March 28, 1961 W. WICKER 2,976,891

DOBBIES

Filed Jan. 24, 1958

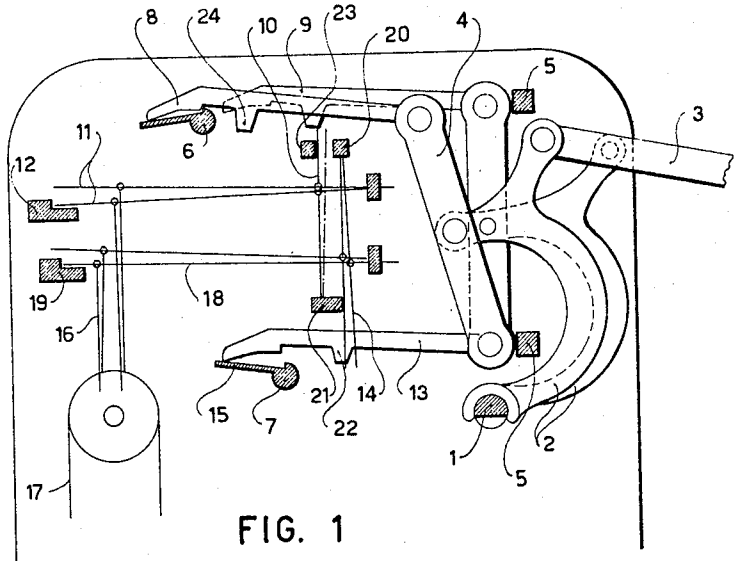


FIG. 1

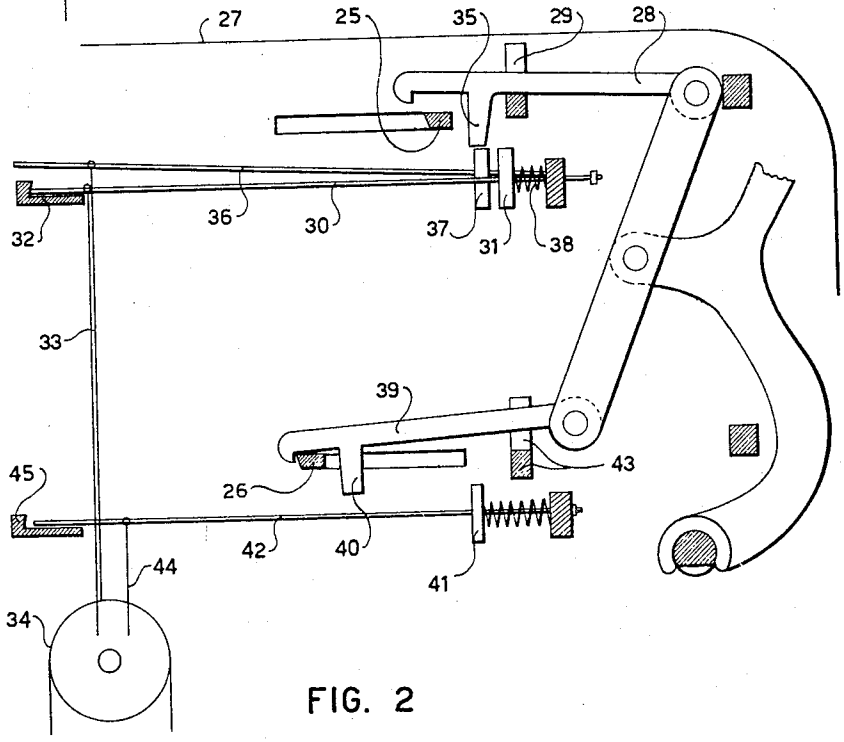


FIG. 2

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DOBBIES

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The present invention relates to a dobby with a pattern card, at least one draw knife and draw hooks associated with the knife and controlled for engagement with the knife according to the pattern.

In known dobbies of this kind the hooks are supported and carried by so-called hook needles in such manner that during the idle movement of the draw knife those hooks which do not have to be engaged by the draw knife during the next pick are lifted off the draw knife by the hook needles. If an attempt is made to operate dobbies of this kind at high speed, the lifting of the hooks takes place abruptly so that faultless control of the hooks may fail to take place. In order to free the hook needles from such loads, according to the invention all draw hooks engaged by the draw knife are lifted off the knife, for the purpose of further control of the hooks according to the pattern, by one and the same member, so that some of the hooks, in accordance with the pattern, need only be supported by supporting members assigned to them.

Two embodiments of the invention chosen by way of example are particularly described hereinafter with reference to the accompanying drawings, in which:

Fig. 1 is a section through part of a double-lift open-shed dobby, and

Fig. 2 is a similar section through a different double-lift open-shed dobby.

In the first embodiment, levers 2 are rotatably supported on a shaft 1 and each lever 2 is connected through a rod 3 to a heald shaft. Baulk levers 4 are pivotally connected to the levers 2 and are at all times urged towards fixed stops 5 by spring loading acting on the heald shafts. Two knives 6 and 7 are driven exactly oppositely to one another in a known manner. In Fig. 1 the upper knife 6 is in the drawn-out position, and the hook 8 of one of the two baulk levers 4 shown in the drawing is engaged with this knife. This position indicates that baulk lever 4 has been rocked so that its associated heald shaft has been drawn into the upper shed. During the preceding control, during which the knife 6 was in its basic position, the upper hook 9 was supported by a support needle 10 and therefore could not engage with the knife 6. The support needles 10 are actuated by presser needles 11 and a presser rail 12. Support needles 14 are associated with the lower hooks 13.

The lower knife 7 is in the basic position, so that the hooks 13 associated with it can be controlled. While the knife 7 is in this basic position, it first makes a clockwise rotary movement so that the hooks 13 are lifted away from the engagement surface of the knife by a single means in the form of a support surface 15 arranged on the knife. A mechanism for rotating the knife is described by way of example in U.S. Patent No. 2,815,044 and does not form part of the present invention. While the hooks 13 are in this raised position, the support needles 14 associated with them are controlled in accordance with the pattern. When a reading needle 16 associated with a support needle 14 has fallen into a hole in the pattern card 17, the associated pressure needle 18 is displaced to the right by the presser rail 19, so that the associated support needle 14 is pushed away to the right. The top ends of the support needles 14 are clamped firmly in a fixed transverse member 20 and tend, owing to their own resiliency, to bear against a transverse member 21. In this position the bent lower ends of the support needles 14 are under projections 22 on the hook 13, so that these hooks cannot engage with the knife 7 when the knife rotates counter-clockwise and ceases to prevent the hooks from descending, before it is drawn out. But those hooks 13 having the support needles 14 which have been pushed away to the right can engage with the knife 7 when it is rotated counter-clockwise, so that these hooks are subsequently drawn out by the knife 7.

The upper support needles 10 are clamped firmly in the transverse member 21 and bear against a transverse member 23 owing to their own resiliency if they are not pushed away to the right by the presser needles 11 or pushed away to the right by their respective hooks as described hereinafter.

When the knife 6 together with the hook 8 returns to its basic position, the projection 24 impinges against the top end of the associated support needle 10 and pushes this needle to the right. Then, as soon as the knife 6 begins to rotate clockwise in order to lift the hooks engaged with it off its engagement surface, the needles 10 that have been pushed away can move back to the left and bear against the transverse member 23; in this position the top end of the support needle is under the projection 24, so that the hook 8 is not engaged with the knife 6 when the latter is next drawn out. But if the hook is to be engaged with the knife again, the appropriate support needle is pushed away to the right as described, so that its top end in not under the projection 24 and the hook 8 can engage with the knife 6. Similar processes take place in the case of the lower hooks 13 and the associated support needles 14. It is clear that the free ends of the support needles 10 and 14 have to be moved only in the longitudinal direction of the hooks in order to control the hooks in accordance with the pattern.

In the dobby shown in Fig. 2, knives 25 and 26 move to and fro oppositely to one another in straight slots in plates 27 and are driven by a mechanism known per se and not shown in the drawings. While the knife 26 is in the drawn-out position, the knife 25 is making its idle movement, so that the hooks 28 can be controlled in accordance with the pattern. At the beginning of the idle movement, all hooks engaged with the knife 25 are lifted off the knife by a single means in the form of a grid 29 which is shown in its raised position and which serves to guide the hooks 28. The presser needle 30 assigned to the hook 28, together with a stop 31 secured to said needle, has been pushed to the right by the presser rail 32, since the appropriate reading needle 33 has fallen into a hole in the pattern card 34. Thus, the projection 35 of the hook 28 is not supported and the hook 28 can engage with the knife 25 as soon as the grid 29 is lowered again. The presser needle 36 is not acted on by the presser rail 32, because the appropriate reading needle 33 is standing on the pattern card 34. Therefore, the stop 37 is under the projection of another hook which is not visible in the drawing but is adjacent to the hook 28; consequently, when the knife 25 is next drawn out, this other hook is not drawn out. The presser needles are loaded by springs 38 in such manner that they are always pushed back into their extreme left-hand position as soon as the presser rail moves back to the left. When the hook 39 engaged with the lower knife 26 returns to its basic position, the projection 40 on the hook impinges against the stop 41 on the presser needle 42 and pushes the latter slightly to the right, before the hooks are raised by the grid 43 which, like the

grid 29, is a single means for raising the associated hooks. This lifting takes place while the knife 26 is making its idle movement, and causes the presser needle 42 to be released. When the reading needle 44 associated with the presser needle 42 has fallen into a hole in the pattern card 34, and when the presser needle 42 is pushed to the right by the presser rail 45, the hook 39 can engage with the knife 26 before the latter is next drawn out. In this embodiment also, the stops formed as supporting members are movable in the longitudinal direction of the hooks. The upward and downward movement of the grids 29 and 43 is effected for instance by means of a cam disc which is not shown in the drawings but is arranged underneath the grids.

What is claimed is:

1. In a dobby comprising a pattern card, at least one draw knife having an engagement surface, draw hooks associated with said knife and controlled for engagement with the knife according to the pattern, supporting members for said draw hooks, single means for taking all the draw hooks associated with the knife out of engagement with the engagement surface of the knife, whereby some of the hooks, in accordance with the pattern, need only be supported by the supporting members, respectively, associated with them for the purpose of the next control of the hooks according to the pattern.

2. A dobby as claimed in claim 1, wherein each hook is provided with a projection which is adapted to co-operate with the associated supporting member to push said supporting member away resiliently when the hooks are engaged with the knife.

3. A dobby as claimed in claim 1, wherein each hook is provided with a projection which is adapted to co-operate with the associated supporting member when the hooks are engaged with the knife to push said supporting member away resiliently, those pushed-away supporting members which have to keep their associated hooks in the upper position when the knife is next drawn out being automatically adapted to return resiliently as soon as the hooks are lifted from the knife engagement surface by said single means to their rest position in which the supporting members engage under the projections on the hooks.

4. A dobby as claimed in claim 1, wherein each hook is provided wtih a projection which is adapted to co-operate with the associated supporting member when the hooks are engaged with the knife to push said supporting member away restliently, those pushed-away supporting members which have to keep their associated hooks in the upper position when the knife is next drawn out being automatically adapted to return resiliently as soon as the hooks are lifted from the knife engagement surface by said single means to their rest position in which the supporting members engage under the projections on the hooks, each supporting member being connected to a longitudinally displaceable presser needle adapted to push the supporting member away from the rest position in accordance with the pattern in order to cause the engagement of the associated hook with the knife.

5. A dobby as claimed in claim 1, wherein each hook is provided with a projection which is adapted to co-operate with the associated supporting member when the hooks are engaged with the knife to push said supporting member away resiliently, the supporting member being defined by a needle clamped fast at one end, the resilient action being obtained by the elasticity of the needle itself.

6. A dobby as claimed in claim 1, wherein each hook is provided with a projection which is adapted to co-operate with the associated supporting member when the hooks are engaged with the knife to push said supporting member away resiliently, those pushed-away supporting members which have to keep their associated hooks in the upper position when the knife is next drawn out being automatically adapted to return resiliently as soon as the hooks are lifted from the knife engagement surface by said single means to their rest position in which the supporting members engage under the projections on the hooks, the supporting member being defined by a needle clamped fast at one end, the resilient action being obtained by the elasticity of the needle itself.

7. A dobby as claimed in claim 1, wherein each hook is provided with a projection which is adapted to co-operate with the associated supporting member when the hooks are engaged with the knife to push said supporting member away resiliently, those pushed-away supporting members which have to keep their associated hooks in the upper position when the knife is next drawn out being automatically adapted to return resiliently as soon as the hooks are lifted from the knife engagement surface by said single means to their rest position in which the supporting members engage under the projections on the hooks, each supporting member being connected to a longitudinally displaceable presser needle adapted to push the supporting member away out of the rest position in accordance with the pattern to cause the engagement of the associated hook with the knife, the supporting member being defined by a stop screwed to the presser needle.

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