machine to another and so making the preparation process continuous, while at the same time the uniformity of the prepared sliver is insured.

In preparing fibrous substances such as wool and cotton and other short staple for the roving and spinning process it is the practice to subject them to the action of a series of carding engines and condensers for the purpose of manufacturing therefrom a sliver fit for the roving, drawing, or spinning machine, but in consequence of the common mode of feeding carding engines it has been found that even where the greatest care is exercised an uniform thickness of roving or sliver cannot be insured and therefore great irregularity is frequently observable in the spun yarn.

Now the object of this invention is to remedy this evil by insuring greater regularity in the sliver or roping than has been heretofore obtained. This we propose to effect by laying a condensed web or band of sliver delivered from one scribbling carding or condensing machine diagonally on the feed cloth of the following machine in one continuous length. The fibrous substance to be prepared for spinning (say wool) is first weighed out and spread over the feeding apron of the first carding engine or condenser in the usual manner and from this machine the wool passes out in the form of sliver. We then take up the sliver as it is delivered from the first carding engine or preparing machine of the series and lay it diagonally in parallel serpentine rows on the feed apron of the second preparing machine, which apron in its continuous progressive motion will deliver the sliver between the feed rollers of that machine and in like manner we continue the feeding operation through the series of machines.

In the accompanying drawing, Figure 1 shows in plan view the feeding end of a preparing engine with our improved mechanism for laying the sliver formed in the first machine onto the feed apron of the next machine. Fig. 2 is a front view of the mechanism shown detached, and Fig. 3 is a cross section.

The feed apron is composed, by preference, of a series of belts or boards *a*, *a*, which pass over rollers *b*, *b*, *c*, *c*, mounted in suitable bearings carried by the main framing.

d, *d*, is a frame of cast iron, which extends across the feed-bands diagonally and is secured to the main framing. This frame *d* carries the operating parts by which the sliver is laid in parallel lines across the bands or feed apron. In the upper part of the frame *d*, is mounted a guide rod *e*, which is capable of receiving a short endwise motion for the purpose to be presently explained. The rod *e* carries a traveling guide *f*, which is free to move from side to side of the preparing machine. By referring to Fig. 3 it will be seen that the guide *f* is formed of angle iron and provided at top with eyes to receive the guide rod *e*. At its lower end it carries a pair of rollers *g*, which run over the face of the frame *d*, and in front of these rollers is fixed an eye *h*, through which the sliver or roping passes before it enters the bite of the rollers. In the guide *f*, a vertical slot is formed to receive a stop pin *i*, carried by an endless band *k*, which band passes over a pair of pulleys *l*, *l*, mounted on adjustable stud axles affixed to the frame *d*. Jointed to the front of this frame *d*, is a pair of trip levers or fingers *m*, *m'*, over the ends of which the sliver is intended to be lapped or distended for the purpose of insuring equal lengths in the serpentine lines of sliver deposited upon the bands *a*, *a*. At that end of the frame *d*, nearest the feed rollers of the engine, an elastic presser or finger *n* is provided which as soon as the laid sliver is freed from the trip lever *m'*, will move inward and press the end of the lapped sliver forward, so as to insure its taking its proper position on the feeding bands. This finger *n* is mounted loosely on a rod *o* pendent from an arm projecting from a stop *p* on the guide rod *e*. A coiled spring surrounds the rod *o*, and

one of its ends is fixed thereto, while its free end bears against a pin projecting from the finger *n* and thereby gives it a tendency to move inward. At the other end of the guide rod *e*, is a stop *q*, which when struck by the traveling guide as it completes its course in the direction of the arrow, Fig. 2, will cause the rod *e*, to slide in its bearings and move the finger *n* into the dotted position of Fig. 1. The finger will then bear against the lever *m'* and be ready to act on the sliver and press it inward immediately on the rising of that lever. In order to prevent the coiled spring from acting, excepting when the finger is in its advanced position, a spring or bearing piece is attached to the back of the finger, which spring or bearing piece moves over a projection on the frame *d*, as shown in the partial plan view Fig. 4, and while in contact therewith keeps the finger in the drawn position of Fig. 1. The trip levers are raised alternately by the guide *f* in its backward and forward traverse, coming into contact with their under edge and thus the sliver is released from their hold. The driving of the belt *k* is effected by the bevel gear *r*, which receives motion through a pulley *s* from a band from a pulley on the axle of one of the feeding rollers or other suitable part of the engine. By reference to the diagram, Fig. 5, which shows a set of engines provided with our improved mechanism, the mode in which we propose to carry out the preparing process will be readily understood. The girl in attendance weighs out the wool or other staple to be operated upon and lays it as usual on the feed cloth of the first machine A. The staple then passes through the machine and is doffed as a rope or sliver and discharged thence through a trumpet mouth. The sliver then falls onto a creeper composed of distended bands to which the motion is communicated from any convenient part of the adjoining mechanism and by means of these traveling bands the sliver is conducted to the second machine. In Fig. 1 this creeper is shown in plan view on an enlarged scale in order that its construction may be understood. The sliver which is delivered in coils on the bands passes slowly forward and is taken up by the traversing guide and laid by it on the feeding bands or apron of the second machine (B Fig. 5).

The feed rolls of this machine in their revolution take the staple simultaneously from all the diagonal lines of sliver presented to them and thus any inequality in the thickness of any one sliver will be distributed diagonally over the carded surface and consequently the inequality in the feed will be lost. The sliver formed by the doffing comb at the end of the second machine B, is passed out of the machine in like manner through a trumpet mouth and allowed to fall into a second creeper of like construction to that shown at Fig. 1. The sliver is thus taken up by a second arrangement of feed mechanism precisely similar to that above described and delivered into the feeding bands of the third machine C. When the staple has passed through this machine it is doffed into sliver, which may then be passed through condensers, as indicated at Fig. 5, or may be removed to the billy to be prepared for spinning.

Having thus described in detail the construction of our improved arrangement of mechanism for feeding sliver to carding engines and explained generally the course we adopt in carrying out the operation of preparing the fibrous substances for spinning, we will now proceed to explain more minutely the action of our improved mechanism.

The sliver or roping having been threaded through the eye of the traveling feeder and passed into the bite of the roller *g*, *g*, and rotary motion having been imparted to the band *k*, through the bevel gearing as explained, the feeder *f* will be driven along the rod *e* by the stop pin *i*, which plays up and down in the vertical slot of the feeder and the rollers *g*, *g*, running over the face of the frame *d* will be caused to rotate and deliver the sliver in parallel lines over the feeding bands. As the feeder *f* arrives at the position indicated by the red lines at *f'*, it will raise the lever *m* and disengage it from the sliver and it will then strike against the stop *q* and give the rod *e* an endwise motion to the left hand. This movement will bring the finger *n* into the dotted position of Fig. 1, where it will rest against the lever *m'*. On the return movement of the feeder *f* it will have a fresh lap of sliver on the end of lever *m*, and passing forward will raise the lever *m'* clear of the sliver. The finger *n* will then (pressed by the coiled spring) turn in the end of the sliver and at the next movement it will be moved back out of action to the position shown at Fig. 2 by the feeder lifting first a hinged catch *t* (which drops onto a pin projecting from the stop *p*, and thus holds fast the rod *e*) and then striking the stop *p*, and sliding the rod *e*, in its bearings. A repetition of these movements coupled with the continuous progressive motion of the bands or traveling aprons will cause the sliver to be delivered to the feed rolls of the engine in compact parallel lines, as indicated by Fig. 1, and thus a perfectly even feed will be secured to a set of preparing machines by the assistance of but one attendant.

Having now explained the nature of our invention of "improved machinery for preparing fibrous substances" we claim—

The means herein described for conducting the roping or sliver from one preparing machine to the other and laying the roping or sliver in parallel lines on the feed bands, aprons, or tables of preparing machines.

In witness whereof we, the said JAMES APPERLY and WILLIAM CLISSOLD, have hereunto set our hands the 30th day of June, 1857.

JAMES APPERLY.
WILLIAM CLISSOLD.

Witnesses:
ALFRED SMITH,
ALFRED HILLIER.