No. 705,517. Patented July 22, 1902.

P. DIEHL.

SEWING MACHINE RUFFLER.

(Application filed Oct. 26, 1901.)

(No Model.) 2 Sheets—Sheet 1.

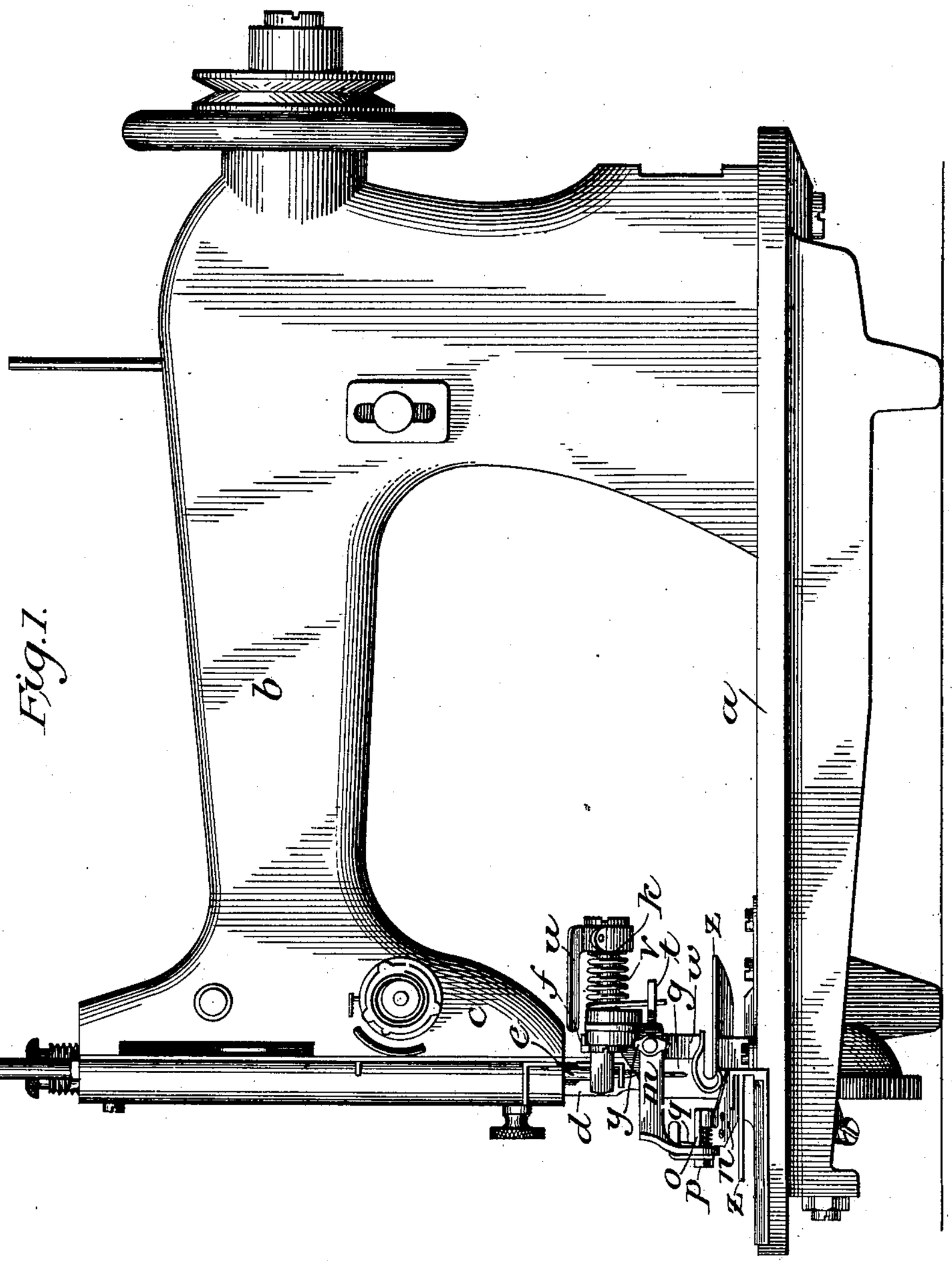

Fig. 1.

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Inventor:
Philip Diehl
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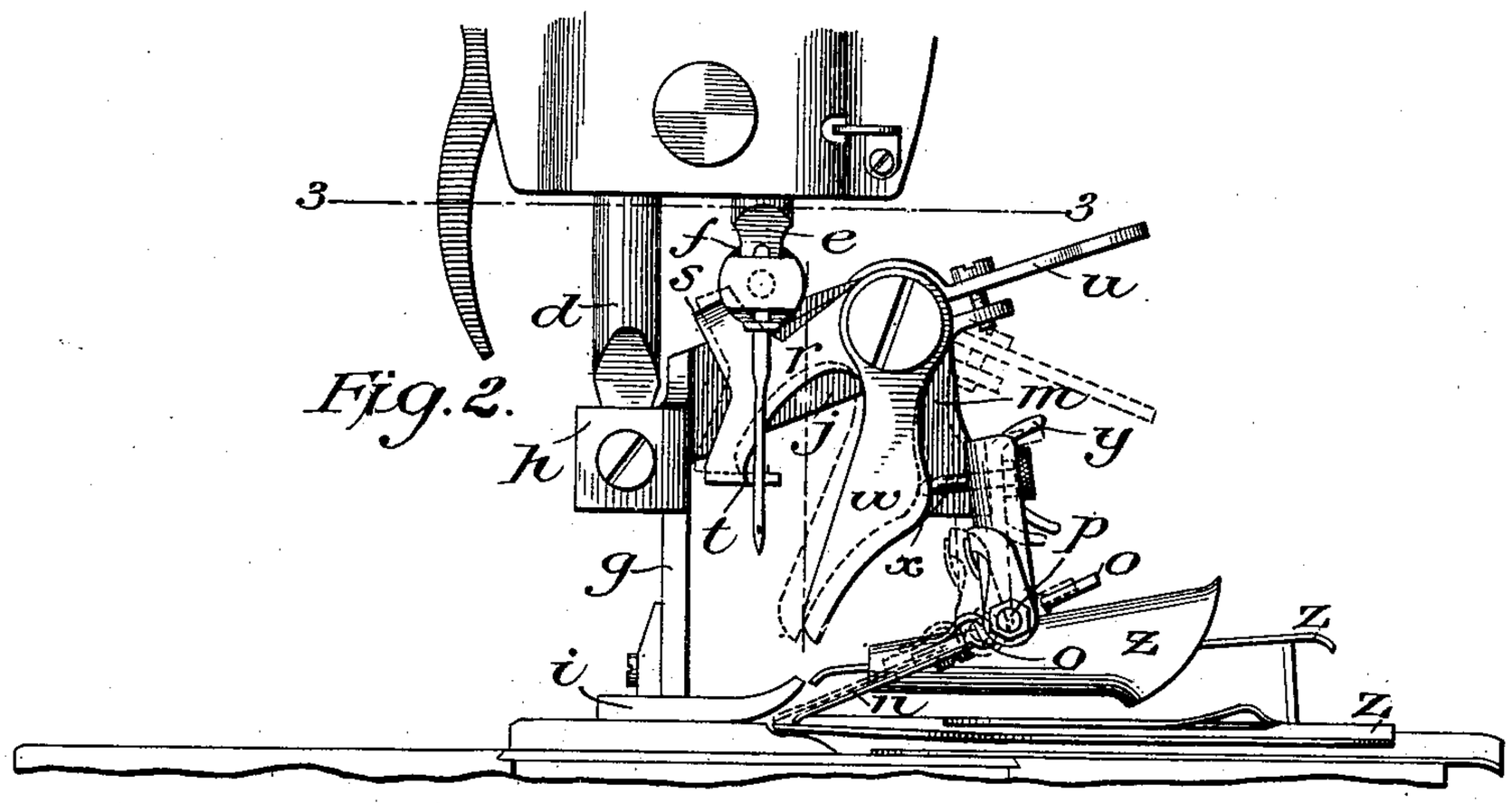

Fig. 2.

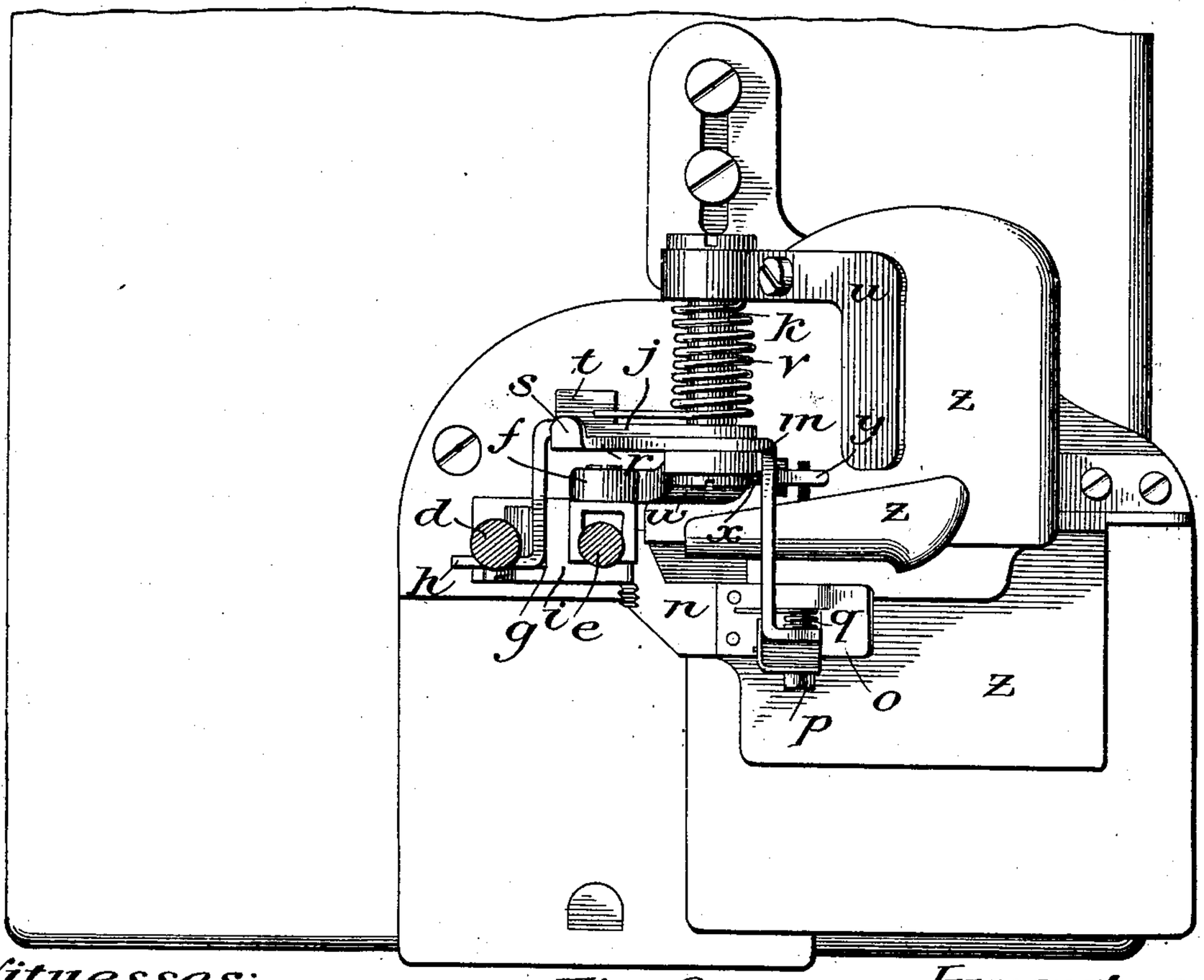

Fig. 3.

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UNITED STATES PATENT OFFICE.

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SEWING-MACHINE RUFFLER.

SPECIFICATION forming part of Letters Patent No. 705,517, dated July 22, 1902.

Application filed October 26, 1901. Serial No. 80,109. (No model.)

To all whom it may concern:

Be it known that I, PHILIP DIEHL, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Sewing-Machine Rufflers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a ruffling or gathering attachment intended more particularly for use in connection with high-speed power-driven sewing-machines, and which attachment is provided with convenient means whereby it may be instantly thrown into or out of operation without arresting or retarding the action of the stitch-forming mechanism of the machine, so that continuous seams, partly plain and partly ruffled or gathered, as is required in the manufacture of shirts, skirts, and other articles, may be rapidly formed. To this end my approved attachment comprises a manually-operated device or lever so constructed and located as to be conveniently accessible to the operator, and which manually-operated device or lever has a yielding connection with the ruffling-blade carrier through an interposed spring. Thus when the spring forming the yielding connection referred to is compressed by the pressure of the thumb or finger of the operator on said device or lever the blade-carrier is moved into operative position, and thus also when said device or lever is released the spring will restore it to the position which it it occupies when the ruffling-blade is inoperative.

In the accompanying drawings, Figure 1 is a front side elevation of a sewing-machine with my improved ruffling attachment applied thereto. Fig. 2 is a partial view looking from the left of Fig. 1, and Fig. 3 is a plan view of the attachment and of a portion of the work-plate of the machine, with the needle-bar and presser-bar in section on line 3 3, Fig. 2.

Referring to the drawings, *a* denotes the work-plate of the machine, *b* the arm, and *c* the head at the front end of the latter. The presser-bar *d* and vertically-reciprocating needle-bar *e* have their bearings, as usual, in the head *c*, said needle-bar being provided with a pin or roller-stud, as *f*, for operating the ruffler-blade carrier or lever. The ruffler-frame *g* is provided with a lug *h* for attachment of said frame to the presser-bar by a suitable set-screw, said ruffler-frame being provided, as usual, with a presser-foot *i*, which may be integral with said frame or suitably attached thereto. The ruffler-frame is also provided with a forwardly-extending arm *j*, having a fixed pin or bolt *k*, on which is pivoted the ruffling-lever or blade-carrier *m*. The ruffling-blade *n* is preferably secured to a holder *o*, pivoted on a bolt *p* at the lower part of the blade-carrier *m*, said holder being acted on by a spring *q*, serving to press the serrated acting end or portion of said blade downward on the work or strip to be ruffled or gathered. It will be understood, however, that a spring ruffling-blade might be attached directly to the blade-carrier *m*, as is common in the art.

The pivoted blade-carrier or lever *m* is provided with a rigid and preferably integral arm *r*, having laterally-extending lugs *s t*, embracing the arm *j* of the ruffler-frame, and thus serving as stops to limit the vibrating movements of the said blade-carrier. Pivotally mounted on the bolt *k* is an arm or lever *u*, preferably extending forward toward the operator, so as to be conveniently accessible, said arm or lever being connected by a torsional spring *v* with the lug *t* on the arm *r* of the blade-carrier *m*. The bolt *k* also supports an arm or contact-piece *w*, which is preferably adjustable relative to the blade-carrier *m* by a screw *x*, secured in any desired position by a set-nut *v*.

The machine to which the attachment is applied has, preferably, guiding devices *z z* for directing overlapping pieces of fabric and an interposed ruffle-strip to the needle, said guiding devices being, as herein shown, secured to the work-plate of the machine and the upper of the said guiding devices being constructed as a hemmer to turn the edge of the upper piece of fabric inward and downward.

The operation of the invention is as follows: When the manually-operated device or lever *u* is in the raised position shown in full lines in Fig. 2, the stress of the torsional spring *v*, connected with the blade-carrier *m*, will be

so relaxed that said spring will not act to press the said blade-carrier toward the needle of the machine, and consequently the contact piece or arm *w* will be out of range of the pin or roller-stud *f* on the needle-bar *e*, and the ruffling attachment will accordingly be inoperative. When it is desired to throw the ruffler into action, the operator depresses the lever *u* to the position denoted by dotted lines in Fig. 2, thereby compressing the torsional spring *v*, causing said spring by its connection with the blade-carrier *m* to move said blade-carrier toward the needle, so that as the needle-bar descends the pin or roller-stud thereon will engage the contact-arm *w* and move the ruffler-blade away from the needle-bar, and when the needle-bar rises and the said pin or roller-stud clears the said contact-arm the stress of the said compressed spring will force the ruffler-blade toward the needle to form a ruffle or gather, the size of which will be determined by the position of adjustment of the said contact-arm *w* relative to the blade-carrier *m*, as will be understood. Thus so long as the lever *u* is held depressed the ruffler will operate, but as soon as the said lever is released it flies upward instantly by the reaction of the spring *v*, which reaction also has a tendency to restore the blade-carrier to its inoperative position (shown in full lines in Fig. 2) even before the said blade-carrier is positively forced to such inoperative position at the next descent of the needle-bar.

In many kinds of work for which this invention is adapted it is desirable to form only a few ruffles or gathers—say a dozen, more or less—at one time before the plain stitching is recommenced, and with a high-speed machine, running at two thousand stitches a minute or thereabout, a dozen stitches, and consequently a dozen ruffles or gathers, will be formed in the fractional part of a second, so that in the use of this invention as many ruffles or gathers as it is desirable to form at one time in many kinds of work will result from a quick or instantaneous touch of the operator on the manual device or lever *u* and which is as quickly released from operation by the recoil of the compressed spring *v*. It will therefore be apparent that a conveniently-arranged manually-operated device capable of performing its desired function under the action of a glancing touch of the finger of the operator and spring-retracted when released is adapted to be thrown into and out of operation much more quickly than a pedal or knee operated device, so that the present invention is adapted for use with machines running at much higher speeds than the contrivances for effecting similar results heretofore in use.

The invention is not to be understood as being limited to the details of construction herein shown and described or to any particular form of ruffling attachment, or to any particular construction of the manually-operated throw-in device, as such details may be varied widely within the limits of mechanical skill without departing from the spirit of the invention.

Although the primary object of the invention is, as above expressed, to control the ruffling operation, I nevertheless do not wish to be understood as limiting my invention to the use or application of the principle described for the control of the ruffler-blade or a ruffling operation unless so expressed in the claims, since I anticipate the utility of the same principle for the control of devices for other purposes than ruffling. For example, instead of using the invention in connection with a ruffling-blade the invention might be employed in connection with any other equivalent tool, as a trimmer or other device to be actuated by the mechanism of the sewing-machine, and which equivalent tool might be thrown into and out of operation by the construction embodied in the present invention without retarding or arresting the operation of the sewing mechanism.

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

1. In combination, a seam-forming mechanism, a ruffler-blade, reciprocating mechanism for the same, said mechanisms being so combined that the engagement of one with the other forces said ruffler-blade in one direction, a spring adapted when compressed to force said blade in the opposite direction, and a manually-operated lever whereby said spring is compressed, substantially as described.

2. In combination, sewing mechanism, a tool operating upon the material being sewed, means for actuating the said tool, a manually-operated member, and a spring interposed between said tool and said member, which spring is so disposed as to be subjected to compression against or in opposition to said member by the action of said actuating means when said tool is thrown into action, and which spring is also so disposed as to permit said tool to be thrown out of action by its actuating means when said member is released; whereby the intermittent operation of said tool upon the material being sewed may be controlled by the operator.

3. A sewing-machine ruffling or gathering attachment provided with a manual device or lever and a movable ruffling-blade carrier, combined with a spring connecting said manual device or lever and said blade-carrier and which spring is so arranged as to be compressed by said manual device or lever when the ruffling-blade is to be thrown into action, and said spring being also so disposed as to throw the ruffling-blade out of action when the manual pressure on said device or lever is released.

4. In a ruffling or gathering device adapted for operative attachment to a sewing-machine, the combination with a movable blade-carrier, of a normally stationary, manual device or lever, of the needle-bar of the ma-

chine, and by which the said blade-carrier may be instantaneously thrown into action without retarding or arresting the stitch-forming operation of the machine, and a spring connecting said manual device or lever with said blade-carrier, so that the latter is shifted to operative position by the compression of said spring, the tension of said spring being relaxed when the manual pressure on said device or lever is released.

5. The combination with a sewing-machine ruffling attachment, comprising a stationary frame and a movable ruffling-blade carrier, of a pin or bolt fixed to said frame, a manual lever for throwing said blade-carrier into action and which is pivotally mounted on said pin or bolt, and a torsional spring encircling said pin or bolt and connecting said manual lever with said blade-carrier.

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

PHILIP DIEHL.

Witnesses:
HENRY J. MILLER,
HENRY A. KORNEMANN.