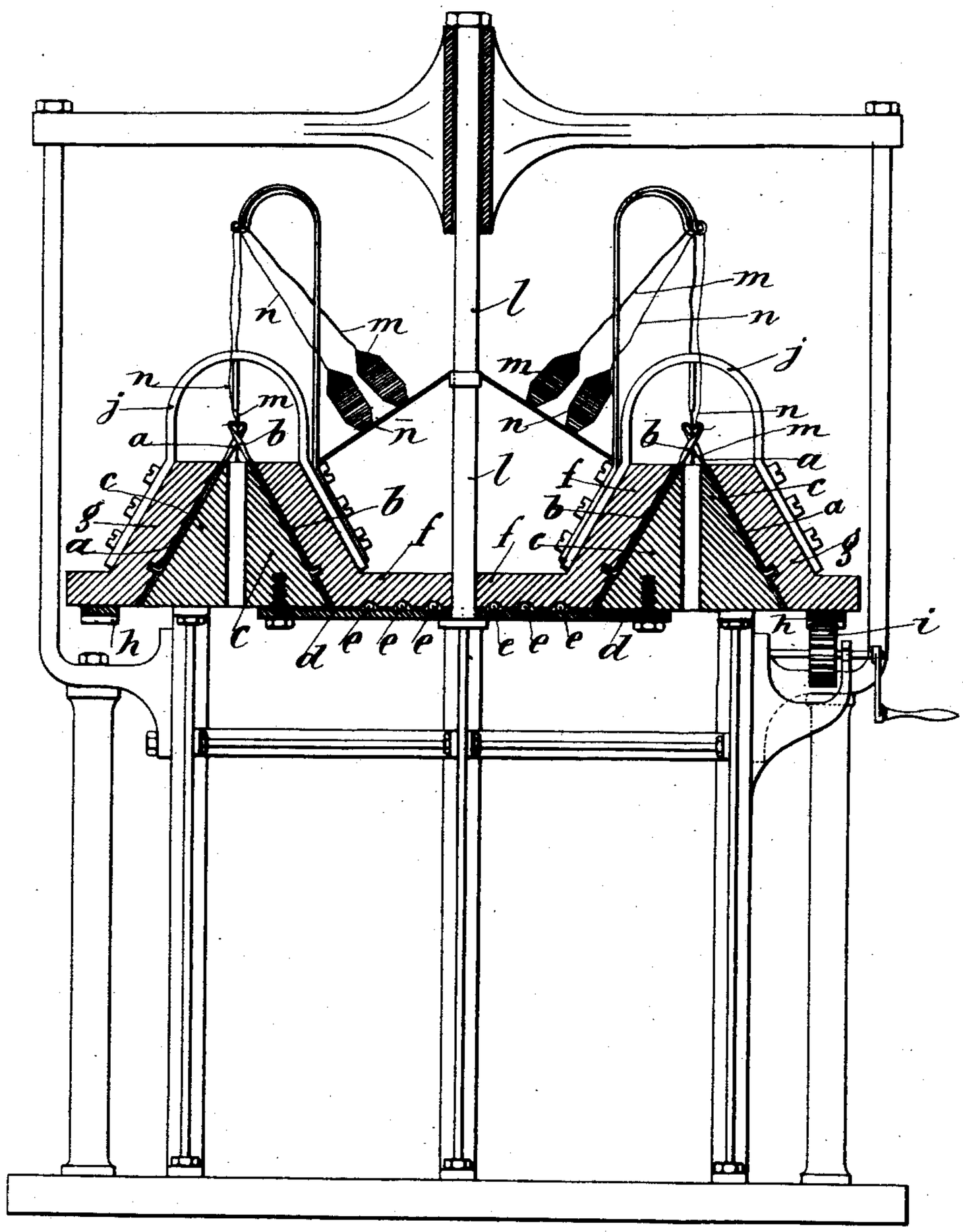
(No Model.) 2 Sheets—Sheet 1.

Z. LECAISNE.

CIRCULAR KNITTING MACHINE.

No. 525,661. Patented Sept. 4, 1894.

Fig: 1



Witnesses
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Chas. W. Higgs

Inventor
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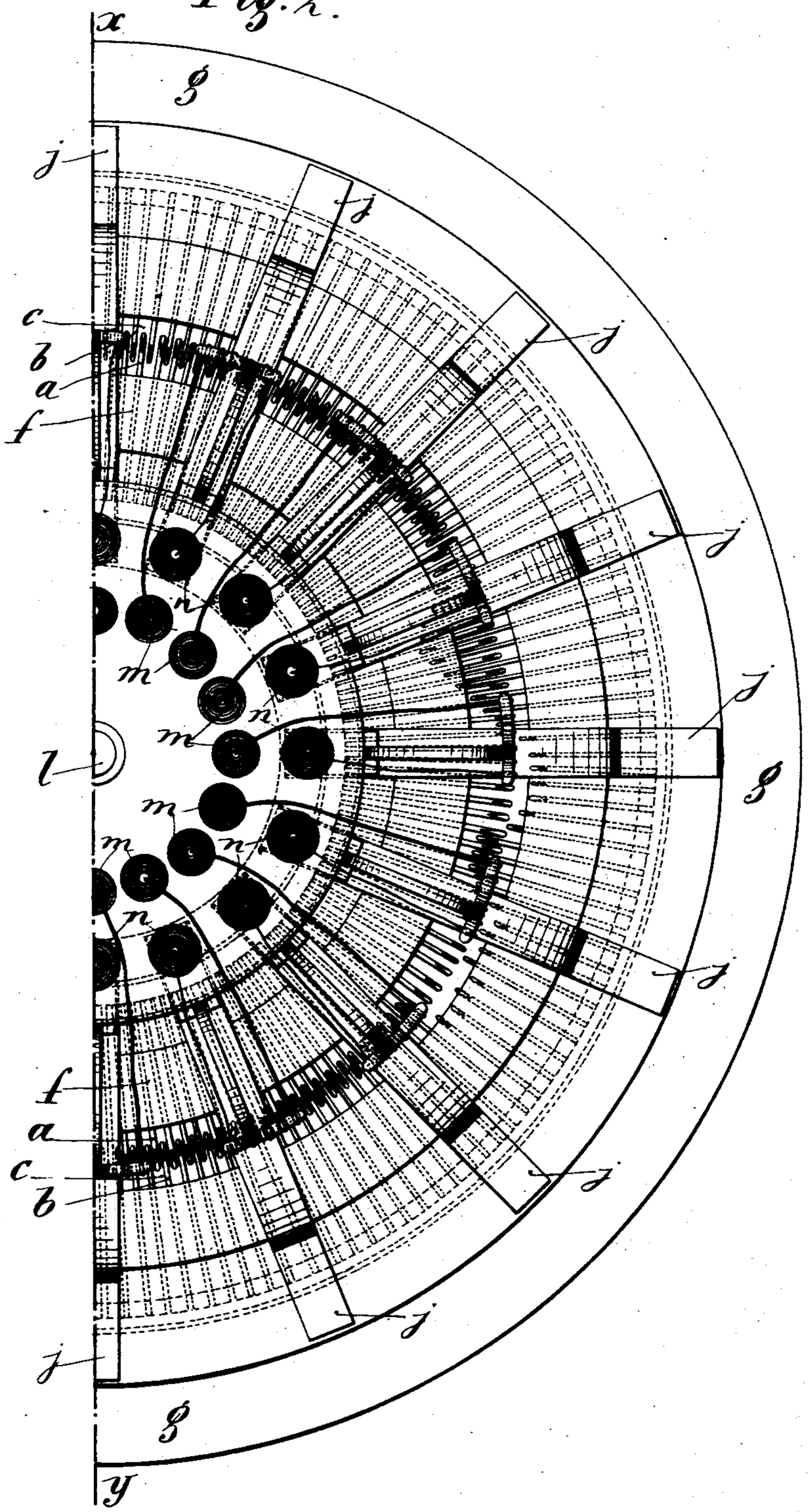
(No Model.) 2 Sheets—Sheet 2.

Z. LECAISNE.

CIRCULAR KNITTING MACHINE.

No. 525,661. Patented Sept. 4, 1894.

Fig: 2.



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UNITED STATES PATENT OFFICE.

ZEPHYRIN LECAISNE, OF PARIS, FRANCE.

CIRCULAR-KNITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 525,661, dated September 4, 1894.

Application filed September 8, 1891. Serial No. 405,088. (No model.) Patented in France May 19, 1891, No. 213,542; in Spain March 14, 1892, No. 13,012; in Belgium April 30, 1892, No. 99,490; in England May 5, 1892, No. 8,539; in Italy June 4, 1892, LXII, 425, and in Austria-Hungary January 27, 1893, No. 43 and No. 66.

To all whom it may concern:

Be it known that I, ZEPHYRIN LECAISNE, manufacturer, a citizen of the Republic of France, at present residing at Paris, France, have invented new and useful Improvements in Circular-Knitting Machines, (for which I have obtained Letters Patent in France, No. 213,542, dated May 19, 1891; in Belgium, No. 99,490, dated April 30, 1892; in Spain, No. 13,012, dated March 14, 1892; in Italy, No. 425, Vol. LXII, dated June 4, 1892; in Great Britain, No. 8,539, dated May 5, 1892, and in Austria-Hungary, dated January 27, 1893, No. 43 and No. 66;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to circular knitting machines adapted for use in the manufacture of ribbed hosiery, and it consists in the construction and combination of parts hereinafter described and claimed.

In order to enable others skilled in the art to make, use, and construct my said invention, I will now describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional elevation of my improved knitting machine, taken on the line *x*—*y* of Fig. 2. Fig. 2 is a partial plan view showing how each weft thread is kept separate from the adjacent knitting thread and the proper distance between the two, there being in practice usually a set of cams for each set of threads, but the needles are merely shown conventionally and with only a part illustration of the action of the cams thereon.

Like letters of reference indicate corresponding parts on the drawings.

My new machine is constructed in such a manner that the weft thread *m*, which is required to be inserted after each course, is laid upon the preceding course at the time when the needles are at the end of their travel, that is to say, when they are at the bottom of the cam-race in their lowest position. While ascending to pick up the thread *n*, in forming a new course, the needles pass on each side of the weft thread, and when descending again to draw the loops, the said weft thread is covered thereby. To obtain this result the needle block *c* has the shape of an annulus, the cross section of which is a truncated cone, upon the two sides, or outer beveled faces of which slide the needles *a* and *b*. This annular block *c* is formed in two concentric parts, one of which is supported by the uprights *c'* of the machine frame, while the inner part is supported by a tray or disk *d* mounted on the pillar *l* at the center of the machine.

To allow the inner cam block *f* to rotate, the same is mounted upon anti-friction balls or rollers *e*, which travel in grooves formed in this block *f*, and upon the face of the disk or tray *d*. As the block rotates, the cams which it carries act upon the butt ends of the needles *b*, and cause them to take the threads. Upon the block *f* are fixed the plates carrying the thread bobbins, as well as the thread guides. The external cam block *g* acts in a similar manner to the block *f*, and forms courses on the right side of the fabric. This block carries on its under side a circular rack *h*, meshing with a pinion *i*, by which a rotary motion is imparted to the loom, and is connected to the block *f* by means of stirrups *j*, which, while connecting the two blocks *f* and *g*, in such a manner as to cause the block *f* to follow the block *g*, in its rotary motion, yet assists in holding the block *g* in a horizontal position.

The operation of my invention is as follows: The blocks *f* and *g*, being set in rotation by the pinion *i*, the needles engaged at their butt ends are subjected to the influence of the cams and ascend and descend to form meshes; when, during this motion, the needles have returned into the body of the loom the weft thread which is required to be inserted in the fabric is placed upon the course just formed. As the needles ascend to form a fresh course they pass on each side of the weft thread and the new course is formed above the same, and when the needles descend to draw the meshes, the weft thread is caught beneath the latter and the same operation takes place around the whole periphery of the loom.

It will be obvious that I may insert in the

fabric a weft of any desired thickness, according to the kind of fabric required.

What I claim is—

In a circular knitting machine, the combination of the annular stationary needle-block *c* composed of two concentric parts and having the form of a truncated cone in vertical cross-section, the needles *a*, *b* arranged on the opposite beveled faces of said block, the inner and outer ring-shaped cam-blocks *f* and *g* connected by a series of stirrups and each provided with a cam race engaging the butts of the needles, gearing for rotating the cam blocks, and thread guides for a knitting thread and a weft thread, substantially as shown and described.

ZEPHYRIN LECAISNE.

Witnesses:
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C. M. LAFONTAIN.