(No Model.) 3 Sheets—Sheet 1.

G. CROMPTON & H. WYMAN.

LOOM.

No. 265,659. Patented Oct. 10, 1882.

Fig. 7

Fig. 6.

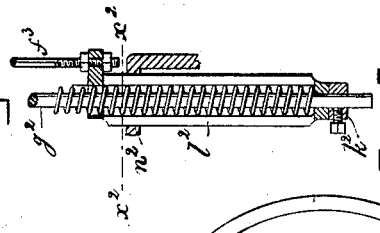

Fig. 5.

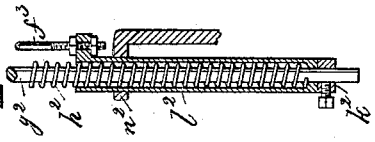

Fig. 8

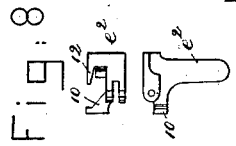

Fig. 1.

Witnesses.

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Arthur Reynolds.

Inventor.

George Crompton & Horace Wyman,

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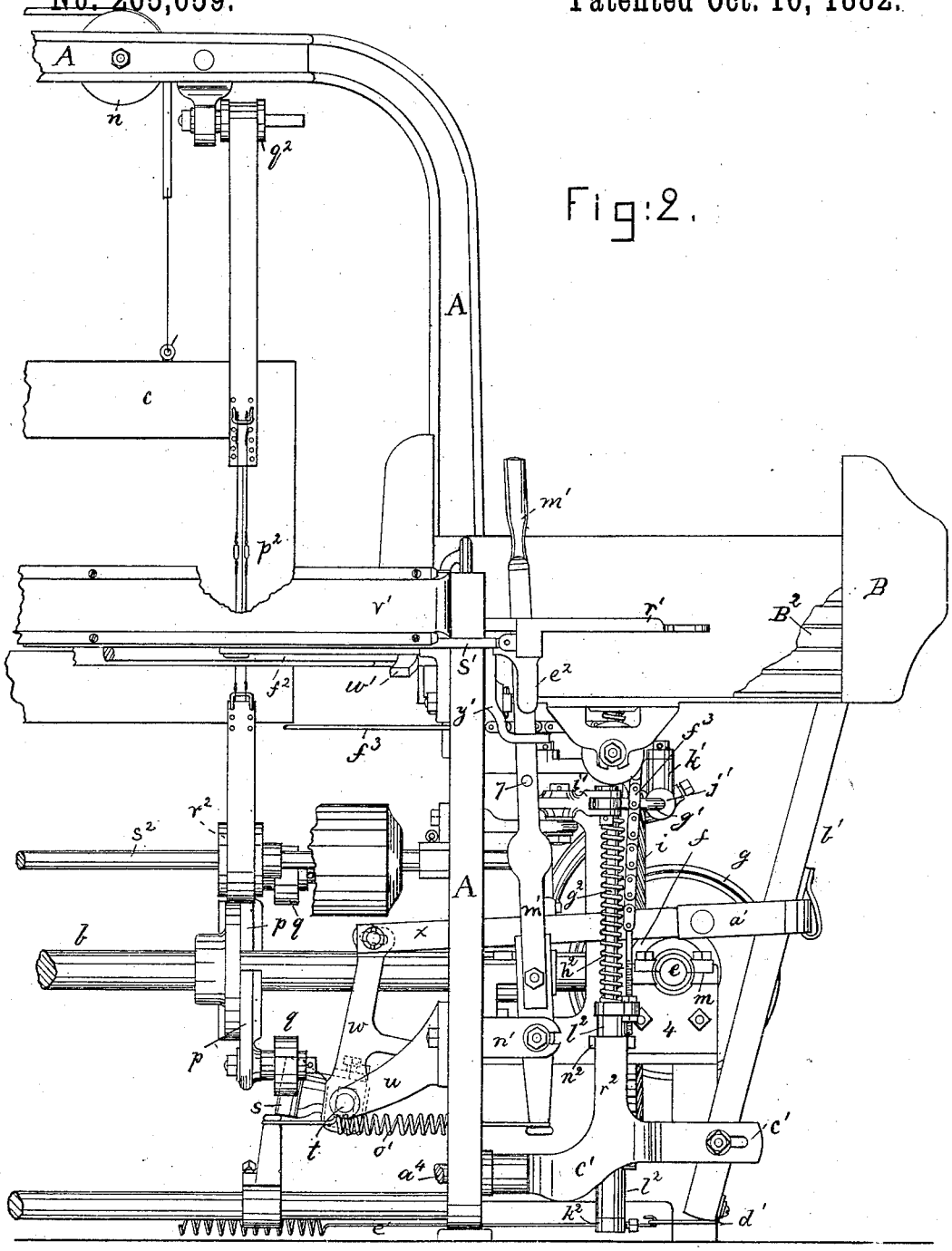
Fig: 2.



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(No Model.) 3 Sheets—Sheet 3.

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Fig: 3.

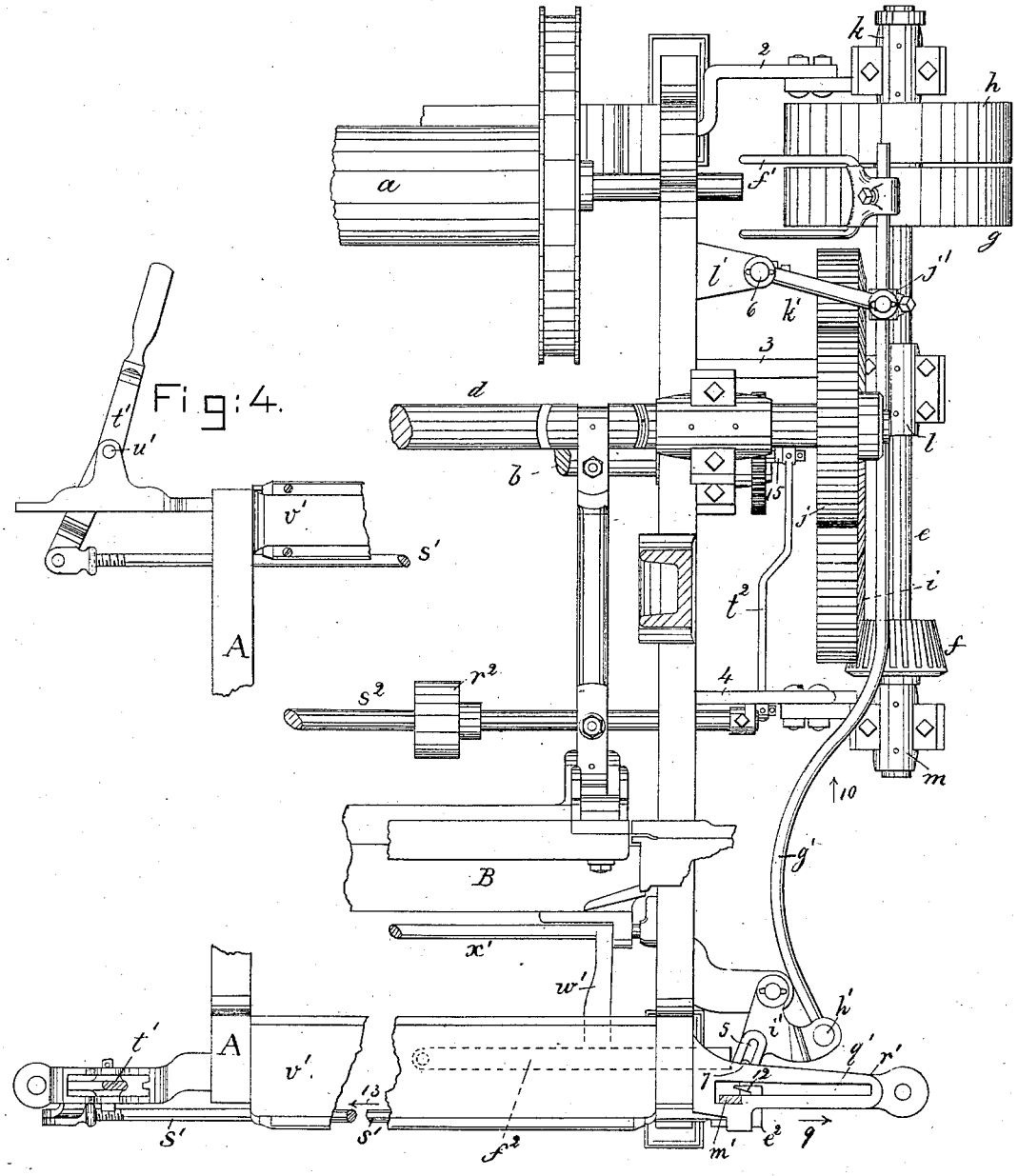

Fig: 4.

Witnesses_

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Arthur Reynolds.

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UNITED STATES PATENT OFFICE.

GEORGE CROMPTON AND HORACE WYMAN, OF WORCESTER, MASSACHUSETTS; SAID WYMAN ASSIGNOR TO SAID CROMPTON.

LOOM.

SPECIFICATION forming part of Letters Patent No. 265,659, dated October 10, 1882.

Application filed February 2, 1881. (No model.)

To all whom it may concern:

Be it known that we, GEORGE CROMPTON and HORACE WYMAN, of Worcester, Worcester county, and State of Massachusetts, have invented certain Improvements in Looms, of which the following description, in connection with the accompanying drawings, is a specification.

This invention in looms has for its object certain improvements in the shipping mechanism, and also in the support for and connections with the shuttle-box rod.

Figure 1 represents in elevation a sufficient portion of the right-hand end of a loom to illustrate our invention, the shuttle-boxes and lay being broken off. Fig. 2 is a front elevation of nearly one-half of a fancy-loom containing our improvements, seen at the right hand of its center, the shuttle-boxes in the lay being partially broken out Fig. 3 is a view looking down on Fig. 1 below the section-line x x, a small part of the breast-beam and frame at the opposite side of the loom being shown to illustrate the auxiliary shipper-handle; but in said Fig. 3 the picking devices, shuttle-box rod, and boxes are omitted. Fig. 4 is a detail elevation of the said auxiliary shipper-handle. Fig. 5 is an enlarged sectional detail of the shuttle-box rod, its spring, spring-case, and its guide broken off the machine. Fig. 6 is a modification of Fig. 5. Fig. 7 is a cross-section of Fig. 6 below the dotted line x^2, and Fig. 8 represents in top and side elevation the shipper-yoke removed from the shipper-lever.

The belt-controller is composed of a fork, f', fixed on a rod, g', connected at its forward end, at h', with a pivoted lever, i', slotted at 5. (See Fig. 3.) The rod g' is supported near the fork f' in a box, j', pivoted upon a link, k', pivoted at 6 on an ear, l', of the loom-frame, such connection permitting the rod and fork to be moved longitudinally for the proper distance to move the usual belt (not shown, but supposed to be embraced by the fork f') from the fast pulley g to the loose pulley h, or vice versa. The slot 5 of the knee-lever i' receives in it a stud or finger, 7, attached to the shipper-lever m', pivoted at n', and acted upon at its lower end by the spring o' to move the said lever in the direction of the arrow 9, Fig. 3, in the slot q' of the shipper-lever plate r' when the said shipper-lever is released from the usual notch which holds it, as shown in Figs. 2 and 3, the release of the shipper effecting the movement of the rod g' in the direction of the arrow 10 to stop the loom.

The shipper-lever m', at the right-hand side of the loom, (see Figs. 1 and 2,) has pivoted upon it a shipper-yoke, e^2, (shown separately in Fig. 8,) and the said yoke is connected by rod s' with the auxiliary shipper-handle t', pivoted at w' on a bracket at the opposite end of the breast-beam v'. (See Figs. 3 and 4.) The shipper-lever m' is pushed out of its holding-notch automatically by the dagger w' whenever the shuttle fails to enter its box or is held in the warp, the said dagger being then lifted to strike a lever, f^2, (see Figs. 1, 2, and 3,) as commonly done, turning the said lever f^2, it acting to turn the disengaging-lever y', causing its lower end, a^2, to move in the direction of the arrow near it in Fig. 1 and push the shipper-lever from its holding-notch. The operator, the fault which caused the loom to stop automatically having been corrected, may move the belt-controller to start the loom by turning either of the levers m' or t' from the side of the loom at which she is then standing. The shipper yoke e^2 has an inclined surface, 10, and a prong, 12. As the rod s' is moved in the direction of the arrow 13, Fig. 3, the prong 12, extended about the shipper-lever m', acts to insure the movement of the shipper-lever with it toward the loom side, and on arriving in proper position the said lever springs back, as usual, into its holding-notch in the plate r'. When the rod s' is moved in the opposite direction by the handle t', as may be done by hand when a miss-pick occurs or a thread breaks, the inclined surface 10 acts to throw the handle m' out of the notch which holds it.

Heretofore it has in practice been found very difficult in looms having four or more shuttle-boxes to get into the limited space allotted in the loom a spring of sufficient strength to sustain the boxes with sufficient firmness to obviate untimely, improper, and injurious movements of the spring-supported boxes arising from momentum and inertia of the spring-supported boxes on the shuttle-box rod. If the spring be too weak, the boxes, when be-

ing lifted, would be tardy in their arrival at the level of the race and would prevent the proper throwing of the shuttle. In the manufacture of looms the length of the box-rod plus the depth of the number of boxes cannot exceed in length the distance between the level of the race of the lay and the floor on which the loom is placed, and consequently each additional shuttle-box employed must be brought within this prescribed distance, and it is thus obvious that each additional shuttle-box correspondingly shortens the box-rod and the space which may be occupied by the spring. It will also be understood that the guide for the lower end of the box-rod is commonly placed as near as possible to the floor, it being so placed as to prevent the box-rod from being withdrawn from the said guide when lifted to bring the lower box opposite the race of the lay. In case four shuttle-boxes are employed in the limited space stated the guide for the shuttle-box has to be correspondingly raised to prevent the box-rod, which is to have a greater range of movement than when three boxes are used, being lifted from the said guide, which raising of the guide further shortens, as will be obvious, the space for the reception of the spring which supports the boxes, and the said spring must be correspondingly shortened to enter this space between the lowest box and the guide, one of which has been lowered while the other has been raised, whereas in practice the said spring, to operate correctly with four boxes, should be increased in length and also in strength. In a four-box shuttle-loom the movement of the boxes from their highest to their lowest position is about five and one-half inches, and the spring employed must be sufficiently stiff to insure the upward movement of the boxes in exact unison with the upward movement of the box-operating lever, and the said spring must have sufficient elasticity to be compressed a distance of about five and one-half inches, if necessary—as, for instance, if the picker should be caught between the top box and the race at a time when the shuttle-box lever is about to place the lowest box opposite the race. This spring must also have sufficient elasticity that when compressed, as described, and released it will immediately return to its original position and not set.

As heretofore constructed, so far as we are aware, the lower end of the box-supporting spring has always been terminated above the guide for the box-rod, and the position of the upper end of the said spring has been limited by the lowest box, and when four boxes were to be employed instead of three the spring had to be shortened. In our experiments we found that we could lengthen the box rod-supporting spring and secure in it the proper length and strength and elasticity for correct operation in a loom having four or more shuttle-boxes by enlarging the opening in the guide for the box-rod and extending down through the same the box-rod spring, supporting its lower end below the said guide, and between the said guide and the box-rod and its spring we have added a spring-inclosing case, which prevents wear of the spring by the guide.

The lay B, supposed to be of usual construction, will in practice be provided with the usual drop shuttle-boxes, partially shown at B^2. The shuttle-box rod g^2 has upon it a strong spiral spring, h^2, compressed sufficiently between the lowest box and collar k^2 to sustain the weight of the shuttle-boxes B^2 as the spring-case l^2, which contains and directly sustains the lower end of the said spring, is raised and lowered by the shuttle-box connection f^3, common to United States Patent No. 230,243, July 20, 1880, to which reference may be had, the said connection being for the most part a chain, and being in both instances designated by the same letter, the said connection f^3 deriving movement from a shuttle-box lever as in the said patent. The spring-case l^2 is extended down through a guide, n^2, of the piece c', connected with the movable axis a^4 of the lay. (See Fig. 2.) This spring obviates breaking the loom in case the shuttle becomes caught between the lay and boxes, so that the boxes cannot be moved.

To enable the spring h^2 to withstand compression for the necessary distance as compared with its normal length, we contrived the long hollow spring-case l^2 to receive within it the spring h^2, the lower end of the said spring being extended down into the said case below the top of the guide n^2. In this way we have been enabled to actually increase the length of the said spring by one-half, which practically obviates all liability of breaking the loom or the spring when an accident of the kind referred to occurs. This case may be either made as a tube, as in Figs. 2 and 5, or a yoke, as in Figs. 6 and 7, the latter figure showing the guide n^2 notched to receive and direct the movement of the yoke in a right line.

We claim—

1. The shipper-handle t', pivoted at one side of the loom, rod s', and yoke e^2, combined with the shipper-handle m' and slotted plate r', the said yoke being pivoted upon the shipper-handle m', as and for the purposes described.

2. The lay, tier of shuttle-boxes, shuttle-box rod and means to move it and the shuttle-boxes, and the guide n^2, combined with the spring-case, collar k^2, and spiral spring arranged in the case and between it and the shuttle-box rod, the lower end of the spring and spring-case and collar being located below the said guide n^2, substantially as and for the purpose described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEO. CROMPTON.
HORACE WYMAN.

Witnesses:
J. P. SYME,
J. A. WARE.