May 23, 1961 H. O. WERNER 2,985,000

PATTERN MECHANISM FOR KNITTING MACHINES

Filed Aug. 29, 1958

FIG. 1

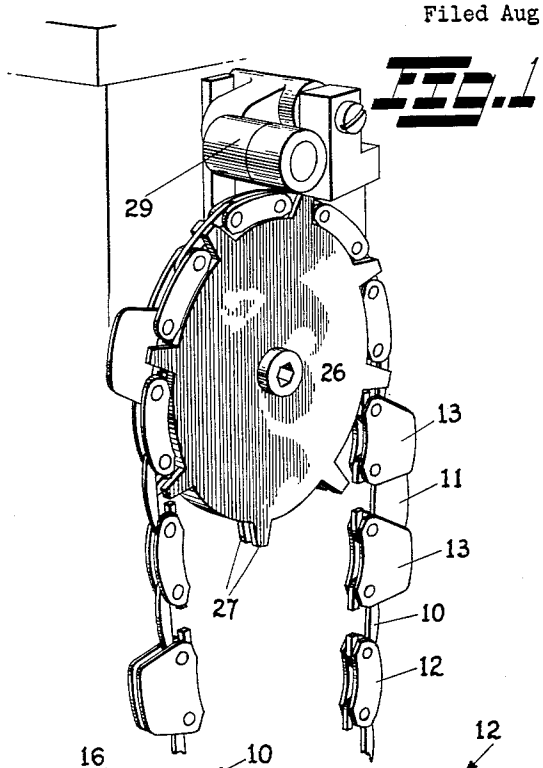
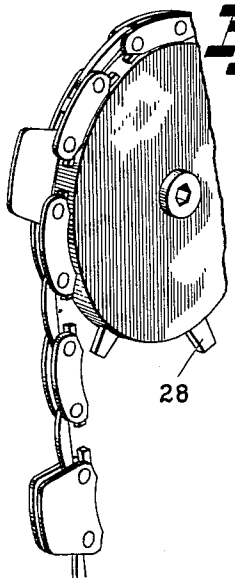


FIG. 2



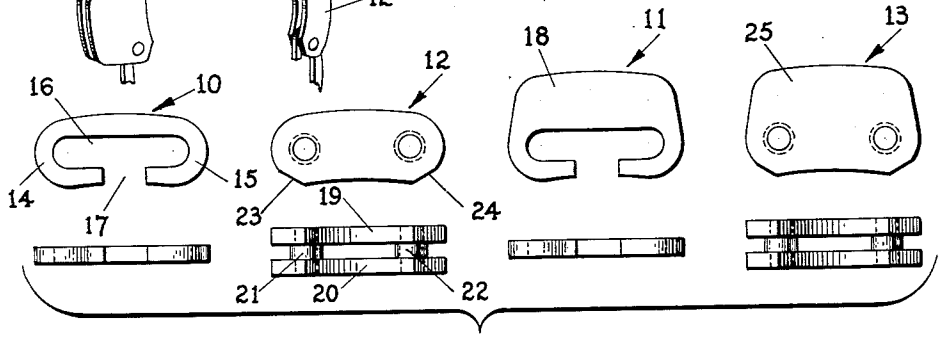


FIG. 3

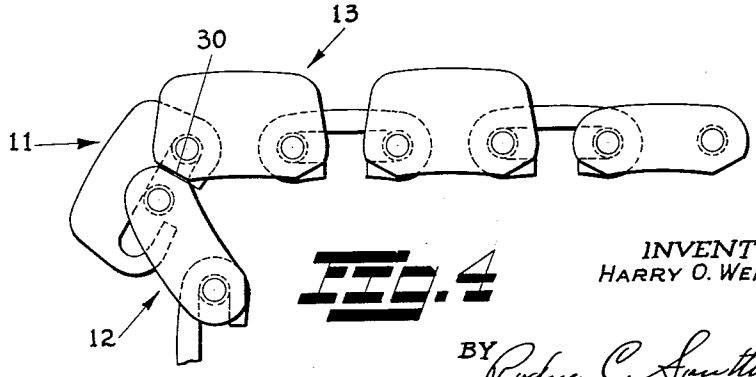


FIG. 4

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PATTERN MECHANISM FOR KNITTING MACHINES

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1 Claim. (Cl. 66—156)

This invention relates to automatic knitting machines and, in particular, to a novel pattern chain mechanism for effecting periodic movement of certain parts of knitting machines.

It is a general object of this invention to devise a pattern chain which may be easily assembled and disassembled at any point thereon in a manner of seconds without the use of tools.

It is a further object of this invention to prevent such a chain from becoming disassembled except when the links of the chain are placed in certain extreme positions with respect to each other, which positions are never encountered in the normal use of the chain.

It is a further object of the invention to devise a chain wherein the design of the pattern may be quickly changed any number of times until a desired pattern is obtained.

Further objects will appear from the detailed description which follows.

In United States Patent No. 1,403,322 there is disclosed a pattern chain for knitting machines wherein adjacent link members are interlocked by means of pins or rivets which are not easily removed. Consequently, the setting up of a particular pattern in such a chain is difficult and time consuming.

According to the present invention, a chain has been devised which is comprised of side links and center links having hooked ends adapted to receive shoulder pins fixed in said side links. The link members are so constructed that they can be dismantled only upon being placed in a certain angular relationshisp with each other, a position which is never encountered during normal operation of the chain so that there can be no possibility of unexpected dismantling.

A more complete understanding of the device may be had by reference to the accompanying drawings, wherein:

Fig. 1 is a perspective view of the pattern chain mechanism mounted upon a toothed sprocket wheel;

Fig. 2 is a similar view of the chain mounted upon a modified form of toothed sprocket wheel;

Fig. 3 shows in the upper group a plan view of various types of separate link elements, and in the lower group a bottom view of the same elements;

Fig. 4 shows one way of separating one end of a side link from its associated center link.

In Fig. 3 there are shown the four types of links forming the chain of this invention, **10** and **11** being herein referred to as center links and **12** and **13** being side links. The center link **10** is comprised of two hooked ends **14** and **15** defining a slot **16** having an opening **17** centrally located at one side thereof. The center link **11** is identical in structure to center link **10** except that in addition thereto it has a lug **18**.

The side link **12** is comprised of two body portions **19** and **20** retained in spaced apart relationship by means of two shoulder pins **21** and **22** located adjacent the outer edges of said body portions. The distance between the centers of these pins is equal to the distance between the

points defining the radii of curvature of the curved portion of the slot of the center link. The edge portions of the two inner corners of the link, i.e., those corners which will appear on the inner side of the assembled chain, are flattened as shown at **23** and **24**. The side link **13** is identical to side link **12** except that it has included the lug **25** on each body portion.

In Fig. 1 a series of side and center links have been alternately assembled. At the right side of the figure the center link **11** is shown as receiving a shoulder pin of each of two adjacent side links **13** and the center link **10** is shown as receiving a shoulder pin of the side link **13** and one of the side link **12**. Obviously, many different lug patterns are possible by varying the location of the different types of links. In Fig. 1 the sprocket wheel **26** is shown as having parallel teeth **27** spaced equally about its circumfernece and each set of such parallel teeth are spaced apart a sufficient distance to receive therebetween one of the center links.

A modified type of sprocket wheel is shown in Fig. 2 comprised of individual teeth **28** equally spaced about the circumference thereof and adapted to be received between the body portions of the side links.

Either type of sprocket wheel may be utilized to drive the pattern chain of this invention. A roller **29** shown in Fig. 1 or other such device is utilized to impart periodic movement to other parts of a knitting machine (not shown) as it is actuated by the lugs of the links.

The shoulder pins of the side links are located sufficiently inwardly of the edges of their links so as to prevent passage of either of the two pins in a single center link through the opening in the latter in all positions except when the flattened edge of one side link is brought in face-to-face relationship with the flattened portion of an adjacent side link as seen at **30** in Fig. 4 or when the flattened portion of one side link is brought in face-to-face relationship with either edge of an adjacent side link adjacent to the latter's flattened portion. Thus, it is necessary that each two adjacent side links have at least one flattened portion between them.

In knitting machines the initial setting up of a pattern on a pattern chain mechanism usually involves some trial and error experimentation until a pattern has been found which will produce the results desired on the article to be knitted. In chains of the prior art this was a tedious chore since each time a change was to be made during the experimentation, the chain had to be removed from its sprocket and rivets or fixed pins had to be removed. As a result long periods of time were consumed in order to achieve the desired results.

The pattern chain of this invention, on the other hand, permits pattern changes in a matter of seconds and even without removing the chain from its sprocket.

The links forming the chain are relatively simple to manufacture and can very readily be assembled into a chain.

While one embodiment of the invention has been disclosed, it is to be understood that the inventive concept may be carried out in a number of ways. This invention is, therefore, not to be limited to the precise details described, but is intended to embrace all variations and modifications thereof falling within the spirit of the invention and the scope of the claim.

I claim:

In a knitting machine including actuating means for imparting periodic movement to parts of said machine, a pattern chain mechanism which comprises a plurality of articulated links adapted to be driven by a toothed sprocket wheel over which said chain is passed, some of said links having lugs adapted to move said actuating means to different positions, said chain further being

comprised of alternating center links and side links having two body portions, a shoulder pin on each end of said side links retaining said two body portions in spaced apart relation, and said center links having hooked ends for receiving the shoulder pins of adjacent side links, said hooked ends being spaced apart a distance equal to the separation between shoulder pins of a side link and defining a slot having an opening centrally located at one side thereof into which said shoulder pins may be inserted, said side links having a pair of ends and a generally longitudinally extending inside edge therebetween, and angularly disposed flattened edge portions extending inwardly from each of said ends to said inside edge, said shoulder pins being so located with respect to said ends that only when said side links are brought together with flattened edge portions of adjacent side links in contact and a center link is moved to its extreme position with respect to one pin, the adjacent side link pin may be removed through said opening.

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