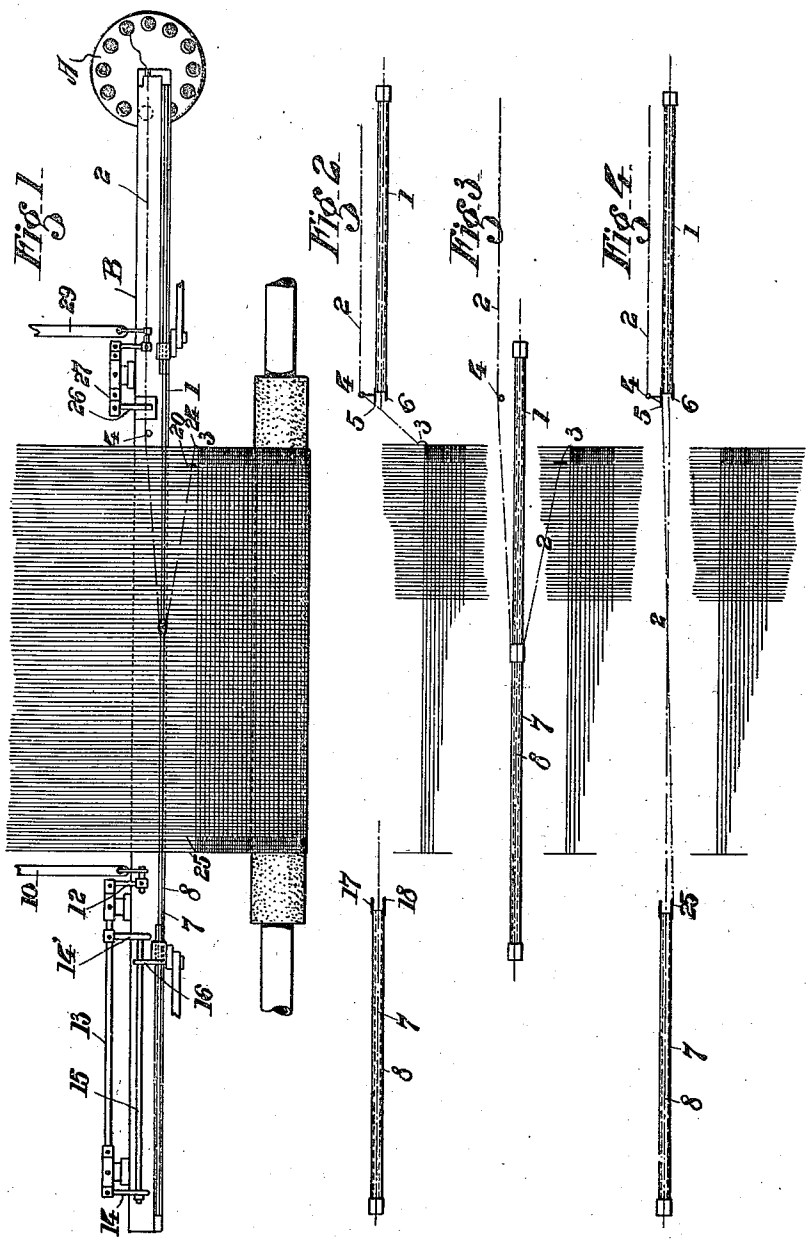
Nov. 11, 1924. 1,515,102

J. GABLER

DEVICE FOR INTRODUCING THE WOOF BY MEANS OF A GRIPPING CONTRIVANCE IN LOOMS

Filed July 5, 1922 2 Sheets-Sheet 1



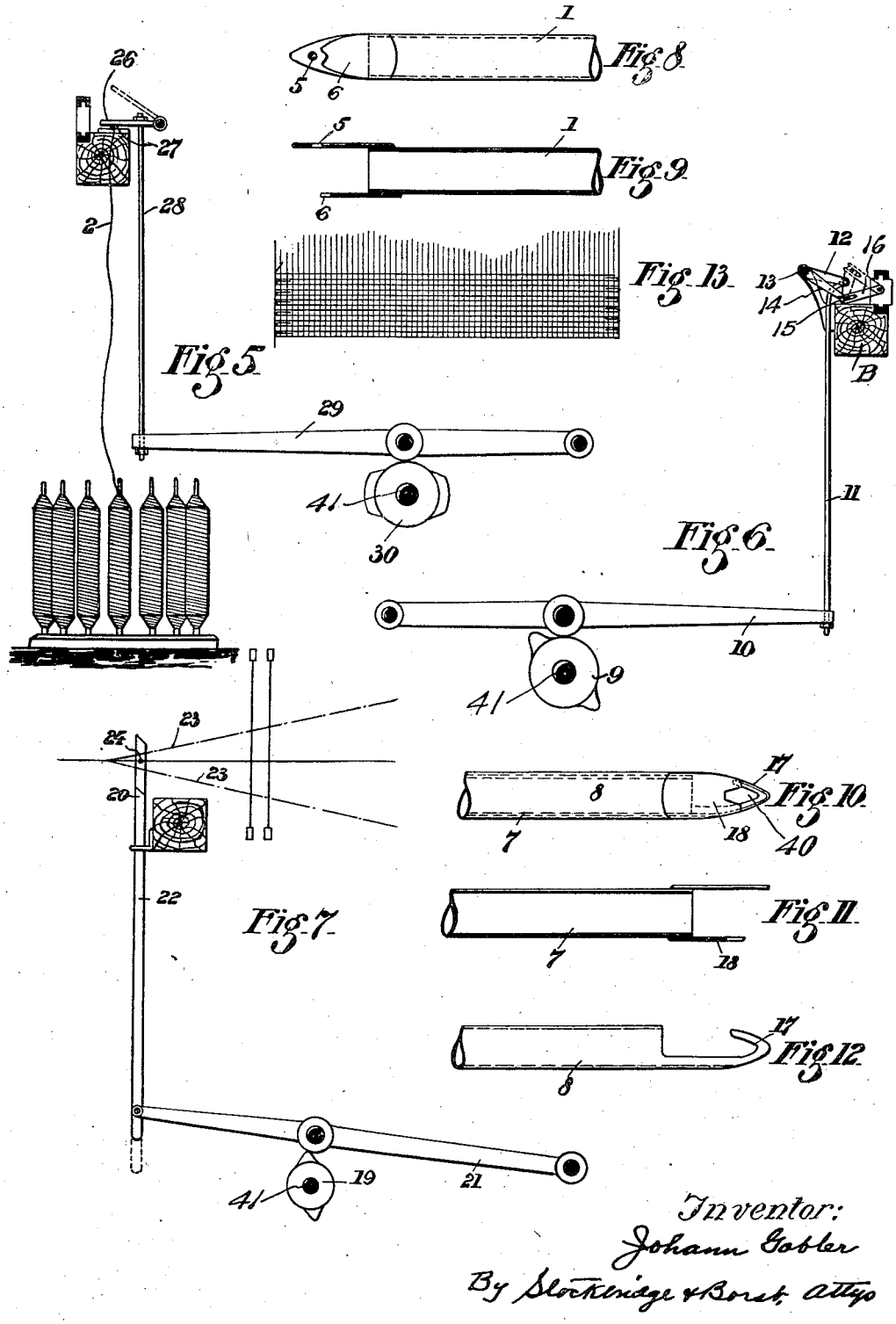

Inventor:
Johann Gabler
By Sloat, Bridge & Sloat, Attys

Nov. 11, 1924. 1,515,102

J. GABLER

DEVICE FOR INTRODUCING THE WOOF BY MEANS OF A GRIPPING CONTRIVANCE IN LOOMS

Filed July 5, 1922 2 Sheets-Sheet 2




Inventor:
Johann Gabler
By Stockbridge & Borst, attys

Patented Nov. 11, 1924. 1,515,102

# UNITED STATES PATENT OFFICE.

JOHANN GABLER, OF ETTLINGEN, GERMANY.

## DEVICE FOR INTRODUCING THE WOOF BY MEANS OF A GRIPPING CONTRIVANCE IN LOOMS.

Application filed July 5, 1922. Serial No. 572,817.

*To all whom it may concern:*

Be it known that I, JOHANN GABLER, a citizen of the Republic of Germany, and resident of Ettlingen, Germany, have invented certain new and useful Improvements in a Device for Introducing the Woof by Means of a Gripping Contrivance in Looms, of which the following is a full, clear, and exact specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in weft inserting mechanism in looms for weaving of the type in which the weft is inserted half way through the shed by means of a weft rod or needle and taken the remainder of the distance by means of a hook device.

According to the present invention the weft is inserted double, as far as the centre of the shed by means of the weft rod, where it is taken hold of by the hook device, cutting mechanism being provided to sever the end connecting it to the last pick to allow this end to be drawn across the shed with the hook device, the hook device being provided with means whereby the weft is retained therein when this latter is at the outer end of its travel the remaining portion being carried back a predetermined distance by it on the succeeding pick forming a selvedge. Means are provided also whereby the weft from the bobbin is held during the return stroke of the weft rod.

The invention will be described with reference to the drawings:

Fig. 1 is a plan of a machine constructed in accordance with the invention and showing the weft 2 inserted double to the centre of the shed;

Figs. 2, 3, and 4 are fragmentary plans showing the weft rod 1 and hook device 7, 8 in various relative positions;

Fig. 5 is a sectional elevation of a portion of the machine showing the mechanism for holding the weft during the return stroke of the weft rod;

Fig. 6 is a sectional elevation of a portion of the machine showing the mechanism for rocking the hook;

Fig. 7 is a sectional elevation of another portion of the mechanism which is utilized for severing the weft;

Fig. 8 is a side elevation of the weft rod;

Fig. 9 is a sectional plan of the same;

Fig. 10 is a side elevation of the hook device which cooperates with the weft rod to lay the weft;

Fig. 11 is a sectional plan of the same; and

Fig. 12 is a side elevation of one of the parts of the hook device.

Fig. 13 shows the fabric when the introduction of the weft takes place.

When the loom is working, the weft rod 1 and hook device 7, 8 are inserted into and withdrawn from the shed in any known manner.

The weft 2 passes from the bobbin on the carrier A over a guide 27 and round a guide pin 4 affixed to the slay B, to the weft rod 1 and through the eye 5 and slot 6 therein to the edge 24 of the cloth 3 (Fig. 2) the weft at this period being still connected to that of the previous pick.

The loom is now in position to commence a fresh pick the weft rod 1 and hook device 7, 8 travelling to the centre of the shed. During this travel, the weft being held at the edge 24 of the cloth 3, is pulled through the eye 5 of the weft rod 1 so that when the weft rod 1 reaches the centre of the shed the weft occupies a position as shown in Figs. 1 and 3. The hook device 7, 8 comprising a tube 7 provided with a thread guide 18 and an inner tube 8 having a hooked end 17, enters the shed from the opposite side and when at the centre of the shed the hook 17 passes between the eye 5 and the slot 6 in the weft rod 1 whereby the weft 2 is engaged round this hooked end 17.

The tube 8 is capable of a rocking motion inside the tube 7 but cannot slide therein. The tube 8 is rocked to open the eye 40 formed by the guide 18 on the tube 7 and the hooked end 17, by the cam 9 on the tappet shaft 41 through lever 10, link 11, lever 12, a rod 13, arms 14, 14′ (Fig. 1) a rod 15 and an arm 16 when in position at the centre of the shed to receive the weft. On the insertion of the weft the tube 8 returns to its normal position and the eye 40 is again closed.

As soon as the weft 2 has been inserted into the eye 40 a knife 20 operated from a cam 19 on the tappet shaft 41 through lever 21 and rod 22 is raised through the warp 23, at a short distance from the edge 24 of the cloth 3 to sever the weft 2, the position of this knife allowing for a selvedge to be formed. When the return stroke of the

weft rod 1 and hook device 7, 8 is commenced the severed end of the weft is drawn across the shed through the eye 40 in the hook device 7, 8.

A cam 30 on the tappet shaft 41 is arranged to lift an arm 26 through the lever 29 and rod 28, during that portion of a revolution when the weft 2 is being drawn from the bobbin on the carrier A, and to allow this arm 26 to fall onto the guide 27 on the slay B to grip the weft during the return stroke of the weft rod 1, thereby preventing the weft from becoming tangled.

When the hook device 7, 8 has reached the end of its backward travel the end of the weft 2 is still threaded through the eye 40 therein and is of sufficient length to be carried back a predetermined distance by the hook device on the next pick before becoming disengaged from the eye 40 thereby forming a selvedge on the side 25 of the cloth 3. Both ends of the weft are therefore doubled over whereby a selvedge is formed at both sides.

Assuming the parts to be in the position illustrated in Fig. 1, as the weft rod 1 and hook device 7, 8 approach one another within the shed the tube 8 is rocked so as to move the hook 17 away from one side of the notch in the end of the tube 7 so as to open the eye 40. During the last portion of the relative approach of the weft rod and hook device, the hook device will pass the short stretch of weft which extends across the rod 1 between the eyes or guides 5 and 6 thereof. The weft thread then enters the notch in the end of the tube 7. At this time, the tube 8 is rocked about its longitudinal axis to carry the hook 17 in a direction to close the notch in the end of the tube 7 and thereby close the eye 40. The weft rod and hook device then start their return travel in the shed, at the beginning of which operation the knife device 20 is operated to sever the weft. At the same time the mechanism illustrated in Fig. 5 is operated to clamp the weft thread. As the hook device moves across the shed, it draws the severed end of the weft thread through the shed, but when the hook device has reached its outer limit of movement, a short stretch of weft is still within the eye 40. The weft thread which has then been laid is beaten up and since there is nothing to disturb the short stretch of weft still within the hook, it remains therein. The next operation is a movement of the hook device and weft rod simultaneously toward one another in the shed at which time the hook device carries the short end of the previously laid stretch of weft into the shed, which short length pulls out of the eye 40 as the movement continues, thus forming the turned over end for the selvedge edge. At the beginning of this movement, the mechanism of Fig. 5 is operated to release the weft thread which is then carried double by the weft rod 1 into the central part of the shed where the weft is again engaged by the hook 17. During this movement, the end of the previously laid weft thread is turned back into the shed as shown in Fig. 1 and the knife 20 is so located that when severed, this turned over end will form a selvedge for the fabric. It will remain turned over until beaten up because there is nothing to displace it. It will be observed that since the end of the hook 17 is closed against the tube 7 so as to form a closed eye 40, there will be no danger of the hook engaging to injure any of the warp threads.

I claim:

1. In loom mechanism, a weft supply, a weft rod having at its forward end means for guiding thereacross the weft thread from the spool, a hook device, means for moving the rod and device toward one another within the shed from opposite edges of the warp and then in reverse directions out of the shed, means for causing an engagement of the device with the weft on the weft rod as the device and rod reach the limit of relative approach within the shed, and means operative at approximately said limit for severing the weft, at a point some distance within the shed, from the thread laid during the previous pick to form a selvedge, the device during the reverse relative movement pulling the severed end of the weft supply through the shed.

2. In loom mechanism, a weft supply, a weft rod having at its forward end means for guiding thereacross the weft thread from the spool, a hook device, means for moving the rod and device toward one another within the shed from opposite edges of the warp and then in reverse directions out of the shed, means for causing an engagement of the device with the weft on the weft rod as the device and rod reach the limit of relative approach within the shed, and means operative at approximately said limit for severing the weft, at a point some distance within the shed, from the thread laid during the previous pick to form a selvedge, the device during the reverse relative movement pulling the severed end of the weft supply through the shed, and beyond the edge thereof and then into the shed during the next travel of the device into the shed to form a selvedge at the other edge.

3. In loom mechanism, a weft supply, a weft rod having at its forward end means for guiding thereacross the weft thread from the spool, a hook device, means for moving the rod and device toward one another within the shed from opposite edges of the warp and then in reverse directions out of the shed, means for causing an engagement of the device with the weft on the weft rod as

the device and rod reach the limit of relative approach within the shed, means operative at approximately said limit for severing the weft, at a point some distance within the shed, from the thread laid during the previous pick to form a selvedge, the device during the reverse relative movement pulling the severed end of the weft supply through the shed, and means operative during the movement of the weft rod out of the shed for holding the weft thread leading thereto.

4. In loom mechanism, a weft supply, means for introducing the weft thread from said supply into the shed double, to approximately the center of the shed, means for then severing the weft thread from the stretch laid during the preceding pick, at a point some distance within the shed so as to form a selvedge, and means for drawing the severed end of the weft thread through the shed to lay the weft thread singly before the beating up operation.

5. In loom mechanism, a weft supply, means for introducing the weft thread from said supply into the shed double, to approximately the center of the shed, means for then severing the weft thread from the stretch laid during the preceding pick, at a point some distance within the shed so as to form a selvedge, and means for drawing the severed end of the weft thread through the shed to lay the weft thread singly before the beating up operation, and then the free end into the shed during the next pick, whereby the said free end will form a selvedge.

6. In loom mechanism, a weft supply, means for introducing the weft thread from said supply into the shed double, to approximately the center of the shed, means for then severing the weft thread from the stretch laid during the preceding pick, at a point some distance within the shed so as to form a selvedge, means for drawing the severed end of the weft thread through the shed to lay the weft thread singly before the beating up operation, and means for holding the weft thread coming from said supply while the doubled part is being drawn completely through the shed.

7. In loom mechanism, a weft rod having guides for directing a weft thread across its ends, means for moving the rod to carry the weft thread on the end thereof approximately midway across the shed, a device movable into the shed from the opposite edge, and having a slot upon its advance end which may be closed or opened by a hook movable relatively thereto, means for causing a movement of the hook to open the slot before it meets the end of the weft rod, whereby the stretch of weft thread advanced by the rod may enter the slot, and then to close the slot after the weft enters; whereby when the device is withdrawn from the shed, the thread will be drawn through the shed, and means operative after the thread enters said slot for severing the thread from the stretch laid during the previous pick.

8. In loom mechanism, a weft rod having guides for directing a weft thread across its end, means for moving the rod to carry its weft thread on the end thereof approximately midway across the shed, a cooperating device comprising a member having an advance end movable past the thread on the rod when said device is moved approximately midway across the shed from the opposite edge, the advance end of said member having a slot into which the thread on the rod enters when their limit of approach is reached, a hook rotatably carried by the member for movement across the slot to open or close it, means for moving the said device into and out of the shed at each pick, means to rotate the hook to allow the thread to enter the slot and to close the slot before the return movement begins, whereby the device will draw the thread through the shed, and means operative at approximately the beginning of the withdrawal of said device to sever the thread from the stretch laid during the previous pick whereby the thread will be laid singly across the shed.

9. In loom mechanism, a weft rod having guides for directing a weft thread across its ends, means for moving the rod to carry its weft thread on the end thereof approximately midway across the shed, a cooperating device comprising a member having an advance end movable past the thread on the rod when said device is moved approximately midway across the shed from the opposite edge, the advance end of said member having a slot into which the thread on the rod enters when their limit of approach is reached, a hook rotatably carried by the member for movement across the slot to open or close it, means for moving the said device into and out of the shed at each pick, means to rotate the hook to allow the thread to enter the slot and to close the slot before the return movement begins, whereby the device will draw the thread through the shed, and means operative at approximately the beginning of the withdrawal of said device to sever the thread from the stretch laid during the previous pick at a point within the shed whereby the turned in end from the previously laid stretch will form a selvedge.

In testimony whereof I have signed my name in the presence of two witnesses.

JOHANN GABLER. [L. S.]

Witnesses:

WALTER BRAUN, [L. S.]

MAURICE W. ALTAFFER. [L. S.]