

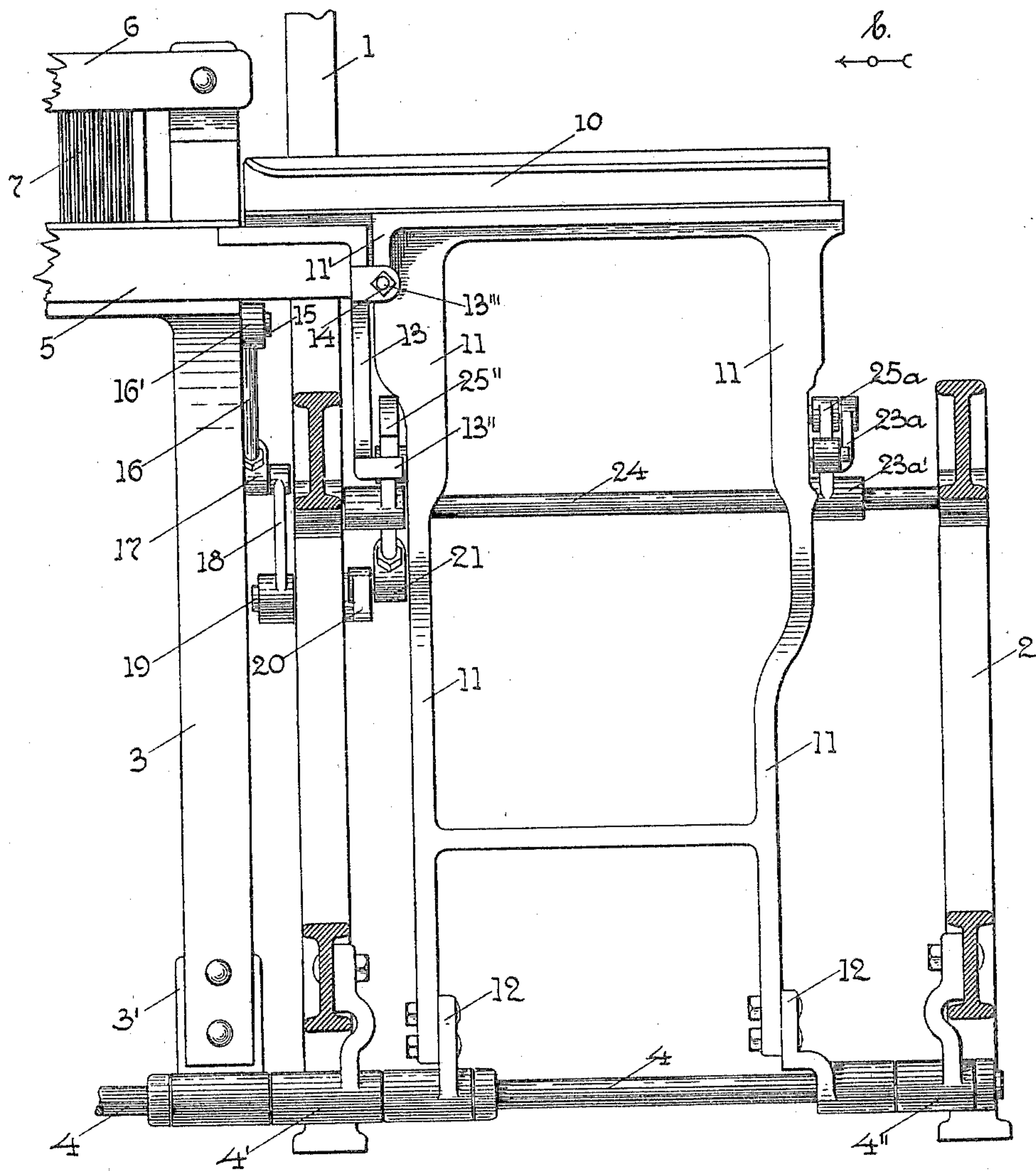
No. 811,842.

PATENTED FEB. 6, 1906.

A. A. GORDON, JR.
LOOM FOR MAKING PILE FABRICS.
APPLICATION FILED DEC. 9, 1904.

2 SHEETS—SHEET 1.

Fig. 1.



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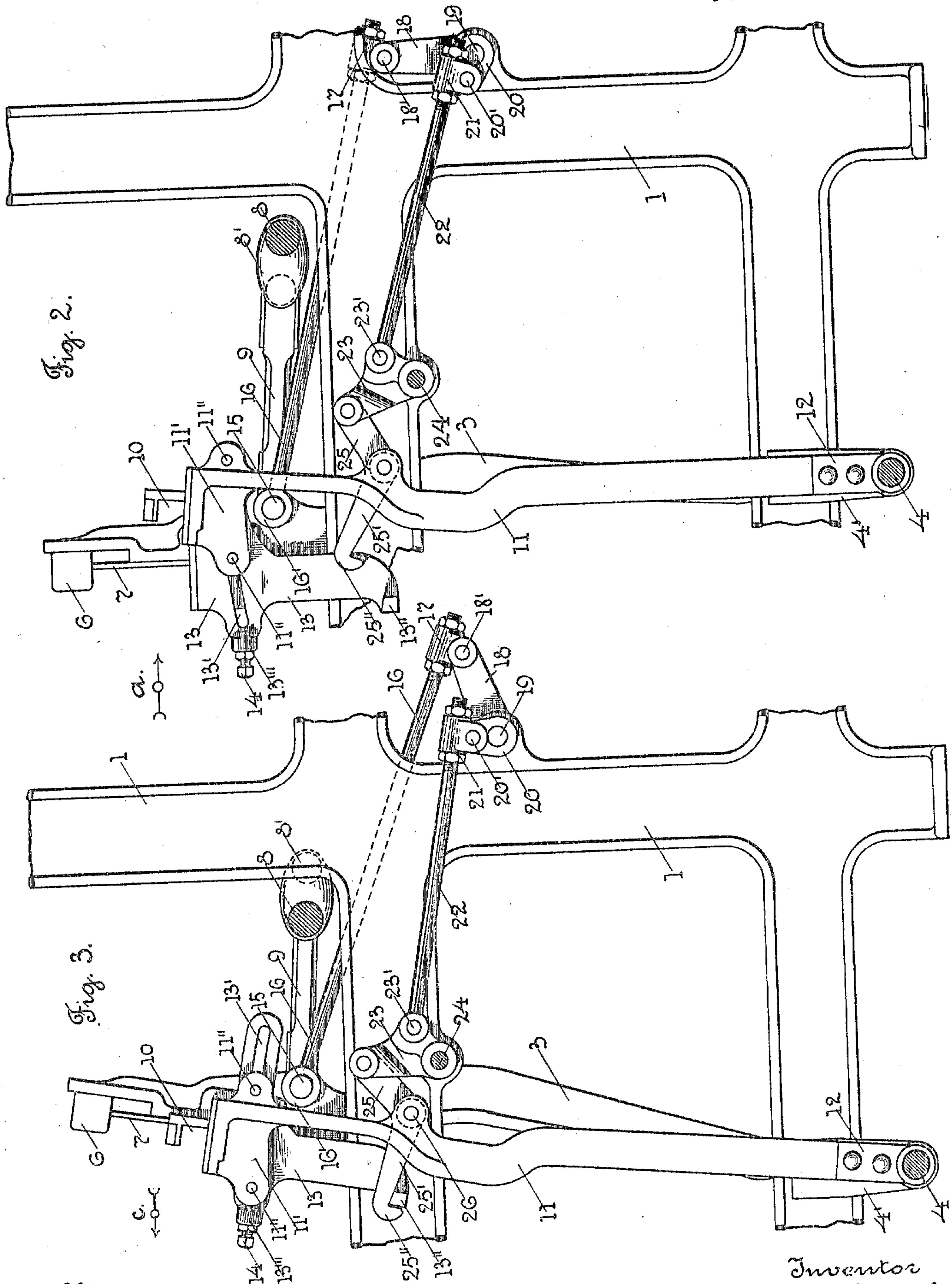
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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LOOM FOR MAKING PILE FABRICS.

No. 811,842.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed December 9, 1904. Serial No. 236,084.

To all whom it may concern:

Be it known that I, ALBERT A. GORDON, Jr., a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Looms for Making Pile Fabrics, of which the following is a specification.

My invention relates to improvements in looms for making pile fabrics, and particularly to improvements in the lay and shuttle-box motion of the class of pile-fabric looms in which pile-wires are used to form the pile-loops and in which one pile-wire is inserted and another pile-wire withdrawn from one side of the loom when the lay is in its forward position in the ordinary way. In this class of looms in order that there may be room for the insertion and withdrawal of the pile-wires the shuttle-box at one end of the lay does not move with the lay to its extreme forward position, but only about to its middle position. On the backward movement of the lay the shuttle-box moves back with it to its extreme backward position to be in proper alinement for the shuttle.

The object of my invention is to improve upon and simplify the ordinary construction of the lay and shuttle-box motion in the class of looms referred to, and particularly to provide improved mechanism for operating the swinging frame carrying the shuttle-box and mechanism for locking the frame to the lay during a portion of the movement thereof.

My invention consists in certain novel features of construction of my improvements, as will be hereinafter fully described.

I have only shown in the drawings a detached portion of one end of a lay and a shuttle-box motion combined therewith embodying my improvements sufficient to enable those skilled in the art to understand the construction and operation of the same.

Referring to the drawings, Figure 1 is a front view of one end of a lay and a shuttle-box motion embodying my improvements looking in the direction of arrow *a*, Fig. 2. Fig. 2 is a section on line 2 2, Fig. 1, looking in the direction of arrow *b*, same figure, and showing the lay and the shuttle-box motion in their forward position. Fig. 3 corresponds to Fig. 2, but shows the lay and the shuttle-box in their rear position.

In the accompanying drawings, 1 is a portion of a loom side or frame.

2 is an additional frame or stand located outside of the loom-frame 1.

3 is the lay-sword, bolted at its lower end to a rocker-iron 3', loose on the shaft 4, which is mounted in bearings 4' 4'', supported, respectively, on the loom-frame 1 and the frame 2. At the upper part of the lay-sword 3 is secured the lay 5, the hand-rail 6, and the reed 7 in the usual way.

Swinging motion is communicated to the lay from the crank 8' on the crank-shaft 8 of the loom through the crank-connectors in the usual way. Only one crank-connector 9 is shown in the drawings.

A shuttle-box 10 is secured upon the upper side of the swinging frame 11, which is secured at its lower end to two rocker-irons 12, loosely mounted on the shaft 4. (See Fig. 1.) At the inner upper end of the swinging frame 11 is a plate 11', which has two pins 11'' thereon, which extend into a horizontally-extending curved guide-slot 13' in a plate 13 on the end of the lay. Said plate 13 has a downward extension, with a horn or projection 13'' thereon. In a lug 13''' on the plate 13 is an adjusting-screw 14, the inner end of which is adapted to engage the front end of the plate 11' on the swinging frame 11, as shown in Fig. 3, when the lay is in its rear position.

The pin 15 of the crank-connector 9 is extended to receive the hub 16' on the connector 16, which extends just within the loom-frame 1. The other end of the connector 16 has a rod-head 17 adjustably secured thereto, which is pivotally mounted on a stud 18' on the arm 18, fast on the inner end of the rock-shaft 19, mounted in bearings on the loom-frame. On the outer end of the rock-shaft 19 is fast the hub of an arm 20, carrying a stud 20', on which is pivotally mounted a rod-head 21, adjustably secured to one end of a connector 22. The other end of the connector 22 is pivotally connected to a stud 23' on a lever 23, fast on the inner end of a rock-shaft 24, mounted in a bearing on the loom-frame.

The lever 23 is pivotally connected to one arm 25 of an angle-lever pivotally mounted on a stud 26 on the inner rear part of the swinging frame 11. The other arm 25' of the angle-lever has a hooked end 25'', adapted to

extend over the projection 13'' on the plate 13 and forming a locking-arm. (See Fig. 3.)

The outer end of the rock-shaft 24 is mounted in bearings on the frame 2 and has fast thereon the hub 23^a' of the lever 23^a. The lever 23^a is connected by a link 25^a with the outer side of the swinging frame 11. (See Fig. 1.)

From the above description, in connection with the drawings, the operation of my improvements will be readily understood by those skilled in the art.

Supposing the lay to be in its rear position, as shown in Fig. 3, with the shuttle-box 10 in alinement with the reed 7 and the projection 25'' extending over the projection 13'' to lock the swinging frame carrying the shuttle-box to the lay, as the lay moves forward in the direction of arrow *c*, Fig. 3, through the rotation of the crank-shaft 8 the rod 16 through arm 18, rocks the shaft 19 and, through arm 20 and rod-head 21, moves the rod 22 and the lever 23, and with it the rock-shaft 24, and the lever 23^a on the other end of said shaft, and, through link 25 and link 25^a, moves forward the swinging frame 11. The movement of the lever 23 moves the arm 25 of the angle-lever and causes the hooked end 25'' on the other arm 25' of said angle-lever to be disengaged to disengage the hooked end 25'' from the projection 13''' on the plate 13.

When in the forward movement of the lay through connector 16 the arm 18 is moved into the position shown in Fig. 2; the arm 20 will be in the position shown in Fig. 2, so that there can be no further forward movement of the connector 22, and the lever 23 and the swinging frame 11, carrying the shuttle-box 10, will be back of the lay in the position shown in Fig. 2.

On the beginning of the backward movement of the lay the swinging frame 11, carrying the shuttle-box 10, will not move perceptibly until the stud 20' on the arm 20 has passed the center line between the rock-shaft 19 and the stud 23' on the lever 23; but the arrangement of the connectors is such that the motion of the swinging frame 11 and the box 10 is then accelerated until at the point where the picking commences the movement of the same is uniform with that of the lay, and this movement will continue until the lay has reached the back center and is moved forward to a point where the shuttle has been boxed, when the movement of the swinging frame 11 and box 10 is lessened, while the lay itself continues forward to its full movement.

As the lay moves backward the hooked end 25'' on the arm 25' moves downward and at the starting of the picking of the shuttle will have passed over the projection 13''' and securely locked the swinging frame 11 to the lay to cause them to move together. As the lay moves forward after the shuttle has entered the box the hooked end 25'' moves

above the projection 13''' and allows the lay to pass forward at its increasing speed, while the swinging frame 11 gradually finishes its forward movement and awaits the backward stroke of the lay.

By means of the adjusting-screw 14, carried on the lay and adapted to engage the plate 11' on the swinging frame 11, the proper relative positions of the lay and the frame 11 can be maintained to have the shuttle-box 10 in exact alinement with the reed for the throw of the shuttle notwithstanding any wear or looseness in the parts of the connections intermediate the lay and the swinging frame 11, and by means of the locking-arm 25' the lay and swinging frame are locked together to travel in time with the shuttle-box in alinement with the reed during a part of the movement of the lay and swinging frame.

It will be understood that the details of construction of my improvements may be varied, if desired.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a loom of the class described, the combination with the lay, and a pivotally-supported and swinging frame at the end of the lay, carrying a shuttle-box, of connections intermediate the lay and the swinging frame, one of said connections having a locking-arm thereon to engage a part of the lay and lock the swinging frame and lay together, during a portion of their movement.

2. In a loom of the class described, the combination with the lay, and a pivotally-supported and swinging frame at the end of the lay, carrying a shuttle-box, of connections intermediate the lay and the swinging frame, and a locking device carried on the swinging frame, and adapted to engage a part of the lay, to lock the swinging frame and lay together, during a portion of their movement, said locking device connected with and operated by the connections intermediate the lay and the swinging frame.

3. In a loom of the class described, the combination with the lay, and a pivotally-supported and swinging frame at the end of the lay carrying a shuttle-box, of connections intermediate the lay and the swinging frame, and a locking device to lock the swinging frame and lay together, during a portion of their movement, and an adjusting-screw, adapted to maintain the proper relative positions of the swinging frame and lay.

4. In a loom of the class described, the combination with the lay, and a pivotally-supported and swinging frame at the end of the lay, carrying a shuttle-box, of connections intermediate the lay and the swinging frame, and a locking device, connected with and operated by said connections, to lock said frame to the lay during a portion of their movement, and an adjusting-screw car-

ried on the lay, and adapted to engage the swinging frame when the same is locked to the lay.

5 In a loom of the class described, the combination with the lay, and a pivotally-supported and swinging frame at the end of the lay, carrying a shuttle-box, of connections intermediate the lay and the swinging
10 frame, said connections comprising a connector from the lay to an arm on a rock-shaft, and said rock-shaft, a second arm on said rock-shaft, a connector from said arm to

a lever or arm fast on a lever, and rock-shaft, and said rock-shaft, and a connection from said lever or arm to the swinging frame, the 15 relative position of the parts being such, that the movement of the swinging frame relatively to the lay is accelerated at certain times.

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