E. B. McGILVARY.

STITCH REMOVING DEVICE.

APPLICATION FILED APR. 30, 1909.

970,733. Patented Sept. 20, 1910.

Fig. 1.

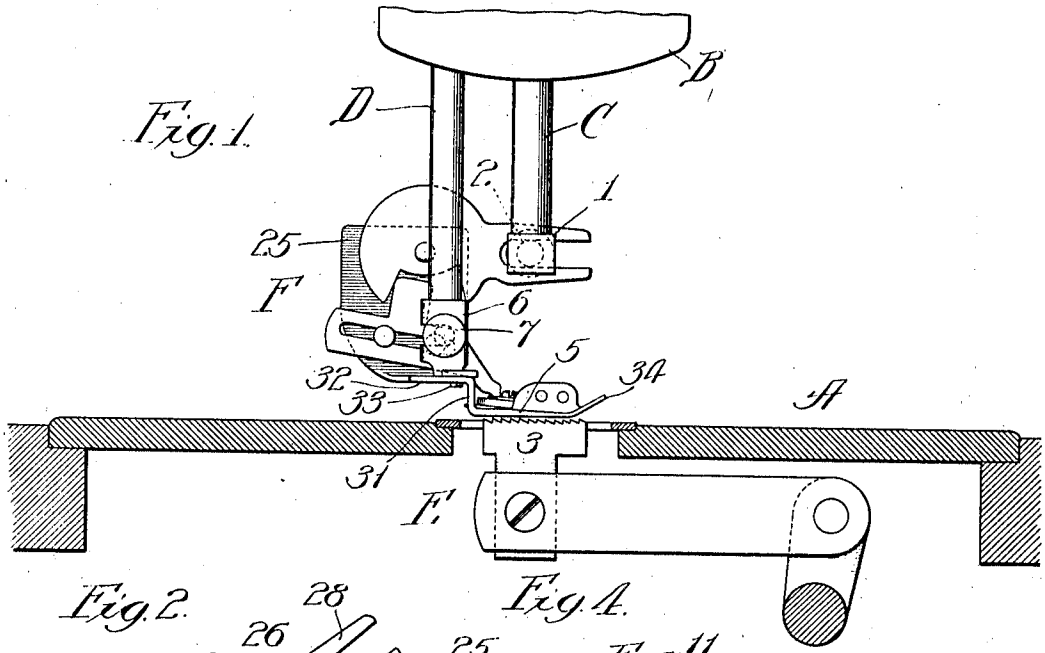


Fig. 2.

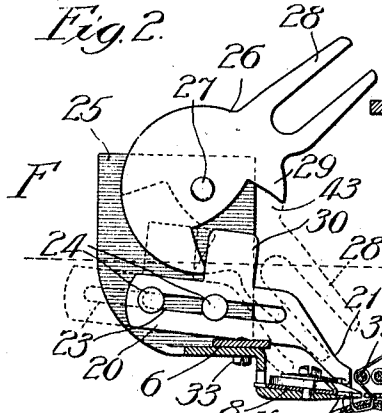


Fig. 4.

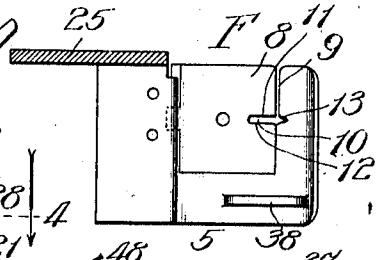


Fig. 6.

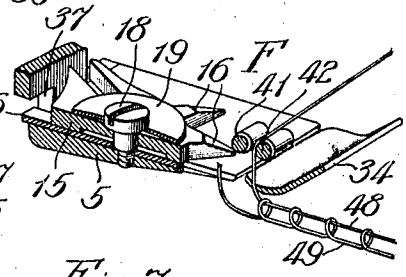


Fig. 5.

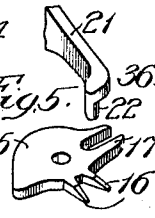


Fig. 3.

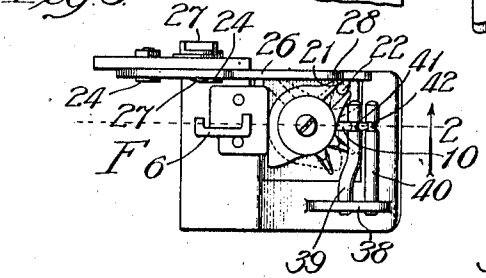
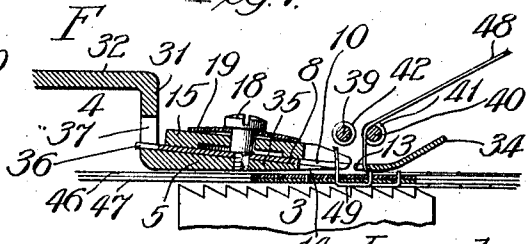


Fig. 7.



Witnesses:

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Fig. 8.

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Attys.

UNITED STATES PATENT OFFICE.

EVANDER E. McGILVARY, OF MADISON, WISCONSIN, ASSIGNOR TO THE McGILVARY COMPANY, OF MADISON, WISCONSIN, A CORPORATION OF WISCONSIN.

STITCH-REMOVING DEVICE.

970,733. Specification of Letters Patent. Patented Sept. 20, 1910.

Application filed April 30, 1909. Serial No. 493,181.

To all whom it may concern:

Be it known that I, EVANDER B. McGILVARY, a citizen of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented a new and useful Improvement in Stitch-Removing Devices, of which the following is a specification.

My invention relates particularly to means for use in removing or unraveling stitches or threads, as where it is desired to remove a seam in a fabric or garment; and my primary object is to provide a device of the character indicated which may either be applied as an attachment to a sewing-machine or be constructed as an independent machine, and which will render the hitherto tedious operation of removing stitches from cloth a comparatively easy and rapid operation, at the same time removing the cut threads from the cloth—a thing which has been impossible of accomplishment when a lock-stitch seam has been ripped by a cutting blade playing between the materials sewed together.

The invention is illustrated in its preferred embodiment as an attachment to a Singer sewing machine, but it will be understood that it may be adapted for use with any sewing-machine, or it may be constructed as an independent machine, with suitable means for actuating the operative parts of the device.

It may be stated preliminarily that my invention involves the use of a shoe, guard, or cloth-guiding member, adapted to lie above the plies of material of the seam and carrying a thread-guide; shears, or clippers, so related to said thread-guide as to be adapted to clip or curtail the end of one (the lower) thread when the other (the upper) thread is drawn through said guide, thereby pulling the lock-stitches progressively from the plies of material and freeing the extremity of the lower thread from the lock-stitch after each curtailing operation and presenting the same to the progressive curtailing action of said clippers; and means serving to actuate said clippers or shears with a continuous clipping operation, whereby the progressive curtailing of the lower thread proceeds practically continuously, although, of course, intermittently. In the preferred construction, said shoe is a false presser-foot, carried by the presser-foot bar of a sewing-machine, and the shears or clipper is operated by the needle-bar, of the sewing-machine.

In the accompanying drawing—Figure 1 is a broken sectional view of a sewing-machine equipped with my improved stitch-unraveling and clipping device; Fig. 2, a vertical sectional view of my improved device in the form of a sewing-machine attachment, the section being taken as indicated at line 2 of Fig. 3; Fig. 3, a plan view of said device or attachment; Fig. 4, a plan sectional view taken as indicated at line 4 of Fig. 2, with the movable parts of the attachment removed; Fig. 5, a broken perspective view showing the preferred form of clipper and the actuating member therefor; Fig. 6, a broken sectional perspective view illustrating the manner in which the upper thread of a lock-stitch seam may be employed for progressively pulling the lock-stitches from the seam and subjecting the extremity of the lower thread to the clipping or curtailing action of the clipper, the plies of sewed material being omitted from the view, however; Fig. 7, a broken sectional view illustrating the manner of operation of the device when the false presser-foot is lowered and the cloth-feeding mechanism of the sewing-machine depended upon to advance the cloth in the operation of removing the seam; and Fig. 8, a perspective view showing a modification of the clipper.

In the construction illustrated, A represents the bed-plate of the head of a sewing-machine; B, the arm of the machine; C, the needle-bar; D, the presser-foot bar; E, a cloth-feeding device of well known construction and operation; and F, my improved stitch unraveling and clipping attachment carried by the presser-foot bar and having a movable blade, or clipper, actuated by the needle-bar.

The regular parts of the sewing-machine are of well-known construction and operation and need not be described in detail. It may be stated, however, that the needle-bar is usually equipped with a collar 1 having a lug, stud, or projection 2, which I prefer to use to actuate the lever which actuates the movable shear-member. The presser-foot bar D may be raised and lowered with relation to the bed-plate A in the usual manner. The feed-device E comprises a toothed reciprocating member 3 which moves rear-

wardly while in the elevated position and which is depressed during its return movement to enable it to take a fresh hold on the cloth in the usual manner.

The attachment F comprises what may be termed a false presser-foot 4 having a horizontally-disposed shoe, or cloth-engaging member, 5 and equipped with an attaching shank 6 by means of which the attachment may be secured to the presser-foot bar, which is equipped with a screw 7; a stationary shear-member, or clipper-member, 8, having its front edge disposed adjacent to a thread-admitting preferably transverse slot 9 with which the shoe 5 is provided at one lateral edge, said shear-member 8 having a rearwardly-extending slot 10 intersecting the transverse slot 9, thus affording shear-edges 11 and 12, said slot 10 being opposite a groove, or guide-slot 13 with which the shoe 5 is provided at the inner end of the slot 9, and said shoe 5 being provided with a slot 14 which registers with the slot 10 of the shear-member 8; a pivoted, oscillatory shear-member, or clipper-member, 15, mounted on the shoe 5 and equipped with forwardly-projecting double-edged cutter-teeth, or blades, 16 which co-act with the shoulders 11 and 12 of the stationary shear-member 8, said member 15 having a fork, or slotted portion, 17 through the medium of which it is actuated; a pivot screw 18 and spring-washer 19 by means of which the shear-member 15 is connected with the shoe 5; a slide 20 equipped with a forwardly and downwardly extending arm 21 carrying a cam-stud 22, which engages the fork 17 of the clipper-member 15, said slide 20 having a guide-slot 23 connected by screws 24 which serve to attach the slide to a vertical member 25 with which the false presser-foot is equipped; and an actuating lever 26 which is connected by a pivot 27 with the member 25 and which is equipped with a fork or slotted arm 28 which engages the stud 2 carried by the needle-bar. The lever 26 has a fork, or slotted portion, 29 which engages an upwardly-extending member 30 carried by the slide 20.

The shoe 5 of the false presser-foot is adapted to co-act with the member 3 of the cloth-feeding mechanism of the sewing-machine and is carried by a vertical shank 31 depending from the front portion of a horizontal member 32 with which the attaching shank 6 is detachably connected, as by means of screws 33. Thus, any desired form of attaching shank may be substituted for the shank 6 to adapt the attachment for connection with the presser-foot bar of any sewing-machine. The shoe 5, shank 31, horizontal member 32 and member 25 may be integrally formed from sheet-metal by a suitable stamping operation. The front edge-portion of the shoe 5 is curved or bent upwardly, as indicated at 34. The metal of the shoe 5 is swaged, ground or beveled, as indicated at 35, to render the material as thin as practicable at the shearing-slot of the device, and the stationary blade, or shear-member, 8 is formed of very thin material. The stationary blade lies on the upper surface of the shoe 5 and is provided at its rear edge with a lug 36 which engages a slot 37 with which the shank 31 is provided. The member 8 virtually forms a part of the shoe, being formed separately merely for the purpose of tempering, and for renewal, if worn. The screw 18 which serves to connect the upper shear-member, may, also, serve to connect the lower shear-member to the shoe 5, the screw being suitably shouldered for the purpose. According to the form illustrated, the lower, or stationary, shear-member 8 inclines forwardly and downwardly somewhat, so that the shear-member 15 lies in a somewhat inclined plane. Accordingly, the screws 24, which connect the slide 20 with the member 25, are so disposed as to cause the slide to move in an inclined plane parallel with the inclined plane in which the shear-member 15 lies. The shoe 5 is equipped on its upper surface near the lateral edge which is opposite the slot 9, with a lug 38, which carries a pair of horizontally-disposed studs 39 and 40 which are provided, respectively, with thread-grooves 41 and 42. When the device is used with the false presser-foot in the lowered position and co-acting with the feed-mechanism of the machine, it is preferred to pass the upper thread of the lock-stitch seam in the rear of the guide 40, that is between the guide 40 and the guide 39. When, however, it is desired to rely upon the use of the upper thread to feed the sewed material rearwardly in the operation of removing the seam, as may be done for the most expeditious results in the case of all but light materials, it is preferred to pass the upper thread over the rearmost guide-member 39, as shown in Fig. 2, so that the thread will operate to draw the sewed material rearwardly as the operation progresses. In either case, the pulling thread passes through the guide-slot 13 which lies in advance of the shearing-slot 10, and the lateral walls of the guide-slot 13 serve to prevent lateral shifting of the pulling thread, this insuring the proper alinement of the seam with relation to the shearing-slot 10, in the operation of the device.

It is observed that the slide 20 lies in a vertical plane adjacent to the vertical member 25 upon which the lever 26 is mounted, notwithstanding the fact that the guide-studs 24 are so disposed with relation to each other as to afford virtually a forwardly and downwardly inclined guide with which the slide 20 is connected. It is

observed, also, that the lever 26 lies in a vertical plane adjacent to the plane of the vertical member 25, and, in fact, in the plane of the slide 20, so that the fork 29 is in position to engage the shank 30 of the slide. The slot 43 of the fork 29 is purposely made wide with relation to the shank 30, so that the oscillating clipper 15 will not be oscillated through an unnecessarily large arc in the clipping operation.

In Fig. 8, 44 represents an oscillating clipper-member of practically the same form as the clipper-member 15, but provided with one cutting-tooth 45 instead of a plurality of cutting-teeth. It is preferred to use a plurality of cutting-teeth, however, and to give to the movable clipper-member a wide enough range of oscillation to carry the several cutting-teeth or blades transversely across the shearing-slot 10 of the stationary shear-member in both directions in every complete reciprocation of the needle-bar C.

In Figs. 2 and 7, 46 and 47 represent the ples of material in a seam in which the materials are joined by lock stitches of threads 48 and 49. In Fig. 6, the same threads are shown with the plies of material removed.

Fig. 2 represents the operation when the false presser-foot occupies the elevated position and the upper thread 48 is depended upon, not only to dislodge the extremity of the lower thread and present it to the curtailing operation of the clippers, but also to feed the sewed plies of material rearwardly as the seam-removing operation progresses. Thus, it will be understood that when the false presser-foot occupies the elevated position, the feed-mechanism E of the machine is not depended upon for feeding the plies of material rearwardly. This is the preferred method of operating the device where the plies of material are sufficiently firm to enable the operation to be carried on without danger of drawing the material into the shearing-slot 10 and subjecting the material to the cutting action of the clipper. Only in cases of very delicate fabrics, such as thin silks, is there danger of the material being drawn into the slot 10 and cut by the clipper; and where stitches are to be removed from such delicate materials, it is preferred to employ the false presser-foot in the depressed position and depend upon the operation of the mechanism E to feed the material. Thus, the material is held somewhat closely confined between the member 3 and the shoe 5, so that no opportunity is afforded for it to wrinkle and enter the slot 10. The operation, depending on the feed of device E approximately adjusted to the length of stitch to be removed, will be slower than when the false presser-foot is raised and the pulling thread 48 depended upon to feed the material, but the danger of injuring the delicate fabrics will be obviated.

The operation may be stated briefly. When it is desired to rely upon the feed-mechanism E to feed the plies of material, the presser-foot bar D is lowered to the position shown in Figs. 1 and 7, and the material is fed beneath the shoe 5 in the same manner that materials are fed beneath the presser-foot of a sewing-machine in the operation of sewing. The upper thread 48 of the seam is entered through the lateral slot 9 of the shoe and engaged in the guide-slot 13 of the shoe and the thread is also entered between the ends of the laterally projecting studs 39 and 40 and engaged in the groove 42 of the stud 40. The machine is then operated, and as the needle-bar C reciprocates, it serves, through the medium of the lever 26 and slide 20, to oscillate the clipper-member 15. The operator pulls gently upon the upper thread 48, thereby progressively pulling the lock-stitches from the seam and presenting the successive end-portions of the lower thread in the shearing-slot 10, where the thread is subjected to the clipping or curtailing action of the clipper. In the operation, the upper thread 48 is drawn wholly from the seam, and as only the successive end-portions of the lower thread are clipped, it follows that the lower thread is wholly removed from the seam, so that it is unnecessary to pick any portions of the threads from the plies of material after the seam has been subjected to the operation of my improved device.

Where the plies of material are sufficiently firm, the presser-foot bar D is left in the elevated position, and the upper thread is then depended upon to not only dislodge the end-portions of the lower thread and subject the same to the curtailing action of the clipper, but is also depended upon to feed the plies of material rearwardly. In any case, the guide-slot with which the shoe of the false presser-foot is equipped serves to keep the seam in alinement with the shearing-slot 10 of the stationary shear-member, so that the successive end-portions of the progressively curtailed lower thread will be caused to enter with certainty the shearing-slot 10. It is observed that the bottom of the guide-slot 13 serves as a shoulder adapted to prevent undue unraveling of the lock-stitches as the operation progresses, so that the projecting end of the lower thread which is presented in the slot 10 will always be sufficiently short to insure the requisite resilient action of the thread in causing the extremity to pass into the slot 10. It is noted that the resilient washer 19 serves as a spring which always keeps the movable shear member 15 in close engagement with the stationary shear-member.

While, in the construction illustrated, the

pulling thread 48 is drawn upon by hand for the purpose of progressively pulling out the lock-stitches of the seam, the invention is not limited to such operation. In the species of the invention disclosed in my application No. 399,806, filed October 30, 1907, there is employed mechanism for exerting a pulling force upon one thread of the seam, thereby to dislodge the successive end-portions of the other thread and present the same to the curtailing action of the shears.

The gist of the invention lies in providing thread-clipping means adapted to work on one side of the seam, or sewed plies of material, as distinguished from thread-cutting means adapted to work between the plies of the seam; and, in practice, it is essential to provide thread-guiding means of suitable character and so related to the thread-clipping means as to permit one thread to be employed to progressively pull the lock-stitches from the plies of material and bring the successive end-portions of the other thread within the range of the cutting action of the clipper. It is important to provide in association with such means, means for feeding the seam with relation to the thread-clipping means, so that in operating upon delicate fabrics the danger of cutting the fabric may, with greater certainty, be obviated.

It is noteworthy that the shears work continuously so as to enable them to effect curtailing of the successively presented end-portions of the thread as fast as the same are presented in the shearing-slot in the operation of the machine. When the feed-mechanism E is employed, it operates, of course, to feed the plies progressively through spaces corresponding with the stitch-length of the seam.

The invention has been illustrated and described in detail for clearness of understanding only. Hence, no undue limitation should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art. For illustration, it may be stated that while it is convenient to provide the device in the form of a sewing-machine attachment, thereby adapting the device to household use, it will be at once understood that practically the same construction and operation may be obtained in a special machine for the sole purpose of removing stitches or seams, in which the needle, bobbin, shuttle, and various accessories of a sewing-machine are omitted. In any case, it is convenient to employ a vertically adjustable bar in the nature of a presser-foot bar, and a vertically reciprocating bar in the nature of a needle-bar. Any suitable shear-actuating and shoe-adjusting devices may be employed, however.

It is to be observed that in certain of the appended claims I employ the term "cloth-feeding means" or an equivalent expression, meaning thereby to include means for feeding piles of any material which are sewed together to form a seam. The cloth is preferably fed in a horizontal plane, and the thread-clipping means is preferably located at the upper side of said plane.

The device may be constructed to remove any threads or strands employed to sew materials together, regardless of the material of the threads or strands.

The word seam is employed to include any line of stitching of the lock-stitch type, whether the ordinary seam comprising plain sewed plies of material, hem, box-plait, tuck, or other form employing sewed stitches.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a seam-remover, the combination of a member adapted to lie on one side of the plies of sewed material and carrying a thread-guide disposed close to the seam, and of such character as to permit a thread to be drawn under tension therethrough, shears disposed near said thread-guide and in such relation thereto as to enable one thread of the seam, when drawn through said thread-guide, to disengage the extremity of the other thread from the lock-stitch and present said extremity to the curtailing action of said shears, and shear-actuating means.

2. In a seam-remover, the combination of a member adapted to lie in contact with the sewed material on one side of the plies thereof, a thread-guide carried thereby adapted to receive the upper thread of the seam, and of such character that said thread may be drawn therethrough and caused to dislodge the extremity of the lower thread, and suitably actuated shears receiving said dislodged extremity and effecting curtailing thereof.

3. In a seam-remover, the combination of a shoe carrying a stationary shearing-shoulder, a movable shear-member having a forwardly-pointing blade which moves transversely to meet said stationary shearing-shoulder, and means permitting one thread to be drawn upwardly slightly in front of the cutting-members, while confined in proper relation to progressively pull out the lock-stitches from a seam lying beneath said shoe, dislodge the successive end portions of the other thread and interpose the same between said shear-members.

4. In a seam-remover, the combination with thread-clipping means and supporting means therefor, of a thread-guide of such character as to enable one thread of a seam to be drawn therethrough under tension and through the medium thereof to maintain the seam in alinement with the thread-clipping means, and thread-confining means in advance of said shears serving to prevent undue unraveling, whereby said thread oper-

oscillating shear-member surmounting said first-named shear-member and equipped with a double-edged cutting-tooth, a spring confining said movable shear-member in close contact with said stationary shear-member, means for oscillating said movable shear-member, and means for guiding a thread adjacent to but slightly out of range of said shear-members.

24. In means of the character set forth, the combination of a shoe equipped with a stationary shear-member provided with a shearing-slot, an oscillating shear-member provided with a double-edged shearing-tooth and having an actuating fork, a slide having a cam-stud engaging the slot of said fork, and a lever serving to actuate said slide.

25. In means of the character set forth, a sewing-machine attachment comprising a false presser-foot having an attaching-shank, a forwardly extending shoe and a vertical member located at one side of said shank, a stationary shear-member carried by said shoe and provided with a shearing-slot, an oscillating shear-member, a forwardly and rearwardly movable slide connected with said vertical member and serving to actuate said oscillating shear-member, and a lever pivotally supported on said vertical member and serving to actuate said slide, said lever having a forwardly extending arm adapted for actuation by the needle-bar of a sewing-machine.

26. In means of the character set forth, the combination of a shoe adapted to lie above the seam to be operated upon and carrying a stationary shearing-shoulder, a movable shear-member surmounting the said shoe, and a pair of thread-guides located one in advance of the other above said shoe, and adapted to be separately used for guiding one thread of the seam in the seam-removing operation.

27. In means of the character set forth, the combination of a shoe carrying a stationary shearing-shoulder, a movable shear-member surmounting said shoe and co-acting with said shearing-shoulder, means for supporting said shoe above the plies of a seam, a thread-guide on said shoe in substantially the plane thereof, and a thread-guide above said shoe in the rear of said first-named thread-guide, whereby one thread of the seam, when pulled through said guides, will serve to progressively draw the lock-stitches from the seam and subject the successive end-portions of the other thread to the clipping action of said shear-members.

28. In a device of the character set forth, an attachment comprising an attaching-shank, a shoe supported thereby and having a rearwardly and upwardly inclined upper surface, a stationary inclined shear-member lying adjacent to said upper surface and provided with a shearing-slot, an oscillating shear-member surmounting said first-named shear-member and lying in a plane parallel therewith and having a forwardly directed cutting-tooth adapted to move across said shearing-slot, and an actuating slide for said second-named shear-member mounted to move on an inclined way parallel with the plane of said shear-members.

29. In means of the character set forth, the combination of a shoe having an upturned front end and provided with a shearing-slot with a lateral shearing-shoulder, a thread-guide in advance of said shearing-slot, a movable shear-member having a blade adapted to point forwardly and move transversely across said shearing-slot and means for actuating said movable shear-member.

30. In a seam-remover, the combination of a member adapted to lie on one side of the plies of sewed material and carrying a thread-guide disposed close to the seam, and continuously working shears disposed near said thread-guide and in such relation thereto as to enable one thread of the seam, when drawn through said guide, to disengage the extremity of the other thread from the lock-stitch and present said extremity to the curtailing action of said shears.

31. In a seam-remover, the combination of a member adapted to lie in contact with the sewed material on one side of the plies thereof, a thread-guide carried thereby adapted to receive the upper thread of the seam, whereby said thread may be drawn therethrough and caused to dislodge the extremity of the lower thread, and continuously-working shears receiving said dislodged extremity and effecting curtailing thereof.

32. In a seam-remover, the combination of a shoe carrying a stationary shearing-shoulder, a continuously-working shear-member which moves transversely to meet said stationary shearing-shoulder, and means permitting one thread to be drawn upwardly slightly in front of the cutting-members, thereby to progressively pull out the lock-stitches from a seam lying beneath said shoe, dislodge the successive end-portions of the other thread and interpose the same between said shear-members.

33. In a seam-remover, the combination with continuously-working thread-clipping means and supporting means therefor, of a thread-guide serving to receive one thread of a seam and through the medium thereof to maintain the seam in alinement with the thread-clipping means, and thread-confining means in advance of said shears serving to prevent undue unraveling, whereby said thread operates, when pulled, to successively pull the lock-stitches from the seam, dis-

lodge the successive end-portions of the other thread and subject the same to the curtailing action of said clipping means.

34. In a seam-remover, the combination of a stationary shear-member and means for supporting the same at one side of the plies of a seam, a thread-guide in advance of said stationary shear-member having lateral thread-confining walls and a front thread-confining wall, said thread guide being disposed close to said stationary shear-member, and a continuously-working shear-member in the rear of said thread-guide and coacting with said stationary shear-member, whereby one thread of a seam may be drawn through said thread-guide and caused to progressively pull the lock-stitches from the seam and subject the successive end-portions of the other thread to the cutting action of said shears.

35. In means of the character set forth, the combination with a stationary shear-member and means for supporting the same above the plies of the seam, said stationary shear-member having a forwardly-extending shearing-slot, of a thread-guide serving to direct one thread of the seam slightly in advance of said shearing-slot, whereby one thread of the seam may be employed to progressively draw the lock-stitches from the seam and dislodge the successive end-portions of the other thread and cause the same to enter said shearing-slot, and a continuously-working shear-member equipped with a blade adapted to point forwardly and move transversely across said shearing-slot, for the purpose set forth.

36. In means of the character set forth, the combination of a bed adapted to support fabrics, a shoe supported above said bed and in such relation thereto as to enable the fabrics to be passed between said shoe and bed, continuously-working thread-clipping means carried by said shoe and thread-guiding means adapted to guide one thread of the seam slightly in advance of the thread-clipping means, whereby said thread may be employed to progressively pull the lock-stitches from the seam and present the successive end-portions of the other thread to the curtailing action of said thread-clipping means.

37. In means of the character set forth, the combination of a bed adapted to support plies of material, a shoe disposed above said bed, vertically-adjustable means carrying said shoe, continuously-working thread-clipping means mounted on said shoe, and means for guiding a thread slightly in advance of said thread-clipping means, whereby one thread of a seam may be employed to progressively pull the lock-stitches from the seam and subject the successive end-portions of the other thread to the curtailing action of said thread-clipping means.

38. In a seam-remover, the combination of a member adapted to lie on one side of the plies of sewed material and carrying a thread-guide disposed close to the seam, said guide communicating with a slot opening outward, and shears disposed near said thread-guide and in such relation thereto as to enable one thread of the seam, when drawn through said thread-guide, to disengage the extremity of the other thread from the lock-stitch and present said extremity to the curtailing action of said shears, and shear-actuating means.

39. In a seam-remover, the combination of a member adapted to lie in contact with the sewed material on one side of the plies thereof, a thread guide carried thereby adapted to receive the upper thread of the seam through an opening communicating with said thread-guide, wherethrough said thread may be drawn and placed in position in said thread-guide and caused to dislodge the extemity of the lower thread, and suitably actuated shears receiving said dislodged extremity and effecting curtailing thereof.

40. In a seam-remover, the combination of a shoe carrying a stationary shearing-shoulder, a movable shear-member having a blade which moves transversely to meet said stationary shearing-shoulder, and means permitting one thread to be drawn upwardly slightly in front of the cutting-members, said means communicating with means for admitting the thread thereto, thereby to progressively pull out the lock-stitches from a seam lying beneath said shoe, dislodge the successive end-portions of the other thread and interpose the same between said shear-members.

41. In a seam-remover, the combination with thread-clipping means and supporting means therefor, of a thread-guide serving to receive one thread of a seam through an opening communicating therewith and to maintain the seam in alinement with the thread-clipping means, and thread-confining means in advance of said shears serving to prevent undue unraveling, whereby said thread operates, when pulled, to successively pull the lock-stitches from the seam, dislodge the successive end-portions of the other thread and subject the same to the curtailing action of said clipping means.

42. In a seam-remover, the combination of a stationary shear-member and means for supporting the same at one side of the plies of a seam, a thread-guide in advance of said stationary shear-member having lateral thread-confining walls and a front thread-confining wall and communicating with an opening outward, said thread-guide being disposed close to said stationary shear-member, a movable shear-member in the rear of said thread-guide and coacting with said stationary shear-member, and means for ac-

tuating said movable shear-member, whereby one thread of a seam may be drawn through said thread-guide and caused to progressively pull the lock-stitches from the seam and subject the successive end-portions of the other thread to the cutting action of said shears.

43. In means of the character set forth, the combination with a stationary shear-member and means for supporting the same above the plies of the seam, said stationary shear-member having a forwardly-extending shearing-slot, a thread-guide serving to direct one thread of the seam slightly in advance of said shearing-slot, and an opening communicating therewith serving for the admission of the thread, whereby one thread of the seam may be employed to progressively draw the lock-stitches from the seam and dislodge the successive end-portions of the other thread and cause the same to enter said shearing-slot, a movable shear-member equipped with a blade adapted to move transversely across said shearing-slot, and means for continuously working said movable shear-member.

44. In means of the character set forth, the combination of a bed adapted to support fabrics, a shoe supported above said bed and in such relation thereto as to enable the fabrics to be passed between said shoe and bed, thread-clipping means carried by said shoe, thread-guiding means adapted to guide one thread of the seam slightly in advance of the thread-clipping means, and thread-introducing means communicating with said thread-guiding means, whereby said thread may be employed to progressively pull the lock-stitches from the seam and present the successive end-portions of the other thread to the curtailing action of said thread-clipping means.

45. In means of the character set forth, the combination of a bed adapted to support plies of material, a shoe disposed above said bed, vertically-adjustable means carrying said shoe, thread-clipping means mounted on said shoe, and means for guiding a thread slightly in advance of said thread-clipping means, said thread-guiding means communicating with thread-introducing means, whereby one thread of a seam may be employed to progressively pull the lock-stitches from the seam and subject the successive end-portions of the other thread to the curtailing action of said thread-clipping means.

46. In means of the character set forth, cloth-feeding means, a shoe disposed above the same, vertically adjustable means carrying said shoe, a vertically reciprocating member, a stationary shear-member carried by said shoe, a movable shear-member surmounting said shoe and coacting with said stationary shear-member, connections between said vertically reciprocating member and said movable shear-member, means for introducing a thread slightly in advance of said shear-members, and means for guiding the thread slightly in advance of said shear-members, whereby one thread of a seam may be employed to progressively pull the lock-stitches from the seam and subject the successive end-portions of the other thread to the curtailing action of said shear-members.

47. In means of the character set forth, the combination of a bed, cloth-feeding means, a shoe disposed above said cloth-feeding means, a vertically adjustable member carrying said shoe, a stationary shear-member carried by said shoe, a movable shear-member carried by said shoe, a vertically reciprocating actuating member, and operative connections between said last-named member and said movable shear-member, whereby said shear-member is actuated with each reciprocation of said actuating member regardless of whether said shoe occupies the elevated position or the depressed position.

48. In means of the character set forth, the combination with means for feeding the seam progressively step by step, the feed corresponding with the stitch-length of the seam, thread-clipping means, means enabling one thread of the seam to progressively present the successive end-portion of the other thread to the curtailing action of said thread-clipping means, and means for actuating said thread-clipping means continuously, at a rapid rate, whereby they will serve to perform the curtailing action as the seam advances through successive stitch-lengths.

EVANDER B. McGILVARY.

In presence of—
J. G. ANDERSON,
R. A. SCHAEFER.

UNITED STATES PATENT OFFICE.

ALEXANDER McLENNAN, OF LONDON, ENGLAND.

TREATMENT OF LEATHER WITH INDIA-RUBBER.

970,734. Specification of Letters Patent. Patented Sept. 20, 1910.

No Drawing. Application filed September 28, 1909. Serial No. 519,981.

To all whom it may concern:

Be it known that I, ALEXANDER McLENNAN, a subject of the King of Great Britain, residing in London, England, have invented certain new and useful Improvements in the Treatment of Leather with India-Rubber, of which the following is a specification.

This invention relates to an improved process for the treatment of leather with rubber.

In carrying the invention into effect the leather is first subjected to any well known fat liquoring process which has the effect of not only softening it so that it can be more conveniently handled or worked, but at the same time should the leather be dry causes the pores of the leather, which have contracted to expand. The hides after the liquoring treatment are secured to the drying frames from which they are removed when dry and buffed upon the flesh side in order to raise the fiber. After the latter treatment the hides are, treated with a solution, designed to kill the fats or oils in the leather and hereinafter referred to as a clarifying solution, in which they may be immersed, or which solution may be sprayed or otherwise applied to them, and after the application of the solution they are placed in a hermetically closed vessel in which they remain for a suitable period according to the weight and character of the hide, which period with hides of average weight will be about 48 hours. The clarifying solution to which the hide is first subjected may be composed of the following ingredients in about the proportions specified, the said proportions and ingredients however being modified to suit the quantity or character of the hides. The proportions given below are however such as I have found to be suitable for chrome tanned hides of average weight and would be sufficient in quantity to treat from 15 to 20 of such hides:—powdered sulfur, 1 lb., carbon bisulfid 4 lbs. The mixture is allowed to stand for a period of 48 hours with occasional agitation, at the end of which period it is strained, and to the liquid residue is added a second mixture adapted to precipitate the undissolved sulfur and also "kill" or dissolve out fats. The following mixture is one which I have found very suitable for this purpose, but I do not confine myself to its use. Sulfuric ether 12 oz., benzol 10 oz. to 12 oz., coal tar naphtha 10 oz., petroleum benzin 6 oz., kerosene 4 oz., rectified spirit of turpentine 4 oz. These quantities are those suitable for addition to 5 lbs. of the carbon bi-sulfid solution for the treatment of average hides. When lighter hides such as rabbit skins are being treated I may omit the kerosene and turpentine. Two or three pints of the above combined mixture is taken and to it is added 5 gallons of benzin the liquid thus formed being employed to treat the hides in the manner before stated. As it is advisable that only the smallest particles of sulfur be held in suspension in the liquid so that the pores of the hide shall not become choked up, the liquid may be again subjected to the straining operation. After this treatment the hides are removed and dried by heat, and when dry and while still warm are treated with a solution containing rubber.

While the preparation of the aforesaid rubber solutions may be effected in any convenient manner I find in practice that it is convenient to prepare a stock solution of the rubber which may be prepared by dissolving 1 lb. of Para rubber in from 1 gal. to 2 or more gals. of naphtha according to the condition or purity of the rubber. Obviously other rubber than Para rubber may be employed but when such other rubber is used it may be necessary to increase either the proportion of the rubber or of the naphtha. Instead of naphtha any other suitable rubber solvent may be used, such for example, as carbon bisulfid or benzol.

In preparing the first bath from the stock solution I ordinarily take equal parts of the rubber solution and benzin, the hide being treated therewith as aforesaid; the proportions of the rubber and benzin will, however, depend upon the condition of the stock solution.

The hides while in the rubber solution are heated and with this object the vessel may be jacketed so that steam, water, or other means may be employed and the temperature of the said vessel regulated. The temperature may range from 80° to 100° Fahr. and the period of treatment may extend from 2 to 5 days in each bath. It will, however, be evident that the weight, nature and origin of the hides must in all cases be considered and the treatment modified accordingly.

The hides during the foregoing treatment