J. F. WICKS.

LOOMS.

No. 184,681. Patented Nov. 21, 1876.

Fig. 3.

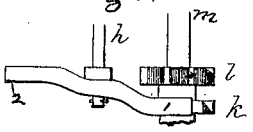


Fig. 1.

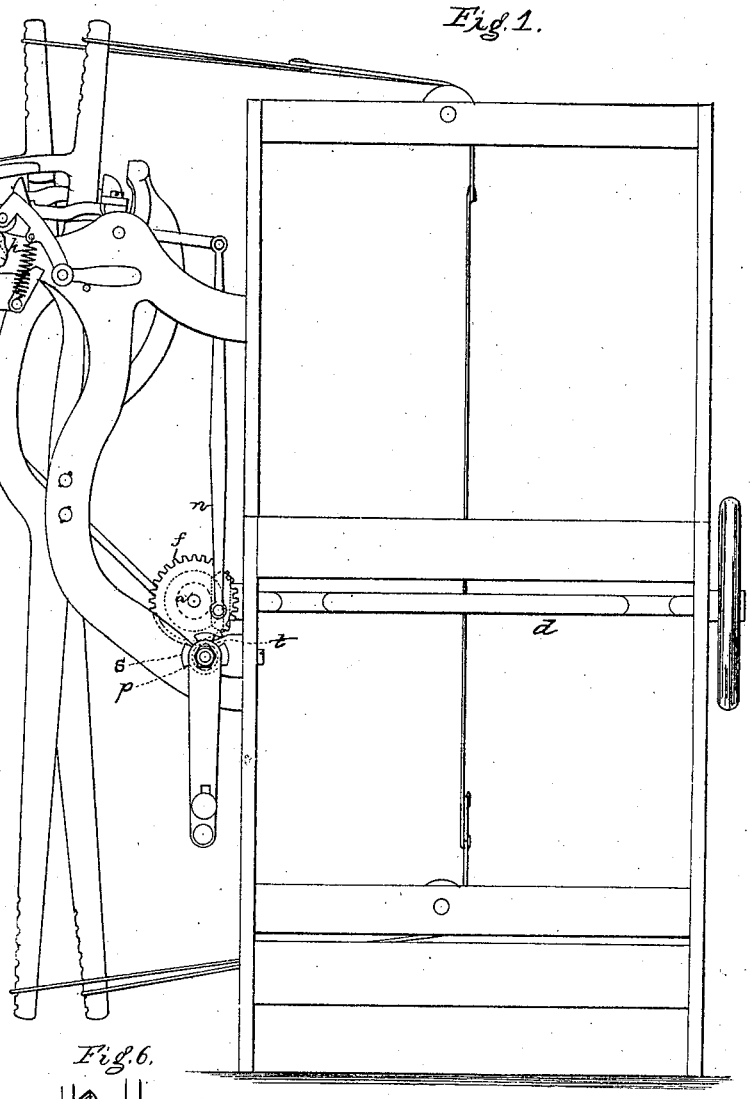
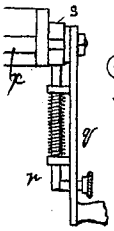
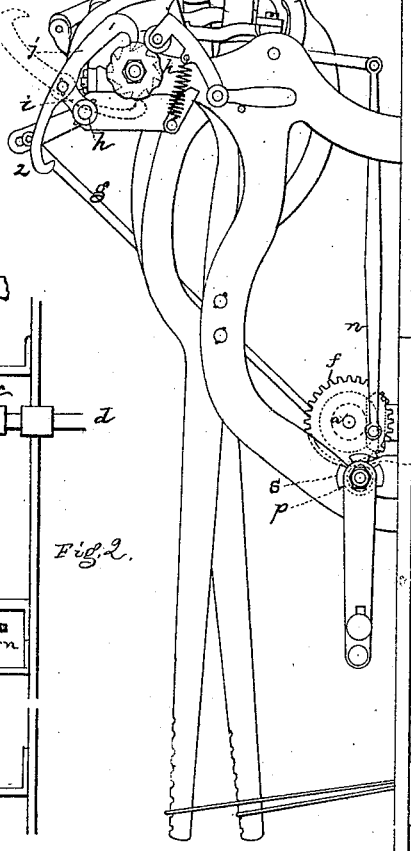


Fig. 4.





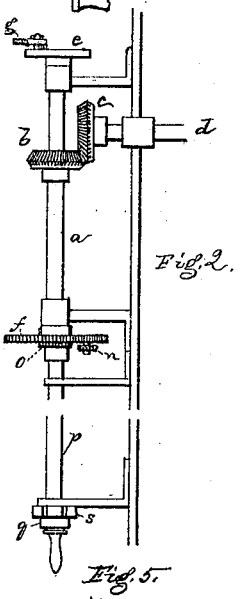


Fig. 2.

Fig. 5.

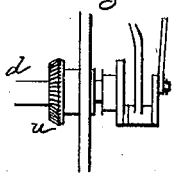
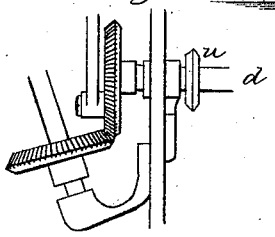


Fig. 6.



Witnesses.
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W. J. Pratt.

Inventor.
Joseph F. Wicks.
per Lowby & Gregory Attys.

UNITED STATES PATENT OFFICE.

JOSEPH F. WICKS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO GEORGE CROMPTON, OF SAME PLACE.

IMPROVEMENT IN LOOMS.

[Specification forming part of Letters Patent No. **184,681**, dated November 21, 1876; application filed March 28, 1876.

To all whom it may concern:

Be it known that I, JOSEPH F. WICKS, of Worcester, in the county of Worcester and State of Massachusetts, have invented an Improvement in Looms, of which the following is a specification:

This invention relates to fancy looms; and has for its object to operate the shed-forming devices and the pattern-surface thereof, through a hand-crank, whenever it is desired to pick out a mispick, or to find a true shed.

In other looms it is customary to employ one or more clutches between the crank-shaft and the shaft or devices for moving the shedding mechanism and pattern-surface, which, when disengaged, permit the attendant to reverse or move the shedding devices and pattern-cylinder independently of the lay.

In this my invention the clutch between the crank and shedding shafts is omitted, its cost is saved, and the attendant is not obliged to throw the crank and shedding shafts out of and into engagement, and these shafts are, therefore, always in proper relation to the pattern, whereas in looms where the clutch is used it sometimes happens that the clutch will not engage at exactly the proper time, and the result is an extra movement of the pattern-surface, which consequently makes a mispick, and this is especially the case in looms in which the pattern-surface is moved by a pawl controlled by the operator when the movement of the pattern-surface is to be reversed.

In forming sheds for taking out mispicks on looms turned independently of the crank-shaft, it often happens that the crank-shaft stops in such position that the lay is not thrown completely back from the breast-beam, and then the lay and crank-shaft have to be turned back by hand, to bring the lay in its extreme backward position, for then only are the warps opened to their greatest extent and drawn taut, giving the attendant complete access to the weft.

This invention consists in devices, as hereinafter described, whereby the shedding mechanism and its pattern may be reversed or moved by a hand-shaft without disconnecting these devices from the crank-shaft; and in carrying out this invention, to obviate moving the picking and shuttle-box mechanism, I turn the short shaft first in one and then in the other direction only far enough to open the shed to its full extent, and at the same time the crank-shaft is turned substantially half a rotation, but not a whole rotation, and then back again, moving the lay from its extreme forward to its extreme backward position, fully opening and separating the threads.

Figure 1 represents a front view of portions of a fancy loom substantially as shown in United States Patent No. 77,361, but with my improvements added; Fig. 2, a detail of shedding-shaft and shaft to move it; Fig. 3, a detail of devices for moving pattern-surface; and Figs. 4, 5, and 6, other details, to be hereafter referred to.

The upright levers, notched jacks, lifter, depresser and evener, pattern-surface, crank-shaft, and short horizontal shaft at the loom side are substantially as represented in the above-cited patent, as to construction and operation, when the loom is weaving regularly.

In this my improvement I denominate the shaft *a* the shedding-shaft, and a pinion, *b*, thereon engages a pinion, *c*, on the crank-shaft *d*, and on shaft *a* is also a crank, *e*, and toothed wheel *f*. The crank is connected, by link *g*, with an arm of a rock-shaft, *h*, having at its other end an arm, *i*, on which is pivoted a double and weighted pawl, *j*, adapted to engage either of two reverse ratchets, *k* or *l*, placed side by side on the shaft *m* of the pattern-surface or cylinder of ordinary construction, and adapted to lift the jacks to be engaged by the lifter or depresser, and this pattern-surface will be moved in one or the other direction according to which end of the pawl is in engagement with a ratchet. When the heavy end 1 of the pawl is engaged with ratchet *k*, as in full lines, Fig. 1, the pattern is moved regularly forward; but when the pawl is turned to position in dotted lines, then the end 2 engages ratchet *l* and reverses the pattern-cylinder. This cylinder is moved from shaft *a*, and on such shaft is the pinion or toothed wheel *f*, which is also provided with a crank and link, *n*, adapted to move the lifter and depressor, all as usual. The teeth of this wheel *f* are engaged by a pinion, *o*, on a hand-shaft, *p*, at

the loom side, this shaft being provided, preferably, with a crank-handle, *q*, having a bolt, *r*, or equivalent locking device, to engage the handle with the end of the shaft, or to leave the shaft free to turn in the handle, as the loom is operated as usual in weaving, for then the hand-shaft moves in unison with the crank-shaft. The connection, in this instance, is made by means of a hub, *s*, provided with notches *t*, to receive the end of the bolt.

When it is necessary to remove a mispick or find a true shed, the handle *q* is made fast on the shaft *p*, and the pawl *j* is turned to throw the hook 2 in engagement with the ratchet *l*, the weighted end 1 keeping the pawl engaged, and the shaft *p* is moved to turn the shedding-shaft, and connected shedding and pattern-surface and crank-shaft, in the opposite direction far enough to form a shed, the cylinder is turned back one step, and the crank-shaft is thrown so as to bring the lay entirely back; then a weft may be picked out; and the hand-shaft is then turned in the opposite direction far enough to again form a new shed and move the pattern-cylinder another step backward, and in this way, it will be noticed, the picking mechanism is not operated, and the connection always maintained with the crank-shaft enables the lay to be brought each time to its extreme backward position.

It is evident that the invention may be applied to other well-known forms of Crompton looms—as, for instance, those shown in United States Patents Nos. 140,894 and 94,571; but in such cases I will provide the crank-shaft with bevel-pinions *u*, and on the end of hand-shaft *p* I will place a suitable bevel-pinion to engage it and turn the crank-shaft.

I do not herein claim a hand-shaft and pinion to reverse a shaft or sleeve connected with and operating the shedding devices, and adapted to be disengaged from the crank-shaft through the action of a clutch.

This present invention is an improvement on an application filed in the United States Patent Office October 27, 1874, and in which I show two reverse ratchet-wheels, and two separate reciprocating hooks for moving them, and in such case I employ a hand-shaft. I do not herein claim any of the devices shown in said application.

I claim—

1. In a loom provided with jacks and lifter and depressor and evener and pattern-cylinder, the combination of the shedding-shaft connected directly with the crank-shaft, and adapted to move the shedding mechanism and pattern, with a double pawl, a pinion on the shedding-shaft, and a hand-shaft provided with a pinion, and extended along the side of the loom, whereby, through the action of the hand-shaft, the shedding mechanism, pattern-surface, shedding-shaft, and crank-shaft may may be turned at will in unison, in either direction, substantially as set forth.

2. The rock-shaft connected with and operated by the shedding-shaft, and the pattern-surface and ratchets *k l*, in combination with the double and weighted pawl *j*, adapted to engage ratchets *k l* of the pattern-surface and turn it in either direction, substantially as described.

3. The combination of the hand-shaft and shedding-shaft with the handle, and mechanism to lock or unlock it from the shaft, whereby the handle, when unlocked, may remain at rest as the shaft is rotated by the crank-shaft.

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

JOSEPH F. WICKS.

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