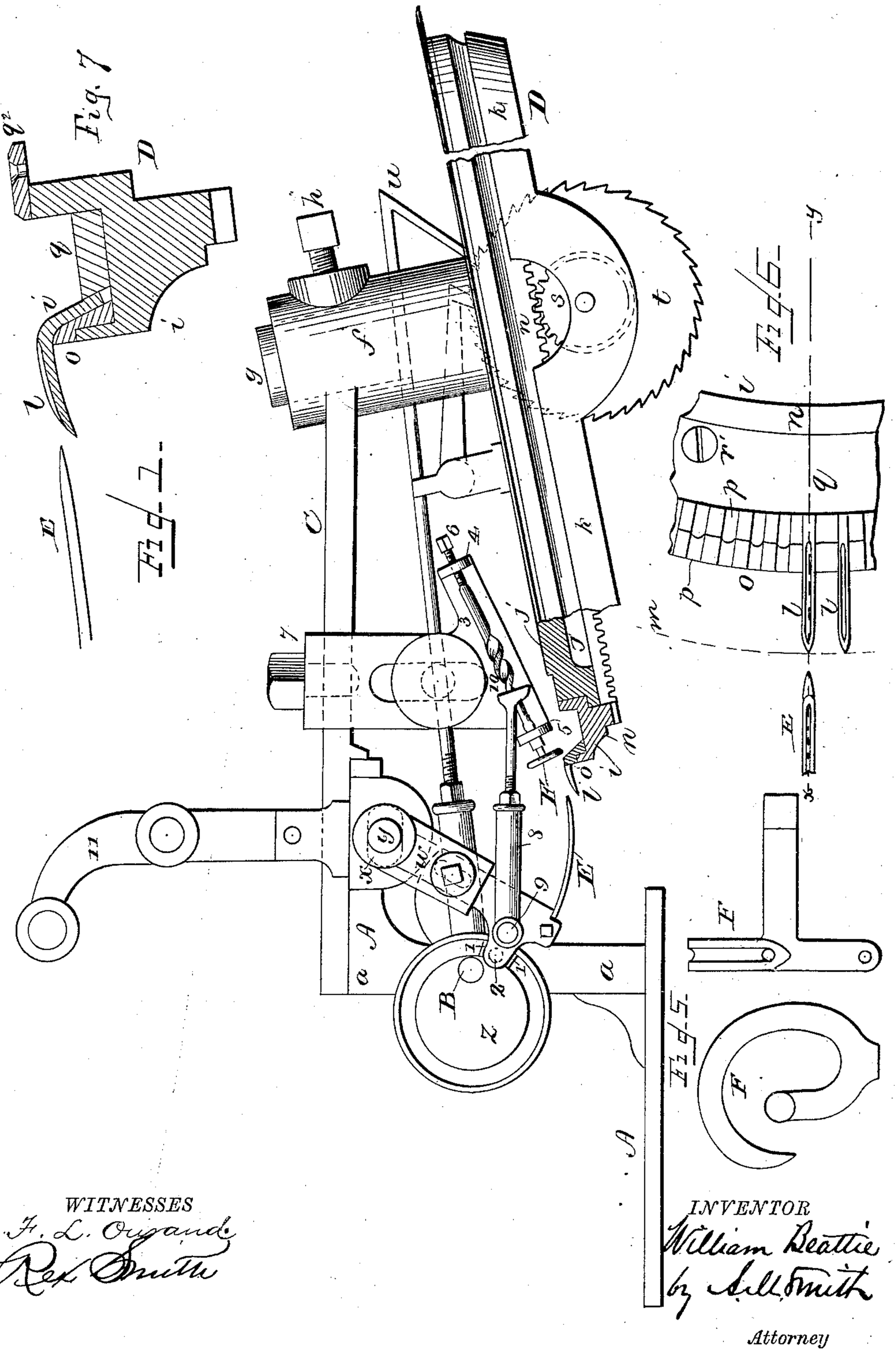
(No Model.) 2 Sheets—Sheet 1.

W. BEATTIE.

MACHINE FOR UNITING KNIT FABRICS.

No. 354,374. Patented Dec. 14, 1886.



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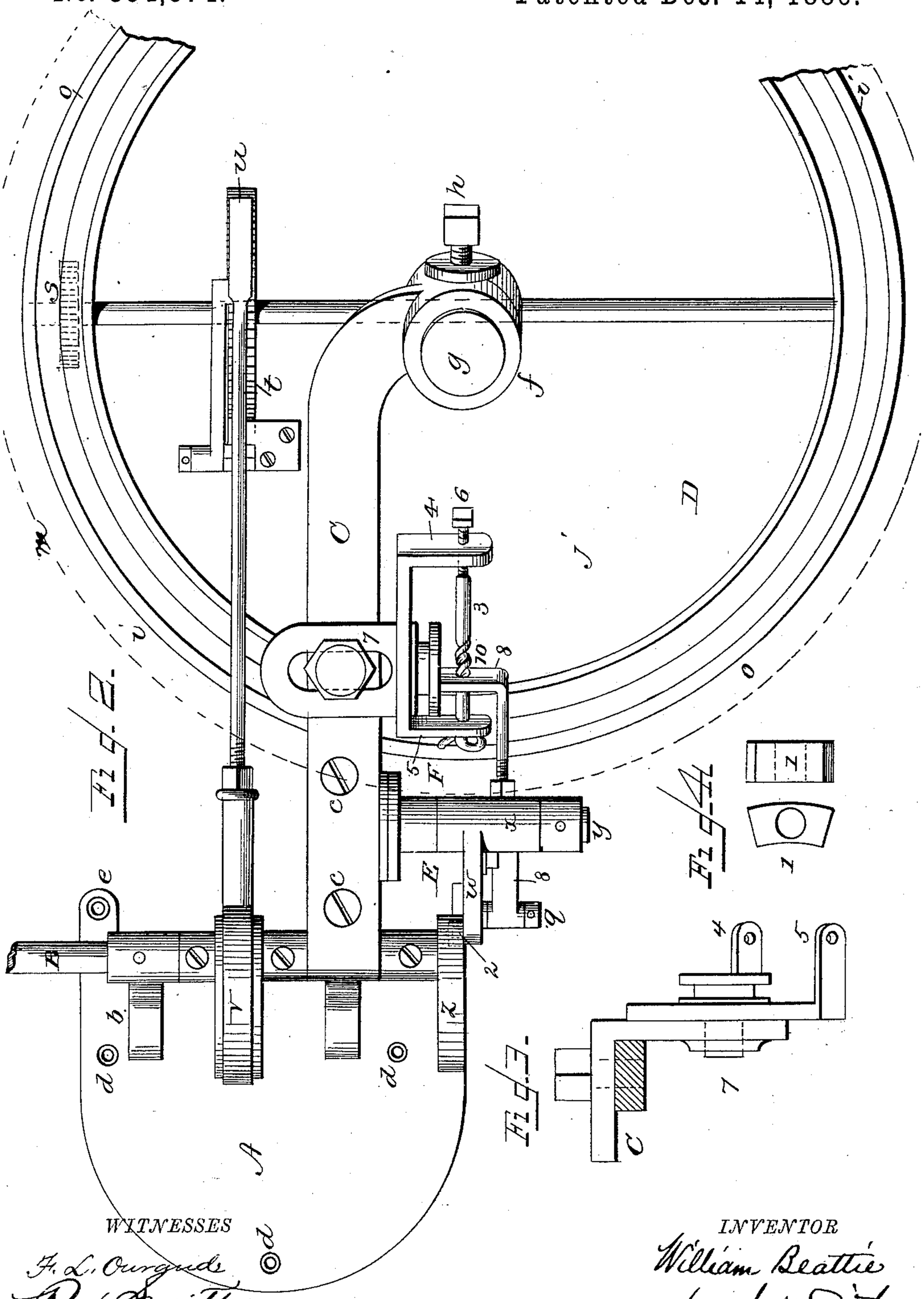

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM BEATTIE, OF COHOES, NEW YORK.

MACHINE FOR UNITING KNIT FABRICS.

SPECIFICATION forming part of Letters Patent No. 354,374, dated December 14, 1886.

Application filed January 19, 1886. Serial No. 189,082. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BEATTIE, of Cohoes, county of Albany, and State of New York, have invented a new and useful Improvement in Machines for Uniting Knit Fabrics, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to certain improvements in turning-off machines of the class described in Letters Patent No. 228,802, dated June 15, 1880, and used in sewing together the two selvage or looped edges of knitted or looped fabrics.

The object of my invention is to provide a machine for uniting knit fabrics in which a circular needle and a thread and a straight or curved needle and another thread, and means for operating the same, are employed to make the seam by which the fabrics are united.

My invention consists of a suitable supporting frame or stand carrying the driving-axle, and having a projecting arm for supporting the cylinder and its attachments, and means for revolving the cylinder and for adjusting it or retaining it in position, in combination with a straight or curved needle and a circular needle, and means for operating the needles and supplying them with thread.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a machine embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is an elevation of the adjustable holder or hanger for the circular needle-spindle. Fig. 4 is a side and inner face view of the cam-block, enlarged. Fig. 5 gives two views of the circular needle, also enlarged. Fig. 6 is a plan view of a portion of the ring proper, on an enlarged scale, showing the grooves for holding the points, and also two points in position with the straight or curved needle opposite one of them. Fig. 7 is a vertical section on the line *x y* of Fig. 6.

A is the supporting frame or stand, which may be of any suitable form for carrying the driving-axle B and the projecting arm C. In the drawings, the axle B revolves in suitable bearings in the two upright columns *a* and *b*. The arm C is attached to the column *a* by screws *c c*. By means of screws through the screw-holes *d* the stand A may be secured to the top of a bench or table near its edge in such a position that the cylinder will project laterally therefrom.

e is a lug for the shipper. The shipping devices and driving-pulley are not shown in the drawings. The projecting end of the driving-axle B carries the driving-pulley. The outer or overhanging end of the arm C is provided with a hub, *f*, bored to receive the cylinder-axle *g*, which is secured in its proper position by the set-screw *h*.

The ring D in the drawings consists of the ring proper, *i*, (shown in section in Figs. 1 and 7,) a top ring, q^2, (shown in section in Fig. 7,) the ring-head *j*, the ring-axle *g*, and the stationary ring *k*; but the ring D may be of any suitable form or construction for carrying the points *l* and bringing them successively into their proper position between the needles. The points *l* are shown in Figs. 1, 6, and 7, but are omitted in Fig. 2. The dotted circle *m* in Fig. 2 is the circle of their outer extremities. The ring proper, *i*, consists of the radially-arranged points *l*, carried by a ring, *o*, preferably of brass, having grooves *p*, into which the points *l* tightly fit, and of the circular ring *n* and section-plates *q*. The section-plates *q*, by pressing against the shanks of points *l*, help hold them in position, and are secured by screws *r* to the ring *n*.

The ring *n* is provided on its lower side with teeth forming a circular rack driven by a pinion, *s*. The pinion *s* is attached to the axle of the ratchet-wheel *t*, which is moved by the pawl *u* and the eccentric *v*.

E is the straight or curved needle. It will be straight if the motion given to it is in a straight line back and forth; but when its motion is vibratory or in an arc of a circle, as indicated in the drawings, it will be correspondingly curved.

F is the circular needle. The operation of the needles E and F in forming a stitch with two threads and making a seam is too well known to need a description here. In my invention the point of the needle E moves in toward the circular needle along the grooves shown in the upper faces of the points *l*, passing through the loops of the fabrics, which are hung on the points close to the ring *o* until the loop of the thread carried by the needle E is

engaged by the circular needle to form the stitch in the manner usual with similar needles. In the form of my invention shown in the drawings, the needle E is curved, and is carried and moved by the adjustable vibrating needle-arm *w*, swinging from the hub *x* on the stud *y*, projecting from frame A. The needle-arm *w* receives its motion from the eccentric cam *z* on the extremity of axle B through the cam-block 1 and a wrist-pin projecting from lug 2 of the needle-arm. The shank of the circular needle F is inserted in the usual manner in the end of spindle 3. Spindle 3 is carried by lugs 4 and 5 and screw 6 of the adjustable hanger 7, which may be attached to the arm C, as shown in the drawings, or may be so modified as to be attached to the cylinder-head *j*.

It will be seen by an inspection of the drawings that the position of either needle may be easily adjusted as required. The required motion of the circular needle is obtained by means of the adjustable slotted rod 8, driven by the pin 9 in the needle-arm. The slot or fork 10 of rod 8, moving longitudinally along the spindle 3, causes the spindle to revolve by means of the double-threaded screw, which forms the middle portion of that spindle.

11 is a removable arm, suitable for carrying the necessary devices for guiding or giving tension to the threads.

It will be apparent that as the driving-shaft B revolves its eccentric will cause the pawl *u* to engage the teeth of the wheel *t*, and, through the medium of pinion *s* and toothed ring *n*, rotate the ring proper, so as to carry its needles *l* successively past the needle E. At the same time the grooved disk Z on the shaft B will oscillate the needle-arm *w*, carrying needle E toward and away from the needle *l*, and also causing the arm 8 to travel back and forth upon spindle 3 of the circular needle. In this manner the loops are formed and threaded as required in uniting the edges of a knit fabric.

The adjustment of the ring D relative to the arm C through the medium of the hub *f* and axle *g* is for the purpose of readily detaching the ring and its attachments from the arm C, and for raising and lowering said ring so that its points *l* shall lie in proper operative position relative to the needle E. The peculiar manner of connecting the points *l* to the ring *n* adapts said points to be readily removed and replaced or adjusted to compensate for wear. The purpose of rendering the arm *w* adjustable is to insure the proper position of the needle E relative to the points *l* in addition to the adjustment secured by axle *g* and hub *f*, before explained, and the slotted arm 8 is rendered adjustable in order to regulate the throw of the arm *w* to accord with its extension or contraction, and also with the position of the ring D. The section *k* of ring D serves merely as a guard for protecting the ring *n* and for insuring its proper movement; but,

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A machine for uniting knit fabrics, consisting of a suitable supporting frame or stand, A, carrying the driving-axle B, and having a projecting arm, C, supporting a ring, D, and its attachments, and means for revolving the ring D and for adjusting and retaining it in position, in combination with a curved needle, E, attached to a vibrating needle-arm, *w*, receiving motion from a cam, *z*, on axle B, a circular needle, F, spindle 3, and adjustable hanger 7, and the adjustable slotted rod 8, deriving motion from the needle-arm and actuating the spindle 3 and circular needle, substantially as herein described.

2. A machine for uniting knit fabrics, consisting of a suitable supporting frame or stand, A, carrying the driving-axle B, and having a projecting arm, C, supporting a ring, D, and its attachments, a ratchet-wheel supported in the ring and engaged by a pawl driven from the axle, and a gear-wheel, supported also in the ring and actuated by the ratchet-wheel, said wheel engaging a toothed member of the ring, in combination with the vibrating arm *w*, carrying curved needle E and rod 8, the hanger 7, and the threaded spindle 3 on said hanger, carrying the circular needle F, substantially as set forth.

In testimony whereof I have hereunto set my hand this 15th day of January, A. D. 1886.

WILLIAM BEATTIE.

Witnesses:
T. E. HUMPHREYS,
DAVID R. SMITH.