

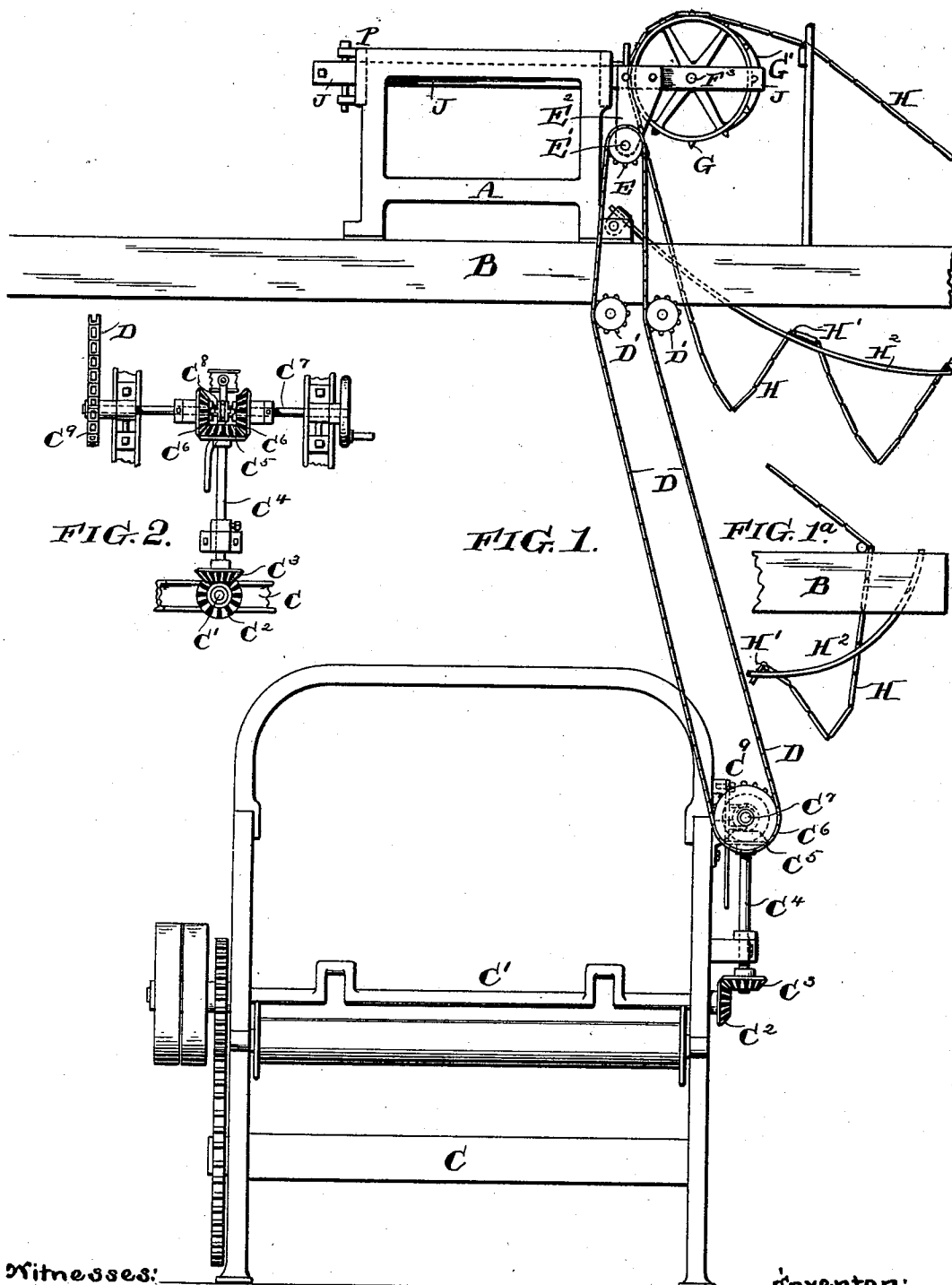
(No Model.)

3 Sheets—Sheet 1.

J. ZIMERMANN.
JACQUARD MECHANISM FOR LOOMS.

No. 507,575.

Patented Oct. 31, 1893.



Witnesses:

Henry Denny
J. W. Russell,

Inventor:

John J. Zimmermann
by his atty
Francis T. Chamber.

(No Model.)

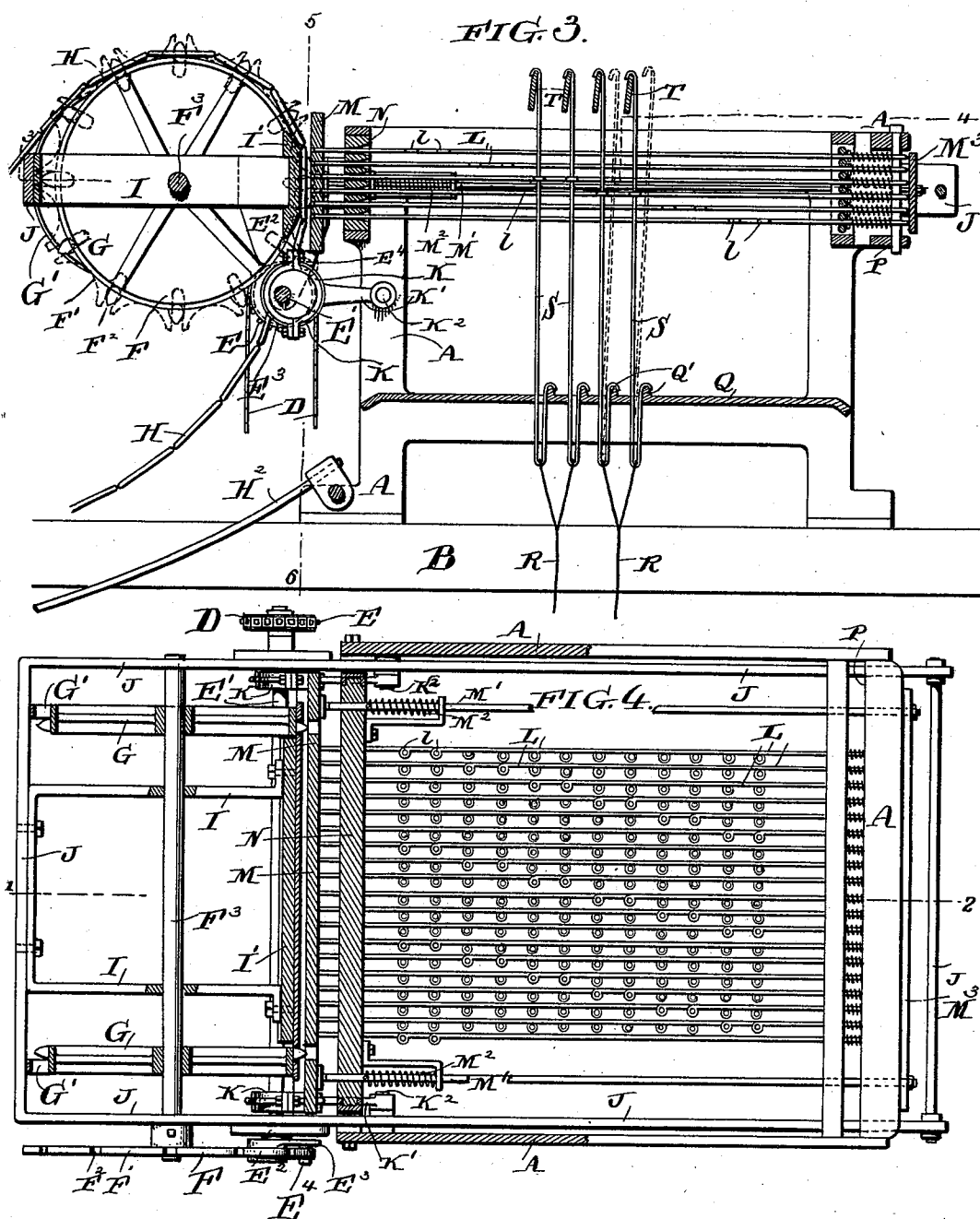
3 Sheets—Sheet 2.

J. ZIMMERMANN.

JACQUARD MECHANISM FOR LOOMS.

No. 507,575.

Patented Oct. 31, 1893.



Witnesses:

Henry Drury
J. Russell,

Inventor:

Inventor:
John J. Zimmerman
by his atty.
Francis T. Chambers

(No Model.)

3 Sheets—Sheet 3.

J. ZIMERMANN.
JACQUARD MECHANISM FOR LOOMS.

No. 507,575.

Patented Oct. 31, 1893.

FIG. 5.

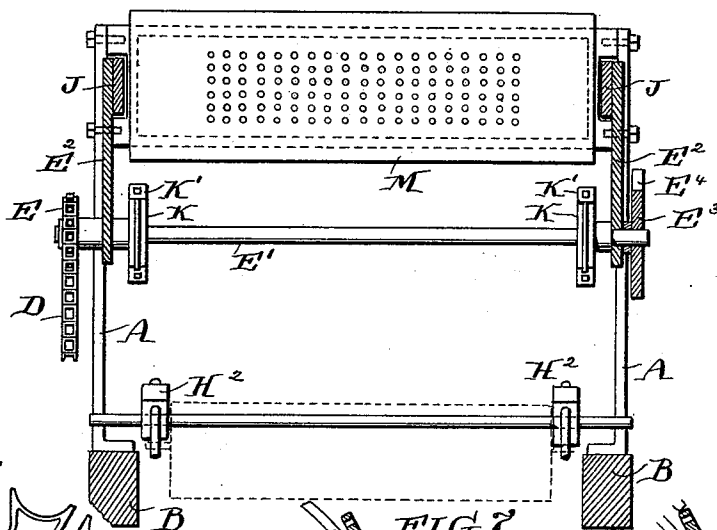


FIG. 6.

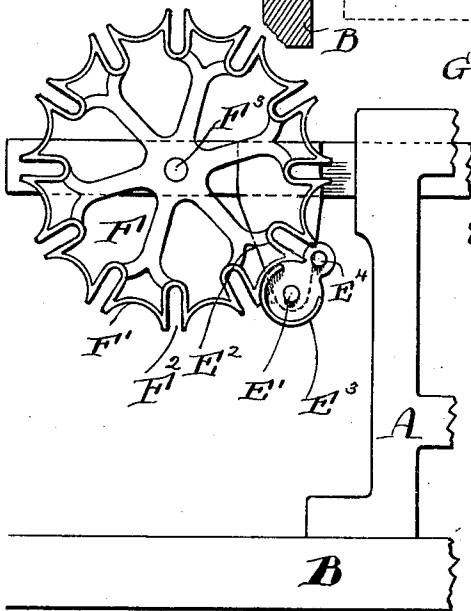


FIG. 7.

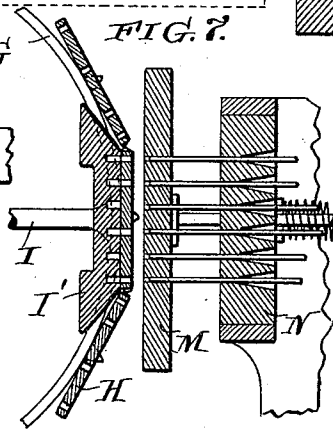


FIG. 8.

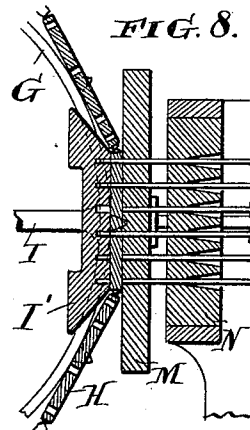
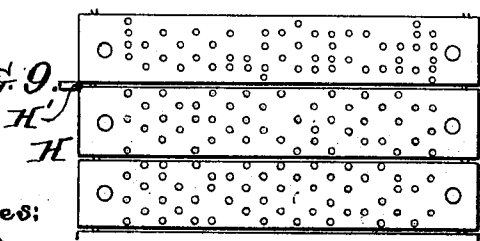


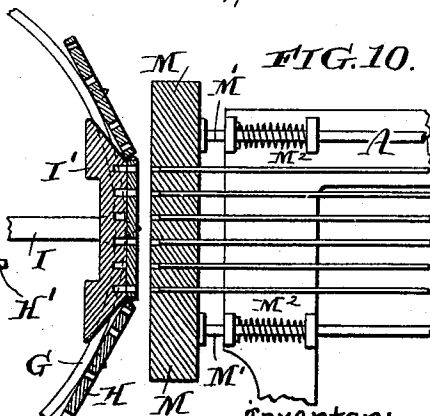
FIG. 9.



Witnesses:

Henry Denny
P. Russell

FIG. 10.



Inventor:

John J. Zimmermann
by his atty.
Francis T. Chambers

UNITED STATES PATENT OFFICE.

JOHN ZIMERMANN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
SCHAUM & UHLINGER, OF SAME PLACE.

JACQUARD MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 507,575, dated October 31, 1893.

Application filed May 6, 1892. Serial No. 432,086. (No model.)

To all whom it may concern:

Be it known that I, JOHN ZIMERMANN, of the city and county of Philadelphia, State of Pennsylvania, have invented a certain new and useful Improved Jacquard Mechanism for Looms, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the construction of the Jacquard apparatus used with looms and has for its object to simplify and improve the construction of such mechanism, especially to avoid the shocks and jars incident to the usual method of operating the jacquard, and to provide an easy running and comparatively noiseless mechanism for shifting and supporting the cards.

The nature of my invention will be best understood as explained in connection with the drawings in which it is illustrated, and in which—

Figure 1 is a view in elevation illustrating part of the device for communicating motion from the driving shaft of the loom to the Jacquard apparatus; Fig. 1^a showing the continuation of the card guide partly illustrated in Fig. 1; Fig. 2 an elevation showing the mechanism for transmitting power in either direction from the main driving shaft to a counter shaft which in turn communicates with the jacquard. Fig. 3 is an elevation on the section line 1—2 of Fig. 4 showing the mechanism of the Jacquard apparatus. Fig. 4 is a plan view of the jacquard; Fig. 5 a cross sectional view on the line 5—6 of Fig. 3; Figs. 6, 7, 8 and 9 detail views of parts of the mechanism shown on a larger scale, and Fig. 10 a sectional view illustrating a modification.

A is the stationary frame of the Jacquard apparatus, on which are supported the needles and hooks, the needles being indicated at L, the usual spring box at P, the hooks at S, the hook supporting plate at Q, Q' being ridges on which the bottoms of the hooks rest. The knives or griffs are indicated at T, and the cords leading to the harness at R. The above mentioned parts are best shown in Fig. 3, and need not be further illustrated or described as they are of the usual and well

understood construction. The frame A may of course be supported in any convenient way, as shown, it rests upon cross beams B.

C indicates the frame of the loom proper, C' being the main driving shaft.

I will first describe the mechanism for communicating motion from the main driving shaft to the Jacquard apparatus referring first to the parts shown in Figs. 1 and 2. To the frame of the loom C is secured in suitable bearings a shaft C' upon which are loosely journaled two driving wheels C⁶ C⁶, which by suitable means for communicating motion are actuated in different directions by the driving shaft C'. The wheels C⁶ are coupled at will to the shaft C' by means of a clutch splined on the shaft and adapted to engage either of the driving wheels at will. Such a clutch is indicated at C⁸ Fig. 2, and the device is of course a familiar one, well known in various modifications in the specific construction shown. The wheels C⁶ are miter wheels, both engaged by a miter wheel C⁵ on the end of a shaft C⁴, which shaft carries at its bottom a miter wheel C³ geared with a similar wheel C² on the driving shaft C'.

Secured to the shaft C' is a sprocket wheel C⁹ which communicates motion to a shaft E' by means of a chain D running over the sprocket wheel C⁹, and a sprocket wheel E on shaft E'. D', D' are guide wheels over which the sprocket chain runs. The shaft E' is carried in brackets E² which are secured to a frame J supported on the stationary frame A in such a way as to be free to move longitudinally. A reciprocating motion is given to the frame J in the construction shown by means of eccentrics K K (see Figs. 3 and 4) which are connected by the usual eccentric strap with rods K' secured at K² to the stationary frame. It is obvious of course that as the shaft E' rotates it and the frame to which it is connected will be moved backward and forward as the eccentrics rotate.

In bearings on the frame J is a shaft F³ which is geared with the shaft E' by connecting mechanism which will convert the uniform rotation of the shaft E' into an intermittent rotation of the shaft F³. The device shown for communicating this motion consists of a star wheel F having recesses F² to

receive the actuating pin and intervening segmental recesses F' . With this wheel is engaged the wheel E^3 secured to a shaft E' of a conformation which fits in the segmental recesses F' of wheel F , and having a pin E^4 which as it rotates will engage in each of the recesses F^2 in turn so that for each rotation of the shaft E the wheel F will make a rotative movement equal to the distance between adjacent pin holes F^2 and then be held in engagement by the engagement of the circular part of the wheel E^3 in the rests F' . The shaft F^3 has secured to it carrier wheels G G which support the cards indicated at H and feed them forward or backward bringing one card at a time into operative position, that is to say; in front of a plate I' which is supported on the frame J being connected with it as shown by a framing I ; supports are shown at H^2 for the cards, certain of which have projections H' as shown in Fig. 9 which serve to engage with the supports H^2 and support the cards thereon. The function of the plate I' is to support the cards as they come into operative position in front of the needles permitting the needles which come opposite to the pattern perforations of the card to pass freely through it to the required distance, for which reason the plate I' is most conveniently made with perforations corresponding in number and position to the total number of needles in the Jacquard apparatus.

The combination with the frame J of the shafts E' and F^3 and their connecting mechanism and of card feeding devices actuated by shaft F^3 , insures the smooth, positive and even feeding of the cards which is the chief object of my invention.

M is a needle plate which supports the front end of the needles and is situated directly in front of the plate I' . I prefer to construct this needle plate as shown in the drawings, that is to say; to attach it so that the plate I' in its forward movement will come in contact with it clamping the card between the two surfaces and pushing the needle plate backward to some extent before it, and for this reason I support the needle plate M on springs which will permit it to move as above described. As shown in Figs. 3 and 4 the needle plate is sustained on rods M' suitably supported on horizontal bearings and connected with springs M^2 which normally hold it in a fixed position, and permit it to move backward under the pressure of the advancing plate I' . In its forward position the needle plate M as shown in Figs. 3, 7, and 10 extends slightly beyond the ends of the needles so that the cards are fed between the plain faced plates I' and M and all risk of catching and bending the ends of the needles is avoided. As the plate I' moves forward it clamps the card between it and plate M and then pushes the card and plate M back so that the needles press against or extend through the card as the case may be.

In order to insure a proper alignment of

the needle points at all times I extend the guide rods M' of the plate M back to the spring box P and secure to their ends a plate M^3 which extends behind the ends of the needles and when the plate M is in normal position rests against the ends of the needles in their normal position of rest. The plate M^3 of course moves back with the plate M , thus permitting such of the needles as come in contact with the card to move back as it advances and insuring that the needles shall return promptly to their normal position as the plate M follows the backward movement of plate I' . This dressing of the needles is accomplished by this device with the utmost promptness and precision.

In order to avoid the danger of the cards sticking to the carrier wheels G , I provide strippers G' which lift the cards off the carrier wheels in case they stick to the pegs or pins.

As shown in Figs. 3, 4, 7 and 8 the needle plate M is supplemented by a fixed needle plate N of the usual construction, but it is not at all necessary as the apparatus can be constructed as shown in Fig. 10, the plate M being the sole support and guide for the front end of the needles.

In Fig. 7 the plates I' and M are shown in positions which they occupy when the card is fed between them, while in Fig. 8 they are shown in the positions which they occupy after the forward movement of the plate I' , the card being clamped between the two plates and the plate moved backward under the pressure.

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

1. In combination with the needles of a Jacquard apparatus the frame J , carrying shaft F^3 and shaft E' , gearing connecting said shafts as described, so that a constant rotary movement of shaft E' is transmitted to shaft F^3 giving it an intermittent rotary movement, carrier wheels G G mounted on shaft F^3 and arranged to carry the cards, a plate I' secured to frame J and adapted to support the cards when in operative position, and means as described, whereby reciprocating motion is given to frame J by the revolution of shaft E' .

2. In combination, the power shaft of a loom, a shaft C' , wheels as C^6 C^6 loosely journaled on said shaft, mechanism connecting the power shaft with the wheels C^6 C^6 to drive them in opposite directions, a clutch keyed on shaft C' and adapted to engage with either of wheels C^6 at will to drive the shaft in either direction, a frame carrying shafts E' and F^3 , means for communicating motion from shaft C' to shaft E' , eccentrics K , mounted on shaft E' , connecting rods K' extending from the eccentrics to the fixed frame and arranged to give the frame J a reciprocating movement, means for communicating motion from shaft E' to shaft F^3 arranged as described, a card carrier G G mounted on shaft

F³, a card supporting plate I' secured to frame J and a needle plate M situated in front of plate I', all substantially as and for the purpose specified.

5 3. In a Jacquard apparatus the reciprocating frame J in combination with a plate I' secured to said frame and adapted to support the cards when in operative position, a shaft F³; carrier wheels G G secured to said shaft 10 and arranged to carry the cards to and from plate I'; a star wheel F secured to shaft F³ having a series of recesses F² to receive an actuating pin and a series of intervening segmental recesses F'; a shaft E' having secured 15 to it a pin E⁴ adapted to engage recesses F² in wheel F and an oppositely disposed segmental rim E³ to fit in recesses F' and means for driving shaft E' and through it shaft F³.

20 4. In a Jacquard apparatus the reciprocating frame J in combination with a shaft F³ journaled in the sides thereof; carrier wheels

G G secured to said shaft, plates I I secured to the rear of frame J and to shaft F³; a plate I' secured to plates II and lying between the carrier wheels, and means for giving an intermittent rotary motion to shaft F³ and wheels 25 G G.

5. In combination with a needle supporting plate M sustained on yielding connections, a needle dressing plate M³ arranged in 30 the rear of the needles and connected with plate M so as to move with it and a reciprocating card supporting plate I' not connected with plates M and M³ but arranged to press a card against plate M and to push said plate 35 and the attached plate M³ backward as described.

JOHN ZIMERMANN.

Witnesses:

LISLE STOKES,
J. H. RUSSELL.