

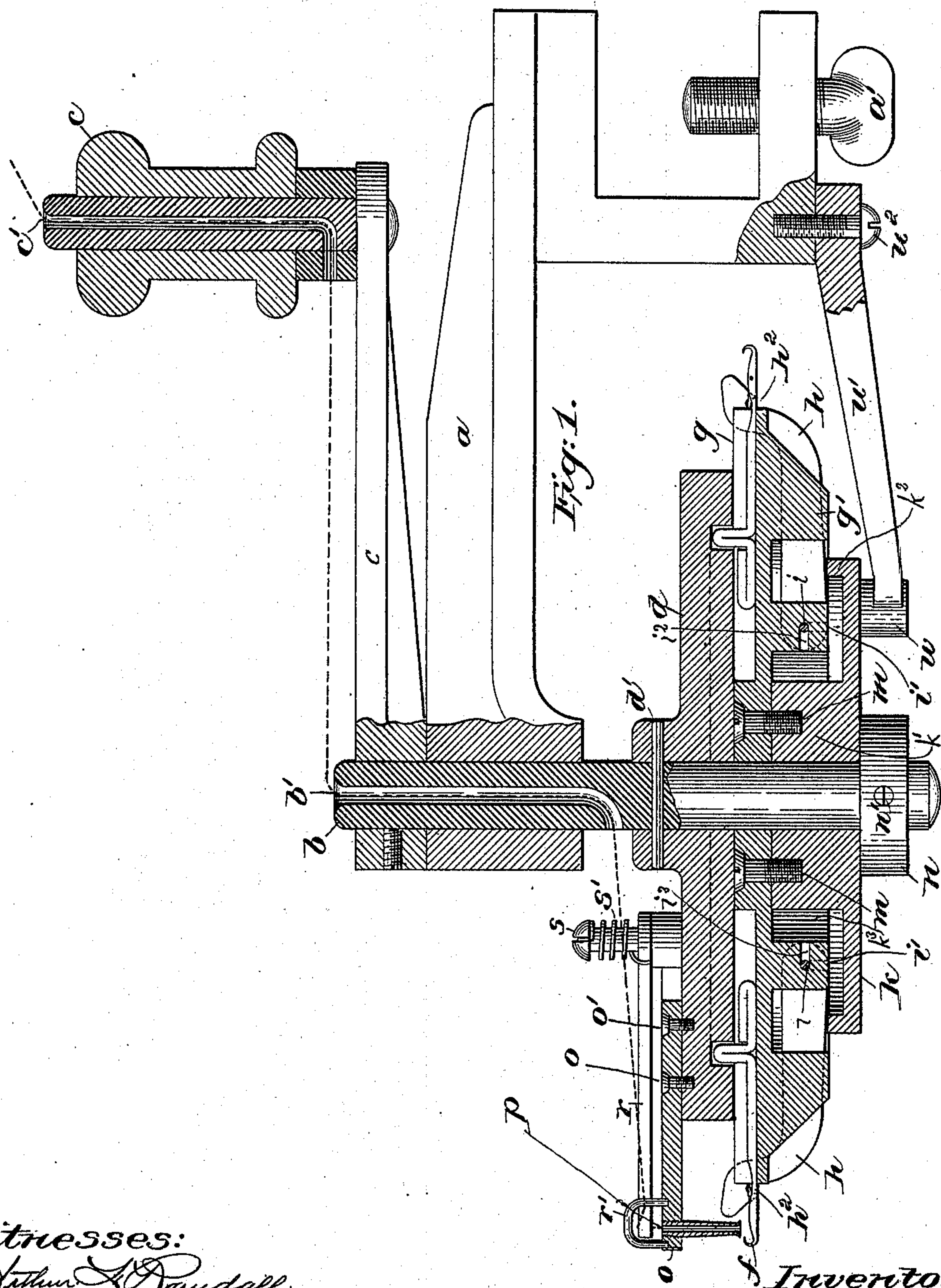
(No Model.)

2 Sheets—Sheet 1.

C. J. APPLETON.
CIRCULAR HAND KNITTING MACHINE.

No. 574,053.

Patented Dec. 29, 1896.



Witnesses:
Arthur A. Randall,
Charles H. Drew

Inventor:
Charles James Appleton

(No Model.)

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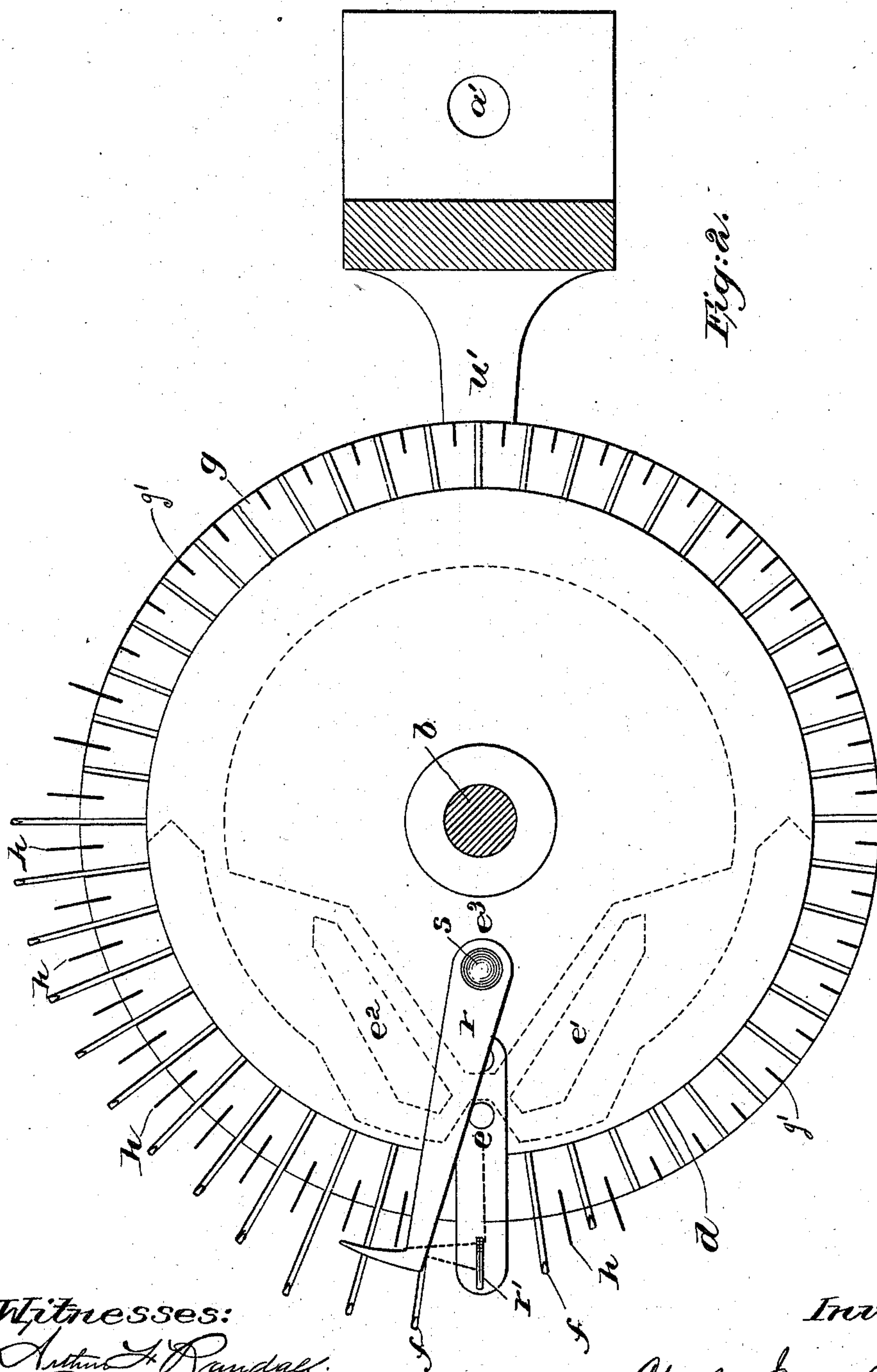


Fig. 2.

Witnesses:

Arthur S. Randall.
Chris. Andrew.

Inventor.

Charles James Appleton

UNITED STATES PATENT OFFICE.

CHARLES JAMES APPLETON, OF LONG ISLAND CITY, NEW YORK, ASSIGNOR
TO ORISON TWOMBLY, OF LACONIA, NEW HAMPSHIRE.

CIRCULAR HAND KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 574,053, dated December 29, 1896.

Application filed September 25, 1895. Serial No. 563,600. (No model.)

To all whom it may concern:

Be it known that I, CHARLES JAMES APPLETON, of Long Island City, Queens county, State of New York, have invented certain new Improvements in Circular Hand Knitting-Machines, of which the following is a specification.

My invention relates to the class of circular-knitting machines known as "hand" or "family" knitting-machines; and it has for its object the provision of a machine simple in construction and equipped with stitch or loop holddowns, novel in their construction and arrangement, all as I will now proceed to describe and claim.

Reference is to be had to the annexed drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 is a vertical central sectional view of the machine complete. Fig. 2 is a plan view of my improved machine, the parts above the dials being shown as cut off.

In the drawings, *a* designates an arm connected with a clamp which is adapted to be secured to the edge of a table, bench, or the like by means of a thumb-screw *a'*.

b is a dial-shaft, which is supported vertically in the outer end of the arm *a*, said shaft being provided on its upper end with a crank or handle *c*, by which it may be turned. A hole *c'*, formed through the vertical part and side of the handle, and a hole *b'*, made in the upper part and side of the shaft, afford a means for guiding and properly conducting the yarn from its source to the yarn-guide and needles.

d is the cam-dial, secured to the dial-shaft by a pin *d'*, and *e e' e² e³* are the cams, secured to the under face of the cam-dial, said cams being constructed and arranged in a way well known to knitting artisans to act upon the heels of the needles and effect their reciprocation in the operation of knitting.

g is the needle-dial, which is arranged loosely, so as to turn on the lower end of the dial-shaft, and is provided in its upper face with radial grooves for the reception and operation of the needles. The under side of the

needle-dial is likewise grooved radially for the reception of the stitch or loop holddowns *h*, which are vertically notched or slotted at their inner or rear ends, as at *i'*, for the reception of a wire ring *i*, which is sprung into a groove *i²*, formed in the wall of an annular chamber made in the center of the needle-dial, all as is clearly shown in Fig. 2.

The forward or outer ends of the holddowns are notched or made into hook form, so as to engage the loops or stitches and hold them back as the needles are pushed outward or forward, the breast of the holddowns below their hooks serving to cast or knock off the old loops or stitches as the needles are drawn back with their new stitches through the latter.

k designates a plate provided at its center with a boss or hub *k'*, which extends into the annular chamber *k³*, formed in the lower face of the needle-dial, and is secured to the latter by means of screws *m*, the dial-shaft passing through the hub *k'* and being provided on its lower end with a collar *n*, keyed in place by a screw *n'*, so as to afford a bearing vertically for the dials and plate *k*. The latter part has an upwardly-extended flange *k²* at its edge, which affords one of the vertical supports for the holddowns *h*.

o is the yarn-guide, consisting of a radially-extended arm secured to the upper face of the cam-dial and having a short vertically-extended tube and guiding-loop *r'* at its outer end.

r is the take-up, which swings on the stud *s*, being actuated by the spring *s'*, connected with the latter and the take-up. The yarn passes through the loop *r'*, then through an eye in the free end of the take-up, and then back again through the said loop and down through the tube on the end of the yarn-guide.

w' is an arm fastened at its outer end to the clamp and extending inward, so as to engage a stud *w* on the lower face of the plate *k* to hold the needle-dial against rotating, and yet, if need be, allow the knit material to be drawn down between the said arm and stud.

The holddowns and stitch-knocking-over devices may be secured in place when the plate *k* is removed by holding their shanks in a position at a right angle with that in

which they are represented in Fig. 1, with the hook h^2 pointing downward. In this position the slot i' in the heel of each holddown will register or match with the slot i^2 in the needle-dial, so that the ring i may be easily sprung into place, after which the holddowns may be turned or moved up to horizontal position and the plate k secured in place.

In the knitting of heel-and-toe work the needles may by hand be drawn forward or outward, so as to cause their heels to escape the stitch or knitting cams on the cam-dial, and so be rendered inactive while still holding their stitches, or be moved or pushed back, so as that their heels may engage the stitch-cams to bring the needles into action again.

The take-up operates simply to take up the slack that may occur in the yarn and effect a regular tension upon the latter in feeding it to the needles.

It will be noted that the organization of the machine is such as to adapt it in a high degree to hand or so-called "family" use. There is nothing in the organization of the machine that can readily get out of order, or if by mishap it should become disarranged it can be easily and quickly adjusted and rearranged without the employment of more than ordinary intelligence.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. A circular hand knitting-machine embodying in its construction a cam-dial equipped with needle-operating cams, a needle-dial provided in its upper face with reciprocatory needles and in its lower face with holddowns, a plate to assist in supporting the latter devices arranged below the needle-dial and connected to the latter, a dial-shaft ex-

tending through the said dials and plate and connected with the cam-dial to rotate the latter, a crank connected with the upper end of the dial-shaft, the said dial-shaft and crank being provided with yarn-guiding holes as described, a yarn-guide, and means loosely connected with the needle-dial to hold the same against rotation by the dial-shaft.

2. The combination, with the needle-dial having an annular chamber formed in its center and provided with a slot or groove in the wall of said chamber, needles operatively arranged in the upper face of the said dial, and needle-operating means, of loop or stitch holddown devices arranged in the lower face of the needle-dial, the said holddowns being provided in their heels with notches or slots adapted to match the slot or groove formed in the wall of the annular chamber of the needle-dial, a ring sprung into the said slots or notches, and a plate below the needle-dial to assist in supporting the holddowns.

3. The circular hand knitting-machine constructed, arranged, and operating substantially as herein shown and described, and employing in its construction the following-enumerated elements: the cam-dial and its needle-operating cams; the needle-dial; needles in the upper face of the needle-dial and holddowns in the lower face thereof; the plate k provided with the stud w ; the dial-shaft, provided with the yarn-guiding hole b' ; the crank, provided with the yarn-guiding hole c' ; the spring-actuated take-up r ; the yarn-guide provided with the loop r' ; a table-clamp; and an arm u' secured at one end to the clamp and engaging the said stud w at the other end to prevent the said needle-dial from turning.

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Witnesses:

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