

*H. G. Sanford.*  
*Stop for Knitting Mach.*

*Sheet 1. 2 Sheets.*

*N<sup>o</sup> 9,434.*

*Patented Nov. 30, 1852.*

Fig. 2

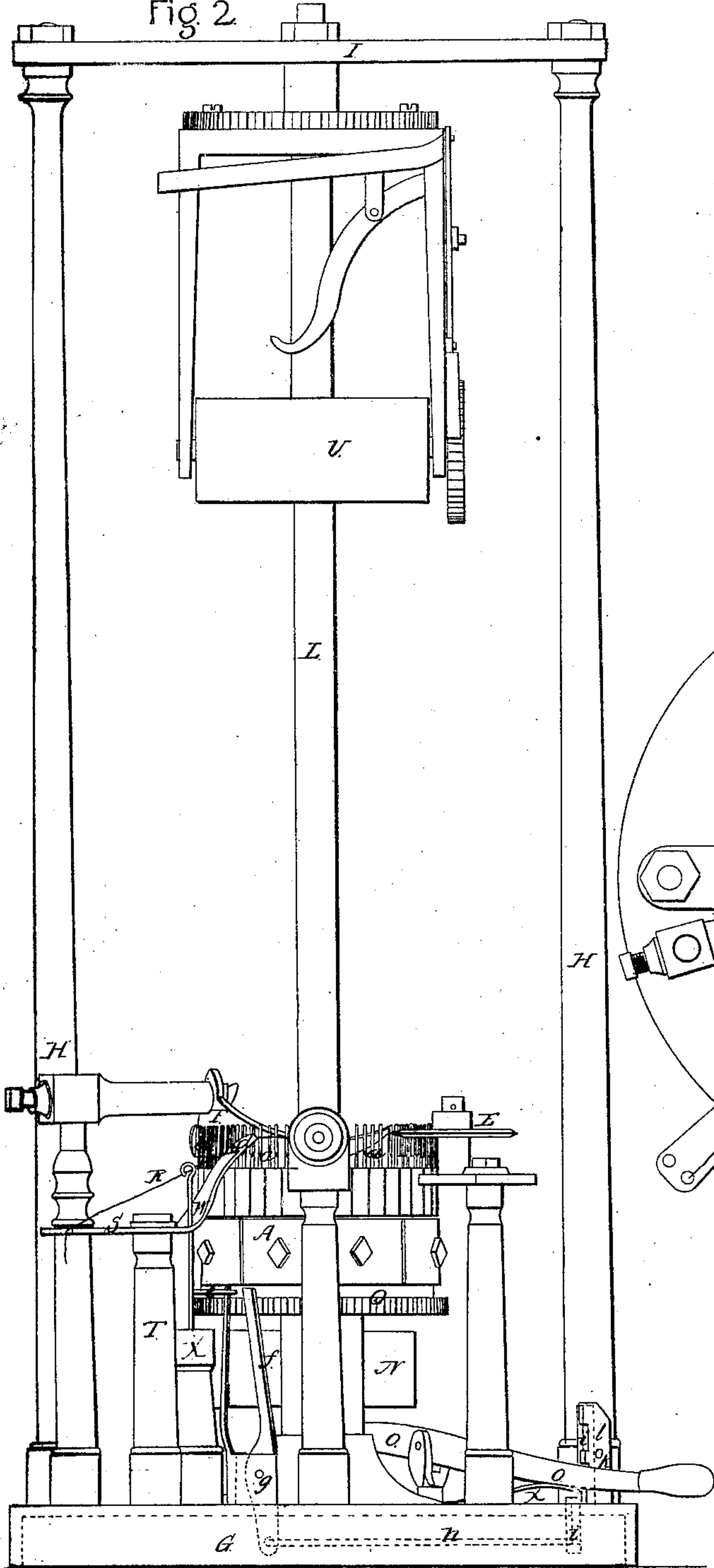
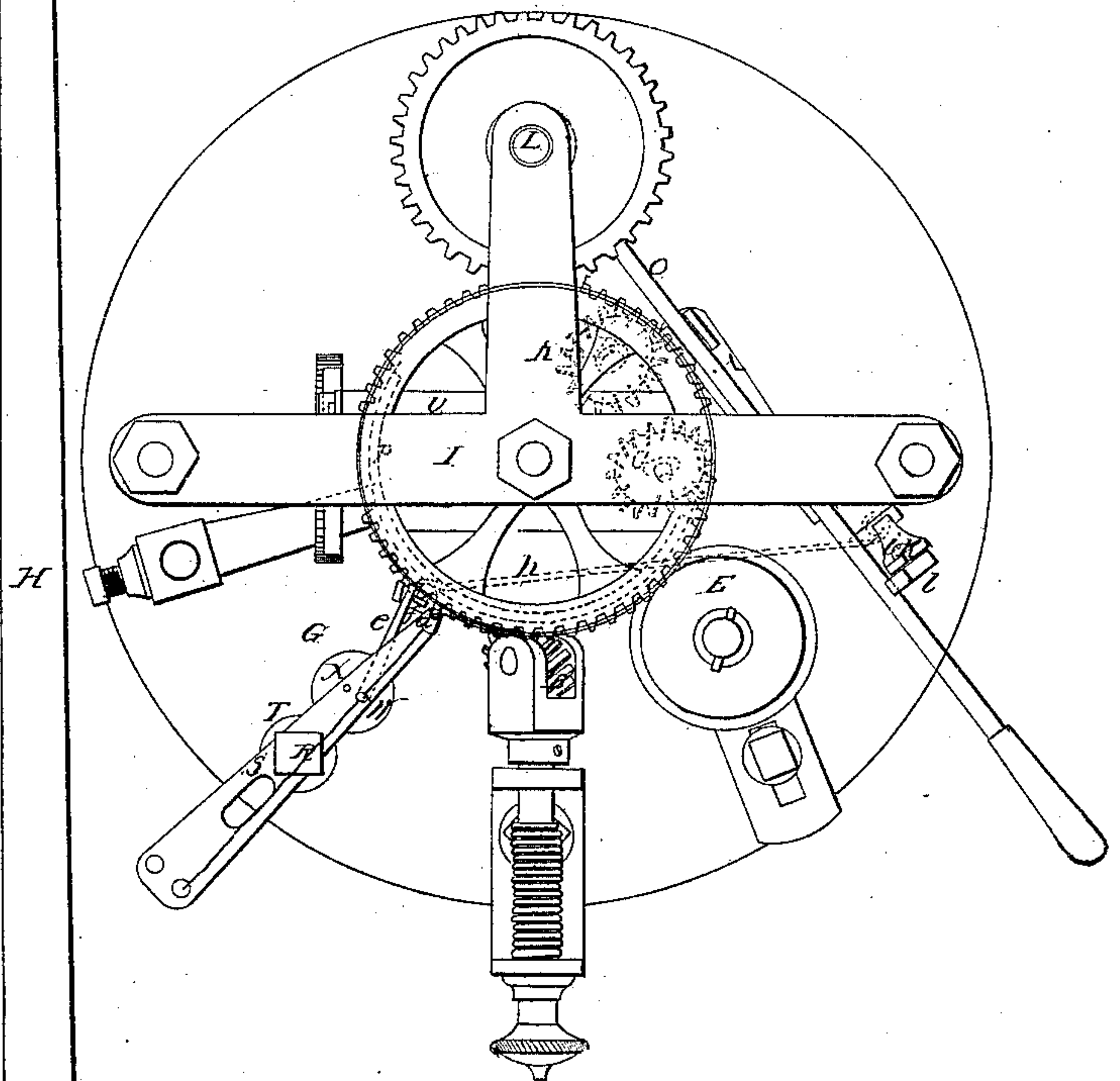


Fig. 1

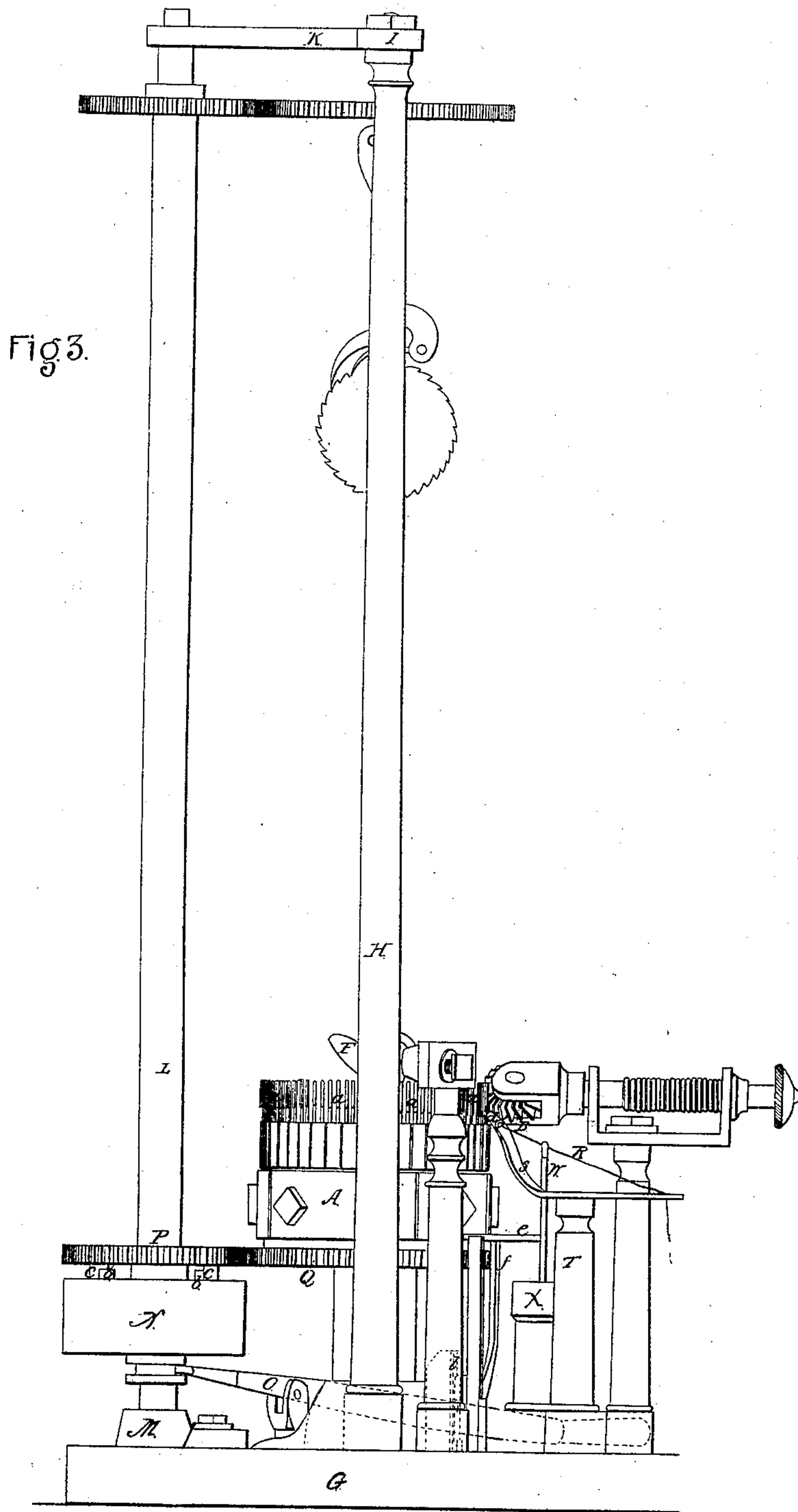


Sheet 2. 2 Sheets.

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# UNITED STATES PATENT OFFICE.

HORATIO G. SANFORD, OF WORCESTER, MASSACHUSETTS.

## ROTARY KNITTING-MACHINE.

Specification of Letters Patent No. 9,434, dated November 30, 1852.

*To all whom it may concern:*

Be it known that I, HORATIO G. SANFORD, of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in the Rotary Knitting-Machine; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 denotes a top view of a knitting machine of the kind above referred to and to which my improvement is applied. Fig. 2 is a front elevation of it. Fig. 3 is a side elevation of it.

The machine to which my improvement is applied is generally known by the name of the French rotary knitting machine, the character of which will be obvious from the drawings. It consists of a series of hooked needles *a, a, a*, &c., arranged in a circle and affixed to a rotary platform or frame A. In connection with the said series of needles and as further parts of the said machine, several burs, toothed, or fan wheels, B, C, D, a presser wheel E, and an inclined plane or cam bar F, are employed to make the loops, form the stitches, and cast them over the loops, the same being done during the rotation of the series of needles. It is to such a machine, one well known to persons skilled in the art of knitting shirts or stocking knit fabrics, that my improvement is applied, which improvement I shall now proceed to describe.

The machine is supported on a horizontal table or platform G, on which two columns H, H, are elevated and surmounted by a cross-bar I, having an arm K extending from it, and constituting a support to the upper part of a vertical shaft L, whose lower end rests and revolves in a bearing or step-piece M secured upon the plate G. On the shaft L a driving pulley N is situated. It is made to rotate freely on the shaft and so as to be capable of being moved or slid up or down thereon by means of a shifting hand lever O. Clutch pins *b, b*, project from the upper face of the driving pulley and operate in conjunction with other and similar pins *c, c*, that extend downward from a gear wheel P, which is fixed on, and to, the shaft, and made to engage with a gear wheel Q fixed on the shaft or axle of the rotatory series of hooked needles *a, a*,

&c. The driving band or belt passes around the pulley N, and when such pulley is clutched to the gear P and the belt is put in motion in the right direction, such gear and the shaft will be rotated, and of course they will be made to create a rotative movement of the rotative platform A.

U represents the cloth roller or beam which is arranged as seen in the drawings, and has connected to it certain mechanism (therein also represented) for the purpose of imparting to it a rotative motion around its axis such as will enable it to take or wind up the cloth as fast as it may be knit. It is not necessary to describe the take up motion as it constitutes no part of my improvement, which latter I shall now proceed to explain.

The object of my invention or improvement is to cause the machine to cease its operation whenever the yarn used in the formation of the stitches, may be accidentally broken. In other words, I have applied to this peculiar machine a "stop motion."

The yarn is shown at R. It may be supposed in the process of being drawn from a bobbin conveniently placed. From the said bobbin it is carried upward through a hole in the rear end of a bent bar S that is supported on the top of a column T. On the front or upper end of the bar S there is a nose or conical projection *d* through which and between the needles and the loop former or wheel B the thread or yarn is carried. The yarn in its passage from one end to the other of the bent bar S is carried through the eye of or a hole made through the upper end of a rod W, whose lower end is supported and slides freely in the upper end of a post X. From the rod W an arm *e* extends toward and over the range of cogs or teeth of the gear Q, and is made of such length that when it drops downward it will pass between two adjacent teeth of the said gear.

By the side of the arm *e* an upright lever *f* is arranged and made to turn on a fulcrum at *g*. The lower end of the lever extends below the platform G and is connected with another lever *i* by means of a connecting rod *h* as represented by dotted lines. The said lever *i* works on a pin or fulcrum *k* that is inserted and fixed in a post *l* that is disposed against the long arm of the shifting lever O, and has a notch below the fulcrum *k* into which the said lever arm may be



pressed when it is down to its lowest position and the driving pulley N is clutched to the gear P immediately over it.

The operation of the said stop motion is as follows: While the machine is performing its functions the common tension of the yarn in its passage from one to the other end of the bent bar S, will cause it to lift the rod W and its arm *e*, so that the latter, while the yarn remains unbroken, shall be maintained at a height a little above the gear Q. As soon however as the yarn breaks the weight of the rod W and its arm *e* will cause them both to drop downward and carry the extreme end of the rod *e* between the teeth of the gear Q. The said gear being in rotation will move the arm *e* against the upper arm of the lever *f*, and move the lever on its fulcrum so as to create such a movement of the lever *i* as will force it against the clutch lever O with sufficient power to throw the said clutch lever out of its notch in the post *l*. When this takes place the weight of the driving pulley causes the said pulley to

fall down, or a spring *x* throws it downward, so as to unclutch it from the gear over it, and thereby cause the progress or movements of the machine to be arrested. The attendant after piecing up the thread depresses the long arm of the shifting lever and again clutches the driving pulley with the gear directly over it, and the knitting operation again goes on as before.

What I claim as my invention is—

The combination of the mechanism termed the stop motion with the rotary knitting machinery of the kind as above specified, the object of the stop motion being to arrest the operations of the machine on breakage of the yarn.

In testimony whereof I have hereto set my signature, this thirteenth day of May, A. D. 1852.

HORATIO G. SANFORD.

Witnesses:

WILLIAM CLARK,  
BENJ. L. SAMPSON.