

(No Model.)

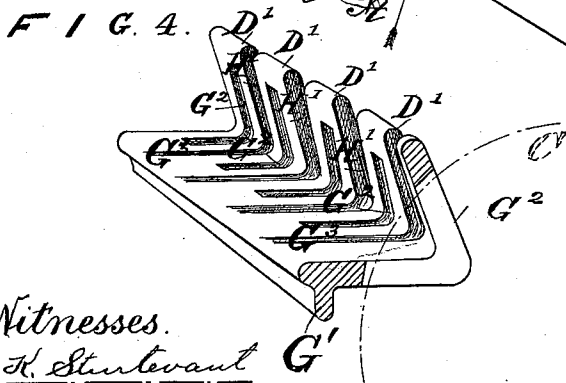
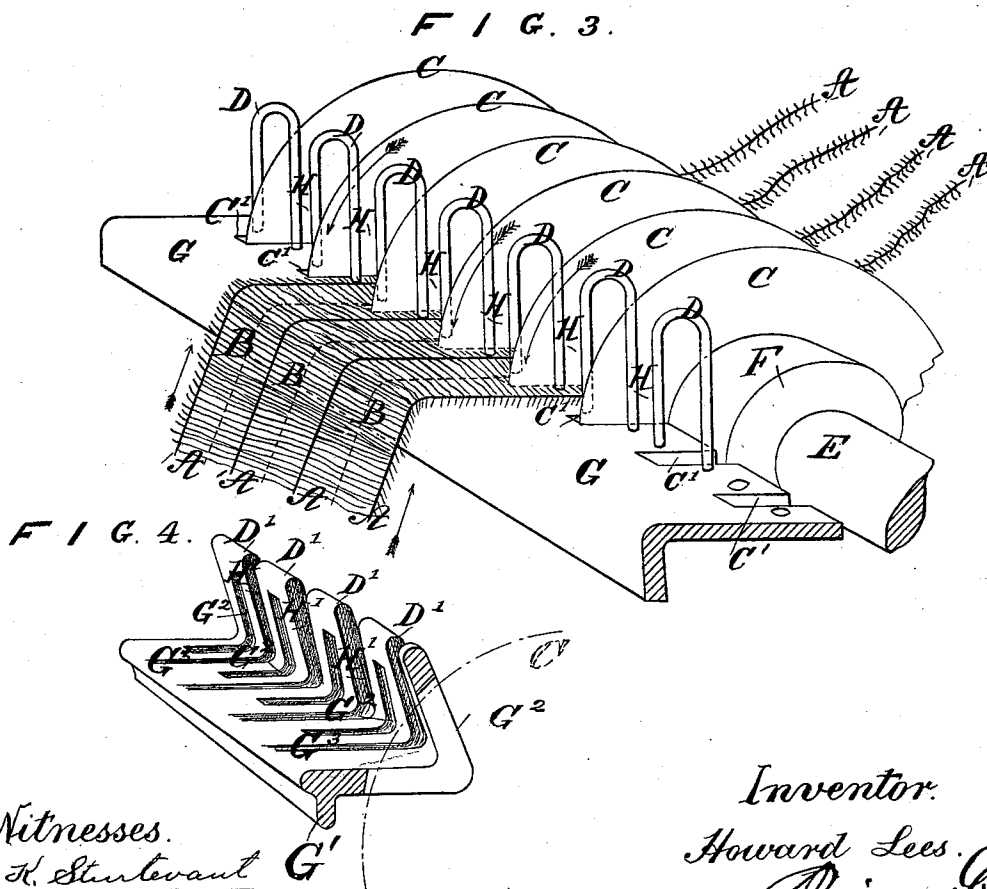
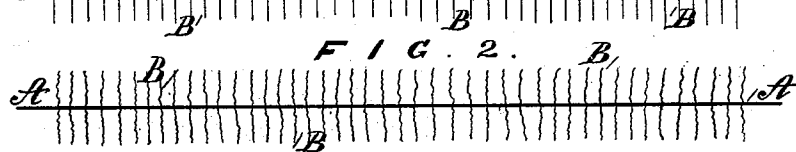
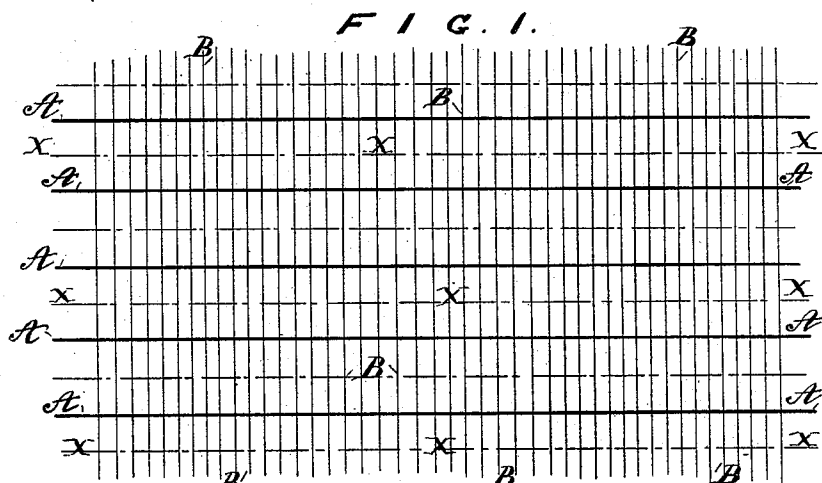
3 Sheets—Sheet 1.

H. LEES.

APPARATUS FOR CUTTING CHENILLE FABRIC.

No. 537,163.

Patented Apr. 9, 1895.



Witnesses.

E. H. Sturtevant

A. S. Buring

Inventor.

Howard Lees.

By his Attorneys Reynolds & R.

(No Model.)

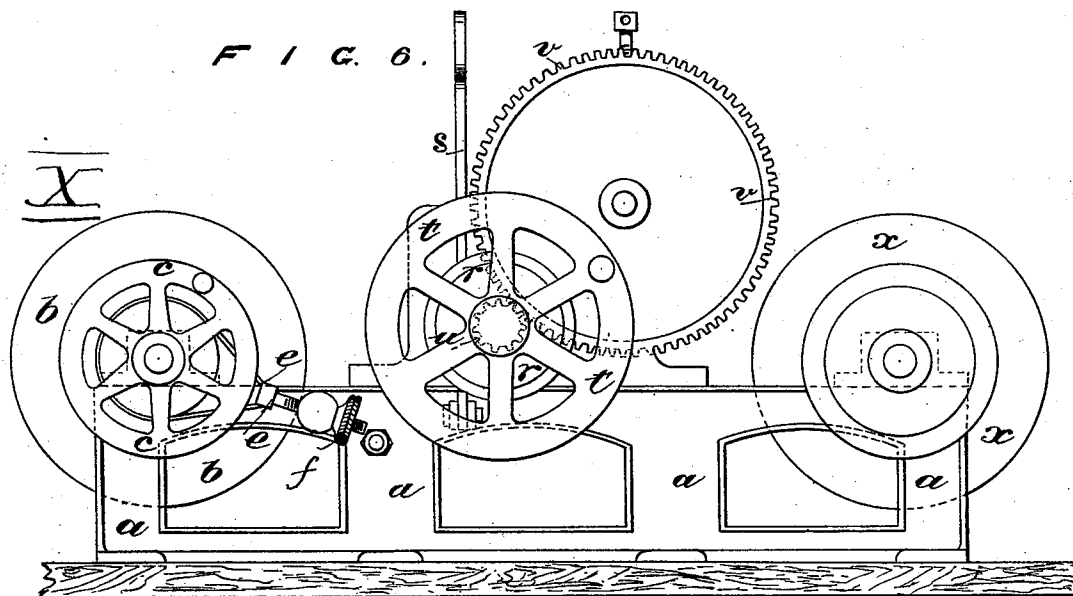
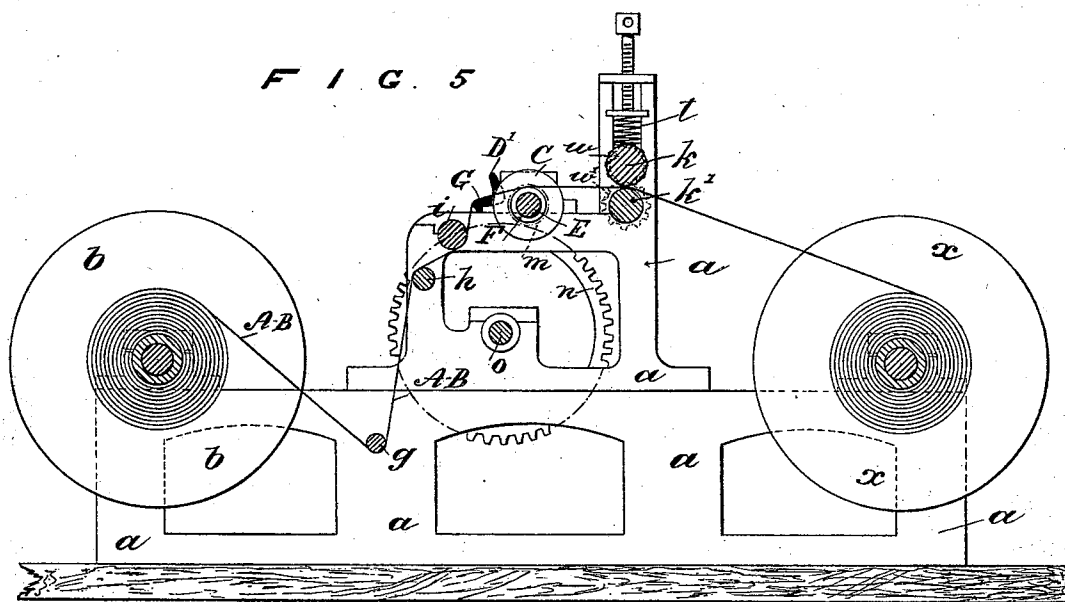
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(No Model.)

3 Sheets—Sheet 3.

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FIG. 7.

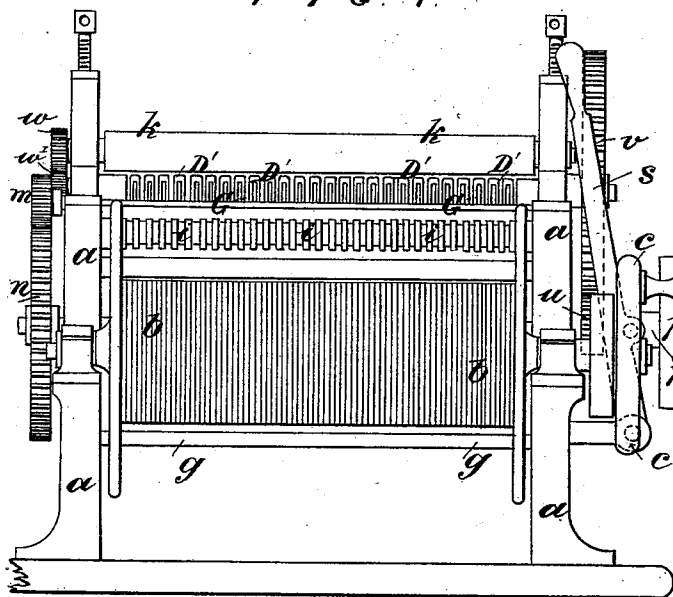


FIG. 10.

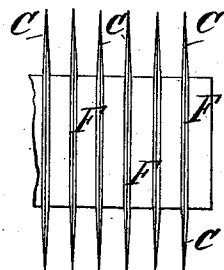


FIG. 11.

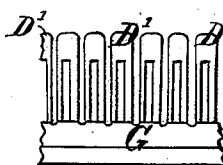


FIG. 8.

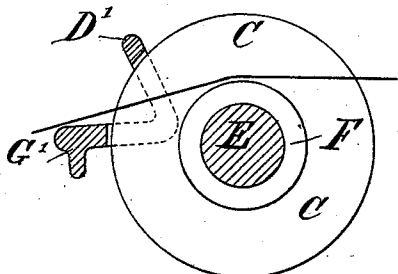


FIG. 12.

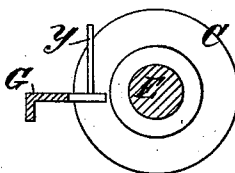


FIG. 9.

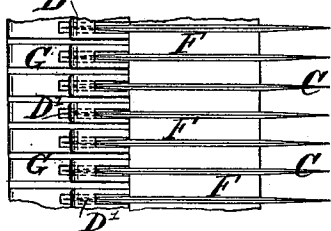
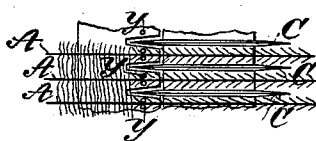


FIG. 13.



Witnesses.

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UNITED STATES PATENT OFFICE.

HOWARD LEES, OF DELPH, ENGLAND.

APPARATUS FOR CUTTING CHENILLE FABRIC.

SPECIFICATION forming part of Letters Patent No. 537,163, dated April 9, 1895.

Application filed September 14, 1894. Serial No. 523,018. (No model.) Patented in England December 30, 1893, No. 25,039.

To all whom it may concern:

Be it known that I, HOWARD LEES, a subject of the Queen of Great Britain, residing at Delph, near Oldham, England, have invented certain Improvements in Apparatus for Cutting Chenille Fabric, of which the following is a specification.

A patent has been granted in England, No. 25,039, dated December 30, 1893.

My said invention relates to improvements in apparatus for cutting up chenille web or fabric into strips as is well understood. The said chenille fabric is usually but not always made from silk and the strips into which it is cut have the appearance of piled cords each strip having a central warp thread or threads intertwined with and securely holding the severed weft ends which form the pile of the chenille strip or cord.

The drawings to illustrate my invention are on three sheets as annexed and are arranged as follows: Figure 1 is a diagram of the ordinary chenille fabric. Fig. 2 is a cut strip; Fig. 3, a perspective sketch of the cutter showing one form of guide; Fig. 4, a view of improved form of guide, this being a modification of that shown in Fig. 3 and being the preferred form. Fig. 5 is a longitudinal section of the chenille cutting apparatus. Fig. 6, is a side elevation. Fig. 7 is an end elevation from the end marked "X." Fig. 8 is an enlarged sectional view of the guide plate, cutting disks and mandrel. Fig. 9 is a plan view of Fig. 8. Fig. 10 is an edge view of cutters C shown strung on the mandrel with spacing washers between. Fig. 11 is a front view of a guide plate, and Figs. 12 and 13 show straight pegs used as guides for the warp threads.

As an example, and to assist even the non-technical reader to a thorough understanding of my invention I have sketched a rough diagrammatic plan of the scheme of manufacture in the production of chenille fabrics. This appears as Fig. 1 in Sheet 1 of the annexed three sheets of drawings. The binding warps are marked A and the wefts B. In the process of weaving, these wefts B are locked by or intertwined with the warps A the wefts floating between the spaced warps. To form chenille strips such as represented in Fig. 2, this fabric is cut up along the dotted lines x ,

each of the resulting strips having a warp or warps A in the center, holding and binding the severed weft ends B which project from the warp on both sides as clearly shown in Fig. 2.

The chief points of my invention are that I in the first place provide means whereby such uneven division of the wefts or any accidental cutting of the central warp threads is entirely obviated. In addition to these safeguards I also adopt improved forms of cutters for dividing the wefts, such cutters consisting of a number of thin steel disks having sharpened cutting edges or peripheries, and strung upon a central mandrel, the disks being separated from each other by distance washers of such a thickness as to maintain the disks at the required distance apart. These elements forming so important a part of my invention, I have shown the guides and the disks in a separate and enlarged perspective view in Fig. 3 Sheet 1. The cutting disks are marked C, the guides D, the mandrel E, and the separating washers F. A piece of chenille fabric is shown being passed through the cutters, the four resulting strips appearing at the back of the cutters.

The pitch of the disks C may be varied in accordance with the pitch of the warps A and consequently with the desired breadth of chenille strip, by putting separating washers F of the necessary thickness, between the disks; or, otherwise, the cutting disks might be adjusted to the required distance apart by any other suitable or convenient means.

In front of the cutters C is a plate G having a series of slits or gates G' into which the disk cutters enter. The pitch of the said slits or gates G' must correspond exactly to the pitch of the cutters. The chief feature of my improvement lies however in the employment of the guides D which are fixed in the plate G or otherwise immediately in front of the cutters C in such a manner that the central warps A of the chenille fabric are guided and maintained always in a position equidistant from the cutters. The said guides might be upright pegs or wire staples as shown in Fig. 3 or projections from or formed in one piece with the plate G as shown for example in Fig. 4 Sheet 1. In all cases what is necessary is to provide gateways or passages H for

the warps A, between and equi-distant from the cutting disks C, so that each warp A shall be always maintained in a position equi-distant from the disk on each side, thereby preventing the warps from ever coming in contact with the cutters and insuring an equal length of pile or cut weft on each side of each warp.

It will be noticed that the form of guide plate G' illustrated at Fig. 4 is practically the same as the plate G with staple guides D as shown in Fig. 3. For example the uprights D' in Fig. 4 are only staples similar to D in Fig. 3 and the openings H' between the uprights are merely repetitions of the openings H in Fig. 3. The slit G² in Fig. 4 is a continuation of the space between the staple legs D' and the cutter C enters this slit as shown by the dotted circle in Fig. 4. As a matter of fact I prefer the latter form of guide plate and have shown it applied to the complete mechanism which I will now proceed to describe.

The parts of the apparatus are supported in side frames *a* held apart by stays in any suitable manner.

At one end of the machine is a flanged roller beam *b* upon which is coiled the chenille fabric A—B. The beam may either belong properly to the machine or it may be the roller upon which the fabric is coiled as it is woven in the loom, the roller being afterward removed from the loom and placed in the bearings on the frame *a*. The axis of the roller *b* has a handwheel *c* by which the roller can be turned so as to wind on the fabric A—B when that is preferred. In some cases however I might pass the fabric direct from the loom to the cutters. Adhering however to the arrangement shown, the fabric is drawn from the beam toward the cutters C, the beam having a brake *e* which can be adjusted by the screw and nuts *f* so as to give the fabric any desired tension. Upon leaving the beam *b* the fabric passes successively about the bars *g*, *h*, *i* the latter bar being grooved as shown in Fig. 7 to a pitch similar to the pitch of the warp threads A of the fabric. This assists to keep the fabric steady. The fabric next passes over the guide plate G', the warps passing between the staple uprights D' and the wefts encountering the cutters C whereby the wefts are severed and the fabric divided into a number of chenille strips. Upon leaving the cutters the strips pass between drawing rollers *k k'* the upper drawing roller *k* being pressed upon the lower roller *k'* by a spring *l* and adjusting means as clearly shown in Fig. 5.

The driving of the cutters C and of the drawing rollers *k k'* is effected in the following manner: First, as to the cutters C. These are strung upon a mandrel E supported in bearings upon the framing *a*, the respective cutters being kept apart by spacing washers F all as already described with reference to Sheet 1 and as illustrated in their true proportions in Figs. 8, 9 and 10 in Sheet 3.

One end of the mandrel E carries a pinion *m* which gears with a spur wheel *n* on the end of a cross spindle *o*. The opposite end of the spindle *o* carries a belt pulley *p* having a sleeve *p'* and running loosely on the spindle *o*. A peg *q* extending from the pulley *p* enables it to engage with the disk *r* keyed to the spindle *o* when the pulley is thrust forward by the clutch lever *s*. (See Fig. 7.) Thus by manipulating the clutch lever *s* I can start or stop the machine at pleasure. I might however use a friction clutch or any other means of starting and stopping. The spindle *o* also carries a hand wheel *t* for driving the spindle *o* when power is not available. The drawing rollers *k k'* are driven from the same spindle *o* by means of a pinion *u* on the spindle which gears with a spur wheel *v* on the axis of the drawing roller *k'*. The rollers *k k'* are geared together by pinions *w w'* at the opposite ends of the rollers. The rollers are so geared as to give the necessary speed of draw, and as the strips are drawn forward they are coiled upon a roller *x* supported in bearings at the back of the machine as plainly appears in Fig. 5. The taking-up roller *x* may be driven by a slip belt or by any other suitable means which will take into account the varying periphery speed of its contents.

The machine which I have just described is at present working with perfect success, but I do not of course confine myself to its exact details as these may be varied without departing from my invention.

In Figs. 11 and 12 I show straight guiding pegs *y* instead of the wire staples or staple uprights which I have already described, but as hereinbefore said the mere form of these guiding parts is not an essential as any means for guiding the warp threads equi-distantly or in a fixed relative position between the cutters would represent my invention. Guides of this nature might be used not only in conjunction with the revolving disk cutters C hereinbefore described but also in conjunction with any other cutting means capable of being similarly used. For example such guides might be used in combination with the sectional cutters which it has been attempted to use in chenille cutting, or with reciprocating blades or jogging knives such as are used sometimes to sever the pile of pile fabrics during the operation of weaving.

In using my apparatus when the pitch apart of the cutters is altered it is necessary also to alter the pitch of the guides and gates and this can be most conveniently done by removing the guide plate and substituting another of the correct pitch.

One important advantage arising from the use of the circular disk cutters C is that they can be speedily sharpened without removing them from the machine, all that is necessary being to set them in motion and apply a set stone to the edges.

I claim as my invention—

1. In combination, in a chenille cutting apparatus, the cutters and the guide bar having slits formed in its rear edge to receive said cutters thus forming fingers projecting
5 between the cutters, said fingers having guides extending upwardly therefrom and in line with the spaces between the cutters.

2. In combination in a chenille cutting apparatus, the cutter and the guide plate of angular form having a substantially horizontal
10 portion and an upwardly extending rear por-

tion, said plate being slitted at the junction of the two portions forming slots for the cutters and having upwardly extending fingers between the slots, substantially as described. 15

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

HOWARD LEES.

Witnesses:

JOSHUA ENTWISLE,
ALFRED YATES.