J. SLADDIN.

MACHINES FOR MAKING LOOM-HARNESS.

No. 192,296. Patented June 19, 1877.

FIG. 1.

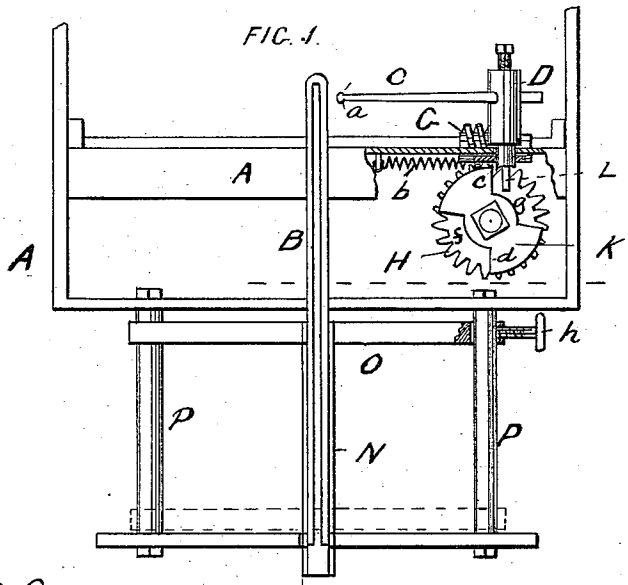


FIG. 2.

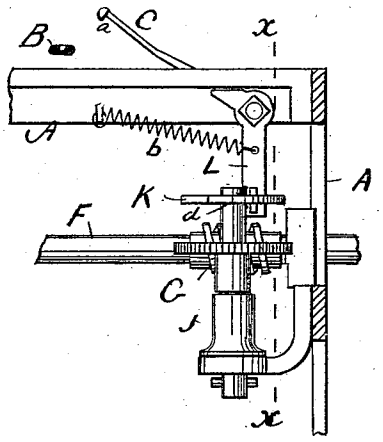


FIG. 3.

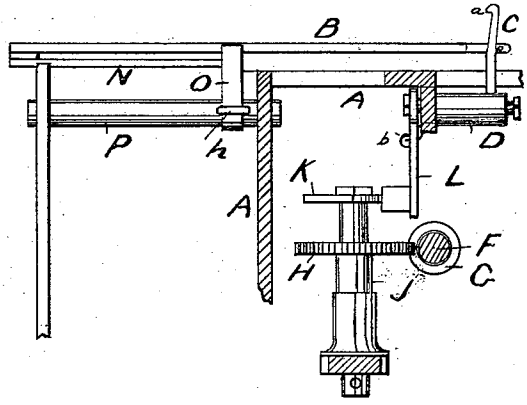


FIG. 4.



WITNESSES.

Geo. H. Earl

Henry A. Clark

INVENTOR.

J. Sladdin

Per Brown Bros

Attorneys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH SLADDIN, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MAKING LOOM-HARNESS.

Specification forming part of Letters Patent No. **192,296**, dated June 19, 1877; application filed December 12, 1876.

To all whom it may concern:

Be it known that I, JOSEPH SLADDIN, of Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Loom-Harness, of which the following is a specification:

This invention relates more particularly to that class of machines for making loom-harness, shown and described in the two reissued Letters Patent issued to me, dated August 8, 1871, numbers 4,509 and 4,510, in which are employed a stationary needle and a device termed a "twister" for forming the loop for the eye.

One object of this invention is to adapt said machines for making fancy loom-harness, so called; and to this end it consists in the combination and arrangement, with machines of said class, of a finger in such manner as to be automatically operated to take and hold the length of yarn or twine, out of which the heddle-eyes are to be made, from the action of the twister which in such machines is employed to make the eye, thereby preventing the formation of an eye or eyes by the said twister, and without interference with the other operations of the machine, and securing the manufacture of what is known as fancy loom-harness, all as will hereinafter fully appear.

In the accompanying plate of drawings, Figure 1 is a plan view of the mechanism constituting my present invention; Fig. 2, a view in elevation; Fig. 3, a view in section on line *x x;* Fig. 4, a detail view.

In the drawings, A represents a frame-work of suitable shape, and on which is to be placed and arranged the working mechanism of a loom-harness machine, such as shown and described in the said Letters Patent, and as this invention does not embrace any of such mechanism, it is not deemed necessary to show or more particularly describe it. B, the stationary needle of the machine. This needle carries two yarns or twines, one of which is taken by a twister at regular intervals of time, and carried about a former, and thus made into a heddle-eye, which eye is pushed upon the needle, all as well shown and fully described in the said Letters Patent.

To prevent the yarn being taken by said twister, for the purpose of this invention, as before stated, I arrange and operate a finger, C, as will be now described. This finger has a shoulder, *a*, at its outer end, and it is fastened by a set-screw to a horizontal shaft, D, which turns in bearings of the cross-bar E of the frame A, and, together with the finger, is arranged so that if said shaft be rocked in its bearings the said shouldered end of said finger will be rocked and carried down in a vertical plane by that edge or side of the stationary needle at which a yarn is taken by the twister to be made by it into an eye, and in such movement intersect the yarn which runs from the needle-eye in said side to the rig-band of the machine. This finger in its said downward rocking movement seizes the said heddle-yarn and carries it down with it, and thus places it out of position for the heddle-eye twister, to take it and make it into an eye, and as a consequence prevents the formation of eyes from such heddle-yarn as long as said finger is kept in such downward position. The upward movement or rock of the said finger frees it from the said heddle-yarn, and leaves the yarn to the operation of the twister. Thus, by means of this finger properly operated, it is plain that a harness can be made having sets of heddle-eyes with spaces between them, and such harnesses are what are known as fancy loom-harnesses.

This finger, under my invention, is operated automatically, and the mechanism therefor is as follows: F, a shaft, through which the said finger is driven. This shaft makes one revolution for each operation of the twister; G, a worm-gear on shaft F, gearing into a horizontal gear-wheel, H, of a vertical shaft, J, turning in suitable bearings of the frame A; K, a cam on shaft J, and turning with it; and L, a pendent arm of the finger-shaft D, which arm is in position to be acted upon by the cam K as it revolves.

The cam K is the device which actuates the finger C, and gives it its downward rocking movement, and allows it to rock upward under the action of the spring *b*, and obviously then the shape of this cam regulates the style of the fancy loom-harness which the machine will make. This cam I therefore term the pat-

tern-cam, and when a different style of fancy harness is to be made it is to be changed, as well also as its driving-gear wheel under some occasions.

The cam shown, when it is acting by either of its two cam-edges *c d*, holds the heddle-yarn in such case away from the twister during six operations thereof, and thus secures a space in the harness without eyes which is equal to the space which six eyes would have occupied were they made, and when the said cam is not operating on the finger C as at either of its two openings *f g*, in each instance six heddle-eyes are made, securing by the combined action and non-action of the whole cam in one revolution a harness which has sets of six eyes separated by spaces, each of which equals the space which six eyes would occupy were they formed.

During one revolution of the cam twenty-four heddle-eyes and spaces have been produced in the harness, and consequently the gear-wheel which drives it should be correspondingly divided, so that its motion from the revolutions of the worm, which is turned as described, shall be one tooth for each revolution of the worm.

Should the cam be divided differently, as, for instance, for thirty-six spaces, and heddle-eyes for a revolution, then the gear-wheel must have thirty-six teeth, and so on, as is obvious without further explanation.

The stationary needle B is fastened at its rear end to a bar, N, which lies underneath the needle B, with a space between, so that the harness as made can pass along the needle, and the bar N is fastened to a cross-bar, O, arranged to slide on guide-rods P P, which are the same guide-rods as those on which the carriage travels which feeds the harness along the needle as it is made.

h, a set-screw for fastening the cross-bar to one of the guide-rods P P, and thus fix it against movement.

When the needle is in position for work, the bar is in its advanced position, (see Fig. 1,) and to withdraw the needle from the harness the bar is slid back to the position shown by dotted lines.

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

1. In a loom-harness machine, such substantially as described, the combination of a finger, C, with mechanism for automatically operating said finger to hold the length of yarn, out of which the heddle-eyes are made, from the twister which makes the eye, as and for the purpose set forth.

2. The worm-gear G, gear-wheel H, and pattern-cam K, in combination with a finger, C, each and all constructed and arranged substantially as described, for the purpose specified.

JOSEPH SLADDIN.

Witnesses:

GEO. H. EARL,

EDWIN W. BROWN.