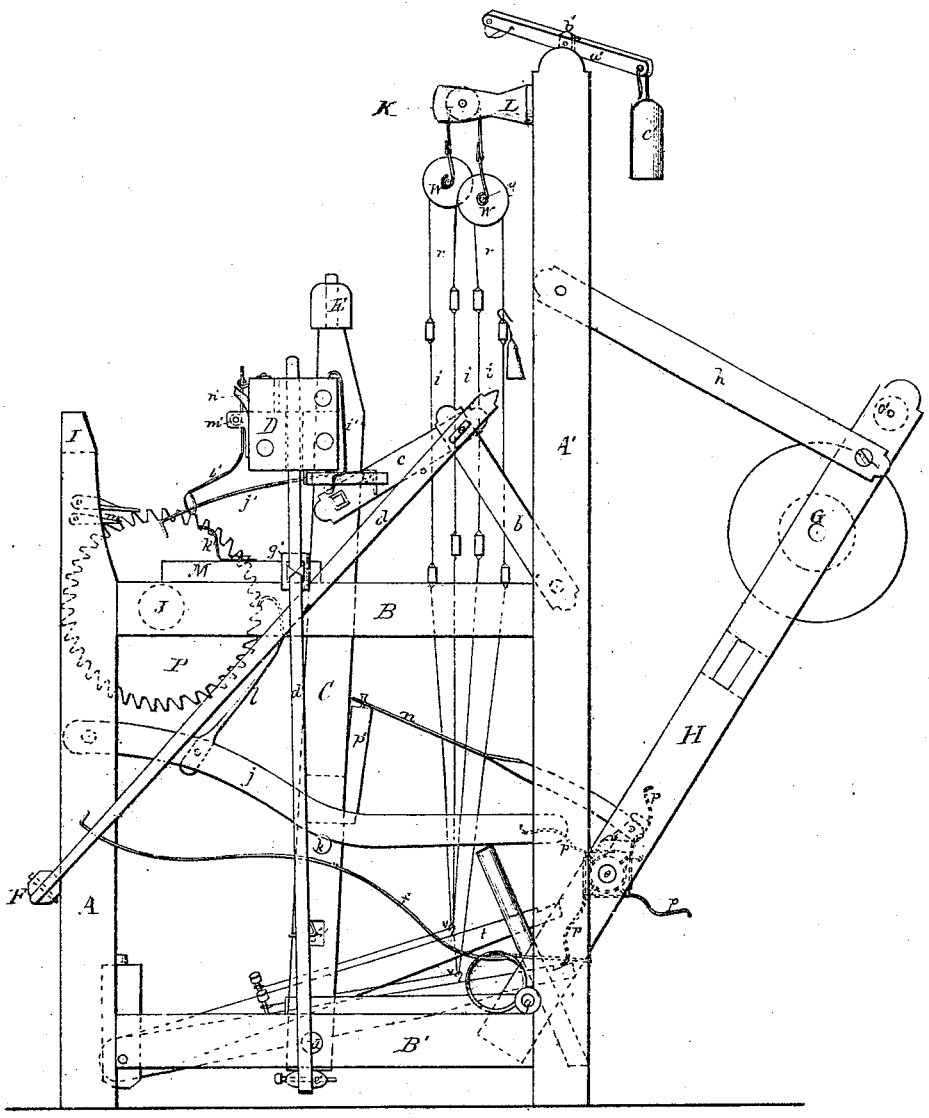
2. Sheets. Sheet. 1.

J. E. Nute,

Hand Loom.

No. 107,094. Patented Sept. 6. 1870

Fig. 1.



Witnesses.

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Eugene F. O'Neil

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James E. Nute

By T. W. Porter Atty

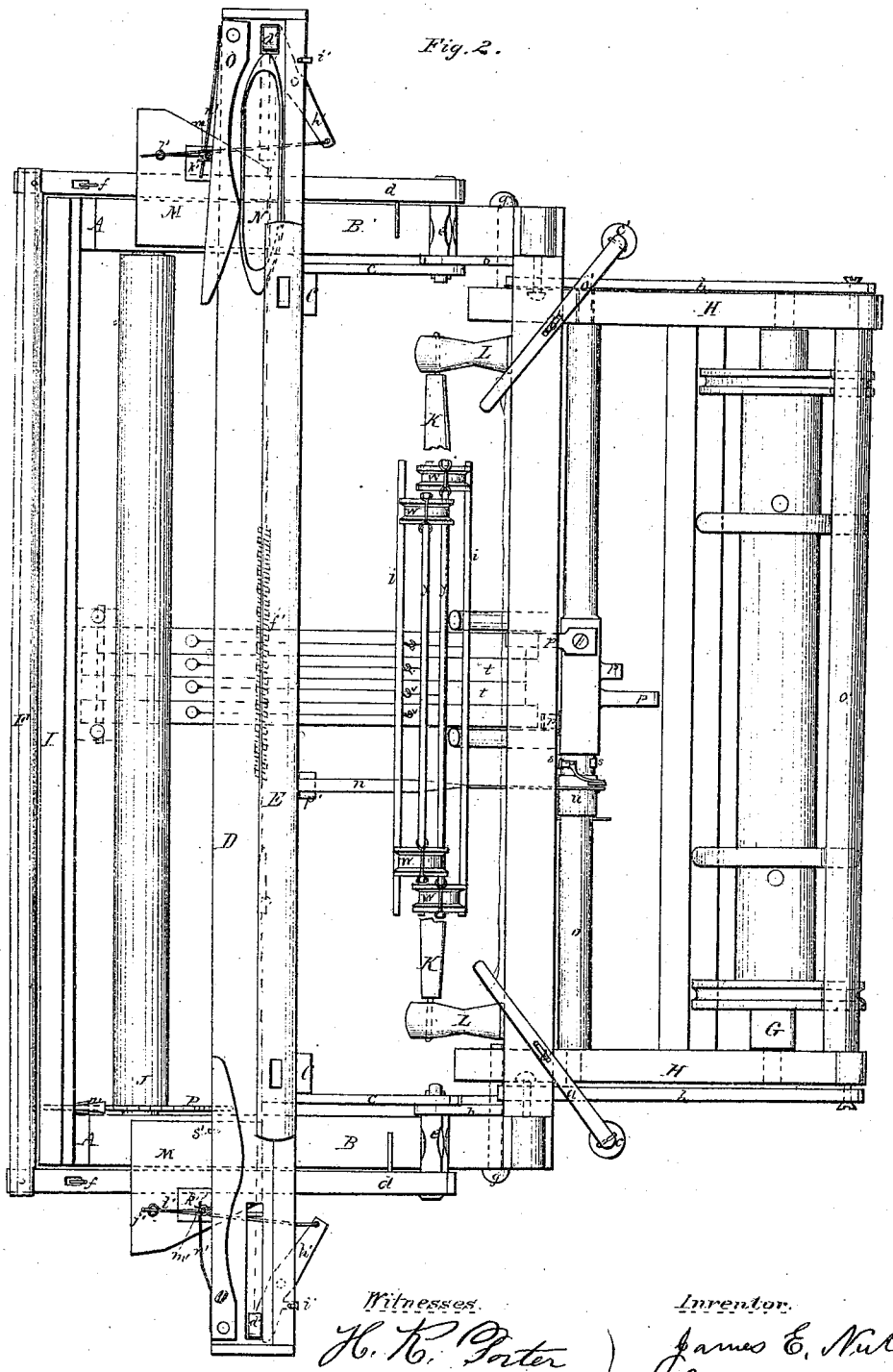
2. Sheets Sheet. 2.

J. E. Nute,

Hand Loom.

No. 107,094. Patented Sep. 6. 1870.

Fig. 2.



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JAMES E. NUTE, OF LINCOLN, MAINE.

Letters Patent No. 107,094, *dated September* 6, 1870.

IMPROVEMENT IN HAND-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, JAMES E. NUTE, of Lincoln, in the county of Penobscot and State of Maine, have invented new and useful Improvements in Hand-Looms; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to which it appertains to practice it.

This invention relates to new and useful improvements in looms used for domestic purposes principally, in which all the articles of domestic use usually woven upon looms are made, including cloths, blankets, shawls, bags, and other articles; and

The improvements consist in the devices and method by which the lathe is actuated; and, also, in improved devices for actuating the shuttle.

Figure 1 is a side elevation, and

Figure 2 is a top or plan view.

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

In the drawings—

A A represent the front, and

A′ A′ the back posts of the frame, while

B B are the upper, and

B′ B′ the lower horizontal bars connecting with the posts, as shown.

Suitable bars, extending lengthwise of the loom, also serve to unite the posts in that direction.

C C are the vertical bars of the lathe, which are pivoted at *a* to the bars B′.

D is the shuttle-bed beam, and

E, the upper beam. Between these the reed is secured in the usual manner.

For actuating the lathe, the following device is employed:

The short levers *c c* are, at their front ends, pivoted to the lathe-bars C, as shown, while similar levers, *b b*, are, at their rear ends, pivoted to posts A′.

Both the levers *b* and *c* are, at their intersecting ends, pivoted upon the short stud *e*, which is secured in the rods *d*, which latter are, at their lower ends, secured in the connecting-bar F.

The coiled lever-springs *f* are secured, at their rear ends, to posts A′, and connected, at their front ends, with rods *d*, as shown.

To operate the lathe by this device, the weaver uses one hand upon beam E and one foot upon bar F, depressing the same as the lathe is thrown forward, the levers *c c* and *b b*, as they assume a horizontal or extended position, yielding their greatest force at the point required, the springs *f* serving to elevate the rods *d* upon the retrograde movement of the lathe.

G is the yarn-beam, which is pivoted in the uprights H, which are pivoted at *g*, at the intersection of bars B′ and posts A′.

The yarn-beam is held in an extended position, as shown, by the rods *h*, which, at their inner ends, are held by removable pins inserted in posts A′.

When the beam is closed in, the arms *h* hang by the side of the uprights H, and the pins in posts A′ serve to secure the beam in this position.

The yarn, passing from beam G over the roller *o′*, passes through harnesses *i i*, thence through the reed, and over beam I, to the cloth-beam J, upon which it is gradually and automatically wound by the action of the lathe through the following-named devices:

The curved lever *j* is, at its forward end, pivoted to post A, the rear end being free to rise and fall.

The knob *k*, secured in upright C, acting upon the inclined edge of lever *j* as the lathe vibrates, serves to elevate the free end of the lever, which, being duly weighted, as shown, bears constantly upon the knob, thereby imparting a rising and falling motion to pawl *l*, which is pivoted to lever *j*, as shown, and which engages with ratchet P, which is secured to the end of cloth-beam J, while the short pawls *m* serve to hold the beam J from retrograding when the pawl *l* is being raised. Thus, by graduating the weight upon lever *j*, the desired tension upon the cloth is, consequently, maintained, and it is steadily wound upon the cloth-beam.

The yielding off of the yarn from beam G is controlled by friction-bands in the usual manner.

The treadles *t t* are, at their forward ends, pivoted to the lower front beam of the frame, in the usual manner, as shown.

The connecting-cords, descending from the harnesses to the treadles, pass through eyes *v v*, secured in the treadles, as shown, and thence forward to short studs, to which they are secured, as shown. By having a series of holes in the treadles for the insertion of these knobs, the tension of the cords is readily adjusted.

The treadles are actuated by the curved arms *p p p p*, which are secured upon shaft *o*, and which, successively, act upon the rear ends of the treadles, thereby depressing them, and actuating the harness in the usual manner.

A rotary movement is imparted to the shaft *o* by the action of the lathe, through the following devices:

The connecting-rod *n*, at its front end, is secured by a pin, as shown, to the stud *p′*, which is rigidly attached to a cross-bar passing from one to the other side of the lathe uprights C.

The rear end of the connecting-rod is pivoted to a short stud formed upon the loose sleeve *u*, which revolves upon shaft *o*.

A pawl, *r*, is also pivoted upon this stud, and engages with four catches, *s*, secured in shaft *o*, to coincide with arms *p*. Thus, the vibratory motion of the lathe imparts a reciprocating movement to rod *n*, which, acting upon sleeve *u*, serves, by the agency of pawl *r*, to rotate shaft *o*, and thereby, through the before-described agencies, to actuate the treadles, as described.

The harnesses are suspended by short cords *r r* to the sheaves *w w*. The cords pass twice around the sheaves, and, by their friction, insure a rotary motion of the sheaves to the extent of the movement imparted to the cords.

The sheaves *w w* are correspondingly secured upon small iron shafts *y y*, as shown, these shafts being suspended in brackets, which, in turn, are attached to straps, which are attached to roller K. By thus securing the sheaves *w* upon shafts *y*, when either harness is sprung, each end is equally raised or depressed, regardless of resistance, as the friction of cords *r* insures a rotary movement of the sheaves, and the sheaves, being thus connected, the harness moves uniformly throughout its length.

When weaving bags or cloth of double width, the roller K is suspended on vibratory arms, *a'*, at their forward end, these arms being pivoted at their center in studs *b'*, inserted in the cross-beam connecting the upper ends of posts A'.

A weight, *c'*, attached to the rear ends of arms *a'*, serves to keep the harness and their connecting-cords taut, without rigidity, thereby enabling the weaver to perform better work of those classes than when roller K is attached to the rigid brackets L.

To actuate the shuttle, I employ the following devices:

The picker-staves *d'* are, at their lower ends, pivoted in the rocking-bar *e'*, which is secured to the lower ends of lathe-posts C. The upper ends of the staves play freely in a slot in the beam D, shown plainly in fig. 2.

Rollers, *g'*, are secured by brackets to the picker-staves, at such point thereon as that, by their contact with the side inclines M, secured upon beams B, the staves are forced outward as the lathe swings forward.

When the staves are thus forced outward to their full extent, they are secured in that position by the latch *h'*, which is pivoted beneath the lathe, as shown, and which is formed with a shallow catch for retaining the staff, as is plainly shown in fig. 2.

A small spring, *i'*, serves to engage the latch with the staff.

To release the staff, upon the backward movement of the lathe, a small rod, *j'*, is, at its rear end, connected with the inner end of catch *h'*, while, at its front end, it is bent downward, forming a hook, which, at the proper time, is brought in contact with the small brackets *k'*, secured upon incline M.

l' is a rod pivoted in the stud *m'*, attached to the lathe-beam D. This rod is formed at the lower end with a loop, through which passes rod *j'*, while its upper end passes through a small eye inserted in the shuttle-holder O.

A spring, *n'*, attached to beam D, and bearing against the upper end of rod *l'*, tends both to hold the binder O against the shuttle and to throw forward the lower end of rod *l'*, thereby raising the front end of rod *j'* above bracket *k'*.

When the shuttle N is removed, the holders O are, by the action of spring *n'*, as described, forced in flush with the front side of beam D, as shown, a stop, *s'*, secured in holders O, checking the action of spring *n'*. But, when the shuttle is inserted, as when thrown in weaving, between holder O and the back of the shuttle-box, as shown in fig. 2, then the holders, which, at their outer ends, are pivoted to beam D, are swung forward, thereby allowing the lower end of rod *l'* to drop, so that the hooked end of rod *j'* will catch against bracket *k'*, thus releasing latch *h'* from the picker-staff, which, by the action of coiled spring *f'*, connected at its respective ends with the staves, serves to throw the shuttle to the opposite end of the lathe, when the operation is repeated.

It will be seen that, when the shuttle is removed from the box, the lathe may be actuated any number of times without releasing the staves, as the detaching device can only act when the holders O are swung forward of beam D, by the shuttle or other means; for, when the holders are thrown in to the extent allowed by stops *s'*, the rod *j'* is raised above bracket *k'*, as described.

By this arrangement the weaver, by stopping his shuttle short of the box, may "beat up" his filling with as many blows of the lathe as desired, without the usual labor of actuating the shuttle-throwing device, an advantage which all weavers of thick cloth will fully understand.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of levers *b c*, connecting-rods *d*, and bar F, relatively to each other and to the lathe, substantially as described, and for operating the lathe, as shown.

2. In combination with the foregoing, the springs *f*, or their equivalents, for the purposes specified.

3. The mechanism for releasing the picking-sticks, consisting of the catches *h'*, springs *i'*, rod *j'*, stop *k'*, rod *l'*, spring *n'*, and shuttle-holder O, or their equivalents, whereby the lathe may be actuated, when the shuttle is removed, without actuating the picking-sticks, substantially as described and shown.

JAMES E. NUTE.

Witnesses:

A. J. BODWELL,

F. J. COBURN.