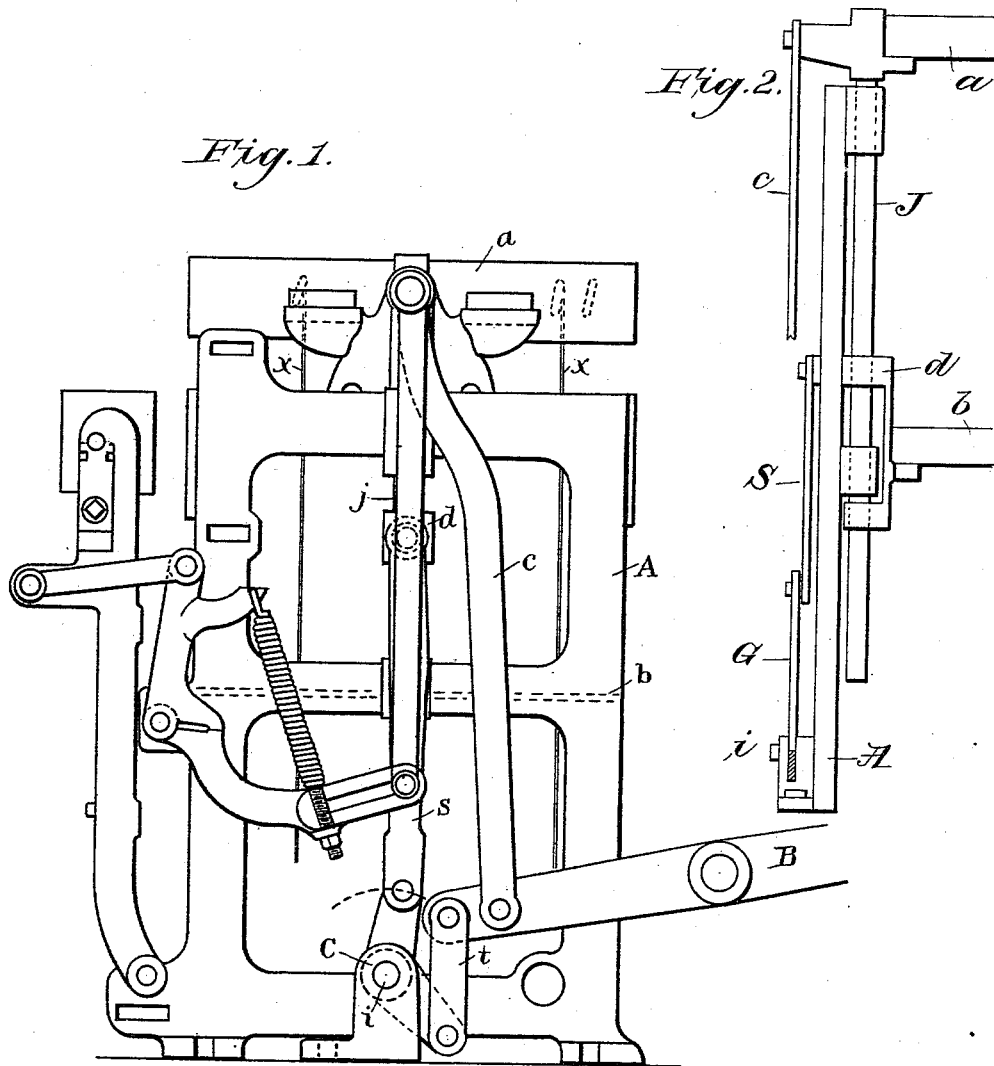


(No Model.)

G. W. STAFFORD & C. H. POLAND.
JACQUARD ATTACHMENT FOR LOOMS.

No. 420,119.

Patented Jan. 28, 1890.



WITNESSES:

J. A. Vickery
Benny Arnold

INVENTORS

Geo. W. Stafford
Charles H. Poland

UNITED STATES PATENT OFFICE.

GEORGE W. STAFFORD AND CHARLES H. POLAND, OF PROVIDENCE,
RHODE ISLAND.

JACQUARD ATTACHMENT FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 420,119, dated January 28, 1890.

Application filed September 2, 1889. Serial No. 322,645. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. STAFFORD and CHARLES H. POLAND, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Jacquard Attachments for Looms; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to Jacquard attachments for close-shed looms, and is an improvement on the invention described in United States patent of September 3, 1889, No. 410,215, and is in the same direction—that of modifying the movements of the griffs when approaching each other.

As the attachments aforesaid are usually constructed the two griffs in approaching each other continue to move until both stop and the weight of the hooks rests on the lower griff—sometimes before either griff stops the upward motion of the lower griff being continued to free the ends of the hooks from the bars of the upper griff with which they are engaged. In this continued upward motion of the lower griff after it has received the weight of the hooks and harnesses attached to them the griff sustains a burden sometimes amounting to four hundred or five hundred pounds. Suddenly arresting the downward movement of this great weight and giving it an upward motion gives a shock to the machinery and produces a great strain on the crank-shaft which operates the attachment just at the time when the loom is doing its hardest work—that of beating up the filling—and this shock is repeated when the upper griff rises and takes up the hooks again, for they already have a downward movement from the return motion of the lower griff, and are in a manner dropped onto the upper griff, instead of being picked up from a stationary position. These shocks are destructive to the mechanism and limit the speed of the loom, besides causing many breaks in the harnesses and warps. We overcome this difficulty by causing the lower griff to get through with its

upward motion and come to a state of comparative rest before the lower ends of the hooks reach it, and, further, we so arrange the actuating devices for the lower griff that the shock of receiving the weight of the descending hooks is transferred from the main lever that connects the attachment with the loom to the pivot of the intermediate arm or lever that moves the lower griff. Again, in our construction, when the upper griff again picks up the hooks after the selection thereof for a new shed, they are taken from a state of comparative rest and are not seized during downward movement. Consequently the said griff has to overcome only the inertia of the weight of the hooks and connected harness without the momentum of a downward movement added thereto. We secure the foregoing desirable results by connecting the lower griff by a bar or link with a rocking arm (herein shown as one arm of a knee-lever) actuated by intermediate connections from the main operating-lever, which arm is so disposed as to bring the point of connection between it and the connecting bar or link approximately in line with the axis of the arm and the point of connection of the bar or link with the lower griff—that is to say, “on the center”—at the time when the descending hooks are received by the said lower griff and before the upper griff has terminated its descent and maintain the said lower griff in a state of comparative rest until after the hooks have been selected for the next shed and engaged by the upper griff.

In the drawings, Figure 1 shows an end elevation of the Jacquard attachment. Fig. 2 is a side view of the end shown in Fig. 1, showing the support of the lower griff and its connection with its operating devices.

As the two ends of the machine are similar in construction and operation, a description of one will convey a good understanding of both.

A is the end frame.

J is a guide-rod sliding in bearings attached to the frame, and having the table of the upper griff secured to its upper end. This rod also serves as a guide for the table of the lower griff b, that is attached to the collar d, which slides on the rod.

The main lever B gives the upward and downward motion to the tables, said lever being actuated from a crank on the crank-shaft of the loom. This lever B moves the upper griff *a* by means of the bar *c*, which is pivoted at its upper end to the griff-table and at its lower end to the bar B near its inner end.

The lower griff is moved through the medium of a knee-lever C, which rocks on a pivot *z*, held in bearings in line, or nearly so, under the rod J. To the upper end of the knee-lever C a bar *s* is pivoted, that has its upper end pivoted to the sliding collar *d*, attached to the lower griff. The other end of the knee-lever C is connected by the bar *t* to the main lever B at the inner end of that lever. It will readily be seen that as the inner end of the lever B descends and lowers the upper griff by the bar *c* the connection *t* will push down the horizontal end of the knee-lever and raise the other end, raising the lower griff by the bar *s* until the two pivots of that bar are in a line with the bearing of the knee-lever, and while approaching and passing that line the motion will be imperceptible, ceasing entirely while on the line. At the same time the upper pivot of the knee-lever is passing this center line the main lever B will continue to move the upper griff down, and will start on its upward movement shortly before the upper pivot of the knee-lever repasses the center line, so that by properly timing the movements the lower griff will be resting solidly on the main pivot of the knee-lever when it receives the impact of the descending hooks, and also again when they are taken off by the upper griff.

The other parts of the attachment are constructed and operated in like manner as described in the patent of September 3, 1889.

Having thus described our improvements, 40 what we claim as our invention is—

1. The combination, with the upper griff, the lower griff, and the operating-lever B, of actuating-connections intermediate the said lever and the griffs embracing a rocking arm 45 connected by a bar or link with the lower griff, the said arm being disposed to bring the point of connection between the same and the connecting bar or link approximately on the center at the time when the descending hooks are received by the said lower griff and before the 50 upper griff has terminated its descent and maintain the said lower griff in a state of comparative rest until after the hooks have been selected for the next shed and engaged by 55 the upper griff.

2. The combination, with the upper griff, the lower griff, and the operating-lever B, of actuating-connections intermediate the said lever and the upper griff, a knee-lever C, connected with lever B, and a link connecting the 60 lower griff with one arm of the knee-lever, the said arm being disposed to bring the point of connection between the same and the connecting bar or link approximately on the center at the time when the descending hooks are received by the said lower griff and before the 65 upper griff has terminated its descent and maintain the said lower griff in a state of comparative rest until after the hooks have been 70 selected for the next shed and engaged by the upper griff.

GEO. W. STAFFORD.
CHARLES H. POLAND.

Witnesses:

J. A. VICKERY,
BENJ. ARNOLD.