(No Model.)

R. T. SMITH.

MACHINE FOR TRIMMING THE EDGES OF FABRICS.

No. 410,655. Patented Sept. 10, 1889.

Fig. 1.

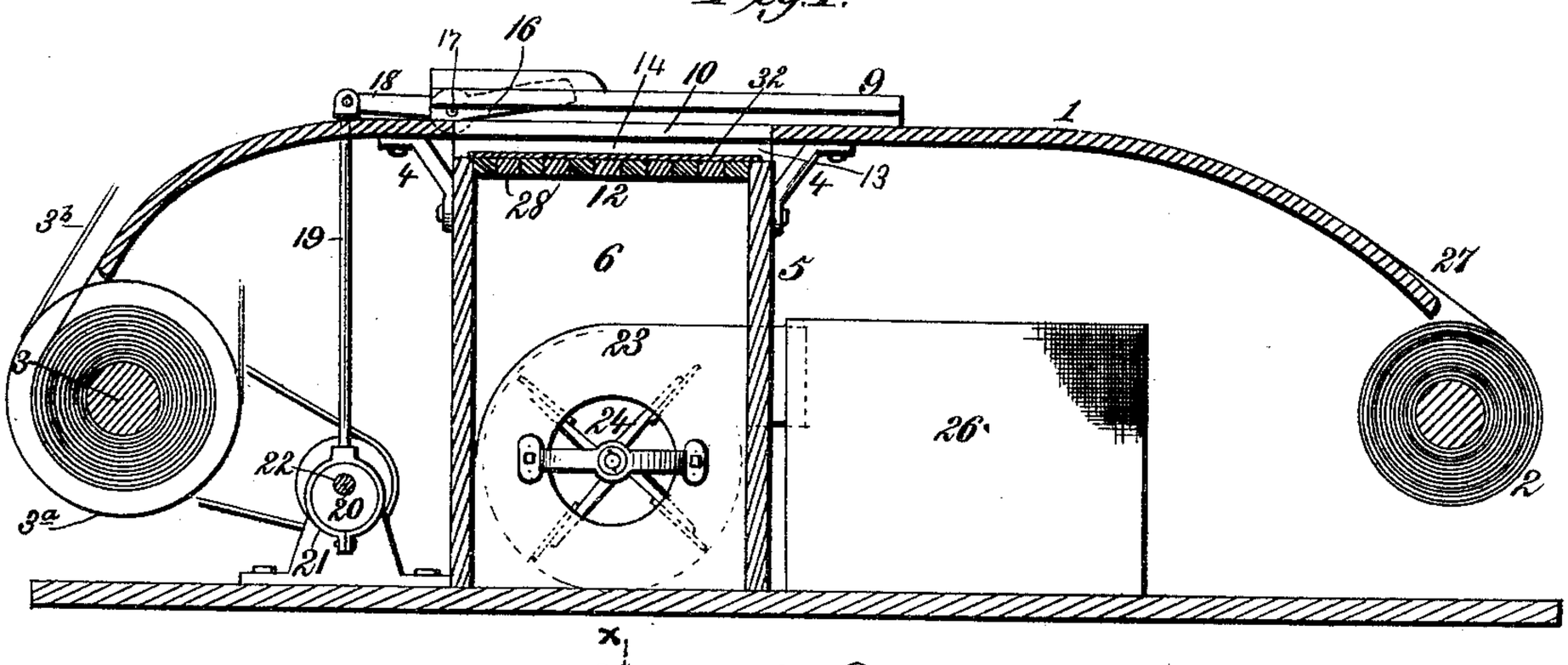


Fig. 2.

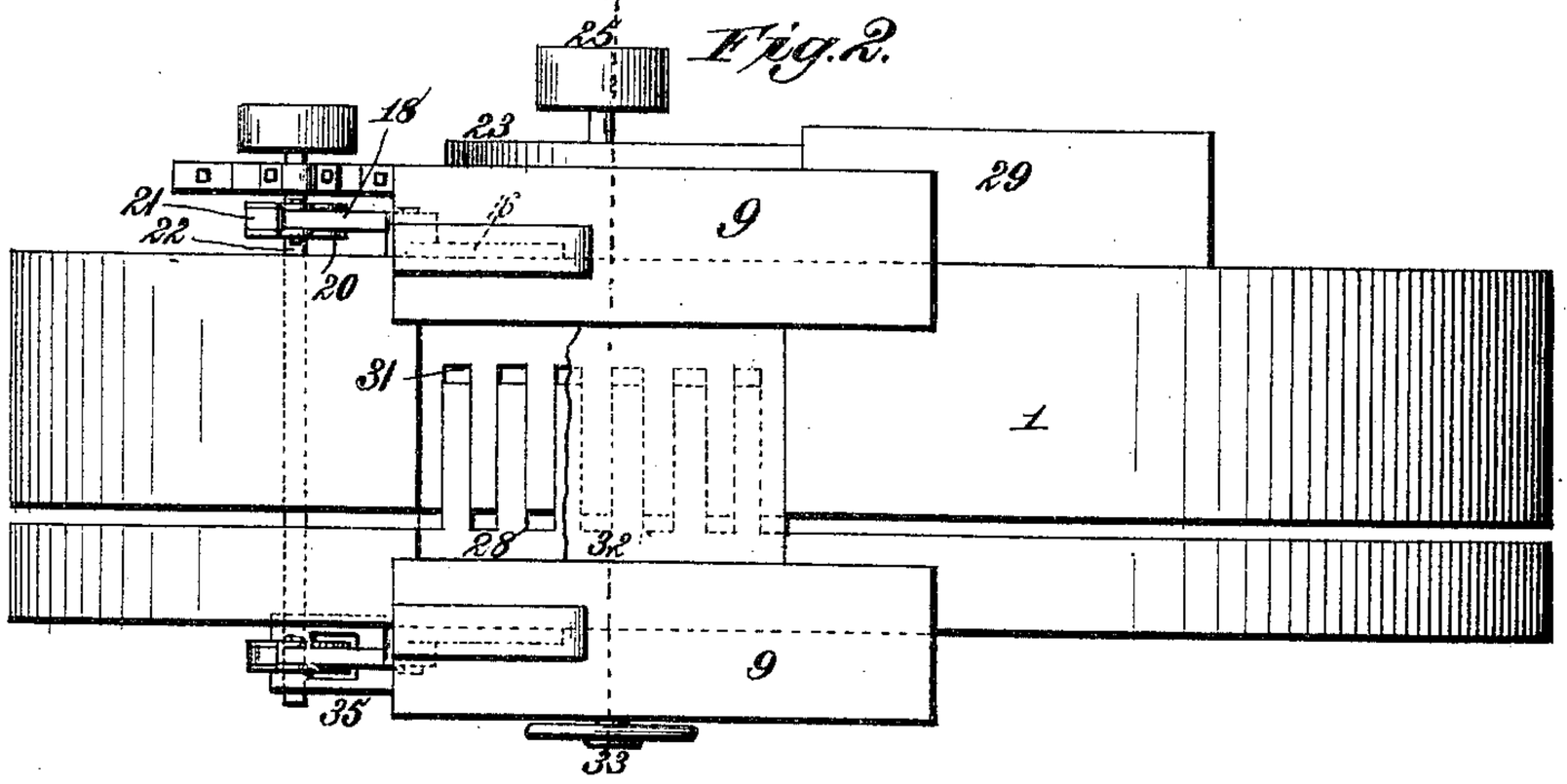


Fig. 3.

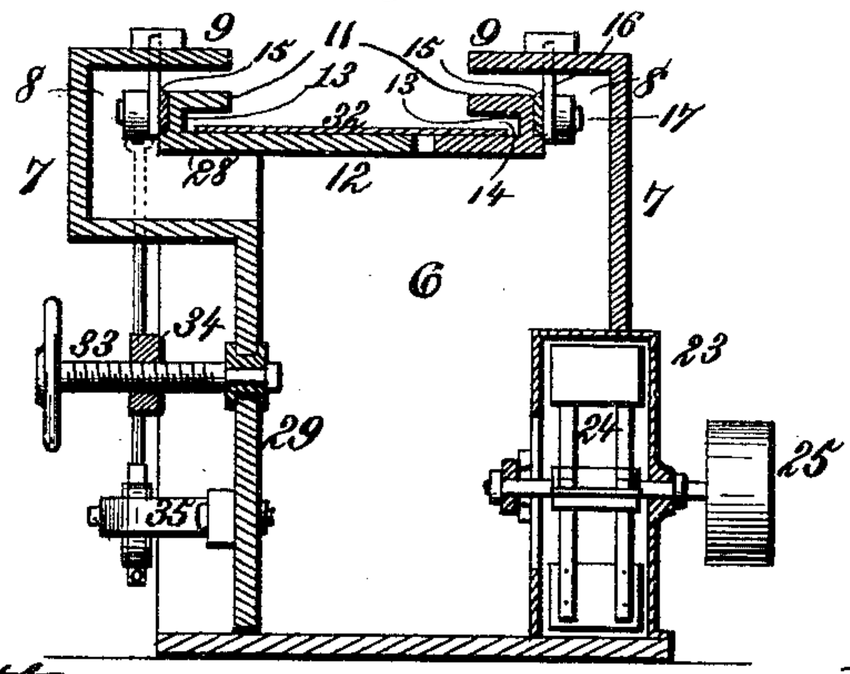


Fig. 4.

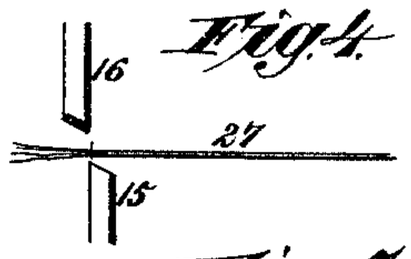
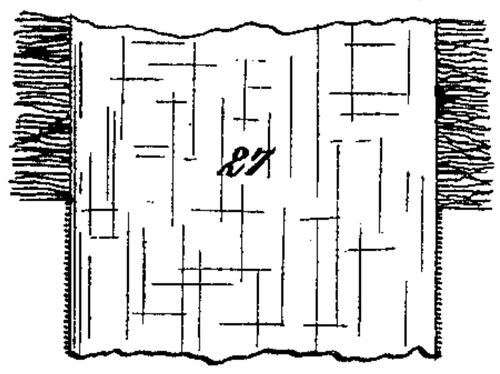


Fig. 5.



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UNITED STATES PATENT OFFICE.

ROSWELL T. SMITH, OF NASHUA, NEW HAMPSHIRE, ASSIGNOR TO HIMSELF AND NATE W. GODDARD, OF SAME PLACE, AND GEORGE H. DUNHAM, OF NEW YORK, N. Y.

MACHINE FOR TRIMMING THE EDGES OF FABRICS.

SPECIFICATION forming part of Letters Patent No. 410,655, dated September 10, 1889.

Application filed March 16, 1887. Serial No. 231,140. (No model.)

To all whom it may concern:

Be it known that I, ROSWELL T. SMITH, a citizen of the United States, residing at Nashua, in the county of Hillsborough and State of New Hampshire, have invented new and useful Improvements in Machines for Trimming the Edges of Fabrics, of which the following is a specification.

My invention relates to apparatus for trimming the edges of textile fabrics in order to prepare them for the market after the process of manufacture is complete.

The invention is more particularly directed to that class of goods known in the market as "ginghams" and "cheviots," as well as other fabrics in which colored threads enter into the web, the ends of which project beyond the selvage edges of the goods.

Heretofore and prior to my invention it has been necessary to remove these threads by hand-labor, since no mechanism has heretofore been devised by which the threads could be distended from the edges in order to enable automatic cutters to act upon and sever them close to the web. Trimming these goods by hand, however, is not only a very slow process, but the work is not always uniform throughout, and the cloth is liable to present an appearance which will injure its sale in the market. Moreover, the cost of hand-labor is a very serious item in the expense of manufacture, and materially enhances the first cost of the goods, besides requiring considerable additional shop-room for the accommodation of operatives. Finally, the danger of clipping and mutilating the edges of the fabric by an inexpert or careless employé is an item not to be disregarded in considering the objections to the method of trimming in use prior to my invention.

It is the purpose of said invention, therefore, to provide a simple and comparatively inexpensive mechanism whereby this work may be performed by positive means entirely, and whereby all the objections specified shall not only be wholly avoided, but the result attained in a far more perfect manner, with incalculably greater speed, and with an economy which will materially reduce the cost of manufacture.

It is also one purpose of my invention to collect the clippings taken from the goods, which have sufficient economic value to warrant their careful preservation.

To these ends my invention consists in the several novel features of construction and combinations of parts hereinafter fully set forth, and definitely pointed out in the claims following this specification.

Referring to the drawings accompanying and forming part of this specification, in which I have shown a convenient form of mechanism for practicing my process, Figure 1 is a vertical longitudinal section, partly in elevation, showing a mechanism embodying my invention. Fig. 2 is a plan view of the parts shown in Fig. 1. Fig. 3 is a transverse section of the parts shown in Fig. 2 in the plane $x\,x$, parts being in elevation. Fig. 4 is a detail elevation of the shear-blades and fabric as they appear during the operation, showing the position of the threads. Fig. 5 is a detail plan view of the cloth as it appears while passing through the trimming mechanism, the fabric being shown as partly trimmed.

In the said drawings, the reference-numeral 1 designates a table or other suitable support over which the fabric is drawn, said table being of any suitable form, though a curved surface, as shown, is considered, for some reasons, most convenient. The fabric is taken from a roll 2 at one end, and is wound upon a similar roll 3 at the other end, driven by a belt 3^b, the draft of the latter roll giving the required feed. This table may be supported by brackets 4, mounted upon the walls 5 of a chamber 6. This table may, if desired, be divided by a longitudinal cut, and one of its sides made adjustable, in which case the movable side will be supported by a movable bulk-head or wall 29, forming part of the chamber 6, as more fully described hereinafter. The chamber 6, just mentioned, is an inclosed space of any suitable form and dimensions. The side walls 7 of said chamber are carried up to a point a little above the surface of the table 1, and then extend inward over the edges of said table, as in Fig. 3, overhanging the margins of the table and extending along

the same over a space of about a foot (more or less) in width. By this construction open passages 8 are formed between the top of the table and the inwardly-projecting hoods 9, said passages extending around the edges of the table and into the chamber 6. Underneath the hoods 9 the central portion of the table is cut away, forming an opening 10, which has a length less than that of said hoods and a width equal to the space between the adjacent edges of the latter. Upon both sides of this opening are strips 11, forming part of the table 1, and the outer edges of these strips are connected with the top 12 of the chamber 6 by wall-pieces 13, a space 14 being thus formed between the top 12 of the chamber and the table, said space being closed at the sides and open at the ends.

Upon the longitudinal margins of the table, beneath the rear ends of the hoods 9, are rigidly mounted shear-blades 15, having their edges substantially coincident in height and alignment with the table-edges. These blades co-operate with reciprocating blades 16, mounted on pivots 17, and having shanks 18, which are connected with pitmen 19, operated by eccentrics 20, running in straps 21, which are attached to the pitmen. These eccentries are driven by a shaft 22 from any suitable source of power.

Communicating with the chamber 6 is a blower-case 23, having a fan 24 driven by a pulley 25. The mouth of the blower-case empties into a receiving-chamber 26, which, as shown, is constructed of any foraminous material—such, for example, as wire-netting—but this construction may be varied in many ways.

The operation of the mechanical parts thus described is as follows: The cloth 27 being carried over the table-top and rapid rotation being communicated to the fan 24, an exhaust is at once created in the chamber 6, which is supplied by air-currents passing over the top of the fabric beneath the hoods 9 and drawn into the exhaust-chamber. At the same time air is drawn in at the two ends of the open space 10 between the top 12 of the chamber 6 and the overlying fabric, and this air likewise is drawn into the exhaust-chamber passing beneath the cloth. Thus two distinct air-currents are maintained upon each side of the fabric, both flowing from the central portion toward the edge—one above and one below the fabric. By these currents the threads projecting or hanging from the edges are drawn out straight, or substantially so, and maintained in that position, as indicated in Fig. 5, in which position they pass above the rigid shear-blade 15 and are instantly severed by the same and the reciprocating blade 16. The severed ends are carried by the exhaust into the chamber 6, thence into the fan, and finally into the receiving-chamber 26, by which they are caught, the walls of the latter chamber permitting the passage of the air, but retaining the threads.

In order to compensate for variations produced by changes of temperature and other causes, and to adapt the mechanism to different widths of fabrics, by which it may become necessary to vary the width of the table at different times, I make a portion of one side of the table adjustable, as well as one wall of the chamber 6. To effect this adjustment, I mount one of the hoods 9 upon the movable bulk-head 29 of the chamber 6 and construct the top 12 of the latter with alternate strips and openings 31, dovetailed in together, as shown in Fig. 2. Upon said top is laid a diaphragm 32, covering the openings formed by the outward adjustment. The shears upon the adjustable side move with it, while the opposite side and attachments are stationary. A threaded shaft 33 is tapped through a rigid support 34 and has its end swiveled in the bulk-head 29. A bracket 35, mounted on the bulk-head 29, carries one of the eccentrics 20, which may be keyed to the shaft 22 in such manner as to move longitudinally thereon.

It will readily be understood that the apparatus described may be greatly modified without departing from my invention.

The machine may also be used for operating upon many kinds of fabric not specified hereinbefore, such as shirtings, sheetings, and braids, as well as other fabrics. Moreover, any form of cutting devices may be employed instead of shears, though I regard the latter as preferable.

Any form of marginal guides may be mounted upon the table to guide the web accurately as it travels between the cutters.

It is obvious that if the fabric is drawn upon a vertical line the cloth-support will be such in the sense of its being a guide to keep the cloth from lateral displacement.

I do not now claim the process or method of trimming the edges of textile fabrics herein described, but have embodied it in a new application, filed June 12, 1888, Serial No. 276,819.

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

1. The combination, with a support over which the cloth may be drawn and cutting devices mounted on the edges of said support for trimming the fibers or threads projecting at the edges of the fabric, of an exhaust-chamber having walls extending above and over the sides of said cloth-support and means for withdrawing air from the exhaust-chamber, whereby as the fabric is passed over the cloth-support the fibers or threads projecting at the edges thereof will be drawn into the line of the cutting devices by the action of the currents of air and severed by said cutting devices.

2. The combination, with a support over which the cloth may be drawn and cutting devices mounted on the edges of said support for trimming the fibers or threads projecting at the edges of the fabric, of an exhaust-

chamber having walls extending above and over the sides of said cloth-support, means for withdrawing air from the exhaust-chamber, whereby as the fabric is passed over the cloth-support the fibers or threads projecting at the edges thereof will be drawn into the line of the cutting devices by the action of the currents of air and severed by said cutting devices, and a receiving-chamber communicating with the exhaust-chamber for retaining the severed fibers.

3. The combination, with a divided support or guide over which the cloth may be drawn and cutting devices mounted on the edges of said support, of an expansible exhaust-chamber having an end which consists of a movable bulk-head adapted to carry one of the parts of the cloth-support and its accompanying cutting device, said exhaust-chamber having walls extending above and over the sides of the cloth-support, means for withdrawing air from the exhaust-chamber, whereby as the fabric is passed over the cloth-support the fibers or threads projecting at the edges thereof will be drawn into the lines of the cutting devices by the action of the currents of air and severed by said cutting devices, and a device for moving and adjusting the bulk-head, and cutters mounted upon the cloth-support for trimming the fibers or threads projecting at the edges of the fabric.

4. The combination, with a support or guide over which the cloth may be drawn and cutting devices mounted upon the sides of the cloth-support, of an exhaust-chamber having walls extending above and over the sides of the cloth-support and forming air-passages at the sides of the cloth-support, means for withdrawing air from said exhaust-chamber, whereby as the fabric is passed over the cloth-support the fibers or threads projecting at the edges thereof will be drawn into the line of the cutting devices by the action of the currents of air and severed by said cutting devices, a feed-roll for driving the fabric over the cloth-support, and means for operating said feed-roll.

5. In a machine for trimming the edges of textile fabrics, the combination, with a support for the cloth having marginal cutters, of an inclosing frame-work forming an exhaust-chamber beneath said support, hoods overhanging the margins of the support and forming air-passages communicating with the exhaust-chamber, a blower having its casing communicating with the exhaust-chamber, and a receiving-chamber communicating with the said blower-casing and constructed of foraminous material to permit the passage of the air-blast and prevent the escape of the clippings, substantially as specified.

6. In a machine for trimming the edges of textile fabrics, the combination, with a divided support for the cloth, of an inclosing frame-work forming an exhaust-chamber beneath the same, having its top made in two intersecting portions lying a little beneath the cloth-support, hoods overhanging the margins of the said support and forming air-passages communicating with the exhaust-chamber, a movable bulk-head forming one wall of said chamber and supporting one of the hoods, a blower having its casing opening into said chamber, cutters mounted on the margins of the said support beneath the hoods, mechanism for operating said blower and cutters, and a diaphragm lying on the divided top of the exhaust-chamber, the central portion of the support being cut away above the top of the exhaust-chamber, and the space between the said top and the support being closed at the sides and left open at the ends, substantially as specified.

7. The combination, with a support or guide over which the cloth may be drawn and cutting devices mounted on the edges of said support for trimming the fibers or threads projecting at the edges of the fabric, of an exhaust air-chamber having walls extending above and over the sides of said cloth-support, whereby open hoods are formed whose leaves project above and over the edges of the cloth-support and inclose the edges of the fabric when the machine is in use, means for withdrawing air from the exhaust-chamber, whereby as the fabric is passed over the cloth-support the fibers or threads projecting at the edges thereof will be drawn into the line of the cutting devices by the action of the currents of air and severed by said cutting devices, and a feeding device for giving progressive movement to the fabric.

In testimony whereof I affix my signature in presence of two witnesses.

ROSWELL T. SMITH.

Witnesses:
S. J. M. SMITH,
CHAS. B. TILDEN.