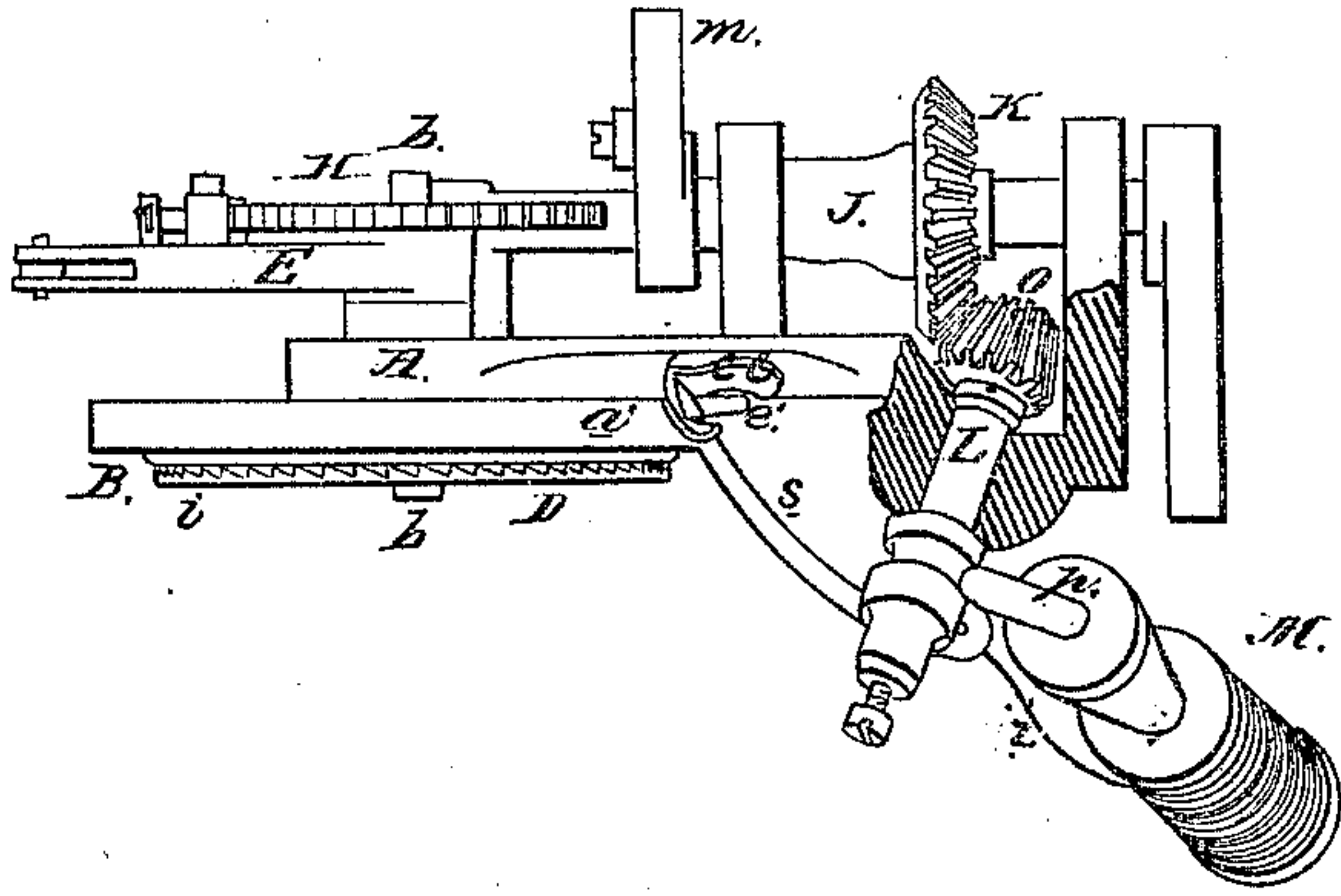


*J. D. Reiff.*  
*Circular Knitting.*

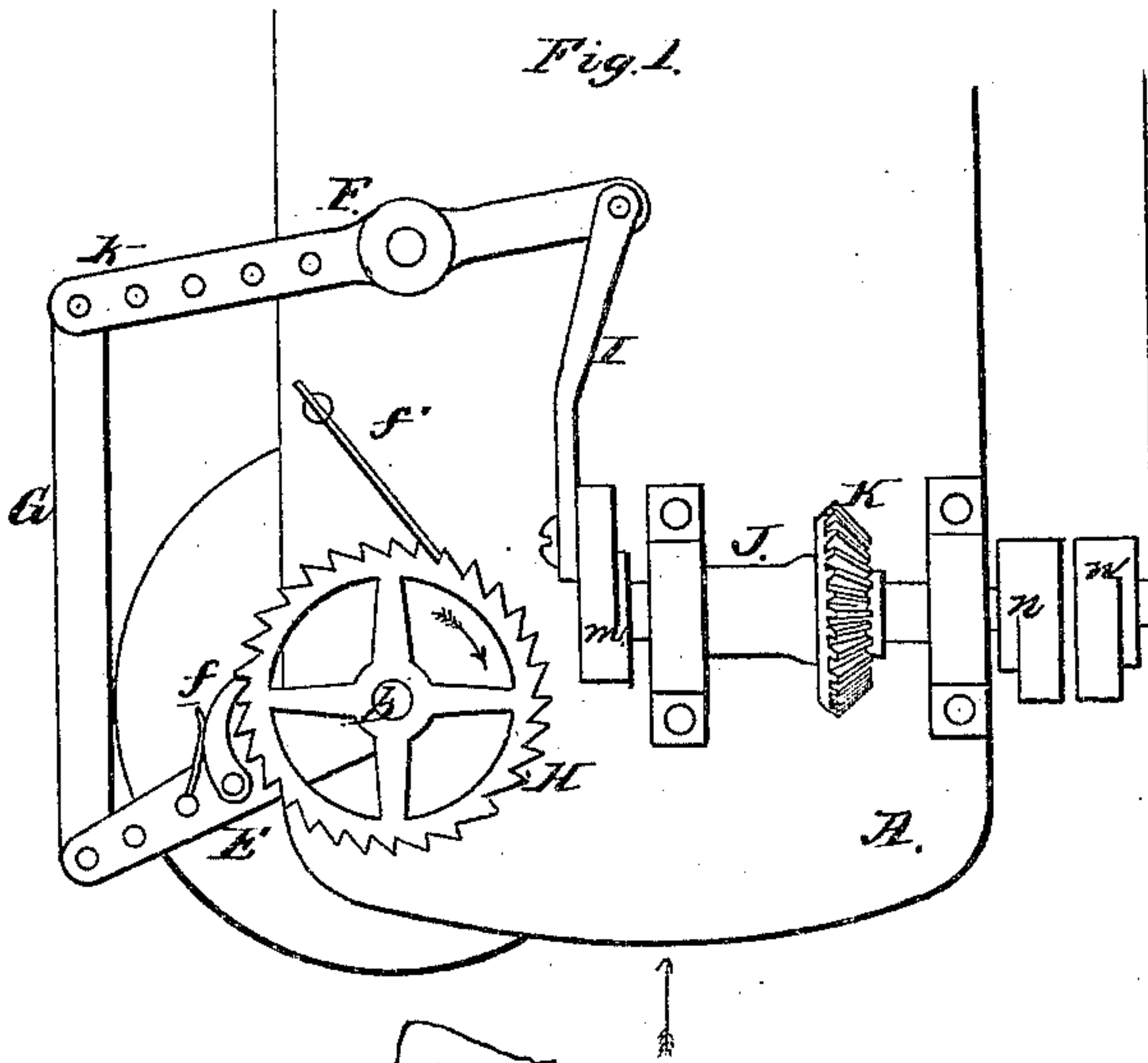
N<sup>o</sup> 85,765.

*Patented Jan. 12, 1869.*

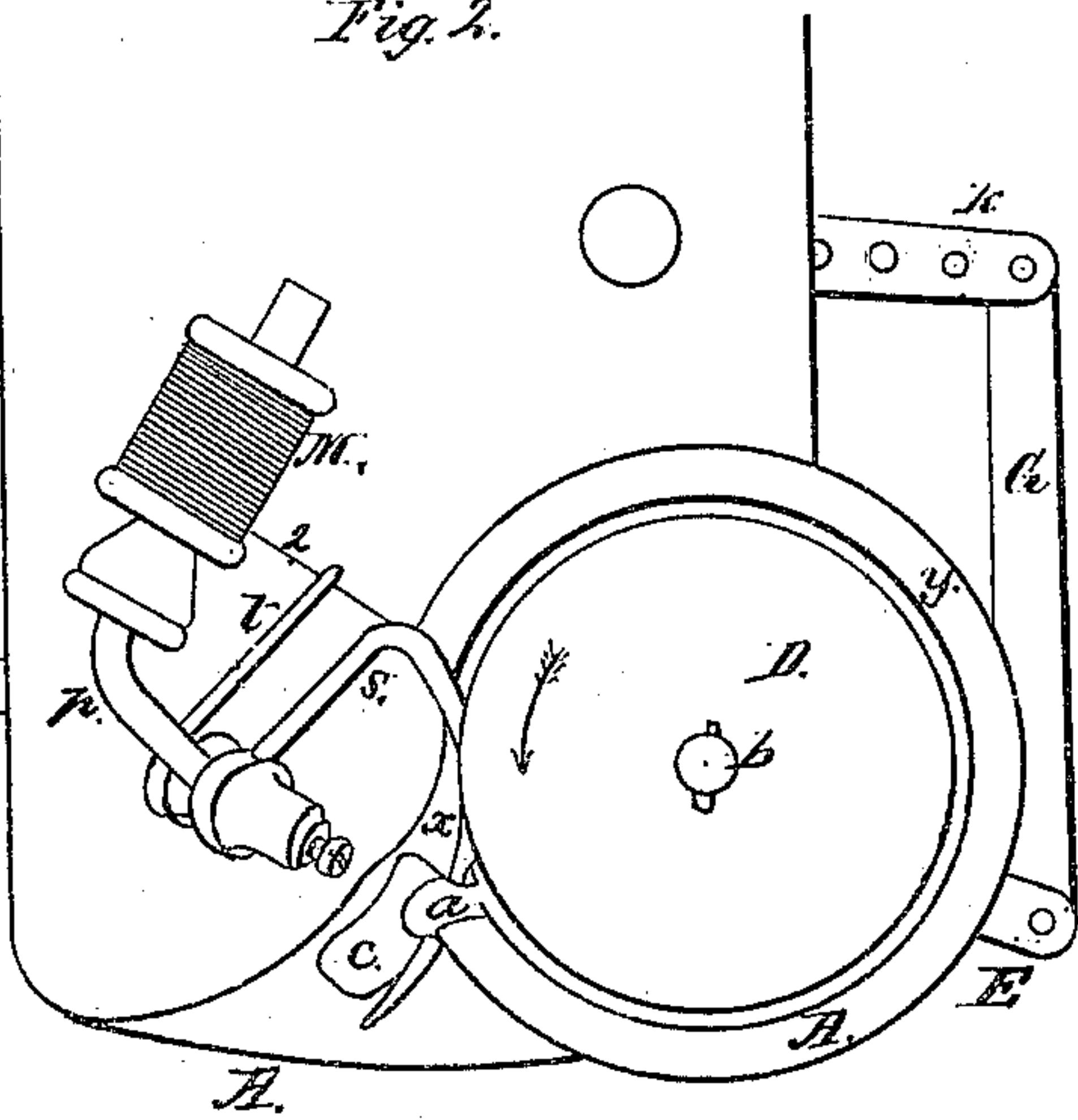
*Fig. 3.*



*Fig. 1.*



*Fig. 2.*



*Fig. 5.*

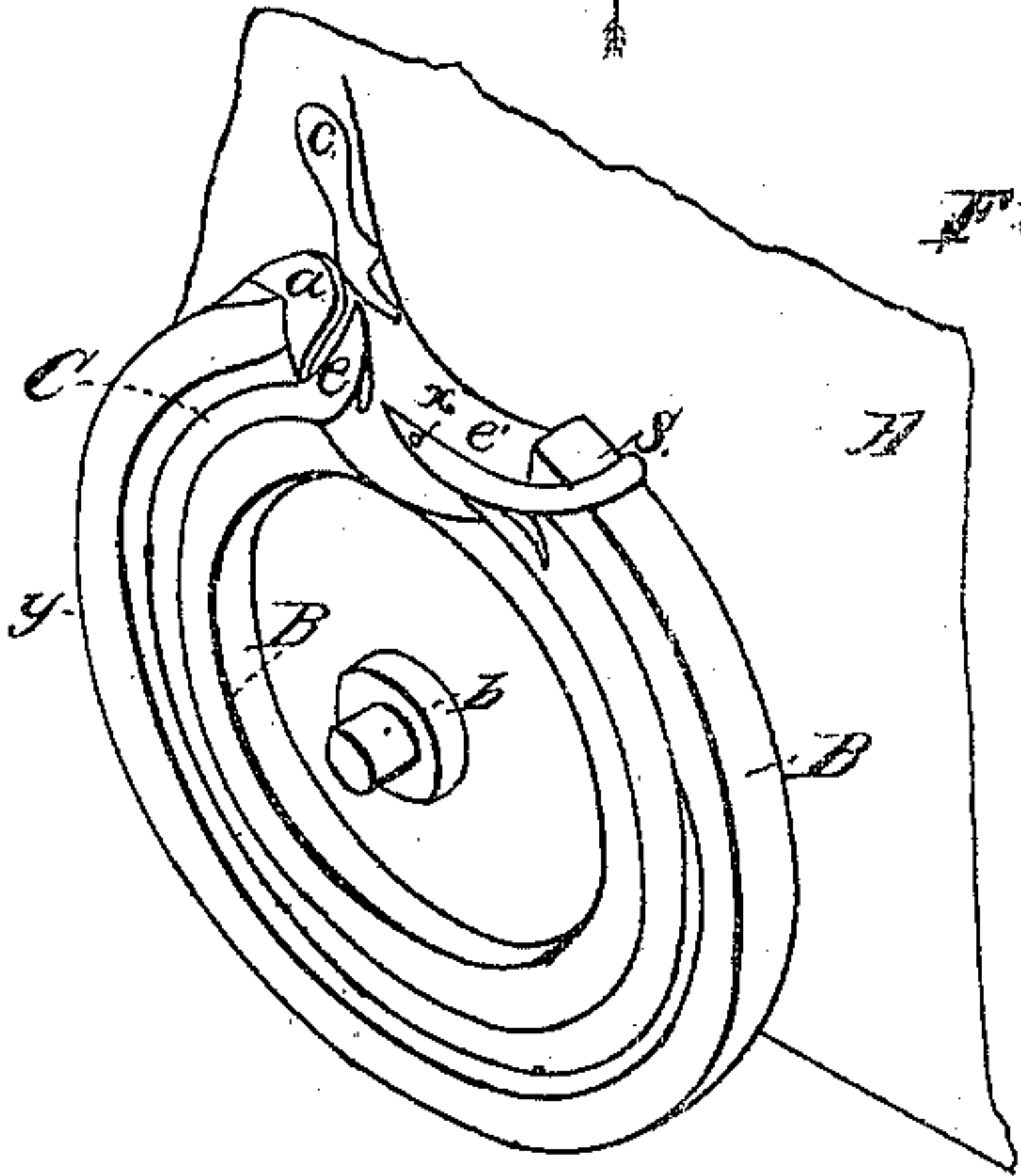
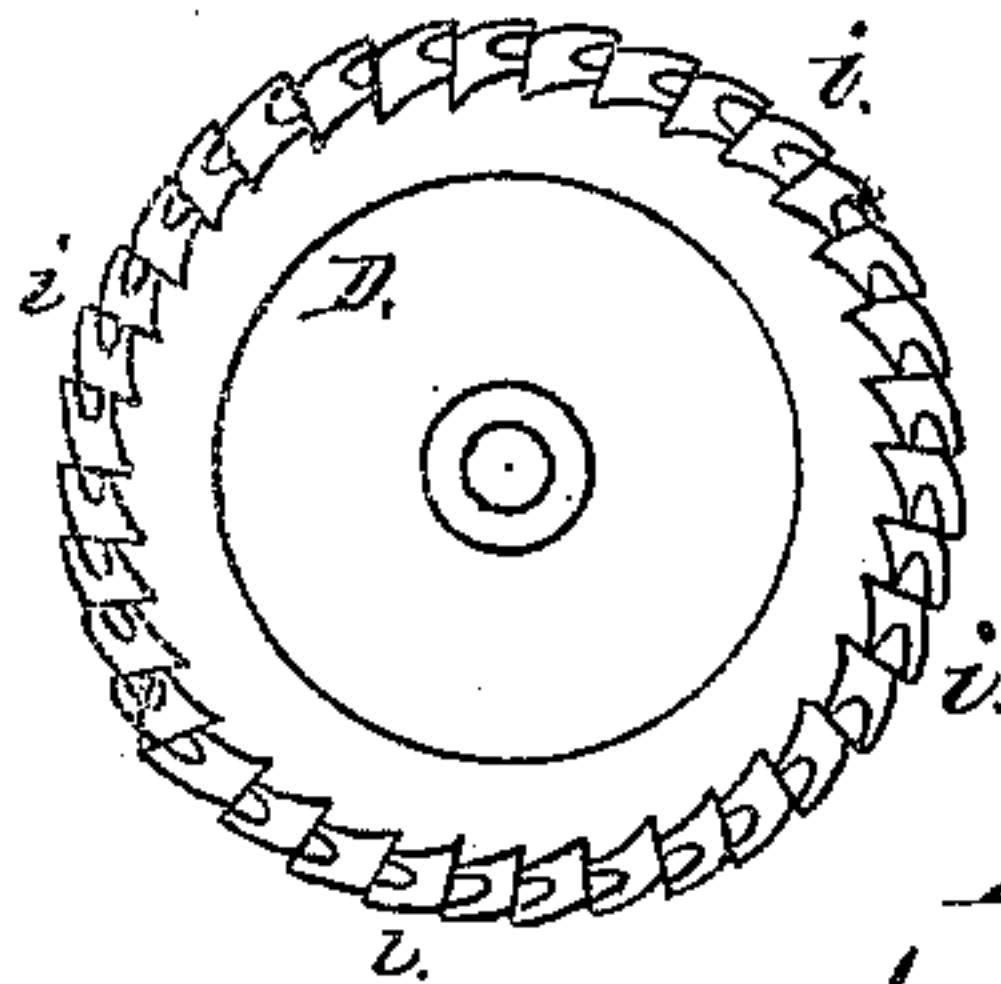


Fig 4.



Witnesses. { Jno B. Harding -  
John Parker

Inventor:  
J. D. Reiff  
By his atty.  
H. Houson



# UNITED STATES PATENT OFFICE.

JACOB D. REIFF, OF SKIPPAKVILLE, PENNSYLVANIA.

## IMPROVEMENT IN KNITTING-MACHINE.

Specification forming part of Letters Patent No. 85,765, dated January 12, 1869.

*To all whom it may concern:*

Be it known that I, JACOB D. REIFF, of Skippackville, Montgomery county, Pennsylvania, have invented an Improved Knitting-Machine; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention consists of certain devices, fully described hereafter, which operate together to produce a circular-knitted fabric or hose.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is a plan view of my improved knitting-machine; Fig. 2, an inverted plan view; Fig. 3, an edge view, partly in section, looking in the direction of the arrow, Fig. 1; Fig. 4, a detached view of part of the machine, and Fig. 5 a perspective view of part of the machine.

At the under side of a plate, A, which is secured to a table or other suitable support, is an annular projection, B, one side of which is cut away, forming a recess, *x*, for a purpose described hereafter.

In an annular recess, *y*, in the projection B lies loosely a rod, C, which is bent to the form of a ring, and is retained in its place by a disk, D, secured to the lower end of a shaft, *b*, turning in the plate A. The edge of the disk D is recessed, to partly receive the rod C, and in the recessed edge of the disk are notches *i*, Fig. 4, for a purpose described hereafter.

At one side of the recess *x* is a plate, *a*, and at the under side of the plate A, and above the plate *a*, is a spring-plate, *c*, Fig. 5. One end, *e*, of the rod C is formed into a barb, and is bent upward adjacent to the plate *a*, and the other end, *e'*, projects into the recess *x*, and is reduced in diameter by being flattened at the under side.

A lever, E, vibrates freely on the shaft *b*, above the plate A; and to the upper end of this shaft is secured a ratchet-wheel, H, to the teeth of which are adapted the ends of spring-pawls *f f'*, the former being hung to the lever E, and the latter being secured to a standard

on the plate A, and preventing the ratchet-wheel from turning in a direction the reverse of that pointed out by the arrow, Fig. 1.

To the upper side of the plate A is hung a lever, F, to holes in the long arm of which is fitted a detachable pin, *k*, the latter serving to secure to the lever a connecting-rod, G, the opposite end of which is jointed to the lever E.

The short arm of the lever F is connected, by a rod, I, to the crank *m* of a rock-shaft, J, turning in bearings on the plate A, and at the opposite end of this shaft is a crank-handle, *n*.

A bevel-wheel, K, on the shaft J gears with a bevel-pinion, *o*, on the upper end of an inclined shaft, L, turning in bearings on the plate A, and to the lower end of this shaft are secured a bent rod, *p*, and a curved thread-carrier, *s*, having an eye in its point and a groove at its back.

On the rod *p* turns a spool, M, the thread *z* from which is passed through a series of openings in a bar, *t*, projecting from the rod *p*, and along the groove in the carrier, to and through the eye of the latter.

The loops at the upper edge of a piece of circular-knitted fabric or "hose" are placed upon the bent rod or "holder" C, and a rocking motion is imparted to the shaft J, when a reciprocating motion will be communicated to the thread-carrier *s*, and an intermittent rotary motion in the direction of its arrow, Fig. 2, to the disk D. As the disk D, with the hose, which bears against the edge of the same, is turned, the loops of fabric will slide upon the rod C, and will pass successively from the end *e'* of the latter. On being brought to this end, however, each loop will be penetrated by the thread-carrier *s*, which then passes to the rear of and in contact with the barbed end *e* of the rod.

On the backward movement of the thread-carrier the thread *z* will be caught by the barbed end of the rod, after which the carrier will pass entirely from the loop of fabric, leaving its thread in the form of a new loop, extending through that of the fabric, and hanging upon the barbed end of the rod. On the next movement of the disk D the last-formed loop will pass onto the circular part of the rod C, after which the carrier will penetrate



the next loop of fabric which approaches the end  $e'$  of the rod, and will pass a new loop of thread through this loop of fabric, and leave the new loop on the end  $e$  of the rod, as before, the barb on the rod preventing the loops from slipping from the same, while the bent end of the rod, striking the plate  $a$ , prevents the rod from turning with the disk  $D$ . As these operations continue, new loops are added to those already formed, and a circular fabric or hose is produced. As the rod  $C$  is reduced in diameter at the end  $e'$ , the loops at this point hang loosely on the rod, so that the carrier can penetrate without distending them; and as the rod or ring rests loosely in an annular groove, the necessity of retaining the rod by complicated devices, which interfere with the free movement of the loops, is avoided. The extent of motion or feed imparted to the feeding-disk  $D$  is regulated by adjusting the pin  $k$  on the lever  $F$ , and the tension on the thread is regulated by passing it through a greater or lesser number of the openings in the bar  $t$ . The plates  $a$  insure the new loop being caught by the barbed end of the rod and its being guided properly onto the latter.

I do not claim, broadly, the combination, heretofore used, of a bent rod and a carrier,

which takes the loops from one end of the rod and places new loops on the other, at the same time moving the work round upon the rod; but

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

1. The carrier  $s$ , in combination with the curved rod  $C$ , bent upward at the end to form a pointed hook,  $e$ , and resting loosely in an annular recess,  $y$ , above a rotating feeding-disk,  $D$ , all substantially as described.

2. The combination of the above and plates  $a$   $c$ , arranged substantially as and for the purpose specified.

3. The combination of the plate  $A$ , having an annular projection,  $B$ , the disk  $D$ , the inclined shaft  $L$ , its thread-carrier  $s$  and spool  $M$ , and the within-described operating devices or their equivalents, constructed, arranged, and operating substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JACOB D. REIFF.

Witnesses:

CHARLES E. FOSTER,  
C. B. PRICE.