C. F. MITCHELL & J. L. BARKER.

CLOTH CUTTING MACHINE.

APPLICATION FILED APR. 13, 1908.

905,207. Patented Dec. 1, 1908.

3 SHEETS—SHEET 1.

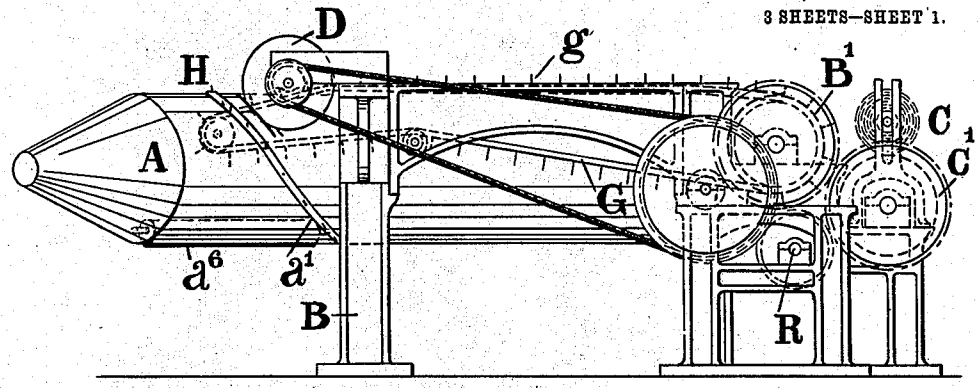


Fig. 1.

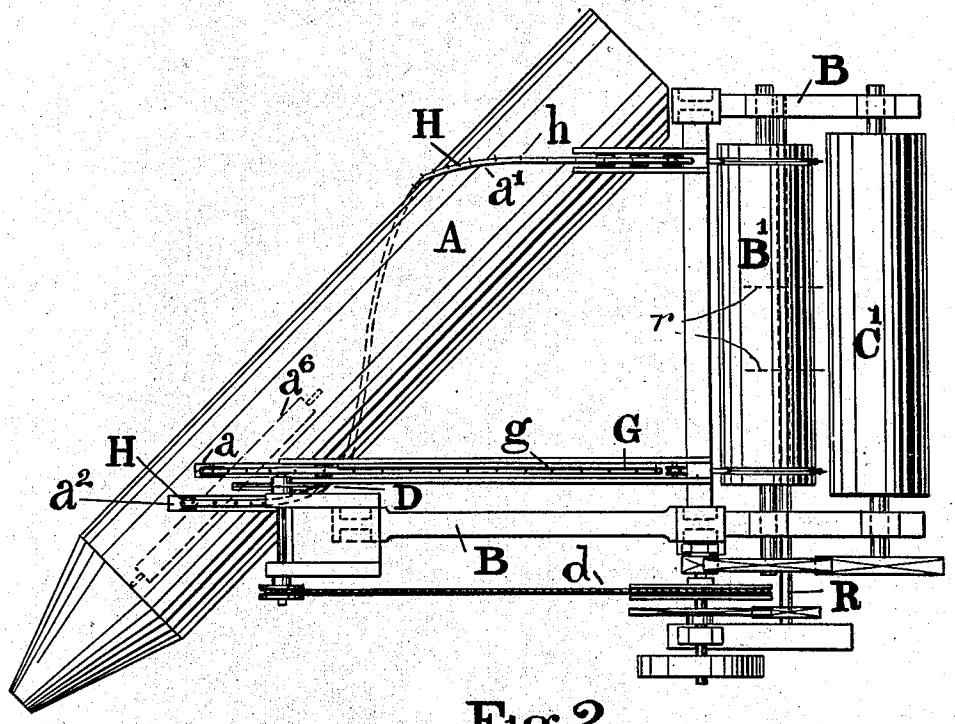


Fig. 2.

WITNESSES.

Joseph Bates.

E. Howard

INVENTORS.

Charles F. Mitchell

John L. Barker

by Dowson & Dowson

Atty

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3 SHEETS—SHEET 2.

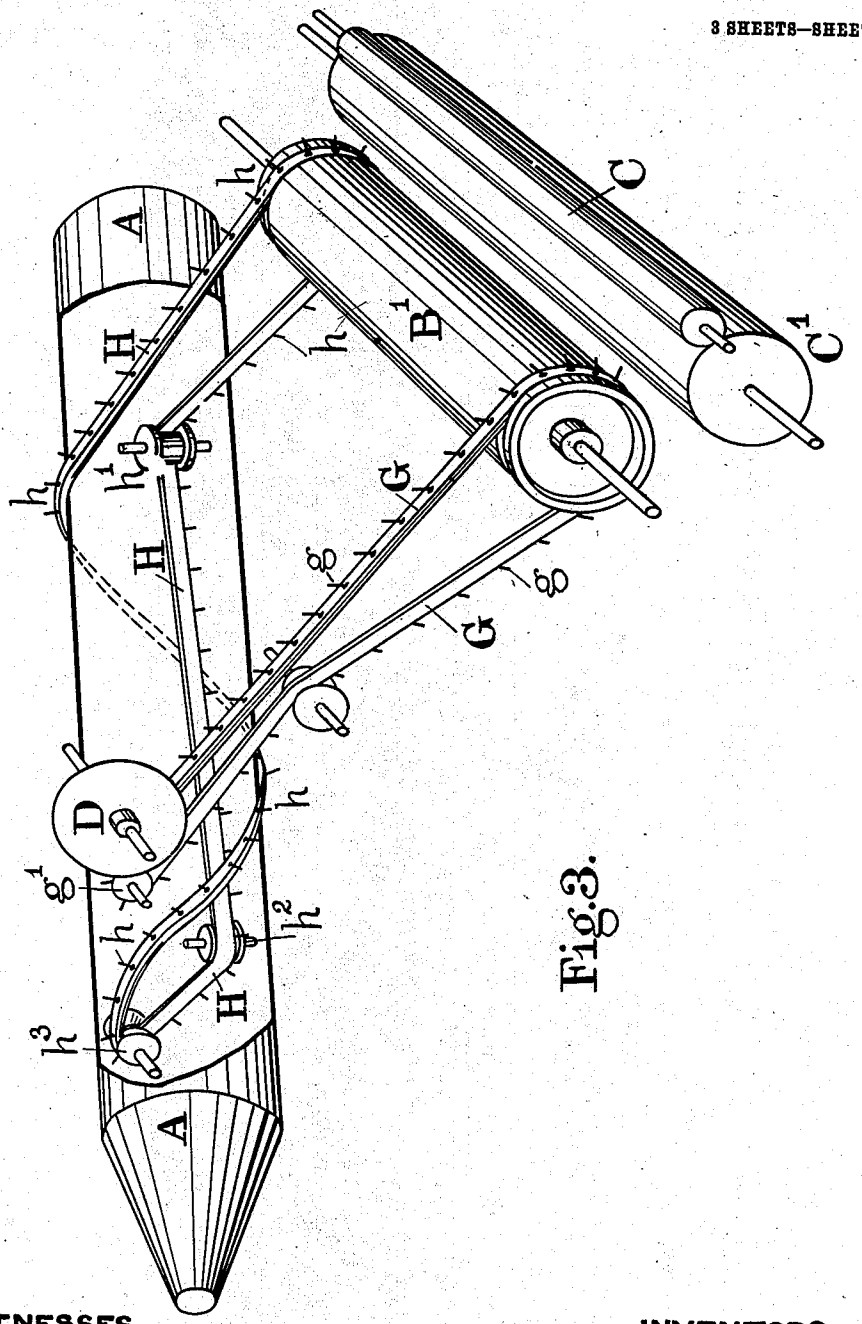


Fig.3.

WITNESSES.

Joseph Bates.

E. Howard

INVENTORS.

Charles F. Mitchell

John L. Barker

by G. W. Tennison

atty.

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3 SHEETS—SHEET 3.

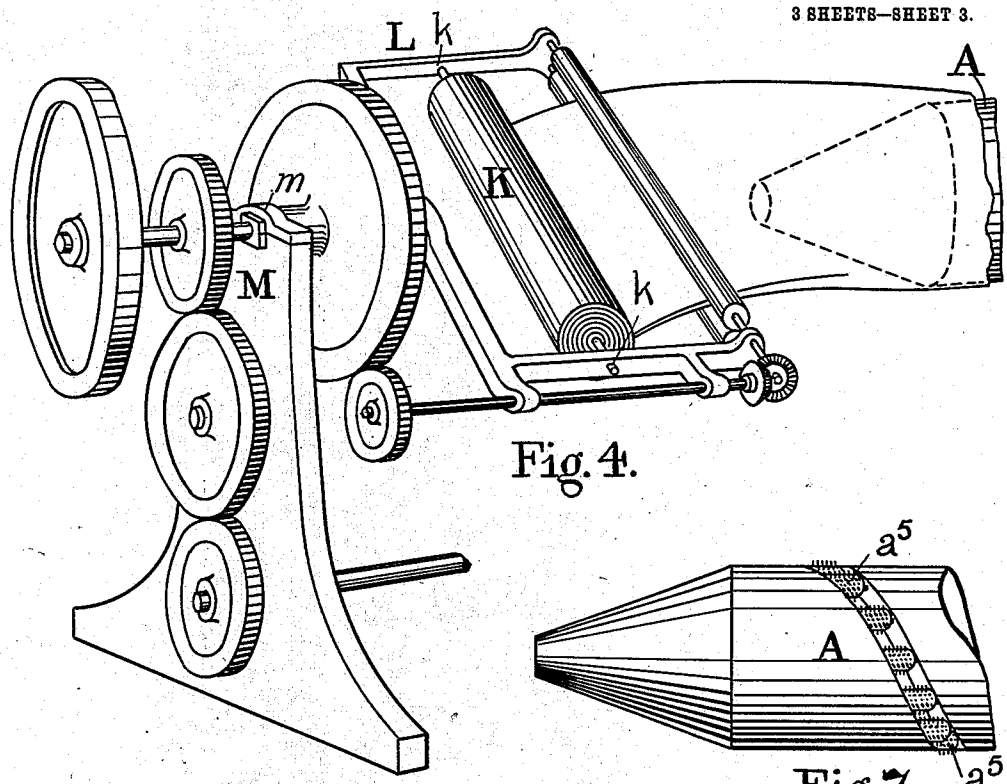


Fig. 4.

Fig. 7.

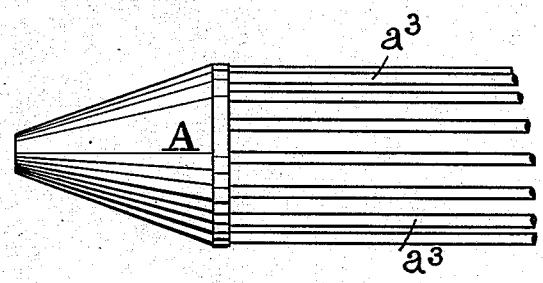


Fig. 5.

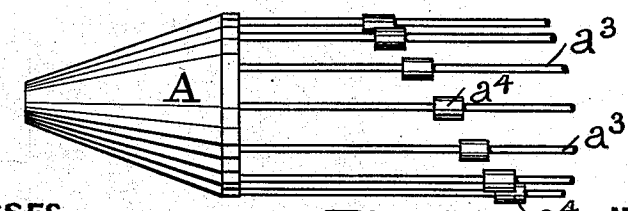


Fig. 6.

WITNESSES.

Joseph P. Bates.

E. Howard

INVENTORS.

Charles F. Mitchell

John L. Barker

by J. O'Brien

atty.

UNITED STATES PATENT OFFICE.

CHARLES F. MITCHELL, OF LEVENSHULME, MANCHESTER, AND JOHN L. BARKER, OF MOSTON, ENGLAND.

CLOTH-CUTTING MACHINE.

No. 905,207. Specification of Letters Patent. Patented Dec. 1, 1908.

Application filed April 13, 1908. Serial No. 426,897.

To all whom it may concern:

Be it known that we, CHARLES FREDERICK MITCHELL and JOHN LORD BARKER, British subjects, and residents, CHARLES FREDERICK MITCHELL, of Levenshulme, Manchester, county of Lancaster, England, and JOHN LORD BARKER, of Moston, county of Lancaster, England, have invented certain new and useful Improvements in Cloth-Cutting Machines, of which the following is a specification.

This invention relates to improvements in apparatus for manufacturing or producing long lengths of cloth upon the bias *i. e.*, with the warp and weft thread at an angle or inclination of 45° to the edge of the cloth.

The invention consists essentially in apparatus for cutting a circular or tubular cloth into lengths spirally constructed with a stationary drum fixed obliquely to rollers for drawing the fabric forward, a knife fitted to the oblique drum for severing the cloth as it is drawn forward and spiked bands driven by the drawing rollers over the ends of the drum to engage the cloth and draw it forward as it is cut.

It will be fully described with reference to the accompanying drawings, forming part of the specification.

Figure 1. is a side elevation of the machine. Fig. 2. is a plan of same. Fig. 3. is a perspective diagram of the operative parts of the machine. Fig. 4. is a perspective view of holder for paying off the cloth. Fig. 5. is a modification of drum A formed with wire. Fig. 6 is a modification of drum A similar to Fig. 5. with rollers attached. Fig. 7. is a modification of drum A with roller temples attached.

The cloth is woven tubular or circular of any desired diameter in the usual way for weaving a tubular fabric, and is then cut spirally upon a suitably constructed machine thereby producing a full length of cloth which is on the bias or in which the threads both warp and weft are at an angle of 45° to the edge of the fabric. The fabric is subsequently cut lengthwise and crosswise into any size that may be desired.

The machine is constructed with a cylinder or drum A to receive the cloth with a conical or pointed end to enter the tubular fabric and enable the cloth to be drawn on to the drum in a continuous length. The end of cylinder A projects beyond or overhangs the support or frame B upon which it is mounted so as to offer no obstruction to the cloth as it is drawn forward over it.

The cylinder A is stationary and set obliquely to a drawing or pulling roller B′ and a pair of taking up rollers C C′ placed behind it by which the cloth is drawn over the oblique cylinder A and carried away from it when severed. The cloth when cut may be rolled up into a roll on the roller C, or it may be folded or plaited by the usual machine not shown.

At the overhanging or front end of the cylinder A a circular knife D (or other knife or shears) is mounted. The axle of the knife D is set parallel to the rollers B′ and C at an angle of 45° to the longitudinal axis of the cylinder A and cuts or severs the cloth as it is drawn forward on to the cylinder. The knife D is operated by band *d*. A roller or weight a^6 is placed in the bottom of the cylinder A to project through a slot therein to take up any slack in the cloth as it passes the knife D.

To assist the roller B′ in drawing the cloth over the cylinder A and to keep it out to the desired width and prevent it contracting laterally two bands or chains G and H furnished with pins or spikes *g* and *h* are driven by the drawing roller B′.

The spiked band or chain G passes over one end of the drawing roller B′ and over a pulley *g′* mounted in the interior of the cylinder A the band or chain passing through a slot *a* in the cylinder. The band is placed so that the pins *g* rise up above the surface of the cylinder and engage the cloth at or near the edge where it is severed by the knife D and prevents it contracting as it is drawn forward by the rollers.

The spikes preferably enter the cloth at a little distance before it reaches the knife.

The spiked band or chain H emerges from a slot a^2 and traverses a spiral groove *a′* in the surface of the cylinder A the pins *h* projecting above the surface of the cylinder. The band H then passes over the other end of the drawing roller B′ and enters the interior of the cylinder through a slot and passes over the guide pulleys h^3 h^2 *h′* in the interior of the cylinder and then emerges again from the drum A. The pins *h* of the band H engage the other edge of the cloth as it is severed by the cutter D and carry the edge spirally around the cylinder A and stretch it out

to the desired width as it travels to the drawing roller B'.

The spiked bands as described are considered the best means for keeping the cloth from shrinking but any of the other devices usually employed for this purpose may be utilized, such as temple rollers, as shown in Fig. 7.

In front of the cylinder A a roller K is mounted upon which the tubular fabric is rolled and from which it is delivered to the machine. The roller K is mounted in a frame L in bearings *k* to rotate about its longitudinal axis and in a standard M with bearings *m* to also rotate in a plane at right angles thereto as the roll of cloth on the roller K will be rotated in both planes as it is delivered to and drawn spirally over the cylinder A. The cloth may be delivered to the cylinder A by any other suitable mechanism.

Instead of a drum or cylinder a number of bars a^3 or rollers a^4 mounted in a suitable frame to form a skeleton cylinder may be employed in substitution for the cylinder A (see Figs. 5 and 6) or roller temples a^5 as shown in Fig. 7, may take the place of the spiked band.

In cases where the cloth to be cut has already been proofed or finished with a preparation of rubber or other mixture and it is desired to cut it into more than one strip a shaft R carrying additional knives *r* may be fixed in a convenient position preferably below the drawing roller B' and in front of the taking up roller C. The knives being capable of sliding upon the shaft and of being fixed at various distances apart as desired.

The machine may also be constructed to cut cloth at angles other than that of 45° in which case the knife and drawing rollers would be set at an angle to the longitudinal axis of the cylinder equal to the angle at which the cloth was required to be cut.

What we claim as our invention and desire to protect by Letters Patent is:—

1. Apparatus for cutting a tubular cloth spirally to produce long lengths of cloth upon the bias comprising in its construction a stationary cylinder and drawing off rollers set obliquely to one another and a cutter set in the cylinder to sever the cloth spirally as it is drawn forward over the cylinder by the drawing rollers, and means for drawing the cloth across the cylinder and means for expanding it as it is cut substantially as described.

2. Apparatus for cutting a tubular cloth spirally to produce long lengths of cloth upon the bias comprising in its construction a stationary cylinder and drawing off rollers set obliquely to one another and a cutter set in the cylinder to sever the cloth spirally as it is drawn forward over the cylinder by the drawing rollers and bands provided with pins which carry forward and expand the cloth as it is cut substantially as described.

3. Apparatus for cutting a tubular cloth spirally to produce long lengths of cloth upon the bias comprising in its construction a stationary cylinder drum or frame over which the tubular cloth is drawn, drawing rollers to which the drum is set obliquely, a cutter fitted at the front end of the drum to sever the cloth spirally as it is drawn forward, and bands with pins to engage the edges of the severed cloth to prevent the cloth contracting as it is carried forward substantially as described.

4. Apparatus for cutting a tubular cloth spirally to produce long lengths of cloth upon the bias comprising in its construction a stationary cylinder and drawing off rollers set obliquely to one another and a cutter set in the cylinder to sever the cloth spirally as it is drawn forward over the cylinder by the drawing rollers and bands provided with pins which carry forward and expand the cloth as it is cut, rollers to take up the cloth and knives to divide it into strips substantially as described.

In witness whereof, we have hereunto signed our names in the presence of two subscribing witnesses.

CHARLES F. MITCHELL.
JOHN L. BARKER.

Witnesses:
J. OWDEN O'BRIEN,
HARRY BARNFATHER.