

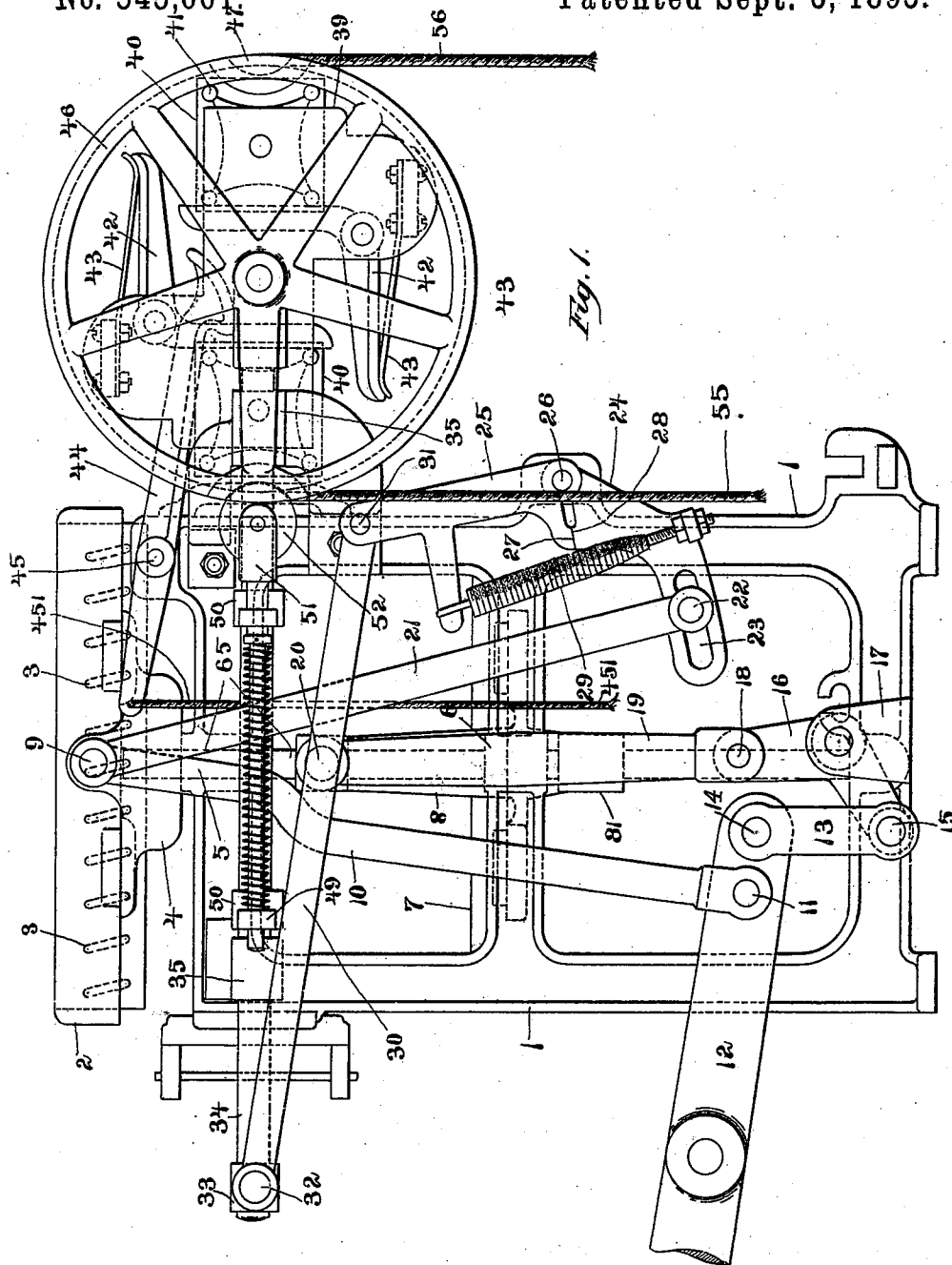
(No Model.)

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G. W. STAFFORD.
JACQUARD MACHINE.

No. 545,661.

Patented Sept. 3, 1895.



Witnesses.

Arthur F. Fendall.
Robert Wallace.

Inventor.
George W. Stafford
by Maceo Calver & Randall
his Attorneys

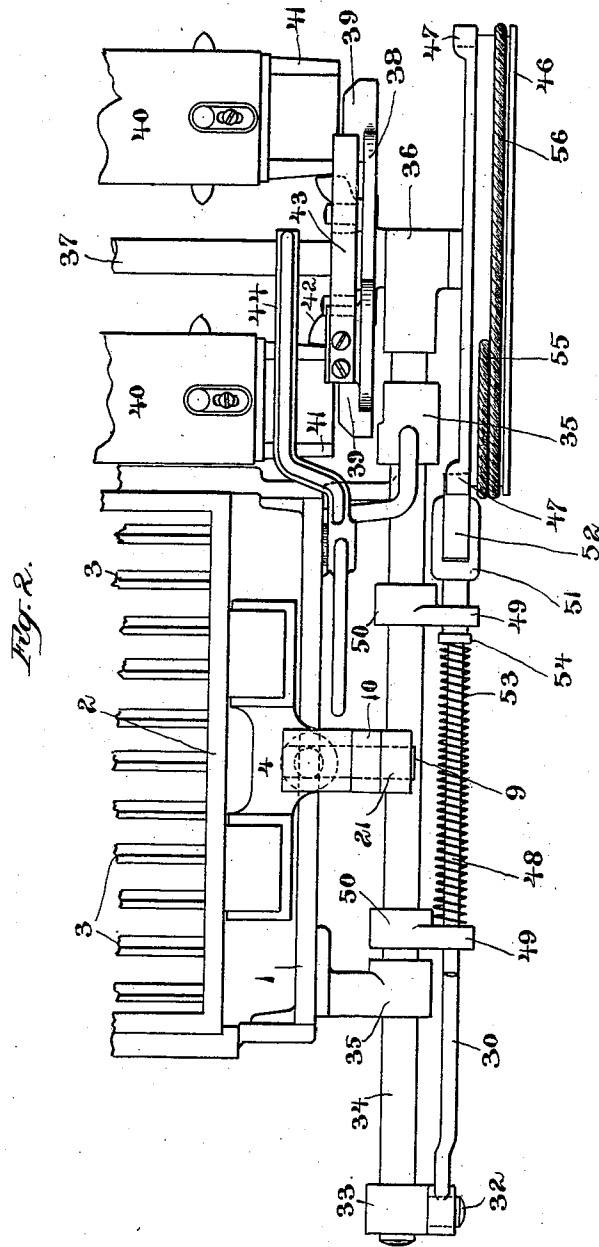
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UNITED STATES PATENT OFFICE.

GEORGE W. STAFFORD, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE
KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS.

JACQUARD MACHINE.

SPECIFICATION forming part of Letters Patent No. 545,661, dated September 3, 1895.

Application filed February 1, 1895. Serial No. 536,950. (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 Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to produce an improved and simple construction and arrangement of parts providing for the use in a Jacquard machine of a plurality of card-cylinders or prisms, each with its own set of cards passing around the same. Jacquard machines, intended to be employed in weaving goods having cross-borders at some distance apart from each other, and other goods, in which, after a length of fabric of one weave or pattern has been woven, a length of some other weave or pattern is woven, and so on, have been constructed to contain two card-cylinders or prisms, and have been arranged so as to enable either of the said card-cylinders or prisms to be brought into action as required. In these machines, however, the construction has been complicated and cumbrous or unwieldy, expensive, and otherwise disadvantageous. My aim has been to enable a plurality of card-cylinders or prisms to be employed in a Jacquard machine which otherwise is of the ordinary character, and, with but a few additions to the usual devices of the machine, to so apply and combine the said plurality of card-cylinders or prisms and the parts immediately associated therewith as to enable the card-cylinders or prisms conveniently and without loss of time to be brought into action alternately, as required.

The invention consists in certain novel and improved features of construction and combinations of parts, all as first will be fully described with reference to the accompanying drawings, and then will be particularly pointed out and distinctly defined in the claims at the close of this specification.

Figure 1 of the accompanying drawings shows, in end elevation, a Jacquard machine embodying the best form of my invention which I have yet devised, certain of the usual details of the machine, which are not neces-

sary to an understanding and explanation of the invention, being omitted for the sake of clearness. Fig. 2 is a view, in plan, of the end of the machine which is represented in Fig. 1. 55

At 1 is the machine-framing.

At 2 is the usual griff.

At 3 are the griff-blades.

At 4 is a bracket which is applied to the end of the griff. At 5 is a vertical rod having the said bracket 4 secured to its upper end and sliding in guides 6 6 on the frame 1. 60

At 7 is the usual bottom grate, and at 8 is a bracket applied to the end thereof and having arms provided with thimbles or sleeves 8 1 8 1, 65 which fit and slide upon the rod 5.

At 9 is a pin applied to the bracket 4 and having fitted thereto a socket or eye at the upper end of a connecting-rod 10, the lower end of which latter has a socket or eye that is fitted to a pin 11 on the inner arm of a lever or walking-beam 12, which is actuated in suitable known manner from the loom to which the Jacquard machine is applied in practice. 70

At 13 is a link or connecting-rod having a socket or eye at its upper end that is fitted to a pin 14 on the said inner arm of the lever or walking-beam 12, and also having a similar socket or eye at its lower end that is fitted to a pin 15 on the laterally-extending arm of a knee-lever or bell-crank 16, the latter being pivotally mounted on a bracket 17, connected with the machine-framing, and also having its upwardly-extending arm provided with a pin 18, to which is fitted a socket or eye at the lower end of a connecting-rod 19, the said connecting-rod 19 having a socket or eye at its upper end, which is fitted to a pin 20 on the bracket 8. 75 80 85

The foregoing construction and connections provide for the actuation of the griff and bottom grate. 90

At 21 is a connecting-rod having a socket or eye at its upper end, which is fitted to the pin 9, projecting from the bracket 4, the socket or eye at the lower end of the said rod 21 being applied to a pin 22, that is adjustably secured by usual means in the slot 23, extending lengthwise of the laterally-extending arm 24 of the two-part bell-crank or knee lever 24 25. 95 100

The laterally-extending arm 24 of the said bell-crank or knee lever and the upwardly-

extending arm 25 thereof are both pivoted upon the stud 26, projecting from the machine-framing 1, and they have meeting surfaces 27, 28, which are held pressed against each other by means of a spring 29, having one of its ends connected with one of the said arms and the other of the same connected to the other of the said arms. The said arms 24 and 25 are held by the spring practically rigid with each other and they swing together about the pin 26, as if they constituted a one-piece lever. When, however, anything interferes with the inward movement of the cylinder-carrying slide-rod, which is connected with the arm 25— as, for example, a misplaced card coming between the ends of the needles of the Jacquard machine and the proximate cylinder-face—the spring yields, thereby allowing the arm 24 to continue its movement in unison with the descent of the griff while the arm 25 remains stationary.

At 30 is a connecting-rod having a socket or eye at one end thereof fitted to a pin 31 on the arm 25 and a socket or eye at the other end thereof fitted to a pin 32, projecting from a collar 33, fixed on one end of the horizontal slide-rod 34, which last is mounted in bearings 35 35, projecting outwardly from the machine-framing 1, this rod corresponding with the usual sliding support for the end of the card-cylinder or prism ordinarily employed. To the opposite end of the slide-rod 34 is affixed the socket 36, containing a bearing for the cross-shaft 37, which extends from end to end of the machine.

On the cross-shaft 37, adjacent to the bearing-socket 36, is secured the fixture 38. This fixture contains the bearings 39 39 for a plurality of card-cylinders or prisms 40 40, each of which card-cylinders or prisms has the desired number of faces or sides, and is provided with the usual lantern-wheel 41, for use in rotating the card-cylinder or prism and holding it in place after each movement or revolution thereof. To the said fixture 38 are pivoted check-levers 42, there being one of such levers for each prism, and leaf-springs 43 43 are attached to the said fixture, one of said springs being provided for each check-lever and acting against the tail thereof, so as to press the flat face of the lever against the rounded portions which are provided at the angles of the corresponding lantern-wheel for co-operation with the check-lever.

In the drawings I have shown two cylinders or prisms mounted upon the fixture 38 diametrically opposite to each other, but I contemplate providing the said fixture with bearings for the reception of the journals of a greater number of cylinders or prisms.

At 44 is a hook or pawl, which is pivoted upon the pin 45, projecting from the machine-framing 1, and occupies normally a position enabling it to engage at each outward movement of the cylinders or prisms with the rounded projections or teeth of the lantern-

wheel pertaining to the cylinder or prism, which for the time being is next the ends of the needles. From the tail of the said hook or pawl 44 depends a cord 45', which may be drawn upon by hand when it is desired to raise the hooked end of the said hook or pawl away from the adjacent lantern-wheel.

To the outer end of the cross-shaft 37 is attached a wheel 46, having in the flange thereof notches 47 47, corresponding in position and number with the cylinders 40, which are mounted on the fixture 38.

A rod or spindle 48, supported in guides 49, formed in collars 50, that are attached to the slide-rod 34, has journaled in a fork 51, at one end thereof, the roller 52. A spiral spring 53, surrounding the rod 48 between the left-hand bearing 49 in the drawings and the small collar 54 on the said rod, acts to press the rod endwise and to cause the roller 52 to bear against the periphery of the flange of the wheel 46, so that whenever one of the notches 47 is presented opposite the said roller the latter enters the said notch and thereby holds the wheel and cross-shaft and the other appurtenances of the latter locked against further movement or rotation until suitable force is applied to rotate the wheel and the shaft on which it is mounted, with the parts carried thereby. The wheel 46 has a barrel-shaped portion to which are applied ropes 55 56, having the ends thereof attached to the periphery of the wheel, one of these ropes extending a part of a turn around the latter in one direction, while the other thereof makes a part of a turn around the same in the other direction. These ropes hang down on the opposite sides of the wheel into position to be grasped by the operator who attends the loom, to which is applied the Jacquard machine embodying my invention. As will be understood, the opposite ends of one and the same rope may be connected in the manner shown to the wheel, the intermediate portion of the said rope hanging down within reach of the operator.

It is intended that different sets or series of cards representing different weaves shall be applied to the respective cylinders or prisms. The cards passing around the cylinder or prism which for the time being is presented next the ends of the needles of the Jacquard machine, will control the weaving so long as such cylinder or prism remains in that position. After the weaving from the cards of the said cylinder or prism has been carried on to the desired extent that cylinder or prism may be swung around away from the ends of the needles and simultaneously therewith another cylinder or prism may be made to take its place with a different set of cards. To effect this change it is necessary only to draw upon the cord 45', so as to raise the hooked end of the hook or pawl 44 out of the way and then draw upon one of the ropes 55 56, so as to turn the wheel 46, shaft 37, and the

parts carried thereby, after which the hook or pawl 44 may be allowed to recover its working position.

It will be understood that there is a proper duplication of the parts at the end of the machine, which is opposite that shown in the drawings.

I claim as my invention—

1. The combination with the slide-rod 34, and means for reciprocating the same, of the cross-shaft 37 mounted in a bearing provided on the said slide-rod, the fixture 38 secured to the said cross-shaft and provided with a plurality of bearings, a plurality of cylinders or prisms having the journals thereof mounted in the bearings on the said fixture, separate checking devices for the said cylinders or prisms, means whereby the cross-shaft and its appurtenances may be rotated to present the desired cylinder or prism in position for action and for locking the same in such position, until it is again to be partially rotated, and means for actuating the cylinder or prism which for the time being is in working position, substantially as described.

2. The combination with the slide-rod 34, and means for reciprocating the same, of the cross-shaft 37 mounted in a bearing provided on the said slide-rod, the fixture 38 secured to the said cross-shaft and provided with a plurality of bearings, a plurality of cylinders or prisms having the journals thereof mounted in the bearings on the said fixture, separate checking devices for the said cylinder or prisms, means whereby the cross-shaft and its appurtenances may be rotated to present the desired cylinder or prism in position for action and for locking the same in such position until it is again to be partially rotated, and the hook or pawl 44 pivoted to the machine framing for co-operation with the cylinder or prism which for the time being is in working position, substantially as described.

3. The combination with the slide-rod 34, and means for reciprocating the same, of the cross-shaft 37 mounted in a bearing provided on the said slide-rod, the fixture 38 secured

to the said cross-shaft and provided with a plurality of bearings, a plurality of cylinders or prisms having the journals thereof mounted in the bearings on the said fixture, separate checking devices for the said cylinders or prisms, means for separately actuating the cylinder or prism which is presented in position for action, a wheel secured to the said cross-shaft, ropes connected with the said wheel for rotating it as may be required in order to present the desired cylinder in position for action, and checking devices co-acting with the said wheel to retain it and the cross-shaft with the parts carried by the latter in the desired position of adjustment, substantially as described.

4. The combination with the slide-rod 34, and means for reciprocating the same, of the cross-shaft 37, mounted in a bearing provided on the said slide-rod, the fixture 38 secured to the said cross-shaft and provided with a plurality of bearings, a plurality of card-cylinders or prisms having the journals thereof mounted in bearings on the said fixture, the checking levers 42 co-acting with the cylinders or prisms, the springs 43 acting upon the said checking levers, the pawl 44 pivoted to the machine-framing for engaging with the cylinder or prism which for the time being is presented in position for action, the wheel 46 secured to the said cross-shaft, the rope or ropes connected with the said wheel for rotating it as may be required in order to present the desired cylinder in position for action, guides carried by the slide-rod, the rod 48 mounted in said guides, the spring 53 acting on said rod, and the roller 52 carried by the said rod and entering notches in the wheel 46 and acting to lock the cross-shaft in position after being partially rotated, substantially as described.

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

GEORGE W. STAFFORD.

Witnesses:

CHARLES H. POLAND,
EMMA NISBET.