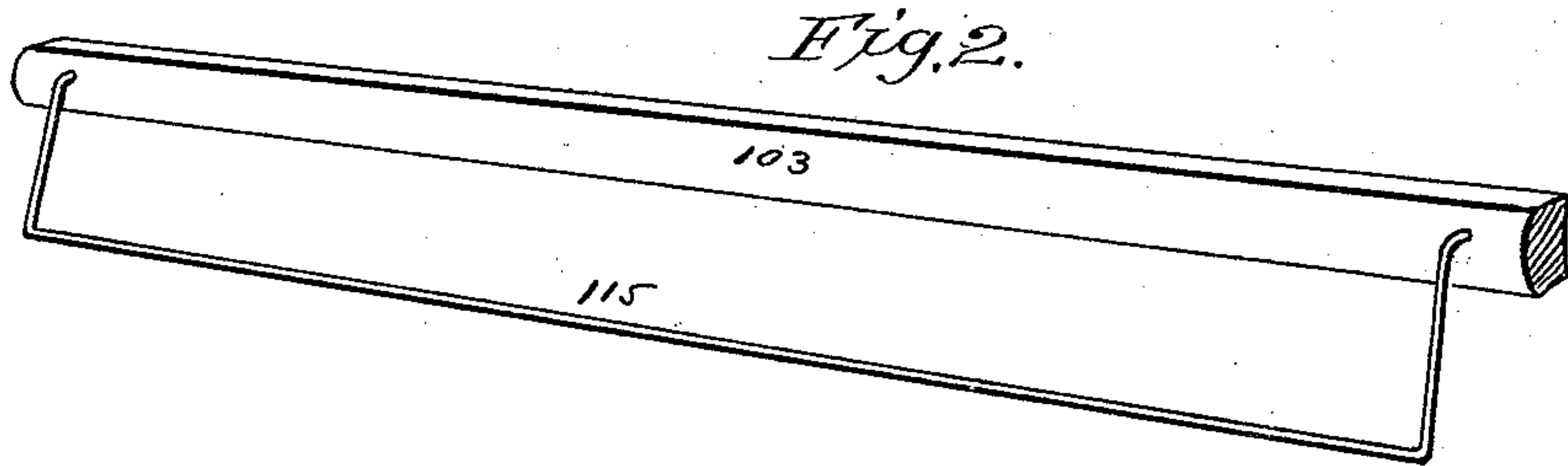
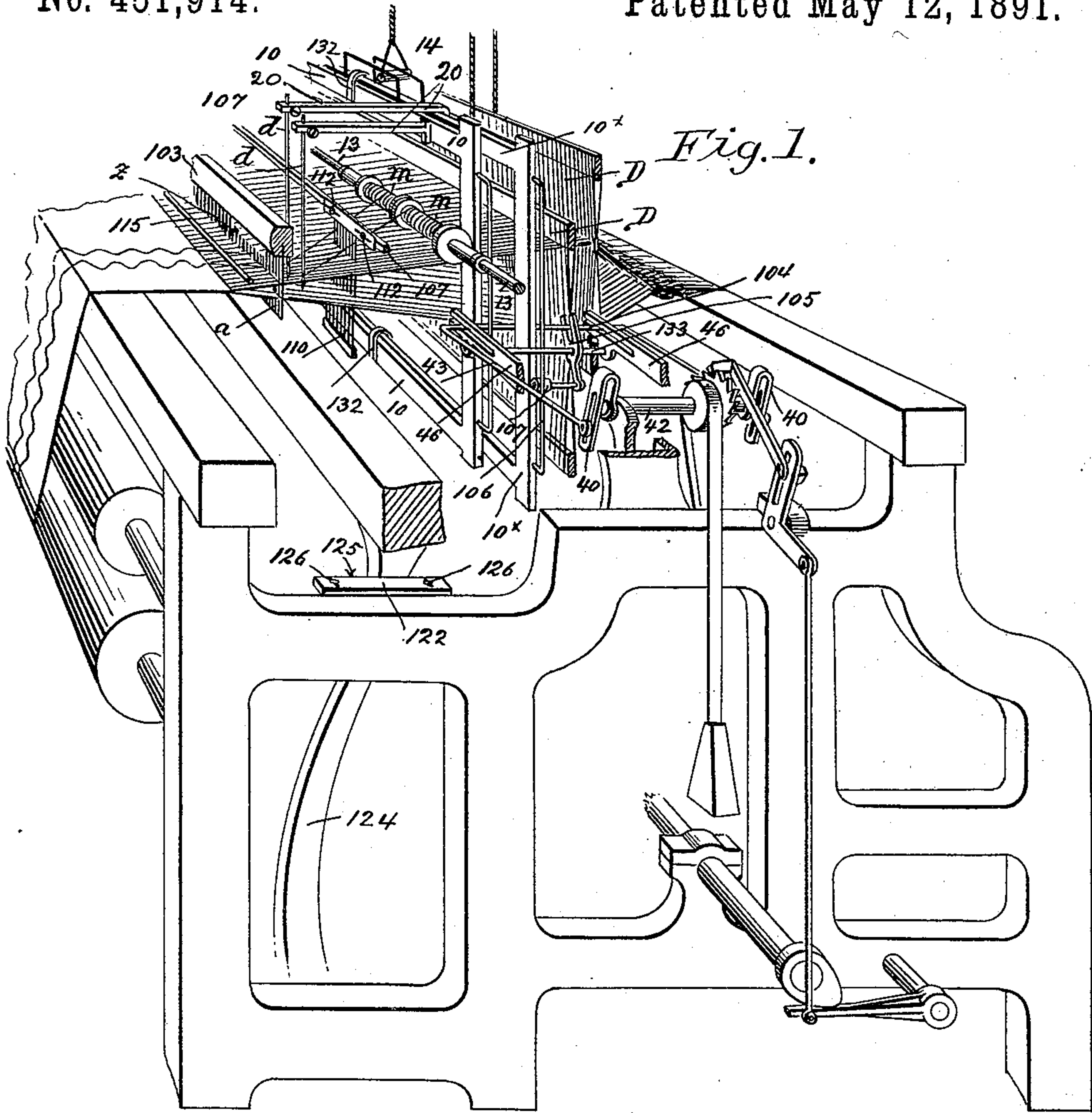


(No Model.)

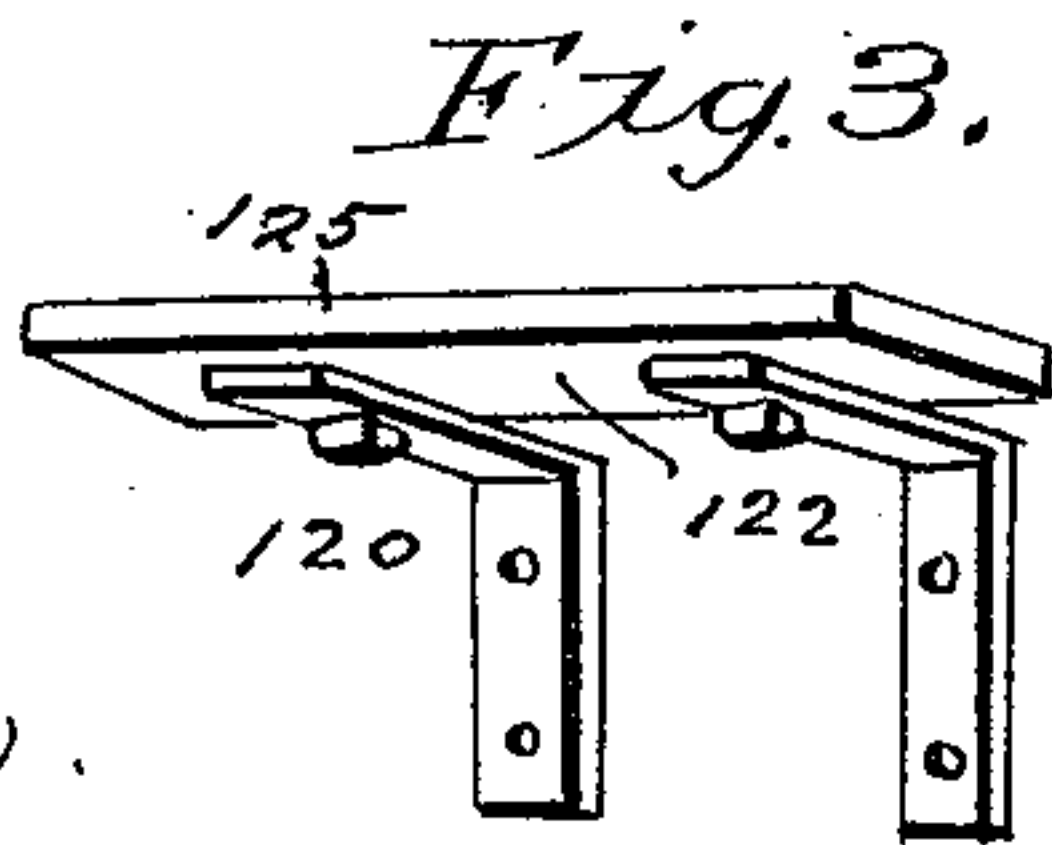
J. W. CHENEY.
LAPPET LOOM.

No. 451,914.

Patented May 12, 1891.



Witnesses:
J. D. Gasfield
J. Schmeckel.



Inventor.
Joseph W. Cheney,
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UNITED STATES PATENT OFFICE.

JOSEPH W. CHENEY, OF THREE RIVERS, MASSACHUSETTS.

LAPPET-LOOM.

SPECIFICATION forming part of Letters Patent No. 451,914, dated May 12, 1891.

Application filed June 16, 1890. Serial No. 355,526. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. CHENEY, a citizen of the United States, residing at Three Rivers, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Lappet-Looms, of which the following is a specification.

This invention relates to improvements in lappet-loom, and particularly to those which are constructed in accordance with the invention or improvements in looms set forth in Letters Patent of the United States granted to me November 18, 1890, No. 440,943; and the object of the present invention is to improve the construction of the said loom with respect to certain of the detail instrumentalities thereof, whereby the loom is rendered of increased efficiency for performing perfect work.

The invention consists, in a loom for lappet-weaving, of the combination and arrangement of parts and instrumentalities, all substantially as will hereinafter more fully appear, and be set forth in the claims.

In the drawings forming part of this specification, Figure 1 is a perspective view of as much of an ordinary power-loom as is necessary to make clear the connection and relative arrangement therewith of the parts constituting this invention, which parts are also embodied in said view. Figs. 2 and 3 are perspective views of parts to be hereinafter particularly referred to.

The said loom constituting the subject-matter of my aforementioned application for Letters Patent embodies a needle and a vertical reciprocatory frame carrying same, means for imparting lateral reciprocatory movements to said frame, and a bobbin having combined therewith drag or tension and recoil devices for carrying a thread-supply for said needle which is independent of the warp and weft.

Under and in accordance with the present invention I provide in the loom two independent needle-frames, each to carry one or any reasonable number of needles, with means for controlling the movements of said needle-frames, whereby they both move vertically in consonance, but whereby the one is rendered capable of lateral movement reversely of the movement of its fellows, and I also provide

a separate independent thread-supply for the needle of each needle-frame.

In the drawings, 10 10^x represent the two needle-frames ranging in advance of the harnesses D D, and said needle-frames are mounted on movable supports 14, which have rising and falling motions properly timed relative to the operation of the shed-forming mechanism, whereby both of said needle-frames are reciprocated vertically in substance the same as was the single needle-frame described in said application.

It is advantageous to employ clips, as shown at 132, to maintain the one needle-frame closely upon the other and to serve to guide the movements horizontally of the one upon the other.

In the loom now being described one—say the forward—of the needle-frames is given its horizontally-reciprocatory movement by the means heretofore employed by me for moving the single needle-frame, and as described in my said application—that is to say, with the cranks 40 on the rotating shaft 42 (the rotation of which may be continuous or intermittent) the rod 43 is connected, which by its inner end has an engagement with the said forward needle-frame. On the horizontal stationary ways 46, which uphold the said connecting-rod 43 for its proper effect, or on other suitable fixed part of the loom, I form bearings for a horizontal arbor or spindle 133, which forms the support and center of oscillation of a lever 105, intermediately hung thereon, said lever by its upper forked arm having an engagement with the angular section 104 of said connecting-rod 43, while said lever by its lower arm has an engagement with the other or rear needle-frame 10^x. It will therefore be plain that as the connecting-rod is by the cranks moved to carry the forward needle-frame 10 toward the left-hand side of the loom the connection had by such connecting-rod with the upper arm of said lever 105 correspondingly swings such arm, while its lower arm is swung in the reverse direction, and through its engagement with the rear frame 10^x such latter frame will be swung toward the right-hand side of the loom, and of course on the reverse movements of the controlling parts for said frames as the forward frame is moved toward the right-hand

side of the loom the other frame will be moved toward its left-hand side. As shown, the connection between the lower arm of the lever 105 and the rear needle-frame is by the provision of the vertical extended back staple 106 on the needle-frame and of a friction-roller 107 on an offset extension of said lower arm, which form of engagement, while effective for insuring the horizontal sliding of the needle-frame, in no way interferes with the vertical movements thereof, it being observed that the engagement of the offset part of the connecting-rod 43 with the forward needle-frame is by the provision of a long-backed staple vertically applied. Needles *d* are carried vertically from forward and horizontally-extending arms 20, connected to said needle-frames, and each needle is in a vertical line which is very near the plane occupied by the lay and reed when such parts are in their rearmost position.

The reed *a* in a line from front to rear of the machine through each needle and a little to each side of such line is cut out as to a number of the wires thereof, the cut-out being the upper portions of said reed-wires, the lower portions thereof, however, standing in a row above the surface of the lay-beam, as seen at *z*. The width of the cut-out section of the reed is to be as great as any required lateral bodily movement of the needle, and for the accommodation of which needle movement and of the thread placed by such movement said reed-opening is formed.

m m represent bobbins respectively provided for the needles *d d* and mounted upon the horizontal rod or beam 13. Each bobbin has combined therewith tension or drag and recoil devices, all as has already been described by me in my aforesaid application, and so that a proper proportion of the thread unwound from the bobbin, and which is in excess of that woven into the cloth at one cloth-forming operation of the loom, will be rewound on the bobbin on the return or upward movement of the needle.

Just to the rear of the working-plane of the needle and in line with the cut-out part of the lay-reed *a* I provide a short guide-reed section 110, which is carried upon a stationary horizontal beam 107 or other suitable part of the loom, said guide-reed having a sufficient height to accommodate the rising and falling movements of the warp-yarns in the shed-forming operation thereof. It has been found expedient to employ this guide-reed closely behind the needles and at a comparatively short distance to the rear of the lay-reed for the reason that longitudinally-running warps are thereby with the utmost distinctness maintained in parallelism and with uniform separating-spaces, which desired arrangement insures the finding by the needle of the proper space between two of the warp-yarns and enables the needles to enter such space without any liability of splitting the yarn.

It will be noticed on reference to Fig. 1 that the said guide-reed is horizontally adjustable across the machine, such capability being insured by the provision of the slot and set-screw indicated at 112. It is desirable to often adjust the guide-reed 110 for its alignment with the cut-out reeds on the lay and also to accord with different traverses of the needle.

On the lay-cap 103 I affix rigidly thereto a bail-like part 115, the transverse and horizontally-extending member of which occupies a line just to the front of the reed *a*, the relative height of which is a little below the upper ends of the said cut-down reeds. This horizontally-extending rod serves to prevent, when the lay is forward and a new shed is being formed, such a rising of any of the warp-threads in advance of the reed as would result in their passing above the top ends of the said shortened reeds of the lay to cause any such disarrangement of the said warps as would produce imperfect weaving; and, as in the loom of the description particularly given herein it is of great importance that the lay in its backward and forward swing shall move without any transversal deflection or vibration, I provide adjustable guides 120 on the inner side of each of the loom-frame standards, each of which has the member 122, against the inner edge of which the pivotally mounted and swinging lay-carrying arm 124 has a continuous slide-bearing. As indicated, the said member 122 is adapted to be adjusted as to its either end portion either inwardly or outwardly, so that its inner bearing-edge 125 may always be aligned to accord with the proper plane of movement of the lay-arm 124. The adjustment of the member 122 is insured by the provision of the slots and set-screws 126 indicated in the drawings, and as plain.

It will be clearly understood that in the running of the loom the needle or needles on the one frame will, in conjunction with the needle or needles on the other frame, effect in the lappet-weaving the laying of their respective threads, which are independent of each other and of the warp and weft, in a manner to form sinuous lines symmetrical with one another—that is to say, the thread laid by the needles of the foremost frame will form detours or ogee or zigzag lines which balance with the detours or ogee or zigzag lines formed by the thread laid by the needles on the rearmost frame.

What I claim as my invention is—

1. In a lappet-loom, in combination, two needle-carrying frames, each adapted to carry one or more vertical needles, said frames being independent of the lay and also independent of each other and located between the harnesses and the lay and susceptible of being vertically reciprocated, means for imparting reversed reciprocatory movements of said frames laterally of the run of the warp, and a thread-supply for each of said needles

which is independent of the warp and weft to be woven by the loom, substantially as and for the purpose set forth.

2. In a lappet-loom, in combination, two 5 needle-frames, one in advance of the other and independent of each other and of the lay and located between the harnesses and lay, and each carrying one or more needles, and said frames being susceptible of vertical reciprocatory movements, a reciprocating device, as the part 43, having an engagement with 10 one of said needle-frames, and a lever intermediately pivoted for a rocking motion, having by one arm thereof an engagement with 15 said needle-frame-reciprocating part and having by its other arm an engagement with the other needle-frame, for the purpose set forth.

3. In a lappet-loom, the combination, with the needle-frame 10, having thereon the vertical extended back staple, the revoluble 20 crank, and the part 43, having the angular extension 104 engaging said staple, of the needle-frame 10^x, having the vertical extended back staple, and the intermediately-pivoted lever having by its one arm an engagement with 25 said angular extension 104 and having on its other arm an offset friction-roller which has an engagement with the said staple of the frame 10^x, substantially as shown and described. 30

4. In a lappet-loom, in combination, a frame located between the harnesses and the lay, having combined therewith means for imparting vertical reciprocatory movements and 35 also lateral reciprocatory movements thereto and carrying a needle, and the lay having in its reed a cut-out section, as described, and a guide-reed at the rear of the said needle, through which the warps which are in lines 40 adjacent the line of said needle pass, substantially as and for the purpose set forth.

5. In a lappet-loom, in combination, a frame located between the harnesses and the lay, having combined therewith means for imparting vertical reciprocatory movements and 45 also lateral reciprocatory movements thereto and carrying a needle, and the lay having in its reed a cut-out section, as described, and a guide-reed at the rear of the said needle, through which the warps which are in lines 50 adjacent the line of said needle pass, which guide-reed is adjustable transversely of the run of the warp, substantially as and for the purpose set forth.

6. In a lappet-loom, the combination, with 55 a needle-carrying frame having a needle for laying a thread from a supply which is independent of the warp and weft and adapted for and having combined therewith means for imparting thereto vertical reciprocatory 60 and also lateral reciprocatory movements, substantially as described, of a lay having in its reed a cut-out section, as shown, and a member 115, secured in the lay-cap and embodying, essentially, a horizontal rod-like part 65 which has its position forward of the reed and at a height slightly lower than the top of the short-length reed-rods, substantially as and for the purpose set forth.

7. In a loom, the combination, with the pivotally mounted and swinging lay-beam-carrying arms 124, of guiding and steadying 70 members for said swinging lay-beam arms supported on the inner side of each of the loom-standards and adjustable thereon, so 75 that their edges may be presented at the desired plane of swing of said arms, substantially as and for the purpose described.

JOSEPH W. CHENEY.

Witnesses:

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F. SCHNEELOCH.