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ADJUSTABLE PRESSER DEVICE FOR SEWING MACHINES

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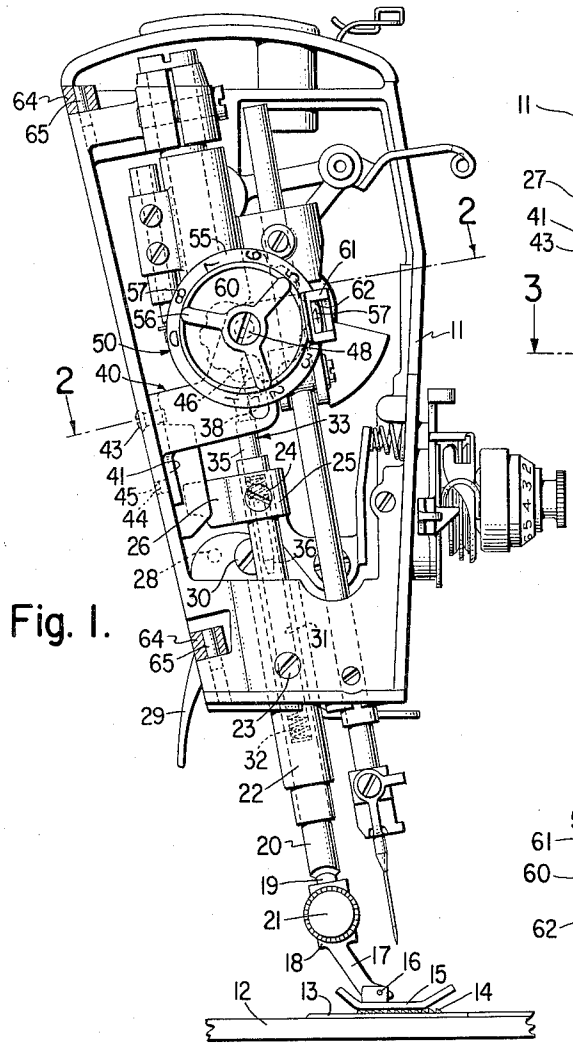


Fig. 1.

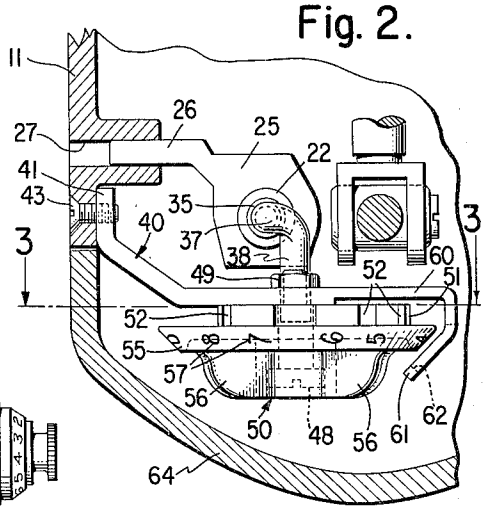


Fig. 2.

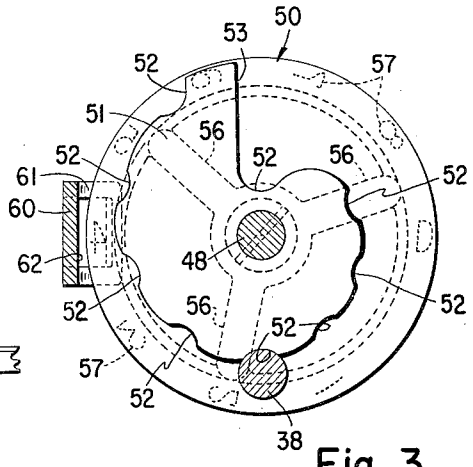


Fig. 3.

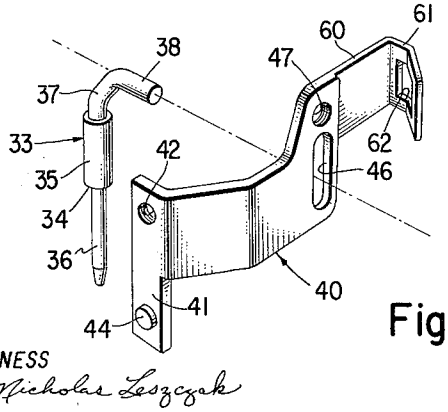


Fig. 4.

WITNESS

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ADJUSTABLE PRESSER DEVICE FOR SEWING MACHINES

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This invention relates to sewing machines of the type having a work presser device for yieldingly urging the work fabrics against the work support and in opposition to the work feeding mechanism at the stitching point. More particularly, this invention relates to a novel and improved means for effecting adjustments of the pressure to be exerted by the presser device.

It is an object of this invention to provide a novel and improved spring pressure regulating and indicating device for a sewing machine presser device.

It is a further object of this invention to provide a unitary supporting bracket which not only sustains the pressure regulating means for the presser spring, but in addition constrains the shiftable abutment of the presser spring for cooperation with the pressure regulating means, and also cooperates with the pressure regulating means in a novel fashion to provide a ready indication of the degree of pressure exerted by the presser device.

With the above and additional objects and advantages in view as will hereinafter appear, this invention comprises the devices, combinations and arrangements of parts hereinafter described and illustrated in the accompanying drawings of a preferred embodiment in which:

FIG. 1 represents an end elevational view of the sewing head portion of a sewing machine casing with the hinged end cover plate broken away at the hinges thereof to illustrate the mechanism carried within the sewing head,

FIG. 2 is an enlarged cross sectional view taken substantially along line 2—2 of FIG. 1,

FIG. 3 represents an enlarged rear elevational view of the presser regulating member with the supporting stud therefor and the shiftable presser spring abutment illustrated in cross section taken substantially along line 3—3 of FIG. 2, and

FIG. 4 represents a detached perspective view of the supporting bracket for the pressure regulating member together with the shiftable presser spring abutment.

Referring to FIGS. 1 and 2 of the drawing, 11 indicates the hollow sewing head portion of a conventional sewing machine casing which is supported in overhanging relation to a work supporting cloth plate 12 of the casing. As illustrated in FIG. 1, the cloth plate is fitted with a throat plate 13 upwardly through which operates a conventional feed dog 14 of a work feeding mechanism.

Opposing the feed dog 14 is a presser foot 15 carried as by a pivot pin 16 on a presser foot shank 17 which is formed with a seat 18 embracing a slabbed portion 19 of a presser bar 20 and secured in place thereon by a knurled clamp screw 21. The presser bar is journaled in a bushing 22 fixed in the sewing head 11 by a set screw 23. Secured to the presser bar above the bushing 22 and within the hollow sewing head by a set screw 24 is a collar 25 formed with a radially extending tang 26 embraced in a slot 27 formed in the sewing head 11 to prevent turning of the presser bar. The under side of the tang 26 may be curved as illustrated in FIG. 1 and cooperates with a pin 28 carried by a presser lifting lever 29 fulcrumed on a shouldered screw 30 secured in the sewing head 11 to elevate the presser foot for removal and replacement of work therebeneath.

The presser bar 22 is formed with an upwardly open axial bore 31 within which is disposed a coil spring 32

which seats at the lower extremity against the bottom of the bore 31. At the upper extremity the coil spring 32 is constrained against a shiftable abutment member indicated generally at 33 and best illustrated in FIG. 4. More specifically, the coil spring is seated against a shoulder 34 formed between a cylindrical portion 35 of the shiftable abutment member which fits snugly into the axial presser bar bore and a pin 36 of reduced diameter which depends from the cylindrical portion 35 and extends within the coil of the spring 32. Above the cylindrical portion 35, the shiftable abutment member 33 is formed with an offset and out turned arm 37 terminating in a follower finger 38 extending in a direction offset and perpendicular to the cylindrical portion 35.

Secured inside the sewing head 11 is a supporting bracket, indicated generally at 40, for the presser spring regulating means. The bracket 40 is formed with an offset seat 41 having a threaded aperture 42 therein to accommodate a fastening screw 43 passing through the sewing head, and a lug 44 adapted to seat in a corresponding aperture 45 in the sewing head to lock the bracket 40 securely in place.

The bracket 40 is formed with an elongate slot 46 disposed when the bracket is secured in place in the sewing head to extend lengthwise substantially parallel to the axis of the presser bar 20. The offset follower finger 38 of the shiftable presser spring abutment member 33 is arranged to extend through the elongate slot 46 and is thus constrained thereby against turning but is free to shift axially of the presser bar to the extent provided by the length of the slot 46.

Formed in the bracket 40 preferably above and in alignment with the lengthwise axis of the elongate slot 46 is a threaded aperture 47 which threadedly accommodates a shouldered pivot stud 48 which may be secured by means of a lock nut 49. Journaled on the pivot stud 48 is a pressure regulating member indicated generally at 50. The pressure regulating member comprises a spiral cam element 51 disposed contiguous to the bracket 40 and, as best illustrated in FIG. 3, formed with angularly spaced peripheral notches 52 each disposed at a different radial distance from the axis of the pivot stud 48 and with a substantially radial wall 53 extending from the peripheral notch 52 nearest the axis of the pivot stud 48 to the outer periphery of the cam element adjacent that notch 52 most distant from the axis of the pivot stud. As illustrated in FIGS. 1 and 2, the follower finger 38 of the presser spring abutment member 33 extends sufficiently far through the bracket 40 and is constrained by the slot 46 therein to track the periphery of the cam element 51 to seat in a selected one of the peripheral notches 52 therein. The distance of the selected notch 52 into which the follower finger 38 is seated from the axis of the pivot stud 48 will determine the position of the abutment member 33 in the presser bar bore and thus influence the tension applied by the coil spring 32.

Formed integral with the cam element 51 or secured to turn therewith is a dial element including a frusto conical disk 55 formed on the exposed face with one or more radial finger gripping lugs 56. The exposed frusto conical periphery of the disk 55 is provided with indicia 57 corresponding each with one of the peripheral notches 52 of the cam element. Preferably the indicia corresponding with each notch 52 is disposed on the dial at an angle of approximately 90° in a counterclockwise direction as viewed in FIG. 1 from the position of the notch 52 to which it corresponds. The bracket 40 is provided with an extension 60 formed at the free extremity with a laterally extending lip 61 bent to conform generally in shape and to overlap the frusto conical disk 55. The lip 61 is formed with an aperture 62 providing a window through which the indicia 57 on the dial may be viewed,

the window preferably being disposed relatively to the pivot stud **48** to expose that indicium **57** corresponding to the notch **52** in which the follower finger **38** is seated.

The hollow sewing head **11** of the sewing machine is closed by an end cover plate **64** preferably hinged to the sewing head by means of hinge pins **65** disposed at the left hand side of the sewing head as viewed in FIG. 1. Since the normal position of the sewing machine operator of a sewing machine of the type disclosed is at the right hand side as viewed in FIG. 1, the pressure regulating member **50** will be viewed by the operator from the right hand side as viewed in FIG. 1 when the end cover plate is opened. The window **62** and the indicia **57** exposed therethrough will be presented directly to the operator's view and selection of the desired pressure of the presser spring may be made by the operator simply by turning the finger gripping lugs **56** of the dial element.

The indicia **57** may be in abstract numbers, for instance, increasing as the spring pressure will be increased thereby, or the indicia may have some significance in terms of the type of sewing best suited for the various pressure settings. It will be noted in this regard that in the drawings the indicia D has been used corresponding to the notch **52** nearest the axis of the pivot stud **48**. Since this notch provides the lowest value of presser spring pressure, the setting is most favorable for darning and the letter D suggestive of this use of the machine may be used.

Having thus set forth the nature of this invention what I claim herein is:

1. In a sewing machine having a casing, a presser bar axially slidable in said casing and formed with an axial bore, a presser spring seated in said bore, a spring abutment member slidably constrained to move axially in said bore against said spring, a cam follower element associated with said spring abutment member, a bracket fixedly secured to said sewing machine casing, cam means pivotally secured on said bracket, guide means on said bracket slidably constraining said cam follower element for translatory movement substantially parallel to said axial bore and in engagement with said cam means, and means on said bracket cooperating with said cam means for indicating the cam influenced position of adjustment of said spring abutment member.

2. In a sewing machine having a hollow casing formed with an opening, a displaceable cover member closing the opening in said casing, a presser bar extending within said hollow casing and axially slidable in said casing,

spring means bearing axially on said presser bar, a spring abutment member disposed within said hollow casing and engaging said spring means, a cam follower element associated with said spring abutment member, a bracket fixedly secured within said hollow casing, cam means shiftably supported on said bracket, guide means on said bracket slidably constraining said cam follower element for translatory movement in engagement with said cam means, cooperating and indicating means on said bracket and on said cam means for indicating the cam influenced position of adjustment of said spring abutment member, said indicating means being disposed for observation through the opening in said hollow casing effected by displacement of said cover member.

3. A device as set forth in claim 2 in which the cam means shiftably supported on said bracket comprises a cam disk, means journaling said cam disk for turning movement about an axis fixed relatively to said bracket, and a dial associated for turning movement with said cam disk, and in which said cooperating indicating means comprises an arm formed on said bracket and extending about the periphery of said dial, said arm being formed with a window exposing a portion of the periphery of said dial, and indicia carried on said dial for exposure through said window.

4. A device as set forth in claim 3 in which said displaceable cover member is hinged to said sewing machine casing at one side of the axis of said cam means, and in which the window formed on said bracket arm is disposed at the opposite side of axis of said cam means.

5. A device as set forth in claim 3 in which said cam disk is formed with a plurality of angularly spaced peripheral notches each notch disposed at a different distance radially from the axis of turning movement of said cam disk relatively to said bracket, and in which the indicia on said dial and the window formed in said bracket arm are arranged to expose through said window that indicium corresponding to the notch in said cam disk which is in engagement with said cam follower element.

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