No. 768,348. PATENTED AUG. 23, 1904.

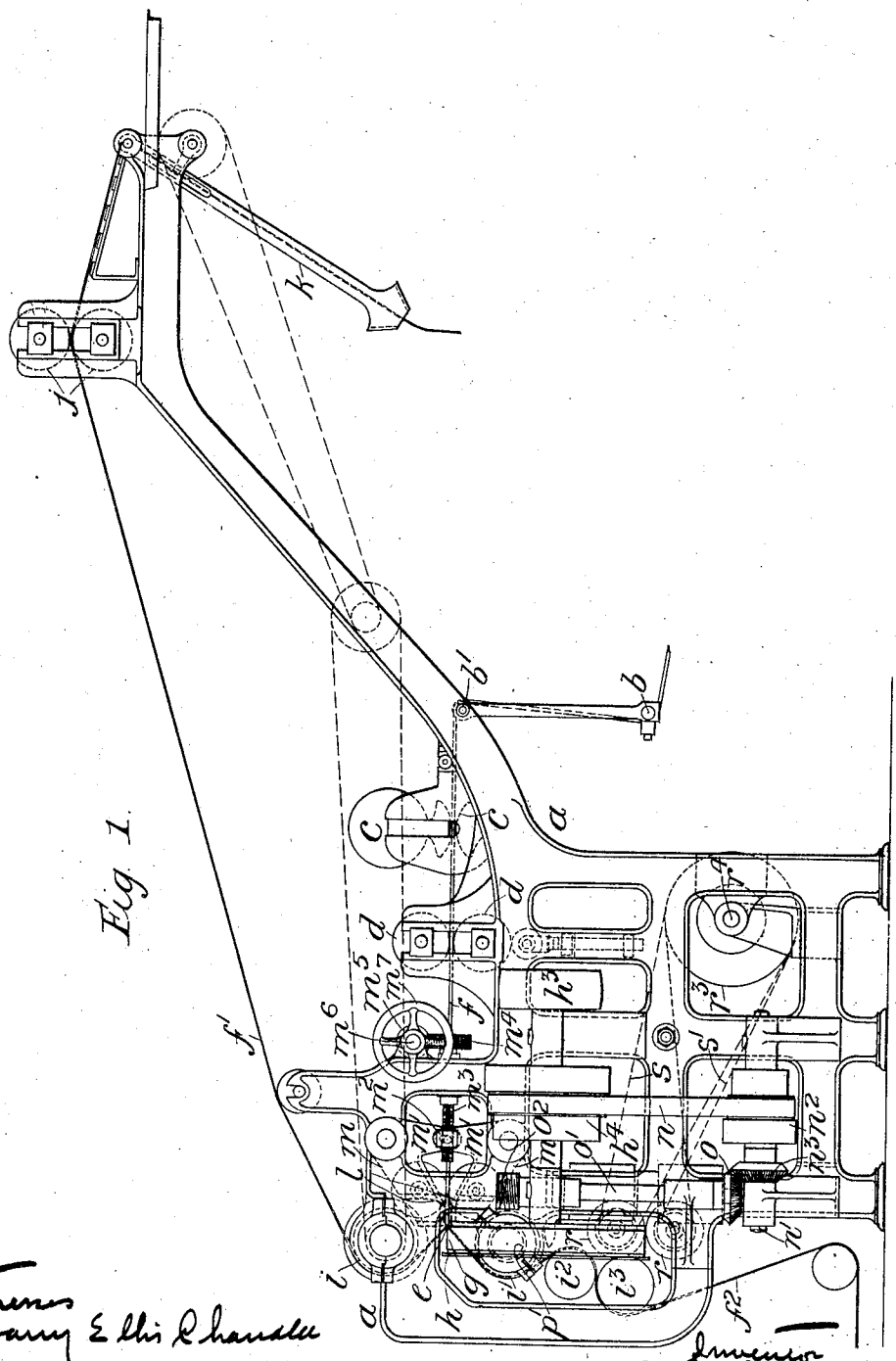
B. S. SMITH.

MACHINE FOR SPLITTING DUPLEX WOVEN FABRICS.

APPLICATION FILED JULY 28, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.



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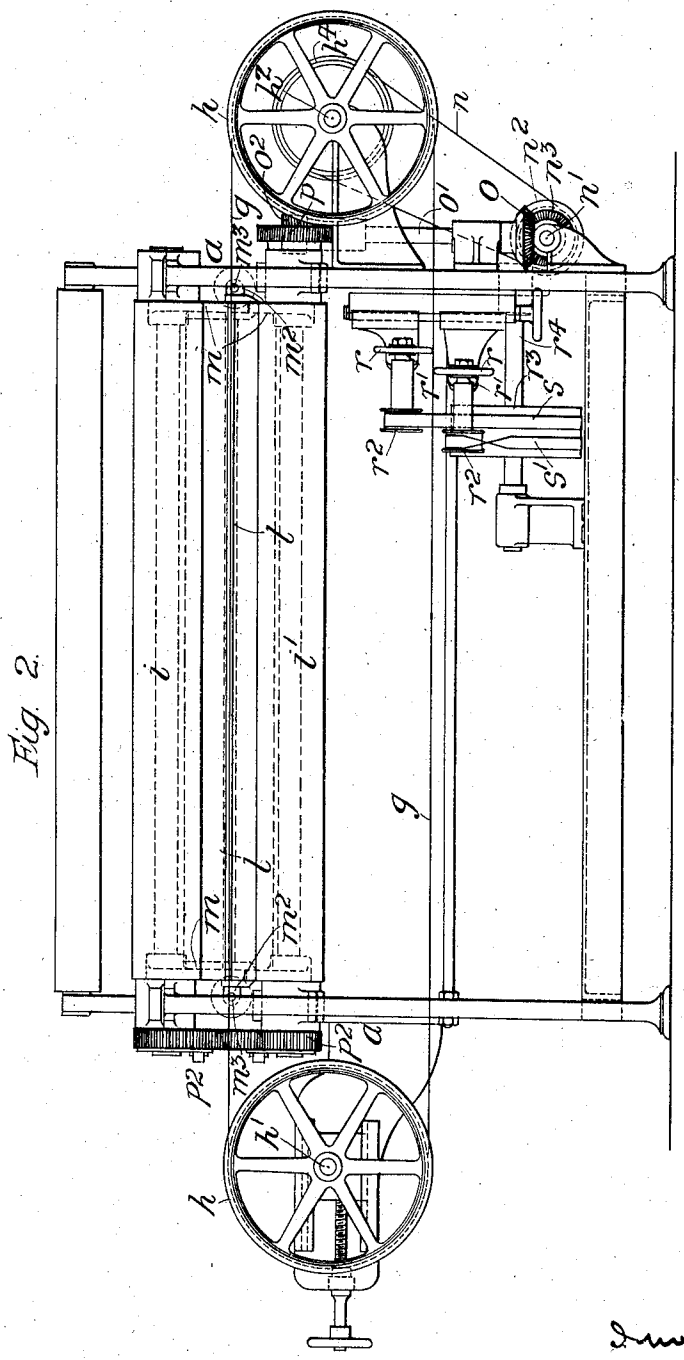
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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.



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No. 768,348. PATENTED AUG. 23, 1904.

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NO MODEL. 3 SHEETS—SHEET 3.

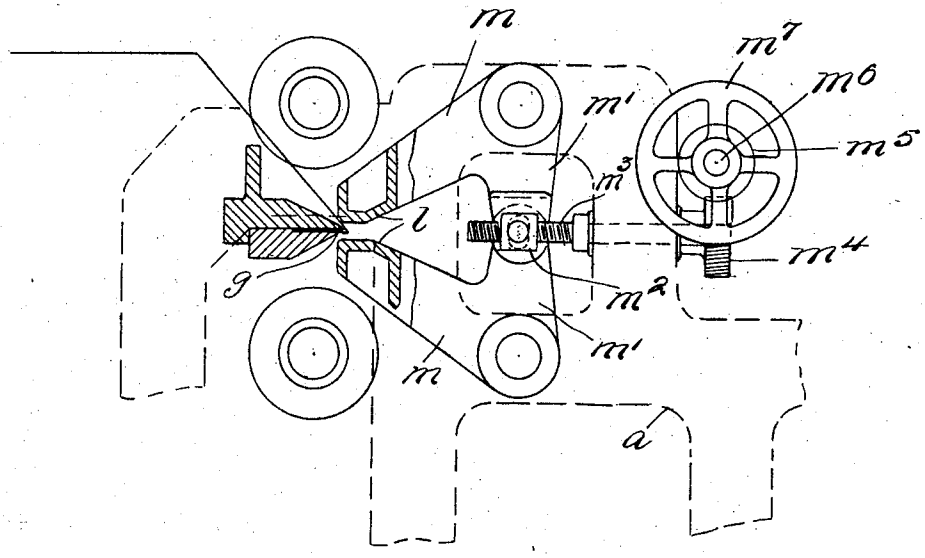


Fig. 3.

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No. 768,348. Patented August 23, 1904.

UNITED STATES PATENT OFFICE.

BENJAMIN SINCLAIR SMITH, OF PAISLEY, SCOTLAND.

MACHINE FOR SPLITTING DUPLEX WOVEN FABRICS.

SPECIFICATION forming part of Letters Patent No. 768,348, dated August 23, 1904.

Application filed July 28, 1903. Serial No. 167,348. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN SINCLAIR SMITH, a subject of the King of the United Kingdom of Great Britain and Ireland, residing at Stonefield Mills, Paisley, Renfrewshire, Scotland, have invented certain new and useful Improvements in Machines for Splitting Duplex Woven Fabrics, such as Pile Carpets, of which the following is a specification.

In accordance with a known manner of manufacture of pile carpets there is produced in the loom a double fabric in the form of an upper and a lower cloth connected by pile-warps which are carried in the weaving operation from cloth to cloth, and the said fabric is thereafter divided into two carpets having an approximately equal length of pile on their faces, the connecting warp-threads being severed centrally between the two cloths.

The present invention has for its object to provide an improved machine for severing the duplex fabric and employing a cutting-knife in the form of an endless band, with means for centering the said knife in the middle of the fabric to be severed and coöperating sharpening means for the knife.

The essential feature of the invention resides in the provision of means for rendering more uniform the operation of the machine irrespective of the thickness of the fabric being severed, and to this end the leading-out bars are arranged to be operated in unison and are capable of simultaneous adjustment while the endless cutting-band maintains a position equidistant from the upper and lower cloth of the double fabric. Moreover, the band-sharpening means are arranged so as to be brought into and out of operation when desired without affecting the rate of movement of the band, and, further, the fabric is guided through adjustable draw-rolls, whereby it is insured that the fabric is led straight through the machine, although not of uniform thickness.

In the accompanying drawings, which illustrate the invention, Figure 1 is a front elevation, and Fig. 2 an end elevation, of the carpet-splitting machine. Fig. 3 is a detail view, partly in section, looking transversely of the cutting-blade.

The machine comprises suitably-braced end standards *a*, arranged to carry the driving and cutting gear, as also a series of rollers around which the fabric is led. The double fabric *f* may be placed on a beam or in folds at the rear of the machine and is led round guide-rods *b b'* and between variably-weighted tension-bars *c c* and between draw-rolls *d d*, which latter may be adjusted by means of an upwardly-pressing roller operated by a screw-threaded spindle, as shown, then toward the front of the machine at *e*, where it is split or divided by means of an endless steel band *g*, having a sharpened cutting edge which is carried upon pulleys *h* and extends across the full width of the machine. This band is driven rapidly after the fashion of a band-saw, and its edge acts on the pile-warps which join together the top and bottom cloths of the fabric *f* so as to sever these warps, and thereby detach the upper from the bottom cloth. The fabric is thus severed into two separate carpets f' and f^2, one of which, f', is led over a roller *i* to drawing-rollers *j* and thence to a folder *k*, while the other, f^2, is led round guiding and drawing rollers $i' i^2 i^3$ to another folder, these folders being arranged to lay the fabric passing through it onto a trolley or other receptacle.

For the purpose of guiding the double fabric *f* horizontally toward the cutting-band *g* and to accommodate varying thicknesses of fabric guide-bars *l* are provided, and these are each carried on bell-crank or like levers *m*, whose arms m' are coupled to a screw-nut m^2, through which passes a screw-spindle m^3. This spindle has on its end a worm-wheel m^4 in gear with a worm m^5 on a cross-shaft m^6, furnished with a hand-wheel m^7, which when turned acts simultaneously on both bell-cranks *m* and equally opens up the guiding-jaws *l*, so that while providing for any variation of thickness of fabric *f* they maintain the fabric centrally in line with the cutting-band *g* and insure that an equal length of pile will be left on each of the split fabrics f' f^2.

The pulleys *h*, carrying the band *g*, are carried upon spindles h' h^2, one of which, h', is adjustable, while the other, h^2, is the driving-shaft, being driven by a belt-pulley h^3. Cone

belt-pulleys h^4 on this shaft and a belt n are used to drive a parallel shaft n', fitted with cone-pulleys n^2 and also carrying a bevel-wheel n^3, in gear with a bevel o on a vertical shaft o', on whose upper end is a worm o^2, in gear with a worm-wheel p on a cross-shaft p', carrying one of the rollers i', and whose other end is connected, through gearing p^2, to drive the other roller i.

For the purpose of sharpening the edge of the cutting-band as it becomes blunt and while it is operating on the work a pair of emery-wheels $r\ r$ is provided and carried on spindles $r'\ r'$, and these are rapidly rotated in contact with the band g as it is traveling by means of driving-belts $s\ s'$, one open and one crossed, fitted over pulleys $r^2\ r^2$ on these spindles and over a driving-pulley r^3 on a shaft r^4. A hand-wheel is provided, as shown, for moving apart the brackets on which are mounted the spindles $r'\ r'$ when the edge of the band has been sharpened, as periodically required.

Having now described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A machine for splitting fabrics comprising means for feeding forward said fabric, an endless traveling band having a sharp cutting edge, and disposed centrally of said fabric, means for moving said band, guiding-jaws for leading said fabric as it is split, bell-crank levers carrying said guiding-jaws, a nut coupled to the arms of said levers, a screw-spindle engaging said nut, worm-gear operating said spindle, and a hand operating device, substantially as and for the purpose set forth.

2. The herein-described machine for splitting duplex fabrics comprising means for feeding forward said fabric, an endless traveling band g having a sharp cutting edge and disposed centrally of said fabric, means for moving said band, emery-wheels r, r, for sharpening said band, means for moving said emery-wheels into and out of operative position, a pair of guiding-jaws l for leading out said fabric, means for simultaneously moving said jaws through equal distances on either side of the endless band, draw-rolls d, d, means for adjusting said draw-rolls, and tension-bars c, c, variably weighted to maintain a steady hold of the fabric, as and for the purpose set forth.

3. The herein-described machine for splitting duplex fabrics comprising means for feeding forward said fabric, an endless traveling band having a sharp cutting edge and disposed centrally of said fabric, a pair of pulleys carrying said band, one pulley driving said band and the other pulley being adjustable relative to said driving-pulley, emery-wheels for sharpening said band, a manual device for moving said emery-wheels into and out of contact with said band, a pair of guiding-jaws for leading out said fabric as it is split, bell-crank levers carrying said guiding-jaws, a nut coupled to the arms of said levers, a screw-spindle engaging said nut, worm-gear operating said spindle, a hand operating device for said worm-gear, draw-rolls adjustable to suit varying thicknesses of fabric, and tension-bars variably weighted to maintain a steady hold of the fabric, as and for the purpose set forth.

4. The herein-described machine for splitting duplex fabrics comprising, in combination, end standards a, guide-rods b, b', variably-weighted tension-bars c, c, draw-rolls d, d, an endless band g, pulleys h, h, spindles h', h^2, on which said pulleys h are mounted, belt-pulley h^3 driving spindle h^2, cone belt-pulley h^4 driving a parallel shaft n', cone-pulleys n^2, and a bevel-wheel n^3 on said shaft n', a vertical shaft o' carrying a bevel o and having at its upper end a worm o^2, a cross-shaft p', a worm-wheel p on said shaft p' gearing with said worm o^2, draw-out roller i' on said shaft p, gearing p^2 between said shaft p' and roller i, drawing-rollers j, i^2, i^3, guide-bars l, bell-crank levers m carrying said guide-bars, a screw-nut m^2 coupled to arms m' of said levers m, a screw-spindle m^3 passing through nut m^2, a worm-wheel m^4 on the end of said spindle m^3, a cross-shaft m^6 having a worm m^5 in gear with said wheel m^4, a hand-wheel m^7 on said shaft m^6 emery-wheels r, r, and means for moving said emery-wheels into and out of contact with the band g, as and for the purpose set forth.

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

BENJAMIN SINCLAIR SMITH.

Witnesses:

WALLACE CRANSTON FAIRWEATHER,

JAMES WRIGHT.