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March 11, 1941. P. TUCHSCHERER 2,234,885

THREAD CARRIER CHANGE DEVICE

Filed Aug. 28, 1939

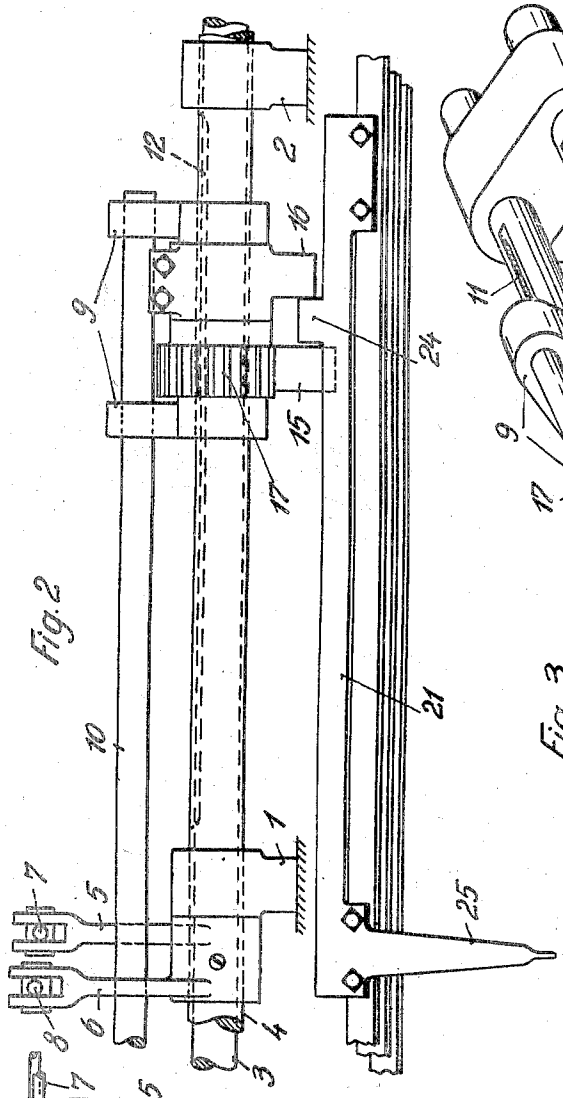


Fig. 2

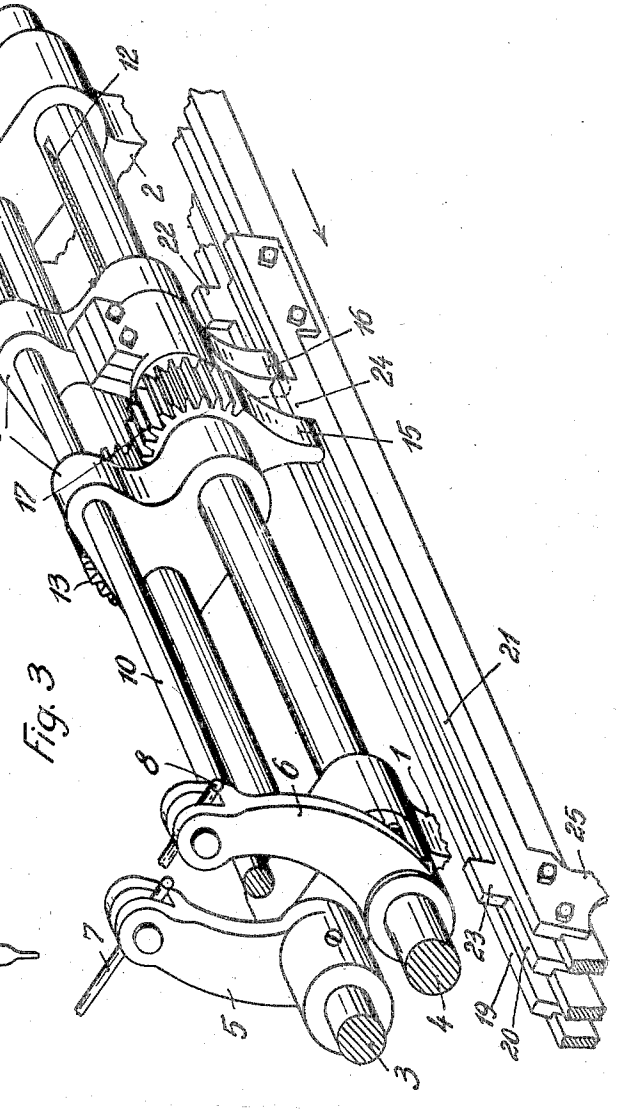


Fig. 3

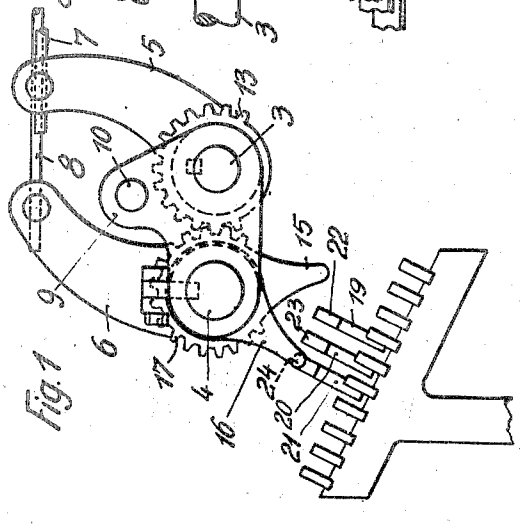


Fig. 1

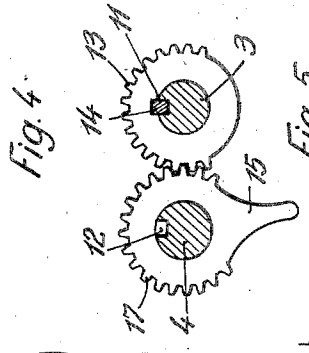


Fig. 4

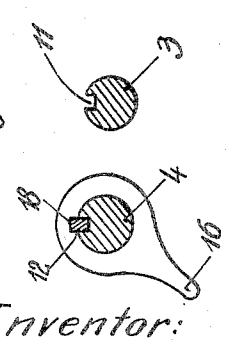


Fig. 5

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Patented Mar. 11, 1941 2,234,885

UNITED STATES PATENT OFFICE

2,234,885

THREAD CARRIER CHANGE DEVICE

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Application August 28, 1939, Serial No. 292,351
In Germany September 1, 1938

3 Claims. (Cl. 66—127)

The present invention relates to a thread carrier change device for flat knitting machines in which the dog shifting the thread carrier bar consists of two parts which automatically and selectively change from one thread carrier bar to another one.

A large number of such thread carrier change devices for flat knitting machines are known already. For the purpose of changing the various thread carrier bars all these devices use a single dog which allows movement of the thread carrier bar by shifting, oscillating or engaging into a recess of the corresponding stop.

Due to the fact, that by the movement of the dog in the moment of contact the thread carrier bar to be changed loses any support at the point of change, the rebounds occurring hereby may have an unfavorable effect upon the thread carrier bar by causing undesired thread layings which strongly jeopardize the further safe operation of the dog and thereby reduce the capacity of the machine.

These draw-backs have already been removed by a known device in which this has been achieved by the fact that the dog has been made of two portions alternating between the thread carrier bars one of the said portions during adjustment of the other remaining unaltered in its position.

As the entire dog arrangement including the adjusting device is mounted upon the brake device, the mass to be moved is rather large. The device, moreover, is extremely complicated and expensive as two slides must be used each having four dogs.

According to the present invention the device is simplified by the fact that the two portions each have one dog only and are oscillatably and displaceably and separated from each other arranged upon one of two shafts of the brake device, said portions cooperating in such a manner, that always the portion shifting the thread carrier bar to the point of contact together with this thread carrier bar remains unaltered at the point of contact during adjustment of the other portion of the dog to another thread carrier bar and is adjusted directly after the start of movement of the other portion of the dog in opposite direction in such a manner, that the stop of the thread carrier bar to be shifted is positively guided between the two portions of the dog until the next point of contact is reached.

In the accompanying drawing one construction of a thread carrier change device according to the invention is shown by way of example in connection with a straight knitting machine having three thread carrier bars and two dogs arranged in a single change device.

In this drawing:

Fig. 1 is a side elevation of the thread carrier change device according to the invention,

Fig. 2 is a front elevation of the device shown in Fig. 1,

Fig. 3 is a perspective view of the device illustrated in Fig. 2 showing all the dogs arranged in a single plane and

Figs. 4 and 5 show detail views.

Pivotally mounted in bearings 1 and 2 of the frame of a straight knitting machine are shafts 3 and 4. Fixed upon the shaft 3 and 4 respectively is a lever 5 and 6 respectively which levers are connected by means of draw members 7 and 8 respectively to a pattern device, for instance pattern discs, pattern chains or the like, not shown in the drawing.

Slideably mounted upon the shafts 3 and 4 is a change device or change head 9 which is connected by means of a rod 10 to a well known brake device not shown in the drawing and driven by the slur bar. The shafts 3 and 4 are provided with longitudinal grooves 11 and 12 respectively the length of which corresponds to the greatest thread carrier way occurring in the operation of the machine.

In the change device or head 9 a toothed segment 13 is mounted upon the shaft 3 and a feather key 14 of said toothed segment 13 engages the groove 11. Upon the shaft 4 also two dogs 15 and 16 are mounted in the change device or head 9. The dog 15 loosely pivoted upon the shaft 4 carries a toothed segment 17 which is kinematically connected to the toothed segment 13 mounted upon the shaft 3 as may be seen from Fig. 4. A feather key 18 of the dog 16 engages into the groove 12 provided in the shaft 4 as may be seen from Fig. 5. Provided upon the thread carrier bars 19, 20, 21 are the stops 22, 23, 24 all of which are substantially of the same width. The space between the two dogs 15 and 16 corresponds to the width of one of the stops 22, 23 and 24. Attached to the thread carrier bars are in a manner known per se the thread carriers one of which only, i. e. the thread carrier 25 of the thread carrier bar 21 is shown in the drawing. To show the dog 15 the latter has been illustrated in Fig. 1 in its swung out position.

The thread carrier change device according to the invention operates as follows:

By means of the rod 10 the change device or head 9 is shifted in a manner known per se. If

for instance by the dog 16 acting upon the stop 24 the thread carrier bar 21 is moved in the direction of the arrow illustrated in Fig. 3, then on reaching the point of contact the dog 15 moving in front of the stop 24 is, by turning the shaft 3 and by the adjustment of the toothed segments 13 and 17 effected thereby, adjusted to another thread carrier bar to be shifted, for instance to the thread carrier bar 20, without changing the position of the dog 16 during this time.

The dog 15, when shifted in the opposite direction, acts upon the stop 23 of the thread carrier bar 20. Shortly after the start of movement a further adjustment of the dog 16 is effected by turning the shaft 4. The dog 16 hereby is brought in front of the stop 23 of the thread carrier bar 20. The stop 23 thereby is enclosed between the two dogs 15 and 16 and is positively moved by them until the next point of change is reached. At this point of change then by turning the shaft 4 the dog 16 moving in front of the stop 23 is again adjusted to another thread carrier bar to be shifted without the position of the dog 15 being altered during this time.

The operations described above are repeated alternately in both directions of movement of the thread carrier bar. The dogs may also be arranged in two change devices or heads. Each of the arrangements having one dog only, however, requires less space and by this separation a hitherto useless space may be employed.

What I claim is:

1. In a thread carrier change device for flat knitting machines, a plurality of thread carrier bars, a stop carried by each of said thread carrier bars, a thread carrier associated with each of said thread carrier bars, means for shifting said thread carrier bars, said means consisting of a toothed segment and a ring spaced from said toother segment, a dog provided at said toothed segment and a second dog provided at said ring, a shaft rotatably mounted in bearings provided in the machine frame and carrying said toothed member and said ring, a second shaft rotatably mounted in said bearings in parallel relation to said first mentioned shaft, a toothed wheel shiftably fixed on said second shaft and means for adjusting said dogs from one of said thread carrier bars to another.

2. A device as set forth in claim 1, in which said second dog is slidably mounted on said first mentioned shaft fixed against relative rotation, and said first mentioned dog is rotatably and longitudinally shiftably arranged on said first mentioned shaft and is movably connected to said second shaft.

3. A device as set forth in claim 1, in which said second dog is slidably mounted on said first mentioned shaft fixed against relative rotation, said first mentioned dog is rotatably and longitudinally shiftably arranged on said first mentioned shaft, said first mentioned dog being provided at a toothed segment movably connected to said toothed wheel mounted on said second shaft and connected to the latter by a groove and feather connection.

PAUL TUCHSCHERER.