

No. 775,558.

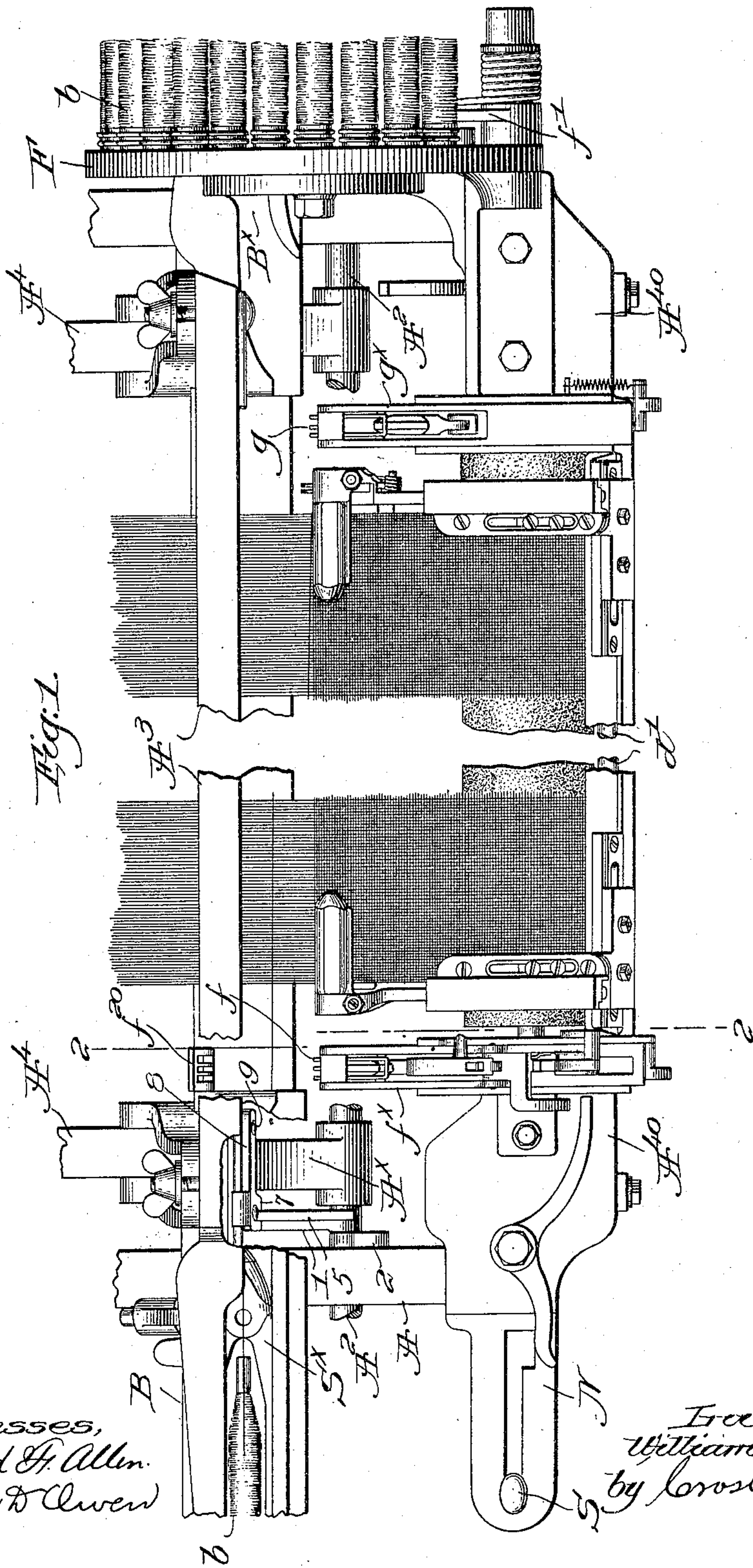
PATENTED NOV. 22, 1904.

W. F. DRAPER.
LOOM.

APPLICATION FILED MAY 21, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses,
Edward H. Allen
Warren D. Owen

In witness whereof,
William F. Draper,
by Crosby & Gregory
attys.

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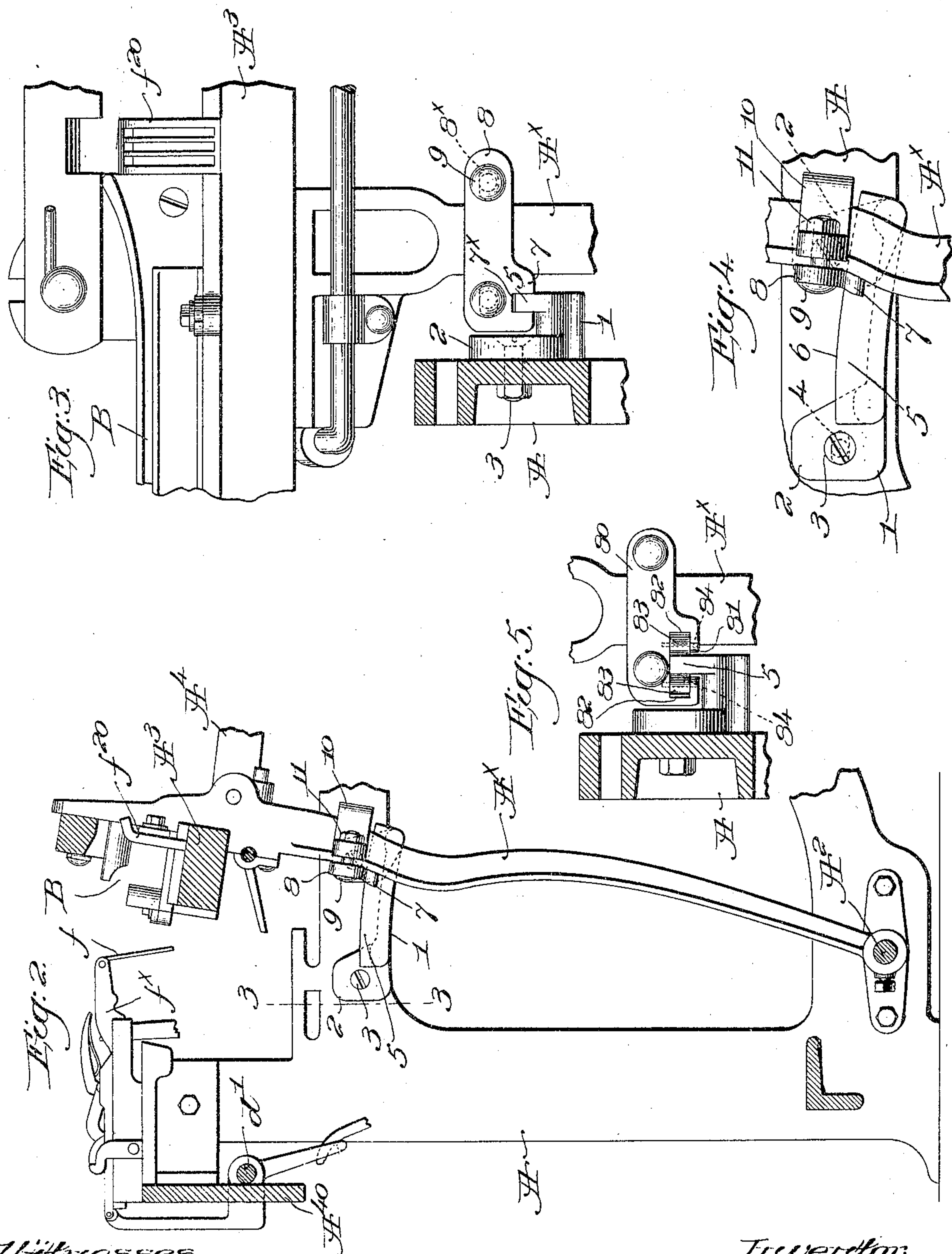
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attys.

UNITED STATES PATENT OFFICE.

WILLIAM F. DRAPER, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO
DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

LOOM.

SPECIFICATION forming part of Letters Patent No. 775,558, dated November 22, 1904.

Application filed May 21, 1904. Serial No. 209,066. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. DRAPER, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Looms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

In operating modern power-loom at the present speeds it is found in practice that the rapidly-swinging lay has a very decided and objectionable tendency to move sidewise or laterally more or less at every pick. The lay-beam is rigidly attached to the upper ends of lay-swords, the latter at their lower ends being usually secured by long sleeve-like castings to the lay rocker-shaft, which is mounted in bearings on the main frame of the loom near the floor, the rocker-shaft and lay-beam being some distance apart.

From exhaustive study of the subject I am led to believe that the motion of the picker-sticks and the various parts to which that motion is communicated, with repeatedly-recurring and sudden reversals in direction of movement, all combine to act through the long lever-arms presented by the lay-swords with a distorting and irregular strain upon the rocker-shaft bearings, so that lateral or sidewise movement of the lay results therefrom. Instead of swinging in a fixed path the lay-path is irregular and shaky, the extent of the lateral movement varying from pick to pick, any wear of the parts naturally adding to the extent of the lateral movement. Such motion is objectionable in any loom, as the racking effect on the various parts thereof is highly injurious; but it is particularly injurious in the double-fork type of loom—such, for instance, as shown in United States Patent No. 727,014, designed to prevent the formation of thin places in the cloth.

The sidewise movement of the lay sometimes causes the filling-fork to bring up against the grid when there is no filling present, and as the fork will be tilted a thin place will be

made in the cloth, because the fork was not permitted to detect the absence of filling, thus nullifying the value of the double-fork arrangement. Again, the lateral movements of the lay have an effect on the picking, making it more or less irregular, and in automatic filling-replenishing looms it complicates the replenishing action by varying the position of the shuttle at the time a fresh supply of filling is inserted in the shuttle. I believe that the quality of the cloth is also affected to some extent, due to the irregular striking action when the filling is beaten in.

My present invention has for its object the production of simple, improved, and efficient means for completely preventing the very objectionable sidewise movement of the lay, whereby the injurious results of such movement hereinbefore set forth are wholly obviated.

The novel features of my invention will be fully described in the subjoined specification, and particularly pointed out in the following claims.

Figure 1 is a top plan view, centrally broken out, of a power-loom embodying one form of my present invention, the loom chosen for illustration being of the double-fork type and provided with automatic filling-replenishing mechanism. Fig. 2 is a transverse sectional detail on the line 2 2, Fig. 1 looking toward the left and showing in side elevation the novel means for preventing lateral or sidewise motion of the lay. Fig. 3 is an enlarged detail taken on the line 3 3, Fig. 2, and showing such novel means in front elevation; and Fig. 4 is an enlarged detail showing in inner side elevation the means for preventing lateral lay motion. Fig. 5 is a detail of a modification to be referred to.

Referring to Fig. 1, the main frame A of the loom, the breast-beam A⁴⁰, having at one end the notched holding-plate N for the shipper S and at its other end supporting filling-replenishing mechanism, including a filling-feeder F for the filling carriers or bobbins b, a transferrer f' to transfer the filling-carriers

one by one from the feeder to the automatically-self-threading shuttle S^x ; the controlling or operating rock-shaft d' , the lay A^3 , and the shuttle-boxes B and B^x thereon may be
 5 and are all of well-known "Northrop" construction and substantially such as form the subject-matter of United States Patent No. 529,940. The lay swings back and forth in well-known manner on the lay rocker-shaft
 10 A^2 , Fig. 2, as a fulcrum, being connected therewith by the lay-swords A^x , as usual, the swinging movement being imparted to the lay by the pitmen A^4 , connecting the lay-swords with the crank-shaft. (Not shown.)

15 The double-fork structure is substantially that shown in the Patent No. 727,014, referred to, the forks f and g being located at opposite sides of the loom and operating through their respective slides f^x g^x when the forks
 20 are not tilted.

Inasmuch as the double-fork mechanism is not of my invention and is well known it needs no further detailed description herein, it being sufficient to state that the proper operation
 25 thereof prevents improper delay in the actuation of the filling-replenishing mechanism when called for and obviates the formation of thin places in the cloth.

The grid f^{20} , opposite the fork f , is shown
 30 in Figs. 2 and 3 and is of usual construction, and to those skilled in the art it will be manifest if either grid is so positioned by any lateral movement of the lay as it beats up that the opposite fork will be engaged. Then the
 35 said fork will be tilted, even if filling be absent. Such improper lateral movement of the lay is prevented by my present invention, and one practical embodiment thereof will now be described.

40 Upon the inner face of one of the sides of the loom-frame A , I secure a bar-like bracket 1, having ears 2 to receive attaching screw-bolts 3, and for purposes of adjustment the ears are slotted at 4 for the reception of the
 45 bolts. (See Fig. 4.) A segmental upturned flange or guide 5 is made as a part of the bracket, the curved upper edge 6 of said guide being struck from the center of the lay rocker-shaft, and, as shown in Fig. 3, the segmental
 50 guide 5 is set in from and parallel to the loom side and rigidly attached thereto.

A cooperating member or follower is mounted to move back and forth with the lay, and herein I have shown such movable member as a depending ear 7 on a clamp-plate 8,
 55 resting upon the front face of the adjacent lay-sword and rigidly secured thereto by bolts 9, passed through a second clamp-plate 10, shaped to embrace the lay-sword, the plates being drawn toward each other and clamped
 60 in position by nuts 11 on the bolts 9, as clearly shown in Fig. 4. The plate 8 is preferably slotted, as at 8^x , for the reception of the bolts,

so that the follower may be adjusted laterally when necessary. I do not, however, restrict
 65 myself to any particular form of clamping device.

The lower edge of the ear 7 is slotted at 7^x (see Fig. 3) to embrace the guide 5 with a sliding fit, whereby a positive slidable connection
 70 is effected between the loom-frame and the lay, said connection comprising a fixed member, as the guide, and a member movable with the lay, as the slotted ear or follower.

Inasmuch as the follower 7 is movable back
 75 and forth on an arc having the same center as the curved upper edge 6 of the guide 5 it follows that there will be no binding or resistance to the proper fore-and-aft swing of the lay, and the parts can be oiled from time to
 80 time.

As the guide is fixedly mounted on the loom-frame, it will be manifest that no sidewise or lateral movement of the lay can take place, owing to the positive cooperation of the guide
 85 and follower, and accordingly the lay must always swing fore and aft in a fixed path. Consequently the fork-grid will always be properly positioned with relation to its fork, there can be no irregularity in the picking
 90 of the shuttle so far as lateral lay motion is concerned, and the proper operation of the replenishing mechanism is enhanced for the same reason. Thus the objections due to side-
 95 wise lay motion, which have been hereinbefore enumerated, are entirely obviated by my invention, and the loom as a whole has a greater stiffness imparted to it.

In the modification shown in Fig. 5 the clamp-plate 80 has its depending portion slot-
 100 ted at 81 to embrace the guide 5, and at each side of the slot a recess 82 is formed to receive an upright roll 83, the opposed rolls running over the vertical sides of the guide,
 105 so that the friction is rolling instead of sliding, as previously described.

The rolls are rotatably mounted on pins 84, driven into the plate 80 at the sides of the slot.

I have shown lay-guiding means at one side only of the loom, as experience shows it to be
 110 sufficient in ordinary cases; but such guiding means may be located at both sides of the loom or in the center, if desired, without departing from my invention.

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

1. In a loom, a main frame, a lay, a rocker-shaft on which it is mounted to swing fore and aft, an upright guide fixedly mounted on the
 120 frame in parallelism with the path of the lay, and a follower rigidly connected with the lay and cooperating with the opposite upright sides of the guide, to prevent lateral movement of the lay.

2. In a loom, a main frame, a lay, a rocker-

shaft on which it is mounted to swing fore and
aft, a segmental lay-guide fixedly mounted on
the frame, and a slotted follower movable with
the lay and in positive and sliding engagement
5 with opposite sides of the guide, to prevent
lateral movement of the lay.

In testimony whereof I have signed my name

to this specification in the presence of two sub-
scribing witnesses.

WILLIAM F. DRAPER.

Witnesses:

GEORGE OTIS DRAPER,
ERNEST W. WOOD.