

(No Model.)

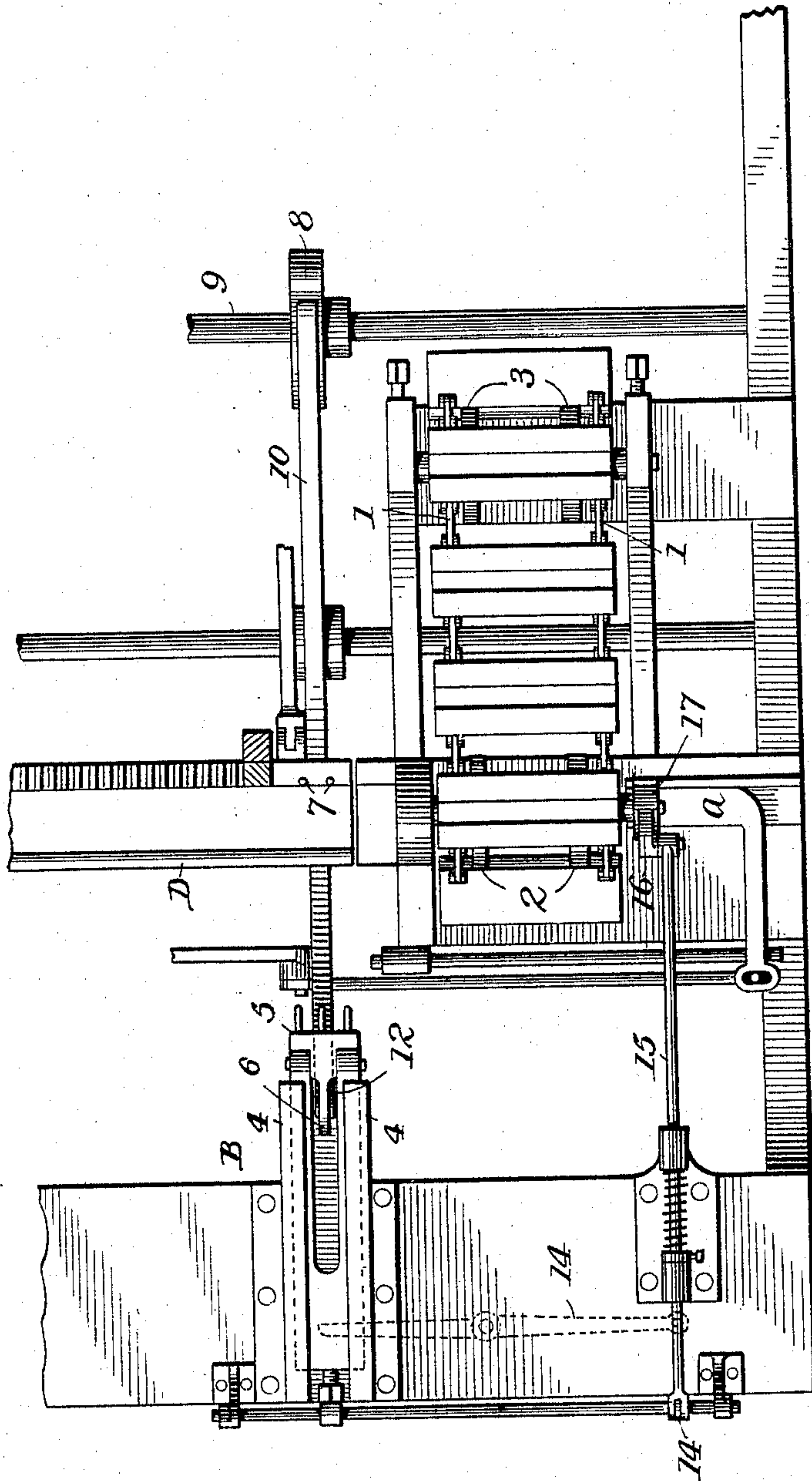
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W. WEAVER.
LOOM.

No. 589,913.

Patented Sept. 14, 1897.

Fig. 2.



Witnesses
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(No Model.)

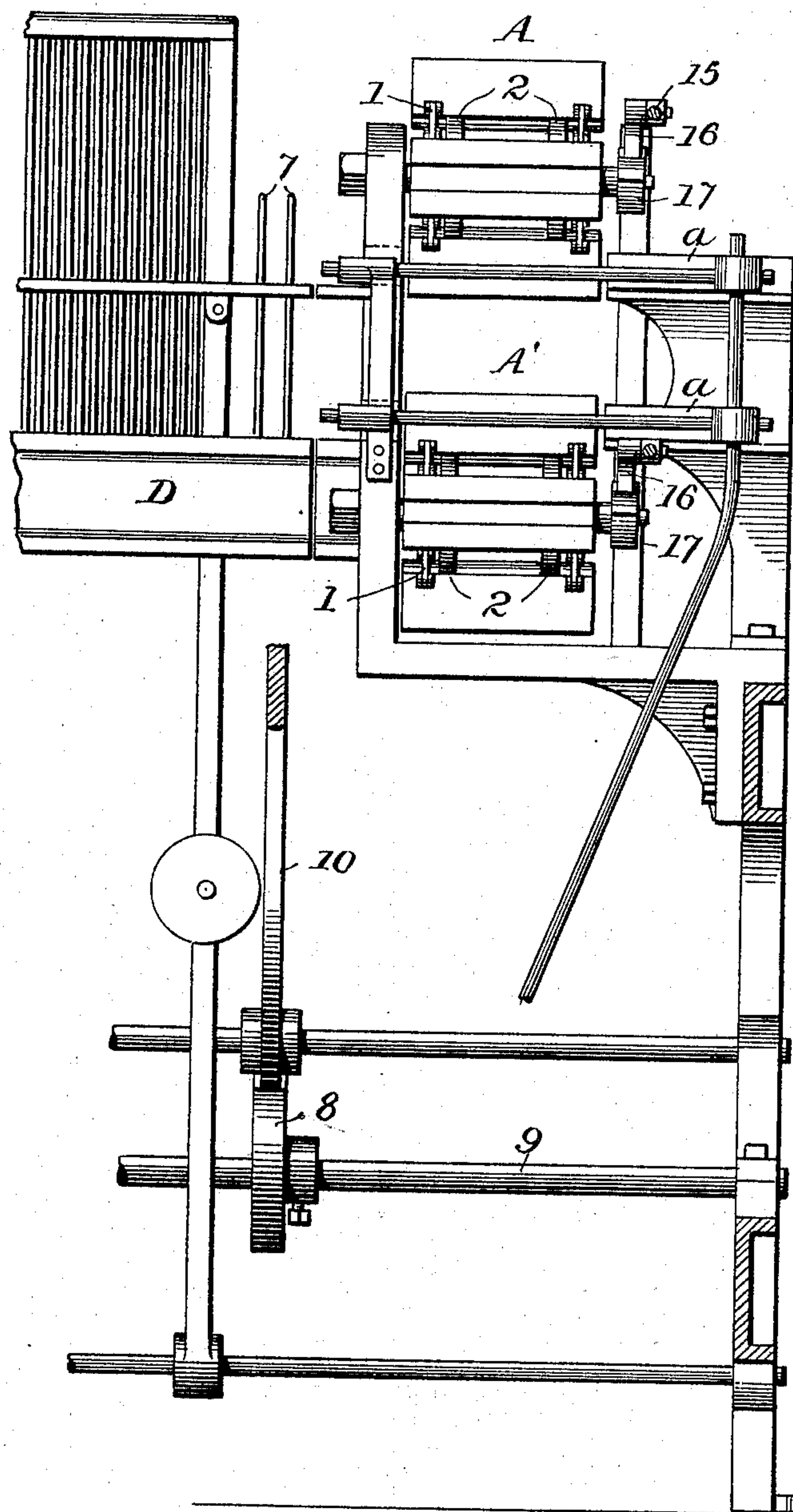
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Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM WEAVER, OF NORWALK, CONNECTICUT, ASSIGNOR TO THE
WEAVER JACQUARD AND ELECTRIC SHUTTLE COMPANY, OF SAME
PLACE.

LOOM.

SPECIFICATION forming part of Letters Patent No. 589,913, dated September 14, 1897.

Application filed June 23, 1896. Serial No. 596,613. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WEAVER, a citizen of the United States, residing at Norwalk, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Looms; of which the following is a specification.

This invention relates to certain new and useful improvements in looms; and it has for its objects to automatically shift an old shuttle out of operative position when a weft-thread breaks or becomes exhausted and simultaneously replacing it by a new one without necessitating stopping the loom to effect such change; and with these objects in view the invention consists in the novel combination, construction, and arrangement of the parts hereinafter more particularly described.

In the accompanying drawings, forming a part of this specification and in which like letters of reference indicate corresponding parts, Figure 1 is a side elevation of the invention, parts being broken away and in section. Fig. 2 is a plan view; and Fig. 3 is a front elevation of one end of the lathe, the shuttle-boxes, and their operating devices.

The loom in its general features may be of any suitable character. As shown, my improvement is intended for application to that class of looms in which two superposed shuttle-boxes are arranged at each end of the lathe, either for simultaneously throwing two shuttles in the same or in opposite directions through a double shed or for throwing a single shuttle across the warp at each forward movement of each picker. As shown, the construction is adapted for use when there is a double warp, so that should either shuttle-thread break or become exhausted instead of the loom ceasing its operation a new shuttle will be substituted for that carrying the broken thread or empty bobbin, the new thread being thrown into the warp at the proper time, so as to avoid any imperfection in weaving. To this end I make use of two series of shuttle-boxes A A', mounted at each end of the lathe D in such position that the pickers *a a* may extend into one of the boxes of each series. I prefer to support the boxes upon the loom-frame, so that they will be stationary relative to the lathe, but in a position

to aline with the shuttle-races when the lathe is in its rearward position.

In the construction shown I have illustrated two endless chains of shuttle-boxes, the boxes of each series being pivotally connected, as by means of links 1. The shuttle-boxes are equidistantly spaced, and each series is supported upon two sprocket-wheels 2 3, journaled upon the loom-frame and preferably arranged in horizontal alinement, as shown. One series of shuttle-boxes is arranged parallel with the other, and the boxes of each series are formed with open ends for the purpose presently to be described.

The arrangement, construction, and operation of the devices of one series of shuttle-boxes are substantially identical with the other, and to avoid complexity and confusion the same reference letters and figures are applied to the corresponding parts of the operating devices of both series of shuttle-boxes.

It will be apparent that if the boxes of the two series A and A' are supplied with shuttles carrying the same kind of thread, and if upon the breaking of the thread of either of the shuttles in operation the box of such shuttle is automatically shifted out of line with the picker, as to bring the next box into position, the weaving may be carried on without the loss of time incident to arresting the operation of the loom. I therefore combine with each series of shuttle-boxes, or with one series of boxes when two are not required, automatic mechanism for shifting the series in event of the breaking or exhaustion of the thread.

Any suitable automatically-operated devices may be employed for shifting the shuttle-boxes, and I have shown a simple and well-known means for effecting this result. This means consists of two superposed slides B B', supported and adapted to reciprocate in guides 4 4 on the breast-beam of the loom. Each of the slides is provided with a pivoted weft-fork 5, having a hooked end 6. The weft-fork 5 is in alinement with two or more stop-fingers 7, carried upon the lathe adjacent to the side of the reed, and the fingers of said fork are adapted to pass between said stop-fingers.

A cam or tappet 8, carried upon a shaft 9, is arranged to act upon one end of an angu-

lar lever 10, the other end of the lever being provided with projections 12, arranged to engage the hooked ends 6 6 of the weft-forks to move their slide-bars when the said hooked ends are not elevated.

It will be understood that so long as the weft-thread is not broken and lies in the shuttle-race it comes into contact with the weft-fork 5 at each beat of the lathe and turns it on its pivot, thereby elevating the hooked end 6 out of the way of the projection 12; but when the thread is broken or absent the weft-fork is not turned, and consequently its hooked end remains in the path of movement of the projection 12 of the lever 10, which engages it and moves the slide in its guide.

Each slide B B' bears at its rear end upon one end of a centrally-pivoted lever 14, which is in turn connected at its opposite end to a rod 15. This rod extends rearwardly in close proximity to the shuttle-boxes and carries a pawl 16, which engages a ratchet-wheel 17 upon the shaft of the sprocket-wheel 2.

It will be apparent from the above that if one of the slides B B' is operated its lever 14 and rod 15 are reciprocated and the pawl 16 caused to rotate the sprocket-wheel 2 to bring a new shuttle-box into position.

As will be apparent, both slides B B' are operated by the lever 10, and said slides may be operated simultaneously or independently, depending, of course, upon the positions of the hooked ends of the weft-fingers.

The pickers α are formed L-shaped in order

that their arms may enter the rear end of the shuttle-boxes, and they are supported and operated in the usual manner and by any of the usual mechanism.

What I claim is—

1. In a loom, the combination of a continuous series of shuttle-boxes, a supporting-wheel therefor, a ratchet-wheel connected to the supporting-wheel, a slide, weft-fingers pivotally supported upon the slide and adapted to cooperate with stop-fingers upon the lathe, a rod carrying a pawl adapted to engage with the ratchet-wheel, connections whereby said rod is reciprocated from the slide, and means for actuating the slide upon the breaking or exhaustion of a shuttle-thread, substantially as described.

2. In a loom, the combination of two series of shuttles and their supporting means, a slide for each of said series of shuttles, weft-fingers pivotally supported upon the slides adapted to cooperate with stop-fingers upon the lathe, devices intermediate the slides and shuttles for shifting the latter, and a lever common to both slides for actuating them independently or simultaneously, substantially as described.

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

WILLIAM WEAVER.

Witnesses:

J. E. HOPKINS,

PAUL W. STEVENS.