(Model.) 2 Sheets—Sheet 1.

J. M. GRIEST.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

No. 280,926. Patented July 10, 1883.

Fig. 1.

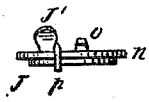


Fig. 11

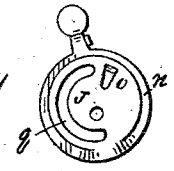


Fig. 2.

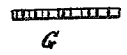


Fig. 12.

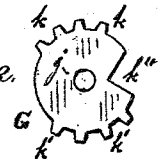


Fig. 3

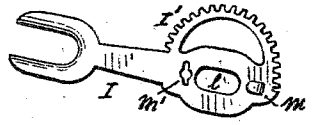


Fig. 13.

Fig. 4

Fig. 14

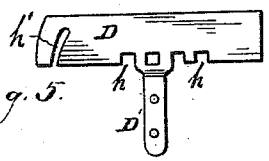


Fig. 5.

Fig. 15.

Fig. 6.

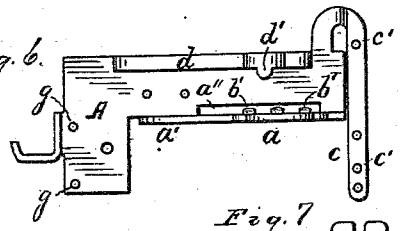


Fig. 16.

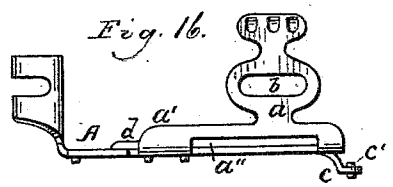


Fig. 7

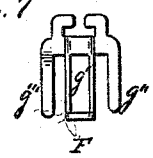


Fig. 8.

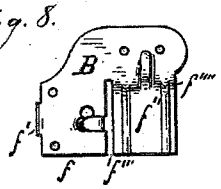
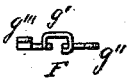


Fig. 17.



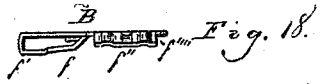
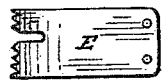


Fig. 18.

Fig. 9.



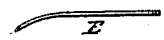


Fig. 19.

Fig. 10.

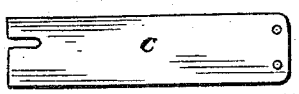


Fig. 20.

Witnesses.

Henry Franz Gunter.

J. B. Halpenny.

Inventor.

John M. Griest.

per. F. F. Wamm.

his Attorney

(Model.) 2 Sheets—Sheet 2.

J. M. GRIEST.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

No. 280,926. Patented July 10, 1883.

Fig. 21.

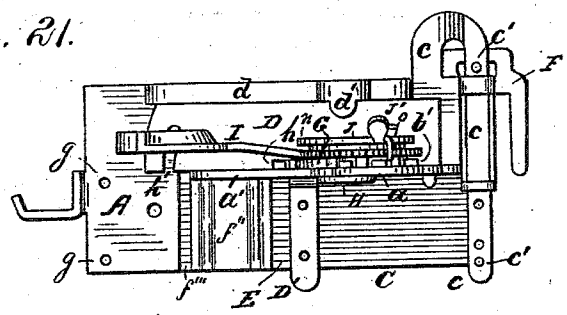


Fig. 22.

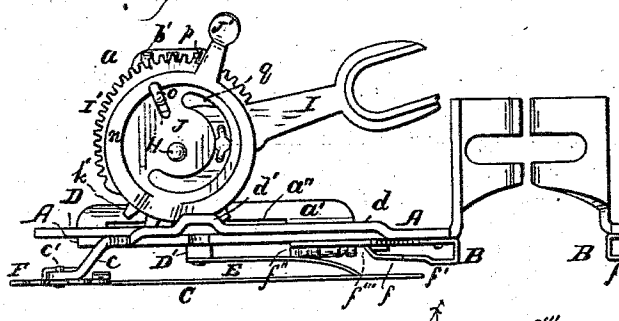


Fig. 23.

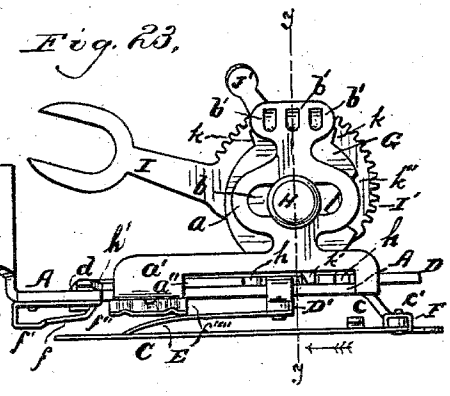


Fig. 25.

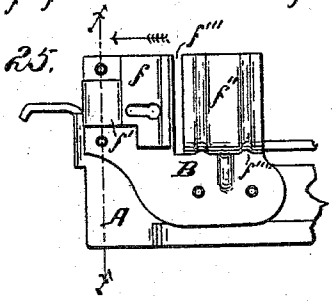


Fig. 24.

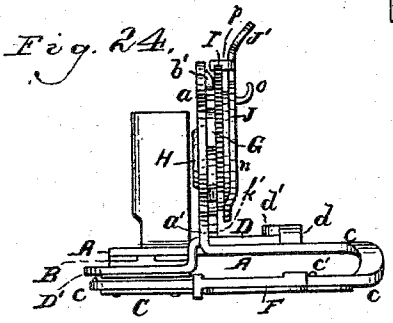


Fig. 27.

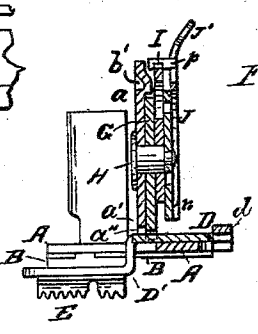
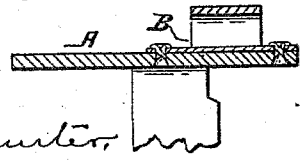


Fig. 26.



Witnesses.

Louis Fankfurter.

William F. Harback

Inventor.

John M. Griest

per. F. F. Warner.

Attorney.

UNITED STATES PATENT OFFICE.

JOHN M. GRIEST, OF CHICAGO, ILLINOIS, ASSIGNOR TO WALTER SCATES, OF SAME PLACE, AND THOMAS S. RIDGWAY, OF SHAWNEETOWN, ILL.

RUFFLING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 280,926, dated July 10, 1883.

Application filed January 22, 1883. (Model.)

To all whom it may concern:

Be it known that I, JOHN M. GRIEST, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ruffling or Gathering Attachments for Sewing-Machines, of which the following, in connection with the accompanying drawings, is a specification.

In the drawings, the first ten figures are views of the different parts of my attachment, shown in detail or detached from each other, and represented as if viewed from above when arranged for combination. The next ten figures are representations of the parts as viewed from the side when arranged for combination. Figure 21 is a top or plan view of the ruffler. Figs. 22 and 23 are side views thereof. Fig. 24 is a rear view of the same. Fig. 25 is a bottom view of the front part of the ruffler. Fig. 26 is a section in the plane of the line *x x*; and Fig. 27 is a section in the plane of the line *y y*, viewed in the direction indicated by the arrow there shown.

Like letters of reference indicate like parts.

A is the main plate, frame, or stock. This plate is adapted for removable attachment to the presser-foot bar of the machine, and to serve as a stock or body to which the operative parts of the attachment may be applied. Its principal novel features of construction are the standard or vertical part *a*, with its elongated base *a'*, in which is the horizontal slot *a''*, and with its central part having in it the horizontal slot *b*, and its upper part having thereon the laterally-extending teeth or cogs *b'*, the transverse arm *c*, with its stops *c' c'*, and the raised portion *d*, with its lug *d'*. I make the plate A of sheet metal, and in one and the same piece, shaping it by means of suitable tools or mechanism. The arm *c*, I make by punching a piece out of the front end of the blank, but not entirely across it. I then bend down the part thus partly severed, so that the arm will occupy a plane somewhat below the main part of the plate, as shown. By this means I am enabled to make the plate A from a much smaller blank than if the arm *c* were first made to project laterally, and then bent to pass underneath the body of the plate, and I find that the stock is worked up with greater economy and advantage by constructing the arm *c* in the manner described. The teeth or cogs *b' b'* are struck up from the standard *a* by means of suitable dies.

B is the presser-bottom. This part is also made in one and the same piece, and its chief characteristics are its widened portion *f* in front of that part, *f'*, acted on by the machine-feed, as shown in Fig. 25, and the resisting-plate *f''* in front of the part *f*. Attention is also called to the fact that the part *f* is inclined or beveled in front, and is slightly lower at its rear portion than elsewhere, but not quite so low as the part acted on by the machine-feed, and that the plate *f''* lies in or nearly in the plane of the bottom or lowest part of the part *f*, thus forming a central space, *f'''*, in the presser-bottom. I corrugate the plate *f''*, as represented, to stiffen it; and as it is set down from the main part of the presser-bottom, a shoulder, *f''''*, is thereby produced. The part *f'* is of the usual width, or of the same width as the serrated feed-plate of the machine. I attach the part B to the back end of the plate A, and so locate it that the part *f'* will be in a proper position with relation to the feed of the machine when the ruffler is attached for work, which attachment or connection is made in the usual manner. To facilitate the operation of connecting these parts of the ruffler to each other firmly, I set down small pins or studs *g g* by driving corresponding punches partly through the plate A, or so far through as to produce depending studs without separating the latter from the said plate. I also make corresponding holes in the part B, and then place these two parts together so that the studs will fill and project a little way through the holes. I then place these parts so arranged between upper and lower punches having pointed working ends arranged in a line with the upper and lower ends of the studs. I then compress the studs between the punches, by which means the ends of the studs, and particularly the lower ends, will be expanded, so that the studs will perform the functions of rivets and hold the parts firmly together; but I do not here intend to claim this method of riveting these parts together, as I have in a pending application,

No. 82,632, filed with this application—viz., January 22, 1883—shown, described, and claimed the like method of riveting two parts together.

C is the separator-plate, which is riveted, in the manner described, to the arm *c*. The free end of this plate extends to or nearly to, but is somewhat lower than, the part *f'*, being lower when free or not compressed than during work, as shown.

D is the slide or reciprocating plate. This plate has a lateral arm, D', bent downward near its junction with the plate. It also has therein the notches *h h* and *h'*, which perform the function hereinafter explained. The plate D is arranged on the plate A, the arm D' projects through the slot *a''*, and the opposite edge of the slide is overlapped by the lug *d'*. To prevent this slide from accidentally slipping laterally out of its place, I turn up slightly the end of the tongue formed by the notch *h'*, so that that end will ride in contact with the face of the base *a'* of the standard *a*.

E is the ruffling or gathering blade. This blade is riveted to the arm D' in the manner already described, and projects underneath the resisting-plate *f'''*, which holds it down to its work. It will be observed that the blade E and plate C are much wider than usual, and as wide or broad as the part *f* of the presser-bottom.

F is an edge-guide, which is arranged on the arm *c*, and adapted to be adjusted thereon between the stops *c' c'*, struck up therefrom. This gage consists of a central part, *g'*, adapted to clasp the arm *c* firmly, but not so as to prevent the gage from being adjusted thereon with facility, and of two side arms, *g'' g'''*, the arm *g'''*, which is the rear arm, being higher than the other, and bent to form a shoulder.

G is a wheel having a central opening, *j*, an upper set of cogs, *k k*, a lower set, *k' k'*, and a lateral V-notch, *k''*. It will be observed that the sides of the notch *k''* do not incline to the same degree with relation to a radial line passing through the angle of the notch.

H is a rivet or stud passing through the slot *b* and through the opening *j*.

I is the operating arm or lever, having in it a horizontal slot, *l*, through which the rivet or stud H passes. A lug, *m*, is struck out from one side of the arm I, and a lug, *m'*, from the other side. The lug *m* is adapted and arranged to project into the notch *k''*, but is much narrower than the widest part of the said notch. The function of the lug *m* is to rotate the wheel G in opposite directions, with more or less lost motion between the lug and the wheel, when the arm I is vibrated.

I' is a circular serrated or toothed segment on the arm I. The part I', however, is not a segment of a true circle, but approximates the form of a half-ellipse.

J is the adjusting-plate. This plate is sheared around near its edge; but the ends of the slit thus formed do not meet. This sheared or partly-severed part *n* is set out or bent slightly near its junction with the remaining part of the plate, and is spring-like or yielding, being capable of having its free part pushed out laterally, and of returning automatically to its original position when released.

J' is a handle or finger-piece for facilitating the moving of the part *n*, and *o* is a stop or catch to prevent it from being moved unnecessarily far, or far enough to injure its spring action. A lug or catch, *p*, extends from the handle J' into the serrations of the part I', but is drawn therefrom by moving the part *n* laterally in the manner described. A semicircular or crescent-shaped slot, *q*, is made in the plate J, and the lug *m'* enters this slot. The stud or rivet H passes through the plate J eccentrically, or to one side of the center of the said plate, as is clearly shown in Fig. 22, and is headed down or riveted to the said plate.

The movements of the parts when in operation are as follows: As the arm I is vibrated by the needle-bar of the machine, the wheel G is rotated back and forth, owing to the fact that the arm and wheel are mounted on the stud H, and for the reason that the lug *m* on the arm enters the notch *k''* in the wheel. The arm I, during this movement, is prevented from sliding back and forth on the stud H, for the reason that the stud is riveted firmly to the plate J, and because the lug *m'* on the arm enters the slot *q* in the plate, and for the further reason that the plate is connected temporarily to the arm I, owing to the fact that the lug or catch *p* on the plate enters the notches I' on the arm. The wheel G, being rotated, and having its teeth or cogs *k k* in engagement with the fixed teeth or cogs *b' b'* on the upright *a*, is caused to travel back and forth as it is rotated in reverse directions, this travel being permitted for the reason that the stud H is movable in a horizontal direction in the slot *b*. For these reasons, also, the arm I and plate J travel with the wheel G and stud H. As the teeth or cogs *k' k'* on the wheel enter or engage the teeth or cogs *k k* on the slide or plate D, that plate is reciprocated by the rotary movement of the wheel G as well as by its travel. The movement of the plate D will be represented by the rotation and the travel of the wheel G, and hence is much greater than if moved by either the rotation or the travel alone, and greater and more easy than if actuated directly by the arm I or by a bell-crank. When the lug *m* is in contact with both sides or edges of the notch *k''*, there will be no lost motion between the arm I and the plate D, and consequently the blade E, which is carried by the plate D, will be reciprocated its maximum distance, or have its fullest stroke. This advantage of the increased stroke of the ruffling-blade will follow if the arm I and wheel G be rigidly connected to each other, in which case the plate J, lugs *m* and *m'*, slot *l*, notch *k''*, and toothed segment I' will not be essential; but as it is obviously of advantage to provide means for varying or regulating the stroke of the ruffling-blade, I have employed for that

purpose the features of construction above referred to as not absolutely essential.

To vary or regulate the stroke of the ruffling-blade, the operator pushes the handle J' out laterally toward his right hand until the lug *p* is withdrawn from the toothed segment I'. Then to lengthen the stroke he pushes the handle from him and releases it. To shorten the stroke he draws the handle in the reverse direction and releases it. A variation in the stroke will follow, for the reason that the lug *m'*, being in the slot *q*, which is eccentric with relation to the stud H, to which the plate J is fastened, will move the arm I back or forth on the stud, and with relation to the wheel G, when the plate J is turned on the stud in the manner described. Consequently the lug *m* will stand a greater or less distance from the angle of the notch *k''* than before, and hence there will be more or less lost motion between the lug and the wheel G, and the stroke of the blade will thereby be diminished, but may be either diminished or increased in the manner described, as may be desired.

It is of advantage to have the stroke of the ruffling-blade either increased or diminished both in its forward and backward movement simultaneously, but not to the same extent. By employing the V-notch *k''*, having its sides or edges at different inclinations with relation to a radial line passing through its angle, the increase of the stroke back of the needle will be different from the increase in front of it. In the example shown, this difference is intended to be about in the proportion of one back to three forward. By this means very small gathers may be laid just beyond the needle, and larger plaits may in like manner be laid wholly beyond the needle, and when the machine-feed is adjusted in unison with the ruffler for that purpose, the plaits may be made up to the full capacity of the feed and ruffler without lapping; or when the stitch is longer than the width of the gather, there will be space between the gathers, and when the stitch is shorter than the width of the gather, the gathers will lap to the extent of the difference between the travel of the feed and width of the gather. Also, in making very fine work, the adjustment is correspondingly slow or delicate, and in doing coarse work it is correspondingly quick in varying the stroke of the ruffling-blade, or responds more noticeably when the adjusting-lever is moved.

The cogged part of the standard *a* performs the function of a fixed rack. The slide D may be termed a "traveling rack." The wheel G is a rotating and traveling cog engaging both the fixed and the traveling rack, and the arm I is a crank or lever for communicating motion from the machine to the wheel, and through the latter and the traveling rack to the gathering-blade, resulting in the comparatively long stroke or travel of the blade, and hence greatly increasing the capacity of the ruffler for producing coarse work, or laying wide plaits, ruffles, or gathers, which is one of the principal objects of my invention. The details of construction and arrangement which I employ for the purpose of making and combining these principal parts with advantage, so as to attain the result desired, I regard as secondary or subordinate features of my invention.

The next important group of parts or features of construction are those employed to vary the stroke of the ruffling-blade, thus extending the scope of the ruffler and adapting it to very fine as well as coarse work. It is obvious, however, from the foregoing description, that some of the details relating to these parts, though preferable, in my opinion, are not absolutely essential. The combination of means for varying the stroke of the ruffling-blade with those for producing the long stroke is the principal object and feature of this part of my invention, and the details are of comparatively minor importance. I also deem certain features of construction relating to the presser-bottom to be of particular importance, as will hereinafter more fully appear when I explain the operation of that part of the ruffler upon the goods.

The goods are to be arranged as follows: When gaging is essential, set the edge gage or guide as may be required, according to the width of seam or heading desired. Pass the goods through the gage and over the separator-plate, or between it and the gathering-blade. When the ruffle is to be stitched to a lower band, pass that band through the gage also and underneath the separator-plate. When an upper band is to be applied, pass it through with the goods, but over the resisting-plate and ruffling-blade and through the space *f'''*. Set the adjusting-plate and the machine-feed according to the style of the gathers to be made, as before described. The wide portion *f* of the presser-bottom enables me to use blades of great width, and as the gather or crimp is formed between the separator and the wide portion of the presser, they will be crimped to the full width of those parts without the feeding of the cloth being retarded. By this means the elastic separator on one side of the cloth and the presser on the other serve as a tension on the goods to the right and left of the feed of the machine and back of the needle in front of the point of the feeding-pressure, and so detain the material while the gather is being formed. This construction therefore serves a different purpose from that of a smoother for folding the crimps to an edge in advance of the needle, the feed and presser in the latter case holding the goods at rest while the gather is being formed, and as far as the feed extends laterally, but no farther.

That part of the presser-bottom which serves as a resisting-plate, or to hold the gathering blade or plate down to its work, is stiffened for that purpose by being corrugated, and, being separated from that part of the bottom immediately in front of the needle, forms the space or recess *f'''*, before referred to, in which the

gathers are formed, and through which the top band passes, as before stated, and the tendency to gather the band, as when passing between the gathering-blade and its presser, is thus avoided. The space *f'''* also enables the operator to see the gathers with facility while being formed, as is very desirable in making scalloped work, for example.

The adjustable edge-guide, when made and applied as shown and described, is of obvious advantage both as to construction and operation.

The mode described of riveting the parts together, as well as the manner of making the edge-guide arm, and the general structure of the main plate, are of advantage mainly as features of construction.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, substantially as specified, in a ruffling or gathering attachment for sewing-machines, of the ruffling-blade, a fixed rack, a movable rack, a rotary traveling wheel or cog engaging the said racks, an arm for actuating the said cog, and a main plate frame or stock, for the purposes set forth.

2. The combination, substantially as specified, in a ruffling or gathering attachment for sewing-machines, of a fixed standard having therein a slot, *b*, and provided with cogs *b' b'*, a rotary cogged wheel supported on a stud entering the slot *b* and movable therein, a cogged slide carrying the ruffling-blade, and a vibratory arm for actuating the said wheel, for the purposes set forth.

3. The combination, substantially as specified, in a ruffling and gathering attachment for sewing-machines, of the ruffling-blade, a reciprocating plate for reciprocating the said blade, a vibratory actuating-arm adjustable longitudinally on its fulcrum, and a supplemental actuating part engaged by the said arm and engaging the said plate for the purpose of varying the throw of the said blade.

4. The combination, substantially as specified, in a ruffling or gathering attachment for sewing-machines, of the ruffling-blade, a fixed rack, a movable rack, a rotary cogged wheel engaging the said racks, and mounted on a stud movable in its bearing or support, and a vibratory arm engaging the said wheel and adjustable longitudinally on its fulcrum, for the purposes set forth.

5. The combination, substantially as specified, in a ruffling or gathering attachment for sewing-machines, of the ruffling-blade, a fixed rack having therein the slot *b*, a movable rack, a rotary and traveling cogged wheel engaging the said racks, a movable stud entering the said wheel and passing through the slot *b*, and a vibratory arm engaging the said wheel, and having therein the slot *l*, adapting it to be fulcrumed adjustably on the said stud, for the purposes set forth.

6. The combination, substantially as specified, in a ruffling and gathering attachment for sewing-machines, of the ruffling-blade, a fixed rack, a cogged rotary and traveling wheel having therein a V-notch, and mounted on a movable stud or support, a movable rack for reciprocating the ruffling-blade, the said racks being engaged by the said wheel, and a longitudinally-adjustable vibratory arm provided with a lug entering the said notch, for the purposes set forth.

7. The combination, substantially as specified, in a ruffling and gathering attachment for sewing-machines, of the ruffling-blade, a fixed rack, a movable rack for reciprocating the ruffling-blade, a rotary traveling cog-wheel engaging the said racks, and having therein the V-notch *k''*, with its sides inclined at different angles to a radial line passing through the point of junction of the said sides, a movable stud for supporting the said wheel, and a vibratory arm fulcrumed adjustably on the said stud, and provided with a lug entering the said notch, for the purposes set forth.

8. The combination, substantially as specified, in a ruffling and gathering attachment for sewing-machines, of the vibratory actuating-arm I, having therein the longitudinal slot *l*, and provided with the lugs *m* and *m'*, the adjusting-plate J, having therein the slot *q*, and carrying the spring-handle J', with its catch *p*, the stud or rivet H, passing freely through the slot *l*, and riveted eccentrically to the plate J, and a serrated part, I', for locking the catch *p* temporarily, in connection with means for supporting the said rivet for actuating a reciprocating plate carrying the ruffling-blade, and for the purposes set forth.

9. The combination, with a longitudinally-adjustable vibratory arm for actuating a ruffling or gathering attachment for sewing-machines, of the pivoted adjusting-plate J, engaging the said arm, and provided with a laterally-yielding handle carrying a catch, *p*, in connection with serrations for locking the said plate temporarily, substantially as specified.

10. The combination, with a longitudinally-adjustable vibrating actuating-arm of a ruffling or gathering attachment for sewing-machines, of the pivoted adjusting-plate J, engaging the said arm eccentrically, and having thereon the sheared part *n*, with its handle J' and catch *p*, and also provided with the stop *o*, in connection with serrations for temporarily locking the said catch, substantially as and for the purposes specified.

11. In a gathering or ruffling attachment for sewing-machines, the combination of a presser-bottom having a part, *f*, inclined or beveled in front, the separator-plate C, and the part *f'*, all arranged, substantially as shown and described, with relation to each other and the ruffling-blade, for the purposes set forth.

12. The combination, with the main plate, gathering-blade, and separator-blade of a ruffling or gathering attachment for sewing-machines, of the presser-plate and the resisting-plate *f''*, all made in one and the same piece, a space, *f'''*, being between the presser-plate

and the plate f''', substantially as and for the purposes specified.

13. The combination of the resisting-plate f'' with the presser of a ruffling or gathering attachment for sewing-machines, the said plate having between it and the presser the space f''', substantially as and for the purposes specified.

14. The combination, with the main plate of a ruffling or gathering attachment for sewing-machines, of the gage-arm c on the front of the said plate, and bent substantially as described, for the purposes specified.

15. The combination of the arm c, provided with the stops c' c', the edge-gage F, adjustably mounted on the said arm between the said stops, and the main plate and working parts of a ruffling and gathering attachment for sewing-machines.

16. The adjustable gage F, having a central clasping arm or part, and an arm on each side thereof, in combination, in a ruffling and gathering attachment for sewing-machines, with the gage-arm c and its stops, substantially as and for the purposes specified.

17. In a ruffling and gathering attachment for sewing-machines, in which are combined a movable rack and a traveling wheel, the teeth b' b', struck up from the main plate and constituting a fixed rack, substantially as and for the purposes specified.

18. The combination, with a flexible or elastic adjusting arm or lever of a ruffling or gathering attachment for sewing-machines, of a stop or guard, o, for limiting the movement of the said arm.

JOHN M. GRIEST.

Witnesses:
F. F. WARNER,
HENRY FRANKFURTER.