To all whom it may concern:

Be it known that I, JAMES A. CAMERON, a citizen of the United States, and a resident of New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Hemmer Attachments for Sewing-Machines, of which the following is a specification.

The invention relates to improvements in hemmer attachments for sewing-machines, and particularly to hemmers for use in making hem-stitched handkerchiefs.

The invention consists in the novel features and combinations of parts hereinafter described, and particularly pointed out in the claims.

The object of the invention is to improve the construction, increase the efficiency and certainty of correct operation, and attain greater convenience in the use of handkerchief-hemmers.

The hemmer of my invention comprises two guides for the edges of the hem, the outer guide, or the one guiding the one edge of the hem to the needle, being rigidly secured to a rod which is in the nature of a carriage, and the other guide being adjustable on said rod toward or from the said outer guide, said guides and their connected parts being of special construction and employed in connection with a tongue or feed-plate, around which the hem of the fabric is folded, and also with a frame, preferably of wire and slightly yielding, intermediate the two guides to prevent the hem portion of the fabric from buckling up during the inward or forward feed of said fabric.

The means I provide for mounting the hemmer upon the machine and enabling an ordinary operative to remove or shift the hemmer and then reestablish the same without any special exercise of individual judgment into accurate relation with the path of the needle I regard as of special importance and novel in this art.

The invention will be fully understood from the detailed description presented, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of a portion of a sewing-machine equipped with a hemmer constructed in accordance with and embodying the invention, the upper arm of the sewing-machine head being indicated by dotted lines. Fig. 2 is a vertical longitudinal section of the same on the dotted line 2 2 of Fig. 1, the position of the fabric to be sewed being indicated by dotted lines. Fig. 3 is a top view of a portion of the hemmer and illustrates a portion of a handkerchief in position to have its edge folded and its hem stitched. Fig. 4 is a vertical section of same on the dotted line 4 4 of Fig. 1. Fig. 5 is a vertical section of same on the dotted line 5 5 of Fig. 1 looking to the left in the direction of the arrow. Fig. 6 is a detached bottom view of a portion of the edge-folder and connected parts. Fig. 7 is a vertical section of same on the dotted line 7 7 of Fig. 3, and Fig. 8 is a like section of same on the dotted line 8 8 of Fig. 3.

In the drawings, 12 denotes the usual bed-plate of a customary sewing-machine head, and 13 a portion of the supporting table thereof. The upper arm of the sewing-machine head is numbered 14 and indicated by dotted lines. The sewing-machine head will carry the usual presser-foot 15, and the bed 13 of said head will be provided with the customary throat-plate 16, having an elongated opening 17 for the needle, said opening 17 being intermediate the feed-dogs 18 18 and also intermediate the arms of the bifurcated presser-foot 19, as denoted by the dotted lines in Fig. 1. The machine illustrated is adapted to operate a vibrating needle 19, by which the sewing is to be performed, and hence the needle-opening 17 is elongated in a longitudinal direction. The dotted circle 20 in Fig. 1 designates the customary position for the usual name-plate ordinarily applied upon the bed-plate 12.

The guides for the edges of the hem are numbered 21 and 22, respectively, the guide 21 being secured to the casting 23, which is rigidly fixed upon the left-hand end of the main supporting-rod 24, while the guide 22 is rigidly secured to the casting 25, adjustably mounted upon the said rod 24. The guide 22 is formed by folding a piece of sheet metal over upon itself, so as to create the upper portion or lip 26 and the lower portion 27, as more clearly illustrated in Fig. 2. The longitudinal outer edge of the guide 22 defines a straight line, and said edge is secured to the forwardly-extending arm 28 of the aforesaid casting 25, said arm 28 extending
be flared upwardly, as denoted at 34, in or
the aforesaid rod 24 and rod 32, respec-
respectively. The lower portion 27 of the guide 22
is formed with the plate 33, extending toward
the guide 21, as shown in Fig. 2, and over
this plate 33 the main body of the handker-
chief or other fabric will be fed, as denoted
by the dotted lines in Fig. 2. At the enter-
ing edges of the guide 22 the said guide will
be flared upwardly, as denoted at 34, in or-
order to facilitate the feeding of the fabric.

The casting 25 in line with the plate 33 and
preferably below the rod 24 will be formed
with a downwardly-extending stud 35, (clearly
shown in Figs. 2 and 4,) which will operate
as a support for the main portion of the atta-
tachment, said stud 35 when the attachment
is in use having its bearing upon the upper
surface of the bed-plate 12. The guide 22 is
therefore formed with the plate 33 and is car-
ried by the casting or frame 25, which is
mounted upon the rod 24, being adjustable
upwardly to and downwardly from said rod 24 and is secured
in any of its adjusted positions by means of
the thumb-screw 36. The guide 21, as here-
inbefore described, is rigidly connected with
the left-hand end of the rod 24, and therefore
is not adjustable upon said rod. The guide
21 will preferably be formed of sheet metal
and be carried by the frame or casting 19 and
sleeve 38, rigidly secured upon the inner
end of the rod 24. The outer portion of the
guide 21 constitutes a folder, as indicated at
39, for turning over the edge of the fabric
on the line on which the hem is to be sewed.
Within the guide 21, and in an outwardly
folder 21 39, is arranged the finger 40, which
is formed of the forwardly-extending por-
tion of the plate 41, disposed below the cast-
ing 23 and having one edge 42 turned up-
ward and secured to the left-hand edges of
said casting or frame 23, whereby an inclosed
space is formed Intermediate the lower sur-
face of the casing or frame 23 and the said
plate 41 and through which the edge of the fab-
ric to be folded by the cooperation of the
folder 39 and inclosed finger 40 may be fed.
The outer portion of the casting 23 flares up-
wardly, and thereby forms a concave seat 43
at its upper surface and an enlarged enter-
mouth through which the fabric may be fed.
Thus at the inner or left-hand end of the rod
24 is rigidly secured the casting or frame 23,
to whose forwardly-projecting finger or arm
37 is secured the combined guide 21 and
folder 39 and to whose outer edges is fastened
the plate 41, whose forwardly-projecting por-
tion constitutes the finger 40, passing through
the folder 39 and guide 21. Intermediate the
guides 21 and 22, both of which are carried
upon the rod 24, is placed the tongue 44,
which extends outwardly toward the opera-
tive over the table 13 and at its forward
right-hand edge is formed with the finger 45,
which is disposed within the guide 33 and 70
over which the outer portion of the hem of
the fabric passes or folds. The tongue 44 has
at the left-hand edge of its forward portion
the upwardly-extending lug 46, to which is
rigidly secured the rod 32, and said rod 32 ex-
tends from said lug 46 toward the right and
enters the bearing-aperture 31, formed in the
casting 23, wherein the right-hand end of said
rod 32 may be firmly secured by means of a
screw 47. The rod 32 at its left-hand end
passes within the concave seat 43, formed
in the casting or frame 23, and is guided
within said concave recess 44, which substi-
tially acts as a bearing for the left-hand por-
ton of said rod 32. The tongue 44 when in
position is above the plate 33, formed as a
portion of the guide 22, and is below the plate
41, fastened to the casting or frame 23, which
carries the guide 21. The attachment proper
is thus formed of three main groups of parts,
each group being connected together and the
three groups being supported by the rod 24.
The first of these groups consists of the cast-
ing or frame 23, secondly the left-hand end
of the rod 24, the combined guide and
folder 21 39, connected to the said casting or
frame 23, and the plate 41, connected to said
casting or frame 23 and comprising the finger
40, which passes within the guide 21. The
second of these groups comprises the guide
22 and the casting 25, carrying said guide and
mounted upon the rod 24, and the third of
said groups comprises the tongue 44, finger
45, and rod 32, the latter passing upon the
casting or frame 23 and being removably se-
cured within the casting 25 by means of the
screw 47.

In addition to the aforesaid main groups of
parts the attachment also comprises the
wire frame 50, which will preferably be 88
secured at one end to the casting or frame 23
and at the other end be freely passed through
an eye 51, formed at the forward end of the
arm 28, constituting a part of the casting or
frame 25. The wire frame 50 will preferably
be formed of a single rod of wire bent into
a serpentine form, the folds of the wire being
intermediate the guides 21 and 22 and in po-
sition to prevent puckering of the hem of the
fabric, said hem being compelled to feed in
wardly below said frame 50 and being, in ef-
efect, constantly ironed out by means of said
frame. The frame 50 is of great importance
in accomplishing the proper sewing of the
fabric, since thereby the hem portion of the
fabric is kept in smooth condition and pre-
vented from drawing its edge away from the
true line of the sewing. When the frame 50
is given a serpentine form, the folds of the
rod of wire being on inclined lines, the ef-
tachment being below the frame 50, the frame 50 is greatly in-
creased, and hence in so far as the frame 50
is concerned I desire to claim, broadly, the
combination of said frame in the attachment
without regard to its special formation and also the special form illustrated of said frame. The attachment of the hemmer to the sewing-machine is through the medium of the rod 24, in connection with the bracket 52, which bracket is provided with the elongated slots 53 to receive the screws 54, and is also provided with an elongated slot 55, through which the rod 24 passes and within which said rod 24 may be rigidly secured by means of the thumb-screw 56. The slots 53 and screws 54, permit of the adjustment of the bracket 52 with respect to the special conditions to be met in the various classes of sewing-machines and the character of the work to be performed as well as with respect to the nature of the material or fabric to be sewed, and the bearing-sleeve 55, in connection with the thumb-screw 56, permits of the adjustment of the rod 24 in order that the guide 21 may receive the most appropriate adjustment possible with respect to the needle-opening 17 in the throat of the machine. Upon one side of the bracket 52 is provided the spring-plate 57, having an elongated slot 58 (see Fig. 2) to receive the screw 59, the said slot permitting of the adjustment of said spring-plate 57 longitudinally along the side of said bracket and said screw 59 being provided with the plate 57 in any of its adjusted positions. The left-hand end of the spring-plate 57 is formed with the outwardly- extending flange 60, and the right-hand end of said spring-plate 57 is formed with the inwardly or forwardly projecting flange 61, the latter being adapted to enter into engagement with the annular groove 62, formed in the end of the rod 24, as more clearly indicated in Fig. 1. The outwardly-extending flange 60 at the left-hand end of the spring-plate 57 is provided simply for convenience in moving or adjusting said plate along the side of the bracket 52, said flange 60 forming a thumb- screw which may be readily grasped when it is desired to move the plate 57. The springplate 57, having the flange 61 to engage the annular groove 62 of the rod 24, is of great importance in this art, since by reason thereof, after the attachment has been once adjusted by the expert with relation to the needle-opening 17, the said attachment may then be withdrawn from the machine and reattached thereto by the usual operator without requiring the attendance of the expert for again effecting the proper adjustment of the parts. For illustration, the expert will adjust the rod 24 within the bearing-sleeve 55 until the guide 21 is in proper alignment with the needle-opening 17 to permit of the proper formation of the hem, and thereupon the expert will tighten the thumb-screw 56, so as to bind the rod 24 in rigid position, after which the expert will adjust the spring-plate 57 until the flange 61 is within the groove 62 of the said rod 24, and thereupon he may tighten the screw 59 in order to secure the plate 57 in rigid position. If thereafter, due to accident or otherwise, it should become necessary for the operative to take the attachment from the machine and to a mechanic for attention, the operative will simply loosen the thumb-screw 56 and (without detaching the spring-plate 57) withdraw the rod 24 from the bearing-sleeve 55 of the bracket 52. The operative may upon again applying the attachment to the machine will simply be required to pass the rod 24 through the bearing-sleeve 55 of the bracket 52 until the flange 61 of the plate 57 snaps into the groove 62 of said rod 24, and thereupon she will tighten the thumb-screw 56, so as to bind upon the said rod 24. After the first adjustment by the expert the spring-plate 57 will govern the further applications of the attachment to the machine, since, the parts having been once adjusted, their reapplication to the machine will become purely formal, since as soon as the flange 61 of the plate 57 snaps into the groove 62 of the rod 24 the guide 21 will then have reached its proper position with respect to the needleopening 17. In the absence of the springplate 57 or some equivalent means the attachment would require adjustment with respect to the needle-opening 17 every time it might be applied to the machine, and since this adjustment can rarely be trusted to operatives, but requires the skill of the expert, it will be apparent that the employment of the springplate 57 or some equivalent device is of great benefit, since thereby the time of the expert is saved and the operative is enabled to always place the guide 21 in proper relation to the needle-opening 17. The attachment may be adjusted toward or from the needle-opening 17 by reason of the plate 57, which is provided within the supporting-bracket 52.

When the attachment is in position upon the sewing-machine, it is practically supported by the bracket 52 and the stud 35, formed at the lower side of the casting or frame 35.

The character of the work performed with the use of the attachment hereinafter described herewith is shown in Fig. 3, in which the operation of hemstitching a handkerchief is illustrated. It is desirable that hems differing in width shall be from time to time produced upon the handkerchiefs or other fabrics, and therefore the guide 22, carried by the casting 23, is rendered adjustable upon the rod 24. The casting 23 may be moved upon the rod 24 toward or from the fixed guide 21 and be secured in any desired position by tightening the thumb-screw 36. During the adjustment of the guide 22 toward or from the fixed guide 21 the outer end of the wire frame 50 will freely slide through the eye 51, formed on the casting or frame 55, and thus the frame 50 will not interfere with the ready adjustment of the guide 22. It is to be especially observed that the adjustment of the guide 22 in no manner disturbs the relation of the rod 24 with the fixed guide 21 nor the relation of the fixed guide 21 with the needle-opening 17, and this also is a feature of importance, since
it is highly desirable that the guide 21 shall
remain fixed with relation to the needle-
opening 17. As an index to the adjustment
of the guide 22 I provide upon the rod 24 in-
termediate the two guides certain lines indi-
cating quarter-inches, and upon the flattened
upper surface of the rod 22 I indicate by nu-
merals quarter-inches. The operative, knowing
what width of hem is desired, will loosen
the screw 36 and move the guide 22 toward
or from the fixed guide 21, so as to regulate
the width of hem, paying no attention what-
ever to the fixed guide 21, the latter remain-
 ing constantly in its fixed relation to the nee-
dle-opening 17.

It is frequently desirable that the forward
ends of the guides 21 22 shall bear a certain
definite relation to the upper surface of the
bed-plate 13 or throat-plate 16, and this re-
sult may be attained in the attachment made
the subject of this application, since by loos-
ening the thumb-screw 56 the rod 24 may be
turned axially, so as to move the forward ends
of the guides 21 and 22 downward or up-
ward, as occasion may require. It may be desir-
ous also that the tongue 44, carrying
the finger 45, shall be capable of adjustment, so
that the said finger 45 may bear a certain
relation to the fabric folded upon the same
in accordance with the thickness of the fab-
rice or other characteristic, and therefore the
operative may, by loosening the screw 47, tilt
the tongue 44 to a limited extent and there-
by cause the forward portion of the finger 45
to move downward or upward within the guide
22, the tongue 44 being then secured in posi-
tion by tightening the screw 47.

The operation of forming the hem on a handkerchief and sewing the seam by means
of a vibrating needle is well understood in
this art and will require no special explana-
tion. The present invention is confined to
the means for properly forming the hem and
preserving the hem in uniform condition
while the needle is sewing the seam. The
method of adjusting the guide 22 for different
widths of seams has been hereinbefore suf-
ciently explained, and the method of apply-
ing the attachment to the machine will be
understood from the foregoing description.

It is frequently desirable to remove the guides
21 and 22 from their position illustrated in
Fig. 1 without entirely detaching them from
the machine, and when this result is desired
it is in the present instance simply necessary
to loosen the thumb-screw 56 and without
disturbing the guides 22 move the rod 24
to the right through the sleeve 55 until the
casting 25 brings up against the left-hand
end of the bracket 52. Thns without dis-
turbing the relationship of the guides 21 22
with respect to one another the said guides,
fastened upon the rod 24, may be moved to the
right entirely clear of the presser-foot
and adjacent parts of the machine. When
it is desired to restore the guides 21 and 22
into the position for performing their usual
duties, it will simply be necessary to pull the
rod 24 to the left until the flange 61 of the
plate 57 again snaps into the groove 62 of
said rod 24, the thumb-screw 56 being then
again tightened. The operative may move
the guides 21 and 22 into the position for
work, since when the flange 61 of the plate
57 snaps into the groove 62 it will be an in-
dication that the fixed guide 21 has reached
its proper position.

It is a convenience to have the rod
24 of some considerable length, as shown,
since thereby the bracket 52 may be secured
entirely out of the way of the operative, and
when the hemmer, with its rod 24, is shifted
toward said bracket it passes into a position
where it will not be an obstruction to the op-
erative in using the sewing-machine for any
usual purpose.

The form, construction, and relation of sev-
eral parts of the hemmer are such that du-
rability of structure is secured, together with
entire convenience in adjustment and use, and
without occupying an undue space upon the
bed of the sewing-machine head.

By adjusting the rod 24 transversely of the bed-plate 12 the forward ends of the guides 21 22 may be moved toward or from
the longitudinal line of the needle-opening 17.
By adjusting the rod 24 longitudinally within the sleeve 55 of the bracket 52 the rigid guide
21 may be brought into the desired relation
to the said needle-opening, and by adjusting
the guide 22 along the rod 24 the proper width
of hem may be assured. The rod 24 may also
be adjusted axially to give the proper tilt to
the guides 21 and 22, and likewise the tounge-
plate 44 may also be tilted to meet special
conditions that may arise.

What I claim as my invention, and desire
to secure by Letters Patent, is—
1. A hemmer comprising the horizontal rod
24 longitudinally disposed over the bed-plate
of the machine, and the hemmer-guides car-
ried at one end thereof and extending at right
angles thereto, combined with the bracket 52
secured to the bed-plate of the machine at a
distance from the path of the needle greater
than the width of space occupied by said
guides and receiving the outer portion of said
rod, and the lug 33 forming a foot or support
for the other portion of said rod and said
guides and carried by the same, the said 120
bracket permitting of an axial motion there-
in of said rod for tilting or adjusting said
guides with respect to the bed-plate of the
machine, and also permitting of the direct
longitudinal motion through the same of said
rod for carrying said guides toward said
bracket and entirely from but in line with
their operative position; substantially as set
forth.

2. A hemmer comprising the horizontal rod
24 longitudinally disposed over the bed-plate
of the machine, and the hemmer-guides car-
rried at one end thereof and extending at right
angles thereto, combined with the bracket 52
secured to the bed-plate of the machine at a distance from the path of the needle greater than the width of space occupied by said guides and receiving the outer portion of said rod, the lug 35 forming a foot or support for the other portion of said rod and said guides and carried by the same, the spring-catch 57 secured to said bracket for engaging a definite portion of said rod when the latter has reached its correct position, and the thumbscrew 56 for the binding said rod to said bracket after said rod has been axially adjusted, the said bracket permitting of an axial motion therein of said rod for tilting or adjusting said guides with respect to the bed-plate of the machine, and also permitting of the direct longitudinal motion through the same of said rod for carrying said guides toward said bracket and entirely from but in line with their operative position; substantially as set forth.

3. A hemmer comprising a horizontal rod longitudinally disposed over the bed-plate of the machine, and the hemmer-guides carried at one end thereof and extending at right angles therewith, combined with the bracket 52 secured to the bed-plate of the machine at a distance from the path of the needle greater than the width of space occupied by said guides and receiving the outer portion of said rod, the lug 35 forming a foot or support for the other portion of said rod and said guides and carried by the same, substantially as described for securing said bracket 52 to said bed-plate and permitting its adjustment in a direction transversely of the same, the spring-catch 57 carried by said bracket for engaging a definite portion of said rod 24 when the latter has reached its correct position, the rod 32 secured at one end to said lug, and the frame 25 detachably receiving the other end of said rod, the plate 44 thus being readily detachable and also permitting, without detachment, the ready adjustment of the movable guide toward the stationary guide; substantially as set forth.

5. A hemmer comprising a pair of guides, and a tongue-plate intermediate said guides and around which the fabric is folded to form the hem, and an open-wire frame extending intermediate said guides and for preventing the latter from buckling up between said guides, the said frame extending to a point adjacent to the outlet ends of said guides; substantially as set forth.

6. A hemmer comprising a longitudinally-disposed rod and the combined guide and folder rigidly secured upon the inner end of said rod, said combined guide and folder comprising the frame 23 secured upon said rod and having the finger 40 extending through said guide and folder, combined with the frame 25 adjutably secured upon said rod, the guide 22 secured to said frame 25 and having the plate 33 extending therefrom toward said rigid guide, the tongue-plate 44 intermediate the said guides and having the finger 45 within the guide 22, and means adjutably securing said tongue-plate 44 and permitting of the adjustment of said finger 45; substantially as and for the purposes set forth.

7. A hemmer comprising a longitudinally-disposed rod and a rigid guide and folder securely secured upon the inner end of said rod, and the frame 23 by which said guide and folder are secured to said rod and having the concave seat 43 on its upper surface parallel with said supporting rod, combined with the frame 25 adjutably mounted upon said supporting rod and having the portion 29 containing the apertures 30 and 31 through the former of which said supporting rod passes, the guide 22 secured to said frame 25, the tongue-plate 44 intermediate said guides and having the finger 45 within said guide 22, the rod 32 secured to said tongue-plate 44 and extending within said seat 43 and into said opening 31, and means for binding said supporting rod and said rod 22 within the respective openings 30, 31; substantially as set forth.

8. A hemmer comprising a pair of guides, and a tongue-plate intermediate said guides and around which the fabric is folded to form the hem, and the wire frame bent into serpentine form and extending in said guides and above said guides and above the fabric for preventing the latter from buckling up during its forward feed; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 9th day of August, A. D. 1899.

JAMES A. CAMERON.

Witnesses:
CHAS. C. GILL,
GUNDER GUNDERSON.