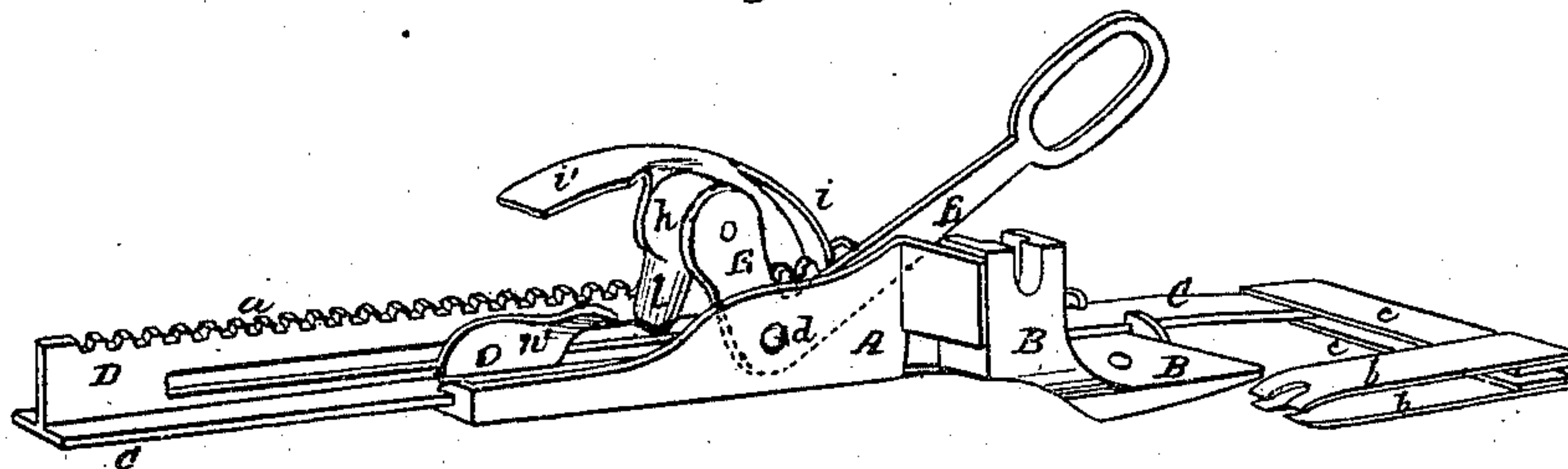
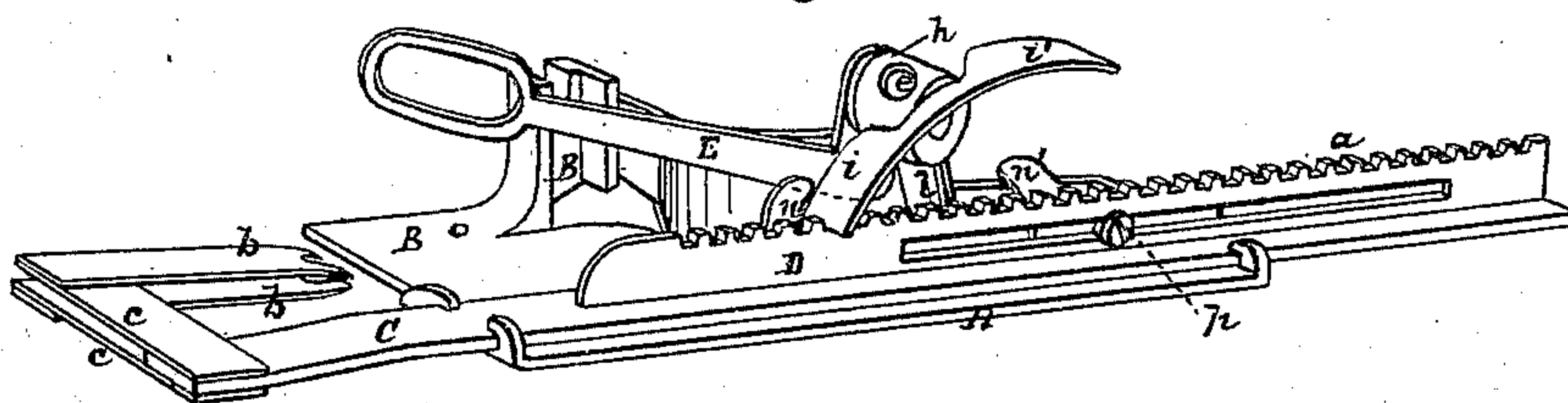


A. RUSH.  
**Ruffling or Plaiting Attachments for Sewing-Machines**  
 No. 143,424. Patented Oct. 7, 1873.

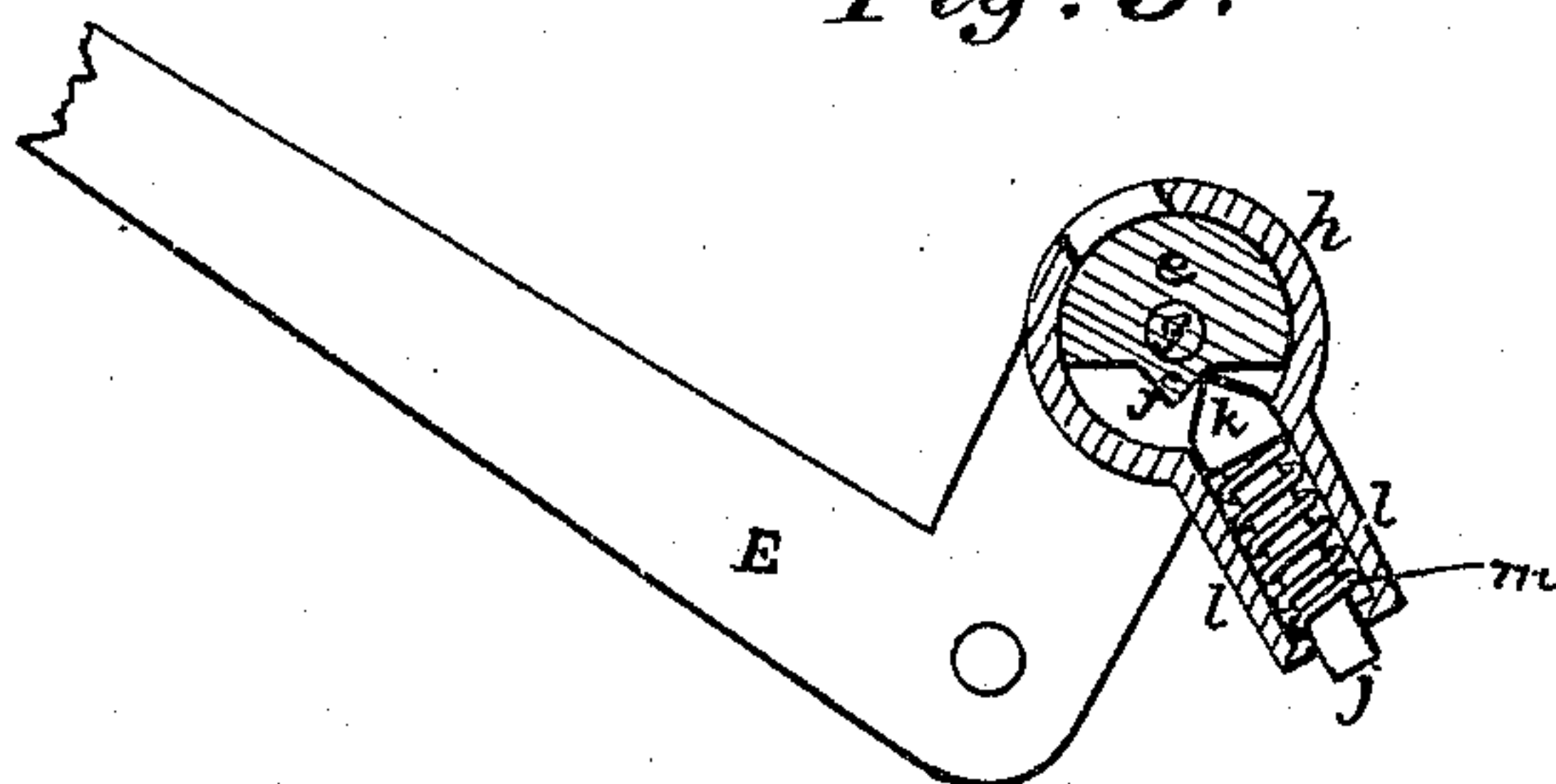
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Witnesses.*  
 John Bulkey  
 J. C. Milohman

*Inventor.*  
 Artemus Rush  
 by Atty. H. H. H.

# UNITED STATES PATENT OFFICE.

ARTEMAS RUSH, OF CHARITON, ASSIGNOR OF ONE-HALF HIS RIGHT TO  
JOHNSTON RUFFLER COMPANY, OF OTTUMWA, IOWA.

## IMPROVEMENT IN RUFFLING OR PLAITING ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 143,424, dated October 7, 1873; application filed  
May 27, 1873.

*To all whom it may concern:*

Be it known that I, ARTEMAS RUSH, of Chariton, Lucas county, Iowa, have invented certain new and useful Improvements in Ruffling or Plaiting Attachments for Sewing-Machines, of which the following is a specification:

This invention relates to that class of ruffling or plaiting attachments in which the plaiting-blade makes but one reciprocation to two, three, or more reciprocations of the needle of the sewing-machine. My attachment is principally characterized by the employment of a tilting double pawl, reversible automatically at the proper and predetermined times, to cause each of its arms or catches alternately to engage a rack on the sliding frame of the plaiting-blade, and to propel said frame alternately in opposite directions, and actuated through the medium of a vibratory lever pivoted to the frame of the attachment, and deriving its movement from the needle bar or arm of the sewing-machine, or some part moving in unison therewith.

The nature of my invention, and the manner in which the same is or may be carried into effect, will be readily understood by reference to the accompanying drawing, in which—

Figure 1 is a perspective view of my improved attachment from the front. Fig. 2 is a like view of the same from the rear. Fig. 3 is a transverse vertical section, on an enlarged scale, of the cylindrical supporting-hub of the driving-pawl and the bearing encircled by the same, together with a portion of the vibratory lever by which motion is imparted to the said pawl.

A represents the main arm of the attachment, which supports all the working parts. The said frame may be adapted, as customary in attachments of this kind, to be attached either to the cloth-plate of the sewing-machine or to the presser-bar. The latter arrangement is shown in the drawing, a presser-foot, B, being attached to and made part of the frame, and being formed to fit onto the end of the presser-bar of the sewing-machine in lieu of the ordinary presser-foot, which requires to be removed, of course, before the attachment can be fitted to the machine. Upon the frame A

is held, in suitable ways in which it can slide, a plate or bar, C, provided with an upright fin or rib, D, notched or formed into a rack, *a*, on its upper edge. The bar C also carries the ruffler or plaiter proper, consisting in this instance of two spring nippers or blades, *b b*, fastened to two strips, *c c*, united with and extending horizontally toward the front of the attachment at right angles with the bar C. The plaiter-blades are arranged to work horizontally in line with the presser B, moving under said foot in their forward movement in the usual manner. The material to be plaited passes between the two blades. To the frame of the attachment is pivoted, at *d*, an angle or elbow lever, E, one arm of which (the longer arm) is formed with a loop to connect with a screw on the needle-bar of the sewing-machine, and the other arm carries a semi-cylindrical bearing, *e*, having a cross-section such as shown in Fig. 3, with a wedge-like projection, *f*, on its under side, below the center *g*. Upon the part *e* is mounted the double driving-pawl, consisting of a tubular hub, *h*, mounted loosely and so as to turn on the bearing *e*, and the two bent arms or catches *i i'* extending over the rack *a*, in such position that, when the hub is partially rotated on its bearing, one or the other of said arms, according to the direction in which the hub is rotated, will be tilted far enough to cause its end to engage the rack.

The device for holding the arm down to its work consists of a pin, *j*, with a head, *k*, beveled on both sides to a point, which is located in a tubular socket, *l*, formed on the under side of the hub, and has its head pressed up against the under side of the bearing *e*, the apex of the head resting on said bearing on one side or the other of the wedge projection *f*, according to the direction in which the hub is tilted. The pin is upheld by a yielding pressure induced by a spring, *m*, encircling the same, and held between the head *k* and bottom of the socket *l*.

If, when the parts are in the position shown in Fig. 3, it is desired to tilt the hub in the opposite direction, this can be done by pressing down on the arm, *i* or *i'*, that may happen to be uppermost. The pin *j*, by reason of its



beveled head traveling over the slanting face on one side of the wedge *f*, will thus be forced outwardly; but, the moment it has passed the apex of the wedge, the spring, by expanding, will cause the head to travel down the opposite face of the wedge, and thus take a position exactly the opposite of that shown in Fig. 3, and at this time the arm, *i* or *i'*, which before was uppermost will be tilted to engage the rack, while the other arm, before in engagement with the rack, will be now disengaged therefrom. The spring tends to hold down on the rack whichever arm may be lowermost, while at the same time it will allow the arm to slightly yield to ride over the rack-teeth during the backward vibration of the pawl. The movement of the pawl to drive the sliding bar C is derived from the lever E, as above said.

Supposing the parts to be in the position shown in Figs. 1 and 2, with arm *i* of the double pawl engaging the rack, then, as the longer arm of the lever E descends, its shorter arm will tend to carry back the pawl, and arm *i* will consequently push back the sliding bar a certain distance. The upward movement of the long arm of lever will cause the arm *i* to move in an opposite direction, in which case its end will ride over the teeth of the rack; and, upon commencement of the downward movement of the lever, the arm will again engage and push back the bar. This operation will continue until the end of the rack is reached, or until the double pawl is reversed, so as to elevate arm *i* and depress arm *i'* into engagement with the rack. In this case the movement of the sliding bar will be forward, or in a direction the reverse of that in which it was moved by the arm *i*, and the sliding bar will be actuated when the longer arm of the lever E rises instead of when it descends. To automatically reverse the pawl at the time desired, I employ two stops, *n n'*, placed on the front side of rack-bar D in the path of the tubular socket *l*. During the movements of the bar, these stops are alternately brought in contact with the socket-piece, and are pressed against it, so as to tilt the pawl over and reverse it. Thus, in the device shown in Fig. 2, the rack-bar will recede or move toward the left until the stop *n'* is brought against the socket-piece *l*. When this takes place the pawl will be tilted, and its arm *i'* will become engaged with the rack, which consequently will move in the opposite direction, or toward the right. By making these stops adjustable a greater or less range of movement can be allowed to the plaiter-bar, and consequently a greater or less width of plait can be obtained.

As it is necessary that the plaiter-blade should always move forward to the same point,

the stop *n*, which determines the extent of forward movement of the blade, is fixed and stationary; but the stop *n'*, by which the distance to which the blade moves rearwardly is regulated, is made adjustable, as shown in the drawing, being held by a set-screw, *p*, passing through a slot in the rack-bar, into the stop-piece. By this arrangement the stop *n'* can be set nearer to or farther from stop *n*, according to the size of plait desired. It is manifest, however, that, in lieu of these devices for automatically, and at the desired time, reversing the double pawl, other reversing mechanism can readily be employed.

The operation of this attachment has been sufficiently indicated in the foregoing specification, and will be readily understood by those skilled in the art to which this invention pertains.

The attachment shown is adapted for a Singer machine. It will, of course, be understood, however, that it can be adapted, like other attachments, for use with any of the sewing-machines in the market without departure from my invention.

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

1. The combination, with the sliding plaiter-bar rack, of a reversible vibratory double pawl, carried by a lever or arm receiving movement from the needle bar or arm of the sewing-machine, and reversed at the proper times by means of stops on the plaiter-bar, to cause the bar to travel alternately in opposite directions, substantially as shown and described.

2. In combination with the reversible vibratory double pawl and sliding plaiter-bar and rack thereon, the two stop-pieces on the said bar, the one fixed and the other adjustable, for the purposes stated, arranged in the path of said pawl to reverse the same at the proper times, substantially as shown and set forth.

3. The combination, with the vibratory lever and the partly-cylindrical bearing carried by the same, of the double pawl, composed of a cylindrical hub encircling said bearing, and provided with a socket-piece containing a bevel-headed pin pressed up against the under side of the said bearing, to operate in connection with a wedge-shaped projection thereon, as described, and two arms or catches, each of which is adapted to engage, when the pawl is tilted to allow it, a rack on the sliding plaiter-bar, substantially as herein shown and set forth.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ARTEMAS RUSH.

Witnesses:

A. G. HARROW,  
B. R. HAMILTON.