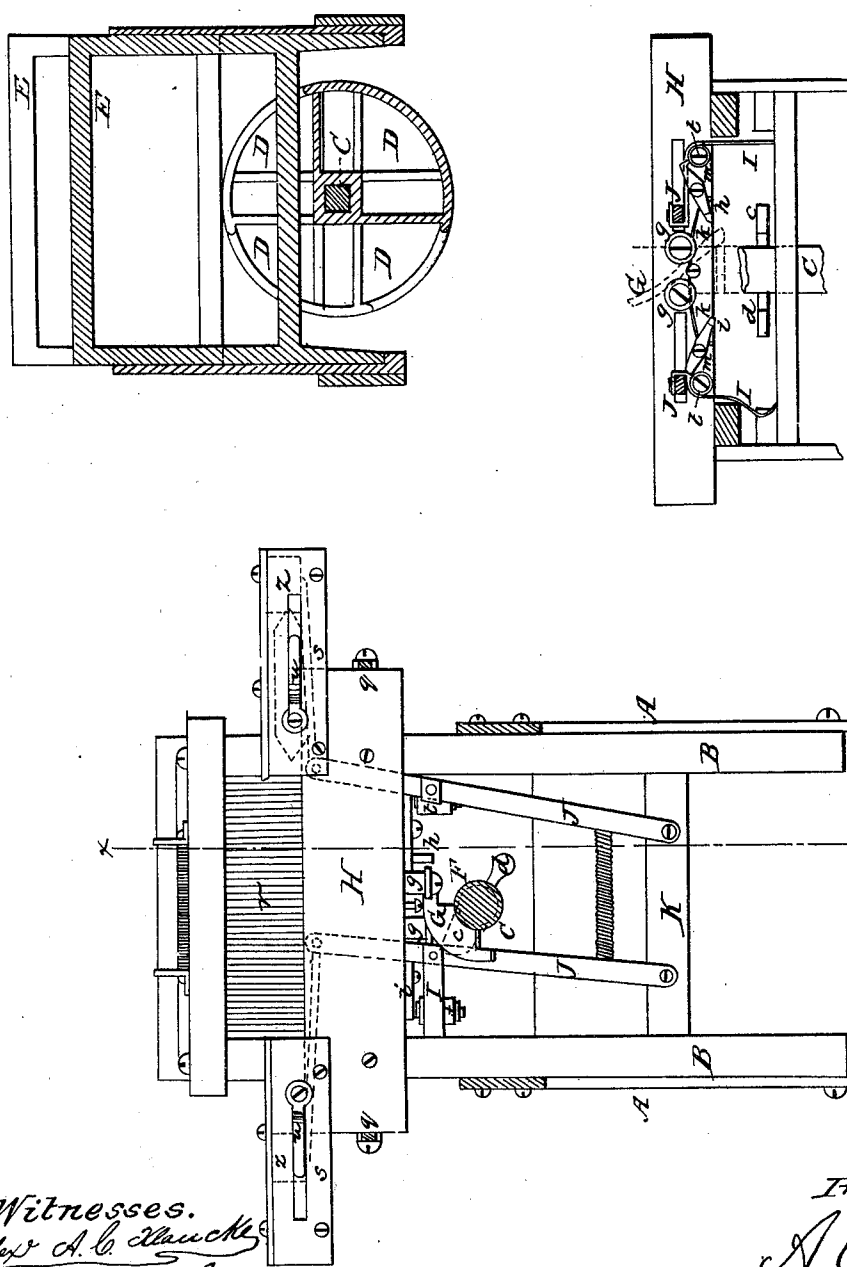


A.O. Very Hand Loom.

Sheet 1, of 2 Sheets.

No 69,515.

Patented Oct. 1, 1867.



Witnesses.
Alex A. C. Claucke
A. K. Ellsworth.

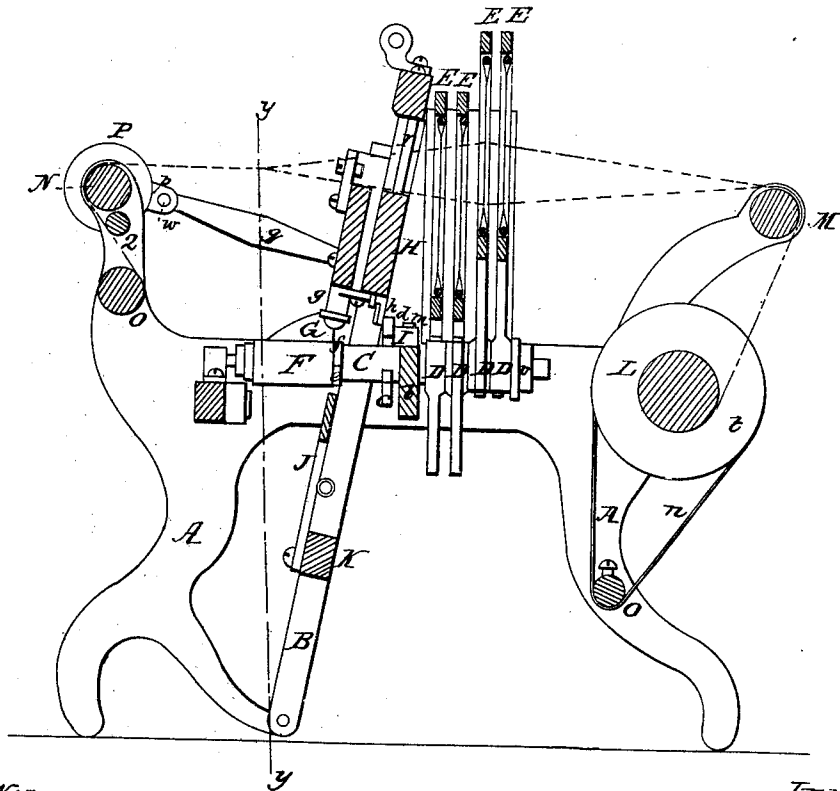
Inventor.
A. O. Very.

A.O. Very. Hand Loom.

Sheet 2, Sheet 2.

No 69,515.

Patented Oct. 1, 1867.



Witnesses.

Rep. A. C. Klauckey.

N. W. Ellsworth.

Inventor.

A. O. Very.

United States Patent Office.

ALPHA O. VERY, OF ANDOVER, NEW YORK

Letters Patent No. 69,515, dated October 1, 1867.

IMPROVEMENT IN LOOMS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ALPHA O. VERY, of Andover, in the county of Allegany, and State of New-York, have invented new and useful Improvements in Hand and Power-Looms; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a longitudinal vertical section of my improved loom in line *x x*, fig. 2.

Figure 2 is a cross-section of the same in line *y y*, fig. 1.

Figure 3 is a detached sectional view of the harness-frames and of the tappets operating the same.

Figure 4 is a detached view of the under side of the shuttle-race, showing the tripping mechanism.

Similar letters of reference indicate corresponding parts in the several figures.

The nature of my invention consists in providing the treadle-shaft at its forward portion with a loose jacket, on which is formed a spiral cam which operates the harness-frames; also, in making the rear ends of the straps which operate the levers of the shuttle motion adjustable, as hereinafter described; also, in tripping the picker-staffs by means of two tripper arms formed on the treadle-shaft in the rear of the loose jacket in place of the straps now in common use in combination with treadles; lastly, in connecting the lay to a crank movement in the front sides of the frame to enable one person to operate the loom and attend to the fabric being woven.

To enable others skilled in the art to which my invention appertains to fully understand and use the same, I will proceed to describe its construction and operation.

A, in the drawings, may represent the frame and B the batten or lay of the loom. C is the treadle-shaft, carrying at its inner end the tappets or cams D D D D, which are secured on the shaft by means of the nut *v*. The shaft C has its bearings on the cross-piece *a* at the forward end, and at the cross-piece *b* at the middle of the frame A. These tappets or cams operate the harness-frames E E E E. On the forward end of the shaft C is a loose jacket, F, provided with a spiral cam, G, which is operated by two roller-pins *g g* on the under side of the shuttle-race H. The loose jacket F engages with the shaft C, when the lay is drawn forward, by means of the pawl *f*, operating on a ratchet-wheel, *e*, on the shaft C, slipping back over the teeth of the same when the lay is pushed back, and allowing the jacket to be turned back by the cam and roller-pins without operating the shaft. On the shaft C, in rear of the loose jacket, are formed two tripper-arms, *c d*, which as the lay moves back alternately trip off the levers *h i*, which are held in the position shown in fig. 4 by means of a spring, *k*, relieving the picker-staffs J, so that they fly inward by the force of the spring attached to them, thus driving the shuttle through the shed. The levers *h i* hold the picker-staffs as soon as the latter have passed their outer ends in position to operate the shuttle. - A band or strap, I, secured to the upper part of the picker-staff J, is employed to draw back the picker-staffs. This band passes around rollers *t*, the bearings of which are on the lower side of the shuttle-race and the uprights of the lay, and these bands are fastened so as not to slip by means of set-screws *m* on the cross-piece *b*. These setscrews *m*, when the bands or straps I become stretched and refuse to set the picker-staffs, are to be turned sufficiently to give to the bands the required tension. The picker-staffs J are pivoted at their lower ends to the cross-piece K on the lay or batten B, and are held in a position toward each other by means of the spring *j*. The cams or tappets E are of a form, shown in fig. 3, shaped in a quarter section of a circle, with a square opening in their angle, which fits on the square rear end of the shaft C, so that by unscrewing the nut *v* the cams can be changed in a few seconds to any position necessary for the different kinds of cloth to be woven. As now commonly in use, the tappets are securely held and prevented from slipping on the shaft by means of set-screws, and in changing them to another position much time is lost in unscrewing and refastening each separate tappet, and considerable care is necessary to get them again into correct and true position. By my invention this is entirely obviated, as each tappet on being replaced must necessarily come at once into the correct and true position to the others, and it is evident that a few seconds will suffice to slip them off and on to the shaft and secure them firmly in place by the nut *v*. I do not, however, confine myself to the exact form of the openings in the tappets or cams, as they may be triangular or of any suitable angular form, or the circular shaft may be provided with grooves, and the round openings provided with projections fitting into the same, and *vice versa*. At the rear end of the frame A is situated the warp-beam L, to which the necessary tension is given by means of a strap, *n*, running over the

friction-roller *t*, and attached to springs on the under side of the cross-bar *o*. Any known means may, however, be used for this purpose. The warp extends from the warp-beam *L* over the roller *M*, through the harness and beaters of the lay, where the shuttle weaves the cloth, which passes over the cloth-beam *N* on to the take-up roller *O*, which is operated by a ratchet-wheel and pawl in the usual manner, and the tension of which is regulated by any well-known device. On each side of the frame, and on a shaft, *Q*, below the cloth-beam *N*, is pivoted a belt-wheel, *P*, provided with a crank, *p*, which has a handle, *w*, and is connected to the side of the lay by means of an arm, *q*. By these means the lay can be operated either by the handle *w* or by means of any power communicated to the belt-wheel or pulley *P*, so that my loom can be operated either as a hand or power-loom at will. The lay *B* consists of the usual frame, provided with beaters *r* and the shuttle-race *H*, at the ends of which are the usual pockets *s*, which hold the blocks *t*, and are provided with the detents *u*.

Operation.

When the lay is in position, as shown in fig. 1, the picker-staffs *J* are in position as shown in fig. 2, the shuttle in the right pocket and the tripper-arm *c* in such a position that at the next revolution of the shaft it will be so placed as to strike the lever *h* on the backward movement of the lay, the straps or bands *I* being in a loose position, and the block *t* in the left pocket *s* in a forward position, after sending the shuttle to the opposite side. The lay is now moved forward. The roller-pins *g* force the shaft *C* to make one-quarter turn, by means of the cam *G* on the loose jacket *F*, and the ratchet-wheel *e* and pawl *f* bringing the tripper *c* in position to strike the lever *h* on the backward movement of the lay and tightening both straps or bands *I*, thereby setting the left picker-staff and the block *t* in the left pocket *s*. At the same time the first harness-frame *E* is raised and the third one lowered by means of their respective tappets or cams revolving with the shaft *C*. The lay now moves back, revolving the loose jacket *F* on the shaft *C* without revolving the latter. The lever *h* coming in contact with the tripper *c* releases the picker-staff *J*, which, by means of the spring *j*, is thrown back into its normal position, and sending the shuttle across and through the warp into the left pocket *s*, where it is retained by the detent, and placing the parts in position as shown in fig. 4. The lay being again moved forward, the same action takes place with the left parts of the loom as above described with the right parts, and so on, the harness-frames changing with every forward movement of the lay. For different kinds of cloths the harness-frames can be differently arranged within a few seconds.

I do not confine myself to the use of the exact form of the cam as represented in my drawings, but may operate the jacket by means of a straight lever acted upon by the lay, or any equivalent device. By my improvements one person can easily turn the lay with either hand and attend to the weaving with the other. The loom may be operated also by any other than hand-power, which may be communicated to the pulley *P* by means of a band.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. Operating the treadle-shaft of looms by means of a direct action of the lay on a cam formed on a loose jacket on the treadle-shaft, substantially as described.
2. The spiral cam *G* on the loose jacket *F* on the treadle-shaft *C*, substantially as and for the purposes set forth.
3. The roller-pins *g g* on the under side of the shuttle-race *H*, operating the cam *G* on the loose jacket *F*, substantially as and for the purposes set forth.
4. Making the straps operating the picker-staffs adjustable, substantially as described.
5. The tripper-arms *c d* on the treadle-shaft *C*, substantially as and for the purpose described.

The above specification of my improvements in hand and power-looms signed this fifteenth day of February, 1867.

A. O. VERY.

Witnesses:

N. K. ELLSWORTH,
ALEX. A. C. KLAUCKE.