

No. 730,438.

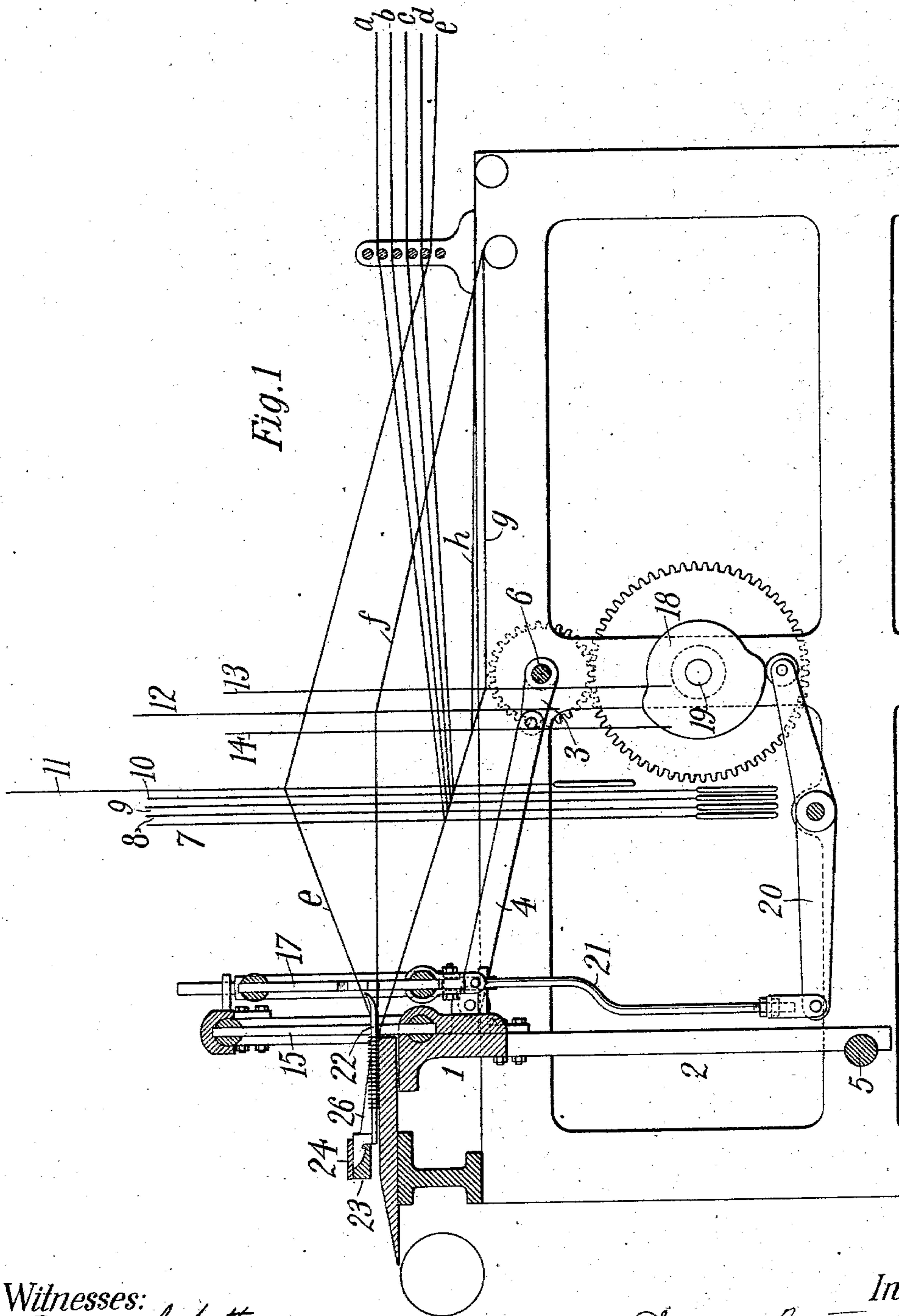
PATENTED JUNE 9, 1903.

T. B. DORNAN.
PILE FABRIC LOOM.

APPLICATION FILED FEB. 14, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
Raphael Ketter
Livingston Ewens

Inventor
Thomas Benton Dornan
by *Henry W. Williams* Atty

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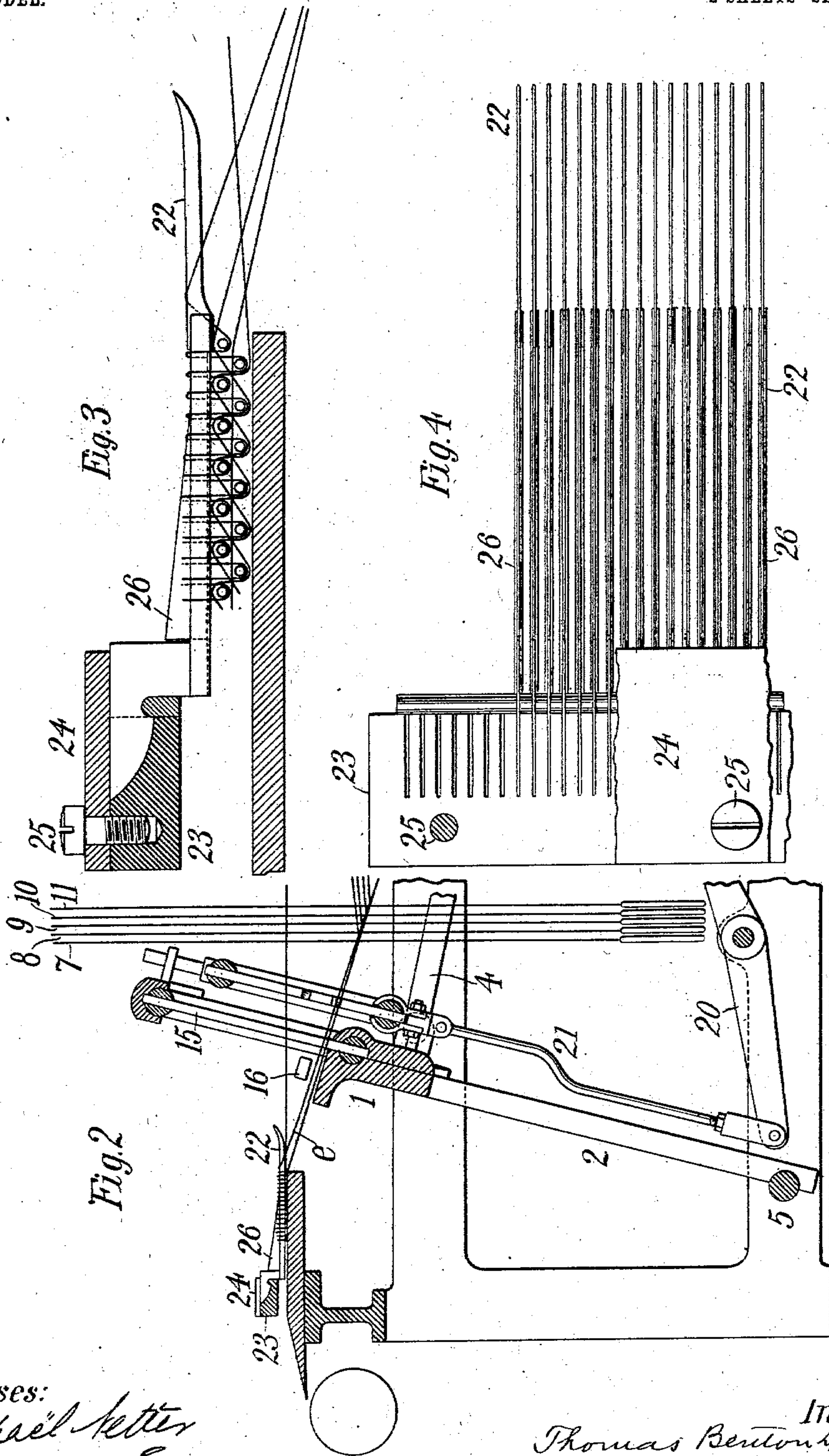
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UNITED STATES PATENT OFFICE.

THOMAS BENTON DORNAN, OF PHILADELPHIA, PENNSYLVANIA.

PILE-FABRIC LOOM.

SPECIFICATION forming part of Letters Patent No. 730,438, dated June 9, 1903.

Application filed February 14, 1903. Serial No. 143,334. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BENTON DORNAN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Pile-Fabric Looms, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to pile-fabric looms, and more particularly to such looms in which longitudinal pile-wires are employed. Heretofore such pile-wires have been so constructed as to project through the reed-spaces in all positions of the reed, producing with the warp-threads at all times a large mass of material in the spaces between each dent of the reed, so that it has been difficult for the weaver to take through the reed-spaces a broken warp-thread. Further, by reason of the fact that the pile-wires were necessarily above each shed a deflection of the shuttle has frequently resulted in the breaking of the pile-wires, and the sagging of a pile-wire has resulted in similar injury.

One of the principal advantages of the employment of longitudinal pile-wires has been the possibility of weaving cloth of considerable width; but with several hundred and frequently more than a thousand pile-wires above the shed and a very long throw for the shuttle such desirable results have not heretofore been satisfactorily attained.

According to my invention the longitudinal pile-wires penetrate the reed-spaces only when the reed is in forward position, thereby affording the desired projections for twisting or crossing the pile-threads over the pile-wires, and the reed in moving back moves entirely clear of the pile-wires and the shuttle is thrown in a shed which has only the warp-threads above it, so that there is no possibility of collision with any of the pile-wires. When the reed is back, the reed-spaces contain only the warp-threads, and these warp-threads are therefore readily accessible to the weaver.

I will now describe the loom embodying my invention illustrated in the accompanying drawings and will thereafter point out my invention in claims.

Figure 1 is a longitudinal vertical section

showing the principal parts of the loom with the lay in extreme forward position. Fig. 2 is a similar view, but showing only the parts in proximity to the lay and showing the lay in extreme backward position. Fig. 3 is an enlarged vertical section showing a longitudinal pile-wire and adjacent parts. Fig. 4 is a plan view, partly broken away, showing several longitudinal pile-wires and clamping means therefor.

The drawings illustrate only such parts of a loom as are required for an understanding of my invention.

The figuring-warps *a*, *b*, *c*, *d*, and *e* are controlled by a figuring-harness comprising cords 7, 8, 9, 10, and 11, which would be actuated by suitable jacquard or other mechanism, so that the pile-forming threads are raised to form the pile and lowered to enter the shed while the lay is in forward position. The binder warp-threads *f* and *g* and a stuffer-warp *h* are controlled by heddles 12, 13, and 14, respectively, and may be operated in the usual manner.

The lay 1 is carried on swords 2 on a rock-shaft 5 and is actuated through connecting-arms 4 by cranks 3 on the main shaft 6. The reed 15 and shuttle 16 may be of any usual or suitable construction; but an additional or crossing reed 17 is provided, which is actuated by a cam 18 on a shaft 19, geared to the main shaft 6, this cam actuating the crossing-reed through a rock-lever 20 and connecting-rod 21. The function of this crossing-reed is to guide the warp-threads which are lifted to form the pile so that they will cross the longitudinal pile-wires, and this is accomplished by laterally-deflected guides in the crossing-reed. This crossing-reed forms no part of my invention and is therefore not particularly shown and need not be further described, as many devices are well known in the art for effecting the crossing of the warp-threads over longitudinal pile-wires.

The longitudinal pile-wires 22 extend rearwardly, so as to penetrate the reed 15 when the reed is in extreme forward position, but not at any time to enter the crossing-reed 17. The projection of the longitudinal pile-wires in rear of the reed 15 when that reed is in forward position is just sufficient to afford a protruding part over which the pile forming

figuring-warps may be crossed or looped, and I prefer to slightly curve upward the extreme end of each longitudinal pile-wire to prevent the crossed pile-threads from slipping off the pile-wires. The crossing or looping of the pile forming figuring warp-threads is effected while the lay is in forward position. When the lay moves back, the reed passes out of the longitudinal pile-wires and entirely clear thereof, as shown in Fig. 2, and thus the longitudinal pile-wires are in the reed part of the time and out of the reed part of the time, and when the shuttle 16 is thrown it passes through a shed, the upper part of which is formed only by the warp-threads, and in its movement the shuttle is entirely clear of all rigid parts of the machine and entirely clear of the pile-wires and there is no possibility that a deflection of the shuttle will result in contact with a pile-wire.

It is my purpose to embody my improvements in looms of considerable width, as for weaving cloth or rugs three yards wide, and the number of pile-wires employed will therefore be very great, so that if these pile-wires extended along the upper part of the shed and one or more of them should be slightly displaced or the shuttle should be deflected the injury to the loom would probably be very great. All possibility of this injury is avoided by the employment of the short pile-wires, which are in the reed only when it is in forward position.

The longitudinal pile-wires 22 are shown as clamped at their front ends upon a stationary cross-bar 23 by means of a clamping-plate 24, which may be held down by screws 25. As shown, a knife 26 is set in each pile-wire 22 for cutting the pile-loops; but any suitable cutting means may be provided.

It is obvious that various modifications may be made in the construction shown and above

particularly described within the spirit and scope of my invention.

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

1. In a pile-fabric loom, the combination with a reed and means for operating the same, and means for controlling the warp-threads, of longitudinal pile-wires penetrating the reed-spaces only when the reed is in forward position.

2. In a pile-fabric loom, the combination with a reed and means for operating the same, and means for controlling the warp-threads, of stationary longitudinal pile-wires of such length as to project through the reed only when the reed is in forward position.

3. In a pile-fabric loom, the combination with a reed and means for operating the same, and means for controlling the warp-threads, of stationary longitudinal pile-wires and a cross-bar in front of the reed in which such pile-wires are held, the pile-wires penetrating the reed-spaces only when the reed is in forward position.

4. In a pile-fabric loom, the combination with a reed and means for operating the same, and means for controlling the warp-threads, of stationary longitudinal pile-wires and a cross-bar in front of the reed in which such pile-wires are held, the pile-wires being of such length as to project through the reed-spaces only when the reed is in forward position and terminating rearwardly in upwardly-extending ends, substantially as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

THOMAS BENTON DORNAN.

Witnesses:

WILLIAM F. LARER,
GEORGE W. GOLDEN.