

A.B. Stillings.
Straight Knitting Mach.

N^o 55,734.

Patented Jun. 19, 1866.

Fig. 1.

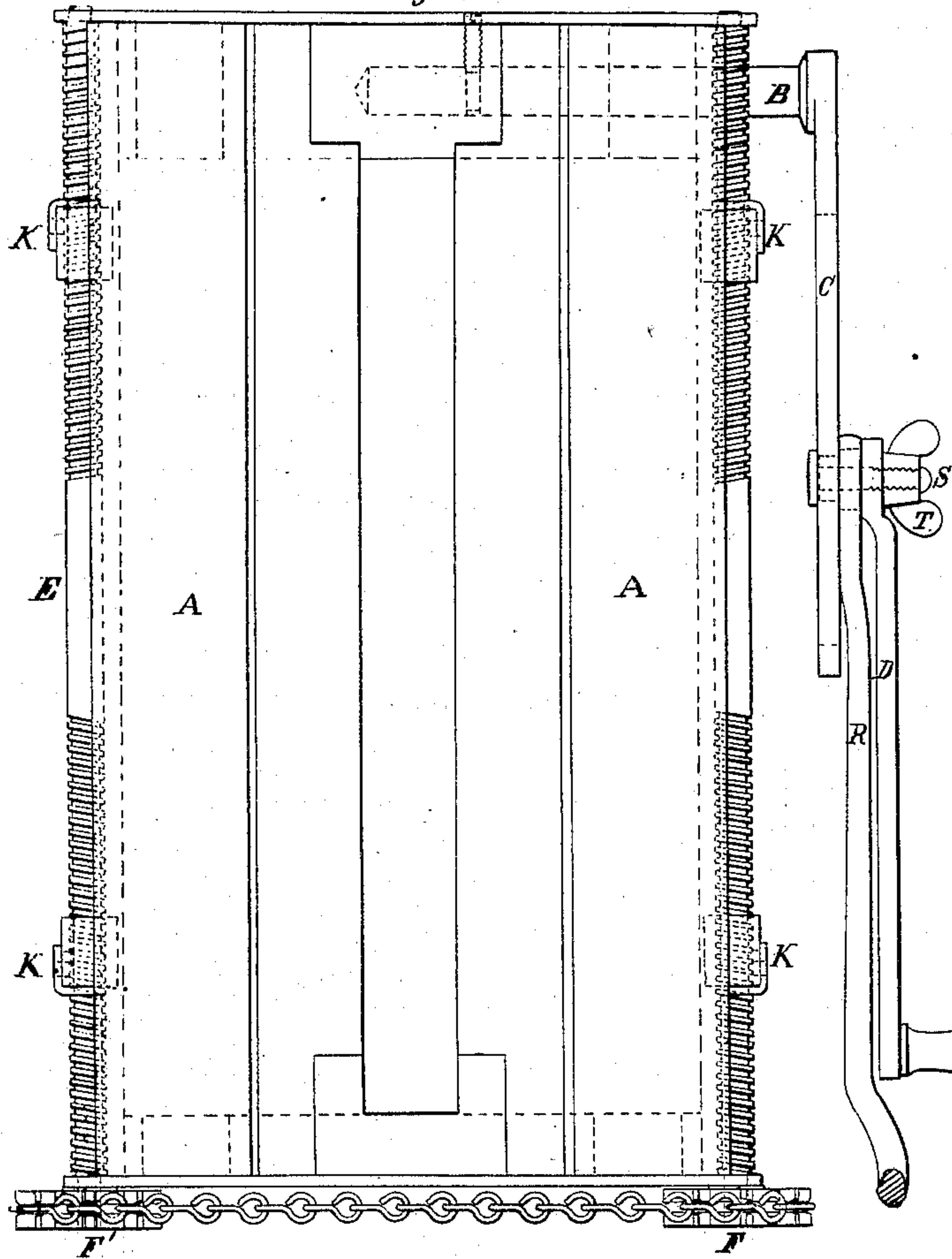


Fig. 2.

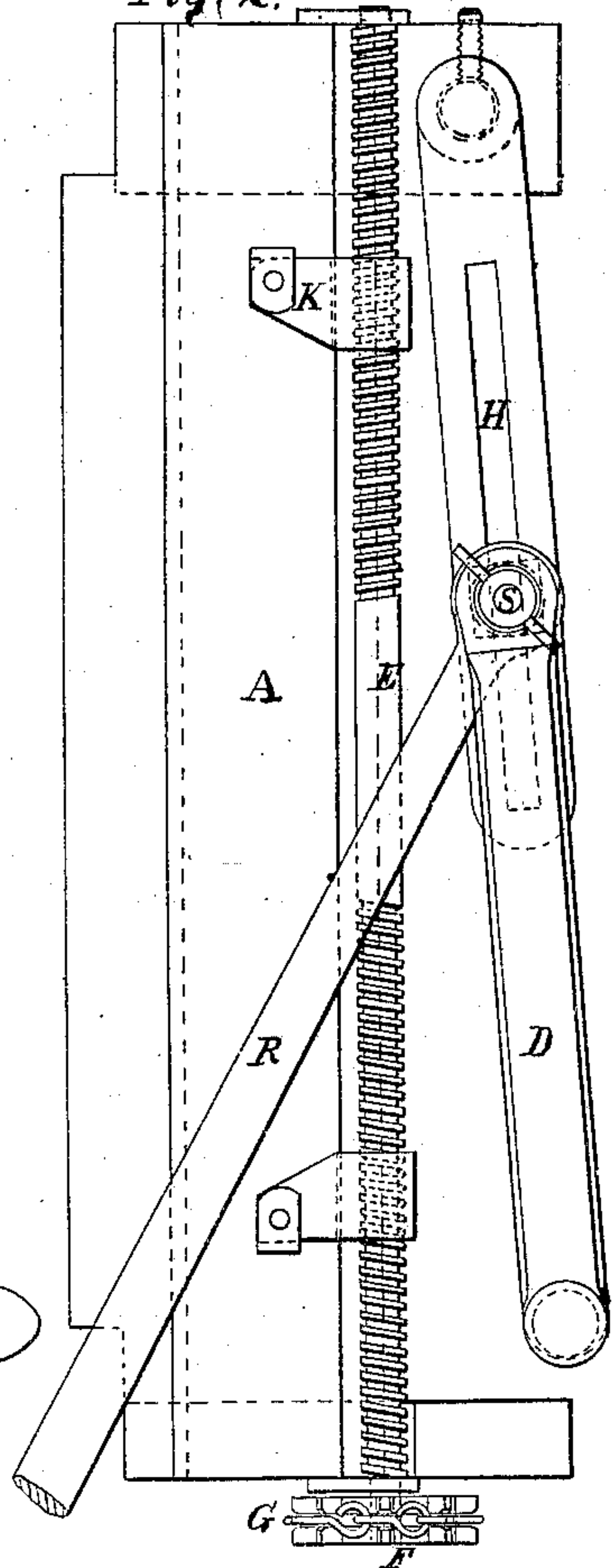
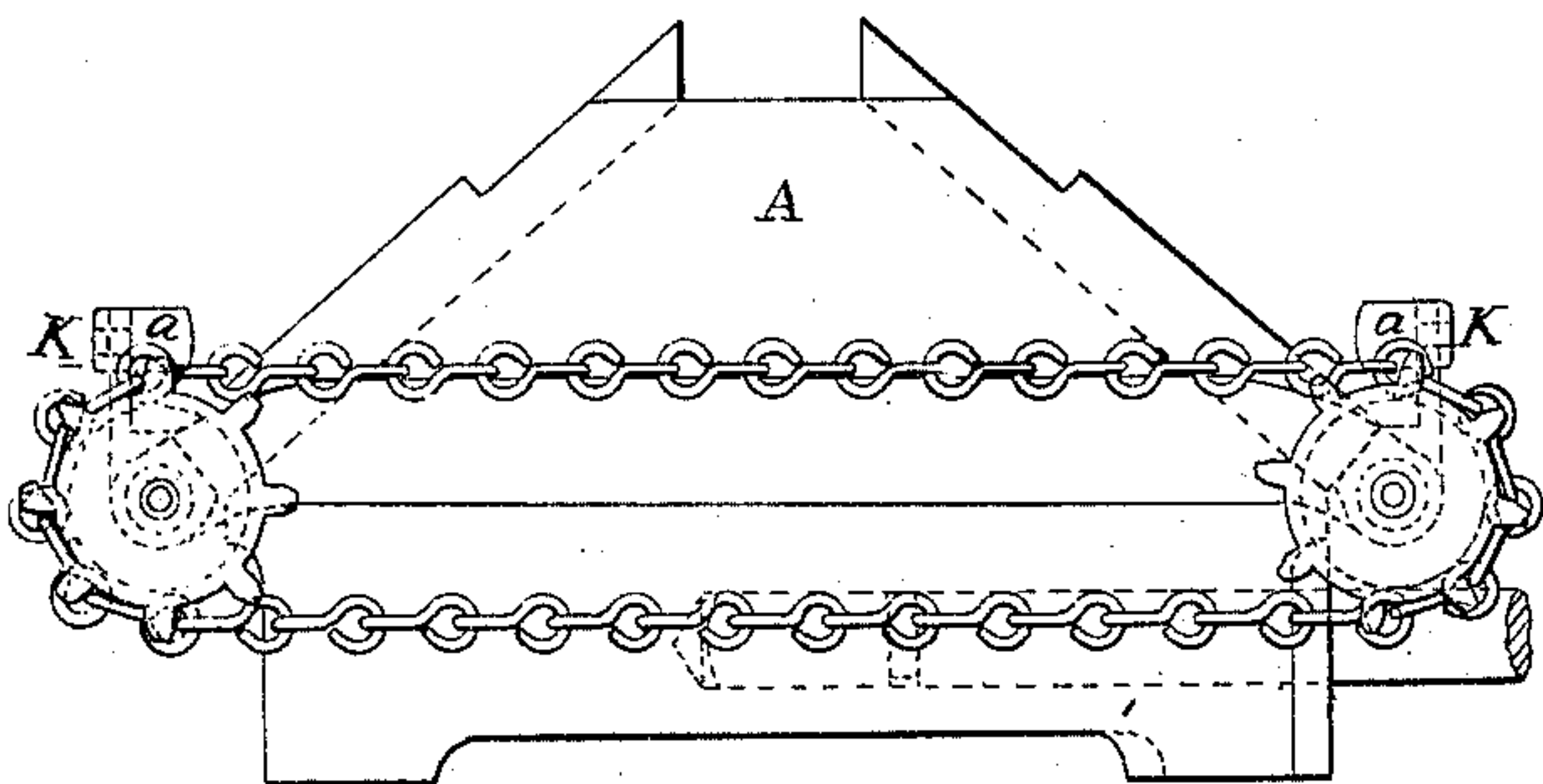


Fig. 3.



Witnesses:

J.P. Buckland
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Inventor:

Alden B. Stillings

UNITED STATES PATENT OFFICE.

ALDEN B. STILLINGS, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. 55,734, dated June 19, 1866.

To all whom it may concern:

Be it known that I, ALDEN B. STILLINGS, of Springfield, in the county of Hampden and Commonwealth of Massachusetts, have invented a new and useful Improvement on Knitting-Machines of the form known as the "Lamb Knitting-Machine," for which Letters Patent No. 39,934 were issued to Isaac W. Lamb, bearing date September 15, 1863, and for which sundry Letters Patent have been subsequently issued to Isaac W. Lamb aforesaid; and I 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 a plan. Fig. 2 is a front elevation, and Fig. 3 is an end elevation, similar letters referring to like parts in all the drawings.

The nature and object of my invention are briefly as follows: In the original Lamb Knitting-Machine the plate or sliding frame is moved back and forth over the bed-piece, which contains the needles, and travels over a space sufficient to carry the middle point of the sliding frame beyond all the needles in each direction. Although but a small portion of the needles may be in use, (as in knitting narrow work,) the sliding frame is moved over the same distance as when all the needles are in use, and the yarn which is used in knitting is carried with the sliding frame; consequently, if only a part of the needles are in action, the frame, in moving over the whole length of the bed-piece, will draw more yarn from the reel than is actually used up in knitting, and this will happen at each end of the bed-piece.

There will therefore be a certain amount of slack in the yarn drawn off at each journey of the sliding frame, and this amount will be greater in proportion as the number of needles in use is less. In knitting some kinds of work this resulting slack must be taken up and a tension maintained by the finger of the operator, in order to work the machine successfully; and one of the objects of my invention is to prevent this slack by causing the sliding frame to travel only so far as is necessary to operate the needles which are actually in use. It is obvious also that by limiting the traverse of

the sliding frame to the shortest distance necessary for the work in hand the labor of turning the crank and operating the machine is lessened, and this saving of labor will be nearly in an inverse ratio to the width of the work to be knit.

The nature of my invention consists in making the movement of the plate or sliding frame adjustable to the number of needles in use, or, in other words, rendering the thrust of the crank which moves the sliding frame adjustable, and making certain parts called "cam-stops," which act with reference to the sliding frame, also adjustable.

My improvement may be described as consisting merely of the substitution of a crank or winch having a varying and adjustable thrust in place of a crank or winch having one fixed thrust, and in making the cam-stops also movable and adjustable in place of being fixed near the ends of the front and rear edges of the bed-piece, and also in controlling the motion of the cam-stops by mechanism hereinafter described.

The two cam-stops on the front side of the bed-piece are supported on a rod or shaft which rests in bearings in the bed-piece, or in projections on the same. Upon a portion of this shaft is cut a right-handed screw-thread extending around nearly one half the length of the shaft, while a left-handed screw-thread is cut upon a corresponding portion of the other half. The cam-stops are supported on this shaft, like nuts on a screw-bolt, having screw-threads cut upon the interior of the holes through them. By turning the shaft in its bearings it is evident that the cam-stops mounted upon it will approach to or recede from one another. The two cam-stops on the rear of the machine are supported in the same manner. My invention therefore relates exclusively to the adjustable crank or winch and to the movable cam-stops, with the mechanism by which their motion is imparted and controlled.

The construction of my invention is as follows: A A represent the bed-piece of a Lamb knitting-machine, on which the sliding frame traverses. B is a stud on the adjustable crank or winch, and turns in bearings in the bed-piece A. The crank or winch is made in two

parts, C and D, which are connected by the square-headed screw-bolt S, upon which is the thumb-screw T.

A slot, H, in the part C allows the thrust of the crank-rod R to be lengthened or shortened by loosening the thumb-screw T.

The crank-rod R is represented as broken off. If shown of full length and upon a Lamb knitting-machine the end would be attached to the sliding plate, and would impart its reciprocating motion to it.

K K K K represent the four cam-stops.

E is a rod or shaft having a right-handed screw-thread cut upon nearly half of its length and a left-handed screw-thread cut upon an equal portion of the other half and moving in bearings at the ends of the bed-piece A. E' is a shaft similarly constructed and supported in similar bearings on the rear of the bed-piece A.

In each of the cam-stops is a hole having a screw-thread cut upon its interior, these threads being right-handed in one of the front and one of the rear cam-stops and left-handed in the remaining two. One cam-stop being now placed upon each end of the shaft E, it is evident that as the shaft is turned the cam-stops not turning with the shaft will be drawn by the action of the screw-threads toward each other. The same will happen in the case of the two cam-stops mounted on E'.

As it is necessary that the four cam-stops shall always be equally distant from their respective ends of the shafts, the two shafts E and E' are provided with chain-carriers F and F', upon which is an endless chain, G, by moving which the two shafts E and E' are turned at the same time and in the same direction.

Instead of the chain-carriers and endless chain I have employed a system of gearing, and have also substituted bevel-gears for the chain-carriers, and used with them a cross-shaft having bevel-gears at each end; but I prefer the construction shown in the drawings as being more simple and more cheaply constructed.

The operation of my invention is as follows: When the work is set up on a machine and the needles which are to be in use are in place the thrust of the crank is adjusted to give such a traverse of the sliding plate as is re-

quired to operate said needles and no more. By turning the shafts E and E' by means of the endless chain the cam-stops K K K K will then be brought to their proper positions and the machine will be adjusted for use.

In knitting a piece of work which requires frequent widening and narrowing, as in the knitting of a stocking, the proper thrust to obtain would be that which will cover all the needles that will be called into action during the progress of the work in hand, though more frequent adjustments may be made.

Some of the advantages of my invention are as follows: That instead of moving the sliding plate along the entire length of the bed-piece it is only moved over a sufficient part of it to perform the work in hand, thereby saving labor in operating the machine, and saving the machine itself from unnecessary wear; also, by enabling the operator to use some kinds of yarn which could not be used in a machine without the adjustable crank and movable cam-stops, and to remove some other difficulties which exist in the use of a Lamb knitting-machine not provided with my invention.

I disclaim any and all parts herein described which are claimed in the aforesaid patents of Isaac W. Lamb.

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

1. Constructing the crank in such a manner as to obtain a varying or adjustable thrust, substantially as described, and for the purposes set forth.
2. The use of the shafts E E', having screw-threads cut upon them, as described, in combination with the cam-stops, when arranged and operating substantially as set forth.
3. Imparting to the four cam-stops the same relative motion by means of the chain-carriers and endless chain or by any equivalent means, substantially as described.
4. The combination of a crank constructed as set forth with the mechanism described, for adjusting the position of the cam-stops, substantially as set forth.

ALDEN B. STILLINGS.

Witnesses:

RUFUS MOSHER,
J. P. BUCKLAND.