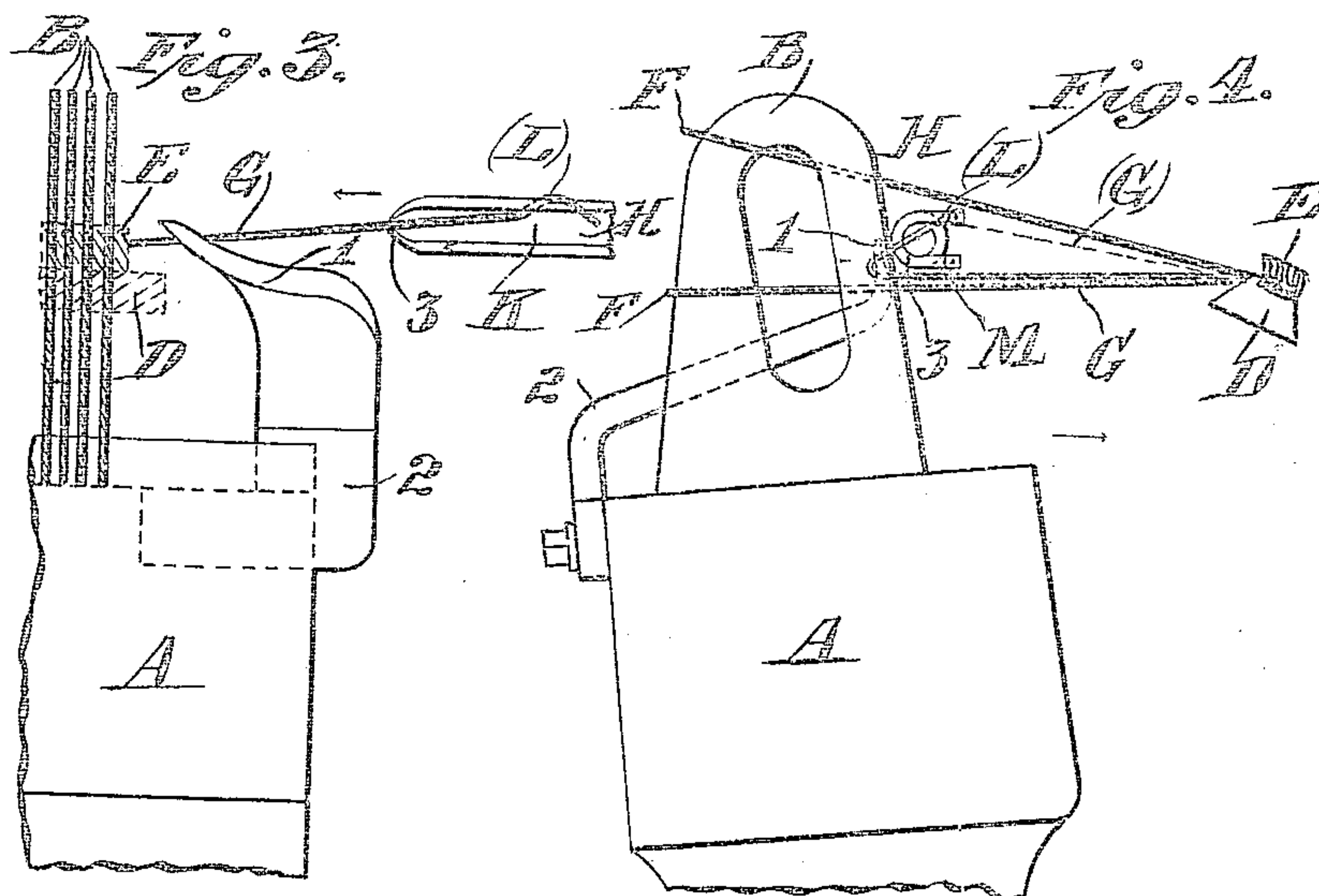
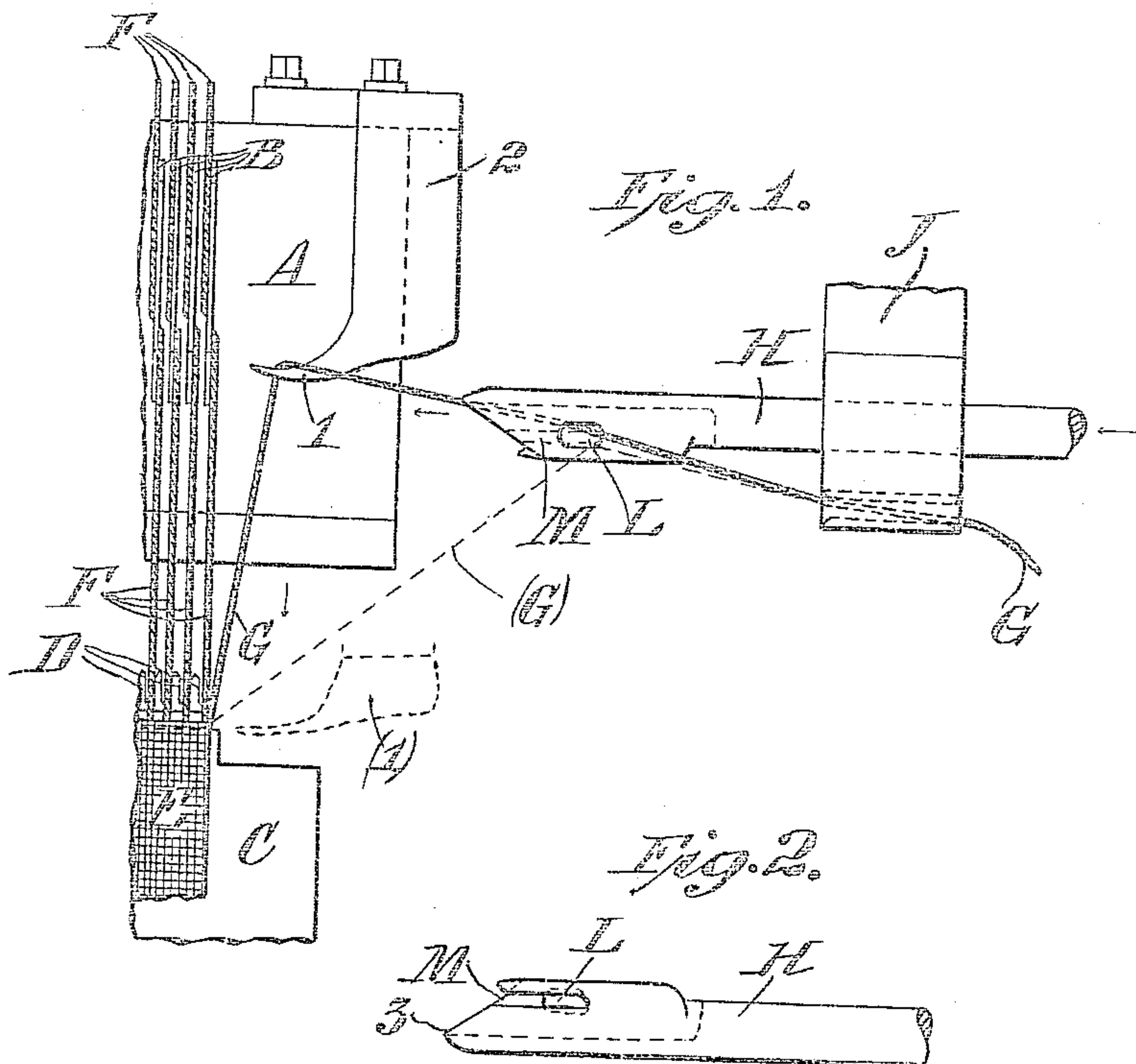


C. VORWERK.  
NEEDLE LOOM.  
APPLICATION FILED JUNE 28, 1906.

953,770.

Patented Apr. 5, 1910.  
2 SHEETS—SHEET 1.



Attest:  
*W. Mitchell;*  
*Lee J. Mathey.*

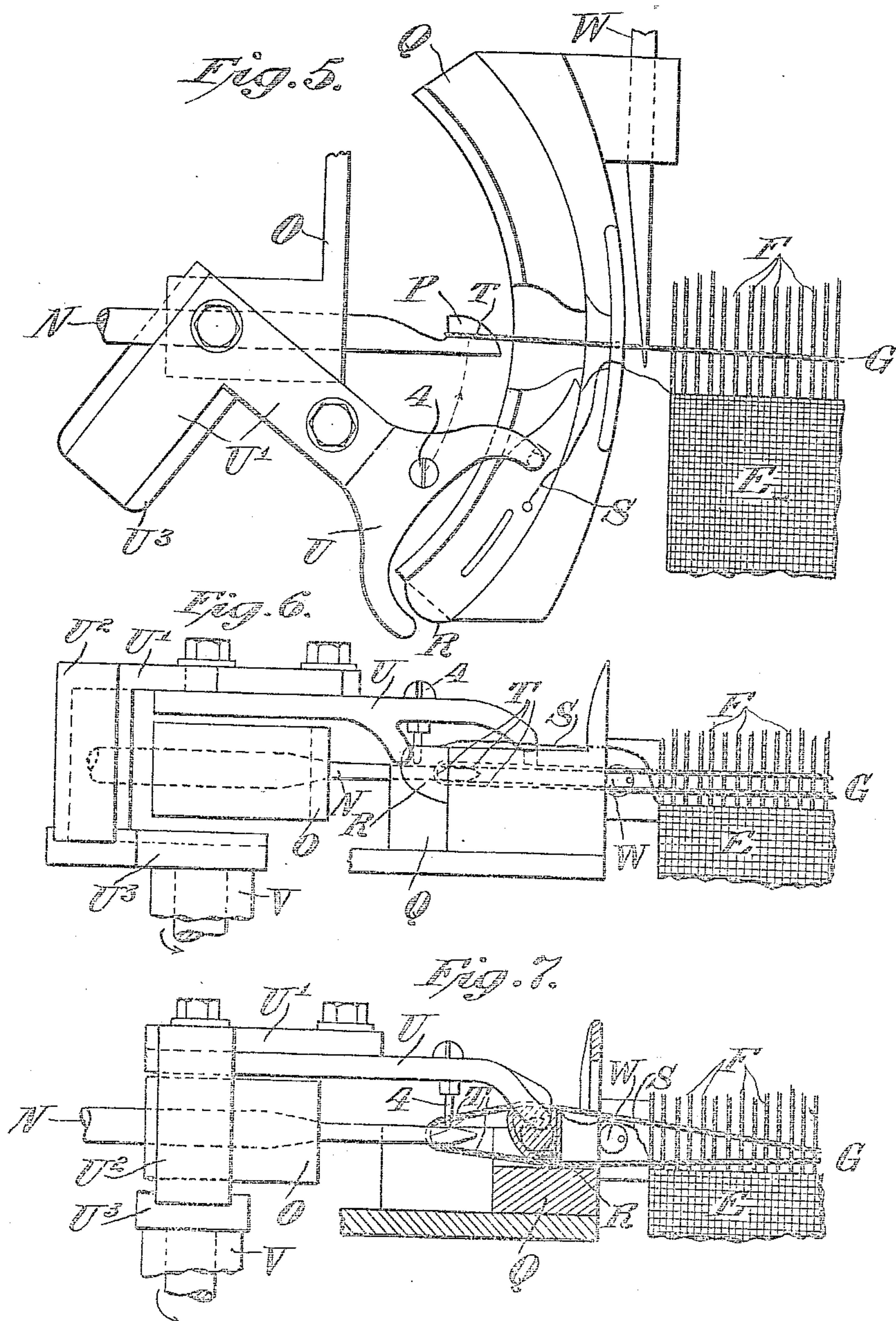
Inventor:  
*Carl Vorwerk.*  
by *Dickerson, Brown*  
*Raegenes & Binney* Attys.

953,770.

C. VORWERK.  
NEEDLE LOOM.  
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Patented Apr. 5, 1910.

2 SHEETS—SHEET 2.



Attest:  
*Committed*  
*Lee J. Mally.*

Inventor:  
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# UNITED STATES PATENT OFFICE.

CARL VORWERK, OF LEUTESDORF, GERMANY.

## NEEDLE-LOOM.

953,770.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed June 26, 1906. Serial No. 323,415.

*To all whom it may concern:*

Be it known that I, CARL VORWERK, a subject of the German Empire, residing at Leutesdorf, in the Rhine Province, Prussia, Germany, have invented certain new and useful Improvements in Needle-Looms, of which the following is a specification, accompanied by drawings.

My invention relates to that kind of looms in which the weft or filling thread is carried across the shed by means of a pair of needles or bars coöperating from the sides toward and away from each other so that they meet substantially in the middle of the loom, one needle pushing the weft thread in the form of a loop from one side to the middle, and the other needle drawing-out the loop of the weft thread of the pushing needle from the middle of the loom unto the other side.

The special object of my invention is to improve the means for properly guiding and presenting the weft thread to the forked end of the pushing needle, and to improve also the means for properly releasing or slipping the loop of weft thread from the hooked end of the drawing needle. These means consisted hitherto in complicated combinations of moving levers and clutch-devices, which could not work satisfactorily.

In order to dispense with all defects and disadvantages, I provide means which consist each of a single part only and require no active movement.

To these ends my invention consists of the parts and combination of parts as herein-after described and more particularly pointed out in the claims at the end of this specification and as illustrated in the accompanying two sheets of drawings, showing sufficient parts of the needle-loom to enable the application of my invention to be clearly understood.

Figure 1 is a top view of the weft-guiding finger according to my present invention. Fig. 2 is a plan view of the under-side of the pushing-needle head. Fig. 3 is a front view of said weft-guiding finger and Fig. 4 is the corresponding side view. Fig. 5 is a top view of the weft-loop releaser according to my present invention. Fig. 6 is the corresponding front view and Fig. 7 is a front view showing some parts of the loom in section and some parts advanced to another position.

Referring to the drawings and in detail, A is the lay.

B are reeds.

C is the table, carrying the table comb D for supporting the fabric, E.

F are warp threads.

G is the weft thread.

H is the pushing-needle, guided in the arm J and formed with a groove K (Fig. 3) in its head. The upper side is provided with an aperture L, and the under side with a slot M open at the end of the needle so that the end is forked.

N is the drawing-needle, guided in the arm O and formed with a flattened hook P at its head.

Q is the race for the selvage-shuttle R, which shuttle carries the selvage-thread S for interstitching the loop T formed by the weft-thread G.

U is the swinging arm for moving the selvage-shuttle R, which arm is journaled by means of the bracket U<sup>1</sup>, U<sup>2</sup>, U<sup>3</sup> upon the support V.

W is the loop holder for preventing the loop T of the weft-thread, by catching it, from being retracted farther than to the selvage after the loop being released from the needle-hook P and interstitched by the selvage-thread.

Arms J and O are customarily secured to some fixed part of the machine.

1, Figs. 1, 3 and 4 is the weft-guiding finger according to my present invention. It is suitably formed at the free end of a bent piece, fixed at the end of the lay so that the finger is pointing toward the reeds on a line somewhat behind that line on which the pushing-needle when entering the shed crosses the front of the reeds. The point of the finger is, however, bent somewhat backward (Fig. 1) and upward (Fig. 3) so that the weft thread, being led through the aperture L of the pushing-needle H, can slide over the finger in the advancing of the lay, but will be caught by the finger in the backward-movement of the lay (Figs. 1, 3, 4). Thereby the weft thread is drawn toward the back of the groove K so that, instead of coming out at the front of the needle, as shown by dotted lines (G) Figs. 1 and 4, the weft thread comes out at the brim 3 of the needle, that is, at the back of the groove K. Now, as the pushing-



needle advances, the weft thread will slide at the brim 3 downward and forward until it reaches the slot M and drops into it, whose end will then push off the loop of the weft-thread from the finger 1.

4, Figs. 5, 6 and 7 is the projection for slipping or throwing off the loop T of the weft thread G from the hook P of the drawing-needle N. Said projection consists most suitably of a screw-pin extending through the swinging arm U which operates the selvage shuttle downward to the level of the surface of the hook P. The position of the projection 4 is such as to enable the projection to reach the upper branch of the loop T just when the selvage shuttle R is extending the loop T at its maximum (Fig. 7). After the loop T has been disengaged from the hook P, and the selvage shuttle has passed through the loop, the loop is retracted by the outward-movement of the pushing-needle H and caught and stopped at the selvage of the fabric by the point of the needle W.

I am aware that changes may be made in the shape or arrangement of the means without departing from the scope of my invention. I do not wish therefore to be limited to the form and disposition illustrated and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. A loom comprising in combination a lay, a drawing needle, a pushing needle, and a weft guiding finger secured to the lay at the end where the pushing needle enters the shed, and comprising means adapted to engage the weft thread during return movement of the pushing needle, said means formed to permit the weft thread to slip from the weft guiding finger during the forward movement of said pushing needle.

2. A loom comprising in combination a lay, a reed, a drawing needle, a pushing needle, and a weft guiding finger secured to the lay at that end where the pushing needle enters the shed and comprising a projection pointing toward the reed and adapted to engage the weft thread during return movement of the pushing needle, and to permit the weft thread to slip off from the weft guiding finger during forward movement of said pushing needle.

3. A loom comprising in combination a

lay, a drawing needle, a pushing needle, and a weft guiding finger secured to the lay at the end where the pushing needle enters the shed, said pushing needle being grooved and having on one side an eye and on the other side a fork, said weft guiding finger arranged to engage the weft thread during the backward movement of said pushing needle and cause said thread to slip into the fork of said needle.

4. A loom comprising in combination a lay, a drawing needle, a pushing needle, and a weft guiding finger secured to the lay at the end where the pushing needle enters the shed, and having a point projecting toward the position of the warp-threads and also projecting upward, and adapted to engage the weft thread during the withdrawal of said pushing needle, the back of said projecting portion of said finger being rounded to facilitate free passage of the weft thread during forward motion of the pushing needle.

5. A loom comprising in combination a lay, means for passing weft-thread through a warp shed, and a weft guiding finger comprising a projection curved upwardly and toward the position occupied by the warp threads in operation.

6. A loom comprising in combination a lay, a pushing needle, and a weft guiding finger, said finger comprising means adapted to engage the weft thread carried by the needle during return movement of said needle, said finger and needle relatively formed and adapted so that during forward movement of the needle the weft thread slips of itself from said finger.

7. A loom comprising in combination a lay, a pushing needle having an eye, a groove, and a slot opposite the eye, and a weft guiding finger having a projection curved upwardly and toward the position occupied by the warp threads in operation, whereby during forward movement of the needle the weft thread slips from said finger.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CARL VORWERK.

Witnesses:

JOHANNES KNÖPPEL,  
ADOLF PRAGER.