J. E. GILLESPIE.

Hand-Loom.

No. 169,098. Patented Oct. 26, 1875.

Fig. 1.

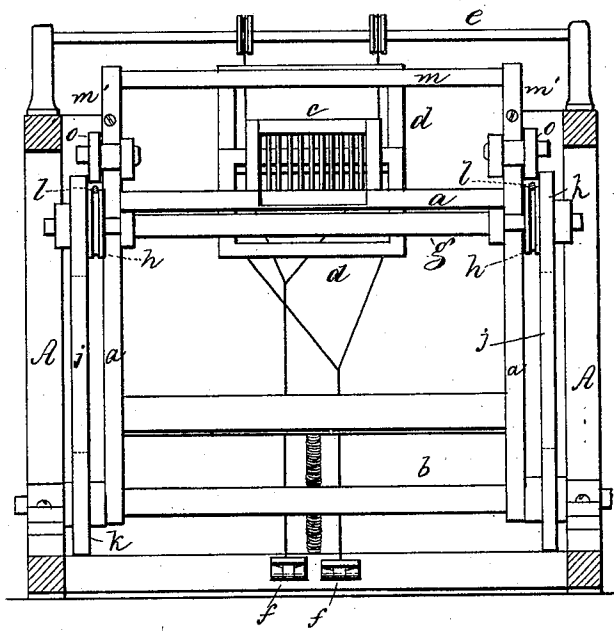


Fig. 2.

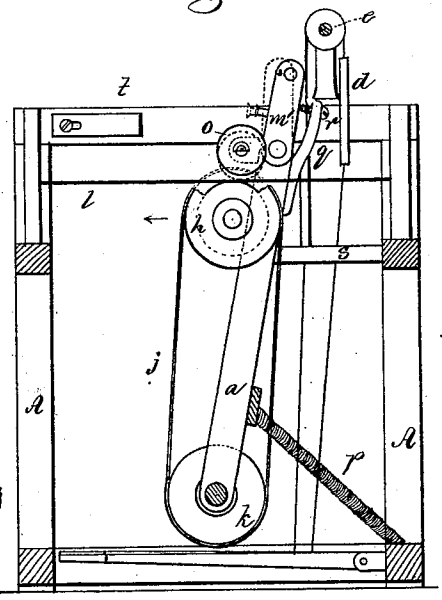


Fig. 3.

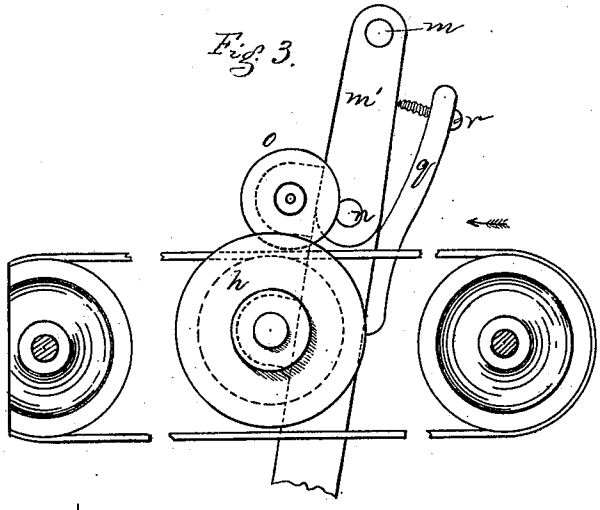
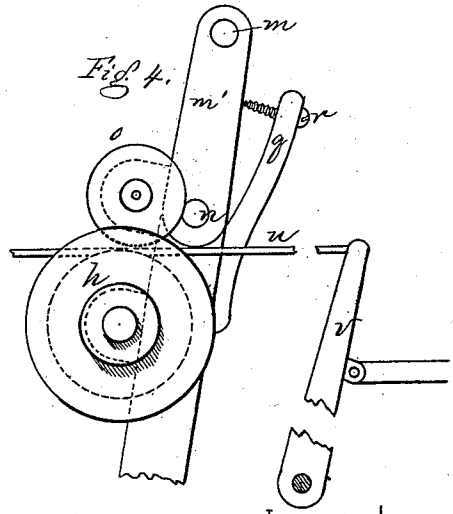


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES E. GILLESPIE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THEODORE A. DODGE, TRUSTEE, OF SAME PLACE.

IMPROVEMENT IN HAND-LOOMS.

Specification forming part of Letters Patent No. **169,098**, dated October 26, 1875; application filed June 24, 1875.

To all whom it may concern:

Be it known that I, JAMES E. GILLESPIE, of Boston, in the county of Suffolk and State of Massachusetts, have invented Improvements in Hand-Looms, of which the following is a specification:

This invention relates to improvements in hand-looms, and is specially adapted to such looms as are employed to weave duck and heavy fabrics, hose, &c., in which it is necessary to beat up the weft very close and hard to make a strong, dense, solid fabric; and the invention consists in means for throwing the lay forward, or to assist the operator in throwing it forward, as hereinafter described.

A cord, band, or rod extends from the front to the back of the loom, and between two friction-rollers carried by the lay, one of which is positively and constantly rotated, and the other of which is mounted on an arm projecting from a part of the hand-rail or other part of the lay, and when the two rollers are forced toward each other, so as to pinch or bind the cord or band, then the positively rotated wheel will, by its contact with the cord or band, move along the same and cause the lay to be thrown forward quickly and forcibly.

Figure 1 is a front view, and Fig. 2 is a side view, of a loom provided with my improvement; and Figs. 3 and 4 are modifications.

A denotes the frame of a loom, of any well-known or suitable construction. The lay *a* has its swords pivoted on the rod or shaft *b*, resting in bearings in one of the cross-pieces of the loom, and the lay carries a reed, *c*. Harness-frames *d* are suspended from pulleys on shaft *e*, and are raised and lowered by pressure on the treadles *f*. A shaft, *g*, extends across the lay under the race-board, and at each end carries a grooved pulley and a band-pulley, *i*, the latter being connected by bands or belts *j* with pulleys *k* on the shaft *b*, which forms the pivotal center of the lay, which shaft is driven by power while the loom is in operation. Extending from the back to the front of the loom at each side is a cord, *l*, and it bears on the grooved pulley *h*. At the top of the lay is a hand-rail, *m*, whose side pieces *m'* are pivoted at *n* to the lay-sword or race-beam, and an arm projecting laterally therefrom carries a friction-wheel, *o*. A spring, *p*, throws the lay back.

When it is desired to throw the lay forward, the operator has only to turn the hand-rail *m m'*, so as to throw its friction-wheel *o* down against the cord or band *l* and the positively rotated wheel *h*. This action nips the band or cord closely, and produces sufficient friction, so that the action of the wheel *h* on the cord or band carries the lay forward, and the force of the lay and its motion are controlled by the degree of pressure applied to the band and the speed of the wheel *h*. The cord or band may be adjusted to be more or less taut. Uprights *q*, attached to the lay and provided with regulating-screws *r*, govern the back movement of the top rail, while the backward position of the lay is regulated by the stops *s*. Adjustable stop-pieces *t* on the loom-frame govern the forward throw of the lay. Such stops, acting against the hand-rail side pieces, or against adjustable projections thereon, turn the hand-rail on its pivot-pin, disengaging the hold of the friction-wheel on the cord or band, and stopping the further movement of the lay forward.

In weaving hydraulic-hose fabric, where it is necessary to beat in the filling very closely, the lay is usually weighted to assist the operator in striking a hard blow, and each weft is usually beat in several times, and this class of weaving requires the expenditure of much strength, and this class of hand-looms is commonly operated by men. By these my devices the operator has only to throw the friction-pulley carried by the hand-rail frame in contact with the other pulley, and by exerting more or less force on the long arm *m'* of the hand-rail, which may be considered as a lever, the friction-pulley of the short arm will bind between it and the driven pulley *h*, the band or cord allowing less or more slip between the cord or band and pulley, and consequently the force of the blow may be easily governed. Movement forward of the top of the hand-rail causes the lay to beat up.

This hand-rail might be controlled through a treadle at the lower part of the loom. Any other well-known harness-motion than that described may be used.

Instead of the stationary cord or belt *l*, I might use a movable belt, as shown in Fig. 3, the arrow showing the direction of its movement, and when the friction-roller is depressed on the belt the lay will be thrown forward.

In Fig. 4, instead of a flexible band or cord, I employ a rod, *u*, connected with a radius-bar, *v*, which is reciprocated through a crank and link, and when the friction roller or wheel is depressed against the rod the lay will be moved.

I claim—

1. The combination of the lay, its movable friction-pulley, and driven pulley with a band, cord, or rod, whereby the lay may be thrown forward, substantially as described.

2. The combination of the lay, its pivoted hand-rail, and friction-pulley with a stop to meet the hand-rail and disengage the friction-pulley from the band or cord at the forward position of the lay, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES E. GILLESPIE.

Witnesses:

G. W. GREGORY,

W. J. PRATT.