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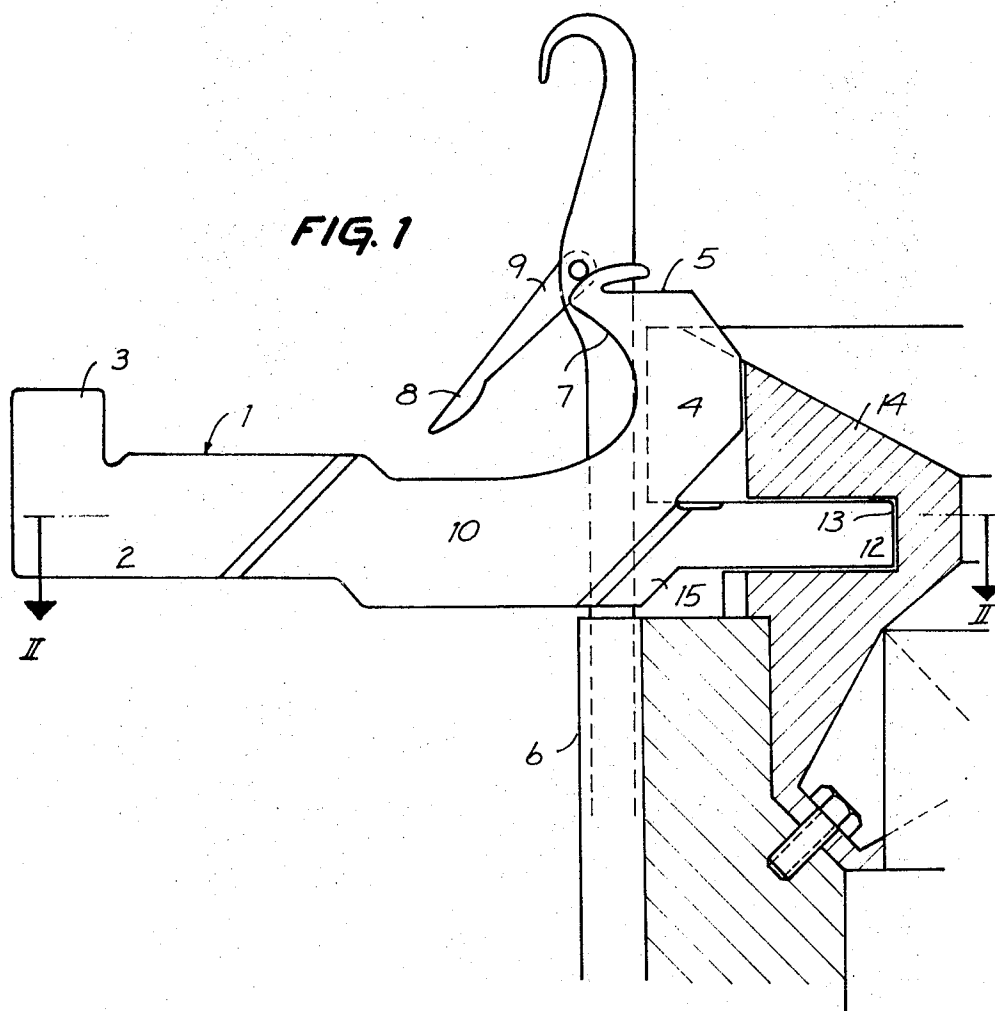
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3,613,402

CIRCULAR KNITTING MACHINE SINKERS

Filed Jan. 23, 1969

2 Sheets-Sheet 1



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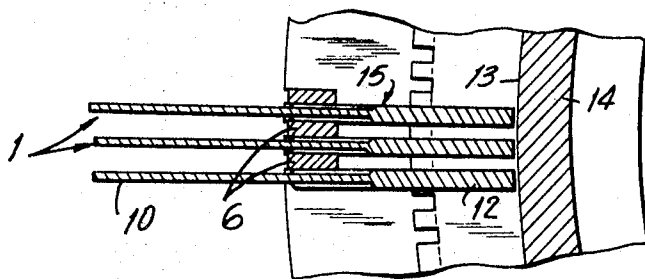


FIG. 2

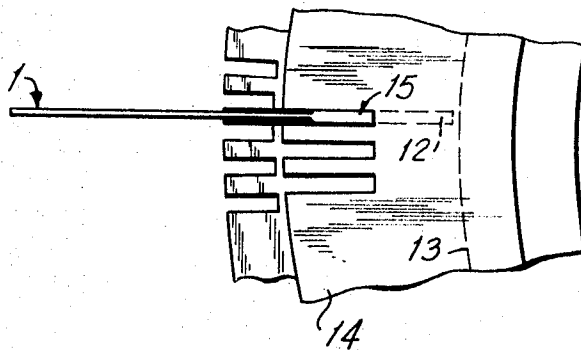


FIG. 3

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## CIRCULAR KNITTING MACHINE SINKERS

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2 Claims

### ABSTRACT OF THE DISCLOSURE

Sinkers for a circular knitting machine have a central portion of reduced tangential thickness to facilitate the working of needles between the sinkers. A tongue at the front end of each sinker is received in a continuous groove in a sinker guide ring. This tongue of each sinker is thicker than the central portion thereof and slidably engages the needles to be guided thereby.

### BACKGROUND OF THE INVENTION

The invention relates to a number of improvements to the mechanisms of circular knitting machine sinkers; an object of the invention is substantially to reduce frictional wear on the moving members and this feature, combined with satisfactory operation, represents a substantial improvement in the embodiment of mechanical elements of the kind specified. Briefly, the improvements according to the invention achieve more satisfactory guiding of the sinkers and needles therebetween.

The sinker has a tongue having a thickness exceeding that of a central portion reduced in size to an extent such that the separation between the opposite surfaces of the thick portions of the tongues of two adjacent sinkers corresponds to the width of the needle body, this thick portion extending into all those longitudinal zones of the sinker which are adapted to move right up to the needles during operation.

The front portion of the sinker therefore comprises a single longitudinal tongue adapted to fit into a novel annular groove with which an otherwise conventional sinker guide ring is formed. The ring is disposed horizontally, so that all the sinkers converge on it.

### DESCRIPTION OF THE EMBODIMENTS

A non-limitative exemplary embodiment of the invention is illustrated in the accompanying drawings, wherein:

FIG. 1 is a longitudinal elevation of the assembly formed by a sinker and surrounding elements, the adjacent area being shown in section,

FIG. 2 is a section, taken along the line II—II in FIG. 1, and developed in a horizontal plane, and

FIG. 3 is a horizontal section through a portion of the machine, giving an overall view of the position of a sinker.

The exemplary embodiment illustrated comprises a sinker 1 having a rear shank 2 which has a butt 3 forming an upper expanded portion; the front portion of the sinker 1 has a specially shaped upper projection 4 having a front flank 5 forming a yarn-seizing hook. Needles 6 are disposed in the normal position in relation to the sinkers, which at the upper projection 5, have a rear flank 7 taking the form of a recess for the movements of latches disposed at the free ends of the blades 9 of the needles.

Transversely, the sinkers are made up of sectors of completely different thickness; the rear zone occupied by the sinker rear shank has a normal transverse size, while the central zone 10, which comprises the upper

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projection 4 and all its appurtenances, is thinner; lastly, the portion of the sinker forming the working end, combined with the longitudinal tongue 12, is thickened to form a third zone 15 characterized by this feature.

A sinker guide ring 14 is formed with an annular groove 13 which receives the tongue of the sinker; the ring 14 is completely conventional, its annular groove being horizontal. This feature obviates the necessity of the sinkers engaging in conventional narrow grooves in the ring.

The present improvements therefore so adapt sinkers that they have zones 2, 10 and 15 of different transverse dimensions, the central zone being the smallest, so that whenever a needle 6 has to pass between two adjacent sinkers, and at the same time the latch 8 of its blade 9 has to move, zones are formed to facilitate these movements and to enable them to take place without harmful friction. The needles are therefore more satisfactorily guided and the resulting fabric has a superior finish.

Also to facilitate substantially the maneuverability of the moving members of the needles, the projection 4 has a concave flank 7. The zone 15, including the tongue 12, is thicker than the sector 10; the object of this shape is to enable the separation between the tongues of two adjacent sinkers to correspond more readily to the thickness of the needle body disposed between the sinkers. Lastly, the continuous annular groove 13 with which the guide ring 14 for the tongues 12 is formed guides the movements of the sinkers more satisfactorily.

As is apparent from FIG. 1, the thicker zone 15 of each sinker is inclined downwardly and rearwardly, at its rear end portion, so as to overlap the needles 6. Because the separation between adjacent sinkers corresponds at the side surfaces of portions 15 of adjoining sinkers which are directed toward each other substantially to the thickness of the needle which is situated between and adjacent the side surfaces, the sinkers are guided by the needles themselves and extend, at the thicker portions 15, substantially up to the needles for this purpose. As a result, it is the needles which take over the function of vertically guiding the sinkers, enabling the ring 14 to have a much simpler construction in that it need only be formed with a simple annular groove 13 and does not require any critical measurements which are difficult to machine with the required degree of precision. The elongated central portion 10 of each sinker has a uniform thickness from the top to the bottom of the sinker, while the thicker tongue 12 projects from opposed side surfaces of the relatively thin elongated central portion 10. The portions 15 terminate in downwardly and rearwardly inclined edges extending all the way to the bottom of the sinker where these zones 15 of the tongue 12 directly engage the needles, so that the sinkers are guided at their lowest portions by the needles, at the greatest distance from the heads of the needles where the needles are more rigid and thus will provide a better guiding for the sinkers. This feature of providing the relatively thin elongated central portion 10 with the thicker tongue 12 having the lower sinker region 15 directly engaging and guided by the needles on the one hand enables the most efficient guiding of the sinkers by the needles with the tongues extending into a simple horizontal groove of the guide ring 14 and on the other hand provides the possibility of accommodating the latches 8 of the needles for free movement between the sinkers with the greatest possible crowding of the needles next to each other so that the needles are not undesirably spaced from each other because they guide the sinkers and on the other hand the latches can operate properly with a relatively close spacing between the needles. It will be noted that the thin elongated central region 10 of each sinker ex-

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tends from the rear of each needle forwardly beyond the latter while the region 15 of each sinker is situated only at the lower region of each sinker beneath that part of the central portion 10 which is situated beside the needle.

I claim:

1. In a circular knitting machine having sinkers and needles of predetermined thickness extending between the sinkers, each sinker having an elongated central portion of uniform thickness from the top to the bottom of the sinker and a tongue projecting from opposed side surfaces of said elongated central portion and having a thickness exceeding that of said central portion to an extent such that the separation between two adjacent sinkers at surfaces of said tongues which are directed toward each other and extend alongside and overlap a needle body situated between said surfaces corresponds to the thickness of said needle body, said central portion of each sinker being situated beside and extending forwardly and rearwardly of the needles and with said surfaces of each tongue extending rearwardly beneath said central portion to the bottom of said sinker into all those longitudinal zones of the sinker which move directly next to the needles during operation, whereby needle latches can be freely accommodated between said central portions of the sinkers with the latter guide at their bottoms by the needles, and a sinker guide ring formed

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with an annular groove receiving said tongues of said sinkers, said needles determining the circumferential spacing of said sinkers while vertically guiding the latter.

2. The combination of claim 1 and wherein said surfaces of each sinker tongue terminate in downwardly and rearwardly inclined edges at the junction with said elongated central portion.

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