

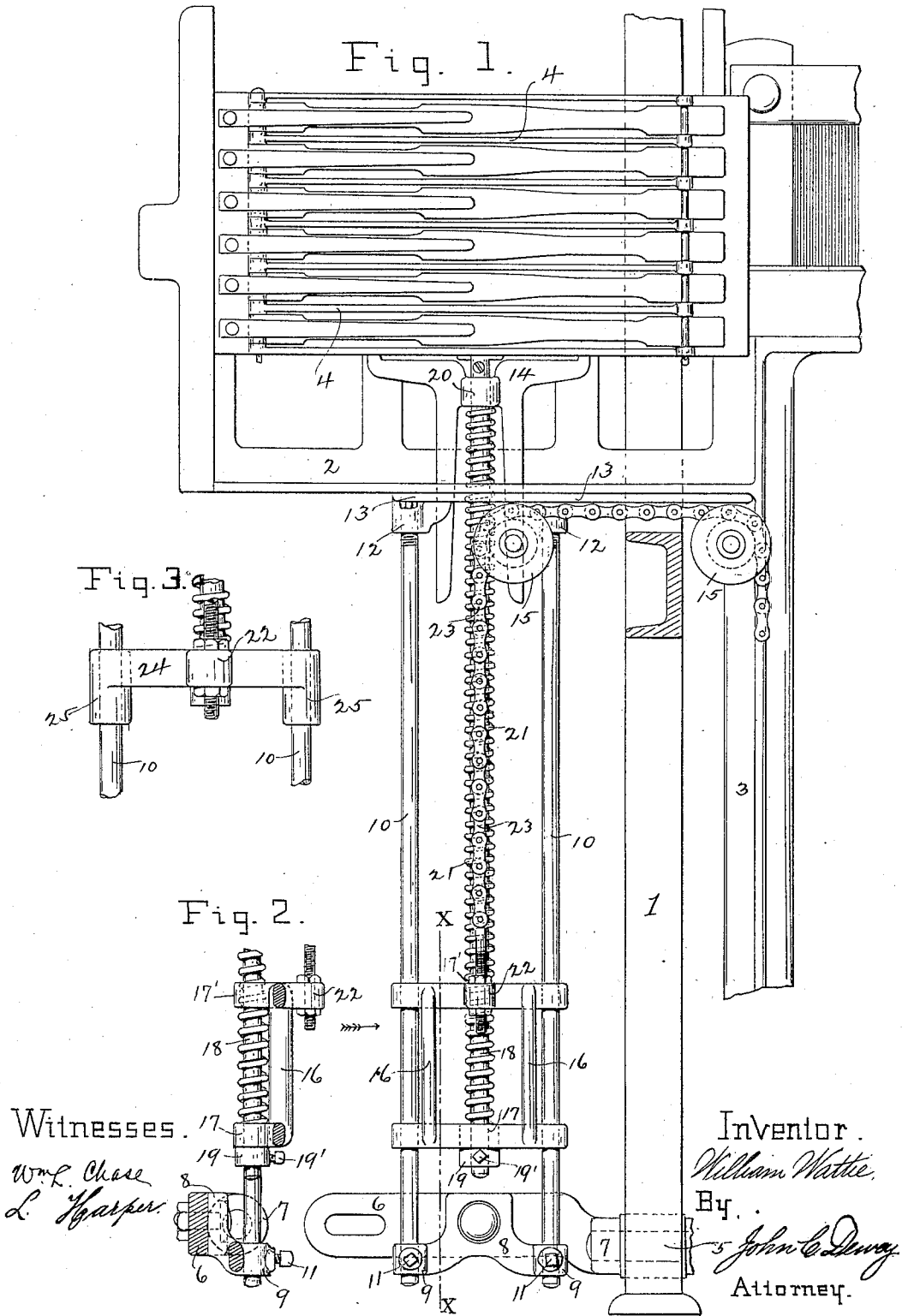
(No Model.)

W. WATTIE.

SHUTTLE BOX MECHANISM FOR LOOMS.

No. 390,419.

Patented Oct. 2, 1888.



# UNITED STATES PATENT OFFICE.

WILLIAM WATTIE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE  
KNOWLES LOOM WORKS, OF SAME PLACE.

## SHUTTLE-BOX MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 390,419, dated October 2, 1888.

Application filed September 23, 1887. Serial No. 250,485. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM WATTIE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Shuttle-Box Mechanism for Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawings making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to the drop-box-lifting mechanism of looms; and it consists in certain novel features of construction of said lifting mechanism, as will be hereinafter fully described, and the nature thereof indicated by the claims.

The object of my invention is to add rigidity to the overhanging end of the lay of the loom, and to relieve somewhat the strain on the shuttle-box rod, for the purpose of securing greater accuracy in throwing the shuttles, and also to provide for the lengthening of the box-rod-supporting spring, as will be hereinafter set forth.

Referring to the drawings, Figure 1 is a side elevation of one end of the lay of a loom to which my invention is applied. Fig. 2 is a section on line X X, Fig. 1, looking in the direction of the arrow, same figure; and Fig. 3 is a detail of a modified form of the lifting-yoke.

In the accompanying drawings, 1 is a portion of the loom side. 2 is the lay end casting, of which the sword 3 forms a part, and 4 is the drop-shuttle box, represented with six cells. 5 is the lay-pivot, and 6 the lifter-rod arm supported by the hub 7 on the end of the lay rocker-shaft, all in the usual way. 8 is a forked casting bolted to the arm 6, terminating in hubs 9, through which the guide-rods 10 pass, secured thereto by set-screws 11. The upper ends of the guide-rods 10 are screwed into hubs 12, cast on the plate 13, which serves as a guide for the lifter-fork 14 and stand for the box-chains heaves 15.

Sliding freely upon the guide rods 10 is the lifter-yoke 16, which has cast upon its upper and lower bars hubs 17' and 17, through

which passes the lifter-rod 18, the upper end of which is fastened to the drop-box 4. The yoke 16 is retained on the lifter-rod 18 by the collar 19, provided with a set-screw, 19'. A steel coiled spring, 21, encircles the lifter-rod 18, and passes through the hub 17' on the upper bar of the yoke 16, and is confined between the hub 17 and a hub, 20, on the lifter-fork 14, said spring 21 being of sufficient strength and being sufficiently compressed to uphold the weight of the drop-box 4 and its moving attachments.

The spring 21 is the commonly-used safety device in connection with drop-boxes of looms, for should the shuttle fail to pass properly and block the shuttle-box, so it could not rise, the spring 21 would permit the box-moving mechanism to move against the spring, thus obviating breakage, and by means of the lifter-yoke 16, having a hub, 17', upon the upper bar thereof, through which the supporting-spring 21 passes, in connection with the guide-rods 10, upon which the yoke 16 slides as the shuttles are raised or lowered, I am enabled to lengthen the spring 21 and to have its lower end extend down almost to the lower end of the box-rod 18, thus using and obtaining the free action of the box-supporting spring practically as long as the box-rod itself.

The lifter-yoke 16 has cast upon it also another hub, 22, through which, by means of the chain 23, connection is made between said lifter-yoke and the ordinary shuttle-box motion, as shown in United States Patent No. 134,992, of January 21, 1873.

Ordinarily the lifter-rod 18, with its confined spring 21, is guided loosely at its lower end in a socket attached to the arm 6, and there is no other connection between the said arm and the lay-beam; but in my improvement it will be seen that the guide-rods 10 act as a rigid brace between the foot of the rocker and the overhanging end of the lay, and that thereby the lay end is prevented from sagging out of line with the race-plate, and the tremor which frequently causes a shuttle to fly out of its course is obviated.

As ordinarily constructed with a single guide on the lifter-rod, if the box-chain should pull a little out of line it sometimes happens that the guide is cramped, causing a jerky

movement when the box-motion acts, thus making trouble in properly throwing the shuttle. By my improved construction I secure a long and broad bearing of the lifter-rod guide, so that this can never happen, and I also provide for the lengthening of the box-rod-supporting spring and the extension of its lower end to almost the lower end of the box-rod itself.

10 The lifter-yoke 16 might be advantageously shortened, in which case the hubs 17 and 22 could be cast on opposite sides of the same bar 24, (see Fig. 3,) and the hubs 25 lengthened to provide surface on the rods, the spring being placed entirely above the bearings of the guide.

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

20 1. The combination, with the lay having the overhanging end and the lay rocker-shaft, and the guide-rods 10, forming a rigid connection between said overhanging lay end and rocker-shaft, of a tier of shuttle-boxes, a box-lifter rod, 18, fastened at its upper end to said

shuttle-boxes, with its lower end extending through the lifter-yoke 16, and said yoke 16 supported and sliding on the guide-rods 10, which act as a double bearing for said yoke, and a box-supporting spring, 21, encircling said rod 18 and extending through the yoke 16 nearly to the lower end of said rod 18, all constructed and arranged substantially as shown and described.

2. The lay having the overhanging end, the lay rocker-shaft, the guide-rods 10, extending between the same, the tier of shuttle-boxes, the box-lifter rod 18, the yoke 16, through which the lower end of the rod 18 passes, said yoke 16 having its bearing and sliding on the rods 10, the box-supporting spring 21, encircling the rod 18 and extending nearly to the lower end thereof, passing through the yoke 16, and the connection from said yoke to the box-operating mechanism, all combined together substantially as shown and described.

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Witnesses:

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