

(No Model.)

2 Sheets—Sheet 1.

W. W. CLAY.  
KNITTING MACHINE.

No. 277,004.

Patented May 8, 1883.

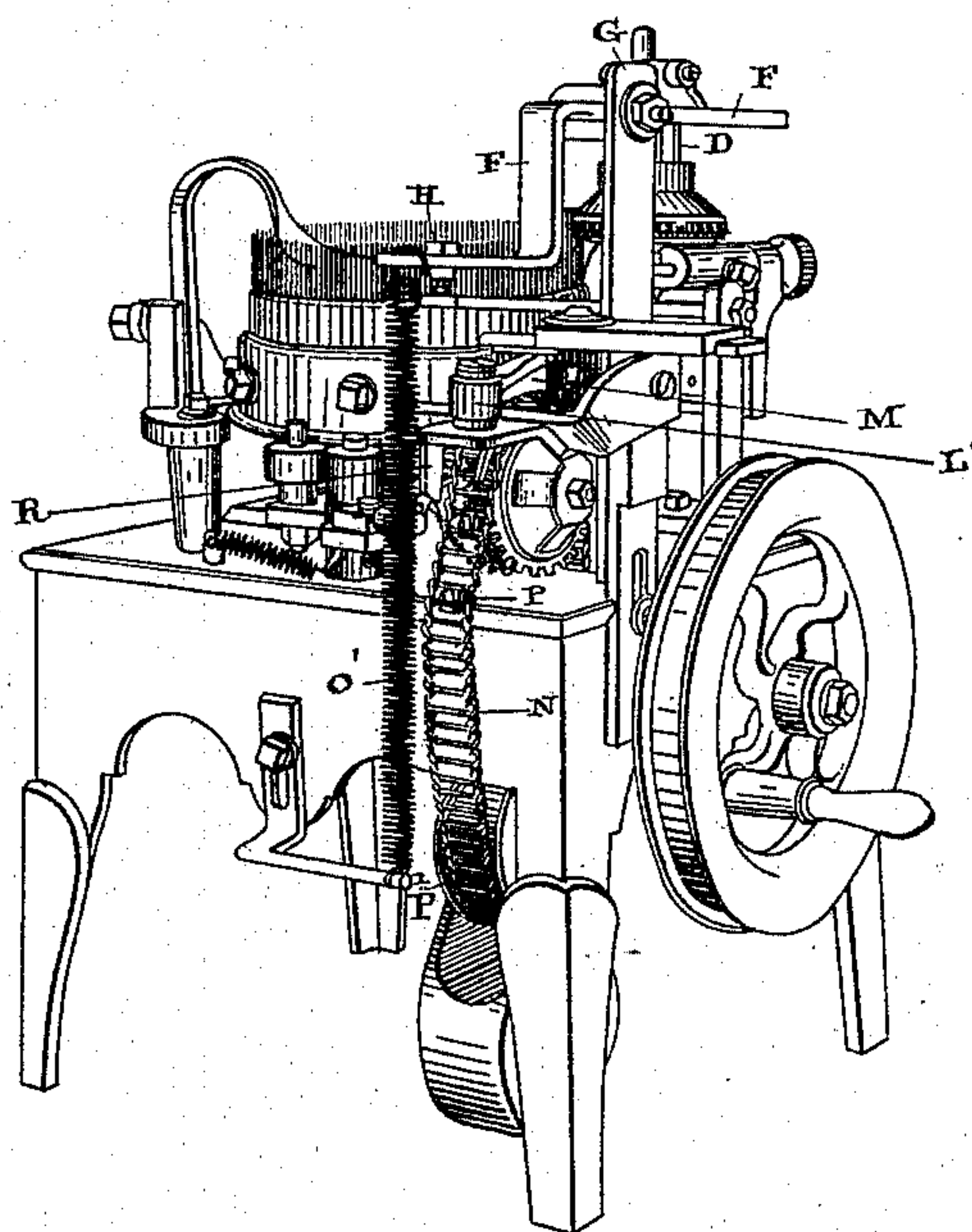


Fig. 1.

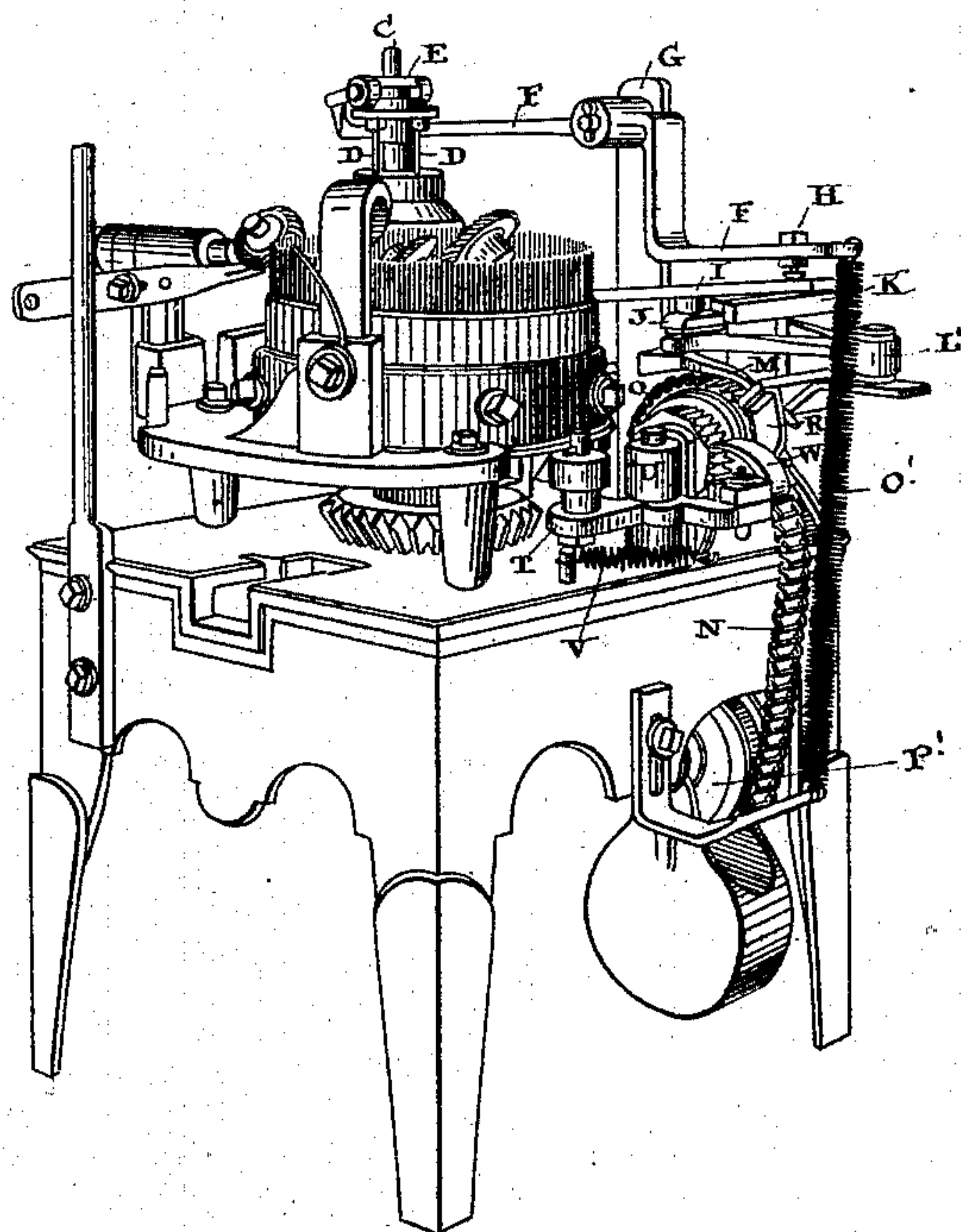


Fig. 2.

Witnesses.

*Lewis Toulmin*  
*J B Fetherstonhaugh*

Inventor.

*William W. Clay*  
*by Donald C. Ridout H.*  
*Att'y*



(No Model.)

2 Sheets—Sheet 2.

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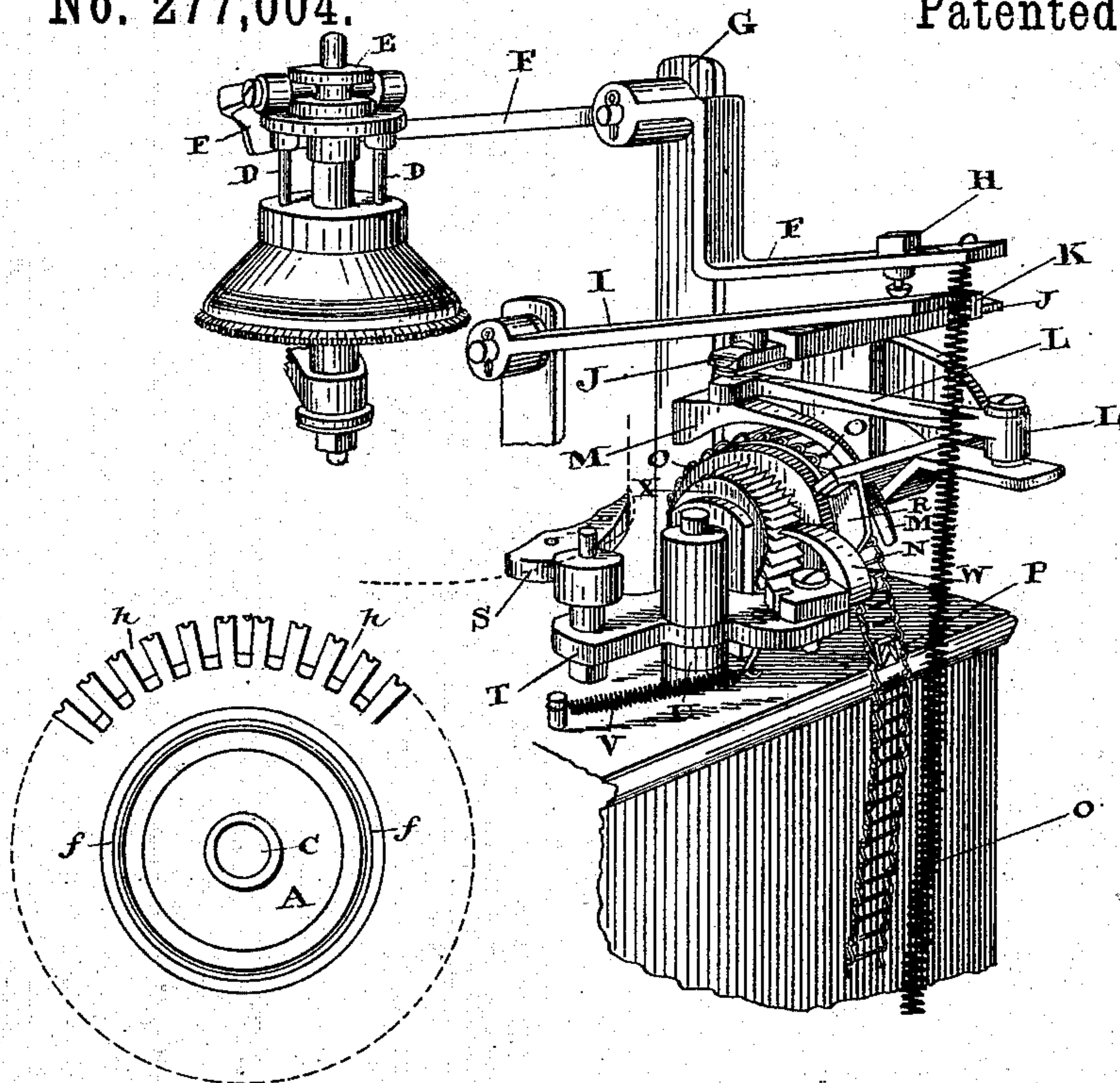


Fig. 3.

Fig. 5.

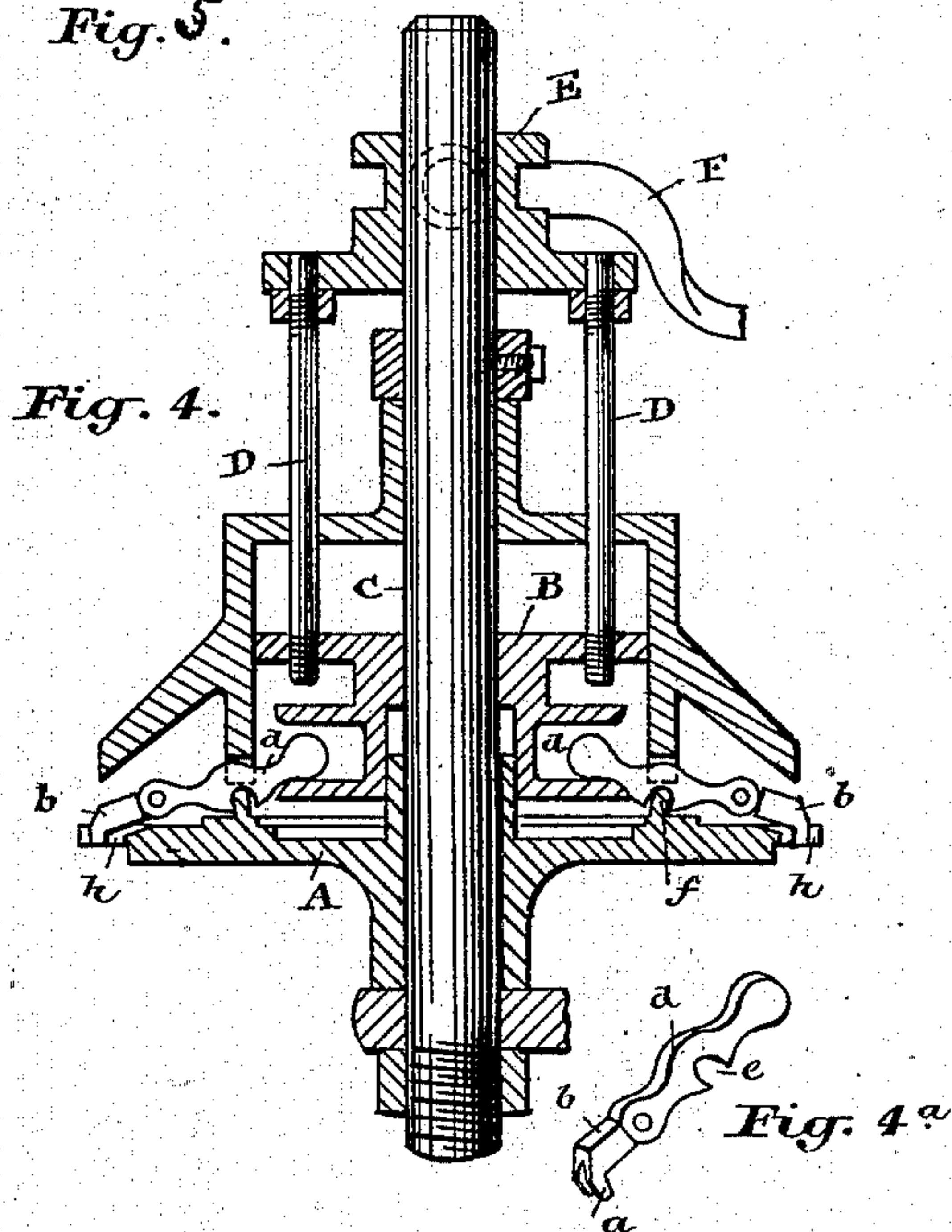


Fig. 4.

Fig. 4a.

Witnesses.

Lewis Toulminson  
J. B. Fetherstonhaugh

Inventor.

William W. Clay  
by Donald C. Ridoutt:  
Att'y.



# UNITED STATES PATENT OFFICE.

WILLIAM W. CLAY, OF PARIS, ONTARIO, CANADA.

## KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 277,004, dated May 8, 1883.

Application filed October 26, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM WILLIAMS CLAY, a subject of the Queen of Great Britain, residing at the town of Paris, in the county of Brant, in the Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Knitting-Machines, of which the following is a specification.

My invention relates to that class of knitting-machines known as "loop spring-barb circular-knitting machines;" and it has for its object to arrange mechanism adapted to be operated from some convenient point of the machine by which the operation of the needles may be automatically altered for the purpose of changing the stitch in the knitting without stopping the machine; and the novelty consists in the construction and arrangement of parts, as will be more fully hereinafter set forth, and specifically pointed out in the claims.

In the drawings, Figures 1 and 2 are two perspective views of my improved machine, taken at different angles of sight. Fig. 3 is an enlarged detailed view. Fig. 4 is an enlarged sectional detailed view, exhibiting the presser-wheel, the adjustable blocks, and the parts of the machine by which they are directly acted upon. Fig. 5 is a plan view of the presser-wheel.

As my invention relates purely to mechanism for changing the presser into a tuck-presser or plain presser, as may be desired, and as I do not alter any portion of the knitting-machine except those parts immediately connected therewith, it is not necessary to describe in this specification the construction of the loop-wheel spring-barb circular-knitting machine further than will hereinafter appear necessary to give a clear understanding of my invention.

Before describing in detail the mechanism by which the pressers are automatically changed into plain or tuck pressers, as desired, I will first describe the particular construction of the means by which the change is effected and the arrangement of the mechanism immediately connected therewith.

In Fig. 4 is exhibited what I consider to be the most approved form of mechanism for changing the presser into a plain presser or tuck-presser, as may be desired. Fig. 4<sup>a</sup> shows a perspective detail of an individual block and

lever. In the latter figure the projection *a* of the block is made to fit into the notch in the rim of the presser, so as to change it into a plain presser or tuck-presser, as desired, is exhibited. This projection, it will be seen, is grooved in the end so as to fit closely against the barb and close it into the eye of the needle. The lever *d* has a notch, *e*, made at or about its center, which notch fits over a circular flange, *f*, made around the disk *A*, on the periphery of which is cut the notches *h* to hold the block in its place, the flange forming a fulcrum on which the lever rocks, the distance between the notches on the periphery of the wheel being such as will permit the insertion of any number of adjustable blocks, *b*, according to the style of the changes it is desired to make in the presser. When the blocks *b* are in the position indicated in Fig. 4 the projections *a* on their ends fill up the notches *h* in the periphery of the tuck-presser *A*, and change it into a plain presser. Consequently as the presser-wheel *A* revolves, the projections *a* come in contact with the barbs and close them into the eyes of the needles, and so allow the previously-formed loops on the stems of the needles to be cast off the needles. When it is desired to withdraw the block *b* from action the inner end of the lever *a* is pressed downwardly, which action causes the block *b* to recede out of line with the periphery of the presser-wheel. Consequently the needles previously operated upon by the block *b* are no longer so affected, and as a consequence the stitch of the machine is altered to a tuck-stitch. As shown in Fig. 4, the inner end of the lever *d* is inserted into a circular groove cut in the sleeve *B*. This sleeve is journaled on the spindle *C* and revolves with the presser-wheel *A*.

*D* are two bolts, screwed into the sleeve *B*, and, extending upwardly, are fastened at their upper ends to the sleeve *E*, also journaled on the spindle *C*. It will thus be seen that by the vertical movement of the sleeve *E* a corresponding movement is imparted to the sleeve *B*, which sleeve, by acting upon the inner ends of the lever *d*, imparts the desired rocking movement to the said lever for effecting the required change of the tuck-presser into a plain presser, or vice versa, as previously explained.

*F* is a lever pivoted to a post, *G*, projecting



up from the frame of the machine, and having one of its ends suitably connected, as indicated, or otherwise, to the sleeve E, so that when the said bar F is rocked upon its pivot the required vertical adjustment is imparted to the sleeve E, and through it the blocks are operated, as hereinbefore explained. In order to provide means for regulating the distance of the vertical adjustment, I make a slot in the lever F through its end opposite to that connected to the sleeve E. Through this slot I insert a pin, H, which is adjustable within the slot, and is held in any desired position by a jam-nut, or otherwise. The end of the pin H rests upon the pivoted bar I. As the lever F in this arrangement is tilted by the movement of the pivoted bar I, it will be understood that by the longitudinal adjustment of the pin H in the slot the movement of the lever F may be correspondingly increased or decreased at will.

J is a sliding bar, held in any suitable guides, K, and connected to the bar L, which is pivoted on a suitable bracket at L'.

M is a pawl pivoted on the bottom of the bar L, immediately below the sliding bar J. This pawl M is curved, as indicated, and extends over the chain N. This chain is fitted over the sprocket-wheel O, and is held in position by a weighted sprocket-wheel, P', preferably situated below the frame of the machine. As the sprocket-wheel O revolves, the endless chain N will of course travel with it. Consequently, by placing a stud or studs, P, on the chain, the movement of the lever F may be effected in the following manner: As shown in the drawings, the slide J is extended below the pivoted bar I. Consequently the end of the lever F, attached to the sleeve E, is depressed and the blocks thrown into action. A spring, O', attached to the lever F, is designed to draw down the end of the lever F, to which it is attached, immediately that the sliding bar J (which is shown in the drawing) as supporting the pivoted bar I is thrown out of the position necessary to constitute the said support. In order to explain how this action is accomplished, I will assume that the stud P is approaching the pawl M. When it reaches the large end of the pawl M, and has passed the point where the said pawl is pivoted to the bar L, the small end of the pawl M is thrown against the bracket R, which forms a fulcrum for the pawl M and causes the said pawl, as pressed upon by the stud P, to push back the sliding bar J clear of the pivoted bar I, which will, as a consequence, fall, and thus permit the spring K to draw down the outer end of the lever F, and thereby, by throwing up the opposite end of the lever F, throw the blocks or spring-levers operated thereby into action, as desired. The small end of the pawl M remains in position against the bracket R till the stud P has again made a revolution with the chain, when the said stud, by coming in contact with the opposite side of the pawl M, causes the small end of the pawl M to move over to the side remote from the bracket R,

previously pushing out the sliding bar J, which action lifts the pivoted bar I, and through it, by tilting the lever F, once more brings the blocks *b* out of action.

As a simple means of imparting a suitable movement to the sprocket-wheel O, and through it to the chain carrying the stud P, I place upon the cylinder of the machine a cam-plate, S, arranged to come in contact, on each revolution of the cylinder, with a pin fixed to the lever T, which is pivoted upon the post U and held against the cam by the spring V. On the opposite end of the lever T, I pivot a ratchet-pawl, W, arranged to engage with the ratchet-wheel X, fixed to or forming part of the sprocket-wheel O. At each revolution of the needle-cylinder the lever T is moved so as to cause the ratchet-pawl pivoted upon it to move the sprocket-wheel the distance of one ratchet-tooth. As each revolution of the needle-cylinder produces one or more rows of stitches corresponding to the number of feeders, it is only necessary to place the stud or studs P in such a position on the chain that upon the number of rows desired being completed the said stud will come in contact with the pawl M, thereby imparting, as hereinbefore described, the required movement to throw the blocks *b* and projections *a* in or out of action.

What I claim as my invention is—

1. A presser-wheel having tuck-presser notches or recesses formed around its periphery, in combination with devices constructed to fit into such notches and capable of adjustment therein, and mechanism for operating said devices to throw them in or out of line with the periphery of the presser-wheel, whereby said wheel may be converted into a plain or tuck presser, as desired, without stopping the machine, substantially as set forth.

2. A disk having tuck-presser notches in its periphery, in combination with a series of blocks constructed to fit in said notches, and mechanism whereby the said blocks may be thrown out or on a line with or withdrawn from the periphery of the presser-wheel at predetermined periods, substantially as and for the purpose specified.

3. The presser-wheel A, provided with the flange *f* and tuck-presser notches *h*, levers *d*, provided with notches *e*, and adapted to rest and rock upon the flange *f*, blocks *b*, hinged to the outer ends of the levers, sleeve B, provided with a groove on its periphery adapted to engage the inner ends of said levers, spindle C, sleeve E, and bolts D, in combination with the post G, lever F, pivoted to said post and connected at its inner end with the sleeve E, and mechanism connected with the outer end of the lever F, adapted to rock said lever on its pivot at predetermined periods, whereby a vertical movement may be imparted to the sleeve E and devices connected therewith, and the blocks *b* be thrown out on a line with or be withdrawn from the periphery of the presser-wheel, substantially as described.



4. The combination of the blocks *b* and sleeve  
E and mechanism, substantially as described,  
connecting said blocks with the sleeve E, with  
the post G, lever F, pivotally secured thereto,  
5 one end of which lever is connected to said  
sleeve, and the other end slotted, as described,  
the pin H, arranged in said slotted end and  
adapted to be moved nearer to or farther from  
the fulcrum thereof, and devices, substantially  
10 as described, for operating said lever, as set  
forth.

5. The combination, with the blocks *b*, slid-  
ing bar J, lever I, and mechanism, substan-  
tially as described, connecting said lever with  
15 the blocks *b*, of the pivoted arm L, the pawl  
M, and pattern mechanism for operating said

pawl, whereby the lever is raised or lowered  
at predetermined intervals, substantially as  
described.

6. The combination of the pawl M, the piv- 20  
oted arm L, and sliding bar J with the sprock-  
et-wheel O, chain N, stud or studs P, and mech-  
anism for rotating said sprocket-wheel, the  
combination being and operating substantially  
25 as and for the purpose set forth.

7. A presser-wheel having formed on its up-  
per inner surface annular flange *f*, as and for  
the purpose set forth.

W. W. CLAY.

Witnesses:

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CHAS. C. BALDWIN.