

G. CROMPTON & H. WYMAN.

Looms.

No. 157,909.

Patented Dec. 22, 1874.

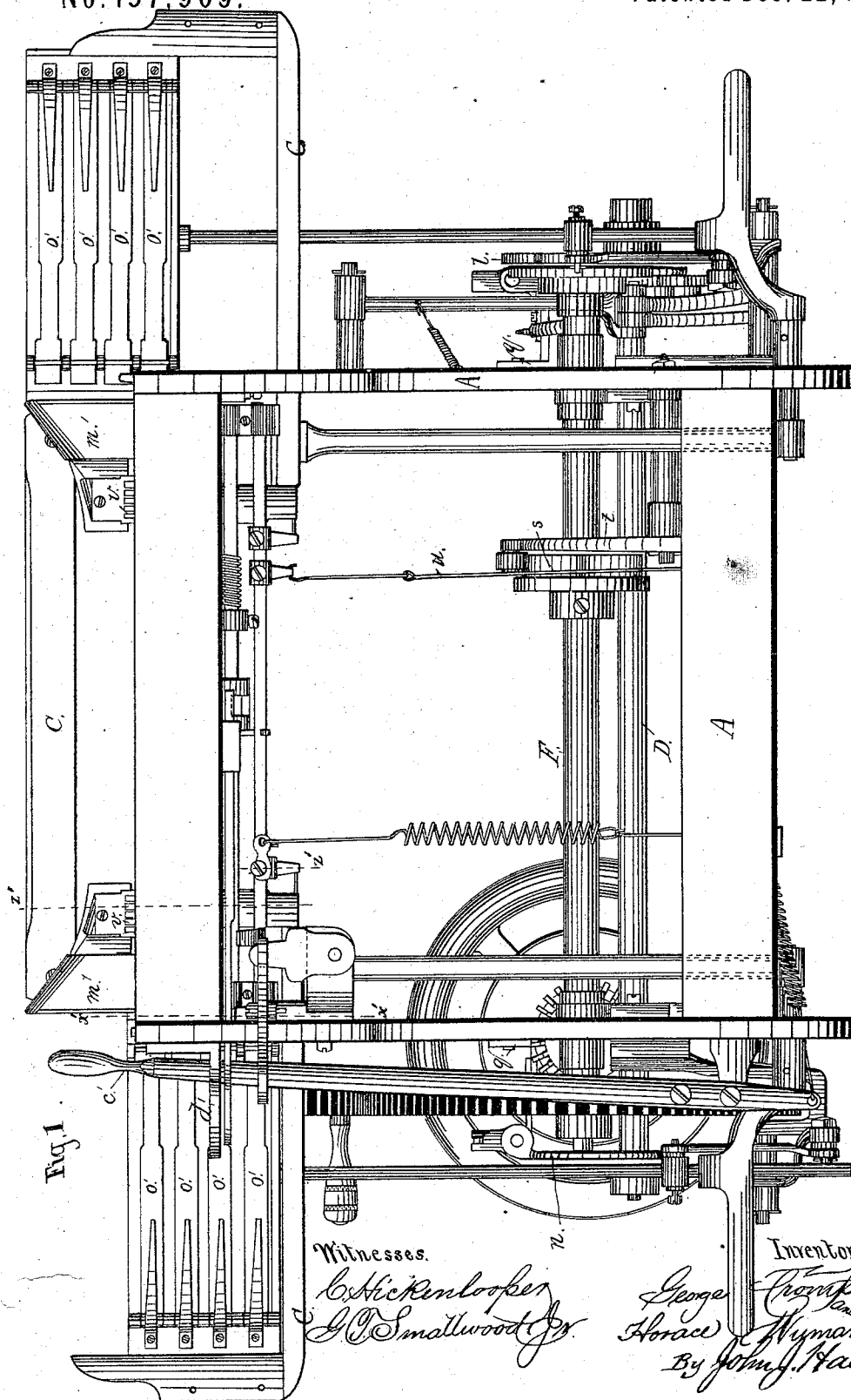


Fig. 1.

Witnesses.

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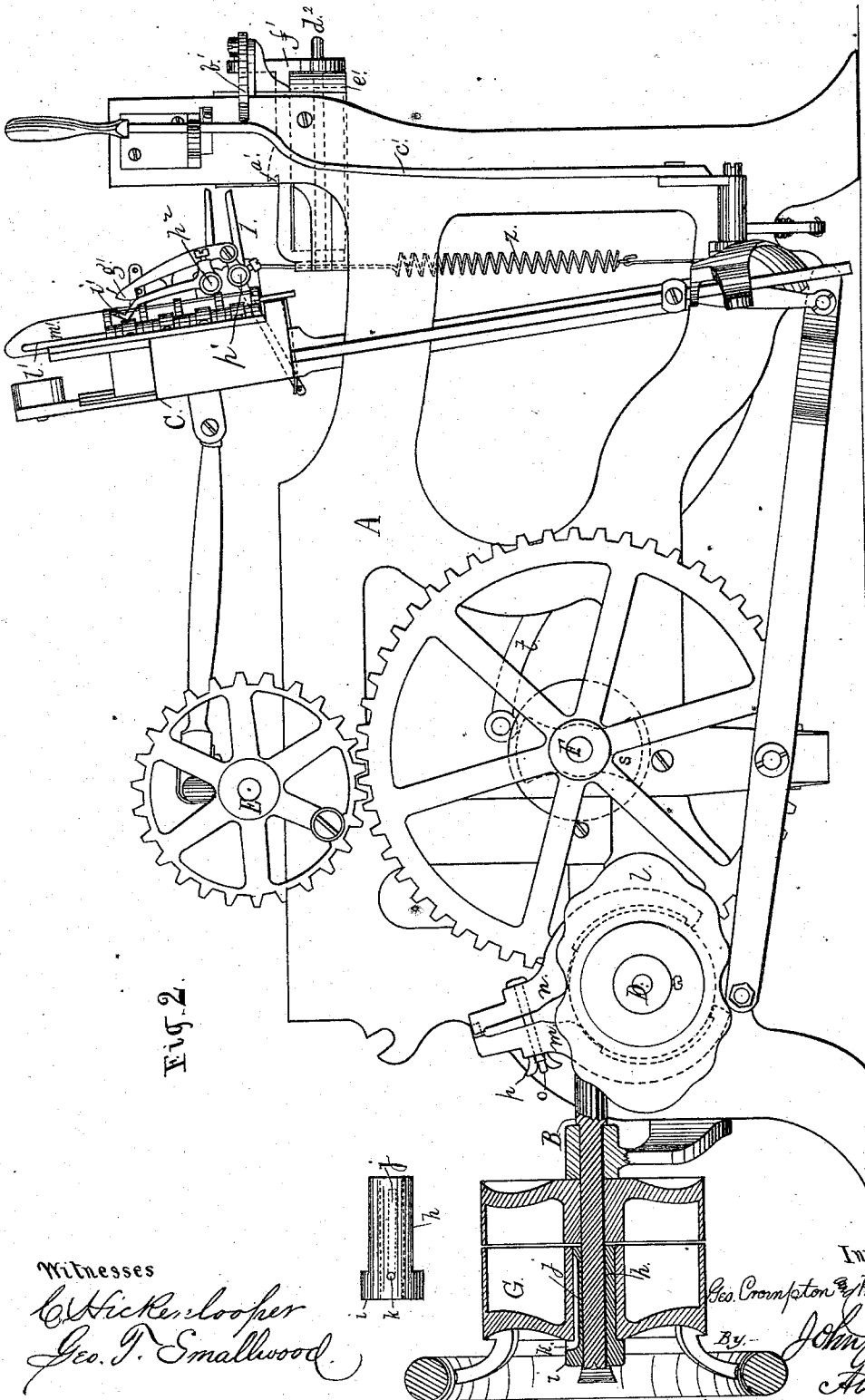


Fig. 2.

Witnesses

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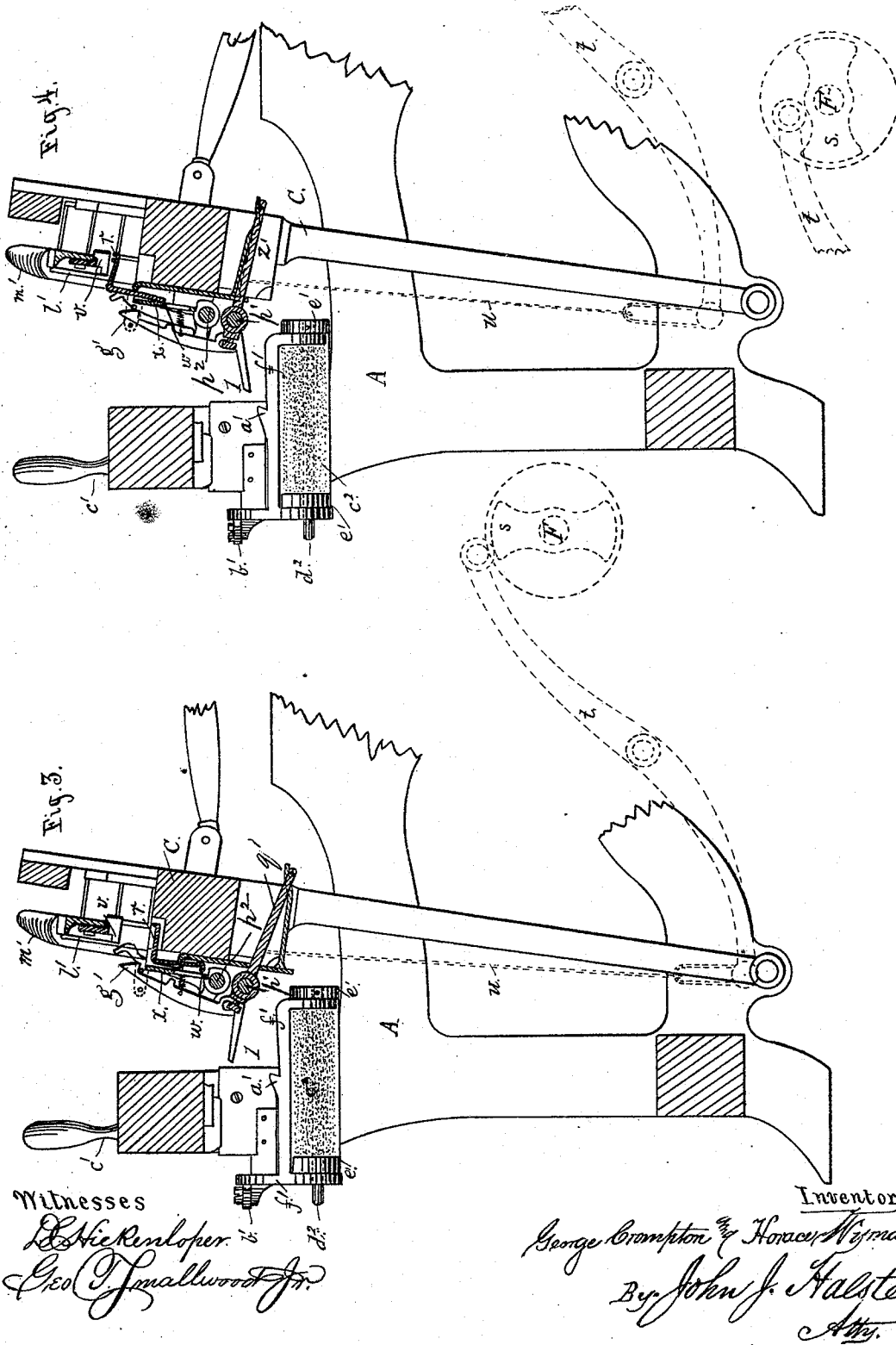
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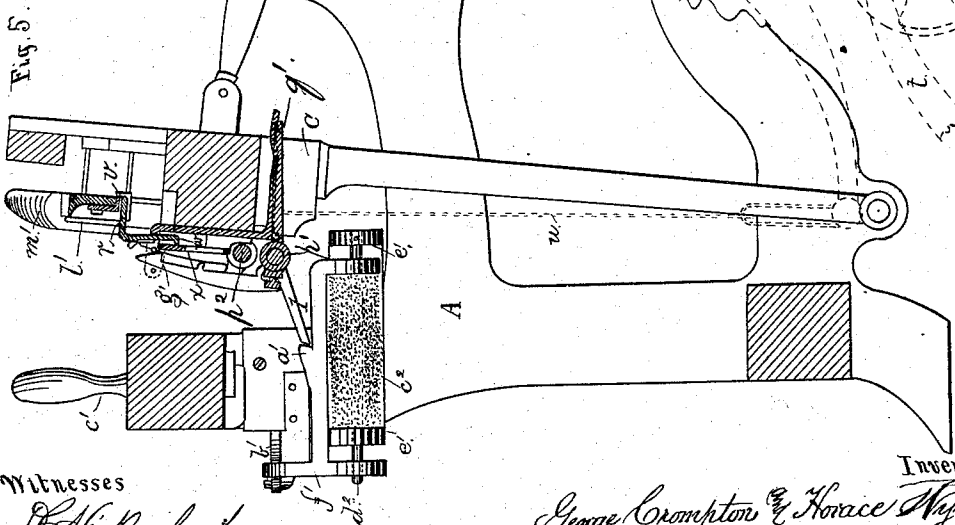
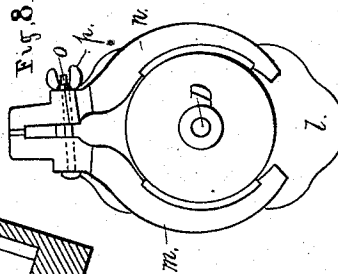
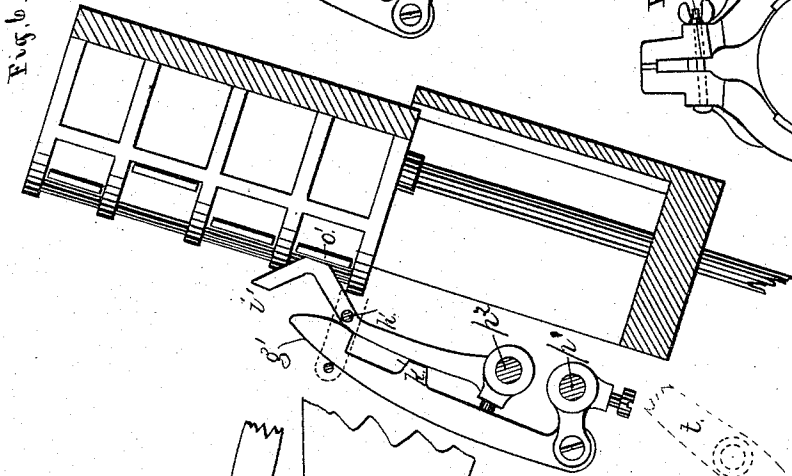
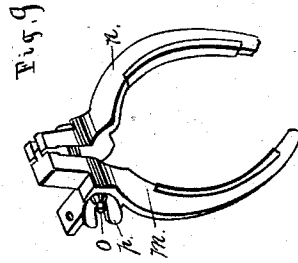
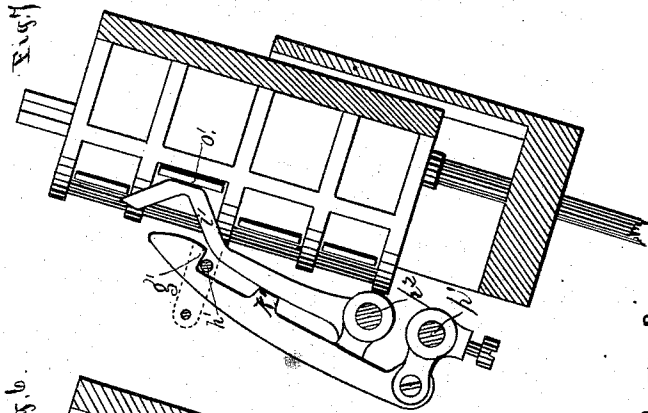
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UNITED STATES PATENT OFFICE.

GEORGE CROMPTON AND HORACE WYMAN, OF WORCESTER, MASS.

IMPROVEMENT IN LOOMS.

Specification forming part of Letters Patent No. **157,909**, dated December 22, 1874; application filed October 30, 1874.

To all whom it may concern :

Be it known that we, GEO. CROMPTON and HORACE WYMAN, of the city of Worcester, county of Worcester and State of Massachusetts, have invented certain Improvements in Looms; and we do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of our invention sufficient to enable those skilled in the art to practice it.

Our present improvements relate to a means for oiling the loose pulley while it is in motion, to a means for detecting the absence of the filling-thread, to a means for stopping the loom without losing the pick, and to other details hereinafter described.

In the accompanying drawings, Figure 1 is a front elevation of a loom embodying our improvements. Fig. 2 is a side elevation, the pulleys being shown in section. Figs. 3 and 4 and 5 are detail views through the line $x'x'$ of Fig. 1, showing the devices in three different positions; Figs. 6 and 7, sectional views of the shuttle-boxes taken through the line $x'x'$ of Fig. 1. Figs. 8 and 9 are, respectively, an elevation and a perspective of the friction-clamp.

A is the frame of the loom; B, the main shaft; C, the lay; D, the tappet-shaft; E, the crank-shaft; F, the bottom or cam shaft; and G, the loose pulley on the shaft B. h is a bushing provided with a head, i , at its outer end, which serves to keep the pulley in its place upon the shaft, and in this bushing is a long groove, j , terminating at its outward end in an aperture, k , in the head for the introduction of oil. These devices are shown in Fig. 2, which gives a vertical central section of the pulley, bushing, and shaft, showing the slot or groove. From this construction it will be seen that the oil is easily applied while the pulley is in motion, and that dust and dirt are effectually excluded. The friction-clamp for holding in position the tappet-wheels, which carry the tappets for operating the shuttle-boxes, is shown detached in Figs. 8 and 9. The tappet-wheel (one of which is placed on each side of the loom) is shown at l , and m n are the two parts or members of the clamp, which parts are loosely jointed or connected together at their upper

end, and are, by means of a screw-rod, o , and adjusting-nut p , adapted to clamp the wheel to any desired degree. The clamps may be lined with leather to prevent wear, and they are firmly bolted or secured to the frame of the loom, or to a projection therefrom, as seen at q .

The devices for detecting the absence of the filling-thread, and for stopping the loom without losing the pick, are as follows: The feeling-fork r is pivoted to a sliding piece on the front of the lathe, and its lower arm is provided with a hook, w , so arranged as to strike the stop x , when the fork is raised and tilted by the weft-thread. The lower dagger-shaft p^1 is rocked in one direction by the spring z , and in the other direction by the cam s on the bottom shaft F, through the lever t and the connecting-rod u . On the dagger-shaft p^1 the arm q' , extending back from it, is arranged to come against an arm on the slide which carries the feeling-fork, and thereby raise it; and when the arm q' is brought down by the action of the cam s , the slide and fork are free to drop into position below the race. Fig. 3 shows the position of the parts at the time the shuttle is being thrown, the thread-fork r being at this stage below or flush with the race, thus enabling the shuttle-thread to be laid above the fork.

Fig. 4 shows the position of the parts after the shuttle is in the box and the fork has moved up to the grid v , the thread having tilted the fork, as shown, so that its hooked part w has been projected under the stop x , and the upward motion of the fork and of the parts connected with it is arrested.

In Fig. 5 is shown the position of the parts after the shuttle is in the box and after the fork has moved up to the grid v , and when the thread is absent. Under these conditions, the fork, entering in between the grids and allowing the hook w to escape the stop x and to continue its upward movement, allows the end of the stop-dagger 1 to be pulled down by the stress of spring z , whereby it strikes the catch a' and forces it forward against the end of lever b' , the opposite end of which lever forces the shipper-lever c' off from its detaining-notch in d' , and shifts the belt upon the loose pulley G, the movement of the loom being arrested by this action of the dagger against the stop, the spring

c^2 taking off the shock of the sudden stoppage. This spring is preferably a strong rubber tube on a spindle, d^2 , which is supported in a bracket, e' , on the frame, the catch a' being on a sliding piece, f' , which is arranged to ride on the bracket e' and to compress the spring when the catch is acted on by the dagger. After this action the resilience of the rubber spring restores the catch to its normal position. Metal springs or air-pistons may be employed in place of the rubber springs c^2 , or any other appropriate yielding device which will render the bunters elastic.

Figs. 6 and 7 show our means for preventing the thread-fork from moving until the shuttle is within the box, the parts being held in position by means of the hook g' pivoted to an arm on the dagger-shaft p^1 , and arranged to take hold of the pin h' .

When the shuttle enters the box the binder o' , being by it pressed outward, forces outward the finger i' on the upper dagger-shaft p^2 , which finger, then coming against a projection, k' , on the hook g' , and, releasing it from the pin, gives free movement to the parts, as above described, the hook g' being connected with the dagger-shaft p^1 .

It will be understood that there is a thread-fork at each side of the warp, and they are intended to be used in connection with the drop-boxes.

The loose threads extending from the boxed shuttles remain, while their shuttles are boxed, in the vertical slots l' in the plates m' , these slots extending both above and below the forks, thus being adapted to receive and protect the threads, whether the shuttles, which for the time being are inactive, have been lifted above or lowered below the race.

Where much oil is used, which might tend to impair the rubber bunter-springs, or in any other cases where preferred, we substitute for the rubber, in order to make an elastic bunter, metal springs of any suitable kind, whether spiral or of leaves of steel, or of any other equivalent construction which will perform the same duty; or, instead of either of these, air cushions or pistons of any known sort.

We claim—

1. The combination, with the loose pulley, of the bushing h , having a head, i , and provided with the groove or channel j , serving as an oil-chamber, terminating in an aperture, k , in the head, substantially as and for the purpose set forth.

2. The combination, with the dagger-shaft p^1 and the connecting devices, substantially as described, of the tilting-fork r , its hook w , and the stop x , the presence or absence of the weft-thread upon the fork serving to permit or prevent the action of the dagger upon the shipper.

3. In combination with the dagger-shaft p^1 and feeling-fork r , connected substantially as described, the finger i' , the hook g and its spring, and the pin h' , as and for the purpose set forth.

4. In combination with the dagger-shaft, the tilting-fork r , provided with a hook, w , and the stop x , a suitable lay bunter-spring, arranged and operating substantially as shown and described.

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