No. 733,694. PATENTED JULY 14, 1903.

D. L. CHANDLER.

PLAITING MACHINE.

APPLICATION FILED NOV. 8, 1901.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

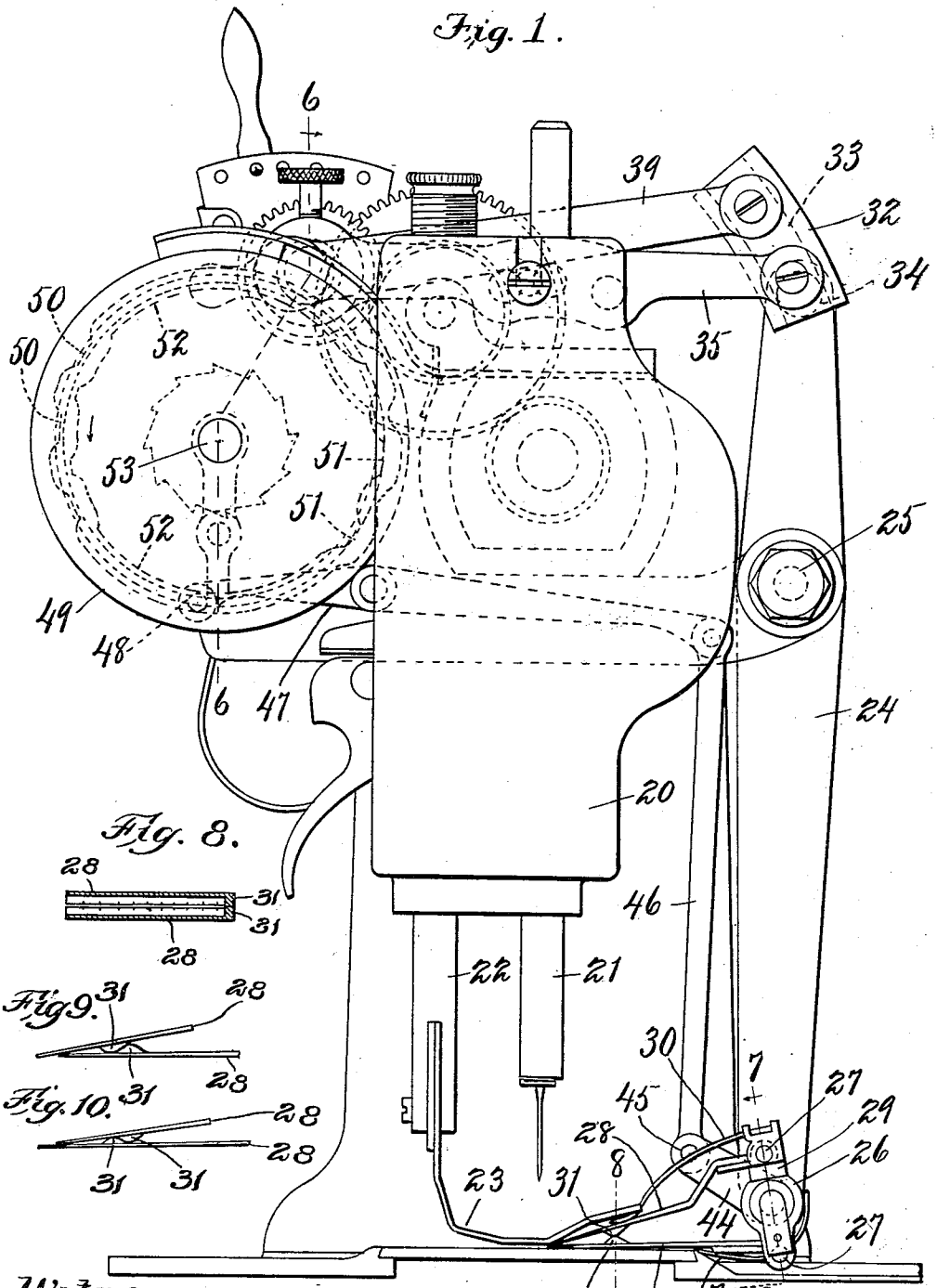


Fig. 8.

Fig. 9.

Fig. 10.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

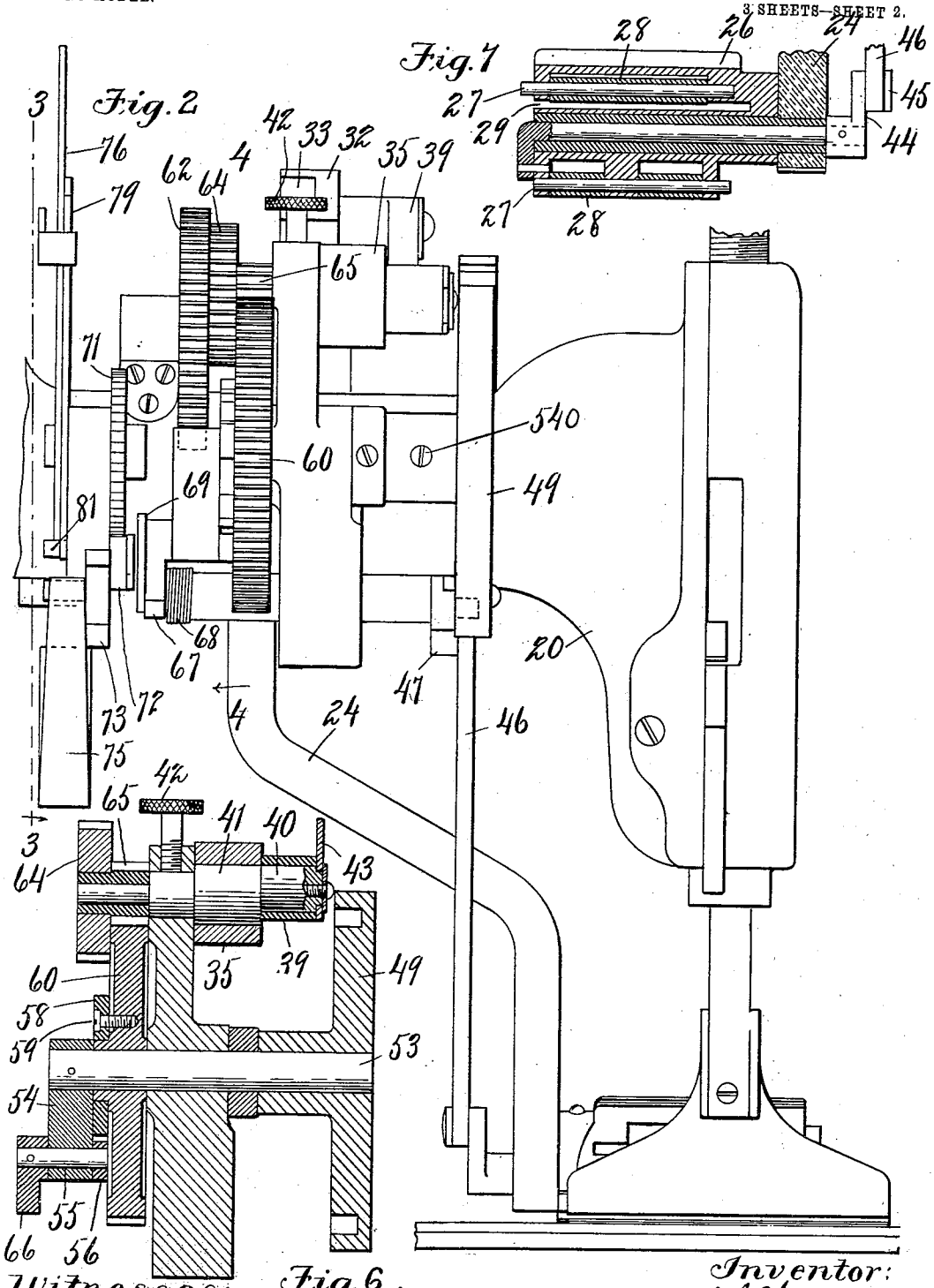
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NO MODEL. 3 SHEETS—SHEET 2.



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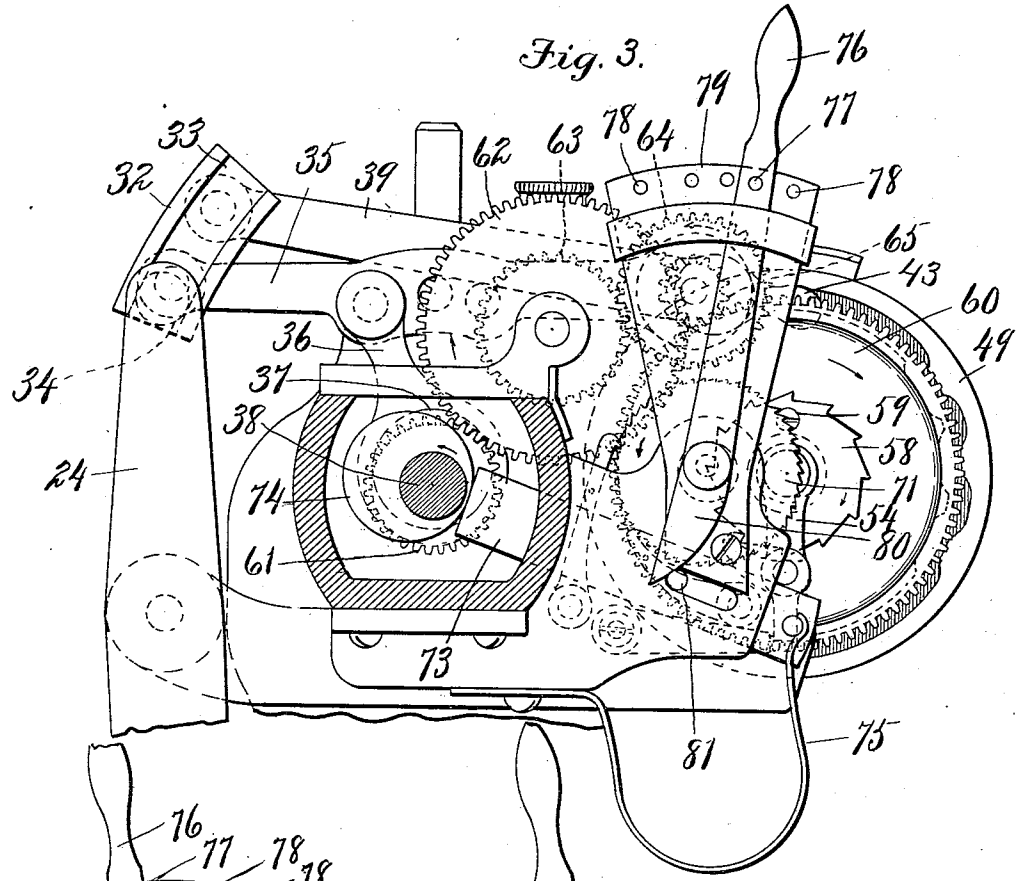
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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 3.



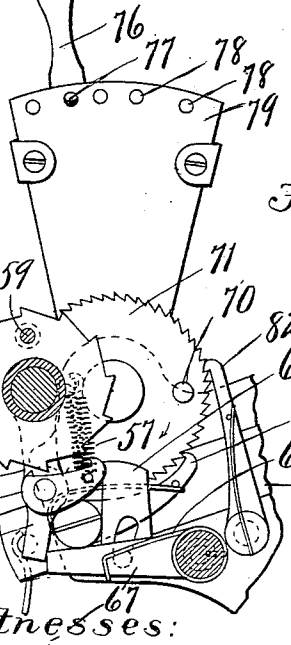


Fig. 4

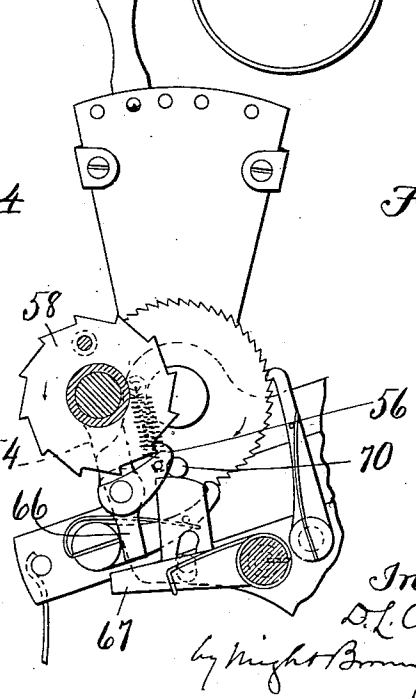


Fig. 5.

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No. 733,694. Patented July 14, 1903.

UNITED STATES PATENT OFFICE.

DANIEL L. CHANDLER, OF AYER, MASSACHUSETTS, ASSIGNOR TO GEORGE J. BURNS, OF AYER, MASSACHUSETTS.

PLAITING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 733,694, dated July 14, 1903.

Application filed November 8, 1901. Serial No. 81,525. (No model.)

To all whom it may concern:

Be it known that I, DANIEL L. CHANDLER, of Ayer, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Plaiting-Machines, of which the following is a specification.

This invention relates to machines for side plaiting fabrics; and its object is to simplify said machines so as to render them less expensive to build and permit an increased speed of operation. This object is attained by means of certain novel features of construction and arrangement which I shall now proceed to describe and claim.

Certain devices forming a part of the machine are also illustrated and described in a copending application, Serial No. 76,058, filed by me September 21, 1901, and I do not herein lay claim to such devices, but only to the features of improvement in the present machine where the devices have the same or a similar object in the two machines.

Of the accompanying drawings, Figure 1 represents a side elevation of a sewing-machine provided with plaiting mechanism constructed in accordance with my invention. Fig. 2 represents a rear elevation thereof. Fig. 3 represents a section on the line 3 3 of Fig. 2. Figs. 4 and 5 represent sections on the line 4 4 of Fig. 2, showing the parts in different positions. Figs. 6, 7, and 8 represent sections on the correspondingly-numbered lines of Fig. 1. Figs. 9 and 10 represent detail side elevations, showing two different positions of the plaiting-blades.

The same reference characters indicate the same parts in all the figures.

Although my invention is shown in connection with a sewing-machine, it is not necessarily thus employed.

20 is the arm of the sewing-machine frame.

21 is the needle-bar, and 22 is the presser-foot bar, having the presser-foot 23.

24 is a plaiter-operating lever pivoted at 25 to a bracket on the arm and having a rock-frame 26 journaled at its lower end. Journaled on pintles 27 on said rock-frame on opposite sides of the axis of oscillation of the rock-frame are the two plaiter-blades 28 28, coacting with the work-plate and the presser-foot and adapted to form oppositely-directed knife-plaits in a fabric fed between them. These plaits as formed are subjected to pressure under the presser-foot 23 and are fed along and stitched by the stitching mechanism of the sewing-machine. The rock-frame 26 is adapted to oscillate on its axis, and in so doing it imparts a relative sliding movement to the plaiters 28, whereby the operating edge of the one or the other of said plaiters is projected into operative position, as shown in Figs. 9 and 10, or said edges are brought even or coincident with each other, as indicated in Fig. 1.

29 is a slot or recess in the rock-frame 26 between the two plaiters, through which the fabric is fed. Springs 30 30 yieldingly press the plaiters toward each other. To separate the working edges of the plaiter-blades and prevent them from operating on the fabric when it is desired to stitch but not plait said fabric, I provide said plaiters on one edge or at the side of the path of the fabric with a pair of coacting cam abutments or projections 31 31. These projections are brought into register when the rock-frame 26 is in its median position, holding the working edges of the plaiters coincident, so that said working edges are then separated, and the plaiters may reciprocate without plaiting the fabric. When the working edge of either plaiter is slid past that of the other, as indicated in Fig. 9 or Fig. 10, these cam projections slide over each other and permit the plaiters to engage and plait the fabric.

The lever 24 is continuously reciprocated by mechanism comprising a link or cam 32, having a groove 33, occupied by a stud 34 on the upper arm of the lever, a horizontal pivoted lever 35, connected with said link, and an arm 36, connecting said lever 35 with the strap of an eccentric 37, mounted on the driving-shaft 38 of the machine. The link or cam 32 is also supported by an arm 39, pivoted to an eccentric 40, formed on the stud 41, which constitutes the pivot of the lever 35. This stud is held in a bracket on the machine-

frame by means of a set-screw 42 and is provided with a short handle 43, whereby the stud may be rotated after loosening the screw 42, so as to change the inclination of the cam 32. By inclining the cam to the path of its movement produced by the oscillating lever 35 the lever 24 is oscillated and the plaiters are reciprocated. It is obvious that by rotating the stud 41 the angle of the cam 32 may be varied, so as to change the throw of the plaiters, or may be removed entirely by bringing said cam into concentric relation with the pivot-stud 41, (the slot 33 of the cam being curved on the radius of the lever 35,) so as to stop the motion of the plaiters.

The shaft of the rock-frame 26 is provided with a crank 44, having a wrist-pin 45, connected by a link 46 to the front end of a pivoted lever 47, the point of connection of said link 46 and lever 47 being in the neighborhood of the pivot 25 of lever 24, as seen in Fig. 1, so that as the lever 24 oscillates such oscillation will not cause the rock-frame 26 to rock appreciably on its pivot. The rear arm of the lever 47 is provided with a stud 48, occupying a groove in the face of a pattern-cam 49. This cam-groove is provided with portions 50 50 of minimum radius, which so oscillate the lever 47 as to depress the link 46 and bring the upper plaiter-blade 28 into operative position, Fig. 9, also with other portions 51 51 of maximum radius, which bring the lower plaiter-blade into operative position, Fig. 10, and with portions 52 52 of intermediate radius, which hold the plaiters in intermediate position, Fig. 1. Therefore while the portions 50 of the cam are operating the machine is making plaits all inclined in one direction, while the portions 51 are operating the plaits are made all inclined in the opposite direction, and while the portions 52 are operating the machine feeds and stitches plain fabric without any plaits. The cam 49 is mounted upon a stud 53 and attached thereto by a set-screw 540, Fig. 2. By changing the cam for one having a different formation of groove a different style of plaiting may be produced.

The stud 53 carries an arm 54, which supports the shaft 55 of a pawl 56. Said pawl is normally held by a spring 57 in engagement with the teeth of a ratchet-wheel 58, which is attached by a screw 59 to the face of a gear-wheel 60, loose on stud 53. This gear-wheel is continuously rotated from the shaft 38 through a train of gears 61 62 63 64 65. The pawl 56 and ratchet 58 form a clutch which when locked, as shown in Fig. 5, causes the cam 49 to rotate.

The arm 54 coincides with the middle of an intermediate or non-plaiting portion 52 of the cam-groove. A timing mechanism is provided, whereby, if desired, the arm 54, and with it the cam 49, may be temporarily arrested for a greater or less length of time and automatically started again, whereby the length of the unplaited portion of the fabric is varied. The shaft 55 of the pawl 56 is provided with an arm 66. 67 is an arresting-dog yieldingly projected by a spring 68 into the path of the arm 66 and having a lug 69 adapted to be engaged by a pin 70 on a rotating ratchet-wheel 71, whereby the dog 67 is intermittently moved out of the path of the arm 66, Fig. 5. The ratchet-wheel 71 is rotated by a feed-pawl 72, pivoted to a slide 73, which is reciprocated by a cam 74 on the shaft 38, the slide being projected toward said cam by a spring 75. 76 is a regulating-lever adapted to be held in different positions by a pin 77 on the lever entering a series of holes 78 in a segment-plate 79, said lever having an arm 80, adapted to engage a pin 81 on the slide 73 and to limit the stroke of said slide. 82 is a check-pawl engaging the ratchet-wheel 71. By manipulating the lever 76 the pawl 72 may be caused to feed four, three, two, one, or no ratchet-teeth at each stroke. The arrangement is such that when four teeth at a stroke are fed the ratchet 71 rotates in the same time as the gear 60. By causing the action of the pin 70 to coincide with the point at which the arm 66 crosses the path of the arresting-dog 67 said dog will be restrained from engaging the arm 66 and oscillating the pawl 56, and the cam 49 will therefore be rotated continuously. If any less number than four teeth of the ratchet 71 are fed at a stroke of the feed-pawl, the said ratchet will fall behind the cam 49 in its rotation, causing the dog 67 to release the pawl 56 from the ratchet 58 (which latter continues rotating) and arrest the rotation of the cam 49 until such time as the pin 70 shall oscillate the dog 67 and allow the pawl 56 to again engage ratchet 58.

I claim—

1. In a plaiting-machine, a plaiter-reciprocating pivoted lever, a rock-frame journaled thereon, two plaiters connected to said frame on opposite sides of its axis of oscillation, a pattern-cam, a pivoted lever oscillated thereby, and a link pivoted to the last-said lever adjacent to the pivot of said plaiter-reciprocating lever, and having a wrist or crank connection with the rock-frame, said link being moved longitudinally by its lever so as to oscillate the rock-frame.

2. In a plaiting-machine, a pair of plaiters mounted for relative sliding movement, means yieldingly pressing the fabric-engaging portions of the plaiters together, and plaiter-separating means brought into action by said relative sliding plaiters for separating said fabric-engaging portions.

3. In a plaiting-machine, a pair of plaiters mounted for relative sliding movement, and coacting cam projections on the respective plaiters located out of the path of the fabric.

4. In a plaiting-machine, plaiting mechanism, a device controlling said mechanism, a

constantly-rotating driving-ratchet, a rotary support connected with said controlling device, a pawl eccentrically mounted on said support and normally engaging the ratchet, an arresting member automatically movable into and out of the path of said support and adapted to release the pawl and arrest the support, and means to variably time the cycle of said member in a predetermined relation to that of the support.

In testimony whereof I have affixed my signature in presence of two witnesses.

DANIEL L. CHANDLER.

Witnesses:

FANNIE G. WALSH,

THOMAS L. HAZEN.