No. 678,100. Patented July 9, 1901.

C. N. COLPITTS.

CLOTH CUTTING AND FOLDING MACHINE.

(Application filed Aug. 4, 1899. Renewed Feb. 6, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

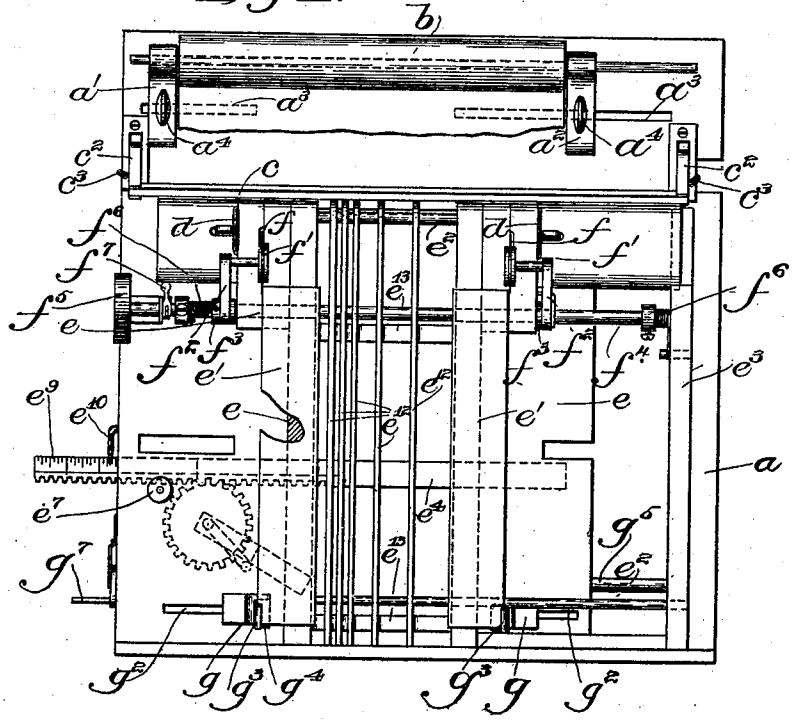


Fig. 2.

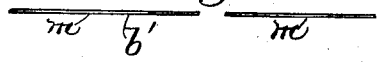


Fig 3.

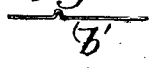


Fig. 4.

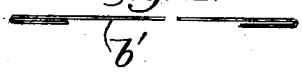
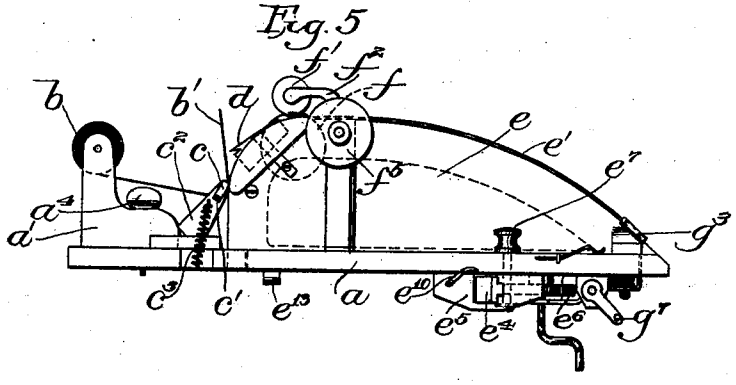


Fig. 5



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Fig. 6.

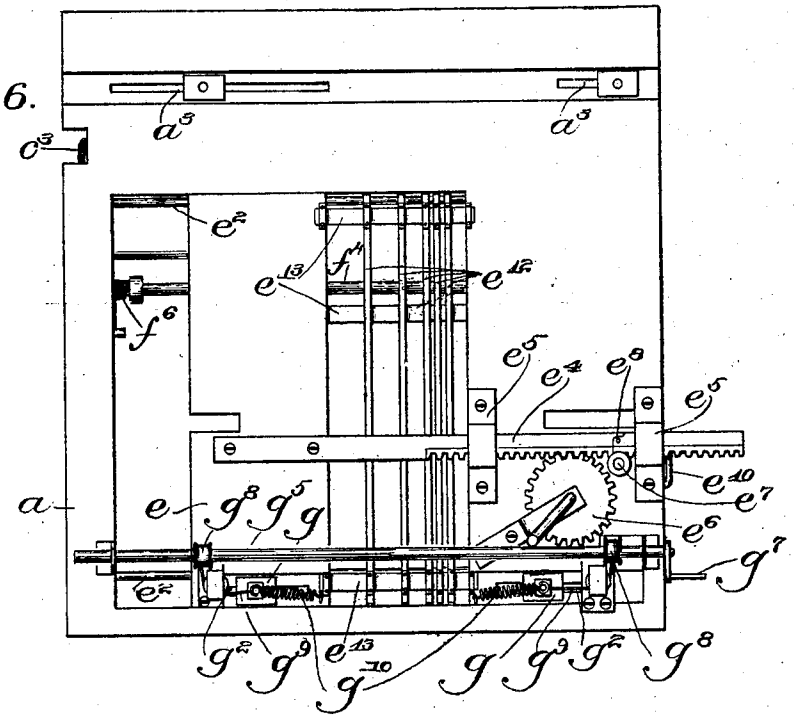


Fig. 7.

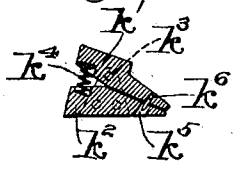
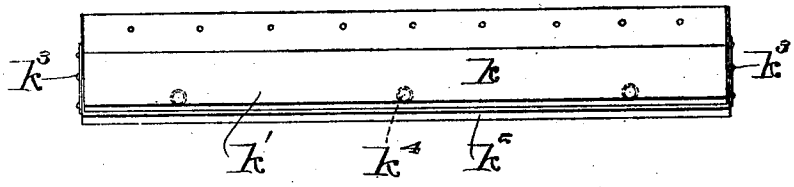


Fig. 8.



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UNITED STATES PATENT OFFICE.

CALVIN N. COLPITTS, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO AMERICAN SHADE MACHINE COMPANY, OF SAME PLACE AND PORTLAND, MAINE.

CLOTH CUTTING AND FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 678,100, dated July 9, 1901.

Application filed August 4, 1899. Renewed February 6, 1901. Serial No. 46,247. (No model.)

To all whom it may concern:

Be it known that I, CALVIN N. COLPITTS, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Machines for Cutting or Slitting Cloth, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is a machine for cutting or folding cloth, particularly such as is intended for making into window-shades, and folding the edges of the same ready to be stitched or otherwise finished.

It is the custom for large stores to keep shade material in stock in bulk and make the shades therefrom of special widths and requirements as the orders are received. This work has heretofore, as a rule, been done very laboriously and expensively by hand, and accordingly I have devised the present machine for cutting and folding with rapidity and accuracy shades of any width desired.

The constructional details and operation of my invention will be pointed out in the following description, reference being had to the accompanying drawings, illustrative of a preferred embodiment thereof, and the invention will be more particularly defined in the appended claims.

In the drawings, Figure 1 is a top plan view of the machine. Figs. 2 to 4 illustrate the forms taken by the cloth in its successive steps of folding. Fig. 5 is a left-hand elevation of Fig. 1. Fig. 6 is a bottom plan view thereof. Figs. 7 and 8 are respectively a vertical cross-section and a top plan of a pulling device required with the machine.

On a suitable base a I mount journal supports or brackets a' a^2 to support a roll b of shade fabric and preferably independently adjustable in slots a^3 by thumb-screws a^4 to accommodate rolls of different lengths. Behind the roll b is a guide or tension bar c, preferably resting loosely for ready removal in slots c' in the free ends of arms c^2, pivoted to the opposite sides of the base a and held down yieldingly by springs c^3. The cloth b' from the roll passes under the bar c and thence upwardly to opposite cutters or slitting-knives d, mounted in uprights or blocks e, extending longitudinally of the machine.

While I do not intend to restrict myself to any special form of cutter, I prefer that shown, having a sharp projecting point readily inserted through the cloth.

Adjacent the cutters, but set in therefrom the distance which it is intended to fold over the edges of the cloth, are opposite pairs of creasing devices, shown as each comprising a sharp-edged under wheel f and a grooved upper wheel f', the latter being adjustable by means of a bracket or arm f^2, held in guide-eyes f^3 on a rod f^4, extending across the frame of the machine. Said rod is provided at its left-hand end with a thumb-wheel f^5, by which the operator can turn it in opposition to the coiled springs f^6, which normally hold the upper wheel f' forcibly down on the under wheel f. A suitable dog f^7 serves to retain the wheel f' and rod f^4 in forwardly-turned or raised position when desired. Beyond the creasing-wheels the blocks e are provided with overhanging thin guide-ledges e', preferably of sheet metal, having their edges in alinement with the creasing-wheels, and at their farther ends the ledges e' are embraced by folding fingers or jaws g, adjustable toward and from the ledges e' in slots g^2, consisting of an upper portion g^3 and an under parallel portion g^4, which serves to pinch the cloth over the edge of the guide-ledges e'. Beneath the slots g^2 is a rod g^5, (see Fig. 6,) provided with a crank g^7 and carrying reels g^8, fast thereon, and on which cords or chains g^9 may wind, said cords being secured at their free ends to the under sides of the blocks g, said blocks being normally pulled toward each other by springs g^{10}. Thus the blocks and their folding-fingers may readily be separated in order to place the cloth in position quickly at the commencement of the work.

It will be observed that the ledges e' and the tops of the blocks e are curved, (see Fig. 5,) the purpose being to give the edges of the cloth beyond the creases thereof a natural tendency to fold under as the cloth is pulled along the ledges.

The two blocks and their ledges and the intermediate supports, to be described, con-

stitute a rest, slideway, or table for receiving the cloth being folded.

In order to cut and fold various widths of shades, I have made the blocks *e* adjustable toward and from each other, one being preferably stationary and the other (herein shown as the right-hand block, Fig. 1) being movable, and for convenience, therefore, the latter carries with it its knife, creasing-wheels, and folding-finger and slides on guides e^2, fixed in a bridge e^3 at one end and in the stationary block *e* at the other end. Lateral adjustment is had by means of a rack e^4, secured to the under side of the movable block *e*, Fig. 6, and operating through ways e^5, being operated by a pinion e^6 and held in adjustment by a clamp e^7. The outer portion of the rack e^4 is hinged at e^8 to the rest of the rack in order that it may be turned back out of the way when narrow shades are being folded. The rack is preferably graduated, as shown at e^9, Fig. 1, and a pointer e^{10} is provided to indicate the width to which the machine is adjusted.

To prevent sagging of the material being folded, I provide a series of intermediate supports e^{12}, like slats, secured together and to the blocks *e* by tapes e^{13}, so that as the movable block *e* is drawn out laterally these supports e^{12} will follow one after the other, being pulled along by their tapes e^{13}.

It will be evident that the shade material, especially for wide shades, cannot be pulled by hand with the evenness which is required for the best results with my machine, and therefore a puller or gripping device *k* is employed for grabbing hold of the leading end of the shade material and pulling it evenly and smoothly as required. This device consists of two jaws k' k^2, pivoted at k^3 at their ends and normally held together by springs k^4, one jaw having openings k^5 and the other jaw having corresponding pricks or pins k^6 to hold into the cloth or other fabric being pulled.

In practice the machine is secured at one end of a work-table, the rest or ledges e' being raised until horizontal at the clamping-finger end thereof and very slightly above the plane of the work-table. The roll *b* of shade fabric is then put in place unrolled slightly, the tension-bar *c* is put on top thereof and dropped into place, and the cloth is properly seized by the puller *k* and then drawn firmly over the sharp ends of the knives *d*, which slit the fabric at the precise points desired, as indicated at *m m*, Fig. 2.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for cutting and creasing window-shades, a support, a roll for cloth or paper mounted upon said support, a table or rest for the cloth as it is being formed into shades, said table having ledges projecting at its edges and being laterally adjustable or extensible to accommodate shades of varying widths, cutters mounted beyond the opposite edges of said table for simultaneously cutting the opposite longitudinal edges of the cloth, longitudinal creasing devices mounted in line with the edges of said projecting ledges, means for moving said cutters and creasing devices toward and from each other according to the adjustment of the table, and means for coöperating with said ledges for folding the edges of the cloth thus creased, substantially as described.

2. In an apparatus for cutting and creasing window-shades, a support, a roll for cloth or paper mounted upon said support, a table or rest for the cloth as it is being formed into shades, said table having ledges projecting at its edges and being laterally adjustable or extensible to accommodate shades of varying widths, cutters mounted beyond the opposite edges of said table for simultaneously cutting the opposite longitudinal edges of the cloth, longitudinal creasing devices mounted in line with the edges of said projecting ledges, means for moving said cutters and creasing devices toward and from each other according to the adjustment of the table, and means for coöperating with said ledges for folding the edges of the cloth thus creased, said table and its ledges being slightly curved for giving the edges of the cloth beyond the creasing devices a natural tendency to fold under as the cloth is pulled along the edges, substantially as described.

3. In an apparatus for cutting and creasing window-shades, a table or rest over which said cloth may be pulled, opposite cutting devices mounted beyond the longitudinal edges of said table the distance which it is intended to fold over the edges of the cloth to form the edges of the shade, opposite pairs of creasing devices in alinement with the edges of said table, said creasing devices each comprising an upper grooved wheel and an under sharp-edged wheel fitting into the groove of the upper wheel, and means for moving one edge of said table and one of said cutting and creasing devices toward or away from the rest of the table and the other of said cutting and creasing devices to enable the apparatus to form shades of varying widths, substantially as described.

4. In an apparatus for cutting and creasing window-shades, a support, a roll for cloth or paper mounted upon said support, sets of cutting and creasing devices located beyond the roll, one for each side of the shade, a block carrying one cutting device and one creasing device, and means for operating said block, substantially as described.

5. In an apparatus for cutting and creasing window-shades, a support, a roll for cloth or paper mounted upon said support, sets of cutting and creasing devices located beyond the roll, a block carrying one cutting device and one creasing device, a rack connected to said block, and a pinion meshing with the rack and provided with an operating device, substantially as described.

6. In an apparatus for cutting and creasing window-shades, a support, a roll for cloth or paper mounted upon said support, sets of cutting and creasing devices located beyond the roll, a block carrying one cutting device and one creasing device, a rack connected to said block, a pinion meshing with the rack and provided with an operating device, a gage on the rack, and a pointer coöperating with the gage and secured to said support, substantially as described.

7. In an apparatus for cutting and creasing window-shades, a support, a roll for cloth or paper mounted upon said support, and two cutters located to cut the opposite edges of paper unwound from said roll, two pairs of creasing devices located beyond and between the cutters and each consisting of a pair of superimposed rolls, and a pair of ledges located in the space between the rolls and serving as guides respectively for the creased-over portions of the cloth or paper, substantially as described.

8. In an apparatus for cutting and creasing window-shades, a support, a roll for cloth or paper mounted upon said support, and two cutters located to cut the opposite edges of paper unwound from said roll, two pairs of creasing devices located beyond and between the cutters and each consisting of a pair of superimposed rolls and a pair of ledges located in the space between the rolls and serving as guides respectively for the creased-over portions of the cloth or paper and means between said ledges for sustaining the cloth or paper between the creased or turned over edges, substantially as described.

9. In an apparatus for cutting and creasing window-shades, a support, a roll for cloth or paper mounted upon said support, two cutters located to cut the opposite edges of cloth or paper unwound from said roll, two pairs of creasing devices located beyond and between the cutters and each consisting of a pair of superimposed rolls and a pair of ledges located in the space between the rolls and serving as guides respectively for the creased-over portions of the cloth or paper, means between said ledges for sustaining the cloth or paper between the creased or turned over edges, and a tension device in position to act against the cloth or paper between the roll and cutting devices, substantially as described.

10. In an apparatus for cutting and creasing-window-shades, means for supporting and delivering the paper or cloth to be cut, two cutters located to cut the opposite edges of the paper or cloth, two pairs of creasing devices located beyond and between the cutters, means holding one of the members of each pair yieldingly toward the other member, and means for manually separating the members of said pairs, substantially as described.

11. In an apparatus for cutting and creasing window-shades, means for supporting and delivering the paper or cloth to be cut, two cutters located to cut the opposite edges of the paper or cloth, means for creasing the paper or cloth, a folding-ledge, and folding-fingers arranged to fold the paper or cloth over said folding-ledges, and means for simultaneously moving said folding-fingers toward and from said ledges, substantially as described.

12. In a machine for making window-shades, a table or support to sustain the material, a plurality of arms, each carrying a disk cutter to trim the opposite edges of the material, means to rotate said cutters to cause them to trim the material, and means to crease the material parallel to its cut edges.

13. In a machine for making window-shades, means to support the shade material, means to regulate the width of said support to adapt it to the width of the shade to be made, means to trim and crease the opposite edges of the shade material, means to adjust the distance apart of the cutting and creasing means to thereby adapt said cutting and creasing means to the width of the material-support.

14. In a machine for making window-shades, means to support the shade material, means to regulate the width of said support to adapt it to the width of the shade to be made, means to trim and crease the opposite edges of the shade material, means to adjust the distance apart of the cutting and creasing means to thereby adapt said cutting and creasing means to the width of the material, and means to turn over the cut edges of the material upon the body of the material.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CALVIN N. COLPITTS.

Witnesses:
GEO. H. MAXWELL,
JOHN C. EDWARDS.