

(No Model.)

2 Sheets—Sheet 1.

F. CHARCOT.
JACQUARD MECHANISM FOR LOOMS.

No. 500,852.

Patented July 4, 1893.

Fig. 1

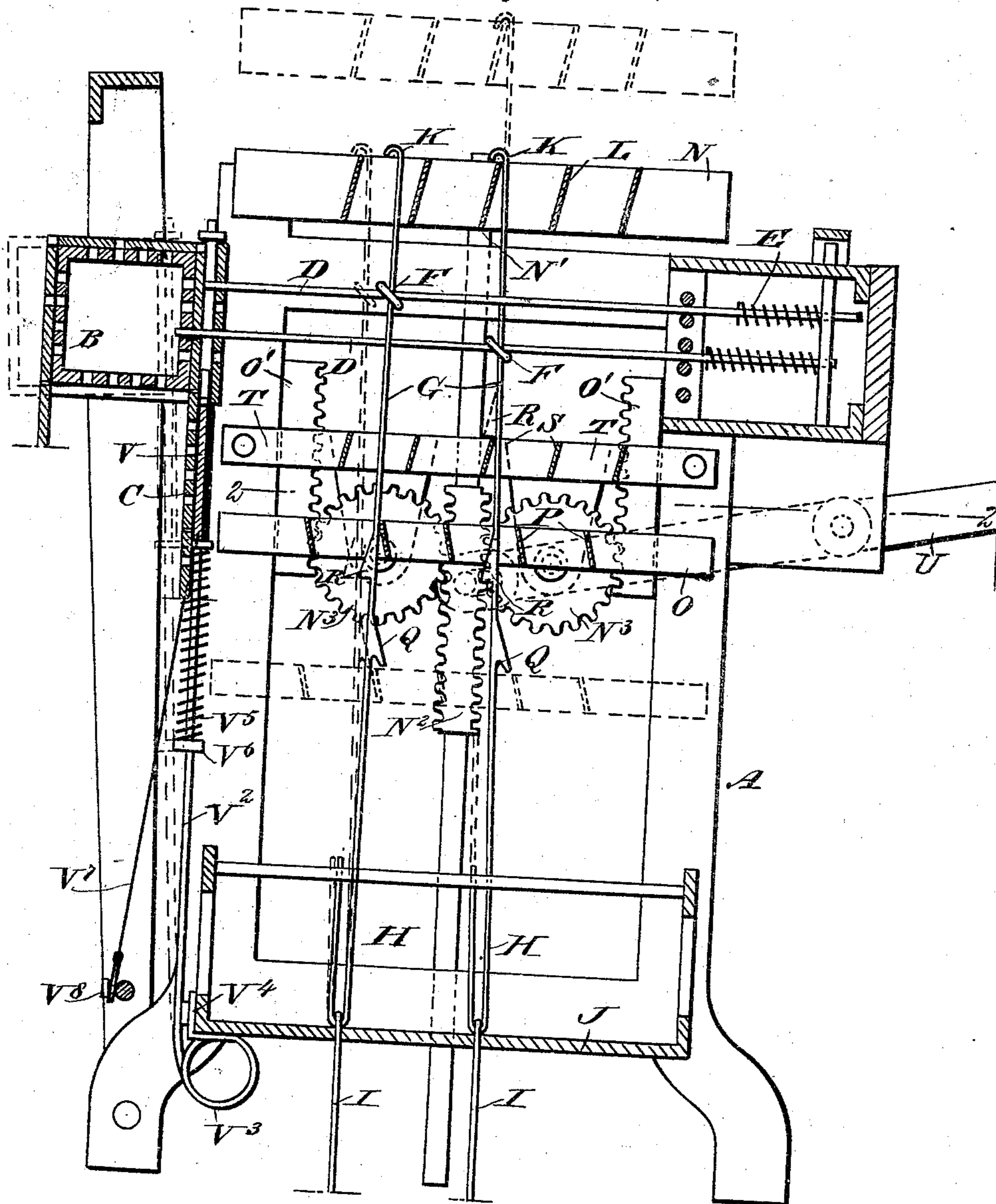
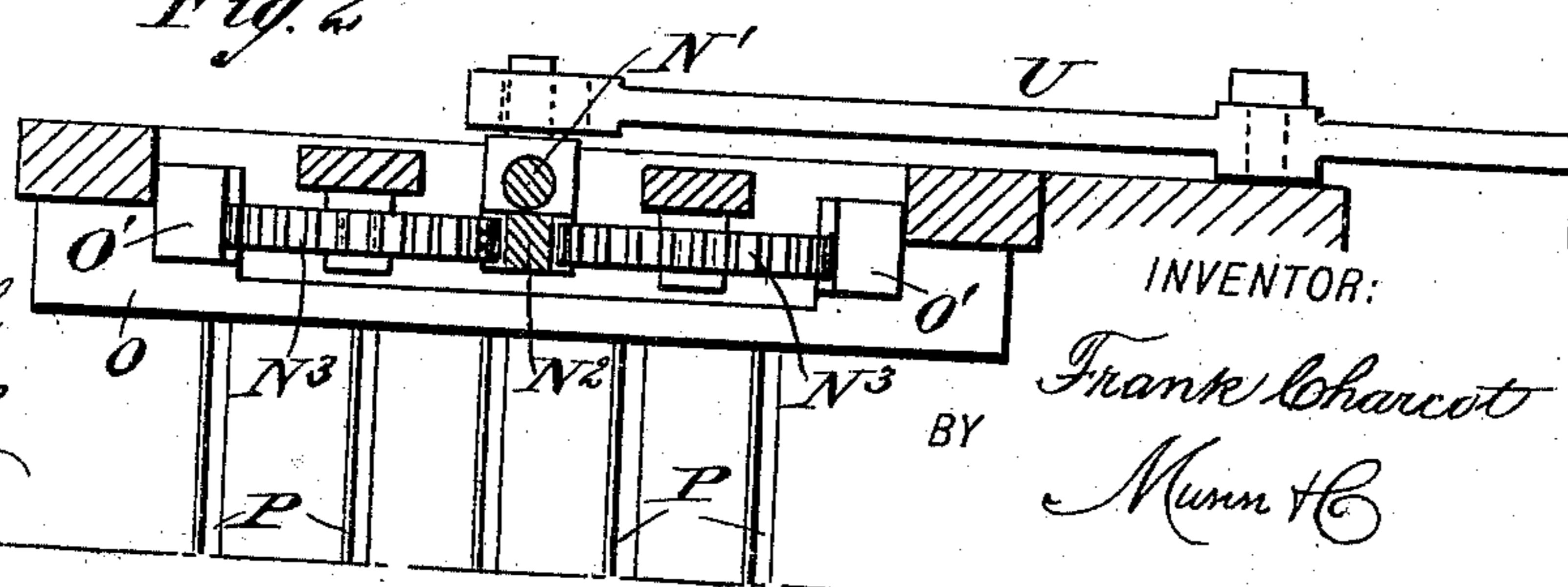


Fig. 2



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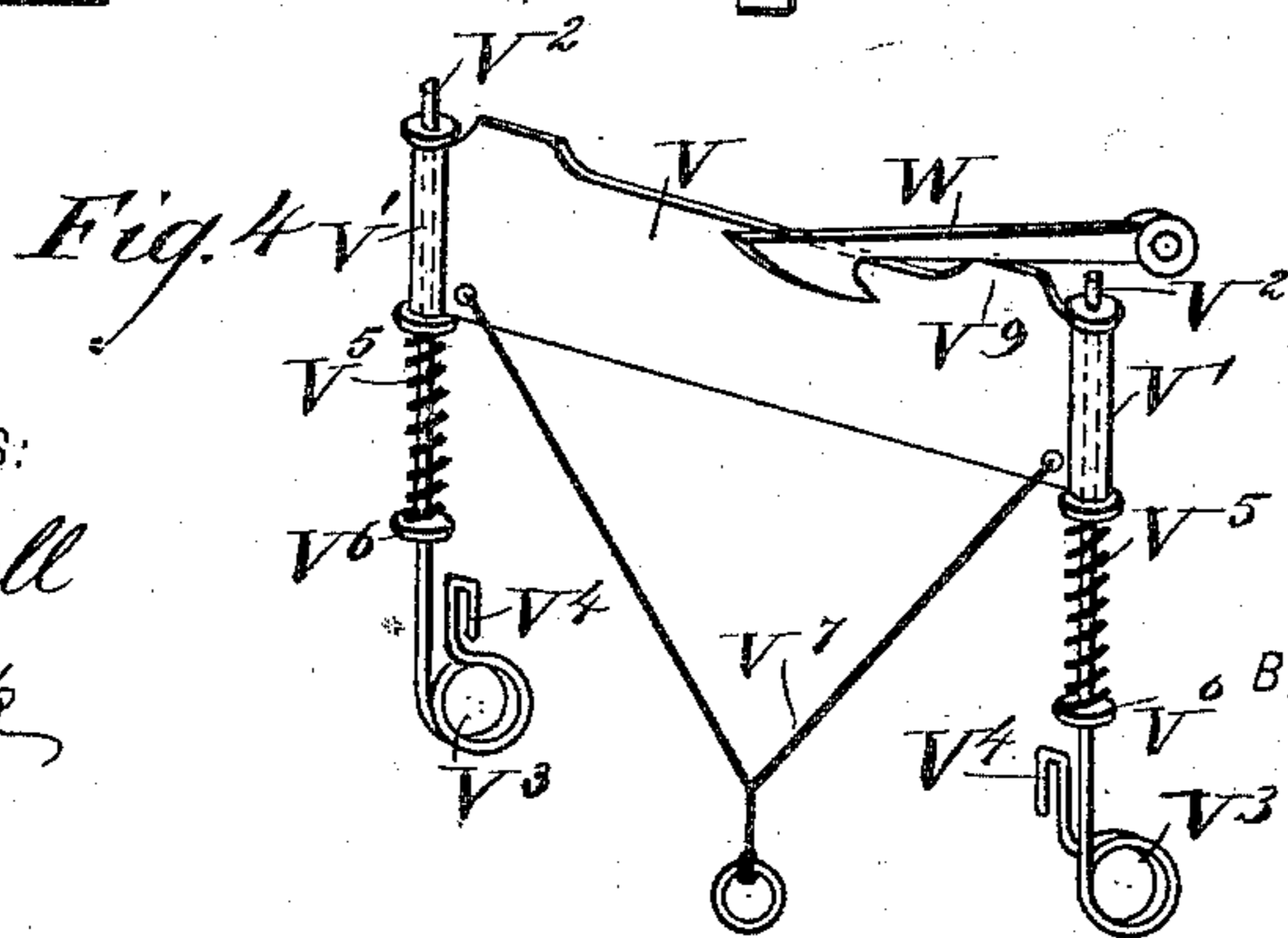
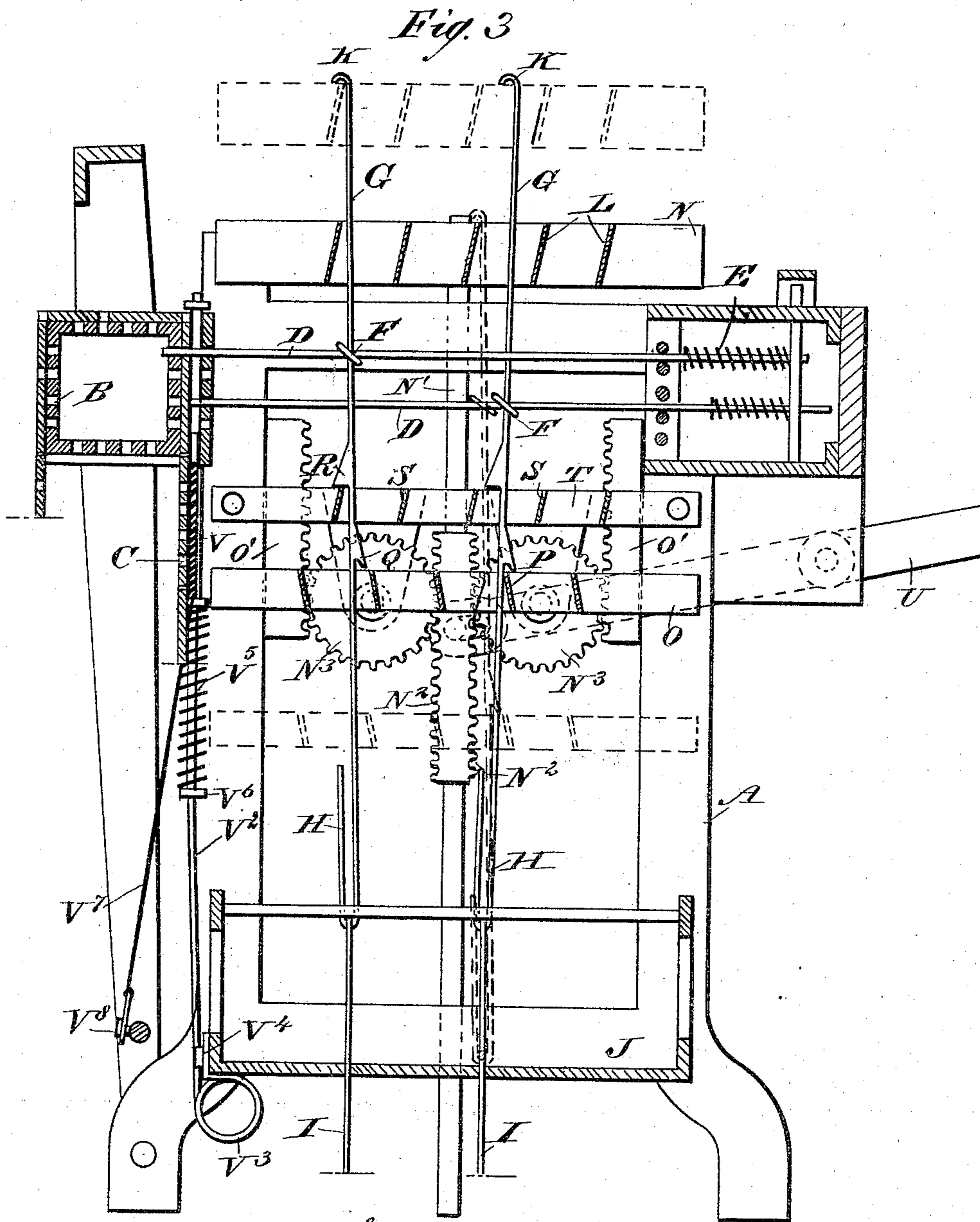
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UNITED STATES PATENT OFFICE.

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JACQUARD MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 500,852, dated July 4, 1893.

Application filed February 5, 1892. Renewed January 31, 1893. Serial No. 460,228. (No model.)

To all whom it may concern:

Be it known that I, FRANK CHARCOT, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and Improved Jacquard Mechanism for Looms, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved Jacquard mechanism, which is simple and durable in construction, greatly increases the efficiency of the loom on which it is applied, and is arranged to lessen the wear and tear on the loom harness.

The invention consists principally of a stationary grate, and two griffs mounted to slide toward and from each other in such a manner that the upper movable griff moves the hooks in engagement with the stationary grate, and the lower movable griff receives the hook from the grate and moves the same downward to lower the corresponding heddles.

The invention also consists of certain parts and details and combination of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a sectional plan view of part of the same on the line 2—2 of Fig. 1. Fig. 3 is a sectional side elevation of the improvement in a different position; and Fig. 4 is a perspective view of the mechanism for locking the needles.

The improved Jacquard mechanism is provided with a suitably constructed frame A, on one side of which is arranged the usual pattern cylinder B over which pass the pattern cards C in the usual manner. On one side of the pattern cylinder B, and on the corresponding card, operate the longitudinally sliding needles D, pressed in the direction of the cylinder by the usual springs E, so as to force the needles automatically into such of the perforations in the pattern cylinder as are not covered by the pattern card. As the mechanism thus far described is common to most all jacquards, further description is not deemed necessary, especially as to

the means for revolving the cylinder, moving it toward and from the needles, &c.

On the needles D are formed the usual loops F, through which extend the vertically arranged hooks G, preferably constructed of wire bent so as to form, at their lower ends, the hooks H, connected with the harness cords I and adapted to rest on the lower grate J secured on the main frame A. On the upper end of each of the hooks G is formed a hook K adapted to engage the upper edge of a knife L of the vertically movable griff N, operating in conjunction with the lower griff O, also provided with transverse knives P adapted to engage, at their upper edges, recesses formed in the lower ends of the wedge-shaped lugs Q formed or secured on the hooks G.

On each of the hooks G and above the lugs Q is formed or secured a wedge shaped lug R adapted to be seated at its under side on a transversely extending knife S secured in the grate T attached to the main frame A. The wedge shaped lugs Q and R extend vertically with the base end downward and the two lugs on each hook G are located on opposite sides, as is plainly shown in the drawings. The knives L and S of the griff N and the grate T respectively, are inclined in the same direction, while the knives P of the griff O are inclined in an opposite direction, as is plainly seen by reference to the drawings. Both griffs N and O are mounted to slide vertically in suitable bearings on the main frame A, the said griffs moving simultaneously toward and from each other and in a like direction relative to the fixed grate T located between the said two griffs. In order to impart the movement described, to the said griffs N and O, the following device is provided:—On the uppermost griff N and at each side thereof, is secured a downwardly extending arm or rod N' mounted to slide in suitable guideways on the main frame A, the said arm being pivotally connected with a lever U receiving a swinging motion by some suitable mechanism, so as to raise and lower the said griff N in unison with the movement of the pattern cylinder B. Each of the arms N' carries a double rack N² formed on each side with rack teeth in mesh with gear wheels N³ engaging the racks O' secured on the griff O and pro-

jecting upward therefrom. The racks O' engage the gear wheels N³ diametrically opposite the rack N², so that when the latter moves upward, a rotary motion is given to the gear wheels N³, which by meshing in the racks O', move the latter downward, thus lowering the griff O at the time the griff N is raised. When the latter moves downward, this movement being caused by the action of the lever U on the arm N', then the gear wheels N³ are turned in an opposite direction by the racks N², and the said gear wheels by meshing with the racks O' move the same upward, thus raising the griff O at the time the other griff N is lowered. It is understood that the gear wheels N³ are journaled in suitable bearings, projecting either from the grate T or from the main frame A.

As in this machine the shed is always open, it is necessary that the needles D be locked in place so as not to engage the pattern cylinder B at the time the operator corrects or fixes some of the threads or stops the machine for other purposes. In order to do this, a transversely extending plate V is provided, adapted to pass in front of the ends of the needles D between the latter and the respective inner card on the pattern cylinder B at the time the latter is in an outermost position, so that when the pattern cylinder B returns it to its innermost position, the needles D, instead of passing through the perforations in the card and the perforations in the cylinder B, abut against the plate V and are thus prevented from entering the registering perforations of the card and pattern cylinder. The plate V is formed, at its ends, with sleeves V' fitted to slide on rods V² extending upward at opposite sides of the machine, each rod being formed at its lower end into a coil spring V³, the end of which is formed into a hook or arm V⁴ adapted to be secured by screws or other means to the main frame A or to the grate J, as shown. The springs V³ have the tendency to swing the rods V² into an outermost position at the time the cylinder B moves outward, it being understood that the upper ends of the rods V² abut against the inner side of the cylinder B near the ends thereof. On the rods V² are coiled springs V⁵, each resting at its lower end on a collar V⁶ secured to the respective rod V², the upper end of each spring resting against the under side of the corresponding sleeve V', so as to exert a pressure on the latter and consequently on the plate V. During the working of the machine in the usual manner, the plate V is held in a lowermost position, the springs V⁵ then being compressed. For this purpose the plate V is connected with a rope or cord V⁷ formed at its lower end with a ring adapted to be engaged with a suitable pin or cleat V⁸ attached either to the frame A or to the lever carrying the pattern cylinder B. This ring of the cord V⁷ is under the control of the operator, and when hooked upon the pin V⁸, holds and locks the plate V in a low-

ermost position, that is, out of the path of the needles D. Now, when it is desired to lock the latter, as above described, the operator unhooks the ring of the cord V⁷ and permits the plate V to slide upward at the time the pattern cylinder B is in its outermost position; the plate V then lies across the outer surface of the card on the pattern cylinder B, thus preventing the needles from engaging the said card. On one side of the plate V and on the upper end thereof, is formed a projection V⁹ adapted to engage, when the plate V is in an uppermost position, the hook W, for turning the pattern cylinder B. Thus, when the plate V is in an uppermost position, the hook W is engaged by the projection V⁹ and is consequently lifted, and thus does not engage the pattern cylinder B, whereby the latter is not turned during the time the plate V is in an uppermost position. The same card consequently remains on the pattern cylinder.

The operation is as follows: The plate V, as above stated, does not engage the needles D during the time the machine is running in the usual way. The plate V is then in a lowermost position, as shown in Figs. 1 and 3. When the several parts of the machine are in the position shown in Fig. 1, then the hooks G connected with the needles D engaging the pattern cylinder, through the holes in the pattern card engage, at the same time, with their hooks K, the upper edge of the corresponding knife L of the upper griff N. The needles D not engaging the pattern cylinder B, hold the corresponding hooks G in such a position that their upper ends K are between two adjacent knives L of the griff N, and are also between two knives of the fixed grate T, but such hooks abut against one of the knives P in the griff O, as shown in the said Fig. 1, on the left hook. The lower end of this hook rests on the fixed bottom grate J. Now when motion is given to the lever U, the latter causes the griff N to rise while the other griff O slides downward in the frame A and the cylinder swings outward. Those of the hooks G engaging with their upper hook ends K, the knife L of the griff N, are carried upward by the latter, and seated with their lugs R on the corresponding knife S of the fixed grate T, as indicated in dotted lines in Fig. 1. The other hooks are then free to assume the position shown on the left hook in dotted lines in said figure; that is, when the corresponding needle engages the card and cylinder perforations this hook engages, at its upper end K, the knife L of the griff N, at the next upward movement. On the downward motion of the griff N the previously raised hooks remain up as their lugs R are seated on the knives of the fixed grate. On the return movement of the pattern cylinder B, see Fig. 3, the previously engaged needles D are pressed to the right by the new card, and the corresponding hooks are consequently moved to the right and their lugs R unseated from the knives S

of the grate T. At the same time the lugs Q are brought with their base ends over the corresponding knives P of the griff O, and with their recesses hook onto the upper edges of the said knives P. At the next downward motion of the griff O these hooks are carried downward to their lowermost position. When the lower end H rests on the grate J the respective knife which carried the hook downward disengages the recess of the lug Q as the griff O moves into its lowermost position, as shown in dotted lines in Fig 1. The needle of this hook is now again in position to be pressed into registering perforations of the card and pattern cylinder by its spring E. If this is the case the end K of this hook is carried to the left to again engage the corresponding knife L of the griff N to be raised, as previously described. The operation is then repeated in the manner above stated. When it is desired to lock the needles D for the purpose of fixing some of the threads, then the operator unhooks the ring of the pin V⁸ to permit the springs V⁵ to raise the plate V in the path of the cylinder B, the latter on its inward movement carrying the plate along against the needles D which are thus pressed rearward against the tension of their springs E, thereby holding the needles in a locked position, preventing their entrance to the cylinder and at the same time the latter is prevented from revolving, so that the same card remains in position until the desired change is made on the machine by the operator. When this is done, the plate V is pulled downward and locked in a lowermost position by the operator engaging the ring of the cord V⁷ with the pin V⁸. At the next inward movement of the cylinder B, the needles D again come in contact with the card, and the above described operation relative to the workings of the Jacquard machine, is repeated.

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

1. In a Jacquard machine, the combination with two griffs having transversely extended knives inclined in opposite directions, the said griffs being mounted to slide simultaneously toward and from each other, of hooks each having a hook end adapted to be engaged by one of the said griffs and a wedge shaped lug secured on the said hook and adapted to be engaged by the other griff, substantially as shown and described.

2. In a Jacquard machine, the combination with a stationary grate, of two griffs, one located above the said stationary grate and the other below the same, the two griffs being mounted to slide toward and from each other, hooks each having a hook end adapted to be

engaged by the uppermost griff and two wedge shaped lugs held on each hook and of which lugs one is adapted to engage the stationary grate and the other the lowermost griff, substantially as shown and described.

3. In a Jacquard machine, the combination with hooks having hook ends and each formed with two wedge shaped lugs located at opposite sides, of a stationary grate adapted to be engaged by one of the said wedge shaped lugs, and two griffs mounted to slide simultaneously toward and from each other, the uppermost griff being adapted to be engaged by the upper hook end of the hook, and the lower griff by the lowermost wedge shaped lug, substantially as shown and described.

4. In a Jacquard machine, the combination with a fixed grate provided with inclined knives, of upwardly movable hooks each having hook ends, two wedge shaped lugs, one of which is adapted to engage the knives of the said fixed grate to be seated thereon to support the hook in an uppermost position, and two griffs, of which one is located above the said fixed grate and the other below the same, the upper griff being adapted to be engaged by the upper end of the said hook and the lower one by the lowermost lug, substantially as shown and described.

5. A Jacquard machine, provided with a plate adapted to be interposed between the needles and the pattern cylinder, rods forming bearings for the said plate and formed with springs at their lower ends to permit the rods to swing longitudinally, and springs held on the said rods to press the said plate in an uppermost position, substantially as shown and described.

6. A Jacquard machine provided with a plate adapted to be interposed between the needles and the pattern cylinder, rods forming bearings for the said plate and formed with springs at their lower ends to permit the rods to swing longitudinally, springs held on the said rods to press the said plate in an uppermost position, and means for holding the said plate in a lowermost position against the tension of the springs, as set forth.

7. In a Jacquard machine, the combination with a pattern cylinder and a hook for turning the same, of a plate adapted to be interposed between the pattern cylinder and the needles, and adapted to directly engage the said hook to hold the latter out of engagement with the cylinder, substantially as shown and described.

FRANK CHARCOT.

Witnesses:

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EDGAR TATE.