

(No Model.)

3 Sheets—Sheet 1.

T. ANDERSON.
FIGURED PILE FABRIC.

No. 307,700.

Patented Nov. 4, 1884.

FIG: 1.

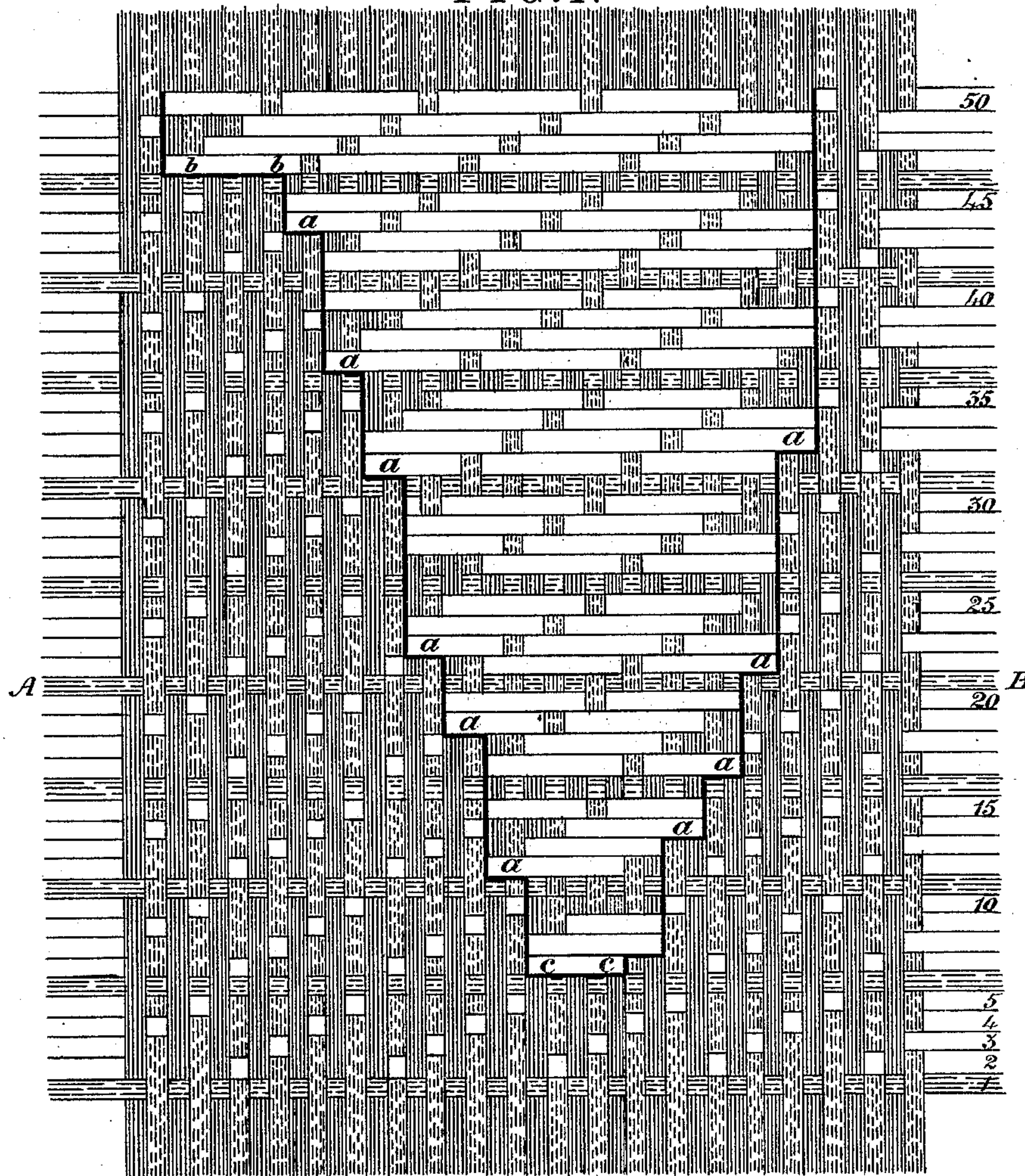


FIG: 3.



Witnesses.
John C. Timbridge.
Harry M. Surk

Inventor.
Thomas Anderson
by his attorneys
Brienen & Steele

(No Model.)

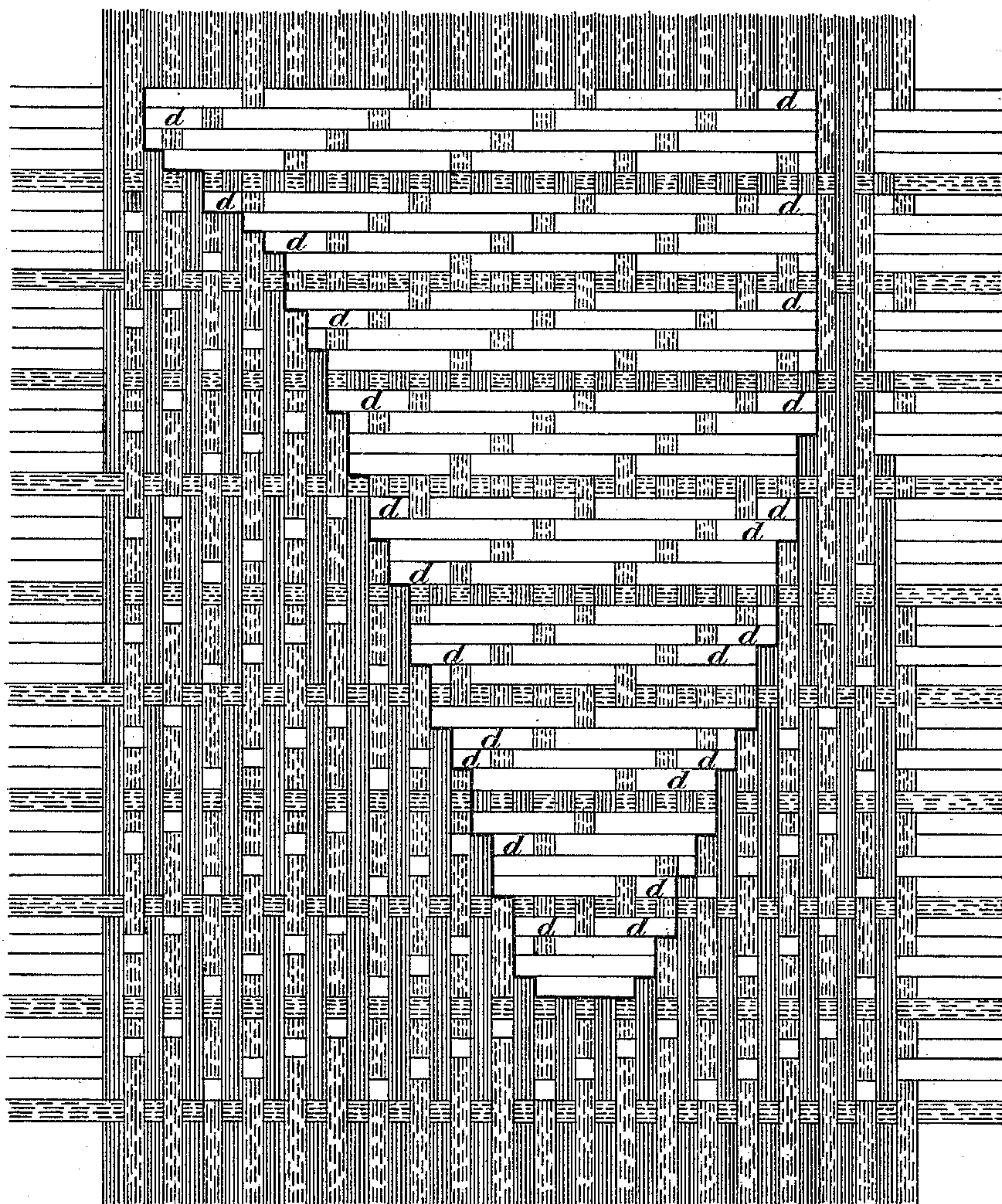
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T. ANDERSON.
FIGURED PILE FABRIC.

No. 307,700.

Patented Nov. 4, 1884.

FIG: 2.



Witnesses.
John C. Tunbridge.
Harry M. Smith

Inventor.
Thomas Anderson
by his attorneys
Priesen & Steele

(No Model.)

3 Sheets—Sheet 3.

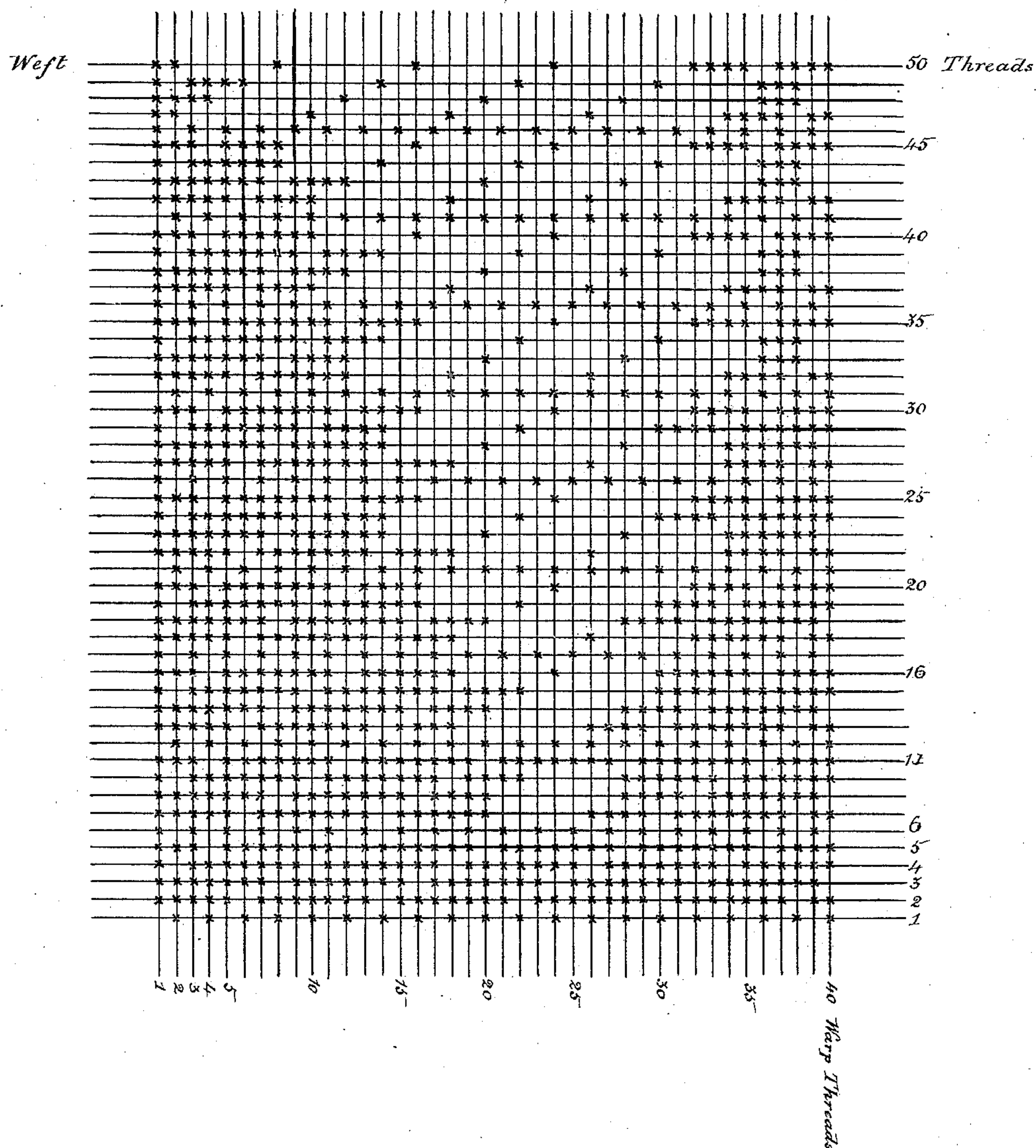
T. ANDERSON.

FIGURED PILE FABRIC.

No. 307,700.

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Fig. 7.



Witnesses:

John C. Tunbridge.
Haryn. Puck

Inventor:

Thos. Andersson
by his attorneys
Briesen & Steele

UNITED STATES PATENT OFFICE.

THOMAS ANDERSON, OF LIVERSEDGE, WEST RIDING, COUNTY OF YORK,
ENGLAND.

FIGURED PILE FABRIC.

SPECIFICATION forming part of Letters Patent No. 307,700, dated November 4, 1884.

Application filed July 23, 1883. (No specimens.) Patented in England May 13, 1882, No. 2,254.

To all whom it may concern:

Be it known that I, THOMAS ANDERSON, a subject of the Queen of Great Britain and Ireland, and residing at Liversedge, in the West Riding of the county of York, England, have invented Improvements in Figured Pile Fabrics, (for which I have obtained a patent in Great Britain, No. 2,254, dated May 13, 1882,) of which the following is a specification.

This invention relates to the manufacture of that class of figured pile fabrics known as "velvets" or "velveteens," wherein the figure pile is formed from the weft-threads, the object of the invention being to facilitate the cutting of the pile, and to enable the knife to pass with greater certainty from the "race" of one figure of weft pile to the corresponding race of another figure of the same without liability to slip out of the race or to "trip." What is known as a "race" in velvet-weaving is the space or furrow underneath the floated threads wherein the point of the knife travels in cutting the said floated threads to form the pile.

Figure 1 is a diagram showing my fabric. Fig. 2 is a diagram showing a fabric of known construction. Fig. 3 is a section along the thread A B, Fig. 1. Fig. 4 is a weaver's diagram showing how my fabric is made.

In designing the patterns for the manufacture of such figured weft-pile fabrics according to my invention the design is so arranged that the outline thereof steps or moves in races at the edge of the figures—that is to say, where the edge of the pattern crosses the warp-threads it must always "step" the exact number of threads which corresponds with the distance between each two races, or a multiple of such number. For example, if a design is made with a pile floating over seven warp-threads and one binding-thread, in which there is one race for every two warp-threads in the cloth, as in an ordinary "E 1" velvet, then, as there is a race for every two warp-threads, the edge of the figure must step or move two warp-threads (or any multiple of two) at a time. This is clearly shown at Fig. 1 in the annexed drawings, which represent a highly-magnified plan view of the face of a piece of uncut figured velvet woven accord-

ing to my invention. The perpendicular bands are the warp-threads and the horizontal bands are the weft-threads, the white being the floated threads which form the pile, and the shaded bands being the binding weft-threads which form the back. The pattern represents the point of a leaf, the black outlines showing clearly the edges of the pattern "stepping" at the sides invariably two warp-threads (or one race) at a time, as at *a a a a*, or a multiple of the same, as at *b b*. The same system applies to any other weft-pile velvet or velveteen tie-up, of course varying the stepping or moving at the edges of the pattern according to the "tie-up" used. For instance, in a pile which has a race for every four warp-threads, the pattern would step or move in fours, (or multiples of fours,) and so on, the edges of the design thus always stepping in races. The advantage of this system is that it facilitates the cutting, as it enables the cutter's knife to enter the race (after passing over a portion of the ground) much more easily than on the old plan, on account of the small squares formed by stepping or moving in races, which act as guides for the point of the knife and prevent it from slipping out of the race. To illustrate this I have shown at Fig. 2 the same pattern as it would be woven according to the best method known previously to my invention, when it will be seen that the pattern steps at the edges by a single warp-thread only at a time, and in consequence of this the knife very frequently entered the wrong race or passed through the back of the cloth after crossing over a portion of the ground; but this difficulty is overcome to a great extent by my improvement.

Another point to be observed in designing the patterns according to my invention is that, in addition to stepping or moving in races along the edge of the patterns, care must be taken to turn the points at the top and bottom of each figure on an odd number of warp-threads, as shown at *c c* in Fig. 1, where the point is turned on five threads, the exact number of threads at the turning-point depending, of course, on the shape of the figure or pattern. The object of thus turning the point of the pattern on an odd number of ends is that the race

will always be nearly at the center of the small square or step, and thus the cutting of the pile is facilitated. In addition to the above system of stepping in races at the edges of the design and turning the points of the pattern at top and bottom on an odd number of warp-threads, I also throw the short "floats" at the edges of the pattern to the back of the cloth. For instance, in a weft pile of seven-thread float I throw all the smaller floats than five threads to the back of the cloth. Floats of four threads could be cut; but I find it much easier for cutting if there are no smaller floats on the surface than five threads. On reference to Fig. 1 it will be seen that none of the floated pile threads on the face pass over fewer than five warp-threads, while at the edges of the velvet or velveteen pile figures made on the old plan there is always a large quantity of short floats, which interfere with the cutting, as they have a tendency to throw the cutter's knife out of the race, (see Fig. 2, where floats over two, three, and four warp-threads are seen at *d d* along both sides of the pattern;) but according to my improvement, (see Fig. 1,) as these short floats are thrown to the back of the cloth, instead of the face, the cutting is greatly facilitated, even with a seven-thread float and one binder tie-up. It would be rather easier to cut if all floats of five threads could be dispensed with by throwing them to the back of the cloth and only leaving the full floats of seven threads on the face; but by so doing the pile would be robbed from the edges of the figure, which would injure the effect to a great extent.

Fig. 3 is a section of the uncut cloth, (magnified and exaggerated,) taken through the line A B in Fig. 1, the circles representing the warp-threads; *eeee*, the binding or back weft-picks, and *ffff* the short floats of less than five threads at the edges of the pattern, carried to the back of the cloth instead of to the face, as heretofore.

In order to enable a weaver or other person skilled in the art of weaving clearly to understand my invention, I have also shown at Fig. 4 a diagram or weaver's draft of part of a pattern designed according to my invention, the class of velvet chosen for illustration being an ordinary "E 1" cloth with a float over seven threads and one ground-pick to each four pile-picks. The black crosses denote where the warp is lifted, the pattern being the same as in Figs. 1 and 2. Nos. 1, 6, 11, 16, or every fifth pick, are plain ground-picks. The races are on every even end or warp thread—that is, two, four, six, and so on. The edges of the

pattern will be seen always to step in races—that is, in twos or in fours or other multiple of two—and all short floats over less than five warp-threads are carried to the back of the cloth. For the turning-point of a figure (in this case turning upon five ends) see No. 7 pick and Nos. 21, 22, 23, 24, and 25 warp-threads.

I have only thought it necessary to give an illustration of one kind of weft-pile tie-up; but the same system applies to any weft-pile velvet or velveteen tie-up, of course varying the stepping or moving of the pattern at the edges in designing according to the tie-up used. For instance, in a pile which has a race for every three warp-threads the pattern would step or move at the edges in threes, and in a pile which has a race for every four warp-threads the pattern would step or move in fours, and so on.

It will be seen from the foregoing statement that my improvement in figured weft-pile fabric or velveteens consists in the combination of three elements or principles—namely, "stepping" always by the exact number of threads equivalent to a race, or a multiple thereof, at the edges of the pattern, turning the points of the pattern at top and bottom on an odd number of warp-threads, and throwing the short floats to the back of the cloth. These three principles combined will be found so greatly to facilitate the cutting that figured weft-pile fabrics woven according to my invention may be cut almost as easily and cheaply as plain velvets.

I do not here claim a figured weft-pile fabric having the figures made with marginal steps that are aligned with the races, and having short floats all thrown to the back of the cloth, as this is described and claimed by me in another application for a patent filed simultaneously with this application, (Serial No. 101,619.)

I claim as my invention—

As a new manufacture, a figured weft-pile fabric having the figures made with marginal steps that are aligned with the races, having the points of the pattern turned on an odd number of warp-threads, and having all the short floats thrown to the back of the cloth, as specified.

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

THOS. ANDERSON.

Witnesses:

DUGALD SCOTT,
JOHN HUGHES.