July 4, 1967 H. FLÜHMANN 3,329,176

DEVICE FOR HOLDING THE WEFT IN LOOMS

Filed Sept. 21, 1964

Fig. 1

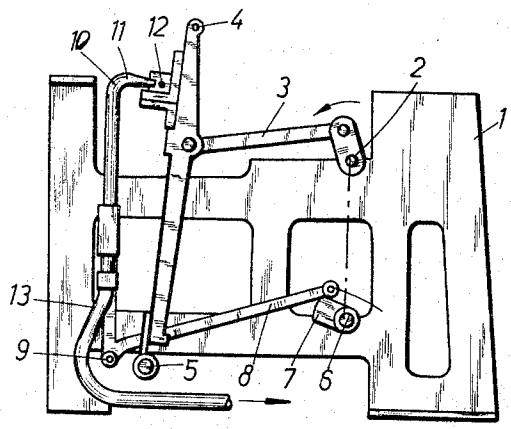


Fig. 2

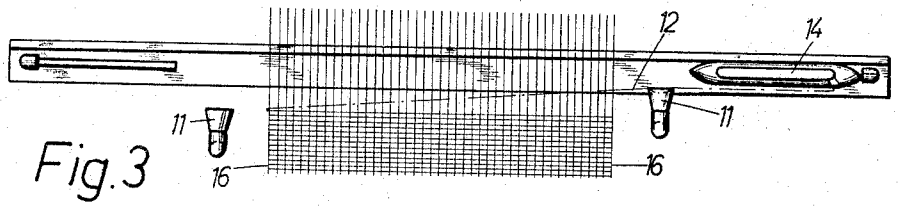


Fig. 3

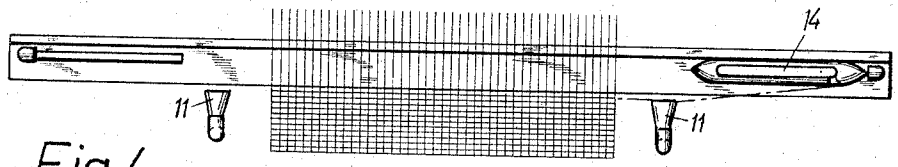


Fig. 4

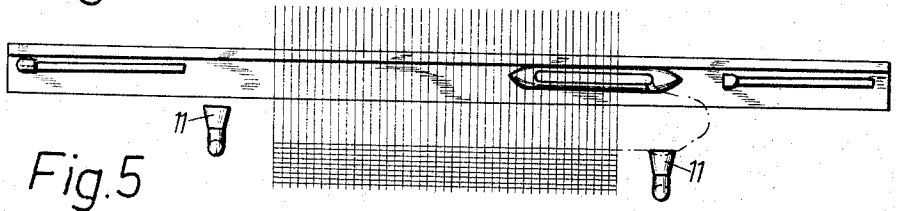
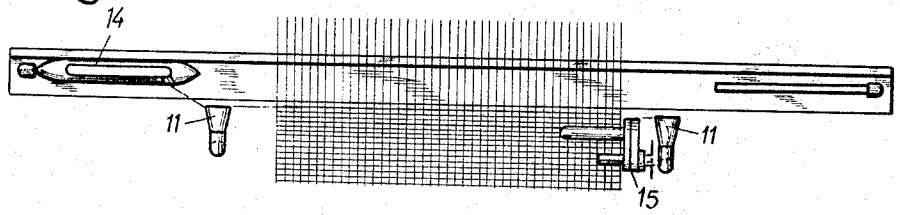


Fig. 5



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DEVICE FOR HOLDING THE WEFT IN LOOMS

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The present invention relates to a device for holding the weft in looms, more specifically, to a device of the above-mentioned type for avoiding jump or skip wefts (Springschüsse).

It is known that in particular with a smooth weft material as, for instance nylon and other synthetic threads, the thread detaches itself from the weft bobbin and snaps back into the shed while forming loops and so-called jump or skip wefts. When the sley beats up such a weft, small irregular spots are formed in the fabric which harmfully affect the appearance and quality of the goods.

In order to avoid these faults, the weaver has to coat the end of the path of the sley with hide or skin pieces, plush, or similar material. These materials brake the movement of the thread so that the formation of loops within the shed is decreased. The quality and appearance of the woven goods is improved, however, the above-mentioned faults cannot be completely eliminated.

It is, therefore, an object of the present invention to provide a device for use in connection with looms which will overcome the above-mentioned drawbacks.

It is a further object of the present invention to provide a device as set forth in the preceding paragraph which will prevent weaving faults and in particular jump or skip wefts (Springschüsse).

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawing, in which:

FIGURE 1 is a side view of a loom provided with the suction device according to the present invention;

FIGURES 2 to 5 illustrate various positions of the suction nozzles of the suction device according to the present invention with regard to the position of the shuttle of the loom.

The device according to the present invention is characterized primarily in that one suction pipe each provided with a suction nozzle is arranged in the vicinity of each marginal portion of the fabric. The suction nozzle serves for holding the weft due to its sucking effect and to tighten the same while it is also adapted to release the taut weft when the shuttle sloughs for filling the weft. In this way, skip wefts and loose filling wefts are avoided which otherwise occur particularly with high speed looms. Furthermore, the arrrangement according to the present invention yields a neat and proper form of the selvage. Each weft is fully equally stretched and the whole weave looks better and more uniform than previously.

The suction nozzles furthermore serve the purpose of sucking off the weft ends cut off by the scissors during a change of wefts.

Referring now to the drawing in detail, the loom illustrated in FIG. 1 comprises a frame **1**, a main machine shaft **2**, a connecting rod **3**, and a sley **4** tiltable about a shaft **5**. A further shaft **6** drives, through the intervention of an eccentric **7** provided thereon, a two-arm lever **8** tiltably journalled of a shaft **9**. One side of the two-arm lever **8** is designed as a suction pipe **10** which is arranged with regard to the sley **4** in such a way that the mouth of a nozzle **11** connected to pipe **10** is adapted to suck in a weft **12**. The suction pipe **10** has connected thereto a flexible hose **13** which in turn is connected to a blower (not shown). One suction pipe **10** with a corresponding nozzle **11** is provided in the vicinity of each of the two marginal portions **16** of the fabric.

When a shuttle **14** leaves the shed, the suction pipe **10** moves through the intervention of the eccentric **7** against the weft **12** and sucks in the same. Thereafter, the suction pipe **10** swings, actuated by the eccentric **7** together with the sley **4**, toward the weaver's stand, as shown in FIG. 3. The suction nozzle **11** remains in this position until the shuttle **14** is shot through the new shed. The weft **12** held by the mouth of nozzle **11** of the suction pipe **10** as before, now is pulled out of the mouth of suction nozzle **11** due to the tension exerted by the shuttle on the weft during its fly through the shed. When the shuttle arrives on the opposite side of the loom, the weft is grasped by the oppositely located suction pipe **10** or the suction nozzle **11** thereof and tightened (see FIG. 5). This process is repeated in rhythm with the shot of the shuttle.

During a change of bobbins, the weft end is sucked in by the suction nozzle **11** and held until the temple cutter **15** (see FIG. 5) has cut the weft at the selvage.

It will be seen that the retraction of each nozzle from the sley not only prevents the nozzles from interfering with the tilting movements of the sley but also position the nozzle gripping a weft thread in substantial alignment with the thread after it is beat into the fabric, thus holding the thread in the proper position.

It is, of course, to be understood that the present invention is, by no means, limited to the particular construction shown in the drawing, but also comprises any modifications within the scope of the appended claims. Thus, in particular, the suction nozzles and the control of the movement of the suction nozzles may have a different design than disclosed in the drawing and described above.

What is claimed is:

1. In a loom; a tiltable sley, a shuttle moveable along the sley through a shed to deposit a weft thread in the shed, and a suction nozzle at each lateral side edge of the shed disposed adjacent the path of the weft thread being placed in the shed on the fabric side of the shed and adapted to grasp the thread when the shuttle passes the respective suction nozzle, a respective pivotal support in the loom for each suction nozzle providing for movement thereof in the direction of tilting movement of said sley and independently of said sley, and means for moving each of said suction nozzles about its respective pivotal support in timed relation to the movement of said shuttle and the tilting movement of said sley.

2. In a loom; a tiltable sley, a shuttle moveable along the sley through a shed to deposit a weft thread in the shed, and a suction nozzle at each lateral side edge of the shed disposed adjacent the path of the weft thread being placed in the shed on the fabric side of the shed and adapted to grasp the thread when the shuttle passes the respective suction nozzle, a two armed lever for each suction nozzle having the respective nozzle on the end of one of the arms, respective pivot means in the loom supporting each of said levers for tilting movement of each lever to move each of said nozzles pertaining thereto in the direction of movement of said sley and independently of said sley, and cam means engaging the other arm of each lever for tilting each of said levers in timed relation to the tilting of said sley and the movement of said shuttle.

3. In a loom; a tiltable sley, a shuttle moveable along the sley to deposit weft threads in the shed of a fabric being woven in the loom, a suction nozzle at each lateral side edge of the fabric adjacent the path of the weft thread being placed in the shed on the fabric side of the shed adapted releasably to grip the weft thread when the shuttle passes the respective suction head, means supporting said nozzles in the loom for movement therein in the same direction of movement as that of said sley, and means for moving each suction head toward the sley prior to

passage of the shuttle conveying a weft thread past the respective suction nozzle, and for moving the suction head toward the fabric prior to the movement of the shuttle toward the other suction nozzle, each said nozzle gripping the weft thread therein with such force as to release the weft thread gripped therein in response to the tension applied to the said thread by movement of the shuttle toward the opposite end of the sley.

4. A method of weaving fabric in a loom having a sley and a shuttle slidable thereon for depositing weft threads in the shed of a fabric being woven in the loom which includes the steps of; positioning a suction nozzle with the mouth thereof adjacent the path of the weft thread on the fabric side of the shed between each side edge of the fabric being woven and the adjacent terminal position of the shuttle so that the shuttle carries the weft threads past the mouth of each said nozzle, drawing air from the interior of each nozzle to develop a suction in the mouth of each said nozzle to cause the nozzles to grip the weft threads as the shuttle passes the respective nozzle while permitting the respective weft threads to be pulled from the nozzles by the tension applied to the weft threads by the shuttle in its movement along the sley, and moving each suction nozzle independently toward and away from said sley in timed relation to the movement of said shuttle and in the same direction of movement as that taken by the sley.

5. A method of weaving fabric in a loom having a sley and a shuttle slidable thereon for depositing weft threads in the shed of a frabric being woven in the loom which includes the steps of; positioning a suction nozzle with the mouth thereof adjacent the path of the weft thread on the fabric side of the shed between each side edge of the fabric being woven and the adjacent terminal position of the shuttle so that the shuttle carries the weft threads past the nozzles, drawing air from the interior of each nozzle to develop a suction in the mouth of each said nozzle to cause the nozzles to grip the weft threads as the shuttle passes the respective nozzle while permitting the weft threads to be pulled from the respective nozzles by the tension applied to the weft threads by the shuttle in its movement along the sley, moving each nozzle independently toward the sley prior to the approach of the shuttle from the opposite end of the sley, moving each nozzle independently away from the sley prior to movement of the shuttle away from the adjacent end of the sley and toward the opposite end thereof and effecting the movement of said nozzles in the same direction as the direction of movement taken by said sley.

6. A method of weaving fabric in a loom having a sley and a shuttle slidable thereon for depositing weft threads in the shed of a fabric being woven in the loom which includes the steps of; positioning a suction nozzle with the mouth thereof adjacent the path of the weft thread on the fabric side of the shed between each side edge of the fabric being woven and the adjacent terminal position of the shuttle so that the shuttle carries the weft threads past the nozzles, drawing air from the interior of each nozzle to develop a suction in the mouth of each said nozzle to such a degree as to cause the nozzles to grip the weft threads as the shuttle passes the respective nozzle while permitting the weft threads to be pulled from the respective nozzles by the tension applied to the weft threads by the shuttle in its movement along the sley, moving each nozzle independently toward the sley into a position closely adjacent the path of the shuttle prior to the approach of the shuttle from the opposite end of the sley, moving each nozzle independently away from the sley into approximate alignment with the beat-in position of the weft thread gripped in the nozzle prior to movement of the shuttle away from the adjacent end of the sley and toward the opposite end thereof and effecting the movement of said nozzles in the same direction as the direction of movement taken by said sley.

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