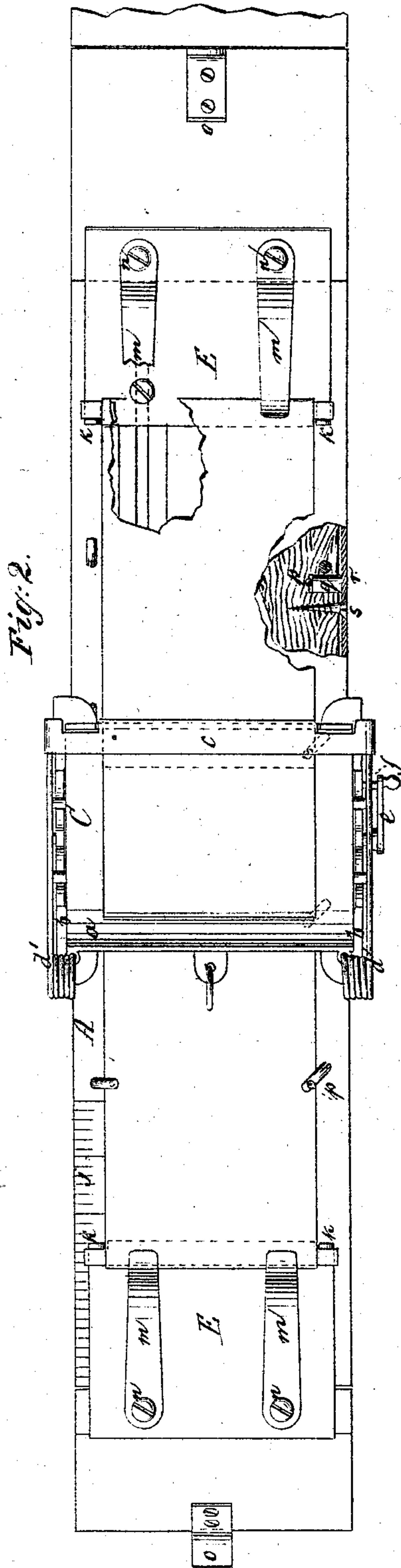
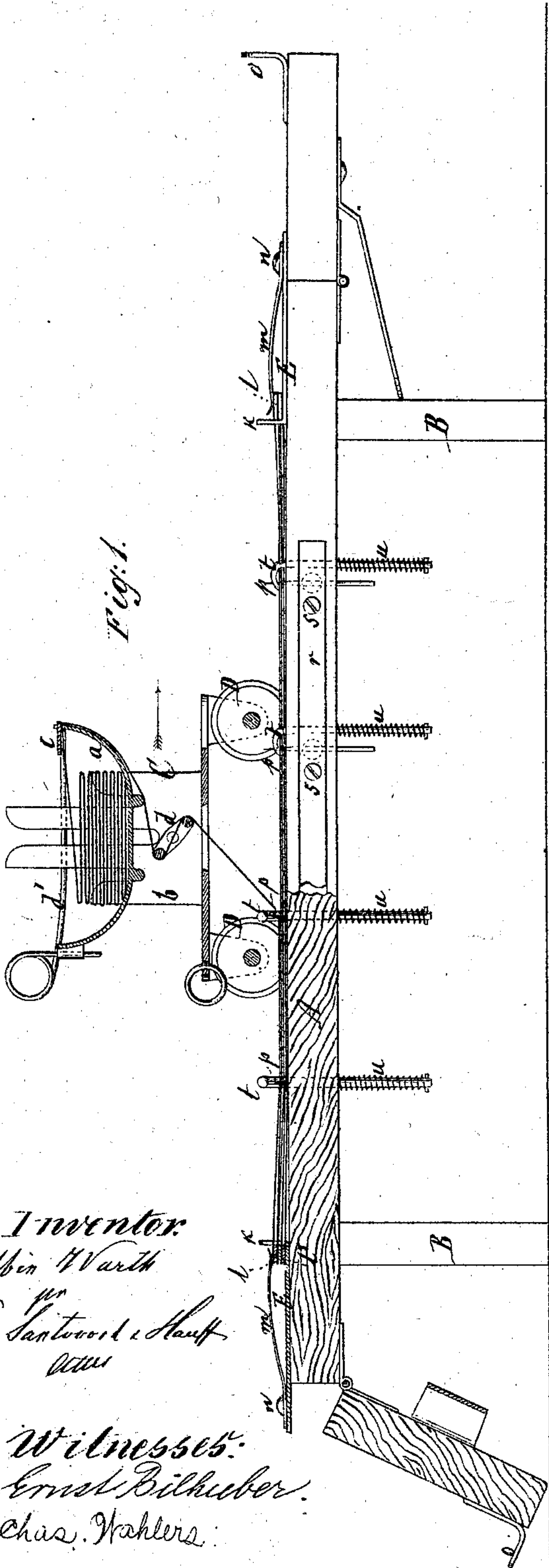


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Machines for Piling Textile Fabrics.

No. 137,041.

Patented March 18, 1873.

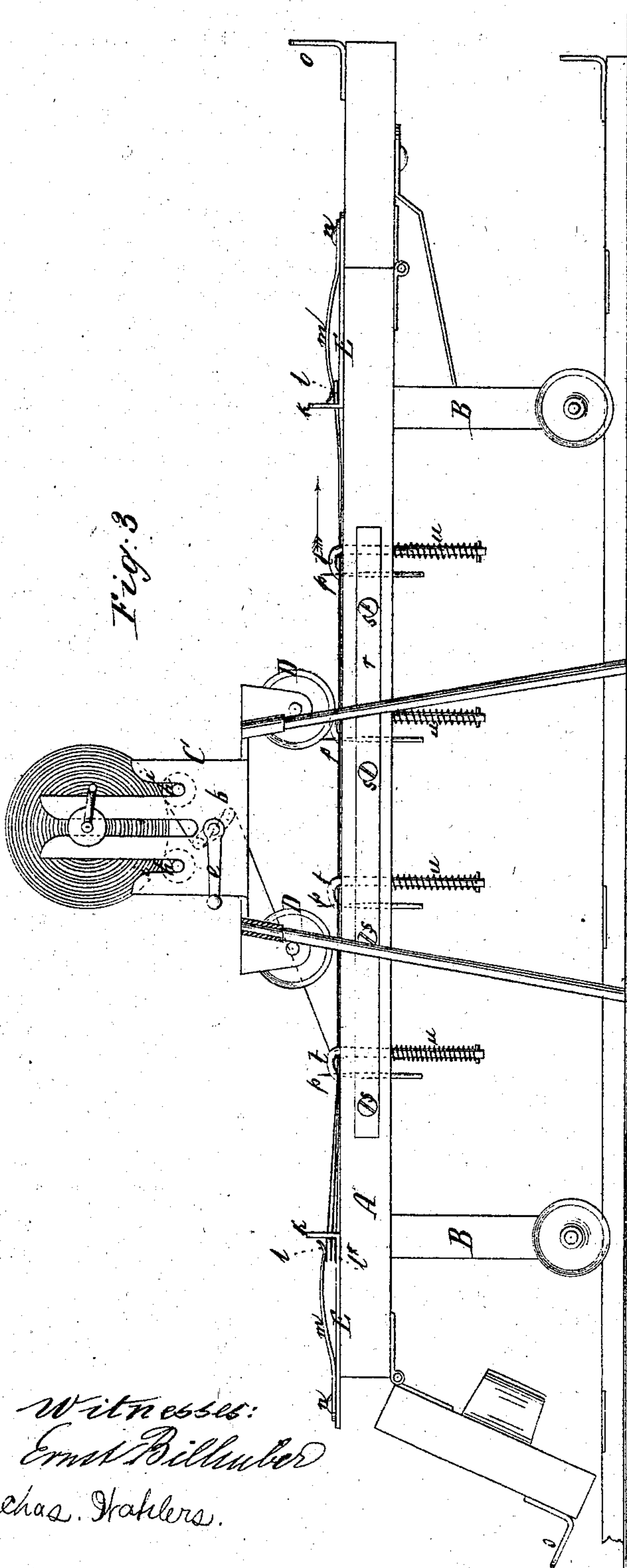


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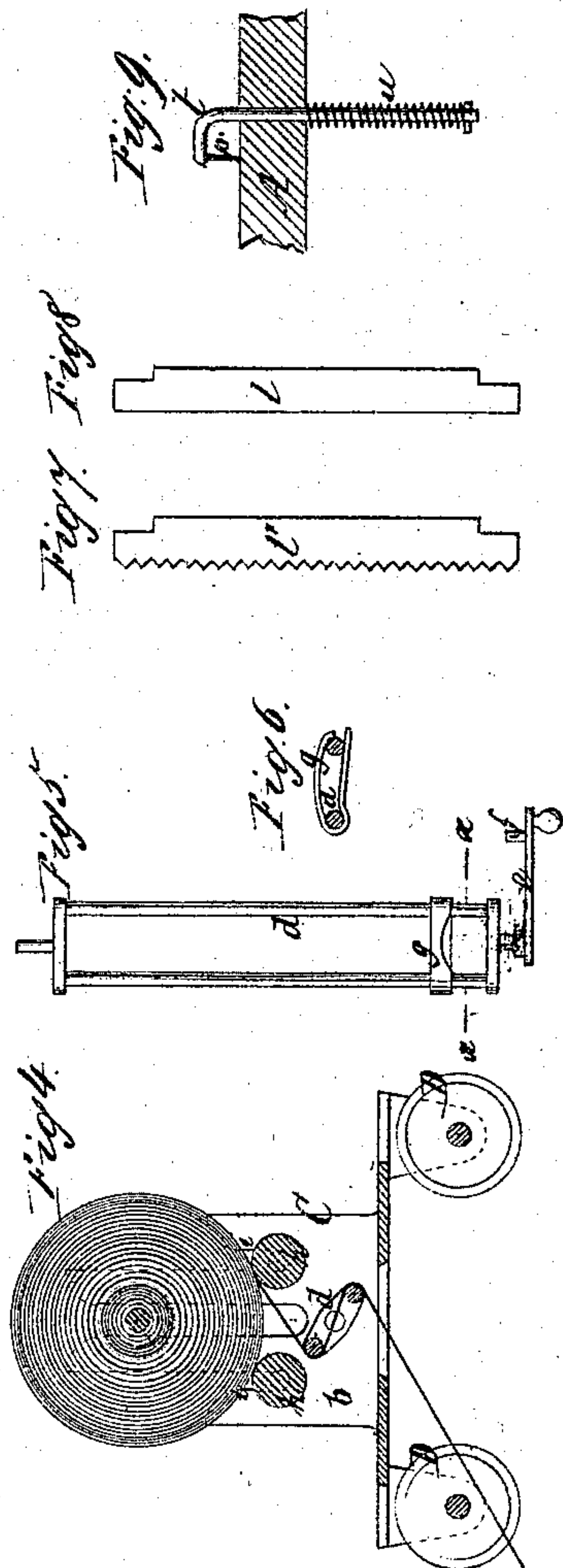
Machines for Piling Textile Fabrics.

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Witnesses:  
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# UNITED STATES PATENT OFFICE.

ALBIN WARTH, OF STAPLETON, NEW YORK.

## IMPROVEMENT IN MACHINES FOR PILING TEXTILE FABRICS.

Specification forming part of Letters Patent No. 137,041, dated March 18, 1873.

*To all whom it may concern:*

Be it known that I, ALBIN WARTH, of Stapleton, in the county of Richmond and State of New York, have invented a new and useful Improvement in Machines for Piling Textile Fabrics; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, in which—

Figure 1 represents a longitudinal section of this invention when constructed with a moving package-carrier arranged for folded packages. Fig. 2 is a plan or top view of the same. Fig. 3 is a side view of my machine when constructed with a moving piling-table and with a package-carrier arranged for roller packages. Fig. 4 is a longitudinal section of the package-carrier mentioned in the previous figure. Fig. 5 is a detached plan of the tension mechanism and gage secured in the package-carrier. Fig. 6 is a transverse section of the same in the plane  $x x$ , Fig. 5. Figs. 7 and 8 are detached plans of different retaining-strips. Fig. 9 is a sectional side view of a retaining-needle which forms part of my machine.

Similar letters indicate corresponding parts.

The object of this invention is to form piles of textile fabrics, each pile consisting of a series of layers, which are arranged in pairs, the corresponding sides of the two layers constituting each pair, being placed against each other with the nap or designs running in one and the same direction in such a manner that when the pile is cut each pair of layers produces patterns fit for garments. This object is effected by means of a package-carrier and a piling-table, the package-carrier being provided with a receptacle, into which the package can be placed loosely so that it can be readily turned over, as required, in order to bring the corresponding sides of the two layers forming each pair against each other. The package-carrier is provided with an adjustable tension mechanism, and with a gage, the tension mechanism being intended to subject the successive layers of the pile to the requisite strain, while the gage serves to guide the edges of the successive layers. The piling-table is provided with gage-plates, which are adjusted at

a suitable distance apart to correspond to the desired length of the pile; and in one side of the piling-table are secured a series of needles or retaining devices, which serve to adjust the edges of the successive layers exactly one above the other. With these needles are combined protectors, which prevent the fabric from jumping off the needles, and which serve to cover the points of the needles, so that the persons engaged in forming the pile are not liable to prick their fingers or hands.

The retaining-needles are adjustable so that they can be set higher or lower to correspond to the thickness of the pile to be formed.

In the drawing, the letter A designates a table, which rests on legs B, and on which rests a package-carrier, C. This package-carrier is provided with wheels D, which run on the surface of the table, and which are furnished with flanges which overlap the edges of the table on both sides, so as to prevent the package-carrier from running off. On the package-carrier is formed a receptacle,  $a$ , for the package, the form of this receptacle being either such as shown in Fig. 1, or such as shown in Figs. 3 and 4, according to the shape of the original package, but in all cases such receptacle must be so arranged that the package resting therein can be turned over conveniently, an operation which becomes necessary, as will be presently more fully explained. The package-receptacle  $a$  is supported by standards  $b$ , which form the bearings for a tension-reel,  $d$ , a detached plan view of which is shown in Fig. 5. One of the gudgeons of this reel extends through the standard, and it bears a hand-crank,  $e$ , which is made elastic and provided with a stop,  $f$ , that is held in contact with the side of the adjoining standard by the elasticity of the hand-crank, so that the reel is retained in any position into which it may be brought. If desired, the stop  $f$  may be made to engage with holes in the standard. The fabric is drawn over the bars of the tension-reel in the manner shown in Figs. 1 and 4, and by turning said reel the tension of the fabric may be increased or decreased. On the base of the tension-reel is fitted a gage,  $g$ , (see Figs. 5 and 6,) which is adjusted to bear against one edge of the fabric passing over said reel, and to assist in paying out the fabric with the desired regularity. The



package-receptacle is, by preference, made in the form of a trough, as shown in Figs. 1 and 2; but if said receptacle is to be used for roller-packages, it may be simply composed of two rollers, *h h*, (see Figs. 3 and 4,) which have their bearings in slots *i* in the standards *b*. If the receptacle *a* is made in the form of a trough, Figs. 1 and 2, it may be provided with a ruler, *c*, that is depressed on its edge by a spring, *d'*, so that the fabric, on being drawn out between said ruler and the discharging-edge of the trough, is freed from wrinkles that may exist in the same. The table *A* is furnished with gage-plates *E E* which are secured on it at such a distance apart as the length of the pile to be formed will demand. In order to determine this distance a scale, *j*, may be marked on the table, as shown in Fig. 2. Each of the gage-plates is provided with stops *k k*, which are situated at such distances apart as to admit the fabric between them, and these stops serve to hold the retaining-strips *l l\**, detached plan views of which are shown in Figs. 7 and 8. Instead of the stops *k* and retaining-strips *l l\**, however, I can use any other device capable of retaining the ends of the layers; and for forming piles such as I wish to form the gage-plates may be provided with stationary needle-points of sufficient length to pass through the entire pile, so that the end of each layer, on being depressed into said needle-points, will be firmly retained. As the successive layers of the pile are formed springs *m m* are brought to bear upon the ends of the layers already formed to prevent them from getting detached from the retaining-devices. These springs turn on pivots *n n*, so that they can be moved out of the way to admit a fresh layer of the fabric. On the ends of the table *A* are lips *o*, which prevent the package-carrier from running off. In one side of the table *A* are secured needles *p*, which serve to adjust the consecutive layers of the fabric, so that one edge of each layer is exactly over the edge of the previous layer. As the package-carrier moves over the table, the fabric, as it is paid out from the same, is depressed on the needles *p*, and thereby each layer is readily brought in the required position and retained, while the subsequent layers are being formed. Said needles are retained in position by plugs *q*, (see Fig. 2,) which are brought to bear on them, and which are forced inward by the pressure of metal strips *r*, fastened to the edges of the table by screws *s*. By releasing these screws the needles can be set higher or lower, to correspond to the thickness of the pile to be formed. With the needles *p* are combined protectors *t*, which are depressed by springs *u*, so that, when they are raised and made to drop over the points of the needles, they will hold down the fabric and prevent it from jumping over the points of the needles; and furthermore, said protectors also serve to cover the points of the needles and to prevent them from injuring the hands, fingers, or garments of the persons working on the

machine. The needles and needle-protectors may also be combined in the form shown in Fig. 9, and when thus constructed the needles are secured in the protectors, and they are depressed into the fabric instead of depressing the fabric on the needles, as previously stated. In this case the shanks of the protectors also serve as guides for the edges of the different layers, and, if desired, the table may be provided with a flange extending throughout its entire length to act as a guide for the edges of the layers. The springs can be made to depress the protectors with sufficient force to retain the fabric in position without the needles.

It will be readily seen that the package-carrier, instead of being made to move over the table, can be made stationary; and in this case the table *A* is provided with wheels which run on rails secured to the floor, (see Fig. 3,) so that said table can be pushed backward and forward under the package-carrier. The piling-table *A* is, by preference, so arranged that it connects with the table of the cutting-machine, and the package-carrier can be used with advantage to bring the fabric, after the same has been formed into a pile, to the cutting-machine.

In forming a pile by the aid of my machine, I proceed as follows: The package of the fabric from which the pile is to be formed is placed loosely into the receptacle of the package-carrier, which is placed near one end of the piling-table; the end of the fabric is drawn out and fastened to the gage-plate on the piling-table next to the package-carrier. The package-carrier is then pushed over the piling-table to the other gage-plate. The fabric is cut to correspond to the length of the layers to be formed, and the end of the first layer is fastened to the second gage-plate. The package-carrier is then moved back to its original position, the package is turned over in the receptacle of the package-carrier, and the second layer of the pile is formed in the same manner as the first. In forming the third layer it is not absolutely necessary to turn over the package; but it may be more convenient to do so, as will be apparent from the following consideration: Let us suppose that in forming the first layer the fair side of the fabric be turned down, and the nap points in the direction in which the package-carrier is moved in paying out said layer; now, if the second layer should be formed without cutting the fabric, simply by folding the same backward on the first layer, the nap of this second layer would run in a direction opposite to that of the first layer; and if the two layers should be cut up into patterns for pantaloons, for instance, the nap on one part of the leg would run up, and on the other down. For this reason it is necessary to cut off the fabric after the first layer is formed and to move the package-carrier back to its original starting point. If the second layer should now be formed precisely like the first, and without turning the package over, the fair side of the second layer would



face in the same direction as that of the first layer, and the patterns cut out could not conveniently be united. In order to meet all the requirements of the tailor, the pile must be formed of a number of layers arranged in pairs, the corresponding sides of the two layers forming a pair being placed against each other, (either the fair side of one against the fair side of the other, or the back of one against the back of the other,) while the nap of said two layers runs in one and the same direction; or if the fabric is printed or otherwise ornamented, the designs must run in one and the same direction. If the original package is formed of a fabric of double width and folded throughout its entire length, the operation of turning over said package in the receptacle of the package-carrier is not required. Furthermore, in forming the pile from the fabric, care is taken to place the edge on one side of each layer exactly over the edge of the preceding layer, while the other edge is left to take care of itself. This is done because the width of woven fabrics is not uniform throughout the entire length of each piece, and it would be useless to attempt to get both edges of all the layers of a pile to lay exactly above each other. After the pile has been completed the patterns are marked on the top layer, the pile is fastened together by clamps or needles, and it is then ready to be cut. It may be cut by means of a hand-knife, and, in this case, it can be left on the piling-table.

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

1. The combination of a tension mechanism, *d*, with the package-carrier C and piling-table A, substantially as and for the purpose described.

2. The combination of the gage *g* with the bars of the tension-reel *d* and with a package-carrier, C, and piling-table A, substantially as set forth.

3. The combination of gage-plates with a piling-table and a package-carrier, constructed and operating substantially as and for the purpose set forth.

4. A series of retaining devices, substantially as described, arranged on the edge of a piling-table, as and for the purpose set forth.

5. The combination of pressure-plugs with the needles *p*, the piling-table, and the package-carrier, constructed and operating substantially as set forth.

6. The needles and their protectors combined with the piling-table and package-carrier, constructed and operating substantially as and for the purpose described.

This specification signed by me this 13th day of January, 1873.

ALBIN WARTH.

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.