

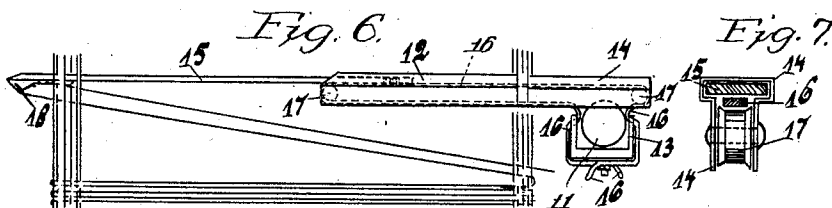
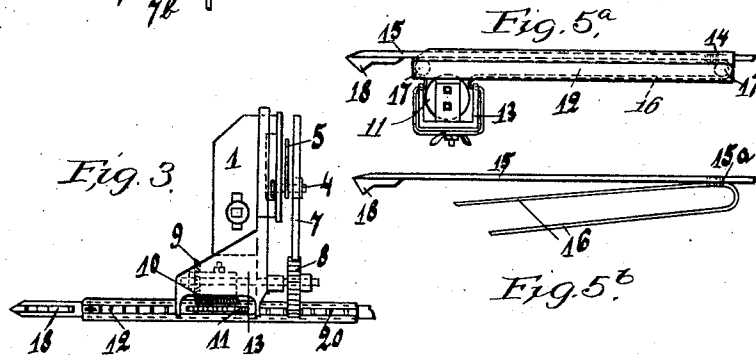
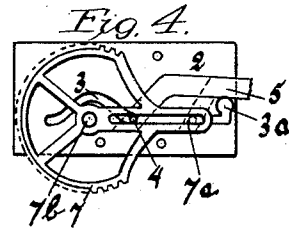
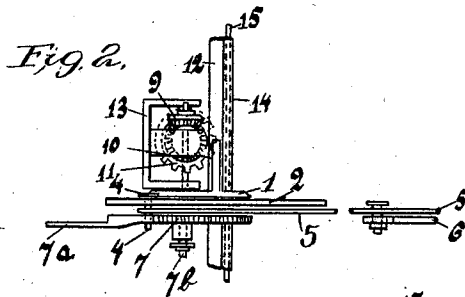
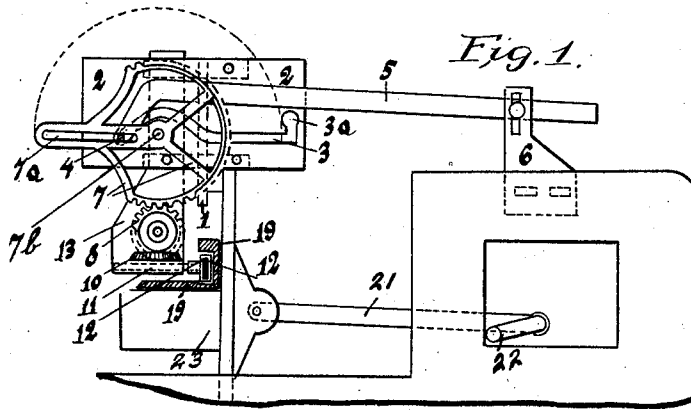
E. GRAF.

LOOM.

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1,061,836.

Patented May 13, 1913.



Witnesses:
Edward H. Sartor
H. M. Barrett

Inventor:
Emil Graf
By Spear, Macdonald, Donnell & Spear
ATTYS

UNITED STATES PATENT OFFICE.

EMIL GRAF, OF ELBERFELD, GERMANY,

LOOM.

1,061,836.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EMIL GRAF, a citizen of the German Empire, and resident of Elberfeld, German Empire, have invented new and useful Improvements in Looms, of which the following is a full, clear, and exact description.

The present invention relates to looms, more particularly to that class known as "needle looms," and has for its object to provide a device by means of which the weft will be quickly and accurately threaded through the shed by a weft-carrier.

With this end in view the invention consists in providing for needle looms a device such as herein specified, composed of parts arranged and operated in the manner fully described and illustrated in the following specification.

In order to more clearly understand the construction and operation of the device, reference is to be had to the accompanying drawings, in which—

Figure 1 is a side elevation (with parts in cross section), of the device secured to the batten foot; Fig. 2 is a plan view of the device; Fig. 3 is a front elevation of the device; Fig. 4 is an elevation of the driving wheel in its position of rest, drawn to an enlarged scale; Fig. 5^a shows the weft carrier, with needle and rope attachment; Fig. 5^b shows the needle with rope attached thereto; Fig. 6 shows the weft carrier with the needle moved out and extending across the shed; Fig. 7 is a cross-section on an enlarged scale of the running-in needle sheath.

Referring first to Fig. 1 of the drawing, the numeral 1 is a carrier for the whole apparatus, adjustably mounted on the batten or batten foot, so as to be easily regulated to correspond to the height of the reed.

2 is a metal plate adjustably attached to the said carrier 1, and 3 is an eccentric guiding slot in the said metal-plate, corresponding in shape and length to the path of the batten.

5 is a lever, and 4 a bolt, provided at the front end of the said lever, and adapted to reciprocate in the said slot 3, according to the movement of the batten. The bolt 4 is inserted into the slot 3 through an enlargement 3^a, formed at one end of said slot.

7 is a semi-circular toothed segment

formed with a projecting arm in which is formed the lateral slot 7^a. The toothed segment is pivotally mounted on the plate 2 by means of a bolt 7^b which is at the same height as the slot 3, and is adapted to be rotated back and forth about this axis through an angle of about 180° as is later set forth. The bolt 4, carried on the end of the lever 5, and moving in the eccentric slot 3, also registers in the lateral slot 7^a of the member 7, so that as the bolt 4 moves along the slot 3, the segment 7 is simultaneously rotated about its axis until it assumes the position shown in Fig. 4.

13 is a bearing plate adjustably secured to the carrier 1, and having mounted upon it the necessary gears through which the motion of the segment 7 is transmitted to the weft carrier.

8 is a toothed gear adapted to engage with the toothed segment 7 and at the same time carrying with it a beveled gear 9, which latter meshes with a second bevel gear 10.

11 is another toothed gear rigidly connected to the bevel gear 10, and adapted to engage the weft carrier 12.

19 is an angular piece mounted upon the lay 23, serving as a guide for the weft carrier so that the latter moves safely and rapidly in the lease. The lay 23 moves laterally back and forth, being operated through the medium of the crank 22 and shaft 21.

The weft carrier 12 consists of a light-casing 14 and a needle 15 (Figs. 5^a, 5^b, 6 and 7), adapted to telescope within the said casing.

16 is a belt or rope attached to the end of the needle 15.

17, 17'' are small rollers, arranged within the said casing 14, at either end of the same, and guiding the belt or rope 16, which latter passes out of the casing and is fastened to the bearing piece 13 on either side of the gear 11.

18 is an oblong weft-thread-guiding head forming the front end of the needle 15. Arranged in the interior of the casing 14, and permanently secured thereto is a rack 20, extending from one roll 17 to the other. This rack is in engagement with the toothed gear 11.

The operation is briefly as follows: Fig. 1 represents the back center position of the lay. As the lay moves forward, the

toothed segment 7 rotates through 180° as previously described, and at the same time it acts through the medium of the gears 8, 9, 10 and 11, directly upon the weft carrier 5 12, which is withdrawn. The segment 7 and lever 5 are then in the position shown in Fig. 4. When the lay moves from the position shown in Fig. 4 to that shown in Fig. 1, the needle will be advanced.

10 To describe more minutely the operation of the weft carrier and its parts: When the gear 11 meshes with the rack 20 and drives the casing 14 forward, the rope 16 will simultaneously pull forward the needle 15 15 which is fastened to it at 15^a. Thus the weft carrier is advanced only half way across the shed, while a stroke is attained which is twice that of the weft carrier. The width of the path either for wide or 20 narrow fabrics may be easily adjusted by inserting a smaller or greater toothed wheel 8 or 11 respectively.

Having described my invention what I claim is:

In a needle loom, the combination of a 25 movable casing, a weft thread-carrying needle movably arranged within the said casing, a roll at the one end and another roll at the other end within the said casing, a bearing piece, carrying the said casing, a 30 rope passed over the two rolls, and fastened in a suitable manner to the bearing piece and to the weft-thread-carrying needle, a gear, and means in connection with the said gear and with said casing and weft thread 35 carrying needle for moving the casing forward and simultaneously forcing the weft thread carrying-needle out of said casing.

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

EMIL GRAF. [L. s.]

Witnesses:

OTTO KÖNIG,
KARL NIESEN.