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A. ANTONELLI

2,116,094

SEWING MACHINE ATTACHMENT

Filed Jan. 10, 1936

Fig. 1.

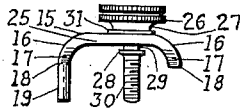


Fig. 2.

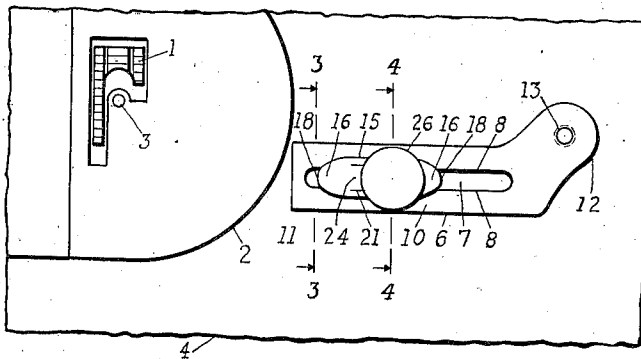


Fig. 3.

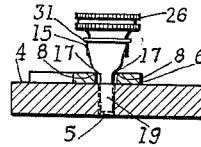


Fig. 4.

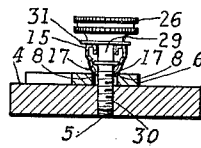


Fig. 5.

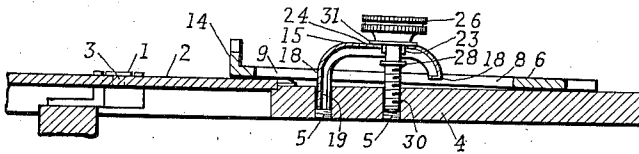


Fig. 6.

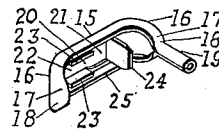


Fig. 7.

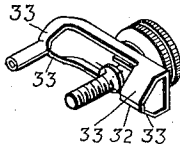


Fig. 8.

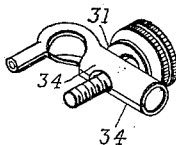


Fig. 9.

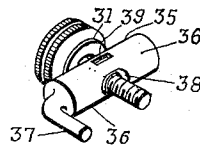


Fig. 10.

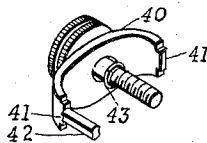
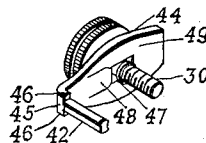


Fig. 11.



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UNITED STATES PATENT OFFICE

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SEWING MACHINE ATTACHMENT

Americo Antonelli, Quincy, Mass.

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11 Claims. (Cl. 112—257)

This invention relates to sewing machine attachment holdfasts, and in particular, to a holdfast for connecting to the bed-plate of sewing machines, various slotted shank sewing machine attachments such as gauges, guides, binders, folders, hemmers and the like.

The principal object of the invention is to provide an efficient device of the character specified for readily and securely applying sewing machine attachments to the bed-plate and as readily detaching therefrom, and to insure said attachments against displacement when subjected to moments of undue magnitude.

Another object of the invention is to provide a device of this character which is applicable to the variety of ordinary sewing machine attachments having a slot in their shanks of various size.

A further object of the invention is to provide a device of this character which, especially when applied to sewing machines with the throat-plate raised above the bed-plate and bearing upon the throat-plate and bed-plate simultaneously, renders structurally-weak slotted shanks of sewing machine attachments more durable.

A still further object of the invention is to provide a device of this character which is simple in construction and operation, economical to manufacture, and of durable life.

Heretofore, the employment of a single fastening screw, of a size common in use, for readily and securely connecting sewing machine attachments to the bed-plate of a sewing machine and as readily detaching therefrom, proved ineffectual when said attachments were slightly worn or subjected to undue moments, especially turning moments, accidental or otherwise.

The frictional resistance created by a single fastening screw connecting a sewing machine attachment to the bed-plate of a sewing machine would, after said attachment was a short time in use, be insufficient to resist the imposed turning moments, and a consequent displacement of said attachment would occur.

In correcting and endeavoring to prevent said displacement, operators would apply greater pressure to the shank of the attachment by an increased tightening of the fastening screw and, a further displacement, followed by inevitable application of greater pressure due to a further and necessary increased tightening of the fastening screw would, in turn, be followed by repeated displacement together with necessarily ever increasing pressure which, ultimately, would cause the attachment shank to have a highly smoothed

and reduced bearing surface on its lower face, and if structurally weak, would have a marred surface on its upper face and would also be bowed upwardly.

This deformation and change, due to undue pressure, would reduce the frictional resistance at the bearing surfaces to inadequacy, and thus render a fastening screw ineffectual as a means of securely connecting attachments to the bed-plate of a sewing machine subjected to considerable stresses and moments.

It is obvious then, that a single fastening screw, employed as above fully described, although presenting a device which is of extreme simplicity and may be readily applied and detached, the friction principle thereof rendered it undependable in operation; comparably, my invention is also simple, although not its equal in simplicity, is as readily applicable, and detachable, and superior thereto in operation, due to a locking principle in the place of the one-point friction principle, thus insuring an efficient operation, and obviating the above difficulties.

In addition to the foregoing this invention comprehends various novel features of construction, combination and arrangement of parts which will be hereinafter more fully described, illustrated in the accompanying drawing and claimed.

In describing the invention in detail reference will be had to the accompanying drawing in which:

Figure 1 is a side elevation of the preferred form of my invention detached from a sewing machine.

Fig. 2 is a plan view of the preferred form of the invention, together with a slotted attachment shank and fragment of a sewing machine, showing the same in operative relation to the bed-plate of a sewing machine, with said slotted attachment shank secured thereby.

Fig. 3 is a section taken on line 3—3 of Fig. 2.

Fig. 4 is a transverse section taken on line 4—4 of Fig. 2.

Fig. 5 is a longitudinal section of the preferred form of the invention, showing the same as in Fig. 2 in its operative relationship, but securing an attachment shank having a work-edge formed at its forward end.

Fig. 6 is a perspective view of the preferred form of the bridge member, as shown in Figs. 1 to 5, inclusive, but showing the same, prior to assembly, with the integral slot closure in the downturned position.

Figs. 7 to 11, inclusive, are perspective views,

readily illustrating various forms and modifications of the invention.

Referring more particularly to the drawing, it will be seen that feed-dog 1, throat-plate 2, needle-aperture 3, bed-plate 4 and threaded apertures 5 are parts of a sewing machine, shown to illustrate the application of the invention to any ordinary sewing machine, other parts of the sewing machine being omitted as unnecessary to illustrate the invention.

A slotted sewing machine attachment shank 6, of well known form and a part of attachments of the pivotally-connected or hinged type such as gauges, guides, binders, folders, hemmers and the like, has an elongated longitudinal slot 7, opposite top edges 8 of said slot, opposite sides 9 of said slot, top surface 10, forward end 11, rear end 12 and threaded aperture 13. The work-edge 14, shown in Fig. 5 and formed at the forward end of the attachment shank, represents a guide portion of a gauge or guide. A pivot or hinge screw, not shown, for pivotally connecting or hinging other parts of the various attachments to the rear end 12 of the attachment shank 6, is received by the threaded aperture 13. Other parts of the various and above-mentioned attachments are not shown as it is deemed unnecessary to the illustration of the application of my invention to any attachment having an ordinary slotted shank or plate.

I have shown, as clearly illustrated in Fig. 5, a throat-plate raised above the bed-plate of a sewing machine and an attachment shank which must necessarily bear upon the throat-plate and bed-plate simultaneously, by reason of the fabric-engaging portion at the forward end of said shank, to make obvious, in such an instance, the importance of stress distribution over a greater distance upon an attachment shank by fastening means.

In the preferred form of the invention shown in Figs. 1 to 6, inclusive, the flanged bridge member 15 has turned down ends 16 with rounded contact edges 17 forming locking portions 18 at the lower extremities thereof. A depending integral cylindrical boss 19 is formed on the lower extremity at the front edge of said bridge 15 by turning the edges of the material inward. A slot 20, longitudinally arranged in the top of said bridge 15, has one end 21 and the other or narrower end 22 in the rear portion of said bridge. The narrower end 22 of said slot 20 has flanged sides 23 formed by bending down the material at the slot portion of the bridge. A slot closure 24, integral with said bridge 15, is clearly shown in Fig. 6 in a bent down position, the same being in its normal position when bent back up to close said wider end 21 of said slot 20, and the purpose of which is to be hereinafter fully described. The bridge 15 has its entire edge flanged by bending down its edge at the top and inward at its ends and lower extremities to form the flange 25. The thumbscrew 26 has a knurled head, a shoulder 27, an integral annular collar 28 formed below said shoulder 27 and of smaller diameter than same, a portion 29 between said shoulder 27 and integral annular collar 28, and a threaded shank 30.

In assembling the invention, the threaded shank 30 and collar 28 of the thumbscrew 26 is passed vertically down through a washer 31 and the wider end 21 of the slot 20 in the bridge 15, said thumbscrew is then shifted horizontally such that its portion 29, between the shoulder 27 and annular collar 28, is received by the narrower end

22 of said slot 20, then the slot closure 24 is bent back up to close said wider end 21 of said slot 20. Thus, through the medium of the wider end 21 of the slot 20 and integral slot closure 24 therefor, the thumbscrew 26, although having an integral annular collar 28, is joined with the bridge 15 and washer 31, said parts thus kept from separation during use.

In the application of the invention, the attachment to be secured to the bed-plate 4 of the sewing machine is positioned with the slot 7 of its shank 6 over the apertures 5 in said bed-plate 4, the invention is then positioned with its cylindrical boss 19 passing down through the slot 7 and partially entering one of the apertures 5 with the shank 30 of its thumbscrew also passing down through said slot 7 and about to enter the other of the apertures 5, then said thumbscrew 26 is firmly fixed or screwed down.

To facilitate the positioning of the invention on the bed-plate of a sewing machine, and yet have the length of the aperture engaging portion of the cylindrical boss 19 and that of the thumbscrew shank 30 equal, the collar 28 is disposed at a distance to the under sides of the flanged sides 23 for permitting relative vertical movement of the bridge 15 and thumbscrew 26. This condition permitting the lower extremity of the cylindrical boss 19 to be at a lower level than that of the thumbscrew shank 30, during the positioning of the invention, for partial insertion of said cylindrical boss 19 into one of the apertures 5 without interference from the thumbscrew shank 30 which is about to enter the other of said apertures 5.

It is obvious that considerable inconvenience would be experienced if, during the positioning of the invention for simultaneous insertion of the cylindrical boss and thumbscrew shank thereof, the position of said cylindrical boss and thumbscrew shank were fixed such that their lower extremities would be at the same level.

During the screwing down of said thumbscrew 26, the cylindrical boss 19 slidably enters farther into one of the apertures 5 and the locking portions 18 enter the slot 7 with the rounded contact edges 17 engaging the two opposite top edges 8. The thumbscrew 26 cooperates with the cylindrical boss 19 in locking the bridge 15 to the bed-plate 4, and when said thumbscrew is firmly fixed or screwed down, the attachment shank 6 is locked to the bridge 15 and held or clamped to the bed-plate 4. To permit adjustment of the slotted attachment shank 6, the thumbscrew 26 is slightly backed out, said slotted attachment shank 6 is shifted longitudinally of the elongated slot 7, then the thumbscrew 26 is firmly fixed or screwed down. Simply backing out the thumbscrew 26 detaches the invention from the bed-plate of the sewing machine, the collar 28 cooperating with said thumbscrew 26 in lifting the bridge 15. To engage and lock in slots of various widths, the locking portions 18, formed by reducing the lower extremities of the bridge 15, has rounded edges 17. Thus, my invention readily connects to, readily secures an attachment to, readily permits adjustment of said attachment with respect to, and may be readily detached from, the bed-plate of a sewing machine.

Fig. 7 shows a form of the invention similar to the preferred form but has a bridge with its sides at its rear portion bent down and inwards to form a tapered locking portion 32 with locking or contact surfaces 33. The front end of the bridge being similar to the preferred form but has a

tapered locking portion with locking or contact edges 33, to correspond with said locking portion 32.

Fig. 8 shows a form of the invention with the front portion of the bridge the same as the preferred form but with the intermediate and rear portion of the bridge in the form of a hollow cylinder with lower locking or contact surfaces 34. This form of the invention is assembled during the formation of the cylindrical portion of the bridge by passing the shank and integral annular collar of the thumbscrew through the washer 31 and round aperture in the top of the bridge, prior to the forming of its cylindrical portion. Said round aperture taking an oval form, after the formation of the cylindrical portion of the bridge, to prevent said integral annular collar from passing back through said round aperture and thus join the members of the invention together.

Fig. 9 shows a form of the invention with a solid cylindrical bridge 35 having lower locking surfaces 36 and a depending integral solid cylindrical boss 37. The parts are assembled by first passing the collar and shank of the thumbscrew through the washer 31 and longitudinal slot 38 in the bridge 35, then forming the rectangular struck-in lugs 39 in either side of said bridge 35 to engage in the neck portion of the thumbscrew between the shoulder and collar thereof. The lugs being struck in to the point where the parts will be kept from separation, yet permit the thumbscrew to freely turn within said bridge.

Fig. 10 shows a form of the invention with the bridge member 40 formed from heavier material than that of the preferred form. Said bridge member 40 has reduced lower extremities forming locking portions 41 with squared edges. The vertical portions of the locking portions 41 adapted to engage the opposite vertical sides 9 of the slot in the attachment shank 6, and the horizontal portions thereof adapted to engage the top surface 10 of said attachment shank 6. The depending integral boss 42 is swaged in a form which is partially cylindrical to increase its area of bearing in one of the apertures 5 in the bed-plate 4. In this form of the invention, the parts are joined together by an annular collar 43 which is received by an annular groove formed around the shank of the thumbscrew. This method of joining together the parts of the invention may, of course, be employed in place of the method which makes use of the integral collar and slot closure.

Fig. 11 shows a form of the invention with a bridge member 44 having a depending reduced integral projection comprised of a boss 42 and locking portion 45 having contact portions 46. The width of the locking portion 45 corresponding with the diameter of the integral collar 47 which is formed upon the thumbscrew shank. It is apparent that, by observing the slot closure 48 and integral collar 47, assembling and joining the parts of this form of the invention is accomplished by the same method and means as in the preferred form. Because of no appreciable relative vertical movement of the bridge and thumbscrew being permitted in this form of the invention, the positioning of the invention is facilitated by making the aperture engaging portion of the boss 42 longer than that of the thumbscrew shank 30. In use, this form of the invention has the under surface 49 of its bridge member 44 engaging the top surface 10 of the attachment shank 6, the contact portions 46 and

periphery of the integral collar 47 engaging the two opposite sides 9 of the slot 7 in the attachment shank 6, the boss 42 slidably entering and engaging one of the apertures 5, the thumbscrew shank 30 threadably engaging the other in the bed-plate 4, and the shoulder of the thumbscrew engaging the top surface of the bridge.

While I have described and shown a specific embodiment of my invention with some degree of particularity, and have illustrated and described other forms of construction which serve to satisfy the objects thereof, it will be understood, of course, that the invention is not confined precisely to the exact disclosure, but to the limits defined by the claims hereto appended.

Having thus described my invention, what I claim is:

1. A sewing machine attachment holdfast comprising, a thumbscrew adapted to engage in a threaded aperture in the bed-plate of a sewing machine, a shoulder formed under the head of said thumbscrew, an annular integral collar formed upon said thumbscrew and spaced below said shoulder and of smaller diameter than same, a flanged bridge member having turned down ends rounded on their edges for the purpose of engaging the two opposite top edges of the slot in the shank of a sewing machine attachment, a depending integral cylindrical boss formed on the lower extremity at the front edge of said bridge and adapted to enter a second aperture in said bed-plate for the purpose of cooperating with said thumbscrew in the locking of said bridge, said bridge being provided with a longitudinal top slot having one end wider than the other with its narrow end in the rear portion of said bridge, said wide end of slot adapted to permit passage of shank and said collar of said thumbscrew therethrough for the purpose of assembly, said narrow end of slot to receive the portion between said shoulder and collar of said thumbscrew thereby mounting said bridge and permitting said thumbscrew to turn therein, said integral collar so disposed as to permit relative vertical movement of said thumbscrew and bridge, and a closure for the wide end of said slot and integral with said bridge whereby said thumbscrew and bridge are joined together.

2. A sewing machine attachment holdfast comprising, a thumbscrew adapted to engage in a threaded aperture in the bed-plate of a sewing machine, a bridge member pivotally mounted on said thumbscrew comprising a flanged member having a longitudinal top slot in its rear portion the rear end of which is turned down and rounded on its edges for the purpose of engaging the two opposite top edges of the slot in the shank of a sewing machine attachment, the front edge of said bridge comprising a turned down projection having a depending integral cylindrical boss formed on its lower extremity adapted to engage in a second aperture in said bed-plate, the turned down projection of the front end of said bridge being rounded and adapted to engage the two opposite top edges of the slot in the shank of said sewing machine attachment.

3. A sewing machine attachment holdfast comprising, a thumbscrew adapted to engage in a threaded aperture in the bed-plate of a sewing machine, a bridge member pivotally mounted on said thumbscrew having turned down curved contact ends adapted to engage the sides of the slot in the shank of a sewing machine attachment, and a depending integral cylindrical boss formed on the lower extremity of one of the ends of

said bridge member adapted to engage in a second aperture in the bed-plate of a sewing machine.

4. In a sewing machine attachment holdfast, a thumbscrew adapted to engage in a threaded aperture in the bed-plate of a sewing machine, a neck portion of the thumbscrew formed below the shoulder thereof, a bridge having lower locking portions adapted to lock in the slot of a sewing machine attachment shank and in a second aperture in the bed-plate of a sewing machine, said bridge being provided with a longitudinal slot adapted to permit passage of the shank of said thumbscrew therethrough and to receive said neck, said thumbscrew to turn in said bridge, and two opposite struck-in lugs in said slot and projecting from either side of same and engaging in said neck for the purpose of joining said thumbscrew and bridge, said neck being of such length and struck-in lugs of such dimension so as to permit relative vertical movement of said thumbscrew and bridge.

5. In a sewing machine attachment holdfast, a thumbscrew adapted to engage in a threaded aperture in the bed-plate of a sewing machine, a shoulder formed under the head of said thumbscrew, an annular integral collar formed upon said thumbscrew and spaced below said shoulder and of smaller diameter than same, a bridge having lower locking portions adapted to lock in the slot of a sewing machine attachment shank and in a second aperture in the bed-plate of a sewing machine, a laterally and downwardly-curved top portion of said bridge, said bridge being provided with a longitudinal top slot through the laterally and downwardly-curved top portion thereof, said longitudinal top slot being narrower at the inner or lower side of said laterally and downwardly-curved top portion than at the outer or upper side of same, said curved top portion and top slot adapted to permit the downward passage of the shank and said integral collar of said thumbscrew therethrough prior to the forming thereof by bending and to prevent the passage of said integral collar back up through said top slot after the formation of said curved top portion for the purpose of joining said thumbscrew and bridge, said thumbscrew to turn in said bridge, and said integral collar so disposed as to permit relative vertical movement of said thumbscrew and bridge.

6. In combination, a sewing machine attachment having a shank provided with a locking slot for placement on the bed-plate of a sewing machine, a bridge to engage the top surface of said shank, a depending integral aperture-engaging projection from said bridge to project down through and engage the sides of said locking slot in said shank and to slidably enter and engage in a locking aperture in said bed-plate, and a fastening device common to both said bridge and shank to project down through and engage the sides of said locking slot in said shank and to connect to said bed-plate.

7. In combination, a sewing machine attachment having a shank provided with a locking slot for placement on the bed-plate of a sewing machine, a bolt projecting down through and

engaging the sides of said locking slot in said shank and to attach to said bed-plate, a bridge mounted upon said bolt and engaging the top surface of said shank, and a depending integral aperture-engaging projection from said bridge projecting down through and engaging the sides of said locking slot in said shank to slidably enter and engage in a locking aperture in said bed-plate.

8. In combination, a sewing machine attachment having a shank provided with a locking slot for placement on the bed-plate of a sewing machine, a bridge having a narrowed downwardly-tapering slot-engaging bottom to engage in said locking slot in said shank, a depending integral aperture-engaging projection from said bridge to project down through said locking slot in said shank and to slidably enter and engage in a locking aperture in said bed-plate, and a fastening device common to both said bridge and shank to project down through said locking slot in said shank and to connect to said bed-plate.

9. In combination, a sewing machine attachment having a shank provided with a locking slot for placement on the bed-plate of a sewing machine, a bridge having downturned narrowed slot-engaging ends engaging in said locking slot in said shank, a depending integral aperture-engaging projection from one end of said bridge projecting down through said locking slot in said shank to slidably enter and engage in a locking aperture in said bed-plate, said bridge being provided with a longitudinal top slot at its other end, a thumb screw extending down through said longitudinal top slot in said bridge and through said locking slot in said shank to threadably engage in a second aperture in said bed-plate, and a collar provided said thumbscrew whereby said bridge is mounted upon and joined to said thumbscrew.

10. In combination, a sewing machine bed-plate provided with a locking aperture, a sewing machine attachment having a shank provided with a locking slot for placement on the bed-plate of a sewing machine, a bridge to engage the top surface of said shank, a depending integral aperture-engaging projection from said bridge to project down through and engage the sides of said locking slot in said shank and to slidably enter and engage in said locking aperture in said bed-plate, and a fastening device common to both said bridge and shank to project down through and engage the sides of said locking slot in said shank and to connect to said bed-plate.

11. In combination, a sewing machine bed-plate having a plurality of apertures, a bridge having a slot-engaging lower portion thereof engaging in the locking slot of the shank of a sewing machine attachment, a depending integral aperture-engaging projection from said bridge slidable in and engaging one of said apertures in said bed-plate, and means engaging another of said apertures in the bed-plate detachably connecting said bridge to said bed-plate for detachably securing said sewing machine attachment against displacement.

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