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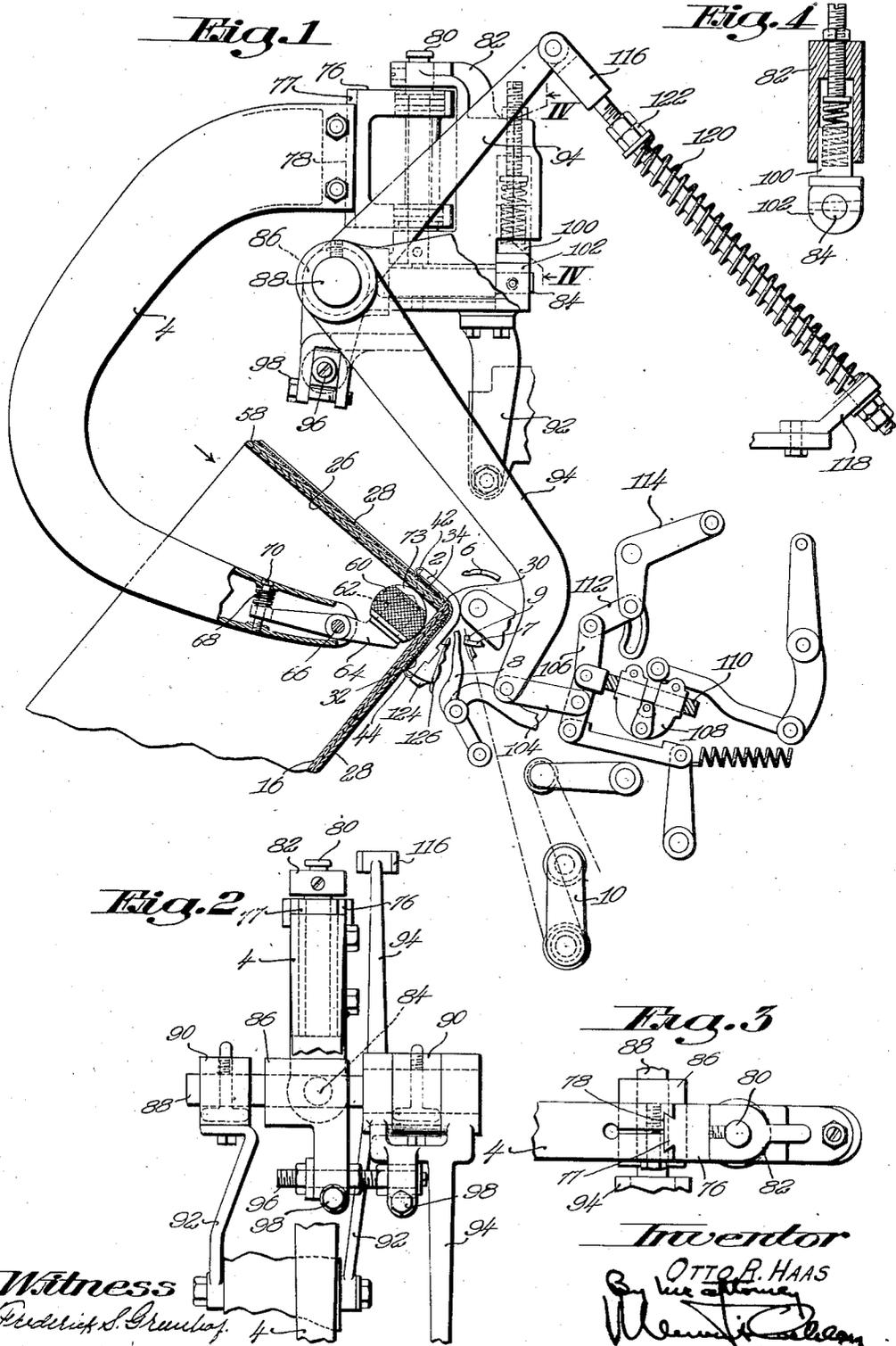
O. R. HAAS

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SEWING AND BINDING MACHINE

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SEWING AND BINDING MACHINE

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Fig. 5

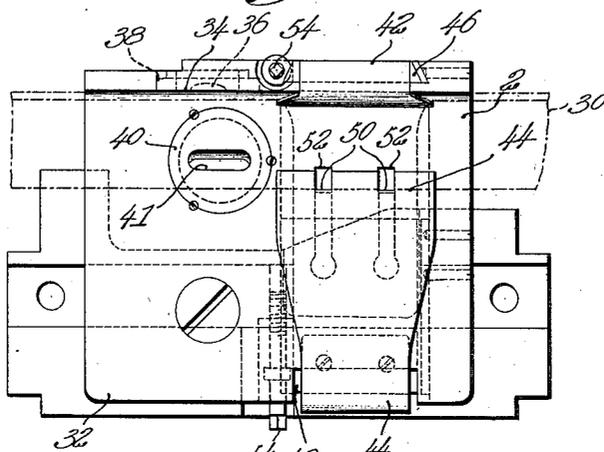
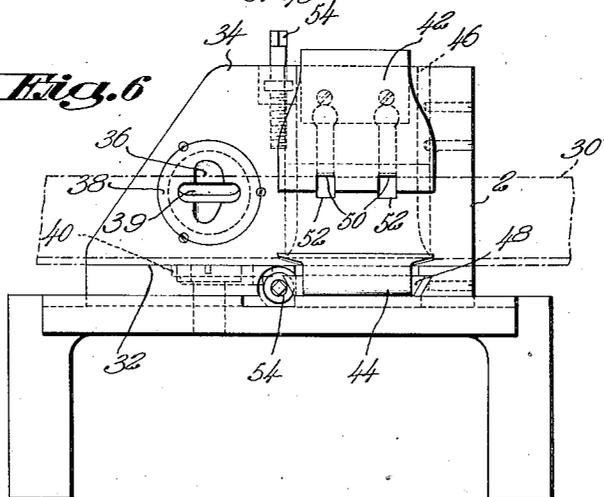


Fig. 6



Witness

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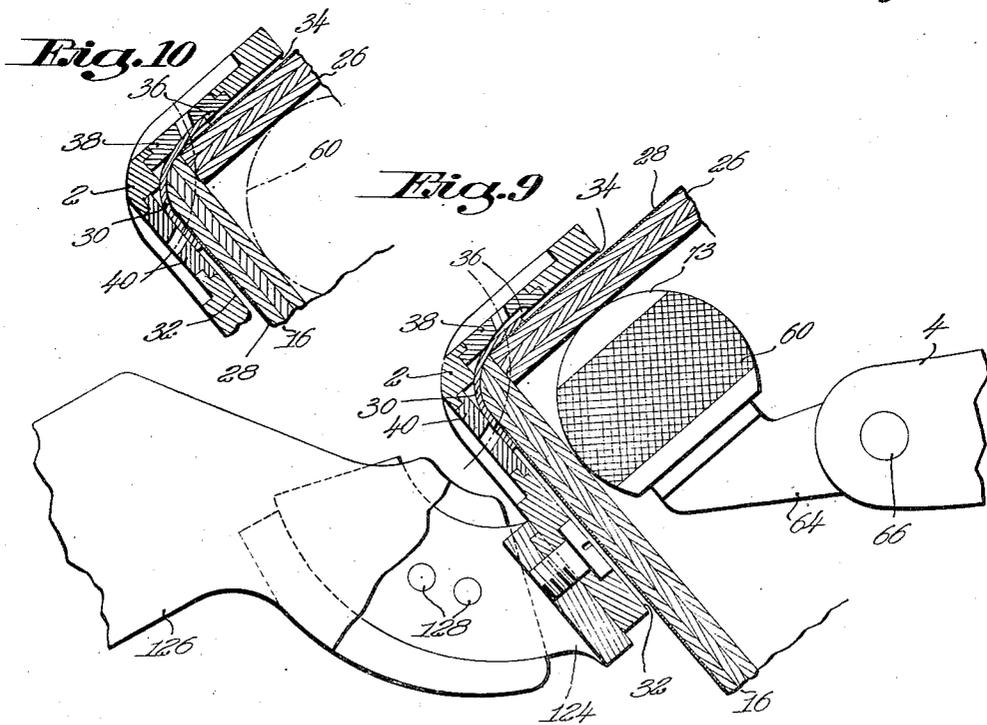
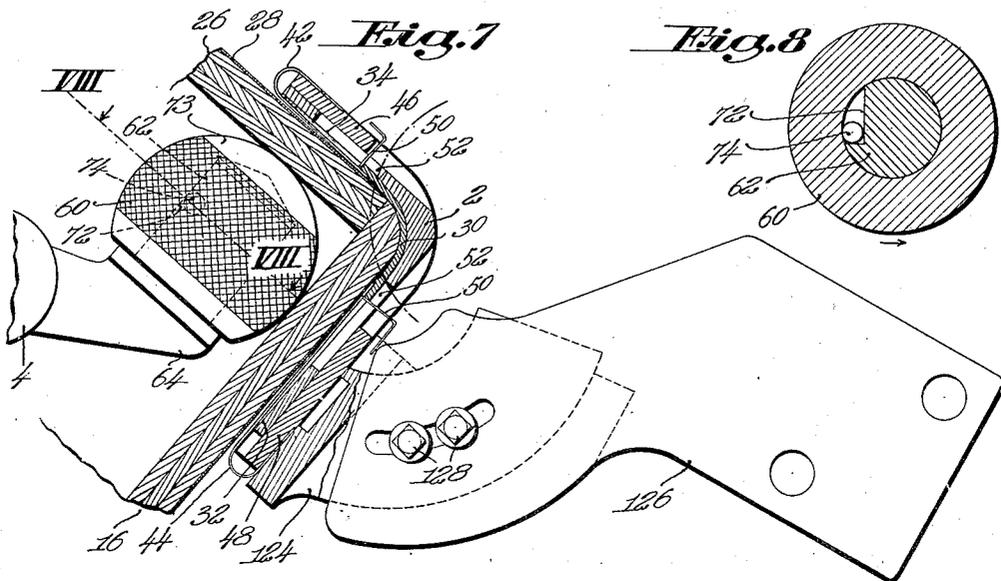
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SEWING AND BINDING MACHINE

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Witness

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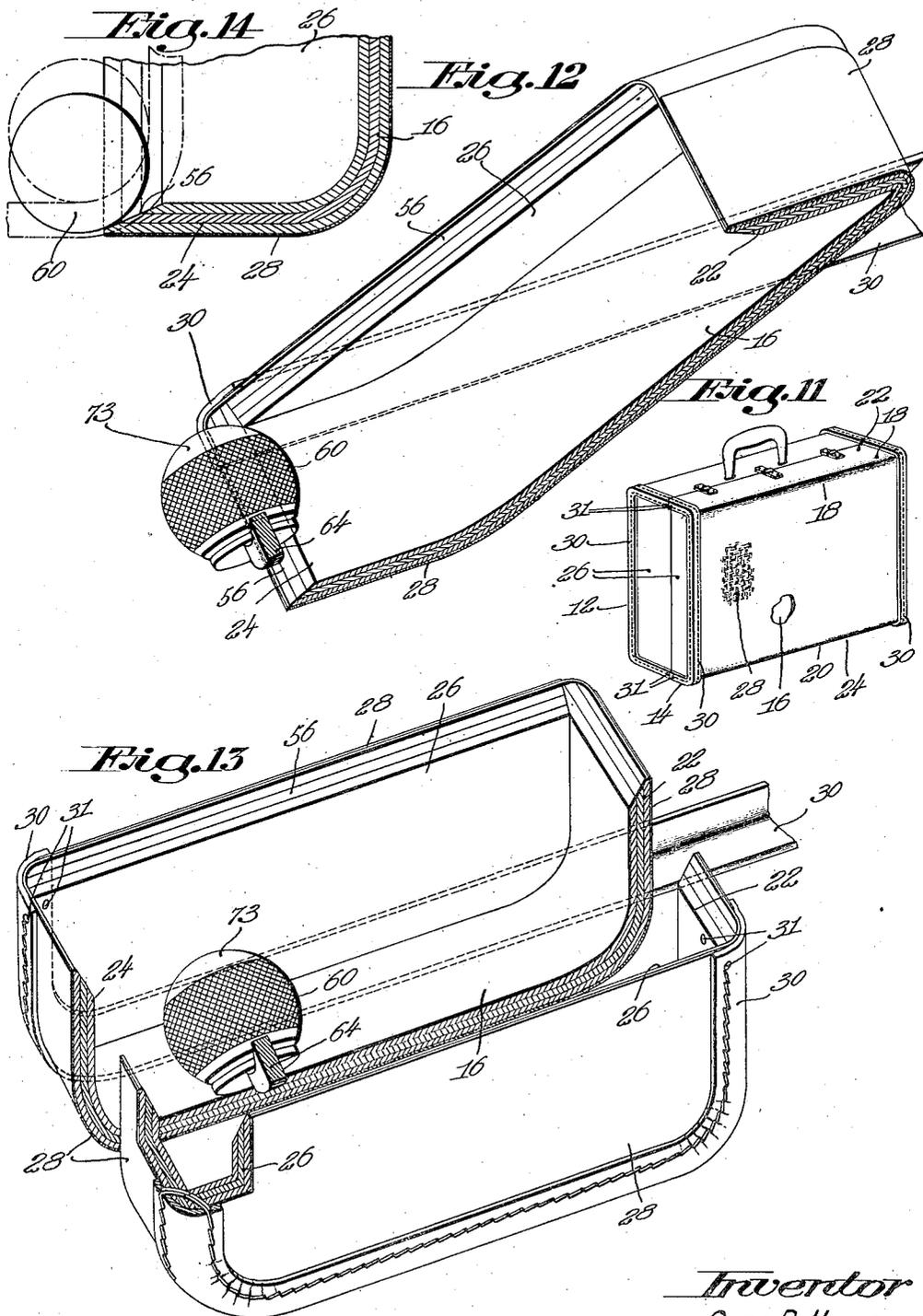
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SEWING AND BINDING MACHINE

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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,388,739

SEWING AND BINDING MACHINE

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Application November 15, 1943, Serial No. 510,279

21 Claims. (Cl. 112-62)

The present invention relates to machines for sewing binding strips to the corners of light weight bags and suitcases and more particularly to improvements in bag corner binding machines of the type disclosed in United States Letters Patent No. 1,751,123, granted March 18, 1930, upon an application filed in the names of Arthur Bates and Fred Ricks, No. 1,707,571, granted April 2, 1929, upon an application filed in the names of Fred Ricks and Reginald B. Woodcock, and No. 1,695,718, granted December 18, 1928, upon an application filed in the names of Fred Ricks and Robert G. Reid.

Modern, light weight bags or suitcases, commonly designated as "airplane luggage," frequently are constructed with a foundation frame of thin veneer or plywood protected with canvas or other weatherproof face coverings. In order to retain the inherent strength of the foundation frame and of the protecting coverings to their fullest degree in a finished bag, sharp corners and joints in the frame are avoided so far as possible. Commonly, the frame is composed of main body and cover members, each having a side unit formed from a single sheet of material bent along the proper lines to give shape to the body or cover member, the ends only of each side unit being connected by joining separate pieces with the unit. The outer edges at the corners outlining each end piece are rounded with a suitable curvature to avoid weakness inherent in a construction having sharp corners, and the rounded corners are bound with a strip of reinforcing leather, or other tough, impact-absorbing material. To avoid cracking or weakening the sheets making up the side units during bending and to reduce wear in the face covering which is not reinforced along the bends of the side unit, the bends in each side unit are made with a curvature of a radius relatively large as compared to that on the more acutely rounded end corners.

One method of attaching binding strips to the foundation frame consists in sewing a seam along one edge of the binding strip at a time. One edge of the strip is first sewed to the side unit along the corners, and the remaining unattached edge of the strip is then bent widthwise around the corners at the end of the frame. With the unattached edge of the strip bent around the corners and temporarily attached or held in place, a second seam with stitches passing through the end piece is then inserted. The purpose in sewing the strip in this way with two separate seams is to enable the fullness in the strip formed at the junction of the end corners and the bends in the

side sheet to be distributed evenly and smoothed out, thus preventing an unsightly appearance and avoiding structural weaknesses in the binding strip. In some instances, the binding strip has heretofore been severed completely at the junction of the corners to avoid the problem of distributing the fullness, or the binding strip is notched to take out the fullness. With these methods of treatment, it is common practice to protect and reinforce the severed ends or the weakened edges at the notches in the binding strip with three-sided metal or plastic caps.

The objects of the present invention are to facilitate the application of a binding strip to a bag or suitcase corner and to provide a sewing machine of the same general type as that disclosed in the Ricks and Reid patent, in which the binding strip may be applied and sewed with a single seam to the corners of a bag or suitcase by a continuous operation in which there is no necessity for severing, notching or otherwise fitting the binding strip at the junctions between the end corners and side bends of a bag or suitcase to which the binding strip is being attached.

Another object of the invention is to improve the operation of a bag sewing machine for fitting a binding strip to a corner simultaneously with a sewing operation in such a way that the strip may be drawn into snug conformity with a corner of the bag in a continuous unbroken length without causing the edges of the strip to pucker excessively or otherwise to produce an unsightly appearance along an area where excessive fullness occurs and particularly along the junction of a corner with a bend in the side unit of the bag.

A still further object is to provide a bag corner binding strip attaching machine in which the fullness created by curvature along a corner operated upon is distributed evenly throughout the bent over edge of the binding strip, thus producing a flat substantially uncreased surface corresponding to that resulting from a high-quality hand fitting operation.

A further and more general object is to improve the construction and mode of operation of a bag corner sewing machine whether for use in attaching bag corner binding strips or for other operations.

The machine in which the present invention is embodied is arranged with a work support having angularly disposed surfaces for engaging adjacent corner faces of a bag frame, or the like article, while inserting stitches or forming other step-by-step attachments along both edges of a binding strip being directed with its edges in

angular relation to the frame corner, in which means are provided for distributing the fullness in one edge of the binding strip evenly while the other edge is being carried around a bend in the side unit of the bag frame so that the binding strip may be led in a substantially straight path through a guide toward the sewing point, the fullness being distributed without the necessity of stopping the operations. Thus, it is unnecessary to attach one edge of the strip at a time, to stop the machine during the operation or to weaken the strip by cutting, and the application of the strip and its attachment to the corner may be accomplished in a single continuous operation, either with a single seam or otherwise. Preferably, the fullness distributing means is so arranged as to collect a small measured amount of fullness in the edge of the binding strip during the formation of each stitch or other step-by-step securing operation and, where the curvature of the bend in the side unit of the bag is of sufficient radius, the small amount of fullness collected for each stitch is readily flattened during the operation, thus producing a finished appearance without weakening the binding strip.

Further features of the invention relate to novel and improved work supporting and clamping members, to a binding strip guiding and clamping device of simplified and improved construction, and to other devices, combinations and arrangements of parts hereinafter described in the following specification and claims taken in connection with the accompanying drawings, in which

Fig. 1 is a view in side elevation and partly in section, showing so much of a curved needle lockstitch sewing machine as is necessary to illustrate the present invention together with a portion of a bag or suitcase being sewn;

Fig. 2 is a view in front elevation of a portion of the internal work supporting horn actuating mechanism of the machine shown in Fig. 1;

Fig. 3 is a plan view of a portion of the horn supporting and actuating mechanism illustrated in Figs. 1 and 2;

Fig. 4 is a sectional view taken on the line IV—IV of Fig. 1;

Fig. 5 is a detail view, on an enlarged scale, of the external work support and the binding strip guide of the machine, looking in the direction of the arrow in Fig. 1;

Fig. 6 is another detail view of the external work support and the binding strip guide, on the same scale, taken at right angles to the arrow in Fig. 1;

Fig. 7 is a side sectional view, on an enlarged scale, of the external and internal work supporting members of the machine, looking from the right side;

Fig. 8 is a sectional detail view, taken along the line VIII—VIII of Fig. 7;

Fig. 9 is a sectional view taken along the plane of the needle operating path, looking from the left side of the machine;

Fig. 10 is a similar sectional view, illustrating the manner in which the fullness of the binding strip is accumulated while the strip is being carried about a bend in the side unit of a bag or suitcase;

Fig. 11 is a perspective view of a bag after being sewn on the machine of the present invention;

Fig. 12 is a view in perspective, on an enlarged scale, indicating the manner in which the frame member of a bag is presented to the machine of the invention at the beginning of an operation;

Fig. 13 is a further perspective view, illustrating

the construction of a bag frame member after being partially sewn and the manner in which the stitches are inserted; and

Fig. 14 is a sectional detail view, illustrating the operation of the internal work support at the beginning of an operation upon a bag frame member.

The illustrated sewing machine is a lockstitch curved needle machine having a construction and mode of operation substantially the same as disclosed in United States Letters Patent No. 1,169,909, granted February 1, 1916, upon an application filed in the name of Fred Ashworth. Instead of flat work clamping devices, the illustrated machine is provided with a work support 2 for the corner of a bag, or suitcase, with adjacent external faces of the bag member engaging surfaces on the work support disposed at an angle of 90° to each other. To clamp the bag member in position on the work support, the machine is provided with a curved bag entering horn 4 acting at its lower end internally of the bag frame to compress the parts of the bag member being sewn together and having a mounting at its upper end actuated intermittently to release the bag member from clamping pressure between stitches so that the member may be fed as the sewing operation progresses. The machine also is provided with a curved hook needle 6, a work penetrating and feeding awl 7, a thread finger 8, a looper 9, a take-up 10 and other stitch forming devices similar to those disclosed in the Ashworth patent referred to.

The machine of the Bates et al. patent is constructed and arranged to guide and sew simultaneously both edges of a binding strip to the corner of a heavy sole leather bag, or suitcase, such as is illustrated in Fig. 11, with a single lockstitch seam. The work operated upon in the Bates et al. machine consists of angularly disposed faces of a bag, supported at an inclination to and intersecting the needle and awl paths at the sewing point while the binding strip is being attached. Satisfactory sewing has thus been successfully accomplished heretofore while folding a binding strip about a straight corner of a bag or suitcase where the main frame of the bag is composed of heavy leather or even of wood, the stitch forming devices acting on wood in much the same manner as on heavy leather.

In Fig. 11, there is illustrated a bag, or suitcase, composed of a foundation frame comprising a main body member 12 and a cover member 14, each having a plywood side unit 16 bent from a single sheet along the lines 18 and 20, respectively, with a relatively gradual curvature at right angles into the top 22 and bottom 24 of the frame member (see Figs. 12 and 13). Joined rigidly to each bent side unit are wooden end pieces 26 completing each frame member of the bag. The outer faces of the side unit and end pieces are protected by a canvas covering, indicated at 28, cemented to the faces of the side unit and end pieces with the edges of the covering substantially registering with the edges of the frame member to which they are cemented. As a protective binding for the edges of the covering and the jointed corners between the side unit and end pieces, there is sewed with a single seam along each end outlining corner a leather strip 30 formed to fit the jointed corners. The strip is laid along the side unit and bent widthwise over the corner into intimate contact with the adjacent end piece. The stitches pass entirely through the corner diagonally and do not break

through into the inside of the frame member. To complete the bag, the main body and cover members are fitted with hinges and other suitable hardware of the usual construction, the ends of the binding strip being secured by suitable reinforcing rivets 31.

In sewing the binding strips to the jointed end corners of each bag member, a corner is presented to the illustrated sewing machine with the outer faces at the corner intersecting the path of the curved needle 6 and the point of the needle entry located substantially symmetrically on a corner with relation to the point of exit. In order to facilitate application of the binding strip to the end corners, the corners are rounded with a relatively acute curvature of sufficiently short radius to present an impact resistant outer surface without weakening to any substantial degree the joint between the side unit and the end pieces.

The binding strip 30 is directed in central relation to a corner with both angularly disposed edges intersecting the needle path. To bend the strip widthwise and direct it properly, it is led through a suitable guide for supporting the strip within the corner formed by the converging surfaces 32 and 34 on the work support 2, as will be more fully described hereinafter. In order to compress the strip into tightly fitting conformity with the jointed bag corners during sewing, the work support 2 is provided between the surfaces 32 and 34 with a curvature substantially corresponding to that of the corners operated upon.

To enable the seam to follow the bend of the side unit after completing a straight portion of a corner along an end piece, it is necessary to turn the bag frame member on the lower surface 32 of the work support at right angles to its original position. The turning movement must be regulated by the speed of sewing and the degree of curvature in the bend of the side unit which forms a junction with the jointed corner outlining an end piece 26. In turning the bag frame member on the work support, the side engaging edge of the binding strip is wrapped about the bend in the side unit 16 and the end engaging edge of the binding strip continues to be bent widthwise into the plane of the end piece 26 by the guide and work support. As a result, the edge of the binding strip engaging the end of the frame is forced against its natural rigidity into an edgewise bent position, producing an accumulation of fullness in the end face engaging edge of the strip which must be absorbed before the strip will lie in flattened condition against the face of the end piece along a junction of the corner.

To give a smooth, close fitting and finished appearance to the binding strip about a corner junction of a bag frame member in using the machine of the Bates et al. patent, a V notch is cut in one edge of the strip with an angle of sufficient width to take up the fullness at the junction. Cutting a V notch necessitates stopping the machine and requires a separate manual operation. Furthermore, the notch, even though the edges are brought snugly together, forms a line of weakness in the binding strip and is fully effective in taking up the fullness only when the bend in the side of the bag is relatively abrupt. As a matter of precaution to prevent excessive wear, the line of the cut is usually reinforced with a rigid cap of metal or heavy plastic.

In order to cause the end engaging edge of a

binding strip to lie in relatively smooth, flattened condition along the junction of the end corner and the bend in the side unit of a bag frame member, in spite of the fullness along the end engaging edge at the junction while sewing both strip edges with a single seam, the work support 2 in the machine of the present invention is so constructed that, along the end corner at the junction where the fullness tends to accumulate it will be broken up automatically into measured quantities of such small size between successive stitches that the thread in the stitches, while being drawn tightly to set each stitch, will press out and flatten the individual quantities collected and distribute them with smooth-fitting conformity against the end face of the bag frame member. To measure the quantity of fullness in the binding strip and to limit the amount taken up by each stitch, the upper surface of the work support is formed with a recess 36 (see Figs. 6, 9 and 10) of tapering depth, the greatest depth being along that portion engaged by the extreme edge of the strip.

The strip collecting recess 36 is of a width substantially the same as the length of a stitch and one margin of the recess is located approximately in line with the path of the needle and the other margin in line with the work penetrating path of the awl. The location and shape of the recess are such that, when the awl penetrates the work, it engages the binding strip at the leading margin of the recess, looking in the direction of feed, and carries the strip together with any fullness collected in the recess, as shown in Fig. 10, into line with the needle path. After the needle enters the perforation formed in the strip by the awl and the stitch is inserted and set, the tension of the sewing thread, together with the pressure of the bag frame exerted by the horn against the work support, will tend to flatten and smooth out the surplus length of the binding strip edge between the previously formed and last formed stitches. The fullness along the edge of the strip thus is retained by each stitch and is not allowed to work its way in either direction along the edge of the strip or to accumulate in any such quantity as will render the work unsightly or cause the strip to be forced out of the needle and awl paths.

With binding strips of different materials, the quantity of fullness which may be measured by the recess and flattened out successfully between successive stitches will vary somewhat. Accordingly, with more rigid and incompressible materials, a recess of greater depth may be required than with softer, more flexible materials.

In order to enable binding strips of different qualities to be employed in the present machine without complicated adjustments, the work support 2 is provided with circular seats within which are fitted a pair of removable throat plates in the form of disks 38 and 40, the disk 38 being of sufficient diameter to accommodate the entire length of the recess 36. With removable disks of this construction, any one of a series of disks having recesses of different depths or widths may be employed by removing one disk and substituting another. The removable disks are also useful to provide slots 39, 41 of different lengths for different lengths of stitch. When the length of stitch is to be changed, the lengths of the slots indicated at 39, 41 also should be changed, since it is necessary to support the binding strip and the faces of the bag being operated upon as close as possible to the points of

entry in the work of the needle and awl to avoid the possibility of the needle and awl escaping from the edge of the strip or breaking through the faces of the bag from which they emerge in such a way as to form splinters or excessively large chips. In some instances, it is desirable to adjust the awl to prevent its penetration entirely through the edge of the binding strip engaging the end piece of the bag, thus avoiding any possibility of forming splinters or excessively large chips. When so adjusted, the leading edge of the recess 36 is located sufficiently behind the awl in the direction of feed to insure complete support for the edge of the binding strip. In this way, the awl can be set to penetrate part way into the binding strip without emerging from the other side, thereby holding the binding strip from slipping along the end surface of the bag while being fed.

The guide for bending the strip widthwise and directing it with its edges intersecting the needle and awl paths comprises a pair of similar U-shaped spring clips 42 and 44 surrounding the outer edges of the work support 2 and being fastened to slide blocks 46 and 48 mounted in suitably shaped guideways in the work support. The free end of each clip has a pair of right-angle tangs 50 entering slots 52 in the surfaces of the work support. The clips are so located that the tangs act on the extreme edges of the binding strip to force the edges into angularly bent relation within the angle between the surfaces of the work support. To adjust the positions of the clips for different widths of binding strip, slots in the side of the slide blocks 46 and 48 are engaged by collars on a pair of adjusting screws 54 threaded into the edges of the work support.

Referring to Fig. 7, the binding strip is led beneath portions of each clip projecting beyond the tangs, the edges of the strip being compressed by the tangs. While the work is being fed, the pressure of the binding strip is released by the resiliency of the clips and moves freely along the projecting portions of the clips. At the end of each feeding movement when the horn clamps the work against the work support, the projecting portions of the clips are forced against the binding strip by the pressure of the bag frame, to grip the binding strip and clamp it against lengthwise movement. Clamping the binding strip in this way is advantageous particularly while sewing around the junction of a corner in a bag frame member, since it avoids slippage of the strip between the times when each stitch is completed and when the awl penetrates the strip.

In order to provide a tight joint between the main body and the cover members of a completed bag frame, the edges of each member are beveled in opposite directions. Ordinarily, the cover member 14 is formed with an outwardly flaring bevel 56, best shown in Fig. 14, and the main body member 12 of the bag frame has a complementary inwardly flaring bevel 58, as in Fig. 1. In starting a sewing operation on a cover member, it is desirable to insert the initial stitch as close as possible to the extreme beveled edge of the member, but the pressure of the horn 4 against the outwardly flaring bevel 56 has a tendency to cause the edge of the member to slip out of operating position in the machine. To avoid this difficulty, according to a feature of the invention, the end of the horn carries a presser tip in the form of a roughened, one-way

rotatable ball 60, the rotary axis of which is substantially parallel to the bag side engaging surface of the work support 2. The ball 60 rotates on a spindle 62 extending from the end of a short lever 64 fulcrumed between spaced flanges of the horn on a pivot 66 substantially parallel to the direction of work feed. When the ball 60 engages the surface of the bevel 56 of the bag member, as in Fig. 14, it holds the bag member and prevents it from slipping. When the sewing operation is started, the bag member moves to the dot-dash position, raising the ball 60 to the level of the inner surface of the bag member, the full thickness of the sheet comprising the member being carried between the work support and the ball. When the bend in the side unit of the bag member is reached, there may be a further tendency for the bag member to slip beneath the ball while sewing around the bend of the corner. With the ball mounted for rotation in one direction only, a more uniform spacing occurs between successive stitches while sewing the bend in the corner, and less effort is required as compared to that needed in prior machines in turning the bag frame member as the sewing progresses around the bend.

The end of the lever opposite the ball 60 extends within a hollow portion of the horn and is engaged by a spring 68 surrounding a screw 70 passing through the outer walls of the hollow horn portion and through a slot in the end of the lever. In starting a new seam, the work clamping pressure of the horn forces the ball 60 axially of the spindle 62 against the inner face of the bag end and the side of the ball presses against the side unit of the bag frame member, the lever 64 moving about its pivot 66 to enable the ball to clamp the parts with equal pressures and to accommodate its position to variations in thicknesses of the parts clamped. One purpose of the spring 68 is to centralize the position of the lever when the presser tip on the horn is disengaged from the bag frame parts, the spring forcing the lever against the lower flange of the horn. Another purpose is to force the ball upwardly during work feed firmly against the internal face of the bag end piece 26, thus reducing the chance for downward slippage of the bag when released from the clamping pressure of the horn.

To cause the ball to rotate in one direction only, a one-way clutch is formed between the spindle 62 and the bearing surface inside the ball 60. The one-way clutch consists of a slot 72 having a wedging surface cut in the side of the spindle 62 and a ball 74 mounted within the slot in such a way as to become wedged when force is applied, tending to rotate it in one direction, and to be released when force is applied, tending to rotate it in the opposite direction, the wedging surface being arranged to cause the ball 74 to be released when rotated in the direction of feed only. The work engaging ball 60 is formed with a smooth area 73 at its end which engages the end of the bag unit, so that the smooth end of the ball 60 may slide freely along the inner face of the bag end during work feed.

The ball 60 is made with the same or a substantially smaller radius than that of the surface within the bends of the bag side unit, so that it will fit within the bends of the side unit but not too far within the jointed corners. When sewing about the junction of the jointed end corners in a bag frame member, the ball 60 acts as a pivot about which the bend in the side unit

swings, thus causing movement of the bag member to be accomplished smoothly and in unison with the linear work feeding movements.

Where bends in a side unit of extremely small radius of curvature are encountered, it is desirable to arrange the mounting for the horn in such a way that it will enable the work engaging end of the horn to swing freely from one side to the other of the sewing point in the direction of feed. Thus, when a bag member with a side unit having bends of radius of curvature relatively smaller than that of the ball 60 is being sewed, the ball may be pressed to one side or the other, as required in turning the bag frame member on the work support. For the best operating conditions, however, the ball should be smaller than the curvature of the bends, as previously described.

The mounting for the horn, in the illustrated machine, comprises a block 76 having a dovetail 77 clamped within a dovetailed groove 78 in the upper end of the horn (see Fig. 3). The block 76 is rotatably mounted on a vertical spindle 80 secured between the arms of a U-shaped member 82 which, in turn, is rotatable on a horizontal shaft 84 the forward end of which is made fast to a perforated horn supporting block 86. Extending through the perforation of the block 86 is a fixed supporting shaft 88 clamped adjacent its ends within collar portions 90 of the machine frame having downwardly extending bracing arms 92 bolted to the frame. The shaft 88 extends parallel to the direction of feed so that rotary movement of the horn supporting block 86 on the shaft causes the ball 60 at the lower end of the horn to move toward and from the work support. To actuate the horn toward and from work clamping position, the right-hand collar 90 is straddled by the divided hub of a downwardly extending arm of an actuating lever 94 rotatably mounted on the shaft 88 and connected to the block 86 through an adjusting bolt 96 passing in a direction parallel to the supporting shaft 88 through an opening in the block 86 and having check nuts for clamping and moving the parts to suitably adjusted relation along the shaft 88. The arm of the lever 94 and the block 86 also are further clamped to the bolt 96 by screws 98 in the arm and block, respectively. When the bolt 96 is released and rotated, the position of the block 86 may be changed along the shaft 88 to bring the lower work engaging end of the horn into the desired alinement with the work support and stitch forming devices.

To enable the work engaging end of the horn to swing yieldingly in the direction of work feed, the U-shaped member 82 is formed with a downwardly opening passage (Fig. 4) within which is received a spring-pressed plunger 100 the lower end of which engages a flat surface on a collar 102 secured to the rearward end of the horizontal shaft 84. When the end of a corner is reached in sewing a bag frame member, if the corner is of smaller radius than will enable the ball 60 to fit conveniently within it, the ball will be pressed to one side of the point of sewing operation, causing the mounting including the member 82 to swing about the shaft 84 and the plunger 100 to be forced yieldingly upwardly by the flat surface on the collar 102. As soon as the stitches have been inserted along the junction between the corner and bend of the bag frame member, the ball will be pressed in the other direction and then released, the spring-pressed plunger act-

ing on the flat side of the collar to draw the horn mounting back into its original alined position.

To actuate the horn and its supporting block 86 to unclamp the work for feeding, the downwardly extending arm of the actuating lever 94 is connected through a link 104 to a mechanism in the machine which is employed for actuating the presser foot toward and from the work when the machine is fitted for ordinary shoe sewing work as in the Ashworth patent above referred to. This mechanism includes a floating lever 106 to which the link 104 is connected, a presser foot lock 108 having a screw threaded rod 110 pivotally connected to the floating lever 106, and a link 112 also connected to the floating lever 106 and to a cam actuated lever 114. To urge the horn toward work clamping position, an upwardly extending arm of the lever 94 is pivotally connected to the upper end of a rod 116 passing loosely through a guide plate 118 fastened to the machine frame and, surrounding the rod 116, is a coiled spring 120 acting between the guide plate and a check nut 122 on the rod 116.

As a convenient means for adjustably mounting the work support and enabling a bag corner to be presented in symmetrical relationship to the paths of the needle and awl, the work support has secured to it an arcuate plate 124 (Fig. 7) slidably mounted within a correspondingly shaped guideway formed in a slotted bracket 126 made fast to the machine frame. Through the slot in the bracket 126 are a pair of clamp screws 128 threaded into the arcuate plate 124 which, when loosened, permit movement of the plate in the guideway of the bracket. The curvature of the arcuate plate and the location of the guideway are such that, during movement of the plate in the bracket, the work support will swing about the point of intersection between the needle path and a line bisecting the angle formed by the supporting surfaces of the work support. As a result, when the position of the work support is adjusted, the angular relation of the needle path and the faces of the bag unit only will be changed without relative bodily movement of the position of the bag toward and from the needle path.

Although the invention has been illustrated and described as being embodied in a machine for sewing a binding strip to the corners of a light weight bag or suitcase composed of thin veneer or plywood frame members each having a single sheet bent into a side unit, certain features are equally applicable to machines for attaching binding strips by means other than sewing to bag frame members, whether bent or jointed and whether composed of wood veneer or other substances.

The nature and scope of the invention having been indicated and a particular embodiment having been specifically described, what is claimed is:

1. In a machine for attaching a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edge to form a jointed corner with the side unit, the combination with attaching devices, a work support having angularly disposed surfaces to engage a jointed corner externally, and means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable attachment of the strip to said faces, of means acting on the binding strip at the point of attachment to distribute evenly the fullness

along the end piece engaging edge of the strip while the other angularly disposed edge of the strip is being wrapped about a bend in the side unit of the bag frame.

2. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edge to form a jointed corner with the side unit, the combination with a needle, a work support having angularly disposed surfaces to engage a jointed corner externally with the angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle path, and means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable sewing the strip to said faces with a single seam, of means acting on the binding strip at the point of needle operation to distribute evenly the fullness along the end piece engaging edge of the strip while the other angularly disposed edge of the strip is being wrapped about a bend in the side unit of the bag frame.

3. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edge to form a jointed corner with the side unit, the combination with a needle, a work support having angularly disposed surfaces to engage a jointed corner externally with the angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle path, and means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable sewing the strip to said faces with a single seam, of collecting means for causing a limited accumulation of fullness along the end piece engaging edge of the strip to be flattened by each successive stitch while the other angularly disposed edge of the strip is being wrapped about a bend in the side unit of the bag frame.

4. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edge to form a jointed corner with the side unit, the combination with a needle, a work support having angularly disposed surfaces to engage a jointed corner externally with the angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle path, and means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable sewing the strip to said faces with a single seam, of a recess in the work support for gathering a limited accumulation of fullness along the end piece engaging edge of the strip between successive stitches while the strip is being wrapped about a bend in the side unit of the bag frame.

5. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edge to form a jointed corner with the side unit, the combination with a needle, a work support having angularly disposed surfaces to engage a jointed corner externally with the angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle path, and means for guiding a binding strip with its edges in angular relation to each other against the

faces of the corner to enable sewing the strip to said faces with a single seam, of a recess in the work support for gathering a limited accumulation of fullness along the end piece engaging edge of the strip between successive stitches while the strip is being wrapped about a bend in the side unit of the bag frame, one margin of said recess being located in line with the needle path to prevent the fullness gathered from working its way along the strip after a stitch is inserted.

6. In a machine for sewing binding strips to the frame of a bag or like article constructed with a side unit having angularly bent portions and an end piece connected along its edges to form jointed corners with the side unit, the combination with a needle, a work feeding awl, a work support having angularly disposed surfaces to engage a jointed corner externally with angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle and awl paths, and a binding strip guide for directing the strip with its edges in angular relation to each other against the faces of the corner to enable sewing the strip to both said faces with a single seam, of a recess in the work support for gathering a limited accumulation of fullness along the end piece engaging edge of the binding strip between successive stitches while the strip is being wrapped about a bend in the side unit of the bag frame, one margin of the recess being located in line with the needle path and the opposite margin of the recess being located in line with the work penetrating path of the awl to prevent the fullness from working its way in either direction along the gathered edge of the strip after the awl penetrates the strip.

7. In a machine for sewing binding strips to the frame of a bag or like article constructed with a side unit having angularly bent portions and end pieces connected along their edges to form jointed corners with the side unit, the combination with a needle, a work support engaging a jointed corner with angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle path, and means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable sewing the strip to said faces with a single seam, of a throat plate removably secured to the work support and formed with a collecting recess acting on the binding strip at the point of needle operation along the end piece engaging edge of the strip to distribute evenly the fullness while the other angularly disposed edge of the strip is being wrapped around a bend in the side unit of the bag frame.

8. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edge to form a jointed corner with the side unit, the combination with a needle, a work support having angularly disposed surfaces to engage a jointed corner externally with the angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle path, means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable sewing the strip to said faces with a single seam, and a horn for pressing the jointed corner of the frame against the work support, of a presser tip rotatably mounted at the end of the horn comprising a ball of substantially smaller radius than the curvature inside the bend of the side unit.

9. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edge to form a jointed corner with the side unit, the combination with a needle, a work support having angularly disposed surfaces to engage a jointed corner externally with the angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle path, means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable sewing the strip to said faces with a single seam, and a horn for pressing the jointed corner of the frame against the work support, of a presser tip comprising a ball mounted for rotation at the end of the horn about an axis parallel with the side unit.

10. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edge to form a jointed corner with the side unit, the combination with a needle, a work support having angularly disposed surfaces to engage a jointed corner externally with the angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle path, means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable sewing the strip to said faces with a single seam, and a horn for pressing the jointed corner of the frame against the work support, of a presser tip comprising a ball mounted for rotation at the end of the horn about an axis parallel with the side unit and formed with a roughened band about its side unit engaging portion and a smooth end surface engaging the end piece of the bag frame.

11. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edge to form a jointed corner with the side unit, the combination with a needle, a work support having angularly disposed surfaces to engage a jointed corner externally with the angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle path, means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable sewing the strip to said faces with a single seam, and a horn for pressing the jointed corner of the frame against the work support, of a presser tip comprising a ball mounted for rotation at the end of the horn about an axis parallel with the side unit and formed with a roughened band about its side unit engaging portion and a smooth end surface engaging the end piece of the bag frame, and means for preventing rotation of the ball in a direction opposite to that imparted by the feeding movement of the work to assist in sewing the bag frame along portions of successively increasing thickness.

12. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edge to form a jointed corner with the side unit, the combination with a needle, a work support having angularly disposed surfaces to engage a jointed corner externally with the angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle path, means for guiding a binding strip with its edges in angular

relation to each other against the faces of the corner to enable sewing the strip to said faces with a single seam, a horn for pressing the jointed corner of the bag frame against the work support, a spindle on the horn, and a ball rotatably mounted on the spindle, of a one-way clutch for preventing rotation of the ball on the spindle in a direction opposite to that imparted by the feeding movement of the work.

13. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having angularly bent portions and an end piece connected along its edges to form jointed corners with the side unit, the combination with stitch forming and work feeding devices, means for supporting a jointed corner with angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the paths of the stitch forming devices, a horn for pressing the jointed corner of the frame against the supporting means, and a substantially horizontal shaft on which the horn is mounted for rotation to enable the work engaging end of the horn to move in the direction of feed, of means for maintaining the horn in a central position opposite the point of operation of the stitch forming devices comprising a flat sided collar on the shaft and a spring-pressed plunger connected with the horn engaging the flat side of the collar.

14. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having angularly bent portions and an end piece connected along its edges to form jointed corners with the side unit, the combination with stitch forming and work feeding devices and means for supporting a jointed corner with angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the paths of the stitch forming devices, of movable guide clips actuated to clamp the binding strip during formation of each stitch and to release the strip during feeding movements of the bag frame and strip.

15. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having angularly bent portions and an end piece connected along its edges to form jointed corners with the side unit, the combination with stitch forming and work feeding devices and means for supporting a jointed corner with angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the paths of the stitch forming devices, of clamp clips formed of yielding sheet metal with right angle tangs engaging the edges of the binding strip arranged to be compressed by the pressure of the bag frame on the work support to clamp the binding strip against movement.

16. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having angularly bent portions and an end piece connected along its edges to form jointed corners with the side unit, the combination with stitch forming and work feeding devices and means for supporting a jointed corner with angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the paths of the stitch forming devices, of clamp clips formed of yielding sheet metal with right angle tangs engaging the edges of the binding strip arranged to be compressed by the pressure of the bag frame on the work support to clamp the binding strip against move-

ment, and movable slides on which the clips are mounted for movement transversely of the direction of work feed for adjustably fitting binding strips of different widths.

17. In a machine for applying a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edges to form jointed corners with the side unit, the combination with attaching devices, a work support having angularly disposed surfaces to engage a jointed corner externally, means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable attachment of the strip to said faces with a single seam, a horn, and a presser tip on the horn engaging the bag frame internally, of a mounting lever at the end of the horn for the presser tip arranged to fulcrum about an axis parallel to the direction of work feed to cause the tip to engage angularly disposed internal faces of the bag frame with substantially equal pressures.

18. In a machine for applying a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edges to form jointed corners with the side unit, the combination with attaching devices, a work support having angularly disposed surfaces to engage a jointed corner externally, means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable attachment of the strip to said faces with a single seam, a horn, and a presser tip engaging the bag frame internally, of a mounting lever at the end of the horn for the presser tip arranged to fulcrum about an axis parallel to the direction of work feed to cause the tip to engage angularly disposed internal faces of the bag frame with substantially equal pressure, and yielding means for centralizing the position of the lever while the presser tip is disengaged from the bag frame.

19. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having an angularly bent portion and an end piece connected along its edge to form a jointed corner with the side unit, the combination with a needle, a work support having angularly disposed surfaces to engage a jointed corner externally with the angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the needle path, means for guiding a binding strip with its edges in angular relation to each other against the faces of the corner to enable sewing the strip to said faces with a single seam, and a horn for pressing the

jointed corner of the frame against the work support, of a presser tip comprising a ball mounted for rotation at the end of the horn about an axis parallel with the side unit and formed with a roughened band about its side unit engaging portion and a smooth end surface engaging the end piece of the bag frame, and means for urging the roughened band of the ball yieldingly against an internal face of the bag frame, comprising a spring-pressed lever on the horn for rotatably supporting the ball.

20. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having angularly bent portions and an end piece connected along its edges to form jointed corners with the side unit, the combination with stitch forming and work feeding devices, means for supporting a jointed corner with angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the paths of the stitch forming devices, and a horn for pressing the jointed corner of the frame against the work support, of mounting means for the horn, a shaft for supporting the mounting means to enable the horn to be moved away from the work support during work feed, an actuating lever rotatable on the shaft, and an adjusting bolt connecting the mounting means to the actuating lever for changing the position of the horn mounting means in the machine along the supporting shaft to bring the work engaging end of the horn into a desired alinement with the work support and stitch forming devices.

21. In a machine for sewing a binding strip to the frame of a bag or like article constructed with a side unit having angularly bent portions and an end piece connected along its edges to form jointed corners with the side unit, the combination with stitch forming and work feeding devices, means for supporting a jointed corner with angularly disposed faces of the side unit and adjacent end piece at an inclination to and intersecting the paths of the stitch forming devices, and a horn for pressing the jointed corner of the frame against the work support, of mounting means for the horn, a shaft extending parallel to the direction of work feed for supporting the mounting means for movement to enable the horn to release the work during work feed, an actuating lever rotatable on the shaft, an adjusting bolt arranged parallel to the supporting shaft between the mounting means and the actuating lever for changing the position of the horn mounting means along the supporting shaft, and means for clamping the bolt after adjustments are made.

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