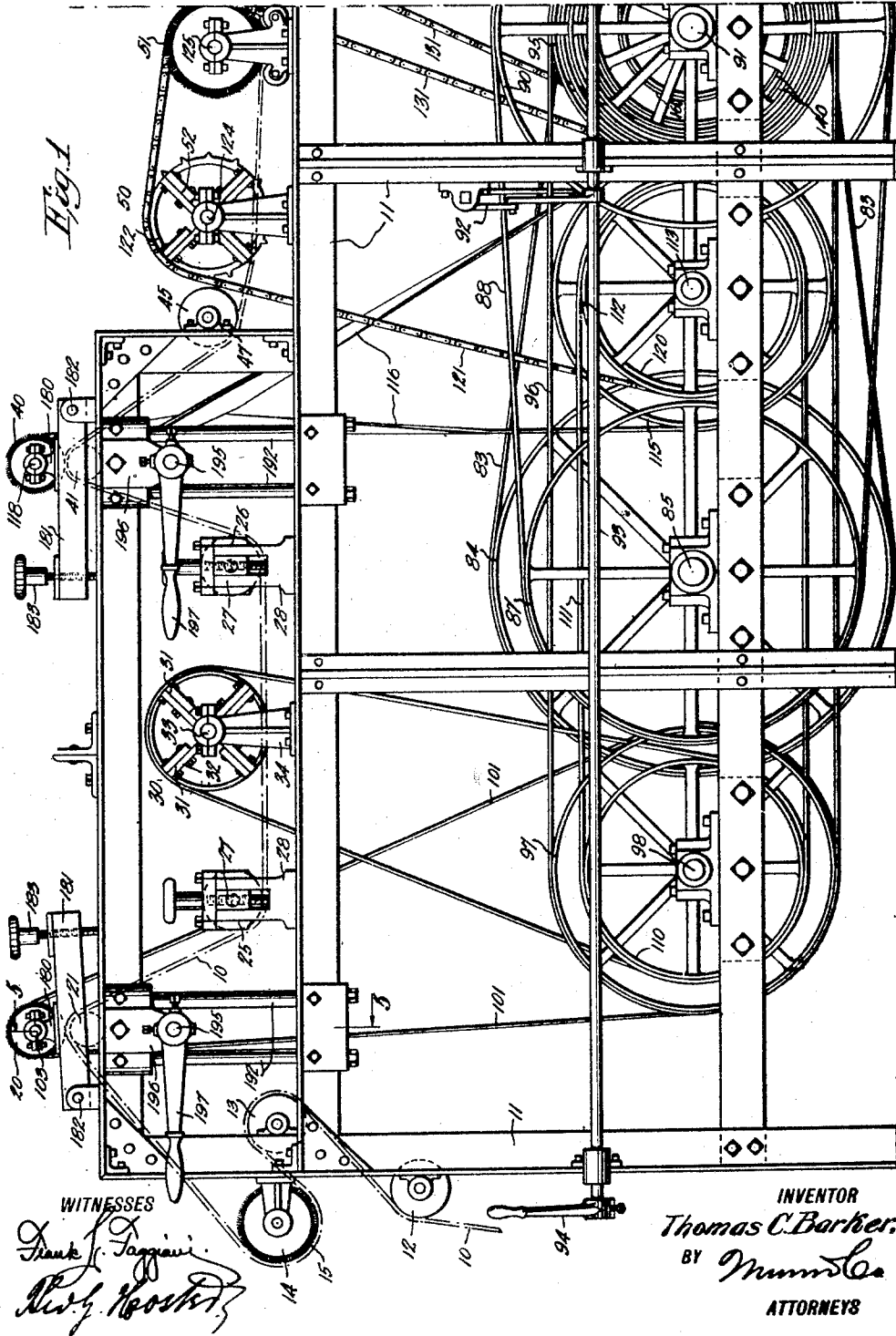


T. C. BARKER.
FINISHING MACHINE FOR PILE FABRICS.
APPLICATION FILED DEC. 31, 1919.

1,368,096.

Patented Feb. 8, 1921.

5 SHEETS—SHEET 1.



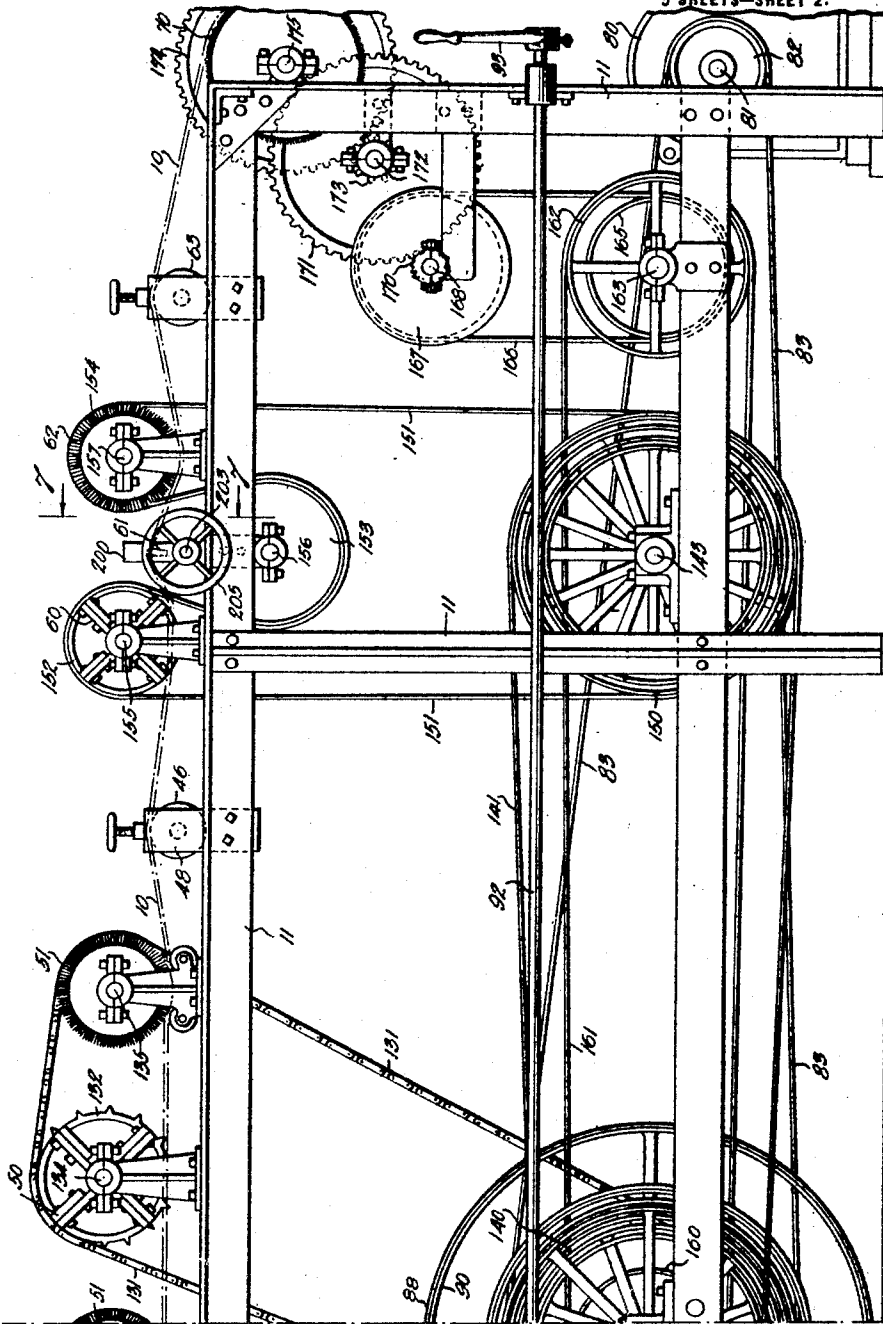
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5 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

Frank J. Faggiari
Rev. H. H. H. H.

INVENTOR

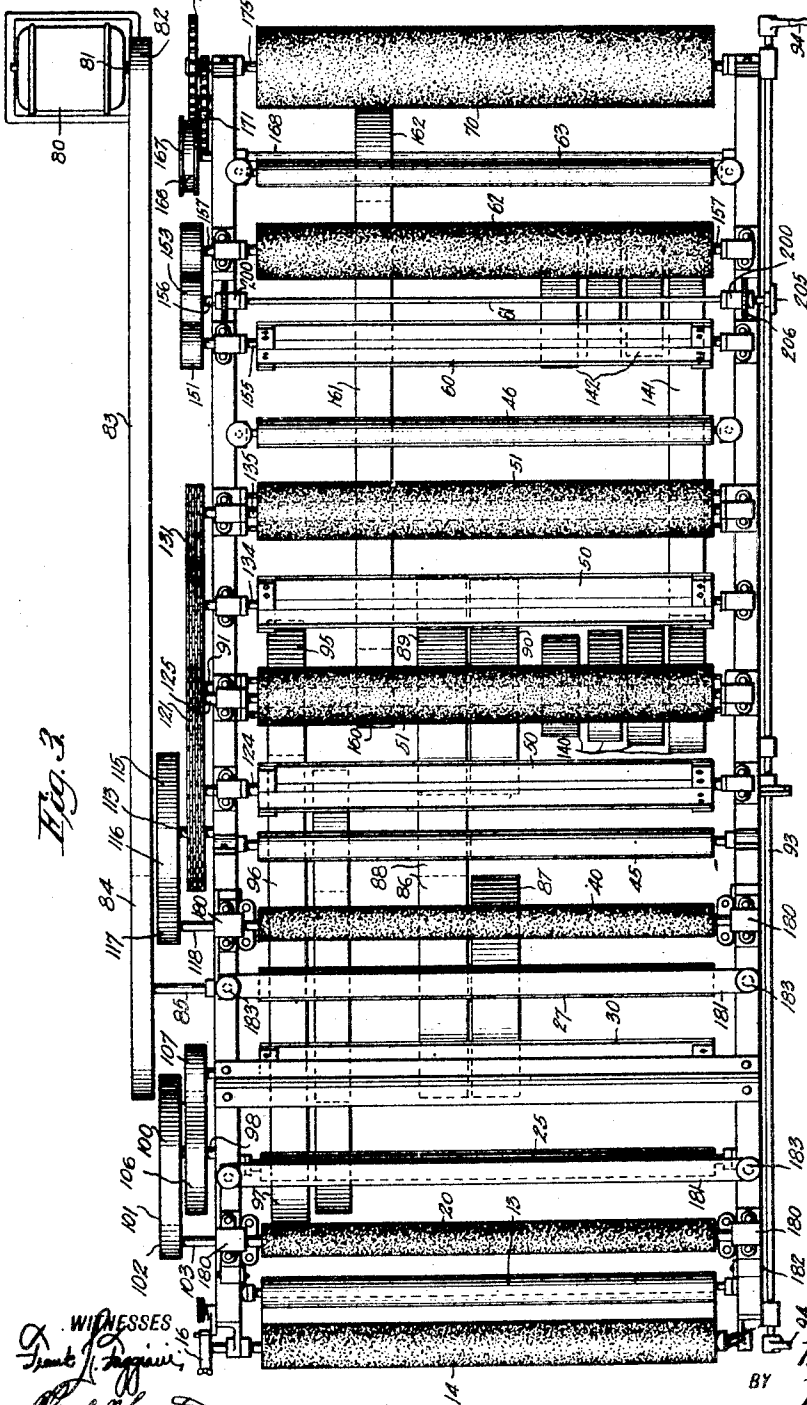
Thomas C. Barker,
BY *Mum & Co*
ATTORNEYS

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5 SHEETS—SHEET 3.

1,368,096.



WITNESSES
Grant J. Higgins
Reed W. Hooton

INVENTOR
Thomas C. Barker,
BY
Mumford
ATTORNEYS

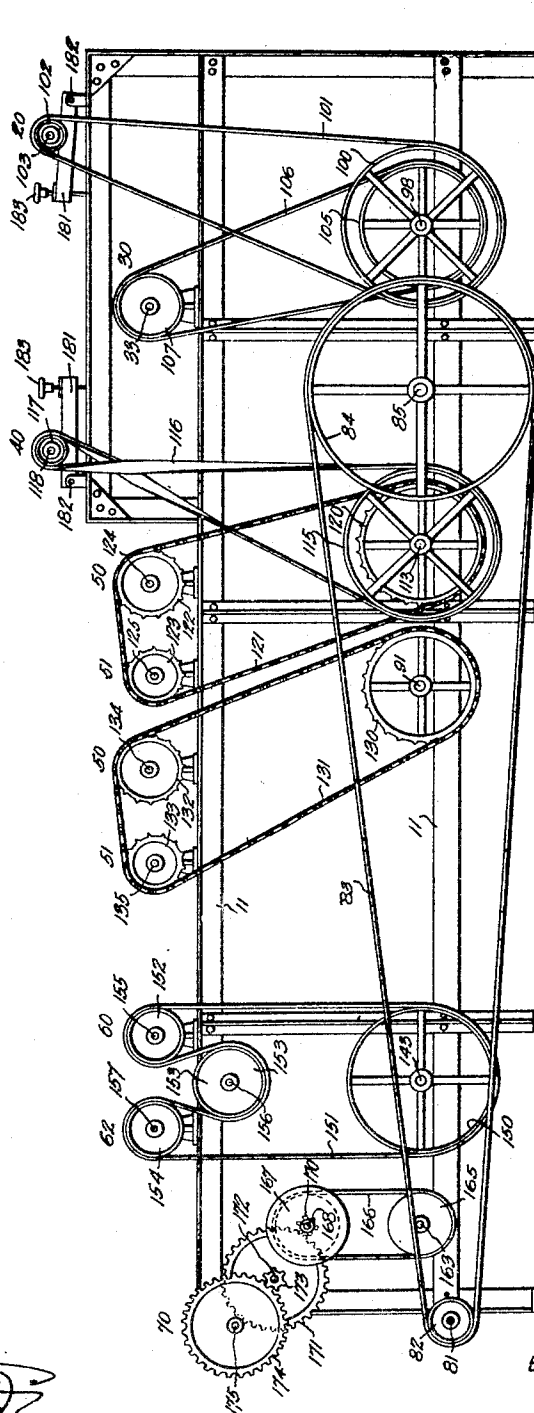
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5 SHEETS—SHEET 4.

Fig. 4.



WITNESSES
Frank J. Pagnani
Ray. H. H. H.

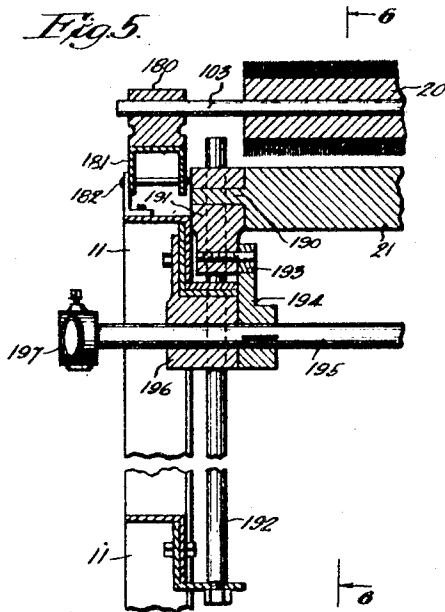
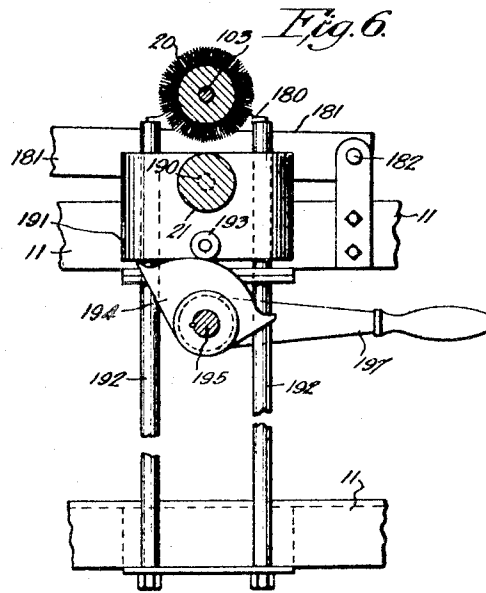
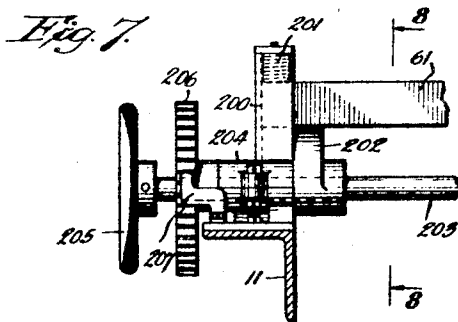
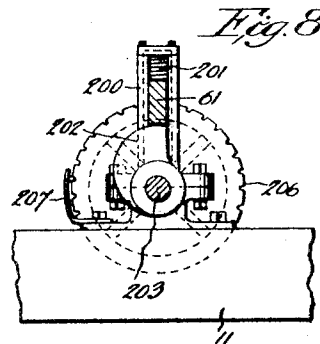
INVENTOR
Thomas C. Barker,
BY *Mumme*
ATTORNEYS

T. C. BARKER.
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APPLICATION FILED DEC. 31, 1919.

1,368,096

Patented Feb. 8, 1921.

5 SHEETS—SHEET 5.



WITNESSES
Frank J. Duggan
Rev. J. H. Heston

INVENTOR
Thomas C. Barker
BY *Mumford*
ATTORNEYS

UNITED STATES PATENT OFFICE.

THOMAS CUTHBERT BARKER, OF NEW YORK, N. Y., ASSIGNOR TO CARL C. MATTMANN, JR., OF NEW YORK, N. Y.

FINISHING-MACHINE FOR PILE FABRICS.

1,368,096.

Specification of Letters Patent.

Patented Feb. 8, 1921.

Application filed December 31, 1919. Serial No. 348,523.

To all whom it may concern:

Be it known that I, THOMAS CUTHBERT BARKER, a subject of the King of Great Britain, and a resident of the city of New York, Elmhurst, borough of Queens, in the county of Queens and State of New York, have invented a new and Improved Finishing-Machine for Pile Fabrics, of which the following is a full, clear, and exact description.

1. The invention relates to cloth finishing and its object is to provide a new and improved finishing machine for pile fabrics, such as mohairs and the like, and arranged to insure thorough combing and batting of the pile with a view to remove all extraneous matter and to cause the pile to stand up permanently.

20 Another object is to dispense entirely with skilled labor heretofore employed for the batting of the fabric.

Another object is to permit of combing and batting a piece of pile fabric of usual length in a comparatively short time.

25 Another object is to prevent the formation of streaks, especially transverse ones and such as are liable to be produced by hand batting operations.

30 With these and other objects in view, the invention consists of certain novel features of construction, as hereinafter shown and described and then specifically pointed out in the claims.

35 A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

40 Figures 1 and 2 combined represent a side elevation of the improved finishing machine for pile fabrics;

Fig. 3 is a reduced plan view of the same;

45 Fig. 4 is a rear elevation of the finishing machine and showing more particularly the driving mechanism;

Fig. 5 is an enlarged cross section of the adjusting means for the first combing roll, the section being on the line 5—5 of Fig. 1;

50 Fig. 6 is a sectional side elevation of the same on the line 6—6 of Fig. 5;

Fig. 7 is an enlarged cross section of the

adjusting device for the tightening roller, the section being on the line 7—7 of Fig. 2; and

Fig. 8 is a sectional side elevation of the same on the line 8—8 of Fig. 7.

The pile fabric 10 is passed in open width while in a moistened state through the machine in the direction of the length of the piece of pile fabric. The improved finishing machine is mounted on a suitably constructed frame 11 on the left hand end of which are journaled the guide rollers 12 and 13, over which passes the piece of pile fabric 10 with the back in contact with the guide roller 12 and the pile face in contact with the roller 13. To one side of the guide roller 13 is arranged a retarding roller 14 provided with a brush or soft fabric face 15 around which passes the back of the piece of pile fabric 10, which then extends upwardly and forwardly and passes between the first revoluble combing or brushing member 20 and a smooth roller 21, with the pile face engaged and combed rearwardly by the comb forming the peripheral face of the driven combing member 20. This combing roll 20 acts on the pile and tends to straighten out the moistened matted pile of the piece of fabric 10.

80 The piece of pile fabric 10 after leaving the member 21 extends downwardly and forwardly and passes under spaced tightening rollers 25 and 26 journaled in adjustable bearings 27 arranged on brackets 28 secured to the main frame 11. The portion of the piece of fabric extending between the rollers 25 and 26 is subjected to a batting action by a revoluble batter 30 provided with transversely extending bats 31 arranged in spaced relation on spiders 32 attached to a shaft 33 journaled in suitable bearings 34 fastened to the main frame 11. The bats 31 move in quick succession in contact with the pile face of the piece of fabric 10 thus subjecting the pile to quick successive batting actions while the fabric is traveling along and held taut between the rollers 25 and 26. It will be noticed that each of the bats has both a batting and a rearward sweeping action on the pile of the forwardly moving pile fabric.

The piece of pile fabric 10, after leaving the guide roller 26 extends upwardly and forwardly and passes between a second revoluble combing or brushing member 40 and a smooth roller 41. The combing or brushing member 40 is driven in the direction of the arrow shown in Fig. 1, to comb the pile in a forward direction. The piece of pile fabric 10 after leaving the roller 41 passes under a guide roller 45 and over a guide roller 46 (see Fig. 2), the rollers 45 and 46 being spaced apart and journaled in bearings 47 and 48, of which the bearing 48 is adjustable. Intermediate the guide rollers 45 and 46 are arranged two pairs of revoluble batting and combing members 50 and 51, of which the batting member 50 is similar to the batting member 30 and the combing member 51 is similar to the combing members 20 and 40 but larger in diameter. Each batting member 50 has its bats 52 batting the pile in a rearward direction and the combing members 51 comb the pile in a rearward direction. The piece of pile fabric 10 after leaving the guide roller 46 passes under a revoluble batting guide bar or rod 61 and then under a revoluble combing member 62, to then pass over a guide roller 63 which with the guide rod 61 and roller 46 forms a means to firmly hold the piece of pile fabric 10 in firm contact with the under sides of the batting member 60 and the combing member 62. In practice, the combing members 20, 40 and 50 are provided with wire bristles while the combing member 62 is provided with softer or animal bristles to give the desired finish to the pile. After the piece of pile fabric 10 leaves the last guide roller 63 it passes over a drawing roller 70 having a peripheral face formed of minute spikes or hooks 71 engaging the back of the piece of pile fabric 10 to draw the latter continually forward.

The several combing members 20, 40, 51 and 52 and the batting members 30, 50 and 60 are rotated at a comparatively high rate of speed, and the drawing roller 70 is driven at a comparatively slow speed by the use of a suitable driving mechanism arranged on the rear side of the machine and constructed as follows: A motor 80 of any approved construction, preferably of electrical type, is provided on its shaft 81 with a pulley 82 connected by a belt 83 with a pulley 84 secured on a main driving shaft 85 journaled on the main frame 11. On the main shaft 85 are secured fast and loose pulleys 86, 87 connected by belt 88 with fast and loose pulleys 89 secured on a shaft 91 journaled on the main frame 11. A suitable belt shifting device 92 of any approved construction is used for shifting the belt 88 from the loose pulleys 87, 90 onto the fast pulleys 86, 89 or vice versa. This belt shifting device 92 includes a rock shaft 93 extending along the front side of the main frame 11 and journaled in suitable bearings thereon. The ends of the shaft 92 are provided with handles 94 to permit the operator to actuate the belt shifting device 92 from either end of the machine. On the shaft 91 is secured a pulley 95 connected by a belt 96 with a pulley 97 secured on a transverse shaft 98 journaled on the main frame 11. On the rear end of the shaft 98 is secured a pulley 100 connected by a belt 101 with a pulley 102 secured on the shaft 103 carrying the first combing member 20. On the shaft 98 is secured a pulley 105 connected by a belt 106 with a pulley 107 secured on the shaft 33 of the first batting device 30. On the shaft 98 is secured a pulley 110 connected by a belt 111 with a pulley 112 secured on a transverse shaft 113 journaled on the main frame 11. On this shaft 113 is secured a pulley 115 connected by a crossed belt 116 with a pulley 117 secured on the rear end of the shaft 118 of the second combing member 40. On the shaft 113 is secured a sprocket wheel 120 connected by a sprocket chain 121 with sprocket wheels 122, 123, of which the sprocket wheel 122 is secured on the shaft 124 carrying the batting member 50, while the sprocket wheel 123 is secured on the shaft 125 carrying the companion combing member 51. On the shaft 91 is secured a set of step pulleys 140, any one of which is connected by belt 141 with a corresponding step pulley of a series of step pulleys 142 secured on a shaft 143 journaled on the main frame 11. On the shaft 143 is secured a pulley 150 connected by a belt 151 with pulleys 152, 153 and 154, of which the pulley 152 is secured on the shaft 155 of the batting member 60 while the pulley 153 is an intermediate pulley attached to the shaft 156 journaled on the main frame 11. The pulley 154 is secured on the shaft 157 of the last combing member 62. On the shaft 91 is secured a pulley 160 connected by a belt 161 with a pulley 162 secured on a transverse shaft 163 journaled on the main frame 11. On the shaft 163 is secured a pulley 165 connected by a belt 166 with a pulley 167 secured on the shaft 168 journaled on the main frame 11. On the shaft 168 is secured a pinion 170 in mesh with a gear wheel 171 secured on the shaft 172 journaled on the main frame 11. On the shaft 172 is secured a pinion 173 in mesh with a gear wheel 174 secured on the shaft 175 carrying the drawing roller 70. By the gearing described a comparatively slow motion is given to the drawing roller 70 relative to the high speed given to the several combing and batting members.

The combing members 20 and 40 are adjustably mounted relative to the rollers 21 and 41, and for this purpose adjusting

means are provided, one for each roller and alike in construction so that it suffices to describe but one in detail. Each of the shafts 103 and 118 carrying the combing members 20 and 40 is journaled in bearings 180 attached to a steering frame 181 (see Figs. 1, 3, 5 and 6) pivoted at 182 on the main frame 11 and provided with set screws 183 engaging the main frame to permit of raising or lowering the combing member 20 to move the peripheral combing face thereof with more or less force into contact with the pile face of the fabric 10. Each of the smooth rollers 21, 41 has its shaft 190 journaled in bearings 191 (see Figs. 5 and 6) mounted to slide up and down on guide rods 192 attached to the main frame 11. On the bearings 191 are journaled friction rollers 193 engaged by cams 194 secured on a transversely extending shaft 195 journaled in bearings 196 attached to the main frame 11. On the forward end of the shaft 195 is secured a handle 197 under the control of the operator for turning the shaft 195 with a view to cause the cams 194 to lift the bearings 191 and with the same the smooth rollers 21 and 41 to adjust the latter relative to the corresponding combing member 20 or 40. By the arrangement described a minute adjustment of the combing rollers 20 and 40 and the smooth rollers 21 and 41 are had to insure a proper combing action on the pile face of the fabric 10 especially when running fabrics of different thicknesses through the machine. The combing members or rollers 20 and 40 are adjustably mounted to allow for various thicknesses of the fabric 10 and to permit of accommodating a cleaner roll, if such is deemed necessary. The smooth rollers 21 and 41 are adjustably mounted to allow for the passage of sewing seams connecting the adjacent ends of successive pieces of the fabric 10, for the passage of damaged places of the fabric.

The guide bar 61 is held vertically adjustable in bearings 200 attached to the main frame 11 (see Figs. 7 and 8). The ends of the guide bar 61 are pressed downward by springs 201 to hold the bottom of the guide bar in contact with cams 202 secured on a transverse shaft 203 journaled in bearings 204 forming part of the guideways 200. The front end of the shaft 203 is provided with a hand wheel 205 adapted to be turned by the operator to turn the shaft 203 with a view to cause the cams 202 to move the guide bar 61 up or down against the tension of the springs 201. On the shaft 205 is secured a notched wheel 206 engaged by a spring pawl 207 attached to the corresponding guideway 200 to hold the shaft 203 and its cam 202 in the adjusted position.

The operation is as follows:

When the motor 80 is running and the belt 88 engages the fast pulleys 86 and 89

then a rotary motion is given to the combing or brushing members 20, 40, 61, 62, the batting members 30, 50 and 60, and the drawing member 70, which latter rotates at a slow rate of speed relative to the combing and batting members above mentioned. The drawing member 70 draws the previously moistened piece of pile fabric 10 through the machine, and the matted pile is first subjected to a combing or brushing action by the first combing or brushing member 20 which combs or brushes the pile upward and rearward, it being understood that the fabric 10 is held taut by the retarding roller 14 and the rollers 21 and 25. The fabric is next subjected to a batting action by the bats 31 of the revolving batter 30, and as the batter revolves at a high speed the bats 31 act in rapid succession on the pile so that transverse streaks are not liable to be formed. It is understood that the batter 30 acts on the portions of the fabric extending between the guide rollers 25 and 26, and as this portion of the fabric is taut an effective batting action is had on the pile of the fabric. The fabric is next subjected to a combing or brushing action by the combing or brushing member 40, which, however, revolves in a reverse direction to the first combing or brushing member 20 and hence the previously matted pile is now combed or brushed in a forward direction. The fabric is next subjected to a batting action by the batter 50 and then to a combing action by the combing or brushing member 61, and this action is preferably repeated by the next following pair of batting and combing members 50 and 51. The guide rollers 45 and 46 are arranged in such a manner that the fabric is drawn upward in firm contact with the under sides of the batting and combing members 50 and 51 to insure an intense batting and combing action with a view to remove all extraneous matter by the combing members to insure a strong, forcible batting of the pile. A further final intense batting and combing action is given to the fabric by the batting and combing members 60 and 62, it being understood that the fabric is held in firm contact with the said members 60 and 62 by correspondingly adjusting the guide bar or rod 61 in a vertical direction, as previously explained. The fabric, after being finished in the manner described, is subjected to a drawing action to be then ready for the market.

It will be noticed that by the arrangement described a drawing means in the form of the roller 70 is arranged at the right-hand side of the machine, and a retarding means in the form of the roller 14 is located at the other end of the machine, and hence the fabric is held taut during its travel through the machine to insure proper action of the

several combing or brushing members and the batting members.

It will also be noticed that by the use of the machine, skilled labor wherever used for the batting operations is completely dispensed with and the finished fabric is without streaks and the pile stands up properly.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a finishing machine for finishing pile fabrics in open width, drawing means imparting a continuous traveling motion to a piece of pile fabric, a pair of rollers between which passes the piece of pile fabric, one of the rollers being smooth and the other being provided with combs engaging the pile face of the piece of pile fabric to comb the pile rearwardly, spaced guiding means in advance of the said rollers, a revoluble batting member located intermediate the said spaced guiding means and having transversely extending bats adapted to bat the pile rearwardly, and a second pair of rollers between which passes the pile fabric and of which one roller is smooth and the other roller is provided with combs engaging the pile and combing it forward.

2. In a finishing machine for finishing pile fabrics in open width, drawing means imparting a continuous traveling motion to a piece of pile fabric, a pair of rollers between which passes the piece of pile fabric, one of the rollers being smooth and the other being provided with combs engaging the pile face of the piece of pile fabric to comb the pile rearwardly, spaced guiding means in advance of the said rollers, a revoluble batting member located intermediate the said spaced guiding means and having transversely extending bats adapted to bat the pile rearwardly, a second pair of rollers between which passes the piece of pile fabric and of which one roller is smooth and the other roller is provided with combs engaging the pile and combing it forward, spaced guiding means in advance of the said second pair of rollers, and a pair of spaced revoluble batting and combing members intermediate the last mentioned guiding means and batting and combing the pile rearward.

3. In a finishing machine for finishing pile fabrics in open width, drawing means imparting a continuous traveling motion to a piece of pile fabric, spaced guiding means for the piece of fabric, a revoluble batting member located intermediate the said guiding means and having transversely extending bats adapted to bat the pile of the piece of pile fabric in rapid succession, a driven revoluble combing member engaging the batted pile of the piece of pile fabric and combing the pile in a forward direction, and a pair of spaced revoluble batting and combing members, of which the batting member

bats the forwardly combed pile and the combing members combs the pile rearwardly.

4. In a finishing machine for finishing pile fabrics in open width, drawing means imparting a continuous traveling motion to a piece of pile fabric, spaced guiding means for the piece of pile fabric, and a pair of revoluble batting and combing members arranged intermediate the said guiding means, the said batting member batting the pile in a rearward direction and the said combing member combing the pile in a forward direction.

5. In a finishing machine for finishing pile fabrics in open width, drawing means imparting a continuous traveling motion to a piece of pile fabric, a pair of revoluble batting and combing members, guide rollers for the piece of pile fabric and located on opposite sides of the said pair of batting and combing members, and a guiding and tightening member for the piece of pile fabric and located intermediate the said batting and combing members.

6. A finishing machine for finishing pile fabrics in open width, comprising drawing means imparting a continuous traveling motion to a piece of pile fabric, a pair of rolls between which passes the piece of pile fabric, one of the rolls having a peripheral comb adapted to comb the pile rearwardly, a pair of spaced guide rollers for guiding the pile fabric after it leaves the said pair of rolls, a revoluble batting member intermediate the said guide rollers and batting the said combed pile, a second pair of rolls between which passes the pile fabric after leaving the last guide roller, one of the rolls having a peripheral comb adapted to comb the previously batted pile in a forward direction, spaced guiding rollers for the piece of pile fabric and located in advance of the said second pair of rolls, at least one pair of revoluble spaced batting and combing members engaging the pile of the piece of pile fabric intermediate the said last mentioned guiding rollers, the said last mentioned batting and combing members batting and combing the pile in a rearward direction, a set of three spaced guide rollers for the piece of pile fabric and in advance of the last combing member, and another pair of batting and combing members engaging the pile of the piece of pile fabric on opposite sides of the intermediate one of the said three guide rollers, the last mentioned batting and combing members batting and combing the pile rearwardly.

7. A finishing machine for finishing pile fabrics in open width, comprising a series of guides for the fabric, a drawing means at the exit end of the machine for drawing the fabric through the machine, a retarding means at the entrance end of the machine

for retarding the fabric to hold the latter taut during its passage through the machine, revoluble combing members arranged to engage the pile of the taut fabric, revoluble batting members alternating with the said combing members and each having transverse bats to bat the pile face of the fabric in rapid succession, and a driving means connected with the said drawing means, the said combing members, and the said batting members to rotate the said drawing means at a low rate of speed and the said combing and batting members at a high rate of speed.

8. In a finishing machine for finishing pile fabrics in open width, drawing means imparting a continuous traveling motion to a piece of pile fabric, a pair of revoluble batting and combing members, guide rollers for the piece of pile fabric and located on opposite sides of the said pair of batting and combing members, a guiding and tightening member for the piece of pile fabric and located intermediate the said batting and combing members, and manually controlled means for adjusting the said guiding and tightening member.

THOMAS CUTHBERT BARKER.