

No. 672,393.

Patented Apr. 16, 1901.

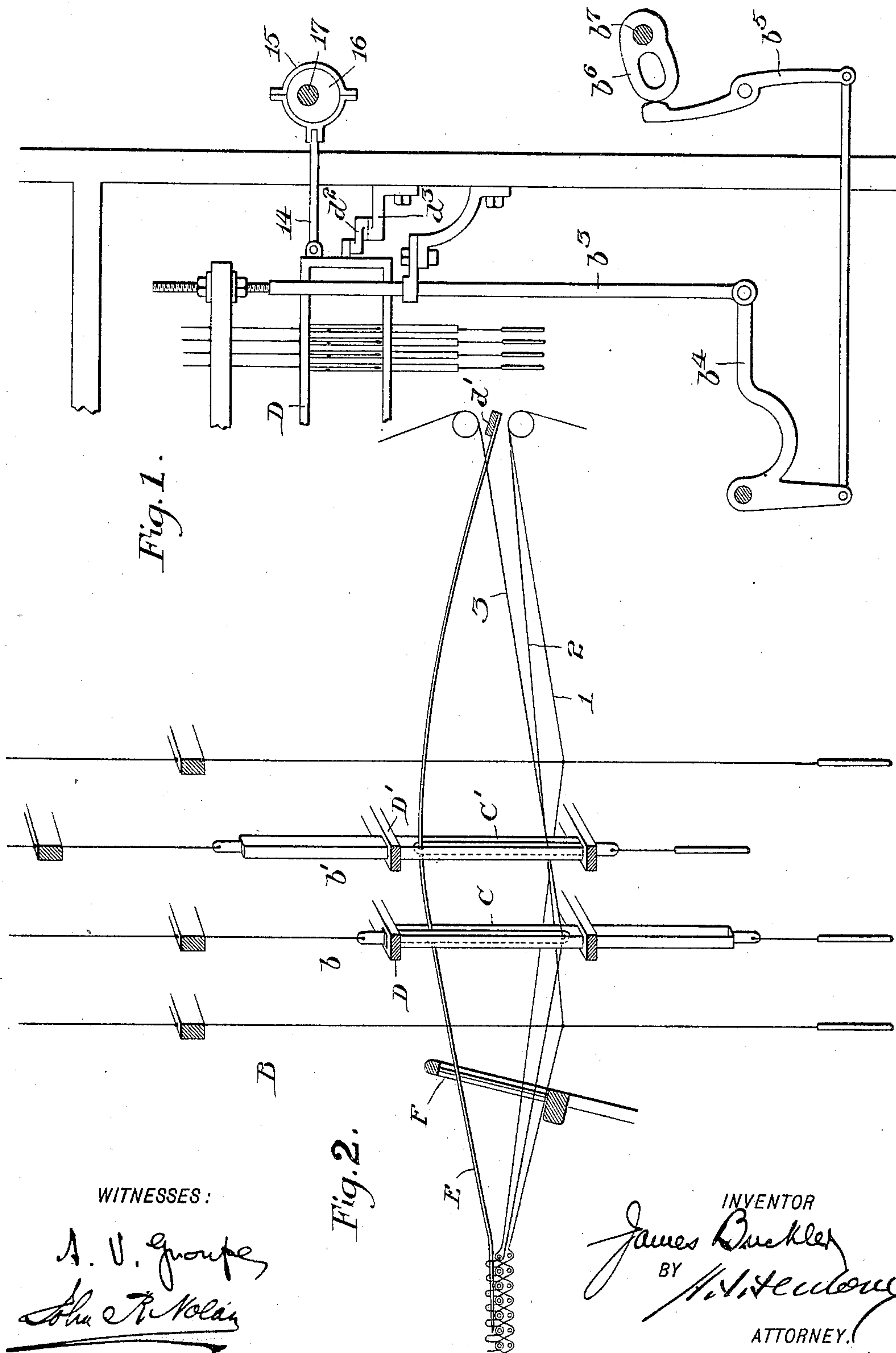
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LOOM FOR WEAVING PILE FABRICS.

(Application filed Sept. 16, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 3.

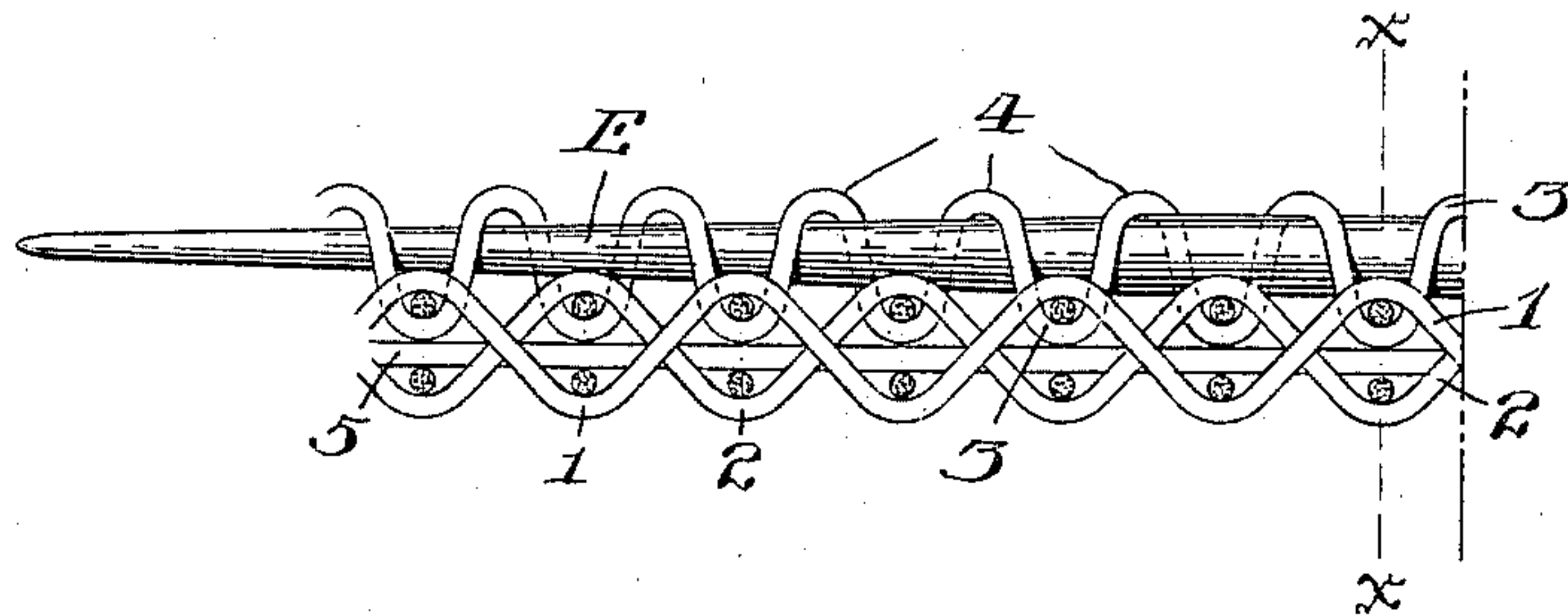


Fig. 4.

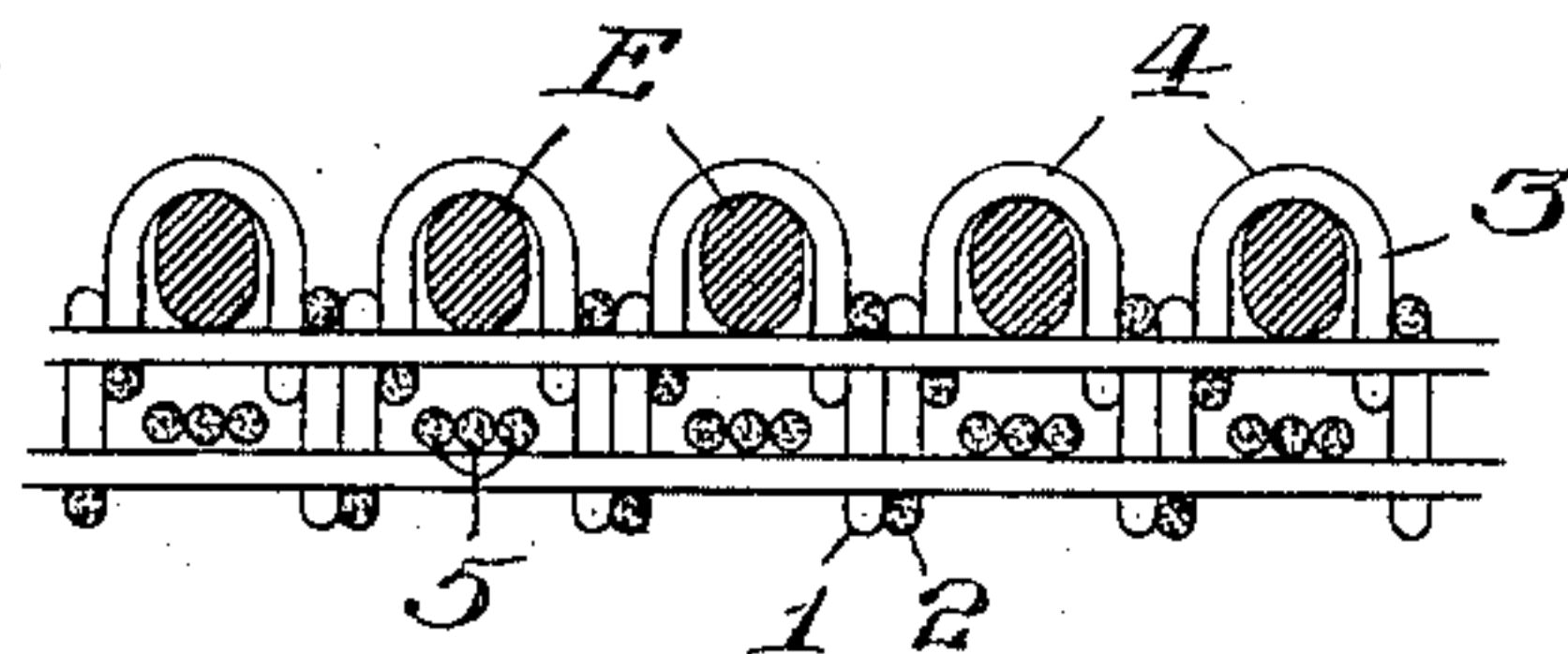


Fig. 5.

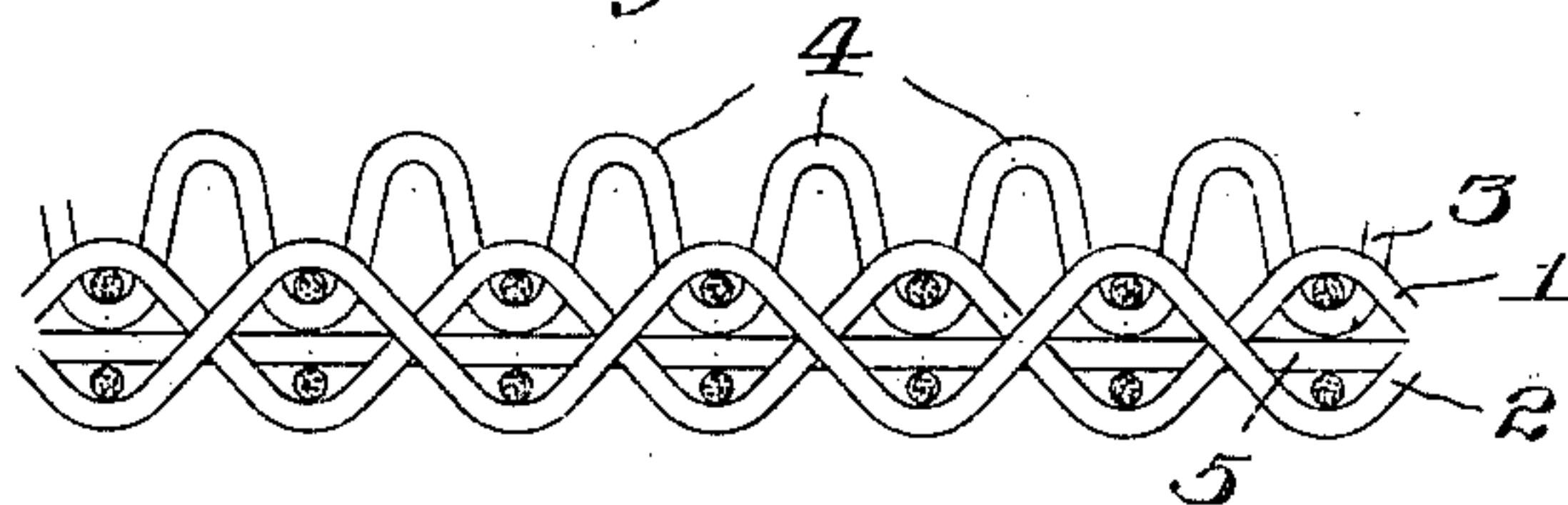
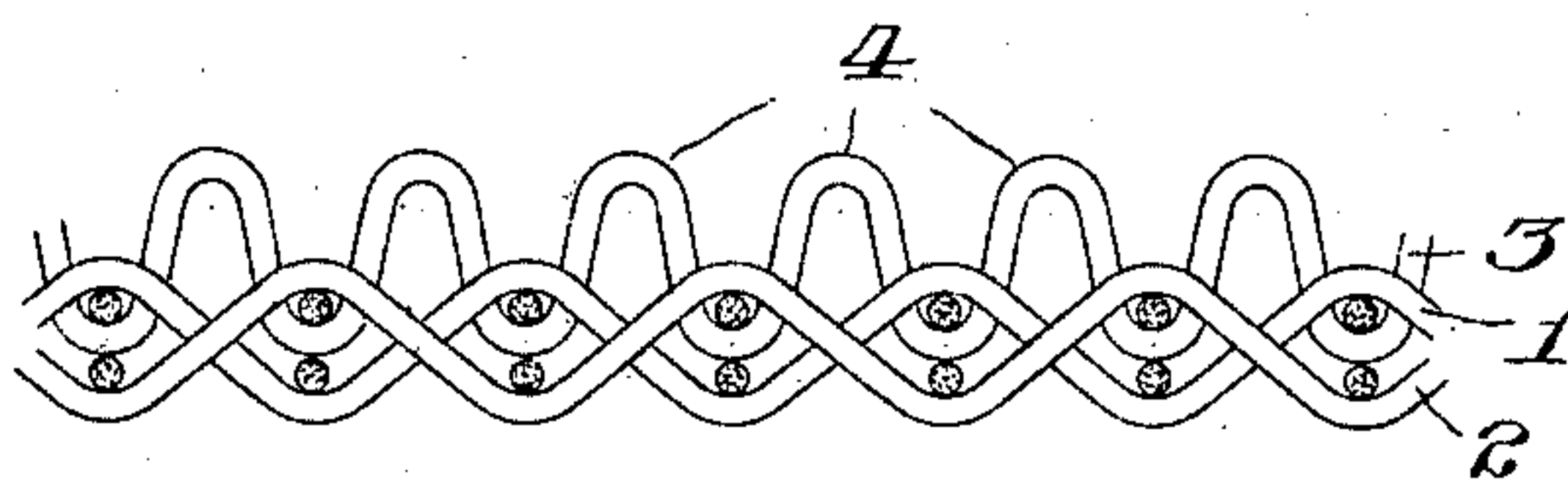


Fig. 6.



WITNESSES:

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JAMES BUCKLER, OF PHILADELPHIA, PENNSYLVANIA.

LOOM FOR WEAVING PILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 672,393, dated April 16, 1901.

Application filed September 16, 1898. Serial No. 691,085. (No model.)

To all whom it may concern:

Be it known that I, JAMES BUCKLER, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Looms for Weaving Pile Fabrics, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

The object of my invention is to provide a loom for the production of pile fabrics, more especially tapestry carpet, wherein the operation of transversely applying and withdrawing the "wires" shall be avoided and wherein the formation of the pile loops or floats shall be automatically effected upon fixed longitudinal wires arranged within the loom, thus not only economizing space, time, labor, and expense in the manufacture of the fabric, but enabling the production of a web of any desired width.

To this end the invention comprehends certain novel features of construction, which will be hereinafter described and claimed.

In the annexed drawings, Figure 1 is a sectional elevation of a portion of a loom embodying my invention. Fig. 2 is a diagram illustrating the general arrangement and operation of the heddles and wires. Fig. 3 is an elevation of the discharging end of one of the wires as enlarged, showing a section of fabric thereon preparatory to its removal. Fig. 4 is a transverse section as on the line *xx* of Fig. 3, showing a series of wires. Figs. 5 and 6 represent sections of fabric that may be produced by my improved loom.

Pile fabric such as my improved loom is designed to produce is represented in Figs. 3 to 6, inclusive, of the drawings, wherein the numerals 1 2 designate the ground-warp, 3 the face or pile warp, 4 the pile formed thereby, and 5 the stuffer or thickening warp, which may or may not be used, as desired. In Figs. 3, 4, and 5 the warp 5 is shown, while in Fig. 6 it is omitted. The fabric, it will be observed, is identical in construction with that of tapestry carpet, saving in the essential particular that the pile, instead of being woven, as heretofore, in the form of plain loops running transversely of the fabric, is produced by diagonal

or spiral-like loops or floats running lengthwise of the fabric. These loops or floats are formed upon parallel pile-wires arranged longitudinally within the machine adjacent to and in alternation with the pile-warp threads, the latter during the formation of the sheds being deflected from side to side of the wires and the fabric being discharged or taken up therefrom as rapidly as it is produced.

In Figs. 1 and 2 of the drawings I have represented my invention as embodied in a cross-weaving loom of the character set out in my Letters Patent of the United States No. 576,300, dated February 2, 1897, to which reference may be had. This loom includes four sets of harness B, whereof the two inner sets *b b'* comprise vertical heddles C C', mounted in horizontally-reciprocative frames D D', respectively, and provided with oppositely-extending blades or needles *c c'* of less vertical length than their respective heddles. The end bars of the two frames are connected with the respective arms of a horizontally-disposed rock-lever *d²*, which is fulcrumed on a bracket or support *d³* on the side of the main frame, one of the heddle-carrying frames being connected by a rod 14 and strap 15 with an eccentric 16 on a power-driven shaft 17, whereby said frames, with their heddles, may be oppositely reciprocated transversely of the loom. The respective sets of harness are raised and lowered in any usual or approved manner for the formation of the sheds. Thus, for example, the journal of each set (where a journal-lift is used) may be supported upon a vertical bar or link *b³*, which is connected at its lower end with a bell-crank lever *b⁴*, linked to a lever *b⁵*, under the control of a cam *b⁶* on a power-driven shaft *b⁷*.

In pursuance of my invention I extend through the eyes of the series of upwardly-extending needles in the heddles C', or otherwise connect or lead from the free ends of said needles, a corresponding series of longitudinally-arranged wires E, the rearward ends of which are preferably fixed to a suitably-located bar *d'*, while their forward ends extend freely through and beyond the lay F, and are preferably tapering, as seen. These wires are flexible, so as to be movable by and with the needles in the actuation of the hed-

dles. The needles in the heddles *c'* are fixedly secured between and parallel with the adjacent blades thereof.

The operation, briefly described, is as follows: The pile-warp threads are drawn through the eyes of the depending needles in the heddles *C* and through the elongated openings or spaces in the heddles *C'*, and the ground-warp threads are drawn through the outer sections of the harness, as usual, and run between the adjacent heddles in the respective frames. The loom is then started, the heddle-frames, with their heddles, being thereupon reciprocated transversely of the machine in opposite directions and the several sets of harness being vertically reciprocated in relation to each other. The pile-warp threads are crossed upon and about each of the adjacent wires during the actuation of the heddles, to the end that when the weft-threads are shot into the sheds and beaten up in the usual way there is produced a fabric possessing the characteristics stated. It will be seen that as rapidly as the fabric is woven it is freed from the wires, the tapering ends of which reduce the friction, and thus facilitate the removal of the fabric.

I claim as my invention—

1. In a loom for weaving pile fabrics, the combination with the harness including a set of heddles having fixedly secured between and parallel with the adjacent blades thereof upwardly-extending blades or needles of less

vertical length than the heddles, of a series of wires extending from the upper or free ends of said blades or needles toward the front of the loom, and means for horizontally reciprocating said heddles.

2. In a loom for weaving pile fabrics, the combination with the harness including two sets of heddles provided with oppositely-extending blades or needles of less vertical length than their respective heddles, of a series of wires extending from the free ends of the blades or needles of one set of heddles and passing freely through the other set of heddles, and means for horizontally reciprocating said heddles.

3. In a loom for weaving pile fabrics, the combination with the harness including two sets of heddles provided with oppositely-extending blades or needles of less vertical length than their respective heddles, of a series of wires secured at their rear ends to the back of the loom and extended to the front end thereof, said wires being connected with the upper or free ends of the blades or needles of one set of heddles and passing freely through the other set of heddles.

In testimony whereof I have hereunto affixed my signature this 12th day of September, A. D. 1898.

JAMES BUCKLER.

Witnesses:

ANDREW V. GROUPE,
JOHN R. NOLAN.