



# UNITED STATES PATENT OFFICE.

LUCIUS J. KNOWLES, OF WARREN, MASSACHUSETTS.

## WEAVER'S SHUTTLE.

Specification of Letters Patent No. 16,734, dated March 3, 1857.

*To all whom it may concern:*

Be it known that I, LUCIUS J. KNOWLES, of Warren, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Mechanism for Weaving; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1, is a side elevation of a shuttle containing my invention. Fig. 2, is a horizontal section of it.

My improvement or invention consists in a means of causing a loom to stop its motion or weaving operation, on the breakage of the thread leading from the bobbin of the shuttle.

In the drawings, A, denotes a loom shuttle and B, a bobbin arranged thereon in the usual way.

C, is the cam or projection usually applied to the shuttle and for operating the protector or contrivance, which is usually connected with either shuttle box of the loom lay and for the purpose of stopping the motion of the loom, in case the shuttle, during a throw of it, should not properly enter the shuttle box to which it may be destined. In this case, the said cam, C, is affixed to a spring D, and the shuttle is provided with a recess, E, for reception of the spring and to allow such spring and the cam to be sprung backward into the shuttle.

A tilting lever, F, is arranged on or within the side of the shuttle, and so as to turn freely up and down on a fulcrum *a*, one arm of the lever being so arranged that when it is horizontal it may be behind the cam, C, and serve as a stop to prevent the said cam from being moved backward into the recess, E. In front and back of the other arm of the lever F a set of wires, guides, or lifters, G, G, arranged with respect to each other and the lever as shown in the drawings the thread, *b*, from the bobbin being led between the decussation or vertex of the angle of the wires, and the under side of the lever arm so that when the thread is pulled on, it will bear against one of the wires or guides and lift the lever arm so as to bring the lever into a horizontal position. That arm of the lever, which operates in direct connection

with the set of wires should be a little heavier than the other arm in order that should the thread break, and the lever become relieved from the force of traction exerted on the thread such lever may tilt so as to bring said other arm up so much above the cam, C, as to allow such cam to move backward into its recess when force is applied to it for such purpose.

From the above it will be seen that while the shuttle is in motion over the race beam, and its thread is unbroken the draft on such thread will maintain the tilting lever in a horizontal position so as to keep the cam, C, forward and cause it to operate the protector. But should the thread become broken, the lever will be relieved from the pressure of the thread and will tilt so as to offer no obstacle to the movement of the cam, C, into the recess, E, into which it will be pushed by the protector when driven against the same. Thus the cam will not operate the protector or move it and therefore the loom will stop.

I am aware that a stop motion or mechanism has been applied to a shuttle and race beam of the lay of a loom, and so as to operate in such manner in case of the breakage of the filling thread of the bobbin of the shuttle as to stop the motion of the shuttle or arrest it in the race beam before it could enter the shuttle box next to that part of the said stop motion which was affixed to the race beam. In this kind of stop motion, the shuttle in being arrested in its motion across the race beam is liable to be driven by the reed close into the crossing of the warps. In case such should take place injury to the warps or loom may ensue. My stop motion is of an entirely different kind, as it allows the shuttle to enter each shuttle box, and when once in either box, the loom will be stopped in case the filling thread may have been broken during the passage of the shuttle across the race beam, and into such box.

What therefore I claim is—

The combination of the tilting lever, F, the inclined wires, G, G, (or the equivalent of the latter) and a spring cam, C, or means essentially the same as said spring cam, whereby in case of breakage of the thread

from the shuttle while the latter is in motion  
across the race beam of the lay the cam or  
contrivance to operate the protector may be  
caused to so act with or against such pro-  
5 tector or its equivalent, that it shall be made  
to produce stoppage of the loom as stated.

In testimony whereof I have hereunto set

my signature this 20th day of December  
A. D. 1856.

L. J. KNOWLES.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.