

J. W. Rist, Knitting Machine.

No. 82,554

Patented Sep. 29. 1868.

Fig. 1

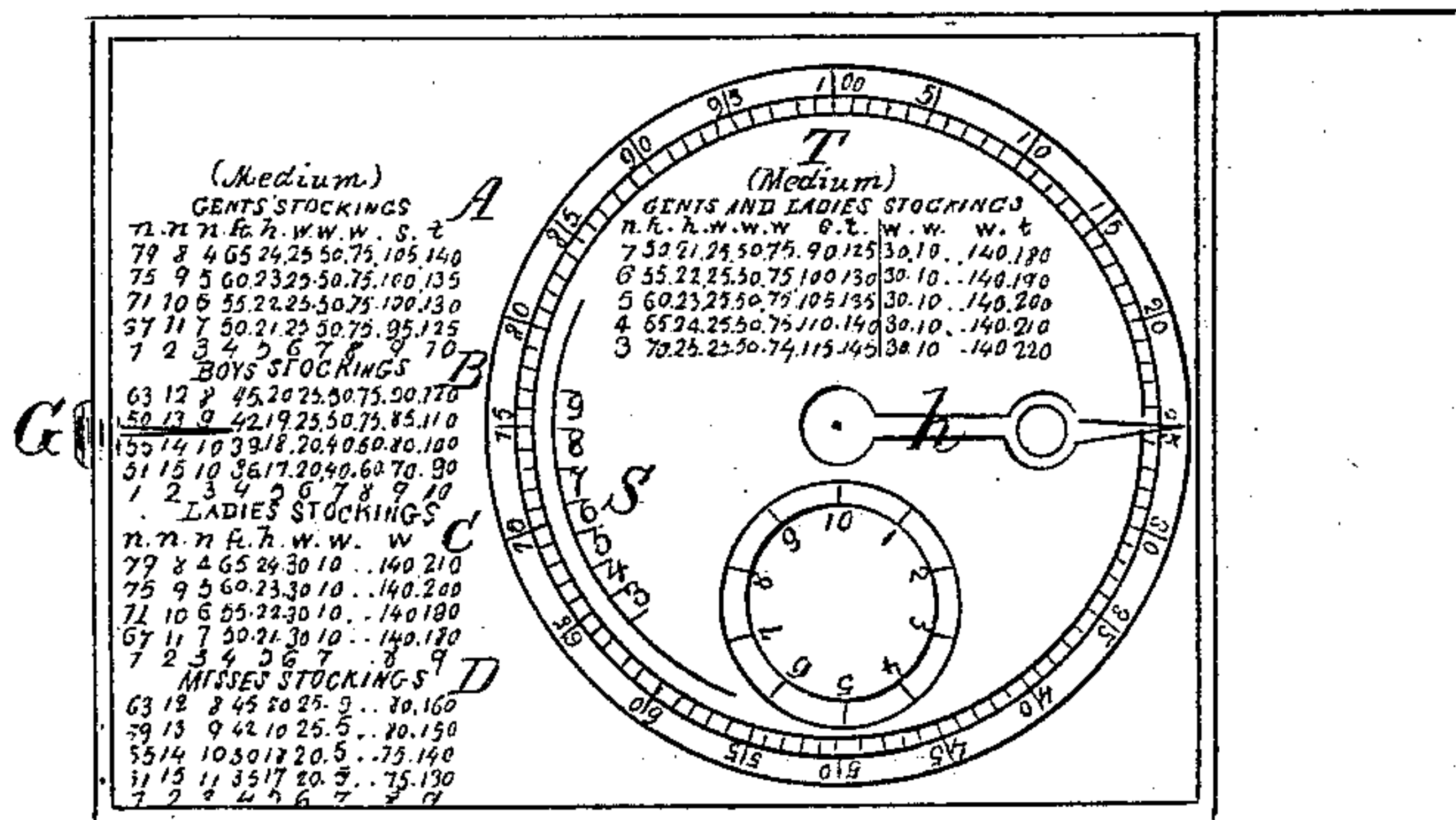


Fig. 2

n. n. n.	t. t.	ft. g.	w. h.	l. w.	l. w.
79, 8, 4, [33, 38]	64	20 (16)	24	140 (6)	200 (24)
75, 9, 5, [31, 30]	61	19 (15)	23, 133 (6)	198 (24)	
71, 10, 6, [29, 27]	58	18 (14)	22, 126 (6)	187 (24)	
67, 11, 7, [27, 24]	55	17 (13)	21 119 (6)	176 (24)	
1 2 3 4 5 6 7 8 9 10 11 12 13					

Fig. 3

n. n. n.	t. t.	ft. g.	w. h.	l. w.	l. w.
79, 8, 4, [33, 38]	64	20 (16)	24	140 (6)	200 (24)
75, 9, 5, [31, 30]	61	19 (15)	23, 133 (6)	198 (24)	
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1 2 3 4 5 6 7 8 9 10 11 12 13					

Witnesses

Wm. Loughborough
Frederick A. Hatch.

Inventor

J. W. Rist.

UNITED STATES PATENT OFFICE.

J. W. RIST, OF ROCHESTER, NEW YORK, ASSIGNOR TO HIMSELF AND IRA A. HEBBARD, OF SAME PLACE.

IMPROVEMENT IN INDICATORS FOR KNITTING-MACHINES.

Specification forming part of Letters Patent No. **82,554**, dated September 29, 1868; antedated September 16, 1868.

To all whom it may concern:

Be it known that I, J. W. RIST, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Size and Proportion Knitting-Tables; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a top or plan view of my count-register, with a sort of abstract of size and proportion tables applied. Fig. 2 is a portion of graduated scale or table, giving the proportions of stockings and socks. Fig. 3 is a section of an extended scale or table, having that shown in Fig. 2 for its base.

The nature of this invention consists in providing suitable proportion-tables or scales, whereby the operator on knitting-machines which are capable of widening or narrowing is guided in the production of an article of any desired size or proportion, the number of rounds necessary to knit or produce the various sections of a stocking, for instance, being indicated by the figures in the columns representing those portions or sections.

It also consists in the adaptation or application of these tables to the count-register.

To enable others to work my invention, I will describe it more in detail.

The table shown in Fig. 2 is produced by considering small articles in connection with those of large proportions, and by calculating a common difference between them throughout the several sections of the articles. This section of table extends, when fully carried out, from very small to the largest article demanded. It admits of indefinite extension, limited only by the capacity of the machine.

The table is calculated for a Lamb knitting-machine, in which there are one hundred and twelve needles, distributed in two parallel rows, and the knitting is always, when tubular goods are being made, carried on on both rows alternately, and there is generally one more or one less needle employed in the front series or rows of needles than in the back.

In the calculation, the figures in the first column on the left indicate the number of needles or stitches employed in both rows for

the foot, and after widening the toe, there being one more needle in action on the front row than on the back. The figures in the second column indicate the number of needles not in use at each end of the front row of needles. Some machines have ninety-six needles instead of one hundred and twelve, and in such machines the third column would indicate the number of needles not in use at each end of the front row; in the fourth, the number of rounds necessary for the toe by one formula of widenings, and in the fifth by a different one; in the sixth, the number of rounds in the foot between the toe and the gore; in the seventh, the number while forming the gore; in the eighth, the number of widenings for the gore; in the ninth, the number of rounds necessary for the heel; in the tenth, the number necessary in the legs of gents' stockings; in the eleventh, the number of widenings while forming the leg; in the twelfth and thirteenth, the number of rounds and widenings in knitting the legs of ladies' stockings.

The table in Fig. 3 is a section of a scale based upon that shown in Fig. 2, and similarly extended, but better adapted to keeping the count, being rated by fives and tens. The points of widening are made as uniform as is consistent with good proportions. The common difference is preserved as nearly as may be and avoid fractions. This table, with additions and diminutions to or from foot and leg, for short, medium, and long, affords several hundred varieties. The figures in the first left-hand column here indicate the number of needles or stitches used on the foot after forming the toe; in the second, the number of rounds in the body of the foot; in the third, the number for the heel; in the fourth, the number to the first widening in the leg of gents' socks; in the fifth, to the second; in the sixth, to the third; in the seventh, the number before commencing to seam, or, if to have a white top, to change the yarn or thread. The letter *s* over this column indicates that the seaming is to be commenced here; in the eighth column, the total number of rounds necessary for the leg of gents' socks; in the ninth, the number of rounds to the first widening on leg of lady's stocking; in the tenth,

the number of rounds to each widening until one hundred and forty rounds are made; in the eleventh, the last point of widening on ladies' stockings; and in the twelfth, the total number of rounds in the leg of lady's stocking.

The tables A, B, C, and D in Fig. 1 are condensed for use in connection with count-registers, or any contrivance that will keep the count of the number of rounds performed by the machine. I place them under the glass and near the dial. They are printed on cards and placed one upon another, so that any one may be placed at the top. The pointer or order-guide G is set to indicate the number or size desired to be produced, which keeps or preserves the registry of that part while the work is being performed. Half-sizes may be knit by these tables A, B, C, and D by bringing up two more needles on the back side of the machine and knitting two and a half more rounds on the body of the foot and in the leg of socks, and five more on the leg of ladies' stockings. The pointer G is made to indicate that a half-size is being knit by placing it centrally over the line or number knit upon, instead of above the line, as in the case of knitting whole sizes.

Table T, Fig. 1, applies only to a machine having ninety-six needles, and gives the number of needles not in use at each end of the machine, in front, after widening for the toe.

These various tables may be printed on cards and placed under the glass of the dial, as shown at A, B, C, and D. The card containing the table to be knit from is placed at the top of the pile.

The inestimable advantages resulting from the employment of these tables will appear, when it is understood that the machines which narrow and widen do not admit of measurements of the work; besides, if they did, the nature of the knit goods is such that the formula for the proportions of an article cannot be ascertained by measurement, and without a table or formula all is guess-work. It is necessary that these articles should have an exact mate, and they can only be produced by using the same number of stitches and giving the same number of rounds in the different parts of each. Therefore, in conducting the knitting on these machines—*i. e.*, which widen and narrow—without my proportion-tables the memory must be severely taxed, or a detailed account of an article already made must be written out, so that a duplicate or fellow might be produced.

Many persons wish to use the machines who have very little idea of correct proportions or forms, or who, if they knew the forms required, would not know the necessary number of rounds and stitches to produce the result.

It is customary in manufacturing establishments to give out knitting to various parties, and by means of these tables the trouble of giving instructions how the work is to be done—or, which is usually practiced, to give the length of foot, leg, &c., in inches, leaving the operator to conduct a series of tedious and perplexing experiments in order to ascertain how to do the work—is wholly avoided, the order being given simply: "Knit so many pairs of such a number of a certain kind of stockings or socks on a machine of a certain gage." By the very convenient arrangement of the tables in the count-register under the order-hand or gage G, as seen in Fig. 1, the guide is set just above the row of figures indicating the variety which is required to be made, and the order is thereby registered, at the same time giving full directions as to sizes and proportions.

By the application of the tables to the knitting or count register the guide or order-hand G may be made to indicate what is to be knit, the size and proportion, whether ladies', gents', boys', or misses'. The unit-hand *h* of the register is put to the figure in the scale S within the dial, Fig. 1, representing the number or size of the article to be knit, so that when the toe is widened out the hand *h* will stand at the starting-point, 100, and the work may be carried forward by the operator with the greatest possible accuracy and dispatch, and with the slightest mental effort.

In fact, so perfect is the registry of the work in its various stages kept by the machine that any number of operators may succeed each other on the same article, each knitting but a few rounds, without either having instructions from his predecessor, and the work leave the machine as perfect as though a single individual had wrought it.

Of course, these tables may be so modified and arranged as to be applicable to any and every kind, variety, and style of knitted goods.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the box or plate of a knitting-machine indicator and its indicating-hand with a proportion-table, substantially as described, to indicate the number of rounds to be knit and the number of needles to be employed to form a knitted article of any desired form, size, and proportion.

2. In combination with the above, the adjustable pointer G, as and for the purposes set forth.

J. W. RIST.

Witnesses:

WM. S. LOUGHBOROUGH,
FRED. A. HATCH.