

H. WYMAN.

3 Sheets--Sheet 1.

Improvement in Looms.

No. 128,694.

Patented July 2, 1872.

Fig. 1.

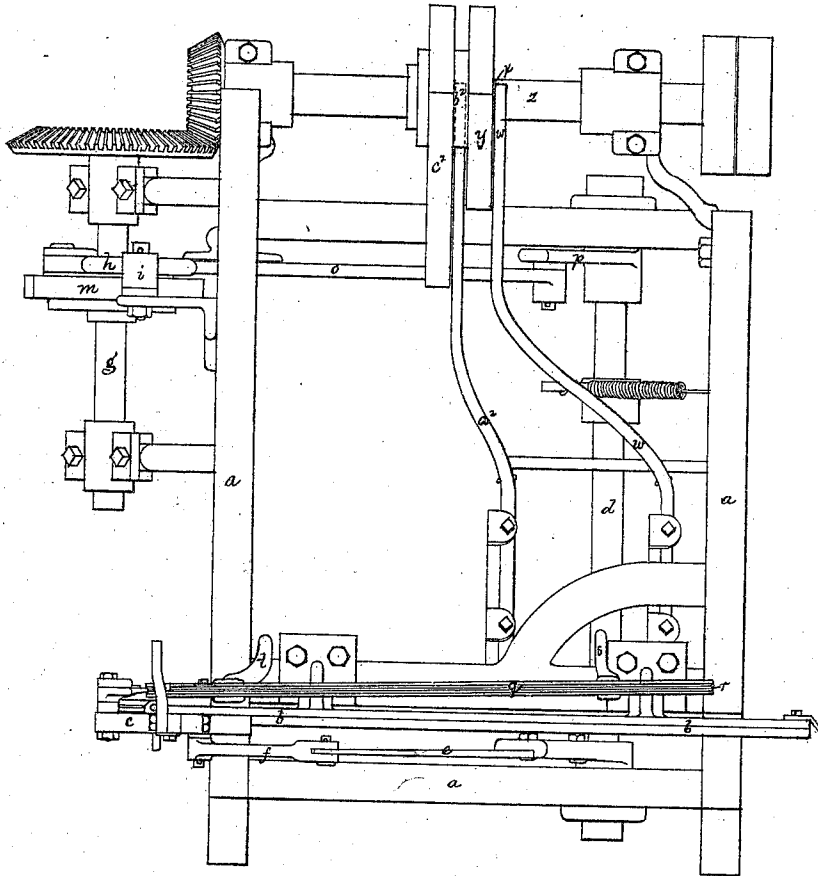


Fig. 4.

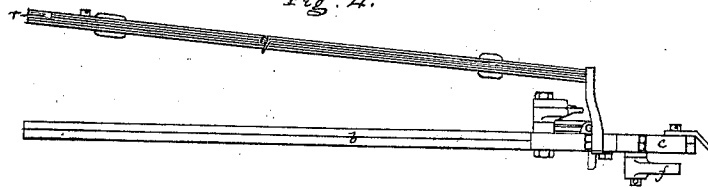
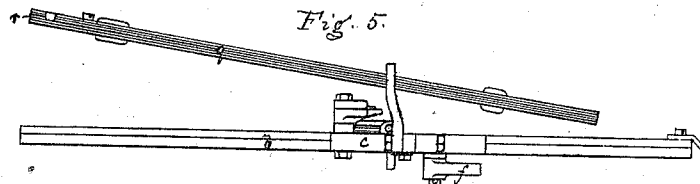


Fig. 5.



Witnesses

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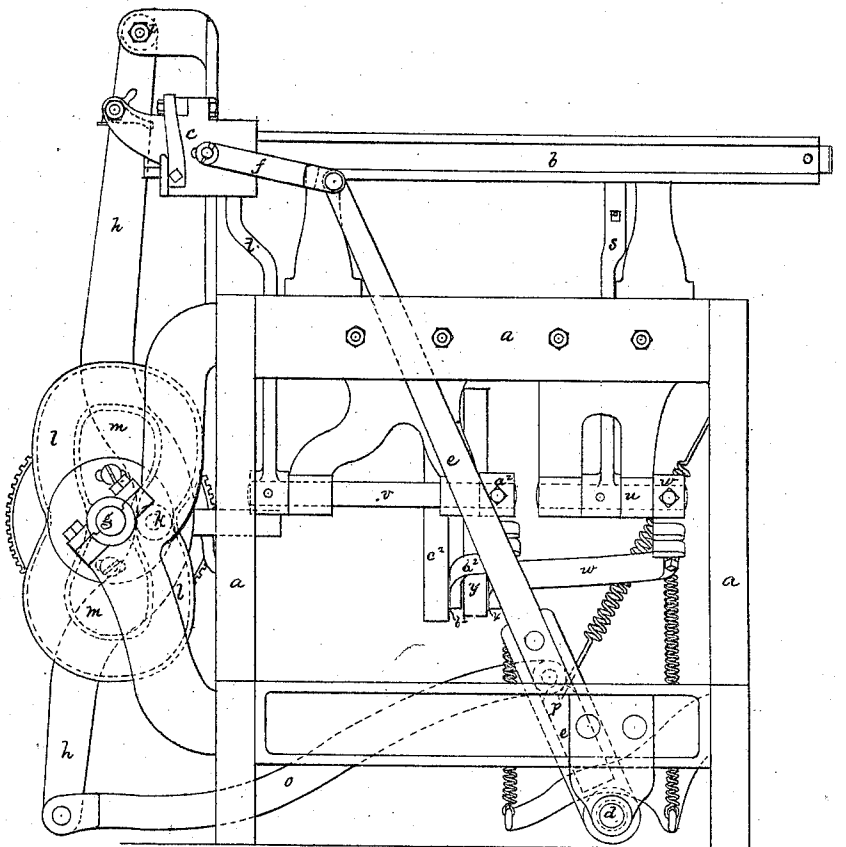
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Fig. 2.



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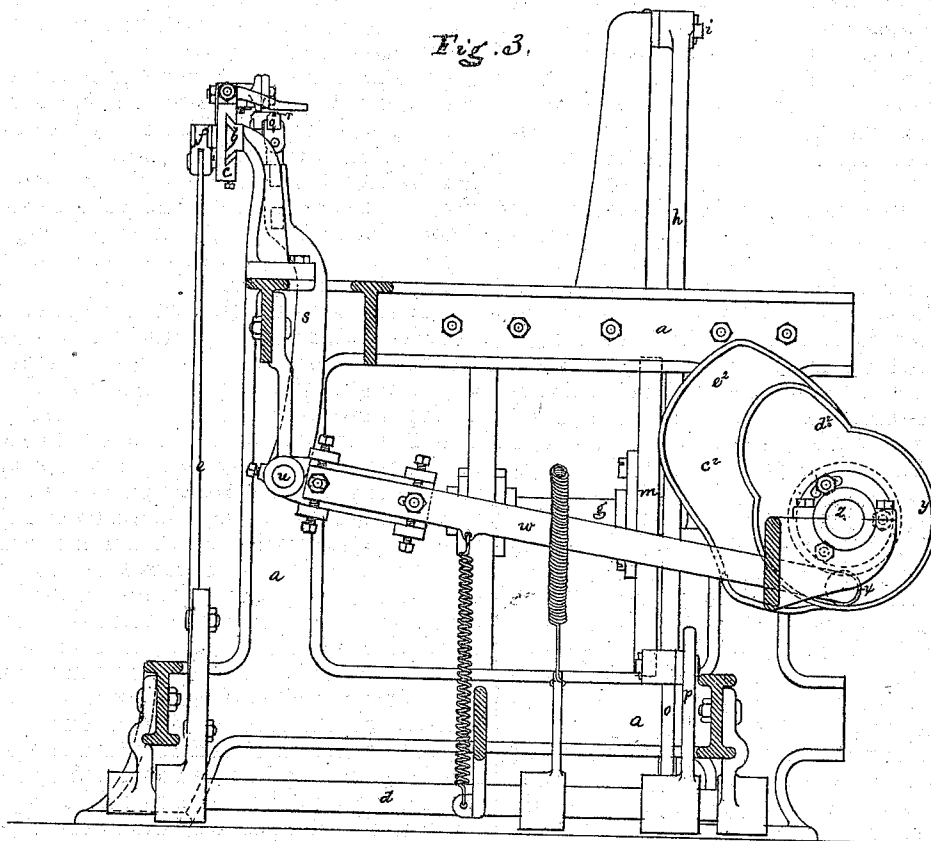
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## UNITED STATES PATENT OFFICE.

HORACE WYMAN, OF WORCESTER, MASSACHUSETTS.

## IMPROVEMENT IN LOOMS.

Specification forming part of Letters Patent No. 128,694, dated July 2, 1872.

*To all whom it may concern:*

Be it known that I, HORACE WYMAN, of Worcester, in the county of Worcester and State of Massachusetts, have invented an Improvement in Looms; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My invention relates to that class of looms designed and employed for weaving pile fabrics, and more particularly to the mechanism for drawing the pile-wires from the fabric and inserting them in the open shed. In my invention I employ, in connection with the bar upon which slides the carriage that effects the transfer of the wires or their removal and reinsertion, a pile-wire trough, to which a compound or irregular movement is given, or a succession of movements, by which the end of the trough is successively presented, first, to the wire in the fabric for its removal, and, next, to the open shed for its insertion; and my invention consists, primarily, in the combination, with a loom and the carriage that applies and removes the wires, of a wire-trough to which such movements are given, or movements to make a special presentation of the trough, first, to the wire to be withdrawn, and, next, to the shed for inserting the wire so withdrawn.

The drawing shows that part of a loom to which my invention is directly applied, none of the weaving mechanism proper being shown, as no change is made therein; and my invention can be fully understood without other than general reference thereto.

Figure 1 shows the mechanism in plan. Fig. 2 is a front elevation thereof. Fig. 3 is a sectional elevation taken on the line *x x*. Fig. 4 shows the trough in position for inserting the wire in the open shed, said trough in Fig. 1 being shown in position for removing the wire from the fabric. Fig. 5 shows its position when the carriage is inserting the wire in the open shed, and has moved half-way across the guide-bar upon which it slides.

*a* denotes the frame-work; *b*, the stationary bar or guide-rail upon which traverses the slide or carriage *c*, which carries the appliances by which each wire is gripped to draw it out from the fabric and is thrown forward into the open

shed, it being unnecessary herein to describe such appliances, as their construction is well known. The carriage *c* is driven from a rocker-shaft, *d*, to an arm, *e*, extending from which, the carriage is jointed by a link, *f*, the rocker-shaft being actuated by connections from the shaft *g*, a swinging pendent arm, *h*, hung at *i*, carrying a pin or roll, *k*, extending into a cam-groove, *l*, in a cam-wheel, *m*, on the shaft *g*, and the foot of said arm being connected, by a link, *o*, to an arm, *p*, extending from the rocker-shaft *d*, the formation of the cam being preferably such as to impart a direct forward movement and a direct back movement to the slide or carriage, with a slight rest at the end of each movement, during which rest the position of the wire-trough is changed. *q* denotes the pile-wire trough, said trough consisting of a bar having a groove, *r*, to receive the wire. The trough is mounted upon the tops of two arms, *s t*, the arm *s* extending from a rocker-shaft, *u*, and the arm *t* from a rocker-shaft, *v*, each arm being jointed to the trough by a compound joint or such a joint as will permit four relative movements of the two arms to move the respective ends of the trough, the two shafts having no connection, and each being actuated by its own cam. The shaft *u* has fixed to it a long arm, *w*, at the outer end of which is a pin or roll, *x*, extending into and operated by a cam, *y*, on a shaft, *z*, and the other shaft *v* has fixed to it an arm, *a<sup>2</sup>*, at the outer end of which is a pin or roll, *b<sup>2</sup>*, extending into and operated by a cam, *c<sup>2</sup>*, on the same shaft *z*, each roll being held down to the cam-flange by the stress of a suitable spring. The cam-shaft *z* is geared to and drives the cam-shaft *g*, the movements of the arm *h*, and the shafts *u v*, and arms *s t*, produced by the cams *m y c<sup>2</sup>*, being timed with respect to the movements of the slide-carriage, the respective movements being as follows: Suppose the wire in the fabric to be ready for withdrawal, the parts will then be in the position shown in Fig. 1, the slide-carriage at the inner end of the guide-bar in position to take the head of the wire. The inner end of the trough will then stand near to the slide, as seen in Fig. 1, the head-grasping device in line with the trough-slot. The continued movement of the cam-wheel *m* will then throw back the slide with the wire grasped thereby, and during such back movement the concentric flanges or parts

of both cams,  $y$   $c^2$ , are in contact with their rolls, and there is consequently no movement of the trough  $q$ , the trough standing parallel, or substantially parallel, to the carriage-bar  $b$ ; but as soon as the slide has reached the end of its outward movement, (the wire being thereby withdrawn from the fabric,) and while the cam  $m$  holds the slide at rest, the cam-roll  $x$  is thrown down into the cam-recess  $d^2$ , thereby actuating the shaft  $u$ , and throwing the outer end of the trough into the position shown in Fig. 4, while at the same time the cam-roll  $b^2$  is thrown down into the cam-recess, thereby actuating the shaft  $v$ , and throwing the inner end of the trough into the position shown in said Fig. 4, the action of both cams bringing the trough into the inclined position shown, the outer end of the trough being then in position for the action of the device that pushes forward the wire, and the inner end of the trough in the position for the wire to enter the open shed. The continued movement of the cam  $m$  then throws the slide-carriage forward, and, as it moves forward, the action of the cam  $y$  on its roll carries in the outer end of the trough, bringing the trough into better angling position for the insertion of the wire, while, as the carriage approaches the end of its stroke, the end of the wire being well introduced, the cam  $c^2$  throws the inner end of the trough toward the guide-bar  $b$ , the trough, as the carriage is at the center of its stroke, standing in the position seen

in Fig. 5. After the carriage stroke is completed, and as soon as the carriage is at rest, the cam  $c^2$  throws the inner end of the trough still further toward the guide-bar, the trough being then in the position shown in Fig. 1, ready to withdraw a wire from the fabric. By giving these movements to the wire-trough, the trough is especially presented both for the removal and the insertion of the wires, the different positions assumed by the trough enabling the wire to be removed and reinserted with a minimum of friction and lateral strain upon it, and also enabling the wire to be readily inserted in the more open part of the shed.

The details of mechanism and the arrangement and specific method of operation may, of course, be greatly varied, the essential feature of my invention being embraced by the trough having such movements as to successively or intermittently present it in position to withdraw a wire from the fabric and to insert the wire into the open shed.

I claim—

The combination of the carriage  $c$  with the wire-trough  $q$ , having partially-parallel and partially-oblique movement, in the operation of transferring a wire from the fabric to the open shed, substantially as described.

HORACE WYMAN.

Witnesses:

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FRANCIS GOULD.