

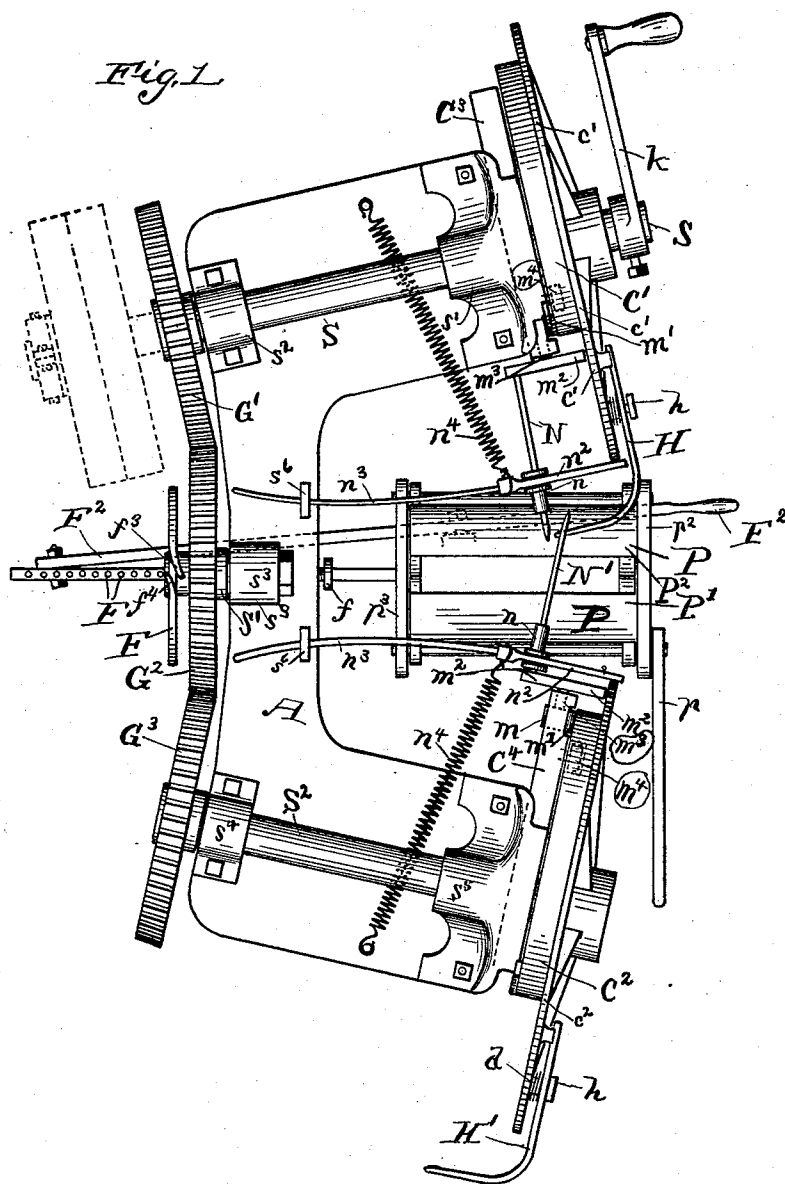
(No Model.)

6 Sheets—Sheet 1.

L. PELTON.
BROOM SEWING MACHINE.

No. 572,615.

Patented Dec. 8, 1896.



Witnesses:
R. J. Jackson,
H. E. Willsie.

Inventor:
Leander Pelton.

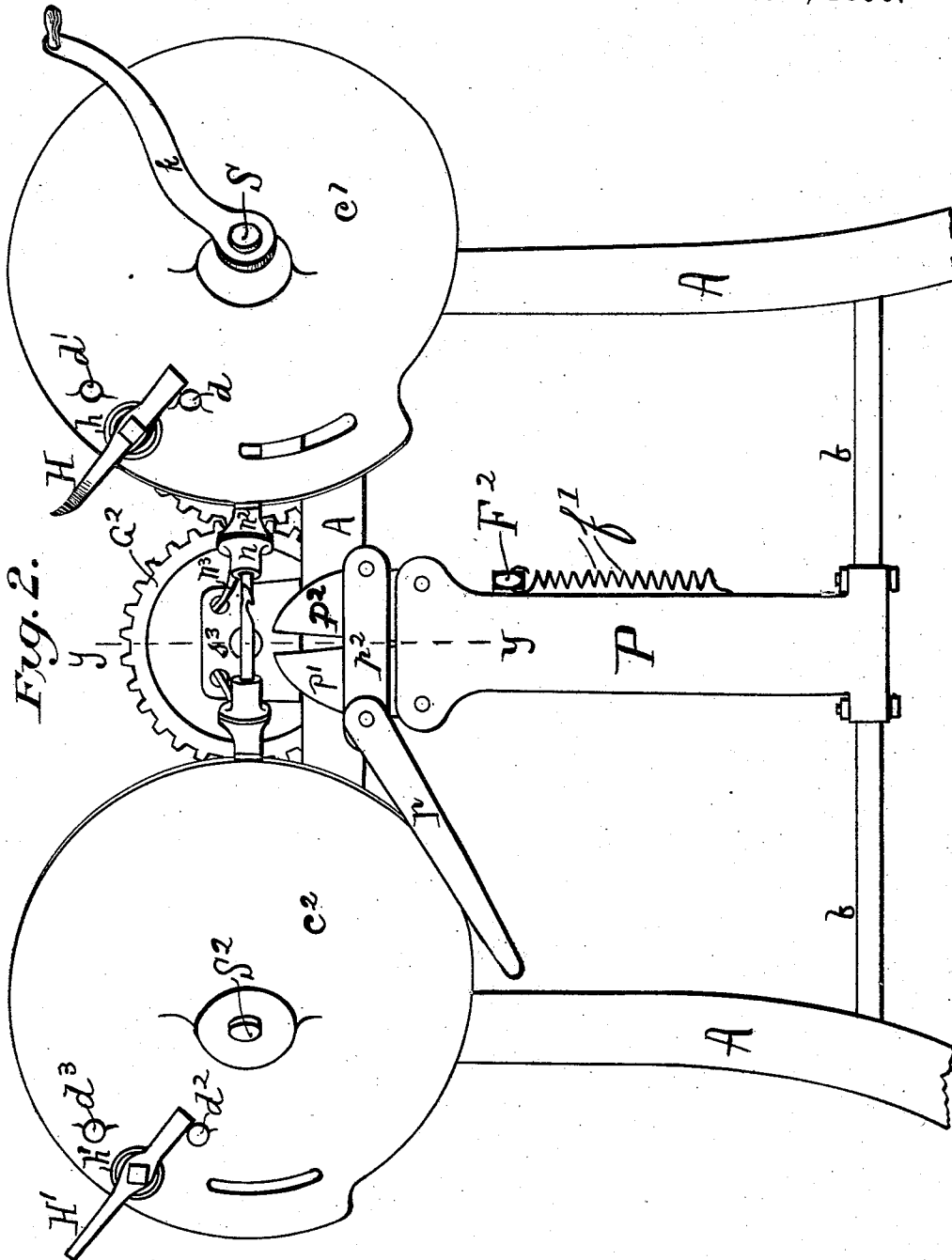
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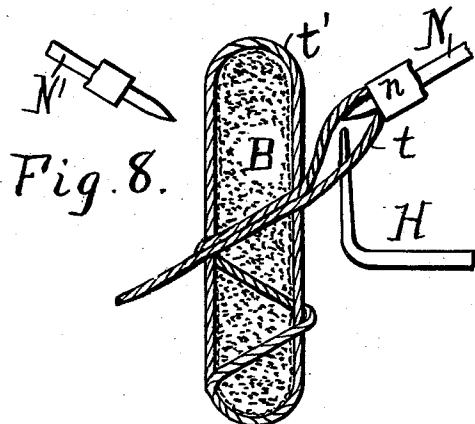
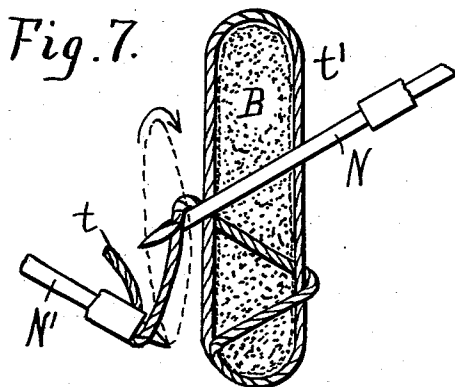
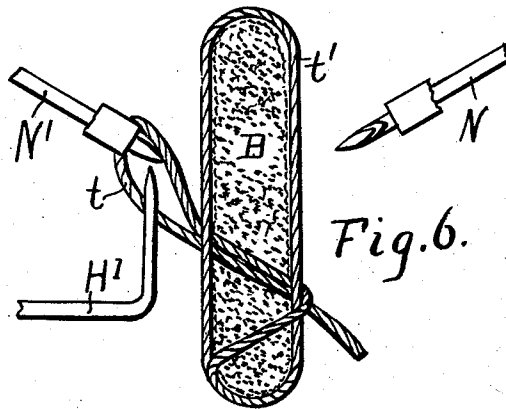
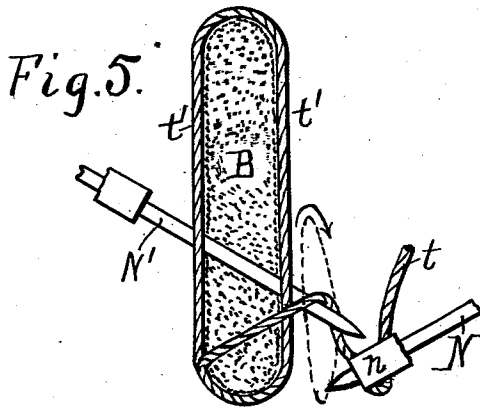
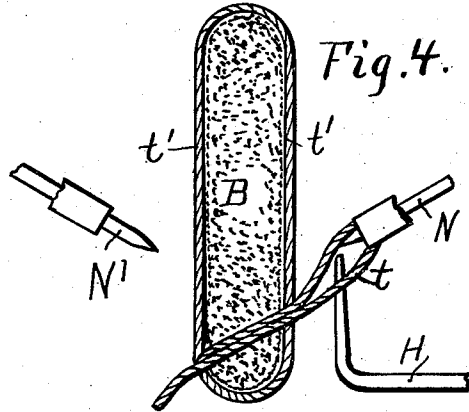
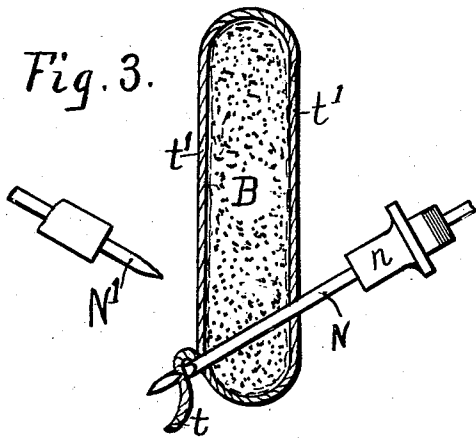
WITNESSES:
J. B. Sperry
H. E. Wilson

INVENTOR:
Leander Pelton

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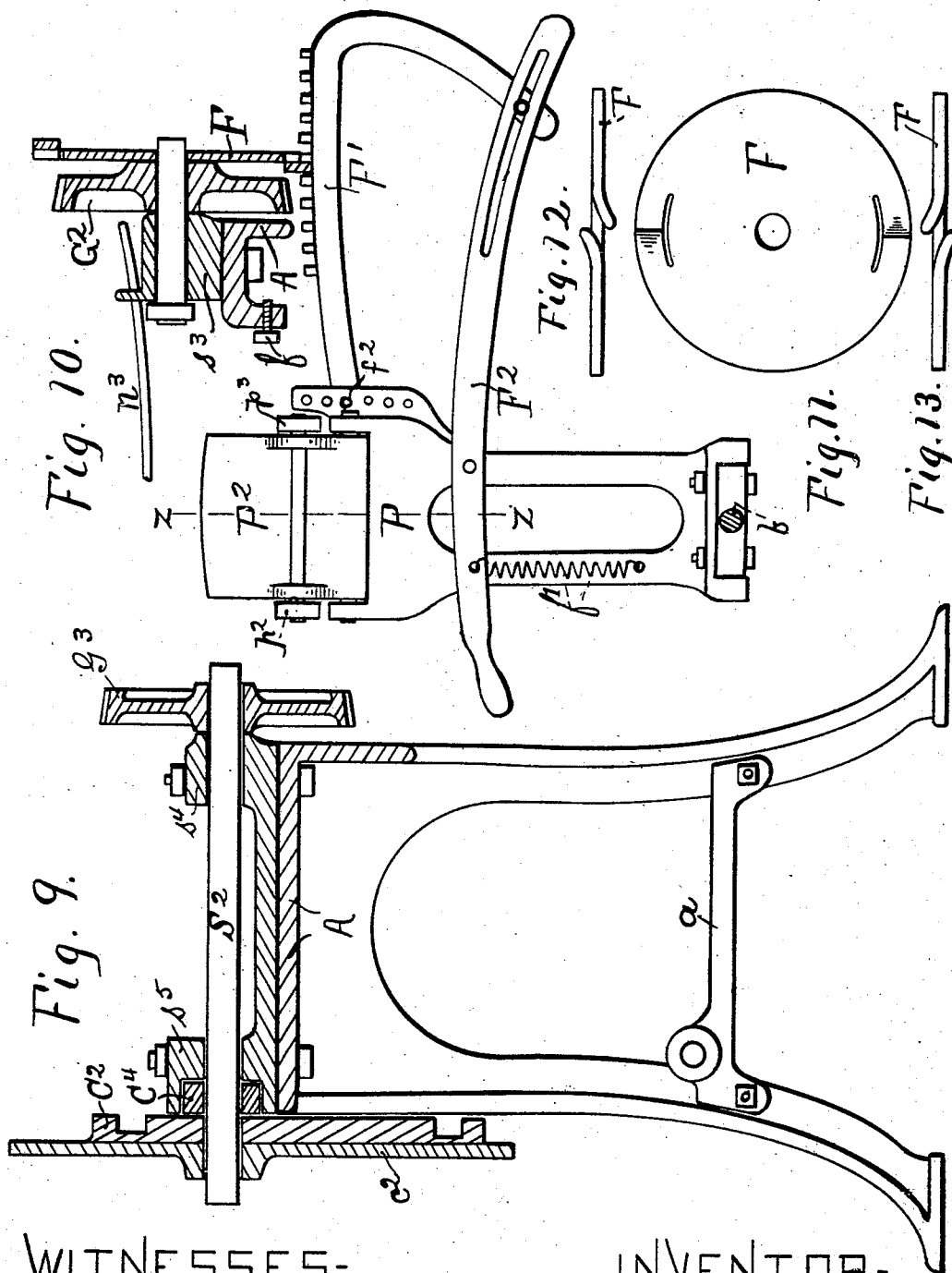
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WITNESSES:

J. B. Sperry
H. E. Willis

INVENTOR:

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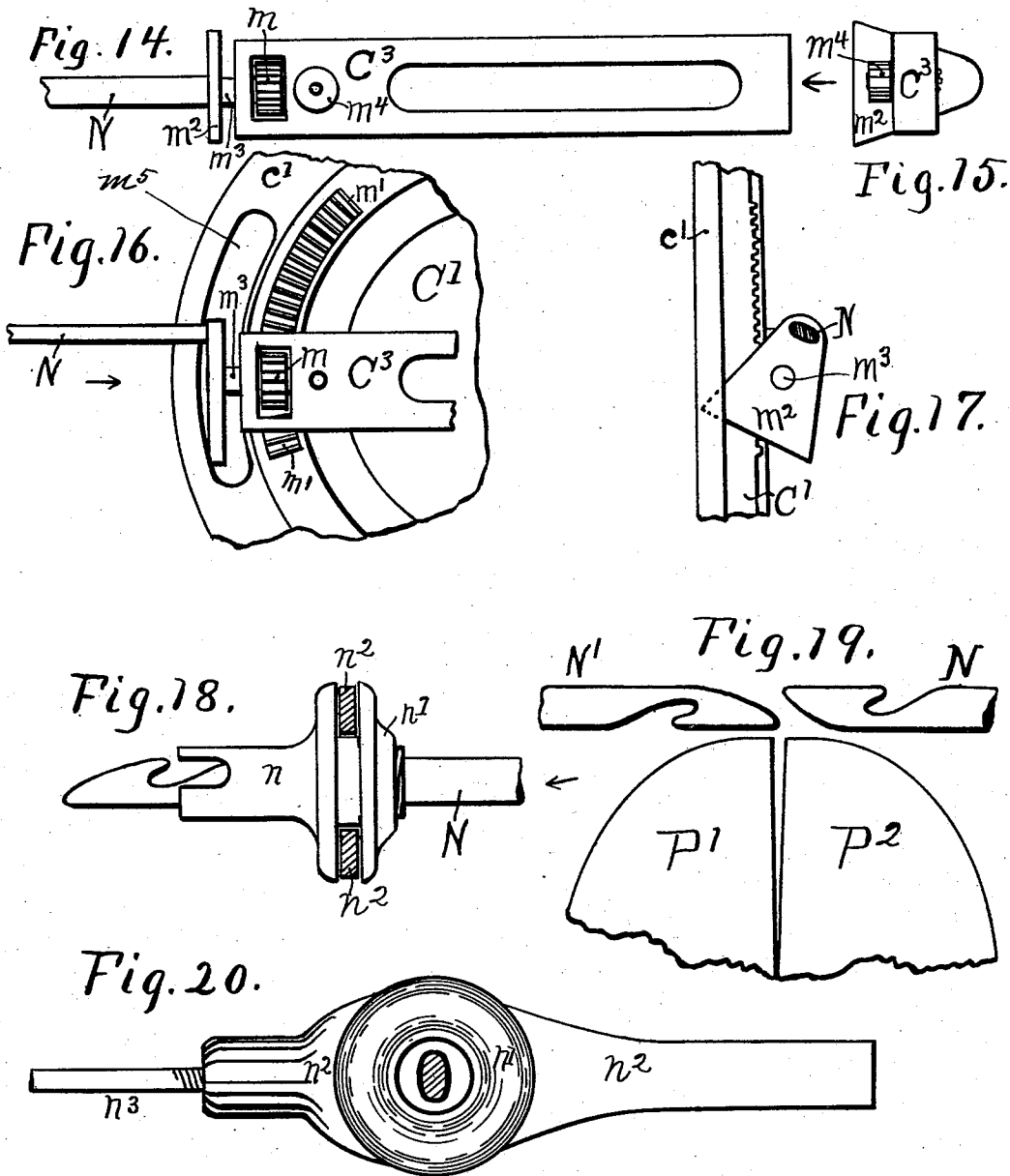
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WITNESSES:

J. B. Sperry
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INVENTOR:

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Fig. 21.

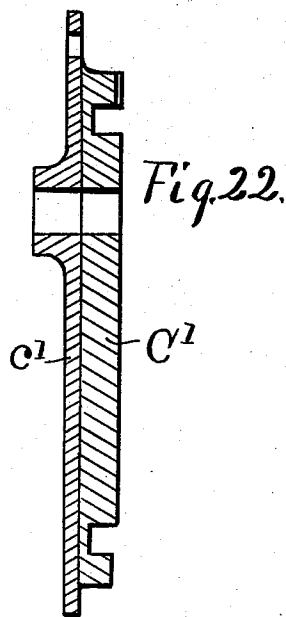
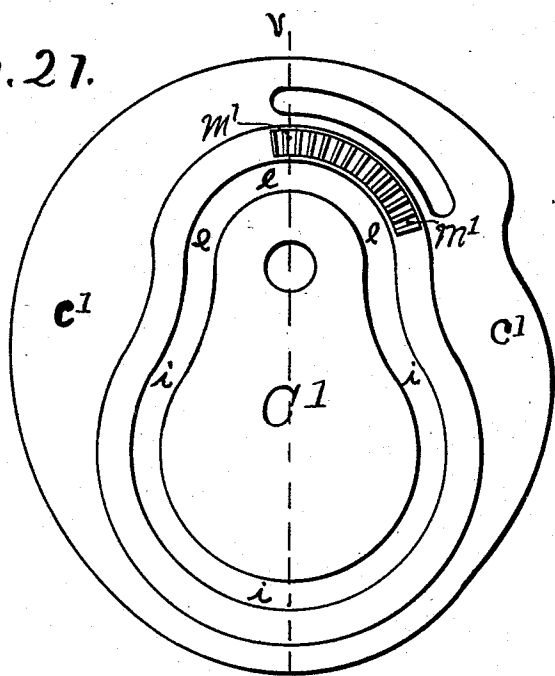


Fig. 23.

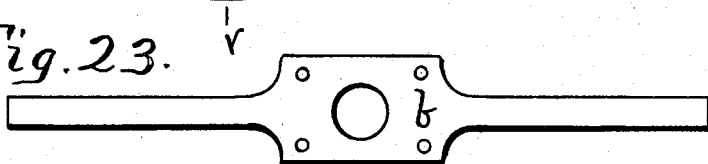


Fig. 24.

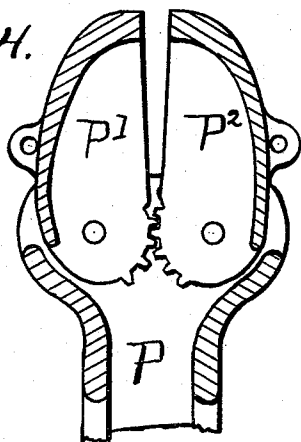


Fig. 25.

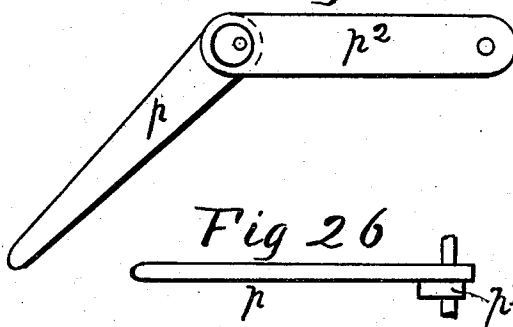
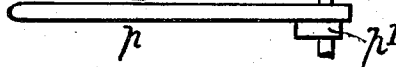


Fig. 26.



WITNESSES:

J. B. Sperry
H. E. Villars

INVENTOR:

Leander Pelton

UNITED STATES PATENT OFFICE.

LEANDER PELTON, OF DES MOINES, IOWA.

BROOM-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 572,615, dated December 8, 1896.

Application filed April 26, 1893. Serial No. 471,906. (No model.)

To all whom it may concern:

Be it known that I, LEANDER PELTON, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a new and useful Broom-Sewing Machine, of which the following is a specification.

My invention relates to improvements in broom-sewing machines in which reciprocating needles operate in conjunction with rotating hooks for drawing from the broom the free and unused end of the thread.

The object of my invention is to provide a broom-sewing machine which because of its reduced friction may be efficiently operated by one man of average strength. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top view of my machine. Fig. 2 is a front view of the same. Figs. 3, 4, 5, 6, 7, and 8 show the relative positions of the broom, the needles, and the thread while sewing the broom. Fig. 9 is a section on the line $x x$ in Fig. 1, viewed in the direction of the arrow. Fig. 10 is a partial section on the line $y y$ in Fig. 2, showing the press and the mechanism for feeding the same. Fig. 11 is a side view of the worm for feeding the press. Figs. 12 and 13 are top and bottom views of the same. Fig. 14 is a view of the cam-operated slide for reciprocating the needle. Fig. 15 is an end view of the same in the direction of the arrow. Fig. 16 shows the mechanism for rotating the needle. Fig. 17 is a view of the same in the direction of the arrow. Fig. 18 shows the device for closing the eye of the needle. Fig. 20 is a view of the same in the direction of the arrow. Fig. 19 shows the relative positions of the needle-eyes and needle-points in respect to the press. Fig. 21 shows the cam for reciprocating the needle and operating the device for closing the eye of the needle. Fig. 22 is a section of the same on the line $v v$ in Fig. 21. Fig. 23 is a top view of the shaft for supporting the press. Fig. 24 is a section of the head of the press on the line $z z$ in Fig. 10. Fig. 25 is a view of the lever-and-link device for operating the jaws of the press. Fig. 26 is a top view of the same lever.

Similar characters refer to similar parts throughout the several views.

The construction and operation of my machine are as follows:

A broom having been placed in the press P, the jaws P' and P^2 are closed upon the broom to compress it by means of the hand-lever p , having the eccentric-cam p' operating on the link p^2 , the latter being pivotally connected to the jaws P' and P^2 . A portion of the thread to be used is wrapped around the broom and secured. This part t' is called the "binder." There remains an unused part t or free end.

Referring now to Fig. 10, the handle of the lever F^2 is raised until the rack F' is disengaged from the worm F . The press then being pushed inward until it strikes the adjustable stop f and the handle of the lever F^2 being released, the spring f' , one end of which is connected to the lever F^2 and the other end to the press P , forces the rack F' to engage with the worm F . The broom is now in position for the first stitch to be sewed.

To the shaft S , which is journaled in the boxes s' and s^2 , are secured the crank k , the cams C' and c' , and the spur-gear G' . With the gear G' meshes the gear G^2 , secured to the shaft S' , which is journaled in the box s^3 . The gear G^2 also meshes with the gear G^3 . To the shaft S^2 , which is journaled in the boxes s^4 and s^5 , are secured the cams C^2 and c^2 and the gear G^3 . By turning the crank k the needle N is forced, by means of the cam C' and the slide C^3 , to advance through the broom B until it has the position shown in Fig. 3. The free end t of the thread is put into the eye or barb of the needle N . A further rotation of the crank k retracts the needle N , advances the press by one tooth of the rack F' , and brings the hook H into position to withdraw the free end of the thread from the broom, as shown in Fig. 4. The free end of the thread is then withdrawn from the broom by the hook H , and the needle N' is advanced through the broom. At this point the needle N is caused, by means of the mechanism shown in Figs. 14 and 16, to rotate around the point of the needle N' and put the free end of the thread into the eye or barb of the

needle N' , as shown in Fig. 5. A further rotation of the shaft S retracts the needle N' , advances the press by one tooth of the rack F' , and brings the hook H' into position to withdraw the free end t of the thread, which has in the meantime been released from the eye of the needle N , as in Fig. 6. The free end of the thread is then withdrawn from the broom by the rotating hook H' . The needle N' moves around the point of the needle N and puts the free end of the thread within the eye of the needle N . The thread is then released from the needle N' . (See Figs. 7 and 8.) By a further and continued rotation of the crank k the above-described operations are repeated continuously and successively until the broom is sewed.

By reason of the free end of the thread being withdrawn from the broom without being pulled through the eye or barb of the needle the machine may be run at a higher speed than is customary without fraying or breaking the thread.

The principal path of reciprocation of a needle is the path the needle travels while passing through the broom.

I term that needle the point of which projects through the broom or over the jaws of the press the "advanced" needle and that needle the point of which is withdrawn from the broom or from over the jaws of the press the "retracted" needle.

I will now describe such details of the construction and operation of my machine as I have so far omitted.

The press P is secured to and supported by the shaft b , which is connected to the frame A . In Fig. 9, a is one of the braces of the frame A , having a journal-box for one end of the shaft b . The shaft b has a hole near its center for the reception of the broom-handle, as shown in Fig. 23.

In order to have the broom always held in the center of the press, the jaws P' and P^2 are made to operate together by means of the teeth on each jaw meshing as shown in Fig. 24.

The rack F' , Fig. 10, is pivotally connected to the press P at the point f^2 . By changing this point of connection to any of the other holes shown for the purpose the length of the stitch can be varied, because the nearer the point of connection f^2 is to the shaft b the greater will be the feed movement of the jaws P' and P^2 . The spring f' holds the rack F' into gear with the worm F . The worm F , secured to the gear-wheel G^2 , is so constructed that it advances the press while both needles are out of the broom and holds it steady during the rest of the time. As is readily perceived by inspection of Figs. 11, 12, and 13 of the drawings, showing the construction of the worm-gear, and Fig. 10, showing such worm-gear in engagement with the rack, I prefer to construct the worm-gear of a disk having lips $f^3 f^4$ thereon, such lips, together with the remainder of the periphery of the disk, fitting between the teeth of the rack F' .

Each time the lips $f^3 f^4$ extend between any two of the teeth of the rack F' the rack will be advanced one tooth, and while the remainder of the periphery of such disk is between such teeth the rack is held stationary.

In Fig. 21, C' shows the cam for reciprocating the needle N . The needle N is secured to the piece m^2 , which is pivoted to the slide C^3 by means of the pivot m^3 , as shown in Figs. 14 to 17. The small gear-wheel m is secured to the pivot m^3 . The roller m^4 , secured to the slide C^3 , works in the groove of the cam C' . Thus by rotating the cam C' the needle N is reciprocated and at predetermined intervals is rotated by means of the gear m , meshing with the gear-rack m' . The gear-rack m' is secured rigidly on the face of the cam C' , so that as the cam C' is rotated such gear-rack passes by the gear m , intermeshing therewith and rotating such gear and its pivot m^3 . The piece m^2 , bearing against the cam c' , prevents any rotary movement of the needle, except when the gear-rack m' is intermeshing with gear m , at which time such piece m^2 can and will enter the opening m^5 , where the cam c' is cut away, as shown in Fig. 16.

The preferable outline for the cams C' and C^2 is that shown in Fig. 21, in which the arc of a small circle eee is joined with the arc of a larger circle iii .

During the rotation of the needle the thread is retained in the eye of the needle N by means of the sleeve n . (Shown in Fig. 18.) The sleeve n slides upon the needle, and because of the elliptical section of the needle rotates with it, and also rotates in the piece n^2 . The sleeve n is guided in its lateral movements by the piece n^2 being held against the cam c' by the spring n^4 . The piece n^2 is prevented from rotating by the rod n^2 working loosely in a hole in the standard s^6 .

The needles are pointed and held in the positions shown in Fig. 19. Thus in sewing a broom one needle N always goes over the binder t' and the other needle N' always goes under the binder.

As my machine is nearly symmetrical the description of the construction and operation of the parts of one half of the machine will apply to the construction and operation of similar parts in the other half of the machine. For example, in construction and operation s^4 corresponds to s^2 , s^5 to s' , p^3 to p^2 , C^4 to C^3 , d^3 to d' , d^2 to d , h' to h , &c.

Having now so fully illustrated and described my invention that any one familiar with the art of broom-sewing and machine construction would be able, without performing any inventive act, to make and use my machine, what I claim, and desire to secure by Letters Patent, is—

1. In a broom-sewing machine, a needle having a longitudinally-movable sleeve thereon arranged to close the barb of the needle when moved closely thereto and to open it when moved therefrom, in combination with a sec-

ond needle having a like sleeve thereon, and mechanism for advancing one of the needles, for moving the sleeve near to the barb on the other needle, and for moving such other needle around the advanced needle, and means for retracting the advanced needle and for then advancing the needle which has been moved around; substantially as described.

2. In a broom-sewing machine two longitudinally-movable barbed needles, in combination with mechanism arranged to alternately longitudinally advance and retract each of the needles, and mechanism to move each of the needles, when retracted, around the barb of the other needle, when such other needle is advanced, so as to lay a thread from the barb of the needle which is retracted into the barb of the needle which is advanced; substantially as described.

3. In a broom-sewing machine, the combination of two longitudinally-movable barbed needles, each needle constructed to be advanced through the body of a broom, receive a thread in its barb, and to then be retracted and pull the thread through such body of the broom, mechanisms for so advancing and retracting the needles, and each needle constructed to be moved, when retracted, around the barb of the other needle, when such other needle is advanced, sufficiently to lay the thread from the barb of the needle which is retracted into the barb of the needle which is advanced, with mechanism arranged to so move the needles when retracted; substantially as described.

4. In a broom-sewing machine, the combination with a work-support, of two longitudinally-reciprocating bars, each on different sides of the work-support, a spindle rotatably mounted on one end of each of said bars, and a hooked needle mounted on each of said spindles with the axial line of said needle in a plane parallel to the axial line of its spindle, mechanism for longitudinally reciprocating said bars, and mechanism for turning the spindles at predetermined times; substantially as described.

5. In a broom-sewing machine, the combination with a broom-press of two reciprocating barbed needles pointed in opposite directions and provided with sleeves, means for moving the barb-closing sleeves, and mechanism for alternately advancing and retracting the needles and for moving the point of the retracted needle around the longitudinal part of the advanced needle, the sleeve of the retracted needle holding the thread within the barb of said retracted needle during said movement around the advanced needle.

6. In a broom-sewing machine, the combination of two needles pointed in different directions, cam mechanism for alternately reciprocating said needles, and a rack-and-pinion mechanism arranged to alternately move said needles when retracted, out of the path of reciprocation thereof, in a circular path around the barb of the other needle, when

such other needle is advanced, for the purposes set forth.

7. In a broom-sewing machine, the combination with a broom-press of two needles connected by cranks to separate slides, cams for alternately reciprocating said slides and thereby so relating the needles that the same functionate, spur-gears secured to the axles of said cranks, and rack-gears adapted to alternately rotate said spur-gears at intervals, and when the slides are, respectively, retracted; substantially as described.

8. In a broom-sewing machine, the combination of two longitudinally-movable barbed needles geared to act alternately, one of such needles having its barb on the upper side thereof and the other having its barb on the under side thereof, in the longitudinal movements thereof, respectively, the point of both needles beveled backward from the edge thereof on which the barb is made, with mechanism for alternately driving the needles longitudinally, and means for moving each of the needles, when retracted, around the barb of the other needle when such other needle is advanced; substantially as described.

9. In a broom-sewing machine, the combination of two longitudinally-movable barbed needles, one of such needles having the barb on the upper side thereof in its longitudinal movement, and the other having its barb on the under side thereof in its longitudinal movement, with two arms moving around separate shafts and passing by the respective needles in opposite directions, one of such arms taking the thread from one of the barbs and the other taking the thread from the other barb, and mechanism for driving the needles and the rotating arms; substantially as described.

10. In a broom-sewing machine, the combination of two longitudinally-movable barbed needles geared to act alternately, with two arms moving around separate shafts and passing by the respective needles in opposite directions, such arms geared so that one thereof passes by and takes the thread from one of the needle-barbs, and the other passing by the other needle in the opposite direction takes the thread from the barb thereof, and mechanism for driving the needles and the rotating arms; substantially as described.

11. In a broom-press, a post, shafts rotatably mounted in the post near the upper end thereof, jaws loosely mounted on the shafts, respectively, gear-teeth on the lower end of the jaws concentric with the shafts, respectively, such gear-teeth intermeshing, eccentrics secured on one of the shafts, links loosely mounted on the shafts with the eccentrics in one end of the links, and a lever secured to one of the shafts; substantially as described.

12. In a broom-sewing machine, the combination with a broom-press of two alternately-reciprocating needles geared to engage with a single thread, each needle attached at one end thereof to a crank, means for longitudi-

nally reciprocating the needles, and mechanism for alternately operating said crank at intervals.

13. In a broom-sewing machine, the combination of two alternately reciprocally moving needles, mechanism for moving the needles when retracted, respectively, around the longitudinal path thereof, and two rotating arins arranged, respectively, to rotate in planes

parallel with the plane in which the needles move, respectively, longitudinally, and thereby to remove from the broom the free or unused end of the thread.

Signed in the presence of two witnesses.

LEANDER PELTON.

Witnesses:

AXEL JORGENSEN,

II. E. WILLSIE.