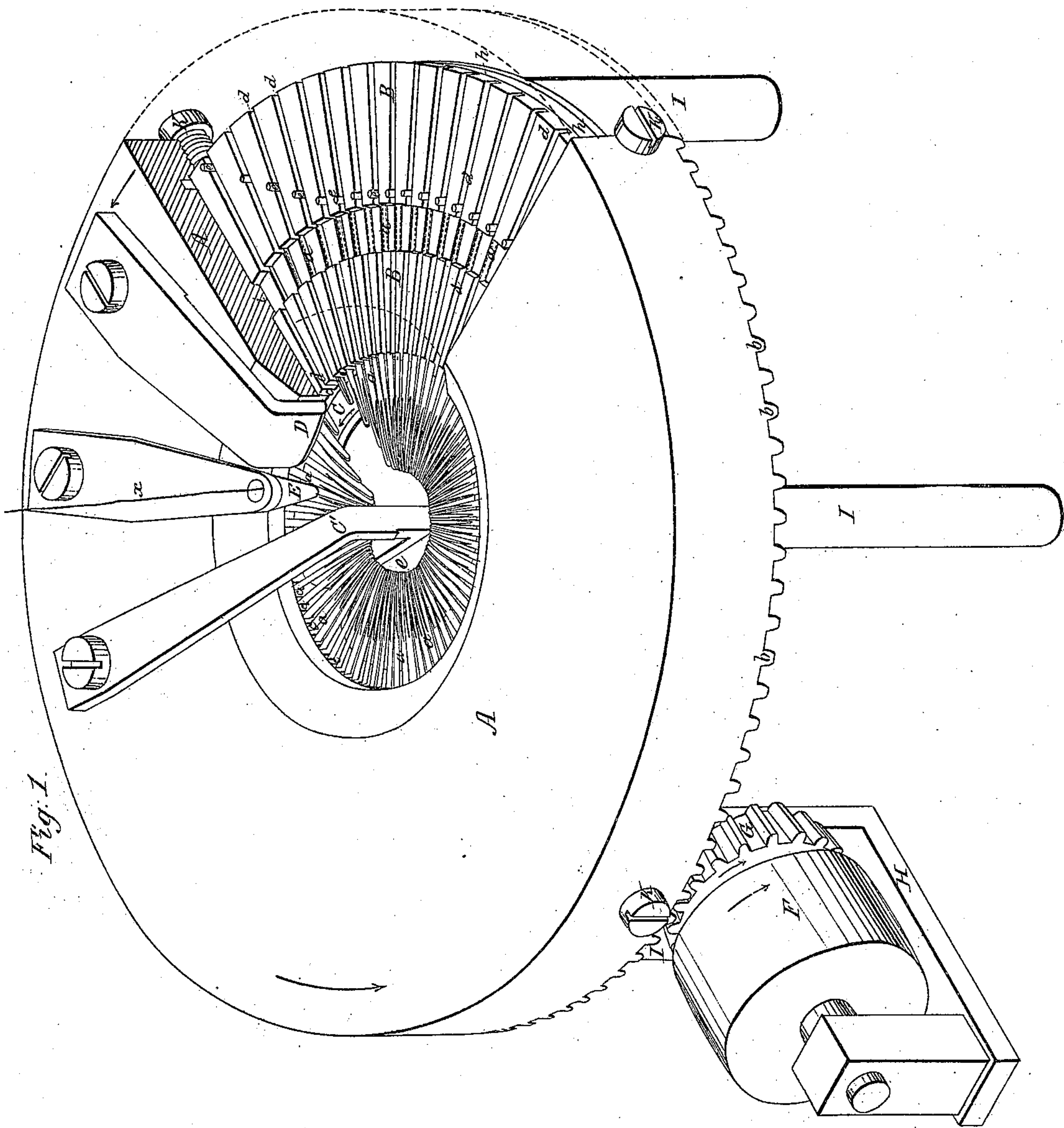


A. J. & D. Goffe.
Circular Knitting Mach.

No 15,484.

Patented Aug 5, 1856.



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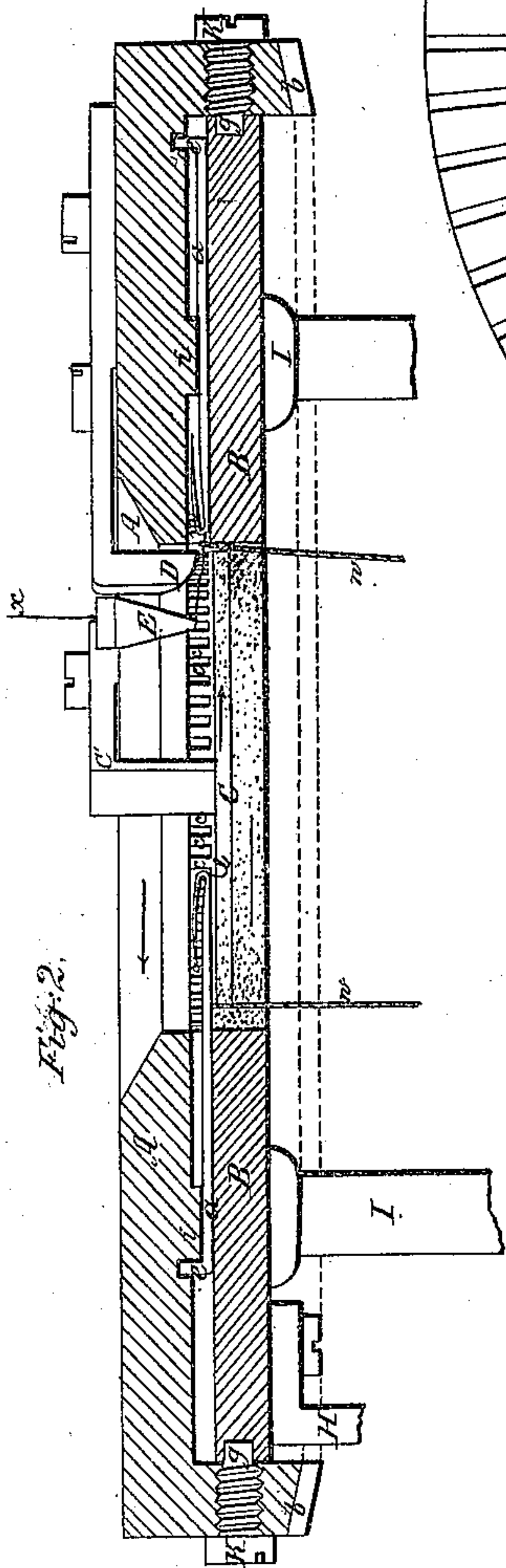


Fig. 3.

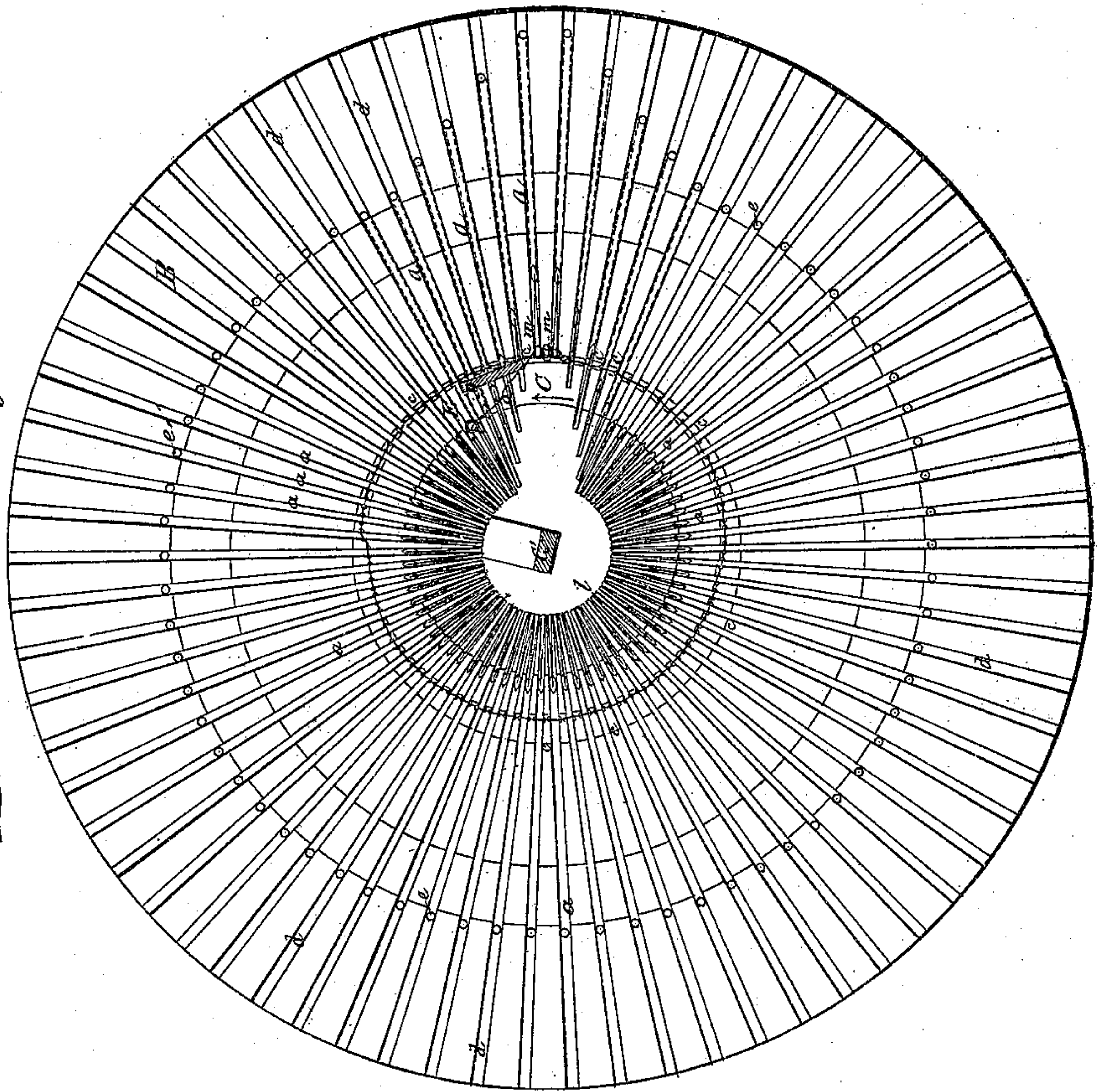
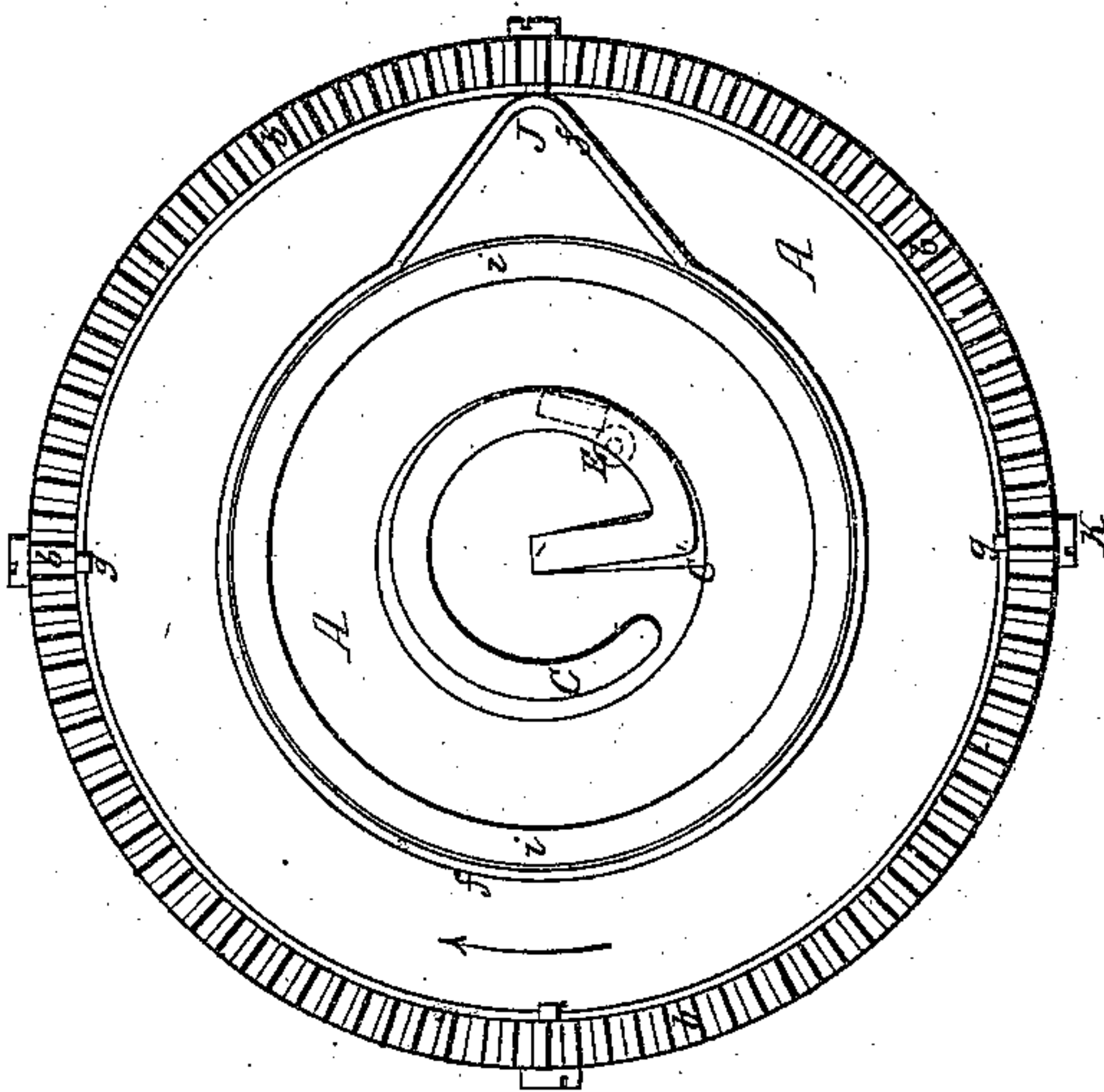


Fig. 4.



UNITED STATES PATENT OFFICE.

AUGUSTUS J. GOFFE AND DEMUS GOFFE, OF COHOES, NEW YORK.

KNITTING-MACHINE.

Specification of Letters Patent No. 15,484, dated August 5, 1856.

To all whom it may concern:

Be it known that we, AUGUSTUS J. GOFFE and DEMUS GOFFE, each of Cohoes, in the county of Albany and State of New York, have jointly invented an Improved Knitting-Machine for Making Plain Tubular Work; and we do hereby declare that the following is a full, clear and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is an isometrical projection of our improved machine; one quarter of the revolving plate which supports the yarn carrier and presser being removed to show a mode of holding and sliding the common hooked needles used, which needles are arranged in an endless stationary series in a circular plane, with their barbed ends pointing inward: Fig. 2 is a central vertical section; Fig. 3 is a plan of the stationary series of sliding needles; and Fig. 4 is a diminished plan of the under-side of the revolving cam-plate which slides the needles and supports the yarn carrier and presser.

The same letters refer to like parts in all the figures; and the directions of motion of the revolving parts are indicated by the arrows thereon.

The construction and operation of our improved machine is as follows viz: B is a circular, stationary bed-plate, supported by posts I, I, or in some other convenient manner, and having a circular central opening to allow the knit fabric, *w*, to pass through. Radial grooves *d, d*, are cut in the upper face of this plate, at equal distances apart, from all around the central opening to the outer circumference of the plate. In these grooves the common hooked needles *a, a*, slide endwise; the barbs of the needles being turned upward, as shown in the drawings. The grooves *d, d*, are cut deeper than the diameter of the body of a needle, so that the bent end *e*, of the needles shall keep the needles from turning sidewise, and also in order to conveniently make loop-forming projections *c, c*, to extend all around the central opening in the plate B from below and between the needles to above their barbs. A is a plate-ring which is kept in place and made to revolve concentrically with and upon the stationary grooved plate B, by any suitable means; as by having a flange extend down from the outer edge of

the plate A close around the edge of the plate, B, and passing pins *g, g*, from this flange to within the circular groove *h*, in the edge of the plate B; and by forming bevel teeth *b b* on the lower edge of the flange, to gear into the bevel pinion G, on the shaft of the driving pulley F.

A broad circular groove is turned in the upper face of the plate B at about the middle of the radial grooves *d, d*, down to the upper side of the bodies of the needles, to admit the ring *i* which projects on the under side of the plate A, to keep the needles in place in their grooves while knitting. The bent butt ends, *e, e*, of the needles extend above the face of the plate B, into an endless cam-groove, *f*, formed in the under side of the plate, A, outside the ring, *i*, so that as the plate A revolves the needles are successively slid endwise, inward and outward, within the grooves *d, d*. The needles are of such length, and the cam-groove *f* is of such form, and in such position, that when the needles are the farthest inward the points of the barbs of the needles are about the length of a needle-barb inside the circle of the loop-forming stops *c, c*; and also so that when the needles are the farthest outward, the barbed ends, *l*, or hooks of the needles are just outside of the inner face of the said loop-formers *c, c*, as shown at *m*.

E is a common tubular yarn-carrier, fastened to and traveling with the revolving plate A. This yarn-carrier is arranged in such position over the needles that the point from which the yarn issues is carried close to the bodies of the needles—lower than and a little outside the points of their barbs, when the needles are farthest inward. This yarn carrier is also so arranged in respect to the projecting part (at J) of the cam groove *f*, and this projecting part is of such form that the needles are slid outward just after the yarn-carrier passes the needles, and that the yarn *x*—seen in red lines—as it extends from the carrier to within the hook of the needle last drawn outside the circle of the stops *c, c*, is under the barbs of those needles which are being slid outward.

D is a fixed presser fastened to the revolving plate A, and arranged so as to travel close over the needles and hold down their barbs as they slide outward at the time when the yarn is under the barbs, just before and during the period that the ends of the barbs

are passing the old loops on the needles. C is a cam, ring, or disk, arranged just under the needles, inside of the web, and fastened by the arm C' to the revolving plate

5 A. This part, C, is arranged to keep the web pressed out close to the ring of stops *c, c*, in order to have the old loops always in the same position on the needles at the time when their barbs are pressed; and also

10 to keep the old loops the proper distance outside the points of the barbs at the time the yarn-carrier passes. If the part C is a complete circular ring nearly as large in diameter as the ring of stops *c, c*, the part

15 C may be stationary and suspended from a fixed support, but we generally prefer the arrangement shown in the drawings. The bobbin from which the yarn, *x*, is taken may be placed on the revolving plate A.

20 With the yarn, *x*, of the bobbin formed into a series of loops on the needles, and with the previously knit web extending from these loops to a suitable stationary take-up mechanism; on turning the ma-

25 chine, the operation is as follows, viz:—The yarn-carrier, E, first draws the yarn just in front but below the points of the barbs when the needles are farthest inward and when the web is held outward by the guide C;

30 and then the cam groove, *f*, successively draws out the needles so that the barbs pass over the yarn. Next, the barbs are pressed in succession by sliding under the traveling presser, D; and at the same time

35 the guide C keeps the web against the ring of stops *c, c*. Then, as the needles are drawn farther outward, the old loops pass over the sunk barbs, and are "cast off" when the ends of the needles arrive at the

40 stops *c, c*. As the ends at the needles pass outward beyond the face of the stops *c, c*, the yarn from the carrier draws around these stops; and the needles are made to slide just so far outward that exactly

45 enough yarn is left drawn around the stops for the new loops. Two or more needles are outside of the stops *c, c*, at the same time, to always insure the taking up of enough yarn for the new loops. After this, the

50 needles are slid inward over the old cast off loops to receive the yarn anew.

Instead of sliding the naked needles in

the grooved plate, by the cam groove *f* in the revolving plate, the needles may be held and made to slide endwise so as to operate 55 with the traveling yarn carrier and presser and stationary ring of stops *c, c*, as described by any suitable means which may best suit the manufacturer; and that cast-off ring of stops *c, c*, may likewise be produced in any 60 suitable manner.

We are aware that machines have been made which have a complete conveying series of "latch needles" arranged in a circular plane to slide endwise and draw the 65 yarn from a yarn carrier around stops arranged between the needles to take up enough yarn for the new loops: and we know that machines are in use which have a complete converging stationary series of 70 fixed hooked needles arranged in a plane; but our invention as herein claimed is not embraced by such machines.

By our particular mode of employing the converging series of hooked needles arranged 75 in a circular plane, while we avoid the use of either "latch needles" or "bur sinkers" we yet make a machine which will produce a finer gage of web than can be made in any machine known to us having latch needles 80 arranged to knit tubular work; and we believe that more threads of yarn can be separately fed at the same time to our machine than can be done on any machine using bur sinkers with hooked needles in making a 85 tubular web of the same size as that made by our machine.

What we claim as our invention and desire to secure by Letters Patent is—

The employment of a stationary, circular, 90 converging series of hooked needles, arranged in a plane and made to slide in respect to the revolving or traveling yarn carrier and presser and also in regard to the stationary ring of stops *c, c*, as described, in 95 connection with the inside web guide C, or its equivalent as set fourth, for knitting plain tubular work.

AUGUSTUS J. GOFFE.
DEMUS GOFFE.

Witnesses:

A. F. PARK,
JOHN MORAN.