

O. VON MEYENBURG.
 DEVICE FOR THE PURPOSE OF THREADING THE WARP THREADS INTO THE HEDDLES.
 APPLICATION FILED APR. 22, 1910.

1,076,598.

Patented Oct. 21, 1913.

3 SHEETS—SHEET 1.

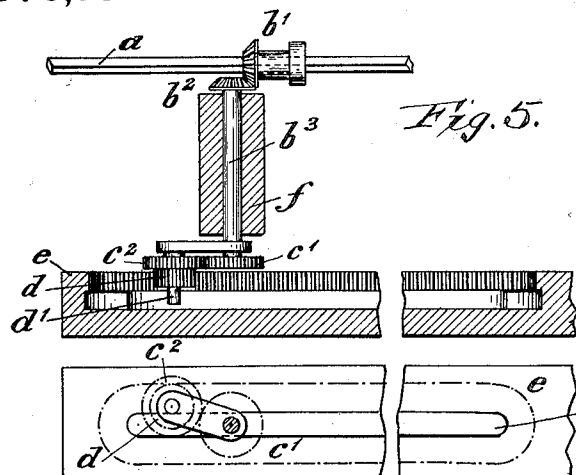


Fig. 5.

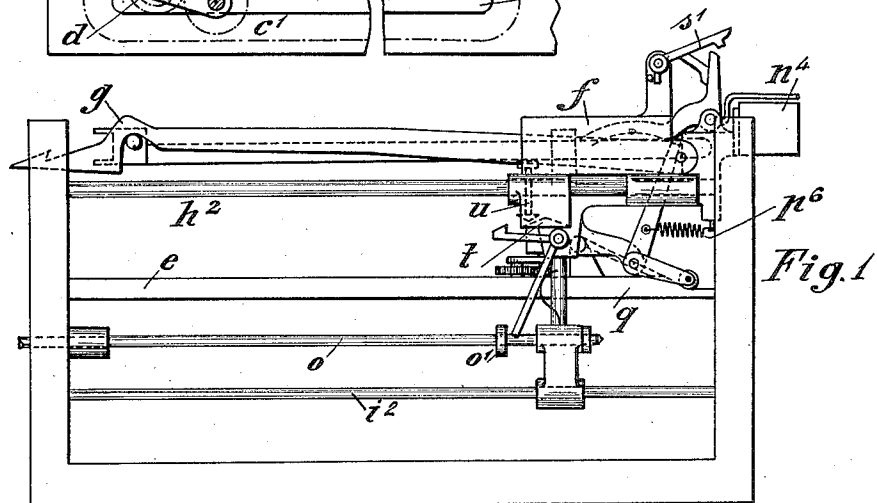


Fig. 1.

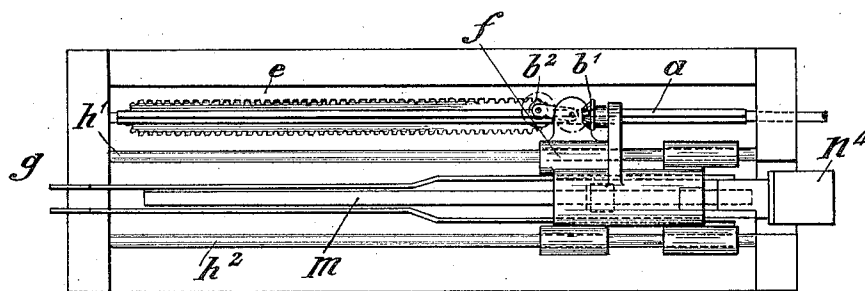


Fig. 4.

Witnesses

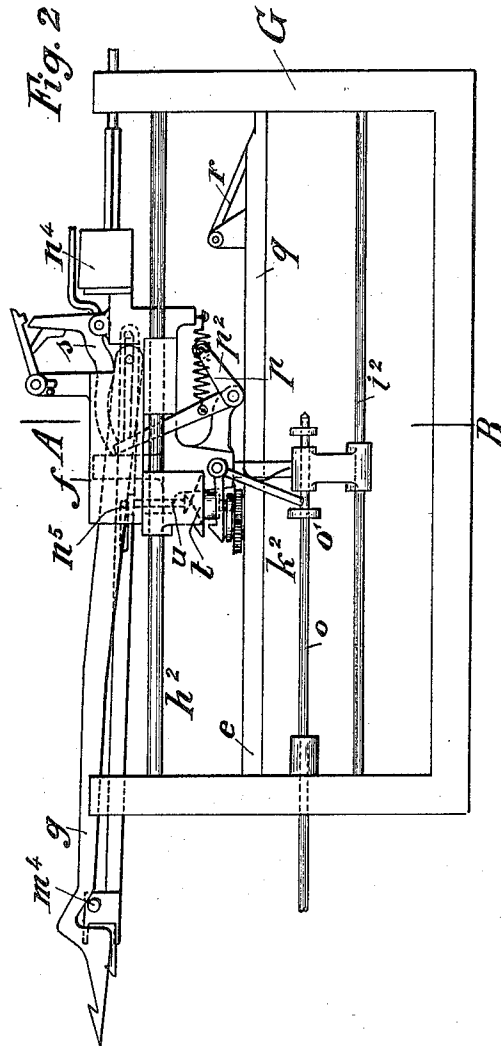
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3 SHEETS—SHEET 3.

Fig. 7

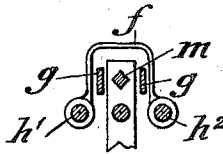
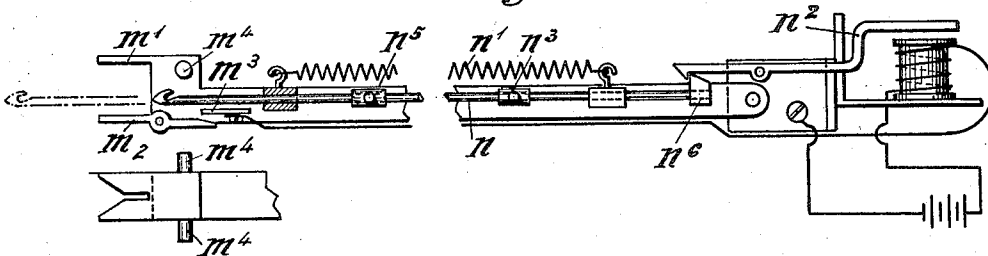


Fig. 6



Witnesses

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UNITED STATES PATENT OFFICE.

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DEVICE FOR THE PURPOSE OF THREADING THE WARP-THREADS INTO THE HEDDLES.

1,076,598.

Specification of Letters Patent.

Patented Oct. 21, 1913.

Application filed April 22, 1910. Serial No. 557,016.

To all whom it may concern:

Be it known that I, OTTO VON MEYENBURG, engineer, citizen of Switzerland, residing at Zurich, Switzerland, have invented certain new and useful Improvements in Devices for the Purpose of Threading the Warp-Threads into the Heddles, of which the following is a specification.

My invention relates to improvements in means for drawing warp threads into and through heddle eyes, and may be employed in connection with a warp thread drawing-in machine of the type disclosed by British Letters Patent No. 3707 of February 14, 1907.

Machines of the type referred to usually contain, as an essential feature thereof, means for successively selecting individual threads from a row of such threads, said means including a member movable against the row to separate from the latter at predetermined intervals a thread and properly position the same to be drawn through the heddle. Such selecting means form the object of my copending application for Letters Patent, filed April 22, 1910, Serial Number 557014. Machines of the type above referred to also include a device for selecting and separating the individual heddle cords, said device comprising oscillating, adjustable and fixed arms which coöperate in selecting and separating a heddle, at predetermined times, from the series of heddle cords and holding the series of cords separate from the one selected.

A device of the character thus briefly described in the statement immediately preceding is made the object of my copending application for Letters Patent, filed April 22, 1910, Serial Number 557015. Finally, the machine above referred to is also provided with a device for threading the warp threads through the heddle eyes, said device having a suitable member for drawing through the heddle eye the thread separated by the first mentioned mechanism and which said heddle is held in readiness for threading by the second mentioned mechanism.

The last mentioned type of mechanism forms the object of the present invention and the means for drawing the threads through the heddle eyes consists of a hooked needle in combination with a guide arm therefor, said arm having a forked or bifur-

cated head adapted to engage a heddle at each side of the eyes therein and thus hold the eye in proper position. The invention further includes means for placing the warp thread in the needle hook and to so actuate the needle that it draws the thread through the heddle eye.

The preferred embodiment of my invention is illustratively exemplified in the accompanying drawings, wherein—

Figures 1-3 show side elevations with different positions of the working parts while in action. Fig. 4 is a plan, Figs. 5 and 6 show details enlarged, Fig. 7 shows a section on A B in Fig. 1.

A shaft *a* is free to rotate in suitable bearings of a frame work *g*. Between the bearings it is of square cross-section, and on this square part a conical gear wheel is fitted so that it can slide on *a* between its bearings. This gear wheel *b*¹ (Fig. 4) gears with another similar one *b*². The latter drives by means of a shaft *b*³ (Fig. 5) supported by a slide *f*, and of gear wheels *c*¹ and *c*² a gear wheel *d*. Wheel *c*² together with *d* are free to swing about *b*³. The wheel *d* gears with a rack *e* which has a shape as shown in Figs. 4, 5 and 7. A pin *d*¹ which rests on a dividing partition *e*¹ serves also as guide. The slide *f* rests on two bars *h*¹ and *h*². On to slide *f* is attached a fork *q* with hook-shaped ends, and which may swing in a vertical plane about the attaching pin. This fork serves as a carrier for the warp-thread. Between bars *h*¹ and *h*² a third *i*¹ (Fig. 7) is provided which supports a slide *k* (Fig. 3). A rod *i*² serves as further guide for slide *k*. On to slide *k* an arm *m* which carries a long and fine-hooked needle *n*, Fig. 6, is attached, which by means of a spring *n*¹ is kept toward the right, but which by means of an electrically releasable catch *n*² is at times kept in a position as shown.

Arm *m* terminates in two fork-shaped tongues *m*¹ and *m*², of which *m*² is free to swing about a pivot on *m*. Whenever *m*² comes into contact with *m*³ the electric circuit is established and catch *n*² is released by the action of the electromagnet. Fork *q* is in fore-part supported by two rollers *m*⁴. The slide *k* carries at one side a catch *h*¹, which may engage with *f*¹ on slide *f* and thus couple the two slides together. With slide *k* a rod *o* is connected which is pro-

vided with an adjustable collar o^1 which may come into contact with arm k^2 connected to catch k^1 . Rod o slides together with slides k and releases as soon as it strikes one of the stops A^1, A^2, A^3, A^4 by means of collar o^1 catch k^1 . On to a projection on slide k an angular lever $p^1 p^2$ is pivoted. p^1 may come into contact with a pin n^3 connected to needle n . A spring p^3 draws p^1 and therefore needle n toward the right. The other arm p^2 of the lever carries a roller p^4 which is free to move along a path q , which at its extreme right end is inclined, but otherwise horizontal. As a continuation of the inclined part of this path q a linked path r is provided which has to be mounted by the roller when slide k moves from right to left. On returning, however, the roller will simply lift r and thus follow q . Lever p^1 is held in its extreme left position by means of a lever-stop s , which again may be released by s^1 on slide f . At this moment the slides have approached each other sufficient to allow catch k^1 to engage with f^1 . The arrangement of parts s and s^1 is such as to cause, on a further approach of the slides toward each other the catch s^1 to be raised, in order that when the two slides are coupled together the lever stop s is free to move once more and ready to keep arm p^1 in its extreme left position. Slide f is provided with a double ended incline t with which a bolt u is in contact. This bolt u is free to move vertically in a suitable hole in slide k . The needle n is provided with a pin n^5 which is in line with and above bolt u whenever needle n is in its extreme right position relatively to the arm m . Hereby is it made possible to raise needle n on a further approach of the two slides toward each other.

This device is to serve harness consisting of one or more shafts *e. g.* four W^1, W^2, W^3 , and W^4 . These are fixed, the one behind the other, in front of parts g and m . In order that the warp-thread may be drawn through the eyes of the four shafts in proper succession beginning with the first heddle of the first shaft and proceeding to the first heddle of the second shaft, etc., the heddles are in succession brought into a suitable position, so that the eyes are placed between m^1 and m^2 . The heddles not under operation are kept aside in order that the parts m and g may have room to move. At the same time while one heddle *e. g.* that indicated at W^3 is being detached and placed in position the respective stop *e. g.* that indicated at A^3 has to be brought into the path of rod o .

The mode of operation of this device is as follows: Supposing all parts to be in their starting position as in Fig. 1. Shaft a is made to rotate as indicated by arrowhead. This movement will be transmitted by b^2 $b^3 c^1$ and c^2 to wheel d which will commence

to travel along the rack and both sides are taken along toward the left. During this motion roller p^4 is compelled to ascend r and to thus compel lever p^1 to move against the pull of p^3 toward the left, where it is kept in position by s . The two slides will continue to move together until the rod o strikes that stop which belongs to the heddle to be threaded. The very moment rod o strikes one of the stops A^1-A^4 the eye of the heddle is just about opposite the point of needle n which is kept back by n^2 and between the two tongues m^1 and m^2 of arm m . Owing to the pressure of the head of arm m against the heddle its eye is compelled to place itself flat against its end. Rod o upon striking A^3 is kept back, and as the slides continue to move k^1 is released by collar o^1 . Slide k becomes thereby detached and remains behind while slide f proceeds. (Fig. 2.) Bolt u is now made to ascend the incline t whereby through aid of pin n^5 the arm m is raised until the pivoted tongue m^2 strikes the eye of the heddle. The eye is thereby brought exactly in line with needle n . The tongue m^2 being carried against the eye the former is made to turn slightly, whereupon the electric circuit is established. The needle n is released by n^2 being drawn down by the electromagnet and is quickly drawn through the eye of the heddle spring n^1 . But herewith pin n^5 gives up its position above bolt u ; arm m cannot, therefore, be raised any farther. Slide f continues to move toward the left until hook of fork g reaches the warp-thread which was kept in readiness. The thread on being caught returns with fork g and is made to approach the hook on n . As soon as the bent in fork g reaches the supporting rollers m^4 , g is lowered and thus places the thread on needle n . Immediately afterward s is released by s^1 and is by spring p^3 and pin n^3 made to draw needle n back until roller p^4 strikes q . Needle n is still projecting through the eye, but as soon as slide f moves a little backward toward the right it strikes against slide k thus causing the latter to return also. The thread is hereby completely drawn through the eye, and shortly before the roller p^4 reaching the end of path q is taken from needle n to some other device not shown. When after this the roller p^4 descends the incline at the end of path q lever p^1 moves under the influence of spring p^3 still farther toward the right and withdraws the needle n completely, whereby n^2 can once more catch behind n . The slide f can now once more advance with slide k in order that all the various parts may again operate and another heddle become threaded. All the first heddles of the four shafts having been done the others are served likewise in turn. Hereby it will be found necessary to place the device opposite the row of heddles

to be threaded; and suitable arrangements, which, however, are not part of this invention, may be made with this end in view.

After having thus described the nature of my invention what I claim as new and for which I desire protection by Letters Patent is:

1. In a device for the purpose of threading warp threads into heddle eyes, the combination with a reciprocable hooked needle for drawing warp threads through heddle eyes, of a movable arm for guiding the needle, said arm having a forked head for engaging a heddle above and below the eye, means for placing the warp thread into the hook of the needle, and means for moving the needle to draw the thread through the heddle eye, substantially as described.

2. In a device for the purpose of threading warp threads into heddle-eyes, the combination with a reciprocable hooked needle of an arm movable in the direction of the needle and serving to guide the needle, said arm having a forked head for engaging a heddle above and below the eye, a reciprocable hooked fork adapted to receive a warp thread and to lay it on the hook of the needle and means for moving the needle to pass through the heddle eye and, when returning to draw the thread through the latter, substantially as described.

3. In a device for the purpose of threading warp threads into heddle eyes, the combination with a reciprocable hooked needle of an arm movable in the direction of the needle and serving to guide the latter, said arm having a forked head for engaging a heddle above and below the eye, means whereby said arm is vertically oscillated to place the needle point directly behind the heddle eye, a reciprocable hooked fork adapted to receive a warp thread and to lay it in the hook of the needle and means for moving the needle to pass through the heddle eye and, when returning to draw the thread through the latter, substantially as described.

4. In a device for the purpose of threading warp threads into heddle eyes, the combination with a reciprocable hooked needle, of an arm, movable in the direction of the needle and serving to guide the latter, said arm having a forked head for engaging a heddle above and below the eye, means whereby said arm is vertically oscillated to place the needle point directly behind the needle eye, means to keep back the needle until the needle point is placed directly behind the heddle eye and means for releasing the needle to pass through the eye, a reciprocable hooked fork adapted to receive a warp thread and to lay it in the hook of the needle and means for returning the needle to draw the thread through the heddle eye, substantially as described.

5. In a device for the purpose of threading warp threads into heddle eyes, the combination with a reciprocable hooked needle, of an arm, movable in the direction of the needle and serving to guide the latter, said arm having a forked head for engaging a heddle above and below the eye, catches serving to keep back the needle in its guiding arm, one part of the said forked head being formed by a plate pivoted and suitably connected with the catches and means to oscillate the said arm vertically to place the needle point directly behind the heddle eye, whereby the pivoted plate in striking the eye is turned and actuates the catches for releasing the needle to pass through the eye, a reciprocable hooked fork adapted to receive a warp thread and to lay it in the hook of the needle and means for returning the needle to draw the thread through the heddle eye, substantially as described.

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

OTTO VON MEYENBURG.

Witnesses:

CARL GUBLER,
AUGUST RÜEG.