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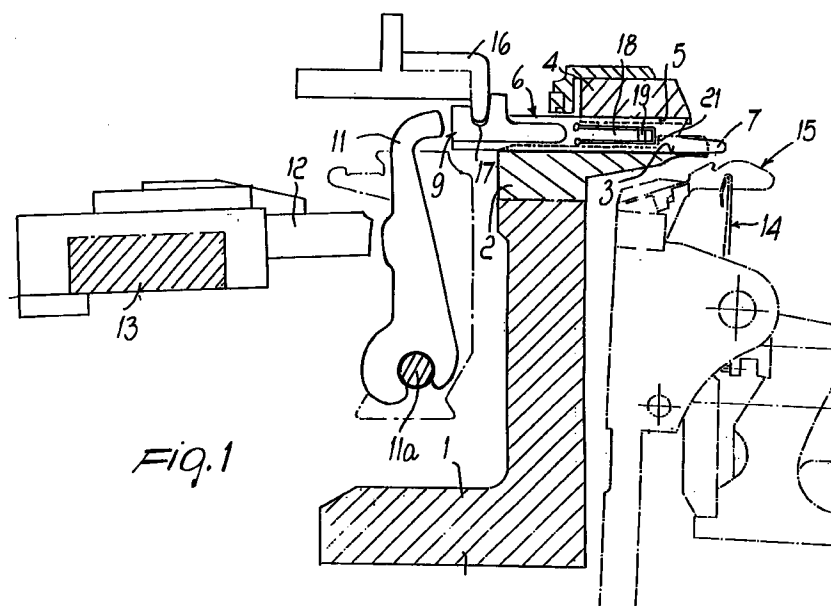
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(54) Improvement to sinkers of cotton looms

(57) An improvement to the sinkers of a Cotton loom, characterized in that elastic means adapted to provide a friction connection between the adjacent sink-

ers are arranged between the sinkers.



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Description

The present invention relates to an improvement to the sinkers of Cotton looms.

It is known that in so-called Cotton looms the sinkers have the purpose of distributing among the needles the thread which is deposited on said sinkers by the thread guides. For this purpose, the sinkers are pushed between the needles by respective levers that are pivoted in a rocker-like manner and are termed waves; said levers in turn are subjected to the action of the so-called couliering cam. Ultimately, the waves have the function of amplifying the movement caused by the couliering cam, in order to ensure a stroke for the penetration of the sinkers between the needles that is sufficient to retain the thread during the movements performed by the needles that lead to the formation of the woven fabric.

The couliering cam is in practice a sort of slider which is shaped with two symmetrical pusher ramps and is actuated in a reciprocating manner. When the couliering cam has ended its pushing action on the waves and therefore on the sinkers, to prevent the sinkers from retracting due to the action of the thread as a consequence of the movement of the needles, the waves are held, in the sinker advancement position, by adapted springs fixed on a shaft that is actuated by the main camshaft so as to be rotatable into a position that allows the springs to disengage from the waves and thus to act with a bar (known as sinker collector bar) to retract the sinkers for the subsequent cycle for depositing the thread on said sinkers. Between the moment when the waves are released and the moment when the collector bar intervenes, the sinkers are free with respect to one another. This entails possible misalignment of the sinkers, which occurs particularly when the collector bar moves away from said sinkers to allow the subsequent pushing action of the waves.

These drawbacks combine with those arising from the fact that during stitch formation the springs can produce different tensionings of the thread, which appear as streaks in the fabric.

From a mechanical point of view, the presence of the spring bar is a considerable technical expenditure, with the related problems in terms of material, assembly, and tuning.

The technical aim of the present invention is to provide an improvement to Cotton looms that allows to eliminate the drawbacks linked to the step during which the sinkers are not subjected to a positive actuation.

Within the scope of this aim, an object of the present invention is to provide an improvement that allows to structurally simplify the Cotton loom without compromising its performance.

This aim and this object are achieved with an improvement to the sinkers of a Cotton loom, characterized in that elastic means are arranged between the sinkers and are adapted to provide a friction connection between the adjacent sinkers.

Further characteristics of the present invention will become apparent from the following detailed description of some embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a schematic sectional view of a Cotton loom, taken at the needle region;
figures 2 and 3 are views of the sinkers according to a first embodiment;
figure 4 is a profile view of the sinkers of figures 2 and 3;
figure 5 is a profile view of a second embodiment of the sinkers;
figure 6 is a side view of a sinker according to a further embodiment;
figure 7 is a profile view of the sinker of figure 6.

With reference to figure 1, the reference numeral 1 designates the longitudinal beam of a conventional Cotton loom, the remaining part whereof is not shown. The beam 1 has an L-shaped cross-section, and the sinker comb 2 is fixed to the top of its vertical wing. The comb 2 is in practice a bar, made of bronze or the like, with a horizontal upper face in which a plurality of equidistant grooves 3 is provided, said grooves lying at right angles to the extension of the comb 2.

The so-called cover 4 is arranged above the comb 2 and is rigidly coupled thereto; a plurality of grooves 5, parallel to the grooves 3, is formed in the lower face of said cover, which is directed towards the comb 2. Each groove 3 of the comb 2 is vertically aligned with a respective groove 5 of the cover 4. The upper and lower edges of the sinkers 6 are guided in the grooves 3 and 5 and usually have a front beak 7, which protrudes forwards below a recess 8, and a rear heel 9 the thickness whereof is increased by applying two shims 10 on the opposite faces.

The waves 11 act on the heels 9 of the sinkers, are articulated to a shaft 11a, and are adapted to be actuated by the couliering cam 12 that runs on the rail 13. As mentioned initially, the cam 12, by acting on the waves 11, causes the forward movement of the sinkers 6, so that a thread deposited on the beaks of the sinkers can be gripped by the recesses 8 and be pushed between the needles 14 of the bed; said needles, by moving in cooperation with the casting-off sinkers 15, form the woven fabric. The fabric-formation steps and the actuation means of the needles 14 and of the casting-off sinkers 15 are not described hereinafter, since they are fully conventional and are beyond the scope of the inventive concept of the present invention.

When the thread has been engaged by the needles 14, the sinkers are collected and retracted through the action of the bar 16 which, by being actuated with a rising and falling motion and with a back-and-forth motion, engages a notch 17 of the sinkers 6 and causes them to retract to the position that allows to deposit a new length of thread on the beaks 7.

The essential prerogative of the present invention is the fact that between the sinkers there is provided a friction connection that makes the sinkers preserve their alignment when the collector bar 16 disengages from the notches 17.

In a first embodiment of the sinkers, said friction connection is provided by forming, by blanking or another adapted process, in the part of the sinker that lies between the heel 9 and the groove 8, a tab 18 that runs parallel to the sliding direction of the sinker and has an end that is coupled to the sinker proximate to the shims 10 and a free end provided with a fold 19 that protrudes laterally. The distance of the top of the fold 19 from the sinker is greater than the distance between two adjacent sinkers, so that the fold of each sinker remains in contact with the lateral face of the adjacent sinker, as clearly shown by figure 4, and produces a friction contact which is sufficient to keep the sinkers connected to each other by friction. It should be noted that to prevent the tab of one sinker from resting on the tab of the contiguous sinker, the tabs of adjacent sinkers are alternately staggered, for example, on two levels (i.e., at right angles to the sliding direction of the sinkers), so that two sinkers as shown in figure 3 are contiguous, on opposite sides, to a sinker as shown in figure 2.

In another embodiment, shown in figure 5, instead of tabs formed directly in the body of the sinkers there are provided free tabs 20 interposed between adjacent sinkers. As shown by figure 5, the tabs 20 are constituted by steel laminae having an undulated shape which are retained between the sinkers due to the fact that once they have been inserted between the sinkers they cannot exit, since they are retained in seats that are delimited in an upward region by the cover 4 and in a downward region by the bar 2, whereas any possibility of escaping in the sinker sliding direction is prevented at the front by the step 21 and towards the rear by the shims 10.

Finally, a further embodiment of the invention, shown in figures 6 and 7, entails the application, laterally to the sinkers, of tabs 22 that are similar to the tabs 18 but are fixed below a shim 10 by means of the rivets with which said shims are fixed to the body of the sinkers.

It is evident that the invention perfectly achieves the intended aim and objects. The tabs 18, 20, and 22 establish a friction contact that keeps the sinkers motionless at both their advancement and return stroke limits. In particular, the stopping of the sinkers at the advancement stroke limit fully eliminates the need for the spring bar and the corresponding controls, which in conventional Cotton looms are required to lock the sinkers after the distribution of the thread between the needles. In this manner, the invention allows to provide a considerable constructive simplification.

The fact that the friction forces remain substantially restricted to the individual sinkers, and therefore do not add together to contrast the collecting movement of the bar 16, as instead could occur if each elastic tab acted

between the corresponding sinker and the comb 2, is also very important. However, it is possible to provide the tabs so that they can act against the inside walls of the grooves 3 and 5, providing adequate dimensions for the constructive elements and for the actuation elements.

In the practical execution of the invention, the shapes and the dimensions, as well as the materials employed, may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. Improvement to the sinkers of a Cotton loom, characterized in that elastic means (19; 20; 22) adapted to provide a friction connection between the adjacent sinkers are arranged between the sinkers (6).
2. Improvement according to claim 1, characterized in that said elastic means comprise a tab (18; 22) that is rigidly coupled to each sinker (6) and runs parallel to the sliding direction of said sinker, said tab having an end that is coupled to the sinker proximate to its heel (9) and a free end provided with a fold (19) that protrudes laterally, the distance of the top of the fold from the respective sinker being greater than the distance between two adjacent sinkers, so that each fold is in contact with the lateral face of the adjacent sinker to produce a friction contact that is sufficient to keep the sinkers connected to each other by friction, the tabs of adjacent sinkers being staggered at right angles to the sinker sliding direction to prevent the tabs from interfering with each other.
3. Improvement according to claim 2, characterized in that said tabs (18) are formed by blanking in the body of the sinkers.
4. Improvement according to claim 2, characterized in that the tabs (22) are fixed to the body of the sinker by rivets.
5. Improvement according to claim 4, characterized in that said rivets are the rivets for fixing the shims (10) of the heel (9) of the sinker (6).
6. Improvement according to claim 1, characterized in that said tabs are constituted by steel laminae (20) adapted to be interposed and retained in seats formed between the sinkers.

7. Improvement according to claim 6, characterized in that said laminae (20) have such an undulated shape as to be retained within seats between the sinkers (6) formed by the upper cover (4) and respectively by the lower comb (2) that supports the sinkers. 5

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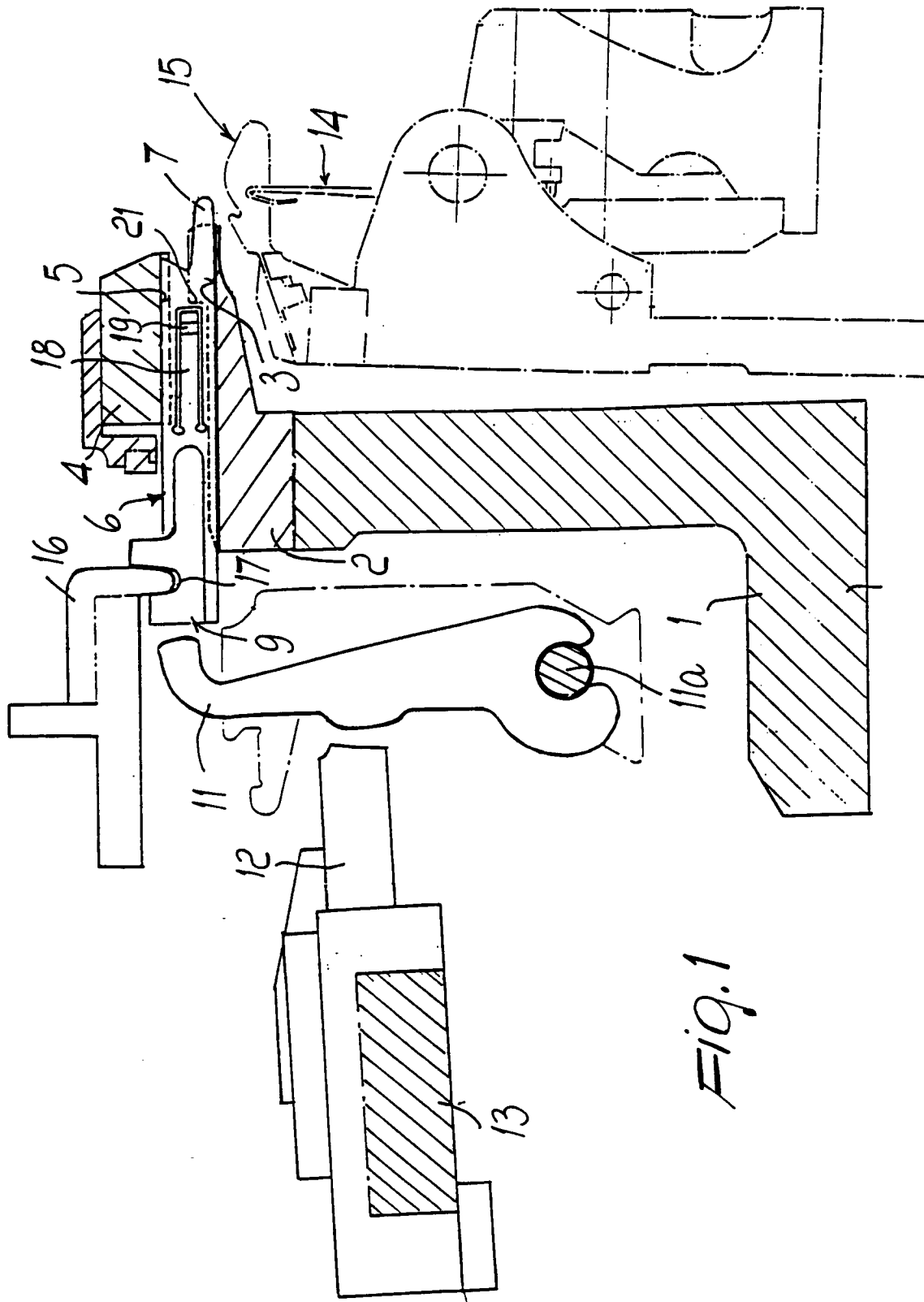
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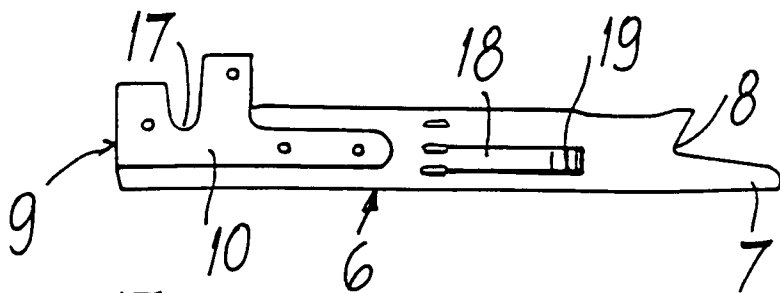


Fig. 2

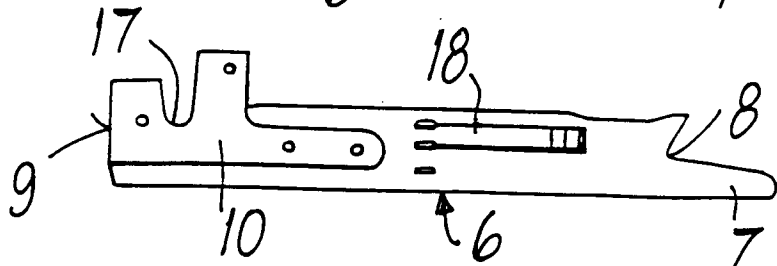


Fig. 3

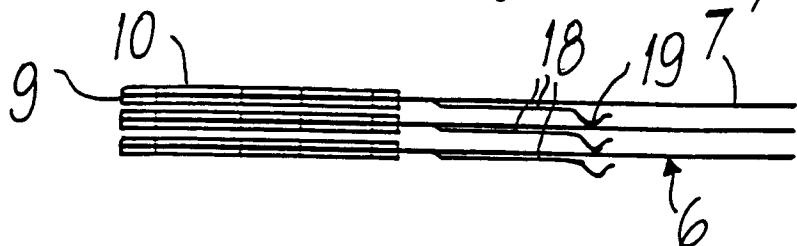


Fig. 4

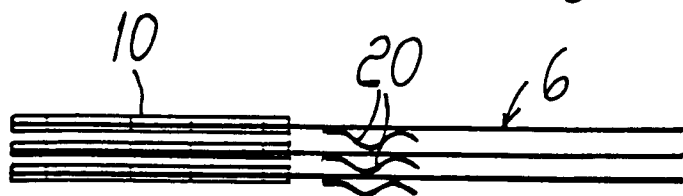


Fig. 5

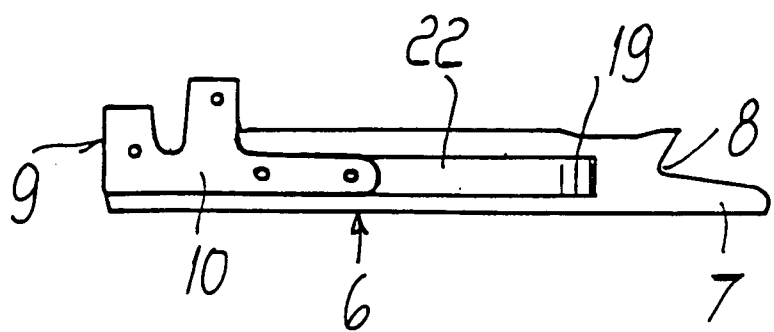


Fig. 6

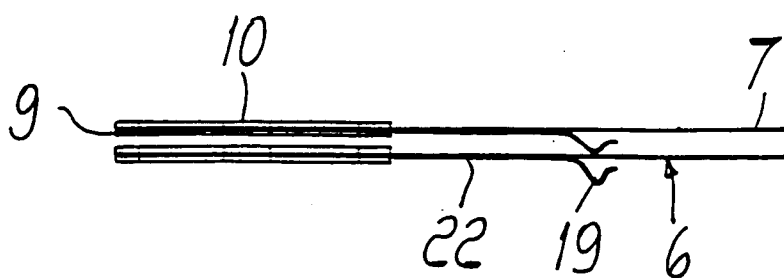


Fig. 7