

Dec. 12, 1961

K. LIEBRANDT

3,012,425

TRACING DEVICE FOR TEXTILE MACHINES

Filed March 9, 1959

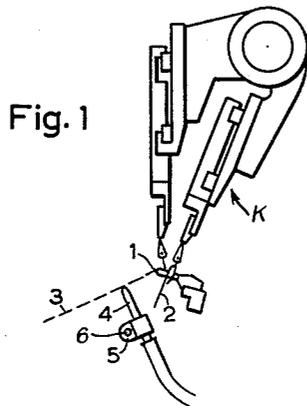


Fig. 1

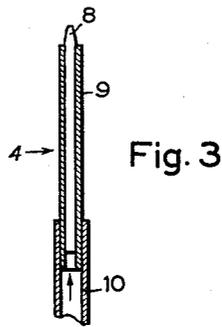


Fig. 3

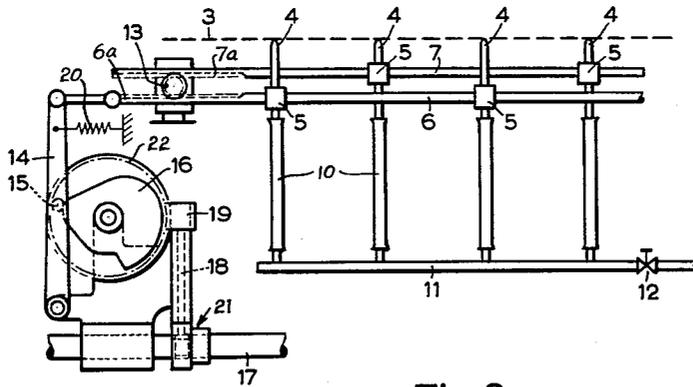


Fig. 2

1

3,012,425

TRACING DEVICE FOR TEXTILE MACHINES

Karl Liebrandt, Naila-Oberklingsporn, Germany

Filed Mar. 9, 1959, Ser. No. 798,255

Claims priority, application Germany Apr. 16, 1958

6 Claims. (Cl. 66-147)

This invention relates to marking devices and is particularly directed to a device for marking or tracing on a moving web the outline of blanks or pieces which thereafter are cut out from the web for further processing into finished articles.

While the invention is applicable to the marking of webs of widely varying materials and fabrics, the invention will be specifically described in connection with the marking of textile webs and fabrics and more particularly knitted webs.

In the manufacturing process of hosiery articles, e.g., stockings, from knitted webs, it is already known to cut blanks from the web and to sew them together or otherwise unite them for making the completed article. For the purpose of simplifying the cutting operation, devices have been used which mark the pieces to be cut by tracing elements attached to the knitting machine. In these known devices, the tracing elements are mounted close to the knitting tools above the web to be marked. As tracing elements, copying pencils, or small tubes filled with liquid India-ink, spray-guns, or the like are used.

The known tracing devices have considerable shortcomings. Thus, by the above-mentioned arrangement of the tracing elements above the web, the knitting tools are partly covered and become less accessible.

Other difficulties arising relate to the adjustment of an adequate and suitable contact pressure with which the tracing elements are made to bear on the web; the contact pressure has in each case to conform to the prevailing conditions such as, e.g., the tension of the web. The known devices lack the necessary adjusting means. Moreover, there is a considerable danger of soiling the fabric when liquid inks or dyes are used; the lines to be traced frequently turn out too heavy; and upon stoppage of the machine, stains are formed quite often.

It is a primary object of the present invention to overcome the above-mentioned disadvantages and to provide a tracing device for pieces or blanks to be cut from a textile, e.g., knitted web, which will operate accurately at a pressure adjusted in accordance with the requirement of each case.

More particularly, it is an object of the present invention to provide a tracing device for marking the contours of pieces to be cut from a web of knitted fabric in the manufacture of hosiery articles, e.g., stockings, and to arrange the tracing elements in a manner so as to avoid obstruction of the knitting tools of the machine.

It is yet another object of the invention to provide a tracing device of the above-mentioned type, which is free of undesirable side-effects, such as soiling and staining of the knitted web to be marked.

Other objects and advantages will become apparent from the following detailed description of the device according to the invention.

With the above objects in view, the invention provides a marking or tracing device, in which the individual tracing elements, used for marking the pieces or blanks to be cut from a web, are arranged in holding members and are urged against the web by fluid pressure means. The tracing element proper may consist of a simple lead rod, as it is used in lead pencils, or may comprise ink such as the filling used in ball point pens, or the like. This writing medium may be disposed in a narrow tube which, in turn, is connected by a flexible hose to a pressure line.

2

In this line, a pressure reducing valve may be provided for regulating the pressure required in any particular case. After the valve has been set, no further supervision or handling by an operator is necessary since an even tracing pressure will automatically be maintained.

It is a further advantage of the invention that in the preferred embodiment of the device the tracing elements are arranged below the knitted web so that they may be pressed against it from its underside without interfering with the knitting tools.

The invention will now be more fully explained with reference to the accompanying drawing in which an embodiment of the device according to the invention is described by way of illustration.

In the drawing:

FIG. 1 is a side view of a tracing element together with the associated parts of a knitting machine;

FIG. 2 is an illustration of a plurality of tracing elements and the means for driving the same; and

FIG. 3 shows one tracing element on an enlarged scale.

Referring now to FIGS. 1 and 2, a tracing element 4 is shown, arranged in close proximity to a sinker 1 and a needle 2 of a knitting machine K and below a web 3 which is being made on said machine. The tracing elements 4 are fastened in holding means 5 which are adjustably arranged in spaced relationship on rails 6 and 7. It will be seen that the rails 6 and 7 extend in a direction transverse with respect to the direction in which the knitted web advances and is withdrawn from the knitting machine.

In a manner known per se, the tracing elements may be alternately disposed on the rails 6 and 7. It is preferred that the tracing elements 4 be arranged below the web and that they be urged against the web by means exerting pneumatic or hydraulic pressure.

FIG. 3 shows an individual tracing element on a larger scale. It comprises a small tube 9 which receives a rod-shaped piece of lead 8 sheathed by the tube in an airtight manner.

Tube 9 is connected by means of a flexible hose 10 to a common pressure line 11 (see FIG. 2) fitted with a pressure reducing valve 12. By means of this valve, the pressure required in any particular case can be adjusted in dependence on the type of web 3 which is being manufactured. For instance, 2 atmospheres excess pressure and a lead of hardness 3B may be used.

The rails 6 and 7 may be driven in a known manner; they may, for instance, comprise terminal rack portions 6a and 7a, respectively, (see FIG. 2) between which a pinion 13 is mounted on the frame of the knitting machine. By this arrangement, the movement of one rail is transmitted to the other rail so as to move it in opposite direction. For driving rail 6, a lever 14 is provided which carries a roll 15 that is urged into engagement with a cam by conventional means, e.g. a traction spring 20 acting on lever 14, as illustrated. The cam 16 is shaped in accordance with the desired pattern or outline to be obtained so that the tracing elements 4 mounted on rail 6 upon one revolution of the cam will trace upon the web 3 the contour of a stocking half blank, for example, thereafter to be cut out from the web. The symmetrical contour-tracing will be marked by the tracing elements 4 mounted on rail 7. The drive of cam 16 is effected by a shaft 17, an intermediate gearing 21, an auxiliary shaft 18 and a turning gear 19 which meshes with a gear 22 integral with or attached to cam 16. When the size of the blank to be traced is changed, cam 16 and gear 19 have to be exchanged in accordance therewith.

What is claimed is:

1. In combination with a textile machine having web-producing tools, a tracing device for marking or tracing

3

the outline of blanks on the web emerging from said machine, said tracing device comprising a plurality of marking elements capable of producing marks on said web, mounting means for mounting said marking elements near said web-producing tools and below and across said emerging web, said marking elements being reciprocally movable with said mounting means in a direction substantially perpendicular to said emerging web, pattern-controlled driving means for moving said mounting means and said marking elements along a predetermined path along the underside of said emerging web, and fluid-pressure control means for urging said marking elements against said underside of said web.

2. A device for tracing pieces to be cut from a knitted web along a pattern, said device being of the type having individual tracing elements associated with and mounted in the vicinity of the tools for knitting said web, rail means for holding said tracing elements and means for moving said elements along the lines of said pattern, said device comprising fluid-operated means and connecting means between said holding means and said fluid-operated means for urging said tracing elements against the underside of said web during the tracing operation.

3. The device as claimed in claim 2, wherein said means for urging said tracing elements against said underside of said web comprises a common fluid operated pressure line for said tracing elements, said connecting means comprising individual connecting ducts from said pressure line to said tracing elements for transmitting fluid pressure from said pressure line thereto, and control means in said pressure line for regulating said fluid pressure transmitted to said tracing elements by which they are urged against said web during the tracing operation.

4. A device for tracing pieces to be cut from a knitted web along a pattern, said device being of the type having tracing elements associated with the tools for knitting said web, rail means for holding said tracing elements

4

and means for moving said elements along the lines of said pattern; said tracing elements, rail means, and moving means being disposed in a plane below the knitted web and comprising a common fluid-operated pressure line for said tracing elements, individual connecting ducts to said elements for transmitting fluid pressure from said pressure line to said tracing elements, and a control valve in said pressure line for regulating said fluid pressure transmitted to said tracing elements by which they are urged against said web from the underside thereof during the tracing operation.

5. The device as claimed in claim 4, wherein each of said tracing elements comprises a tube with a writing medium held in said tube in an air-tight manner.

6. A device for tracing pieces to be cut from a knitted web along a pattern, said device being of the type having individual tracing elements associated with and mounted in the vicinity of the tools for knitting said web, rail means for holding said tracing elements and means for moving said elements along the lines of said pattern, said device comprising pneumatically operated means for urging said tracing elements against the underside of said web during the tracing operation, wherein each of said tracing elements comprises a tube with a writing medium held in air-tight manner in said tube and flexible connecting means for attaching said tube to a pressure line for admitting a pneumatic pressure medium to urge said writing medium against said web.

References Cited in the file of this patent

UNITED STATES PATENTS

709,225	Jordan	Sept. 16, 1902
860,386	Jordan	July 16, 1907
2,556,757	Guild	June 12, 1951
2,688,189	Klauss	Sept. 7, 1954