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KNOCKOVER BIT ASSEMBLY AND MOUNTING THEREFOR

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Fig. 1

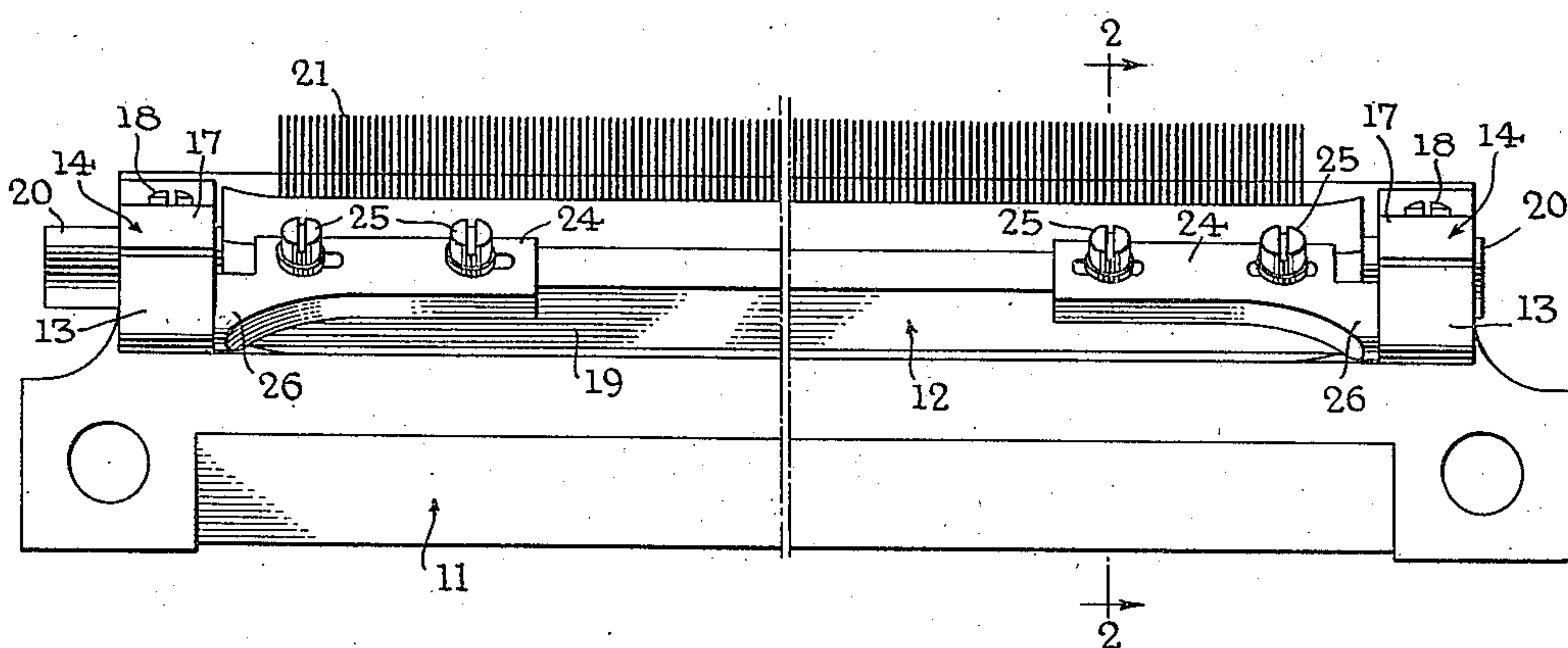
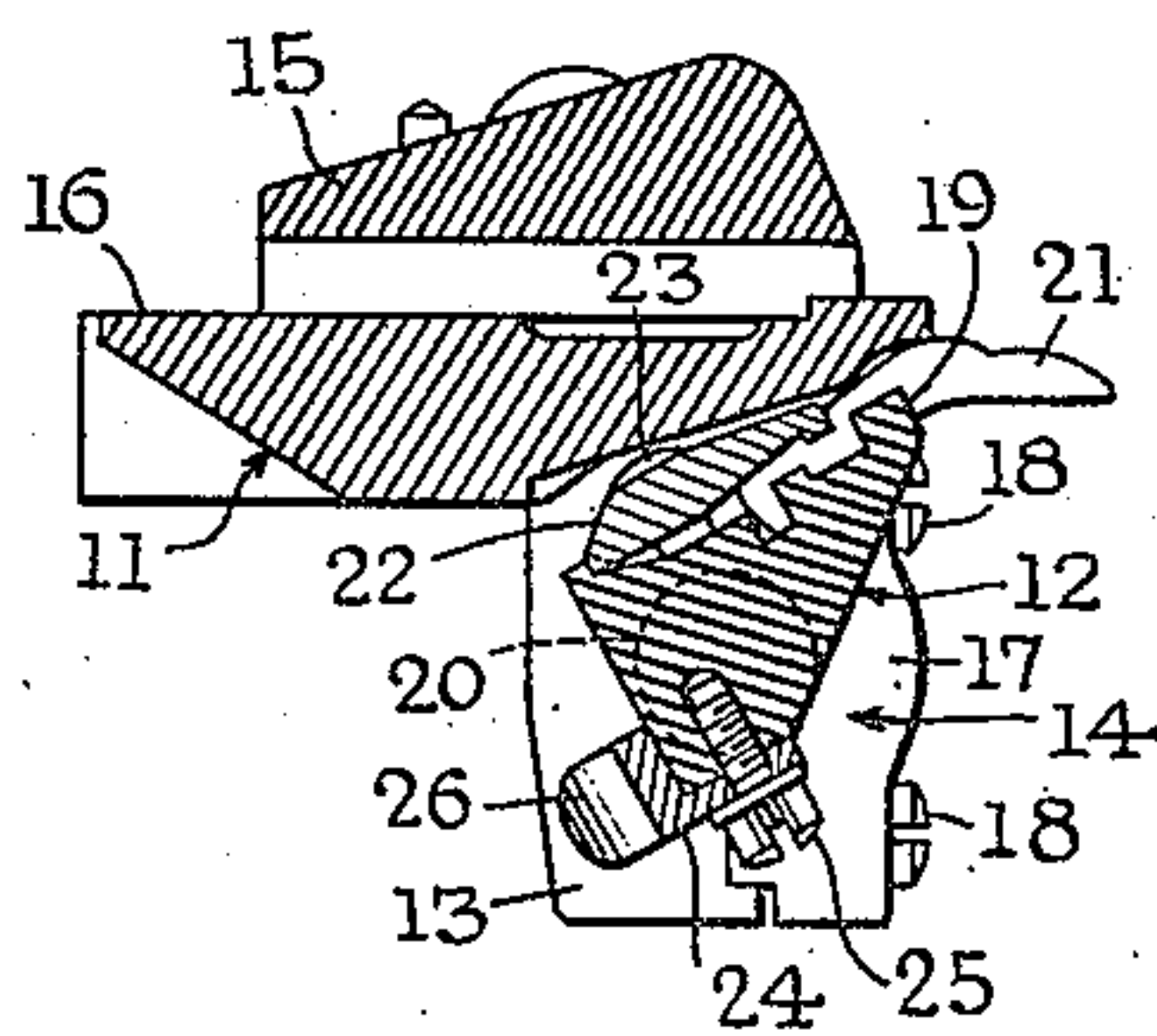


Fig. 2



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KNOCKOVER BIT ASSEMBLY AND
MOUNTING THEREFOR

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6 Claims. (Cl. 66—109)

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This invention relates to improvements in knitting machines and more particularly to improvements in the knockover bit assembly of a straight knitting machine, such as the conventional straight machine for knitting full-fashioned hosiery.

Straight knitting machines usually comprise a relatively large number of knitting sections. Such machines may have as many as forty knitting sections, each section being adapted to knit a separate blank or part thereof, so that a multi-section machine produces many separate blanks or parts thereof simultaneously. Each knitting section of the machine is a complex mechanism which requires precision adjustment to obtain satisfactory operation of each knitting operation. The fundamental parts of each section of such machines concerned with the actual knitting of the fabric are the needles, the sinkers, the dividers, the jacks, and the knockover bits, and these parts and the assemblies thereof must be properly coordinated and alined with respect to each other in order to properly function in the knitting operation. The proper alinement of the knockover bits and knockover bit assembly with the sinkers, dividers, jacks and their assemblies has been a problem, since the motions of these various parts in the knitting operation are necessarily different from each other.

It is, therefore, an object of this invention to provide an improved adjustable knockover bit assembly for straight knitting machines.

Another object of this invention is to provide a knockover bit assembly which may be easily adjusted and properly alined for cooperation with the other parts of the knitting mechanism.

Still another object of this invention is to provide a knockover bit assembly adjustment which permits proper lateral alinement of the assembly without removal of the assembly from the machine.

A further object of this invention is to provide an alinement adjustment for knockover bit assemblies which may be easily added or applied to such assemblies as are already in use.

Other objects and advantages of this invention will be apparent and readily understood from the following description, the appended claims, and the accompanying drawings, which illustrate a preferred embodiment of the invention.

Referring now to the drawings, Figure 1 is a plan view of the underside of a sinker-head and knockover bit assembly embodying this invention as it may be applied to a straight knitting machine.

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Figure 2 is a cross-sectional view taken on line 2—2 of Figure 1.

In Figure 1, there is illustrated the underside of a conventional sinker head 11 provided with a knockover bit assembly 12 adjustably supported thereunder. Each section of a multi-section flat knitting machine may be provided with such a sinker-head rigidly secured to the frame of the machine, as shown, for example, in my United States Patent No. 2,308,730, issued January 19, 1943. The sinker-head 11 is provided with a hole at each end so that it may be bolted to the frame of the knitting machine. Depending leg-like members 13 are also provided at each end of the sinker-head 11, the members being integral with or secured to the head 11 and forming portions of split bearings 14, which will be described more fully hereinafter. The sinker-head 11 is provided with milled slots (not shown) in its top member 15 and in its bottom member 16 to receive conventional sinkers and dividers therein, the sinker-head serving as a guide for the sinkers and dividers when they are moved back and forth by conventional jacks and catchbars. The sinker-head 11 may be made from cast bronze or the like to provide a good wearing surface.

The leg-like members 13, together with the caps 17 secured thereto by screws 18, form split bearings 14 for supporting the knockover bit assembly 12. The assembly 12 includes a bed 19 having alined stub shafts or pins 20 extending from each end, and includes a plurality of parallel knockover bits 21 rigidly fastened to the bed 19 by a top plate 22 held by screws 23. The stub shafts or pins 20 may be integral with the bed 19 and are fitted in the split bearings 14 to provide for oscillatory movement of the bit assembly 12 with respect to the fixed sinker-head 11. One of the shafts 20 extends outward beyond the bearing 14 for connection with a lever mechanism providing the knockover bit assembly with the necessary oscillatory motion.

The horizontal length of the knockover bit bed 19 exclusive of stub shafts 20 is somewhat less than the distance between the opposing side faces of the leg members 13. The length of the bed 19 is preferably less than the distance between legs 13 by an amount equal to the spacing of several of the knockover bits 21. The members 24, which preferably are angular or L-shaped in cross section, are adjustably secured to the under side of the bed 19 by screws 25. The members 24 may have elongated holes or slots therethrough so that they may be adjusted horizontally with respect to the bed 19 before

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the screws 25 are tightened. The outer ends 26 of the members 24 are preferably offset and enlarged, as shown in Figure 1, to provide an enlarged end bearing surface for engagement with the inner side faces of leg members 13. By providing members 24 shaped as illustrated in Figure 2, their ends 26 abut or bear on the legs 13 rather than the caps 17 during the limited oscillatory movement given the knockover bit assembly 12 during the knitting operation. The members 24 may be made from steel, bronze, or other suitable material.

Provision of the adjustable end bearing members 24 on the knockover bit bed 19 permits the bed 19 to be confined to a selected lateral position with respect to the sinker-head 11. Thus the knockover bits 21 may be positioned in desired alinement with the sinkers and dividers supported by the sinker-head 11. This lengthwise or lateral adjustment of the knockover bit assembly is very important in securing proper action of the bits 21 in catching knitted loops as they are dropped from the noses of the sinkers and dividers.

It will be apparent that adjustable end bearing members 24 may be attached to the bed portion of knockover bit assemblies already in use provided the length of the bed is or is made shorter than the distance between the legs and bearings which support it.

The method of adjusting the knockover bit assembly will now be described. The bit assembly 12 is mounted under the sinker-head 11 by securing the pin shafts 20 in the split bearings 14 by means of bearing caps 17. With the screws 25 loosened, the knockover bit bed 19 may be shifted laterally with respect to the sinker-head 11 until the knockover bits 21 are in proper alinement with the sinkers and dividers carried in the head 11. The members 24 are then moved toward the bearings 14 until the bearing ends 26 engage the side surfaces of the legs 13, and the screws 25 are then tightened to secure the members 24 against any further lateral movement. The lever mechanism for imparting oscillatory movement to the knockover bit assembly 12 may remain connected to the end of one of the pin shafts 20 during adjustment of the assembly, since the actual amount of lateral adjustment is relatively small.

It will be observed that the enlarged offset ends 26 on the adjustable members 24 provide a bearing surface of adequate area and opposite the rigid side face of the leg 13, rather than opposite the side face of the bearing cap 17. This arrangement is desirable, although not necessary, since it maintains the knockover bit assembly in proper alinement even if a bearing cap 17 should become loose during knitting operations.

The foregoing description is to be understood as illustrative, as this invention includes all modifications and embodiments coming within the scope of the appended claims.

I claim:

1. In a straight knitting machine having a sinker-head mounted therein, the combination comprising a leg depending from said sinker-head and provided with a bearing therein, an oscillatory knockover bit assembly positioned adjacent said sinker head, a supporting pin extending from said knockover bit assembly into said bearing, and a slotted member adjustably secured to a side of said knockover bit assembly by means passing through the slots, said member extending

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from said assembly into engagement with said sinker-head leg and being laterally adjustable with respect to said knockover bit assembly for maintaining said assembly in a selected lateral position with respect to said sinker-head.

2. In a straight knitting machine having a sinker-head mounted therein, the combination comprising bearings supported adjacent said sinker-head, a knockover bit assembly positioned adjacent said sinker-head and shorter in length than the distance between said bearings, supporting pins extending from the opposite ends of said knockover bit assembly into said bearings, and slotted members adjustably secured to a side of said knockover bit assembly by means extending through the slots, said members extending beyond the ends of said assembly into engagement with the end of said bearings.

3. In a straight knitting machine having a sinker-head mounted therein, the combination comprising legs depending from said sinker-head, each of said legs having a bearing therein, a knockover bit assembly positioned between said sinker-head legs and shorter in length than the distance between said legs, aligned supporting pins extending from said knockover bit assembly into said bearings, and a member fitting against two sides of said assembly and adjustably secured to said assembly adjacent each end of said knockover bit assembly and extending beyond said end into engagement with said leg to maintain said bit assembly in a selected lateral position with respect to said sinker-head.

4. In a straight knitting machine having a sinker-head mounted therein, the combination comprising legs depending from said sinker-head, each of said legs having a bearing therein, a knockover bit assembly positioned between said sinker-head legs and shorter in length than the distance between said legs, aligned supporting pins extending from said knockover bit assembly into said bearings, and slotted members of angular cross section adjustably secured to said knockover bit assembly adjacent each end thereof by means passing through the slots, said members extending beyond the ends of said assembly into engagement with the said legs to maintain said bit assembly in a selected lateral position with respect to said sinker-head.

5. In a straight knitting machine having a sinker-head rigidly mounted therein, the combination comprising legs depending from said sinker-head and provided with bearings therein, each of said bearings including both a portion of said leg and a cap secured to said leg, a knockover bit assembly positioned between said legs and shorter in length than the distance between said legs, aligned supporting pins extending from said knockover bit assembly into said bearings, and a member having an enlarged offset head adjustably secured adjacent each end of said knockover bit assembly with its offset head extending beyond the end of said assembly into engagement with the leg portion of said bearing to maintain said bit assembly in a selected lateral position with respect to said sinker-head.

6. In a straight knitting machine having a sinker head mounted laterally thereon, the combination comprising laterally aligned bearings rigidly supported with respect to and adjacent said sinker head, an oscillatory knockover bit assembly journaled in said bearings for lateral adjustment therein, means defining parallel plane oppositely facing surfaces normal to the oscillatory axis of said assembly and rigidly supported

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with respect to said sinker head, and at least two members secured to said assembly for lateral adjustment thereon, each of said members extending into contact with a separate one of said surfaces for arcuate sliding engagement therewith, whereby said assembly may be maintained in a selected lateral position with respect to said sinker head.

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