



(No Model.)

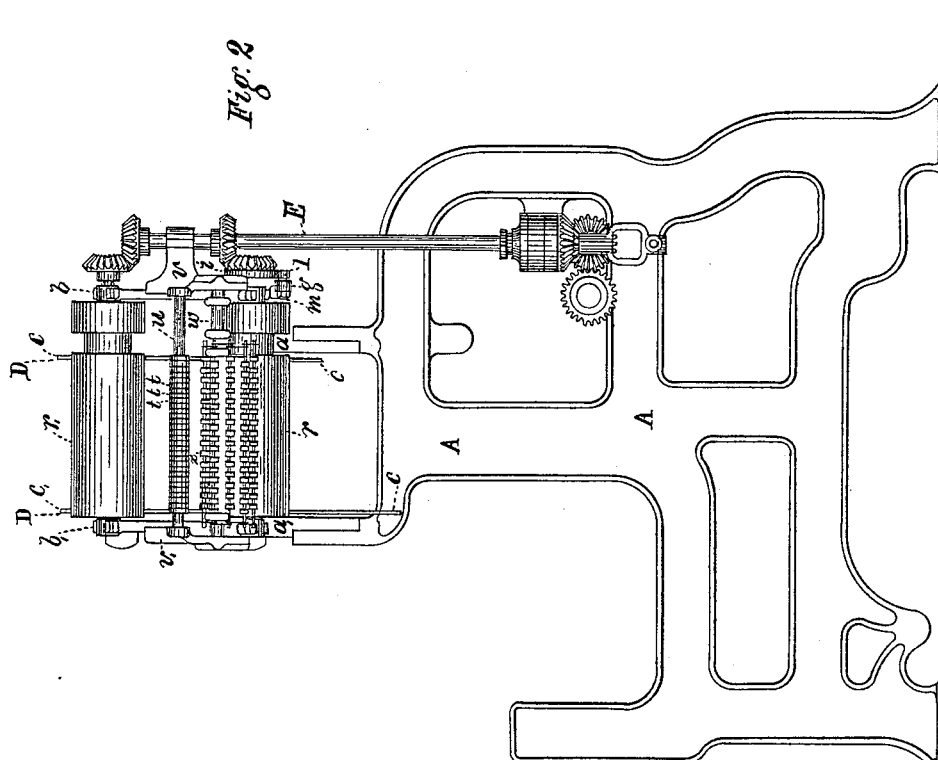
3 Sheets—Sheet 2.

G. F. HUTCHINS.

## LOCKING DEVICES FOR THE HARNESS JACKS OF LOOMS.

No. 346,407.

Patented July 27, 1886.



*Witnesses*

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Inventor:

George F. Hutchins.

per

*J. C. Dewey*  
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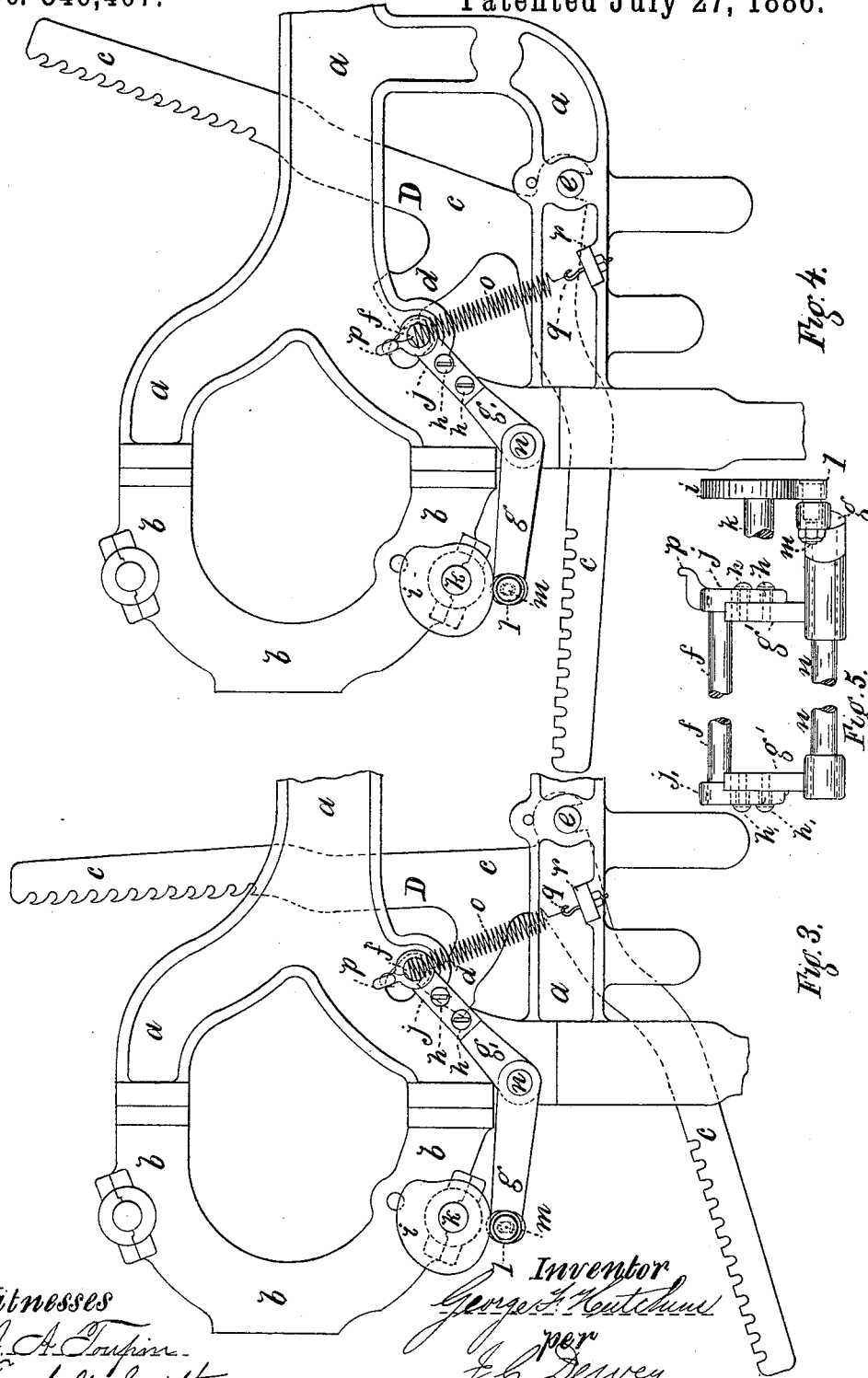
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# UNITED STATES PATENT OFFICE.

GEORGE F. HUTCHINS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE  
KNOWLES LOOM WORKS, OF SAME PLACE.

## LOCKING DEVICE FOR THE HARNESS-JACKS OF LOOMS.

SPECIFICATION forming part of Letters Patent No. 346,407, dated July 27, 1886.

Application filed May 23, 1885. Serial No. 166,521. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE F. HUTCHINS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Locking Devices for the Harness-Jacks of Looms, of which the following is a full, clear, and exact description, and which, in connection with the drawings making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to looms; and it consists in an improved automatic locking device or attachment for the harness-jacks, adapted to be applied to looms for the purpose of relieving the strain on the mechanism for operating the harness proper, by causing the harness-jacks to be carried over a little farther in either direction than they otherwise would be, and holding or locking them firmly in such position, thus allowing the harness mechanism which operates the jacks to act freely and quickly, the great strain usually brought to bear upon said mechanism by the great weight of the harness being, by means of my invention, relieved and temporarily removed at just the time the harness mechanism should be free to act in a proper manner.

I have shown in the drawings only such parts of a loom as will be necessary to clearly illustrate the construction and operation of my improved harness-jack-locking attachment applied thereto, and I make no claim to any part of said loom as my invention, except the jack-locking attachment, to be hereinafter fully described.

Referring to the drawings, Figure 1 represents a rear view of a loom, some of the parts of which are left off in order to more clearly show my invention. Fig. 2 represents an end view of the loom upon which the harness mechanism is mounted, looking in the direction of arrow, Fig. 1. Fig. 3 represents, on an enlarged scale, a side view of a portion of the loom shown in Fig. 1, all the parts being left off except the locking device and a harness-jack, which is shown locked in the position which it is in when the harness attached to it is up. Fig. 4 is a similar view to Fig. 3, except that the harness-jack is shown locked in the

position which it is in when the harness is drawn down; and Fig. 5 is a detached side view of the locking-rod and cam for operating the same removed from the loom proper, as will be hereinafter fully explained.

As many parts of the loom shown in the drawings are similar to those for which Letters Patent have heretofore been granted, and which patented looms are well known to the public, a detailed description of the loom shown is unnecessary, and I shall confine myself, principally, to a description of my improvement and the features thereof which I wish to secure by Letters Patent.

Similar letters of reference refer to similar parts in the drawings.

In the accompanying drawings, the parts marked A are the loom sides or frame.

a is the loom-arch.

b is the head.

B is a harness-frame in its lower position, and B' represents the harness-frame in its upper position.

C C are the wires and straps connecting the harness-frame with the jack in the usual manner.

D is one of the angle-levers or harness-jacks (to raise and lower the harness) pivoted on the jack-pin e, secured in the frame of the loom in the usual manner. When the harness is raised, the jack D is in substantially the position shown by dotted lines, Fig. 1, and when it is lowered in the position shown by full lines, Fig. 1.

The parts of the mechanism shown in the drawings for operating the harnesses and the pattern-chain are old and well known, and form no part of my present invention. I therefore will not describe them, but simply state that r r are the upper and lower cylinder-gears; k k, their shafts. s is a vibrator-gear. t is a vibrator. u is the heel-pin on which each vibrator swings. v v are the arms which support the vibrators and pattern-chain. w is the pattern-chain shaft. x is the pattern-chain. y is the hook connecting the vibrator-gear with the jack D, and E is the shaft which gives motion to the harness mechanism. All of these parts are constructed and operated in the usual manner.

I will now proceed to describe the harness-

jack-locking device and the mode of operation of the same, as shown in the drawings and more fully illustrated in Figs. 3, 4, and 5 thereof.

5 The angle-levers or harness-jacks D are each provided with a projection or locking-horn, *d*, by means of which the jacks are held by my locking device, which consists of the locking-rod *f*, which extends through an opening on  
10 each side of the loom-arch *a*, at substantially right angles thereto, and is secured at each end to adjusting-pieces *j*, which are provided with slots, (see Fig. 5,) and may be adjusted on the supporting-arms *g' g'* by means of screws *h*  
15 *h*. The arms *g' g'* are secured upon a shaft, *n*, turning in suitable bearings in the frame of the loom, said shaft *n* being substantially parallel to the locking-rod *f*. (See Fig. 5.) Upon one end of the shaft *n* is secured the arm *g*,  
20 projecting out therefrom, and provided at its outer end with a small roll, *l*, which turns on a stud, *m*, which is made adjustable up and down in a slot in the end of said arm *g*. A coiled spring, *o*, is secured at one end to a  
25 hook, *q*, which passes through a lug on the loom-arch *a*, and at the other end to the projection *p*, extending out from the piece *j*. Said spring (in connection with a second similar spring, not shown in the drawings, connected  
30 to the other end of the locking-rod *f* or its supporting-arm) serves to pull the supporting or locking arms *g'* and rod *f* down to lock or hold the jacks as soon as the horns or projections *d* have passed the locking-rod *f*. The locking-rod *f* is operated by means of a cam, *i*, secured upon the shaft *k* of the lower cylinder-gear *r*. The roll *l* on the end of the arm *g*  
35 bears against the cam *i*, so that as the cam revolves with the shaft *k* it raises the locking-rod *f* by depressing the arm *g* and allows the jacks D to be changed between the positions shown by the full lines *c c* and dotted lines *c' c'*, Fig. 1, and the positions shown in Figs. 3 and 4. At each revolution of the cam *i* the locking-rod *f* is raised to allow the jacks D to change  
45 their positions, as indicated by the pattern-chain, in the usual manner, and as soon as the harness mechanism has operated the jacks or changed their positions, then the rod *f* is forced or drawn down by the spring *o* at each  
50 end thereof, and said rod working on the inclined surface of the projections *d*, either the upper or the lower side thereof, according to the position of the jacks, forces the jacks a little farther over in either direction, according

as they have the projections *d* above or below the rod *f*, a sufficient distance to relieve the strain and friction on the harness-operating mechanism, consisting of the vibrator-arm *t*, vibrator-gear *s*, and the hook *y*, connecting the  
60 vibrator-gear with the jack D, all of the usual construction and operation, which strain and friction is caused by the great weight of the harnesses secured to the jacks D. The strain on the harness mechanism being removed, as  
65 above described, it is allowed to be moved easily by the balls on the pattern-chain, so as to enable the vibrator-gear *s* to be readily carried into contact with the top cylinder-gear *r* or to drop by gravity freely and quickly into con-  
70 tact with the lower cylinder-gear *r*. While the harness motion or mechanism is changing its position, as indicated by the pattern-chain, and as above described, the locking-rod *f* remains in its position, locking and holding the  
75 jacks D, until at the proper time for their positions to be changed, when the cam *i* raises the rod *f*, and the operation above described is repeated.

I have shown in the drawings one way of  
80 operating the locking-rod *f* by means of the cam *i*, as hereinbefore explained; but I do not wish to limit myself to this way, for the locking-rod *f* might be operated in other different and equivalent ways. For instance, the  
85 arm *g* might be attached directly to either of the supporting-arms *g'*, and extended up so as to be operated by a cam upon the shaft *k* of the upper gear-cylinder *r*, or by a cam surface made on the cylinder *r* itself.

90 Having described my improved locking device for harness-jacks of looms, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

The combination, with the locking-rod *f*, adjustable up or down on its supporting-arms, and means for adjusting and holding said rod, substantially as shown, spring *o*, secured at one end to the frame of the loom, for the purpose stated, and the frame of the loom, the  
95 shaft *n*, and the supporting-arms *g'*, secured thereon, of the arm *g*, secured upon said shaft *n*, and the shaft *k* and cam *i*, secured thereon, for the purpose stated, substantially as set forth.

GEORGE F. HUTCHINS.

Witnesses:

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