

No. 782,494.

PATENTED FEB. 14, 1905.

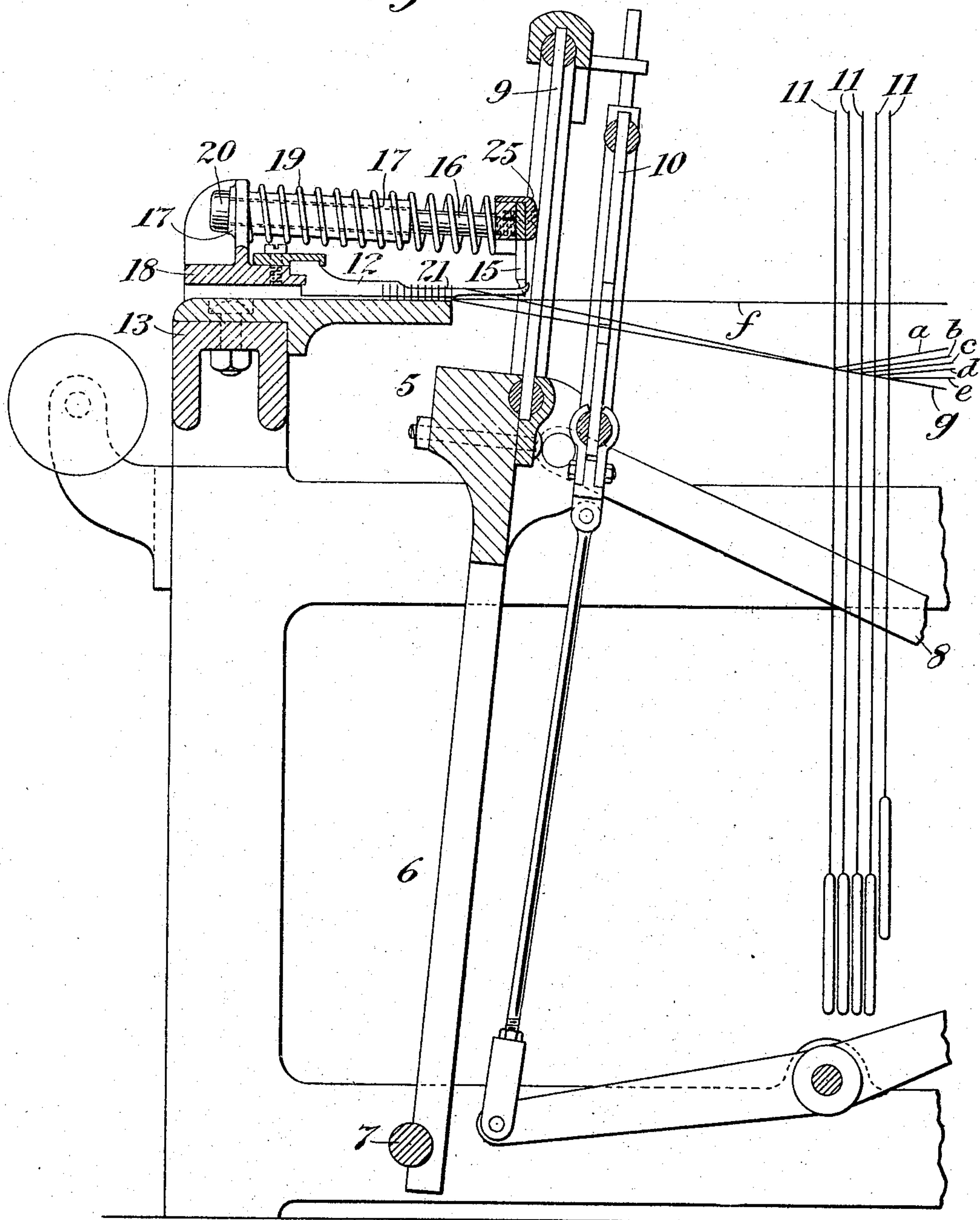
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PILE FABRIC LOOM.

APPLICATION FILED DEC. 13, 1904

2 SHEETS—SHEET 1.

*Fig. 1*



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Albert T. Day

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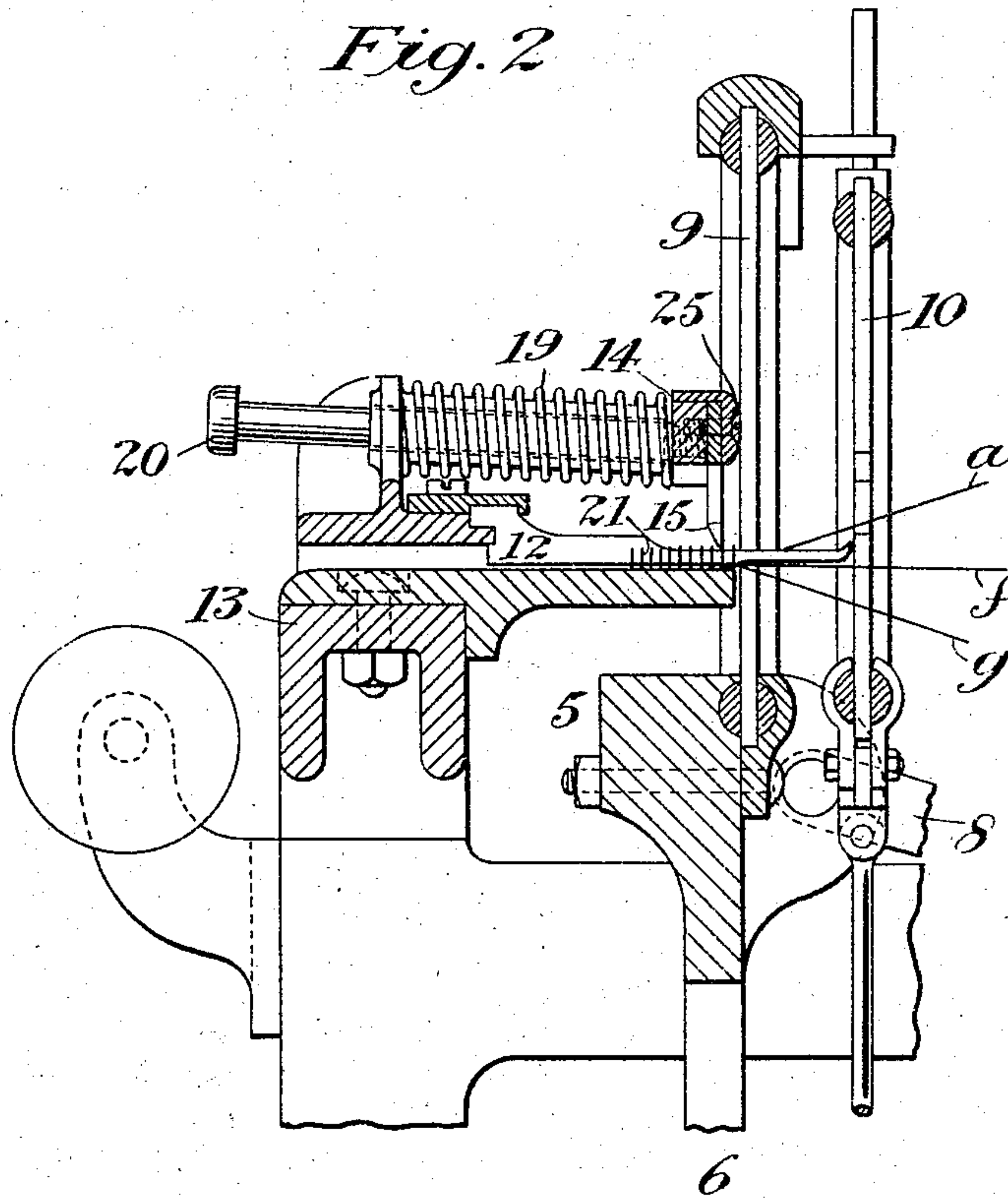
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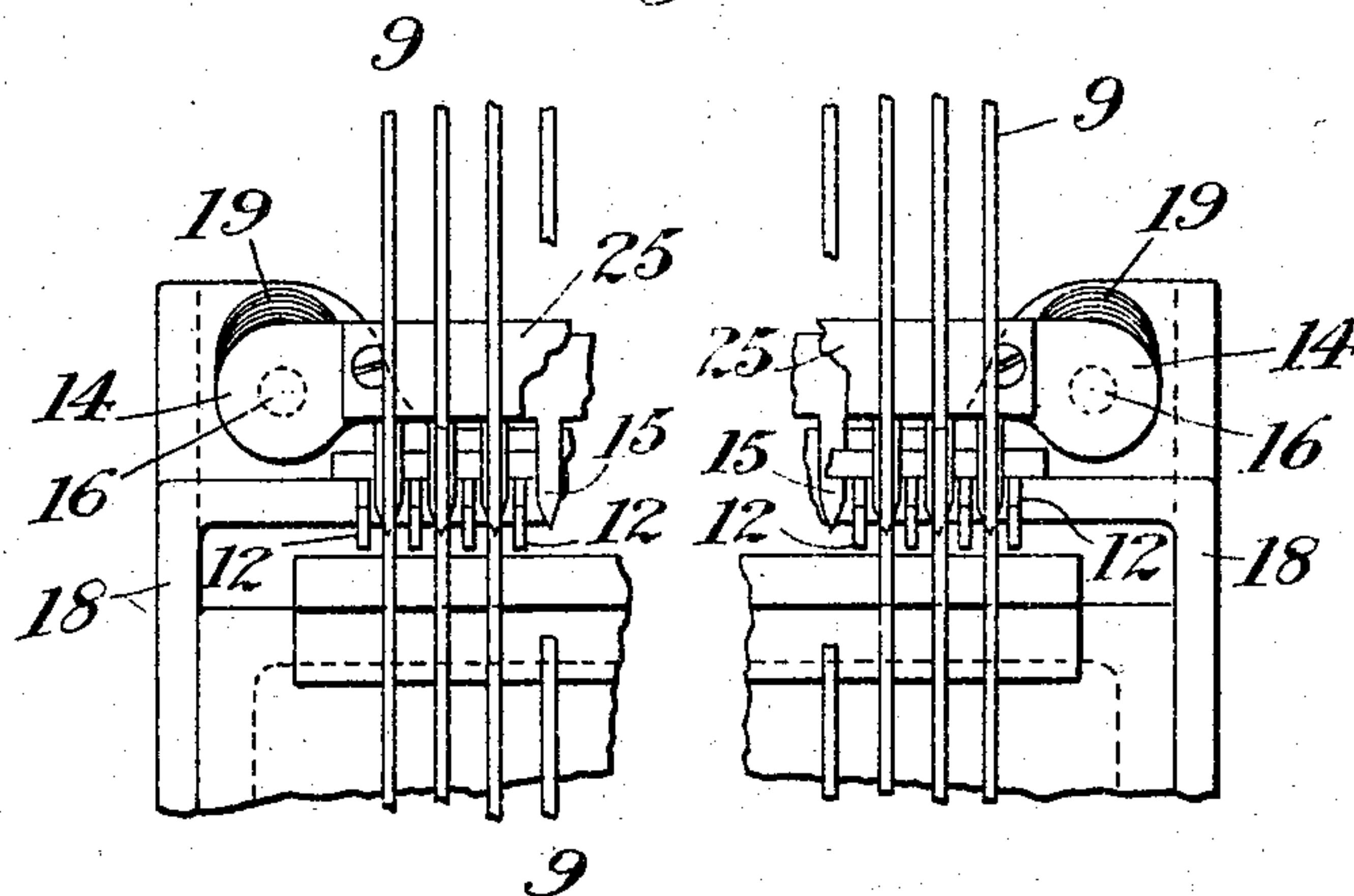
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2 SHEETS—SHEET 2.

*Fig. 2*



*Fig. 3*



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# UNITED STATES PATENT OFFICE.

THOMAS BENTON DORNAN AND NATHANIEL MARCUS SHINN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO ROBERT DORNAN AND SAID THOMAS BENTON DORNAN, OF PHILADELPHIA, PENNSYLVANIA, COMPOSING THE FIRM OF DORNAN BROTHERS.

## PILE-FABRIC LOOM.

SPECIFICATION forming part of Letters Patent No. 782,494, dated February 14, 1905.

Application filed December 13, 1904. Serial No. 236,647.

*To all whom it may concern:*

Be it known that we, THOMAS BENTON DORNAN and NATHANIEL MARCUS SHINN, citizens 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, forming a part thereof.

Our invention relates to pile-fabric looms, and more particularly to such looms in which longitudinal pile-wires are employed.

One of the objects of our invention is to provide means for restricting or preventing lateral vibration or displacement of the pile-wires.

A further object is to provide means for guiding the rear ends of short pile-wires which enter the reed-spaces during the forward movement of the lay, so as to cause such rear ends to properly enter the reed-spaces.

Another object of our invention is to provide means for causing the guiding means to recede from the spaces between the pile-wires at each beat of the lay, thereby avoiding interference with the pile-loop-forming operation and also with the reed.

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

Figure 1 is a longitudinal vertical section of such parts of the loom as are required for an understanding of our invention with the lay in an intermediate position. Fig. 2 is a similar view of the parts of the loom adjacent to the lay, the latter being in extreme forward position. Fig. 3 is a detail vertical elevation of the reed and adjacent parts looking toward the breast-beam or front of the loom and broken away at middle portions thereof.

The figuring-warps *a*, *b*, *c*, *d*, and *e* are controlled by figuring-harness comprising harness-cords 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* may be controlled by suitable heddles. (Not shown.)

The lay 5 is carried on swords 6 on a rock-shaft 7 and is actuated by arms 8 in any suitable manner. The lay carries the usual reed 9, which may be of any usual or suitable construction. The lay is also shown as carrying a crossing-reed 10 of the construction fully shown in and covered by patent to Nathaniel Marcus Shinn, No. 733,434, dated July 14, 1903, and which need not, therefore, be particularly described. Any suitable warp-crossing mechanism may be provided to perform the function of causing the pile-warps to be looped over the pile-wires. Longitudinal pile-wires are shown of the construction covered by Patent No. 730,438 to Thomas Benton Dornan, dated June 9, 1903, these pile-wires 12 being supported by a stationary cross-bar 18 in front of the reed and projecting rearward and being of such length as to penetrate the reed only when the reed is in forward position, so that the reed in moving backward moves entirely clear of the pile-wires and in moving forward approaches and overlaps the pile-wires, the rear ends of the pile-wires entering and penetrating the reed-spaces.

The guiding means for the pile-wires comprise a guide member 14, provided with downwardly-extending teeth 15, shown as tapering at their lower ends and of such length as to project into the spaces between the pile-wires and hold the pile-wires in alinement when the guide member is in its extreme rearward position, as shown in Fig. 1. This guide member is movable and is shown as provided with guide-rods 16, located at the sides of the loom and at the ends of the guide member and slidable in stationary guide-sleeves 17, extending rearward from a suitable supporting cross-bar 18, which is rigidly supported in the loom. Retractive means are provided for the guide-member, shown as coiled springs 19 surround-



ing the rods and sleeves and tending to move the rods rearward, and thus to move the guide member rearward to the rearward limit of its movement, determined by the heads 20 on the forward ends of the guide-rods 16. This extreme rearward position is shown in Fig. 1, the head 20 of the guide-rod there shown being in contact with the end of the guide-sleeve 17.

We provide for the utilization of the movement of the lay to cause the forward movement of the guide member by the direct engagement of the reed with the contact-piece 25, carried by the guide member and interposed in the path of the reed, so as to be engaged by the reed and moved forward by the reed, carrying the guide member forward and compressing the springs 19. The guide-sleeves 17 are slightly inclined downward and rearward relatively to the pile-wires, so that the forward movement of the guide member is also an upward movement thereof, and as the guide member is moved upward the teeth thereof are carried upward, so that their ends are raised clear of the pile-wires, and the pile-wires are unobstructed by such teeth and may freely receive the pile-loops formed thereon by the weaving mechanism. The location of the teeth 15 of the guide member and of the contact-piece 25 is shown as such that the contact-piece meets the reed at about the same time that the rear ends of the pile-wires meet the reed, so that the guide-teeth direct the rear ends of the pile-wires into the reed-spaces and are then moved rearward and upward, so as to leave the pile-wires unobstructed for the pile-forming operation. Fig. 1 shows the guide member in the position of the engagement of the contact-piece 25 and the reed 9. Fig. 2 shows the reed in extreme forward position, with the guide-teeth 15 so lifted as not to obstruct the pile-forming operation. Upon the backward movement of the lay the guide member is impelled by its springs 19 so as to follow the reed until the guide member reaches its extreme rearward position, (shown in Fig. 1,) the guide-teeth 15 moving downward and rearward and entering the spaces between the pile-wires and guiding the pile-wires to proper alinement, and at the extreme rearward position of the guide members the guide-teeth hold the rear ends of the pile-wires in alinement, and they are maintained in such positions until the reed again approaches the guide member and the pile-wires enter the reed-spaces. Thus the rear ends of the pile-wires are guided and held in proper positions at all times when they are out of the reed-spaces, and their proper entrance into their proper reed-spaces is assured during each beat-up of the lay. It will also be observed that the guide-teeth recede gradually from the spaces between the pile-wires, and thus perform their guiding function until the pile-wires have

entered a suitable distance into the reed-spaces.

It is obvious that our invention is capable of use in looms of various forms and construction and that various modifications may be made in the construction shown and above particularly described within the principle and scope of our invention.

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

1. In a pile-fabric loom, the combination with a reed and actuating mechanism therefor and with longitudinal pile-wires supported in front of the reed and extending rearward and penetrating the reed-spaces during a portion only of the movement of the reed, of means for guiding the rear ends of the pile-wires.

2. Pile-forming mechanism for looms comprising a reed and actuating mechanism therefor, longitudinal pile-wires supported in front of the reed and extending rearward and penetrating the reed-spaces during a portion only of the movement of the reed, shed-forming mechanism, warp-crossing mechanism, and means for guiding the rear ends of the pile-wires as they enter the reed-spaces.

3. In a pile-fabric loom, the combination with a reed and actuating mechanism therefor and with longitudinal pile-wires supported in front of the reed and extending rearward and penetrating the reed-spaces during a portion only of the movement of the reed, of movable guiding means for the rear ends of the pile-wires and means for effecting the forward movement thereof during the forward movement of the reed.

4. In a pile-fabric loom, the combination with a reed and actuating mechanism therefor and with longitudinal pile-wires supported in front of the reed and extending rearward and penetrating the reed-spaces during a portion only of the movement of the reed, of guiding means for the rear ends of the pile-wires, such guiding means being actuatable by the reed and movable forward thereby, and of retractive means for returning the guiding means to rearward position.

5. In a pile-fabric loom, the combination with longitudinal pile-wires of a guide member having teeth projecting into the spaces between the pile-wires.

6. In a pile-fabric loom, the combination with longitudinal pile-wires and with a reed and operating mechanism therefor, of a guide member having teeth and movably supported with the teeth normally projecting into the spaces between the pile-wires, and means for causing the teeth of the guide member to recede from said spaces upon the forward movement of the reed.

7. In a pile-fabric loom, the combination with longitudinal pile-wires and with a reed and operating mechanism therefor, of a guide member having teeth and movably supported



with the teeth normally projecting into the spaces between the pile-wires, the guide member being arranged to be engaged by the reed in its forward movement and thereby moved to cause the teeth to recede from said spaces.

8. In a pile-fabric loom, the combination with a reed and actuating mechanism therefor and with longitudinal pile-wires of such length as to penetrate the reed-spaces only when the reed is in forward position, of a guide member having teeth projecting into the spaces between the pile-wires.

9. In a pile-fabric loom, the combination with a reed and actuating mechanism therefor and with longitudinal pile-wires of such length as to penetrate the reed-spaces only when the reed is in forward position, of a guide member having teeth projecting into the spaces between the pile-wires adjacent to their free extremities.

10. In a pile-fabric loom, the combination with longitudinal pile-wires and with a reed and operating mechanism therefor, of a guide member having teeth and movably supported with the teeth normally projecting into the spaces between the pile-wires, and means for causing the teeth of the guide member to recede from said spaces and also from the reed on the forward movement of the reed.

11. In a pile-fabric loom, the combination with a reed and actuating mechanism therefor and with longitudinal pile-wires of such length as to penetrate the reed-spaces only when the reed is in forward position, of a guide member having teeth and movably supported with the teeth normally projecting into the spaces between the pile-wires, and means for causing the teeth of the guide member to recede from said spaces after the pile-wires have penetrated the reed-spaces.

12. In a pile-fabric loom, the combination with a reed and actuating mechanism therefor and with longitudinal pile-wires of such length as to penetrate the reed-spaces only when the reed is in forward position, of a guide member having teeth and movably supported with the teeth normally projecting into the spaces between the pile-wires, the guide member being arranged to be engaged by the reed after the pile-wires have penetrated the reed-spaces and thereby moved to cause the teeth to recede from said spaces.

13. In a pile-fabric loom, the combination with a reed and actuating mechanism therefor and with longitudinal pile-wires of such length as to penetrate the reed-spaces only when the reed is in forward position, of a guide member having teeth and movably supported with the teeth normally projecting into the spaces between the pile-wires, and means for causing the teeth of the guide member to recede from the spaces intermediate of the pile-wires and also from the reed-spaces after the pile-wires have penetrated the reed-spaces.

14. In a pile-fabric loom, the combination with a reed and actuating mechanism therefor and with longitudinal pile-wires of such length as to penetrate the reed-spaces only when the reed is in forward position, of a guide member having teeth and movably supported with the teeth normally projecting into the spaces between the pile-wires adjacent to their rear ends, and means for causing the teeth of the guide member to recede from the spaces intermediate of the pile-wires and also from the ends of the pile-wires upon the forward movement of the reed.

15. In a pile-fabric loom, the combination with a reed and actuating mechanism therefor and with longitudinal pile-wires of such length as to penetrate the reed-spaces only when the reed is in forward position, of a guide member provided with teeth, a rod secured to such guide member at each end, a stationary sleeve in which each rod is reciprocable, and a spring connected between each sleeve and the guide member and tending to retain the guide member in the path of movement of the reed with its teeth projecting into the spaces between the pile-wires, the sleeves being inclined downward rearwardly with relation to the plane of the pile-wires, whereby the forward movement of the guide member by the reed will cause the teeth to recede from the spaces between the pile-wires and also to move forward, substantially as set forth.

In testimony whereof we have affixed our signatures in presence of two witnesses.

THOMAS BENTON DORNAN.  
NATHANIEL MARCUS SHINN.

Witnesses:

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GEORGE W. GOLDEN.