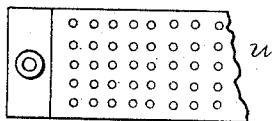
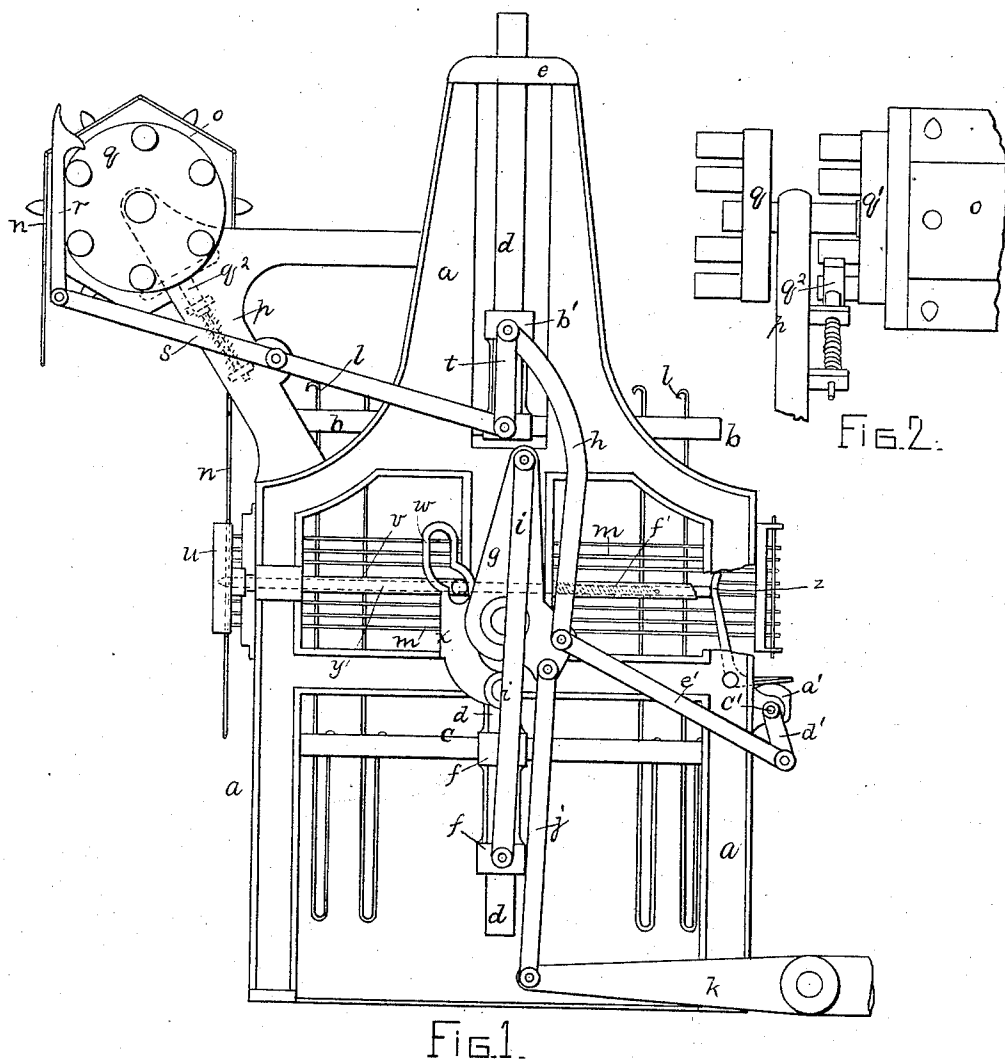


(No Model.)

G. W. STAFFORD.
JACQUARD MECHANISM.

No. 475,711.

Patented May 24, 1892.



WITNESSES.

Arthur F. Randall,
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Fig. 3.

INVENTOR.

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UNITED STATES PATENT OFFICE.

GEORGE W. STAFFORD, OF PROVIDENCE, RHODE ISLAND.

JACQUARD MECHANISM.

SPECIFICATION forming part of Letters Patent No. 475,711, dated May 24, 1892.

Application filed November 27, 1891. Serial No. 413,332. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. STAFFORD, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Jacquard Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

10 Jacquard mechanisms as at present ordinarily constructed cannot satisfactorily and successfully be run at the desired high speeds. Various improvements in such mechanisms have been devised and put into practical use, 15 these improvements being of a character which has resulted in the application of simpler and better mechanical principles to the working parts of the mechanisms than formerly was the case and in a great increase in the possible capacity of the said mechanisms. There 20 is met in practice, however, one difficulty which places practically a limit upon the speed that may be attained—that is to say, the devices at present employed in such mechanisms for presenting in succession the perforated cards in position for acting upon the horizontal needles and for moving each of 25 the said cards in turn against the ends of the said needles and thereby determining which vertical hook shall be engaged by the vertically-moving griff and which hook shall not be engaged are of such a character that they require considerable time for their operation, thereby reducing the speed of the entire mechanism and of the loom to which the latter is 30 applied, and also present the cards against the ends of the needles with a blow, which is very severe upon the cards, this blow increasing in force and injurious effect as the speed is increased. It is my object to obviate this difficulty and to provide a mechanism in which the time required for feeding forward the cards so that they may act successively and for causing each card in turn to act upon the 35 needles shall be reduced to a minimum and in which, moreover, the cards shall be carried against the ends of the needles by a movement which is very slight in extent and with a very slight blow.

40 My invention consists in an improved construction and combination of parts providing

in a satisfactory manner for the attainment of these improved results, and it will first be described in connection with the accompanying drawings, and then be particularly pointed 55 out and distinctly defined in the claims at the close of this specification.

In the drawings, Figure 1 is a side elevation, with a small part broken away, of a Jacquard mechanism embodying my invention. 60 Figs. 2 and 3 show details.

The frame of the Jacquard mechanism is shown at *a*. Within this frame I have shown an upper griff *b* and a lower griff *c*. The upper griff *b* is connected at each end thereof 65 by a bracket *b'* to the vertical rod *d*, which is held in bearings *e* on the frame *a*, only one of these bearings being shown in Fig. 1, and through which bearings the said rod is free to slide up and down. The griff *c* has connected therewith at each end a bracket *f*, 70 which is formed with sleeves that fit and slide upon the vertical rod *d*. Upon each side of the frame is pivoted a bell-crank *g*. To the downwardly-projecting arm of this bell-crank is pivotally connected a rod *h*, which at its upper end is pivotally connected to the bracket *b'* at the corresponding end of the upper griff. To the upwardly-extending arm 75 of the bell-crank is pivotally connected one end of a rod *i*, which at its other end is pivotally connected with the bracket *f* at the corresponding end of the lower griff. To the depending arm of the bell-crank is pivotally 80 connected also the upper end of a connecting-rod *j*, which at its lower end is pivotally connected to a lever *k*, deriving its movement in suitable well-known manner from one of the shafts of the loom to which the Jacquard mechanism is applied. 85 90

The vertical hooks of the Jacquard mechanism are shown at *l*, and *m* are the horizontal needles which engage with the said hooks. The pattern-cards *n* are perforated in the usual manner and act upon needles *m* for the purpose of determining the lifting of the hooks 95 by the upper griff, as usual. Ordinarily the said cards, which are linked together into a series as customary, pass around a cylinder or prism having the shaft thereof supported 100 in journal-bearings in a vibrating frame or batten. This vibrating frame or batten swings

toward and from the ends of the needles during the working of the loom, and in the movement toward the same it carries that card which is on the adjacent face of the prism or cylinder into contact with the ends of the needles. As the batten moves outward to carry the cylinder or prism and the cards passing around the same away from the ends of the needles the cylinder or prism is given a partial revolution upon its axis by well-known mechanism, so that as the frame or batten moves inward again a new card shall be presented to the needles. With this construction and arrangement necessarily a long movement is given to the prism or cylinder and cards, in order that they may be carried away from the needles sufficiently far to permit of the turning of the cylinder or prism about its axis, and as the parts require to move quickly the cards strike against the ends of the needles with quite a forcible blow, which is very severe on the cards and causes considerable wear and tear thereof.

In my improved mechanism I employ a cylinder or prism *o*, which is mounted in stationary bearings that are formed in or applied to a bracket *p*, projecting from the frame *a*, at each side thereof. To the shaft of this cylinder or prism *o* is applied a pin-wheel *q*, and it is provided with a hooked pawl *r*, which engages with the pins of the said pin-wheel for the purpose of rotating the cylinder or prism, this pawl being pivotally connected with one end of a lever *s*, which is pivoted on the brackets *p* and at its other end is connected by a rod *t* with one of the brackets *b'* of the upper griff. To the said shaft is also applied a second pin-wheel *q'*, and against the pins of this wheel acts a spring-actuated locking device or hammer *q''*. From the side of the cylinder or prism which is turned toward the machine the cards hang down in front of the ends of the needles. In order to cause each card to act in turn against the ends of the needles, I provide a press-board *u*. Holes or perforations—such as are formed in each face of the prism usually employed in Jacquard mechanism—are formed in this press-board opposite the ends of the needles; but none are formed in the cylinder or prism *o* above referred to, because none are needed. The press-board is supported at each end on a rod *v*, mounted in bearings on the side of the frame *a*, and when farthest away from the ends of the needles it is separated therefrom only by a space sufficient to permit of the free passage of the cards between the board and the ends of the needles—say about one-half an inch. On one side of each rod *v* is a stud or bowl, which enters a slot *w*, formed in a bar *x*, carried by the bracket *f* of the lower griff. The said slot *w* has two vertical portions, which are connected by a short diagonal portion sufficient to produce the endwise movement of the rod and the movement of the attached press-board. As each card which lies in front of the press-board is carried inward against

the ends of the needles, in consequence of the inward movement of the press-board, it is necessary that the card should occupy a precisely fixed position and present its holes or perforations accurately to the ends of the needles. For the purpose of fixing the card in proper relative position to the face of the press-board at the time when the press-board moves inward to carry the said card against the ends of the needles I employ rods *y*, having pointed ends, which are caused to enter the holes which are formed in the cards at the ends thereof for the reception of the studs on the prism or cylinder. These truing-rods are supported in bearings on the sides of the frame *a* and are acted upon by means of bell-crank levers *z*. The vertical arm of each bell-crank extends upwardly into position to bear upon the end of the corresponding truing-rod *y*, while the horizontal arm of each lever rests upon the surface of a cam *a'*, that is mounted on a cross-shaft *c'*, which is provided with an arm *d'*, that is connected by a rod *e'* with the bell-crank *g'*. The cam just mentioned acts through the bell-crank lever to thrust the pointed end of the rod into the corresponding stud-hole of the card. The rod is retracted by means of a spring *f'*, which surrounds the rod and at one end thereof bears against a fixed part of the frame and at the other end thereof against a pin or shoulder on the rod.

The operation of the devices described will be apparent. As the prism or cylinder is rotated intermittently it draws up the cards between the press-board and the ends of the needles, and by the action of the press-board each card in turn is carried forward against the ends of the needles. Each card is given its correct position on the face of the press-board with relation to the needles by means of the truing-rods.

I claim as my invention—

1. The combination, with the needles of a Jacquard mechanism, of a card cylinder or prism, stationary bearings in which the said cylinder or prism is mounted, means for rotating the said cylinder or prism, a press-board located adjacent to the needles, means for moving the same toward and from the needles, truing-rods adapted to act upon the card located in front of the press-board and to bring the same into correct position, and means for operating the said truing-rods, substantially as described.

2. The combination, with the needles of a Jacquard mechanism, the hooks, a movable griff or griffs, and means for actuating the latter, of a cylinder or prism, stationary bearings in which the said cylinder or prism is mounted, means for rotating the said cylinder or prism, a press-board, a rod by which the same is supported, a stud or roller on the said rod, an arm connected with the griff or one of the griffs and having a cam-slot therein, a truing-rod adapted to bring the card located in front of the press-board into correct position, a spring for retracting the said rod,

a bell-crank lever, a cam, and means for operating the said cam, substantially as described.

3. The combination, with the needles of a
5 Jacquard mechanism, the hooks, and a griff
or griffs acting on the said hooks, of a cylinder or prism, stationary bearings in which the
said cylinder or prism is mounted, means for
rotating the cylinder or prism, a press-board,
10 a rod by which the said press-board is car-

ried, a stud or roller on the said rod, and a bar connected with the said griff or one of the griffs and having a cam-slot, substantially as described.

In testimony whereof I affix my signature in 15
presence of two witnesses.

GEO. W. STAFFORD.

Witnesses:

CHARLES H. POLAND,

J. A. VICKERY.