W. T. SMITH.

MACHINE FOR DRAWING AND SPINNING SHORT FIBERS.

APPLICATION FILED MAY 14, 1912.

1,215,211. Patented Feb. 6, 1917.

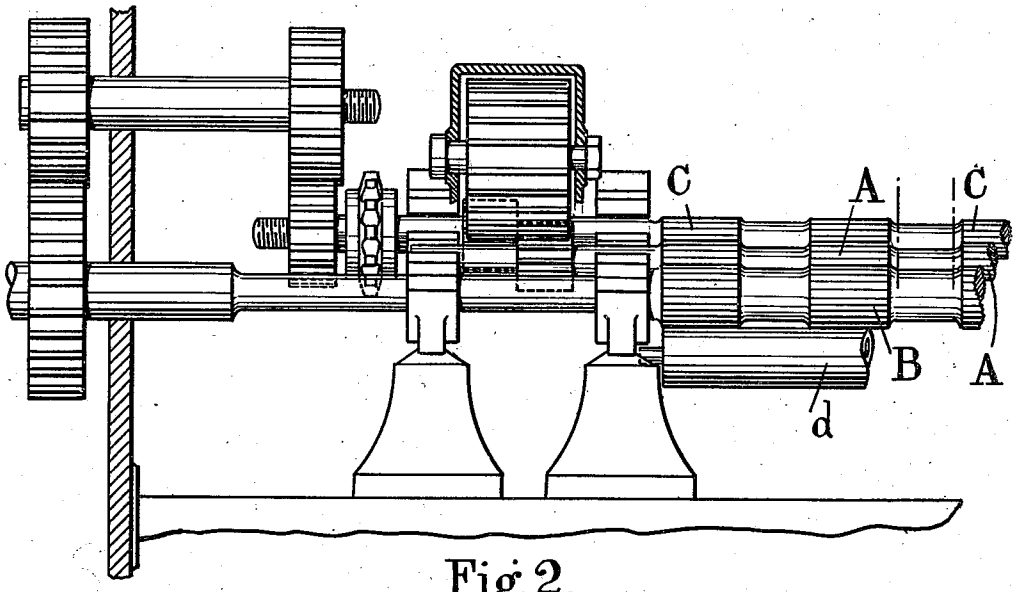


Fig. 2.

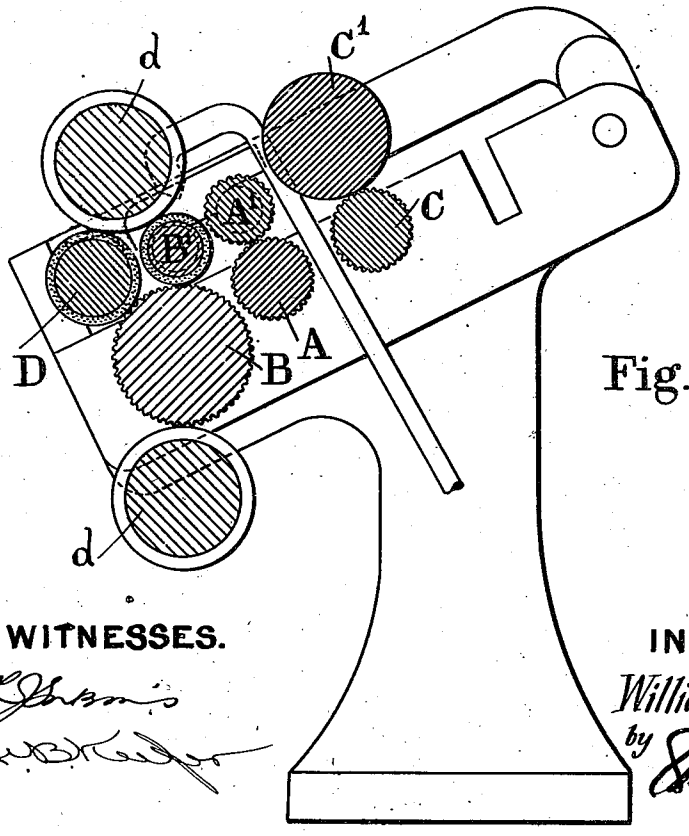


Fig. 1.

WITNESSES.

INVENTOR.

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MACHINE FOR DRAWING AND SPINNING SHORT FIBERS.

1,215,211. Specification of Letters Patent. Patented Feb. 6, 1917.

Application filed May 14, 1912. Serial No. 697,244.

To all whom it may concern:

Be it known that I, WILLIAM THOMAS SMITH, a British subject, residing at Bolton, county of Lancaster, England, have invented certain new and useful Improvements in Machines for Drawing and Spinning Short Fibers, of which the following is a specification.

This invention relates to the arrangement of the rollers in the drawing heads of spinning machines for spinning short staple fibers in which pairs of drawing rollers of small diameter are set closely.

In the drawing of cotton fibers in a spinning machine, it is customary to set the drawing rollers at a distance apart slightly greater than the length of the staple or the longer fibers in the rove.

In drawing short staple cotton or cotton waste, however, where the staple is chiefly short fiber intermixed with a small proportion of longer staple, I find the best results are obtained by setting the rollers for the drawing of the shorter fibers, and arrange that the longer fibers shall be drawn or pulled through the back pair of rollers by the front pair of rollers, to which latter I impart a greater grip or hold on the fiber. This system can be applied to several pairs or lines of rollers in series by increasing the grip or hold of each succeeding pair of rollers on the fiber as described above.

The invention consists essentially of closely set drawing rollers comprising two back rollers of small diameter, a bottom front roller of larger diameter than the bottom back roller, and a top front roller, of smaller diameter than the bottom front roller and a second top front roller both top front rollers resting upon the bottom front roller, as will be fully set forth with reference to the drawings and claims.

Figure 1. is a transverse sectional elevation showing the arrangement of the rollers. Fig. 2. is a front elevation showing the bottom rollers and the gearing for driving the same.

The roller stand is of the usual construction to carry the drawing rollers and the latter include a pair of very small back drawing rollers A A′, a bottom front roller B of larger diameter than the bottom back roller A, and a top front roller B′ smaller than the bottom roller and set with its center behind the center of the bottom roller to bring the nip of the drawing rollers very close together to grip or take hold of the shortest fibers.

The bottom front roller B is larger than the back roller A to give a large arc where the thread or yarn leaves it, and an auxiliary top roller D, which is located in advance of roller B′, assists the even delivery of the yarn by bringing the nip of the roller B nearer to the front and more nearly over the point of the spindle. The forward nip of the rollers B and D also facilitates the piecing up of a broken end of yarn.

Behind the drawing rollers, to obtain a more even and uniform feed thereto, a pair of check rollers C C′ is placed. The rollers C C′ rotate at about the same surface speed as the back drawing rollers A, A′.

The bottom rollers A, B and C are fluted steel rollers and are driven in the ordinary way by pinions or gear wheels as shown in Fig. 2. The top check roller C′ is preferably a plain or smooth metal roller; the top back roller A′ is a fluted metal roller and the top front drawing roller B′ is a smooth leather or rubber covered roller. The auxiliary roller D is also a smooth rubber or leather covered roller.

The top front drawing roller B′ is weighted more heavily than the top back drawing roller A′ to enable the front drawing rollers B and B′ to pull a long fiber through between the back rollers A and A′ without breaking it.

Clearer rollers *d* and *d′* are placed below the roller B and above the rollers B′ and D.

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

1. A machine for spinning staple composed of intermixed long and short fibers, consisting of a pair of coacting back drawing rollers; a pair of coacting front drawing rollers located in advance of the back drawing rollers and at a distance therefrom equal to the length of the shortest fibers to be operated upon; and a pair of coacting check rollers located behind said back drawing rollers and at a distance from the front drawing rollers equal to the length of the longest fibers to be operated upon, the said check rollers and back drawing rollers rotating at the same surface speed.

2. A machine for spinning staple composed of intermixed long and short fibers, consisting of a pair of coacting back drawing rollers of small diameter; a bottom front drawing roller of large diameter; a top

front drawing roller of small diameter mounted upon the bottom front drawing roller and having its center located behind that of the latter roller, said front drawing rollers being located a distance in advance of the back drawing rollers equal to the length of the shortest fibers to be operated upon; an auxiliary roller mounted upon said bottom front drawing roller in advance of said top front drawing roller; and a pair of check rollers located behind said back drawing rollers and at a distance from the front drawing rollers equal to the length of the longest fibers to be operated upon, the said check rollers and back drawing rollers rotating at the same surface speed.

3. A machine for spinning staple composed of intermixed long and short fibers consisting of a pair of fluted, back drawing rollers of small diameter; a fluted, bottom front drawing roller of large diameter; a pair of plain drawing rollers mounted one behind the other upon the bottom front drawing roller with their centers located at opposite sides of that of the latter roller, for bringing the nip of the drawing rollers close together to grip the shortest fibers to be operated upon and to support the same; and a pair of checking rollers, the lower of which is fluted and the upper plain, located behind the back drawing rollers and at a distance from the front drawing rollers equal to the length of the longest fibers to be operated upon.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM T. SMITH.

Witnesses:
J. OWDEN O'BRIEN,
GEO. H. O'BRIEN.