

G. KRENZLER.
LACE MAKING MACHINE.
APPLICATION FILED DEC. 20, 1909.

979,770.

Patented Dec. 27, 1910.

Fig. 1.

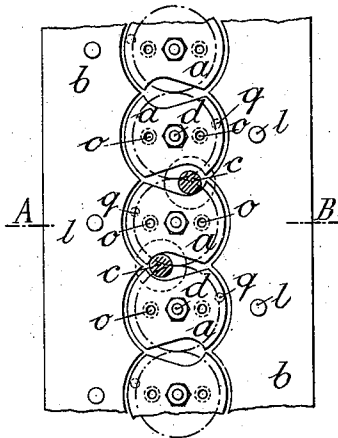
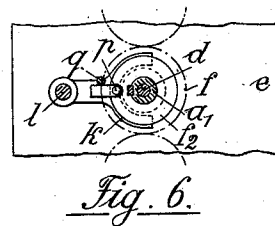
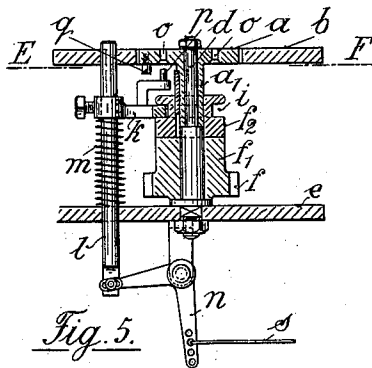
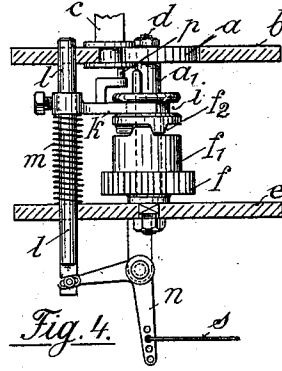
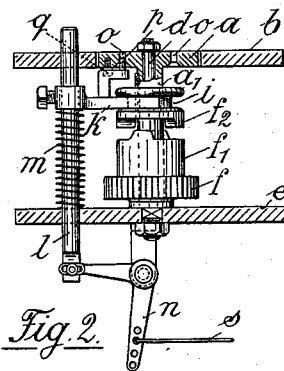
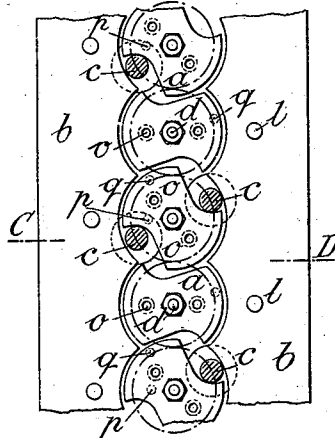


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

GUSTAV KRENZLER, OF BARMEN, GERMANY.

LACE-MAKING MACHINE.

979,770.

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To all whom it may concern:

Be it known that I, GUSTAV KRENZLER, a subject of the German Emperor, and residing at Barmen, Germany, have invented certain new and useful Improvements in Lace-Making Machines, of which the following is a specification.

My invention relates to lace-making machines in which the number of bobbin carriers is equal to the number of heads or plates, so that each plate corresponds to one bobbin carrier. In these machines, the bobbins never operate on two immediately adjacent or contiguous plates. Either two bobbins run on one plate, in which event the threads from these bobbins twist around one another, or the bobbins of these plates are transferred to the adjacent plates when each operates with another bobbin. The bobbins which are not working are stopped on the plates by the rotation of the drivers being interrupted by means of the pattern gear of the jacquard mechanism, and this interruption takes place always only when the drivers occupy one definite position. Further, in these machines the drivers, or the plates formed as drivers, are so arranged that one driver enters into the path of the adjacent driver and the recesses in the drivers are so proportioned and shaped that each of two adjacent drivers can drive the bobbin carrier between the two and thus leave one bobbin on the same plate or transfer it to the next, as desired, according in each instance as to whether the one or the other driver is rotated.

Now a primary object of my invention is to provide a device for lace-making machines of the type described above for securely holding the stopped drivers in the rest or dwell position, as it frequently happens in the mentioned machines that an operative, *i. e.* rotating, plate drives the adjacent plate which is to remain at rest, when of course the operation of the machine is disturbed.

One illustrative embodiment of my invention is represented by way of example as applied to a lace-making machine of the described type, in which the plates themselves are formed as drivers, in the accompanying drawing, wherein:—

Figure 1 is a top plan view showing a portion of the machine with the drivers in one position, Fig. 2 a vertical section in the plane A—B in Fig. 1, Fig. 3 a top plan view

showing a portion of the machine with the drivers in another position, and Fig. 4 is a vertical section in the plane C—D in Fig. 3 showing the clutch partially disconnected; Fig. 5 is a like section showing the clutch entirely connected, and Fig. 6 is a horizontal section in the plane E—F in Fig. 5.

Referring to the drawing, the heads or plates a are revoluble in the top frame-plate b and serve simultaneously as drivers for the bobbin carriers c ; each driver rotates on the wheel spindle d secured in the bottom frame-plate e of the machine. In Fig. 1 the drivers are all shown in that position which they occupy when they are to be stopped; in Fig. 3 the first, third and fifth plates are operating, whereas the second and fourth plates are in the rest positions. On this spindle runs pinion or gear wheel f whose hub f_1 is formed as one half of a clutch. The other half f_2 of the clutch is axially displaceable on a key on hub a_1 of driver a , and in a groove i turned into this half engages a fork k secured on pin l mounted movably vertically in the top and bottom frame plates of the machine. The fork and with it the half f_2 of the clutch are constantly pressed upwardly by a spring m and the half f_2 of the clutch is thereby kept out of engagement with the half f_1 .

At its bottom end pin l is pivotally connected with one arm of angle lever n whose other arm is connected by a tie rod s with the jacquard apparatus. When the appertaining lifting-wire is lifted, the half f_2 of the clutch is moved downwardly whereby this is brought into engagement with the other half of the clutch and the drivers a are rotated. But if the lifting-wire falls from the lifting-blade, owing to the pressure of spring m the half f_2 of the clutch moves upward and the clutch is disengaged. Now in order that the drivers a may be stopped and held absolutely certainly in their rest position, I provide on fork k a pin p which abuts, in the elevated position of fork k , against the bottom face of a driver a and snaps into a hole o of the same after the driver has subsequently rotated a small amount.

The jacquard machine is so adjusted that the lifting-wire falls down somewhat before the hole o arrives over the pin p . Then, although the displaceable half of the clutch is released by the fallen lifting-wire, the half f_2 of the clutch remains a short time

in engagement because the pin *p* abuts
 against and is retained by the plate or driver
a, so that the plate or the drivers *a* are
 driven farther and thereby always arrive
 5 into the correct position for the pin *p* to
 snap in. The small partial rotation of the
 driver after the fall of the lifting-wire is
 of importance because the entire disengage-
 10 ment of the clutch and with it the stoppage
 and securing of the driver always occur
 exactly in a definite position of the bobbin
 carrier relatively to the moving parts, so
 that it is impossible for the drivers or bobbin
 carriers to collide. The hole *o* is somewhat
 15 countersunk at its bottom end whereby the
 snapping in of pin *p* is assured. In order to
 check the rotation of the drivers and secure
 them additionally in a corresponding posi-
 20 tion of the same, I may provide in addition
 a fixed stop *q* in the drivers, for coacting
 with the arm carrying pin *p* or with fork *h*.

I claim:—

The combination, in a lace-making ma-

chine, of a spindle carrying a driver having
 a hole therein, a driving clutch-member 25
 freely revoluble on said spindle, a gear con-
 nected with said clutch-member, a driven
 clutch-member slidable axially on, but non-
 revoluble on, said spindle, and upwardly
 30 spring-pressed arresting means actuated by
 pattern gear and comprising a forked mem-
 ber for actuating said driven clutch-mem-
 ber to bring the same into and out of en-
 gagement with said driving clutch-member,
 said forked member carrying a pin under 35
 said driver adapted to enter into said hole
 in the driver when said clutch-members are
 disengaged and thereby positively secure the
 driver in its rest position.

In testimony whereof, I affix my signature 40
 in the presence of two witnesses.

GUSTAV KRENZLER. [L. S.]

Witnesses:

OTTO KÖNIG,
 CHAS. J. WRIGHT.