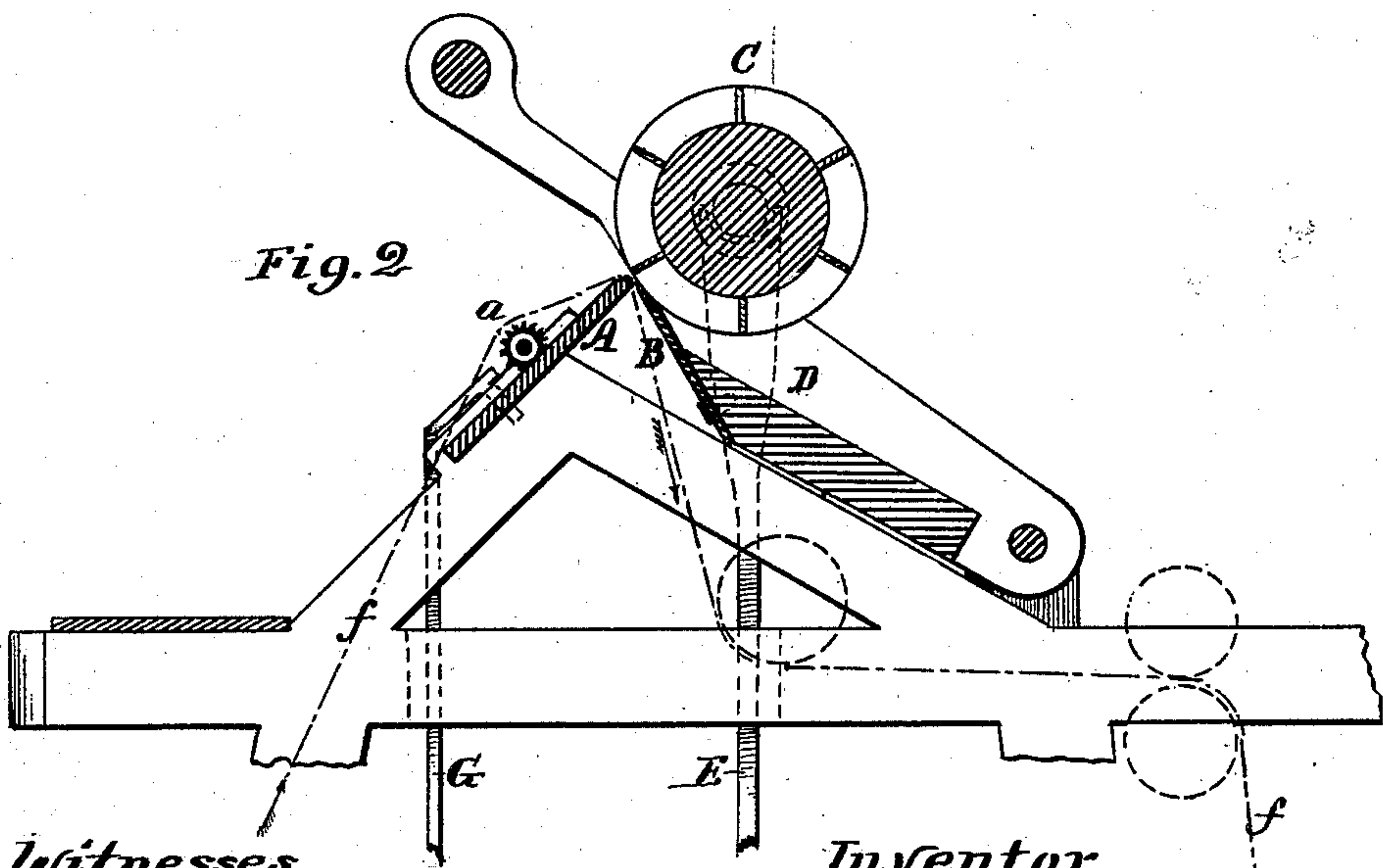
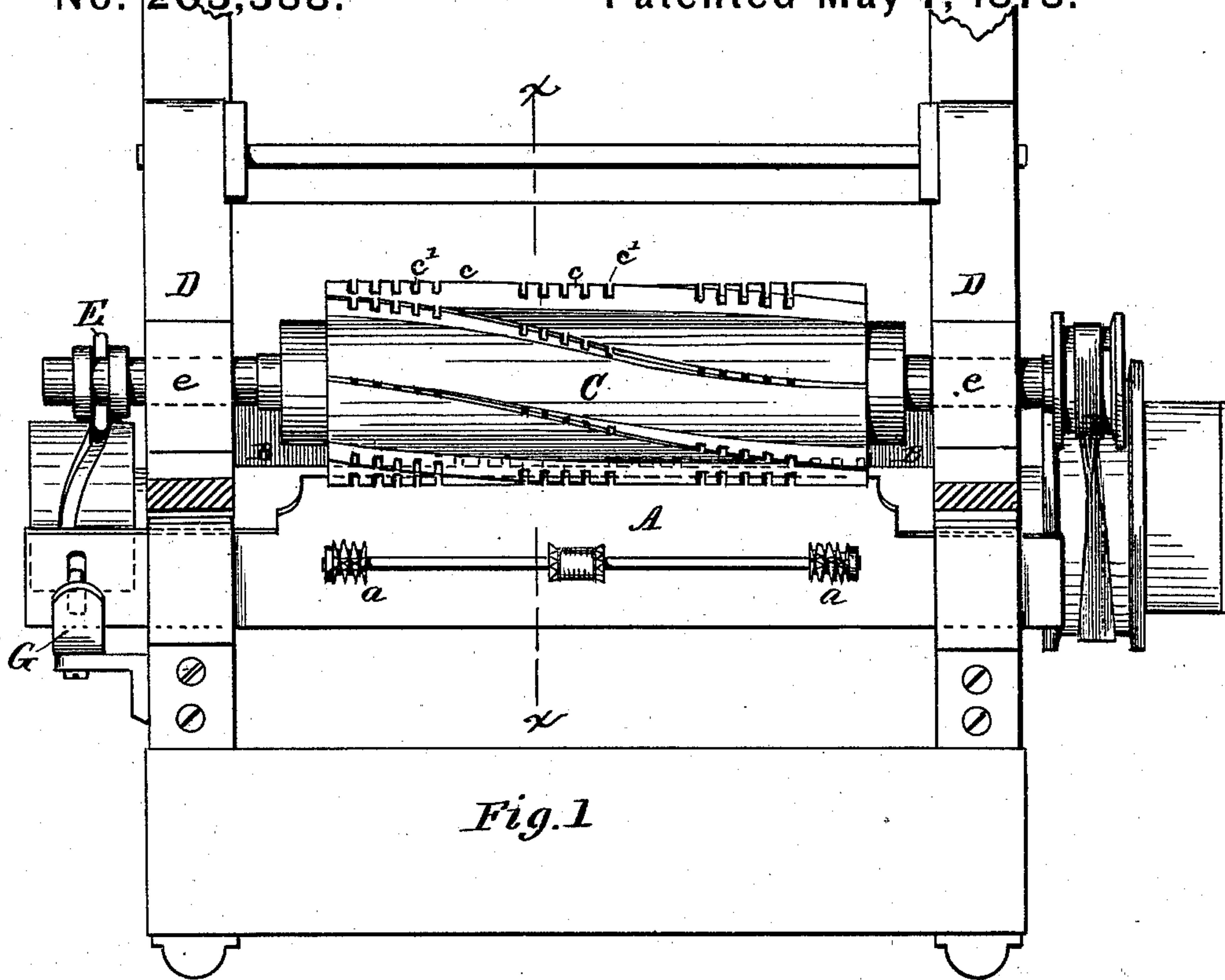


D. C. SUMNER.  
Cloth-Finishing Machine.

No. 203,388.

Patented May 7, 1878.



Witnesses.  
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*W. H. Gates*

Inventor  
*Dwight C. Sumner*  
per - *Chas. H. Burlingame* Atty.

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Fig. 3.

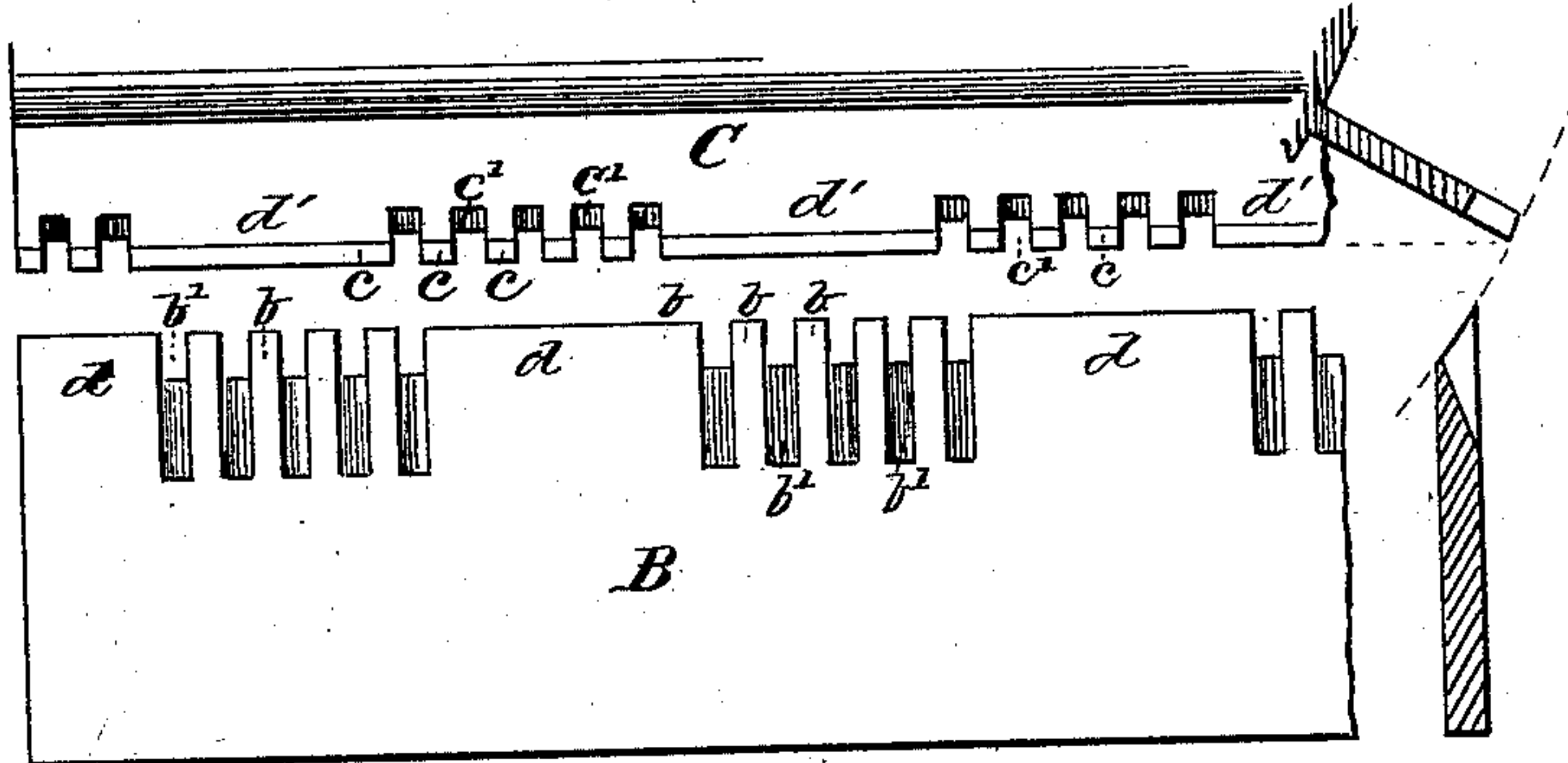
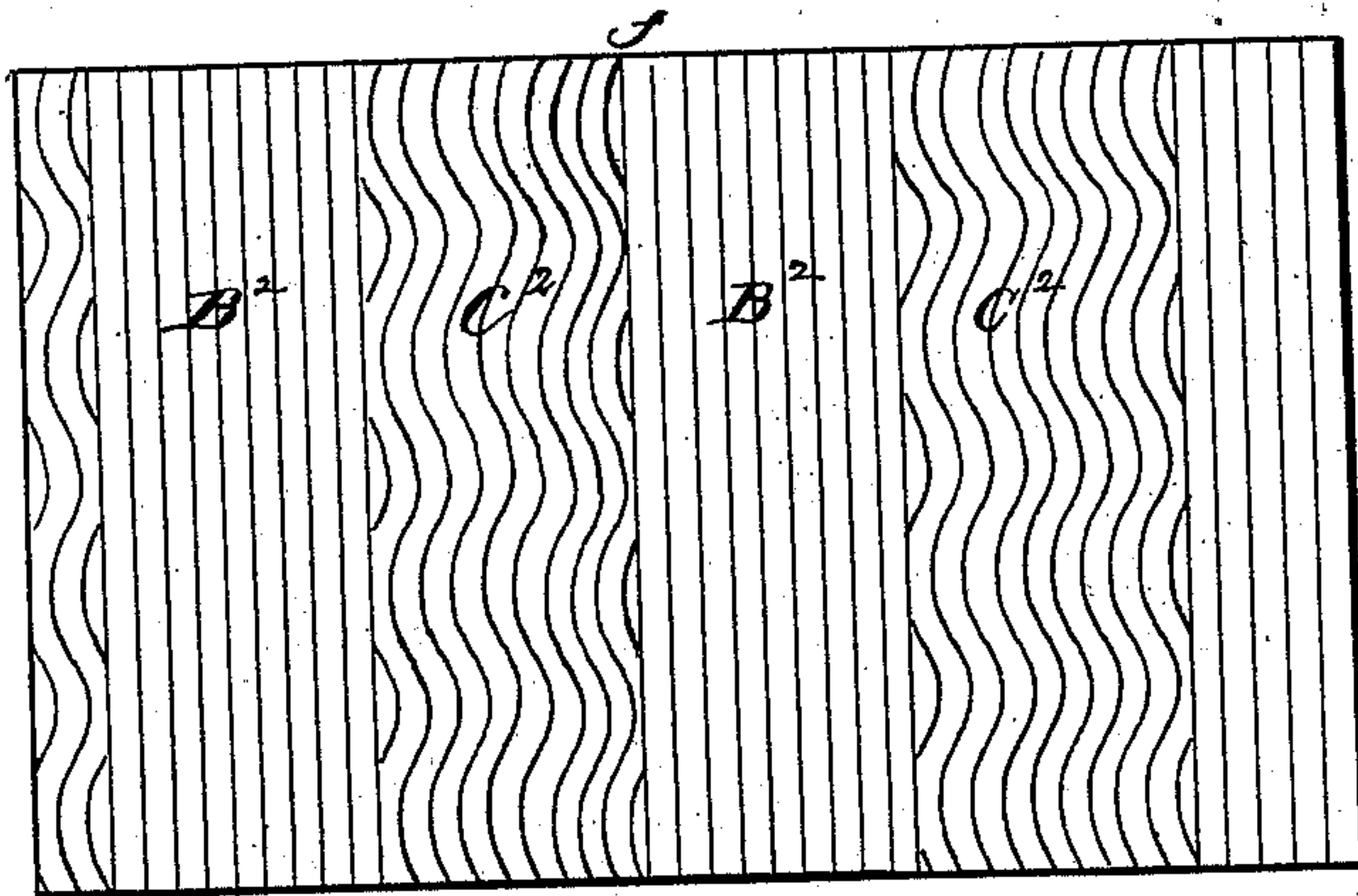


Fig. 4.

Fig. 5.



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# UNITED STATES PATENT OFFICE.

DWIGHT C. SUMNER, OF MILLBURY, MASSACHUSETTS.

## IMPROVEMENT IN CLOTH-FINISHING MACHINES.

Specification forming part of Letters Patent No. **203,388**, dated May 7, 1878; application filed January 18, 1878.

*To all whom it may concern:*

Be it known that I, DWIGHT C. SUMNER, of Millbury, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machines for Finishing Cloth; and I declare the following to be a description of my said invention, sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a plan view of such portions of a machine for finishing cloth as are necessary to illustrate the nature of my invention. Fig. 2 is a vertical section of the same, taken on line *x x* of Fig. 1. Fig. 3 represents, on an enlarged scale, a portion of one of the revolver-blades. Fig. 4 represents a similar view of a portion of the ledger-blade; and Fig. 5 illustrates one style of pattern produced by means of my invention.

This invention has relation to certain improvements appertaining to the art of finishing textile fabrics, whereby peculiar surface effects or figured patterns are produced by the action of shearing mechanism.

Previous to my invention it had been the custom to cut the pile or nap of the fabric to a uniform smooth surface by a suitable apparatus constructed for the purpose; and a further step in the art was to provide machinery that would cut or shear the pile or nap in grooves or furrows of a zigzag, curved, or circular form. These grooves or furrows are duplicates or counterparts of each other, having the same curve or general appearance throughout the entire surface of the fabric.

The object and purpose of the present invention are to produce an entirely different effect in the ornamentation of the face of the fabric, by producing a class of ornamentation comprising two distinct and dissimilar species of longitudinal stripes, alternating with each other and simultaneously formed.

The invention therefore consists, in a machine of the character named for finishing cloth, of a ledger-blade and a revolver or blade-cylinder, having a longitudinal reciprocating movement, the ledger-blade and blade-cylinder being formed with a series of cutting

edges or sections, and constructed to operate in relation to each other, so as to form two distinct and dissimilar series of line-ornamentations simultaneously in the pile or face fibers of the fabric, as will be hereinafter more fully described.

In the accompanying drawings, A denotes the cloth support or rest, over which the fabric *f* is passed by suitable feeding mechanism in the direction indicated. B represents the ledger-blade, firmly supported on the frame D, with its edge in position to receive the face-fibers of the fabric as it passes over the edge of the rest A. C indicates the revolver or shear-blade cylinder, mounted to revolve in bearings *e* on the frame D, and arranged to have a longitudinal reciprocating movement independent of the ledger-blade B or its supporting-frame B, being actuated by means of the cam-lever E or other suitable mechanism, and working against the blade B for shearing the fibers, the relative positions of the revolver C, ledger-blade B, and rest A being the same as in ordinary shearing-machines.

The main supporting-frame, the devices for feeding forward the fabric, and the operating belts and gearing may be like the ordinary shearing mechanism, or of any suitable construction and arrangement, and need not therefore be herein more fully described.

The blades of the revolver C are provided with a series of cutting-sections, *c*, between which are recesses or depressed spaces *c'*, the recesses in the several blades being formed so as to follow each other or to revolve in the same plane. The ledger-blade B is also provided with a series of recesses, *b'*, and cutting-edges *b* along its working edge. The action of the recessed blades is to form ridges and furrows in the pile or raised face-fibers of the fabric. In the present instance the blades are provided with long sections and short sections, the long sections on the revolver and ledger-blade alternating, as shown. The long full sections *d* on the ledger B, acting with the short sections and recesses of the revolver C, imparts to the face of the fabric lines of ornament *C<sup>2</sup>* corresponding to the recessed portion of the revolver-blades, while the long full sections *d'* of the revolver C, acting with the short sections and recesses of the ledger-blade B,



imparts to the fabric lines of ornamentations  $B^2$  corresponding with the recesses of the ledger-blade, thus giving two distinct sets or series of lines simultaneously produced, but independently of each other in their formation.

The ledger-blade, being fixed in its position on the frame D, produces a series of parallel lines running in the direction in which the fabric is fed or moved, which, with the rest A stationary, would be straight forward. The revolver C, being reciprocated longitudinally in its bearings  $e$  by means of the cam-lever E or other suitable mechanism, produces a series of undulating or zigzag lines, thus imparting to the surface of the fabric a figure or pattern of the peculiar nature indicated in Fig. 5, consisting of two distinct series of cut lines, viz., the parallel lines  $B^2$  and the undulating or zigzag lines  $C^2$ , the two series of lines showing as stripes longitudinally of the piece, and forming a neat and complete finish over the face of the fabric. In this instance the vibratory movement of the revolver equals the width of one of the narrow sections or recesses  $c'$ .

For the above pattern the cloth-support A is retained in a fixed position; but said support or rest A may have independent reciprocating movement by a cam-lever, G, or other suitable device, and a spur roll or rolls or other ordinary device may be employed to retain the fabric laterally while it is fed forward over the rest.

By thus reciprocating the rest A the stationary recessed ledger-blade B is caused to shear undulating or zigzag lines, while the lines produced by the reciprocating movement of the revolver-blades have an independent and different degree of undulation or zigzag form, thereby producing a variation of pattern on the fabric.

The pattern produced may be variously modified by the variation of the vibrating movement, by vibrating the parts intermittently or at different rates of speed; also, by changing the relative sizes and arrangement of the cutting-sections  $b\ c$  and recesses  $b'\ c'$  on the ledger and revolver blades.

All of the patterns produced by the above modifications are of the same nature or class,

consisting of two independent series of longitudinal stripes, perfectly combined and simultaneously produced by the peculiar double action of the stationary ledger-blade and longitudinally-reciprocating revolver.

It will be understood that in a full working machine the several parts of the mechanism should be provided with adjusting devices, so that the blades could be adjusted or set up to each other as they wear, and to accommodate the rest A to different thicknesses in the fabric, such adjusting devices being of any suitable construction.

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

1. In a machine for shearing cloth, a ledger-blade and a longitudinally-reciprocating revolver or blade-cylinder, both of which have a series of cutting edges or sections arranged in relation to each other, substantially as described, whereby their combined action will impart to the fabric or face thereof in a direction with its length two distinct and dissimilar series of stripes alternating with each other, substantially as specified.

2. In a machine for shearing cloth, a ledger-blade and a longitudinally-reciprocating revolver or blade-cylinder, each of which have long and short cutting-sections alternating with each other, the long sections of one blade being disposed on a line opposite the short sections of the other, whereby two independent dissimilar series of line-ornamentation are simultaneously formed in longitudinal direction on the face of the fabric, substantially as set forth.

3. In a machine for shearing cloth, the combination, with a longitudinally-reciprocating revolver or blade-cylinder, provided with cutting-sections and a recessed ledger-blade, of a longitudinally-reciprocating cloth-supporting rest, substantially as and for the purpose described.

Witness my hand this 11th day of January, A. D. 1878.

DWIGHT C. SUMNER.

Witnesses:

CHAS. H. BURLEIGH,  
R. LORD.