

Shuttle Box Mechanisms for Looms.

Patented Aug. 18, 1874.



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By his Attyys.
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UNITED STATES PATENT OFFICE.

MERRILL A. FURBUSH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND C. A. FURBUSH, OF SAME PLACE.

IMPROVEMENT IN SHUTTLE-BOX MECHANISMS FOR LOOMS.

Specification forming part of Letters Patent No. 154,237, dated August 18, 1874; application filed July 25, 1874.

To all whom it may concern:

Be it known that I, MERRILL A. FURBUSH, of the city of Philadelphia, Pennsylvania, have invented Improvement in Drop-Box Looms, of which the following is a specification:

The object of my invention is to run a drop-box loom at a higher speed than usual without risk of injuring the parts, owing to the accidental obstruction or stoppage of the shuttle-boxes.

I attain this object by securing the boxes A to the drop-box lever B by a spring-connection, D, (fully described hereafter,) so that the said boxes shall be positively lowered, as well as raised, by the lever, and yet be capable of yielding should any obstruction be offered to their free movement. (See elevations, Figs. 1 and 2 of the accompanying drawing.) E represents one of the side frames of a loom, to which the weighted drop-box lever B is hung at the point *a*, a vibrating movement being imparted to the said lever from the cam-shaft F, through the medium of an anchor-lever, H, and devices connected therewith, which are of a character so well known as to render minute description unnecessary.

In ordinary drop-box looms the arm *b* of the lever B is connected to and imparts a reciprocating movement to a vertical rod having an enlargement or shelf at its upper end, upon which the shuttle-boxes A simply rest, without being secured thereto. The connection between the lever and rod *d* is such as to permit the latter and the boxes to yield should the said boxes meet with any obstruction during their upward movement, while the rod can descend without the boxes should the latter meet with any obstruction during their downward movement.

This arrangement answers well for some classes of weaving, but prevents the attainment of a very high speed, for, as the boxes descend by gravity alone, their movement must be comparatively slow—an objection which I

overcome by drawing the said boxes downward, as well as forcing them upward, by positive mechanism, which will permit them to yield when necessary in either direction.

The boxes A are permanently secured to a vertical rod, *d*, guided by and arranged to slide freely through projections *e* and *e'* on the frame of the loom. On this rod is wound a spiral spring, *f*, by the action of which two slides, *h* and *h'*, which also embrace the rod, are maintained in contact with fixed collars *i* and *i'* on the latter, as shown in Fig. 1. These slides are also adapted to slots *j j* in a plate, *k*, which is connected, by a link, *m*, to the arm *b* of the drop-box lever.

The spring *f* is of sufficient strength to maintain the slides *h* and *h'* at the ends of the slots in the plate *k* and against the shoulders of the rod *d*, so that the shuttle-boxes A must be positively lowered, as well as raised, by the lever B, during the ordinary working of the loom at any required rate of speed; but if the said boxes should meet with an obstruction during their downward movement the spring *f* will yield and permit the descent of the plate *k* and slide *h*, while the rod *d*, slide *h*, and boxes remain stationary, and if the obstruction should occur during the ascent of the boxes the movement of the latter would, in like manner, be stopped, but the spring would be compressed from its opposite end by the slide *h'*, which would continue to rise with the plate *k*, as shown in Fig. 2.

I claim as my invention—

The combination, substantially as described, of a double-acting spring-connection, D, with a series of shuttle-boxes, A, and their operating-lever B, for the purpose specified.

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

M. A. FURBUSH.

Witnesses:

WM. A. STEEL,
HUBERT HOWSON.