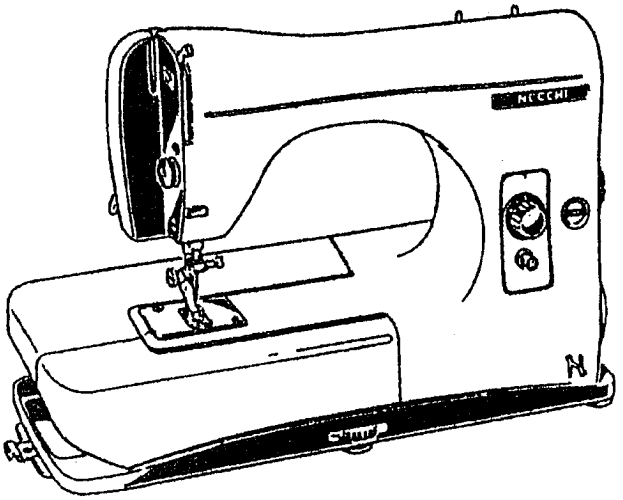
NECCHI
544
542



SERVICE MANUAL

PART 1

FEATURES AND PRELIMINARY CHECKINGS

1. NECCHI 544

MAIN FEATURES

Flat,bed transformable in cylinder bed.

Gate rotary hook with 45° slanting axis, placed frontally, rotating at a constant speed with 2 : 1 ratio.

Link thared take-up lever.

Pendulum-wise oscillating needle bar.

Lighting at mains' voltage.

Electrical operation only, with two-speed built-in motor.

Pedal rheostat.

Lockstitch, reversible, straight and zigzag, with automatic control.

Built-in device for the automatic lifting of the presser bar for darning.

Built-in cams for the execution of embroideries.

Needle syst. 705.

2. NECCHI 542

MAIN FEATURES

Flat bed transformable in cylinder bed.

Gate rotary hook with 45° slanting axis, placed frontally, rotating at a constant speed with 2 : 1 ratio.

Link thread take-up lever.

Pendulum-wise oscillating needle bar.

Lighting at mains' voltage.

Electrical operation only, with two speed built-in motor.

Pedal rheostat.

Lockstitch, reversible, straight and zigzag.

Built-in device for the automatic lifting of the presser bar for darning.

Needle syst. 705.

3. PRELIMINARY CHECKINGS AND PREPARATION OF THE MACHINE.

After having verified that the machine has not suffered any damage during transport, clean it devoting a particular care to the organs directly concerned with sewing (hook, thread-guides, tension discs, feed-dog, etc.) and check their smoothness.

Check that the voltage and frequency of the electric line with which the machine is to be connected, are those indicated on the rating-plate.

Check the smoothness of the presser-bar and check also that the upper tension opener works regularly.

4. SEWING TESTS

Concerning the sewing tests, the traditional recommendations are still valid (always remember to hold the threads at the beginning of sewing, insert the fabric under the foot at least reaching the area of the needle, equilibrate the tensions, etc.).

Thread the needle and check that the flowing of both threads, upper and lower, occurs in a perfect manner.

Effect the sewing tests, by starting from straight sewing; then, by turning the selector knob, try the other performances, zigzag, automatic embroideries, tacking (with the golden needle), buttonholes, etc.

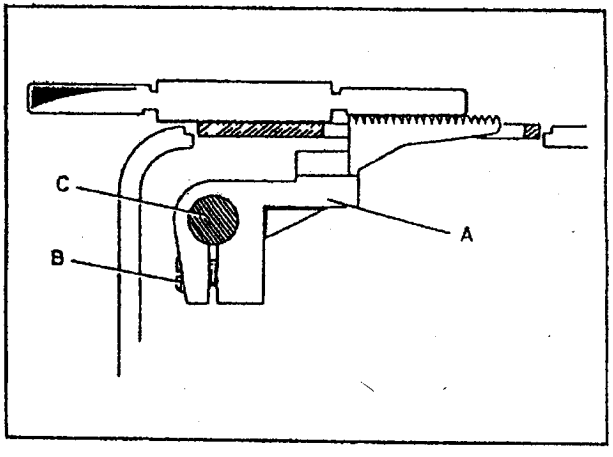


Fig. 1

PART 2

CHECKING OF TIMINGS

- Take off the detachable working surface, the base, the rear cover of the base, the right cover.

5. NEEDLE - FEED DOG TIMING

To check the needle-feed dog timing, proceed as follows :

- put stitch regulating knob on n° 4;
- bring needle bar to its top dead centre, checking that feed dog, in correspondence with this position of the needle bar, has just started its onward stroke (advanced feeding).

If this is not the case, proceed as follows :

- loosen the screws of the lower pulley (driving) and, by holding this motionless, so that the needle remains at its top dead centre :
- turn the balance wheel onwards and backwards until obtaining the above specified position of the feed dog;
- tighten the screws of the lower toothed pulley;
- insert under the foot three pieces of fabric (approx. 4 mm.) and, by turning balance wheel by hand, check that, when feed dog reaches the end of its stroke, the point of the needle grazes the fabric.

6. HEIGHT OF FEED DOG TEETH

Remove foot and needle, and then :

- put stitch length knob on n° 4;
- place gauge n°979101000-00 (fig.1) on the needle plate, turn balance wheel slowly by hand and verify that the height of the teeth from the needle plate is between 0.7 and 0.9 mm., i.e.: on 0.9 mm. the teeth «pass» without touching the gauge; on 0.7 (marked by the transversal red lines) they do not «pass» and move the gauge.

If the height of the feed dog is wrong, proceed as follows :

- loosen screw B and move slightly feed dog supporting bracket A upwards or downwards;
- once screw B is fastened again, check that shaft C on which the bracket is mounted does not have horizontal play;
- insert needle and foot again.

7. FEED DOG CENTERING IN RESPECT TO NEEDLE PLATE

(Division of the onward and backward stroke)

Put stitch regulator knob on n° 4;

- turn balance wheel and check that, when feed dog is at the beginning of its onward stroke, the distance existing between it and the end of the slot is comprised between 0.3 and 0.5 mm. (fig. 2).

If this condition is not met, proceed as follows :

- loosen screw A and rotate feed dog shaft, in either direction, until feed dog is brought to the desired distance;
- then tighten screw A strongly;
- by pressing the reverse sewing knob and by turning balance wheel, check that during the maximum reverse feeding feed dog does not hit the end of the needle plate slot;
- re-insert foot and needle.

8. HEIGHT OF PRESSER FOOT

Take off needle.

The height of the foot sole from the needle plate, when presser bar lever is raised, must be of 6.5 mm. In this position the tension discs must be three tenths of mm. open.

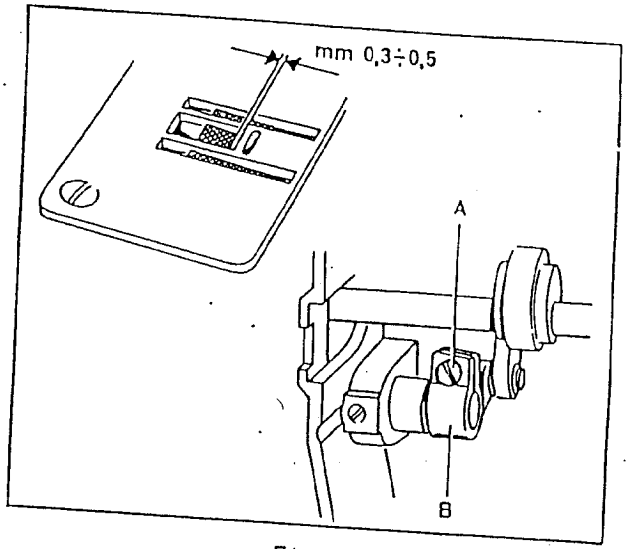


Fig. 2

After having lowered the presser bar lever until the foot sole has reached a distance of 5.5 mm. from the needle plate, close the tension discs.

So as to adjust said height, proceed as follows : (fig. 3)

- take off the bulb cover, the front plate and the tension holder plate;
- lower feed dog;
- loosen screw B of guide A;

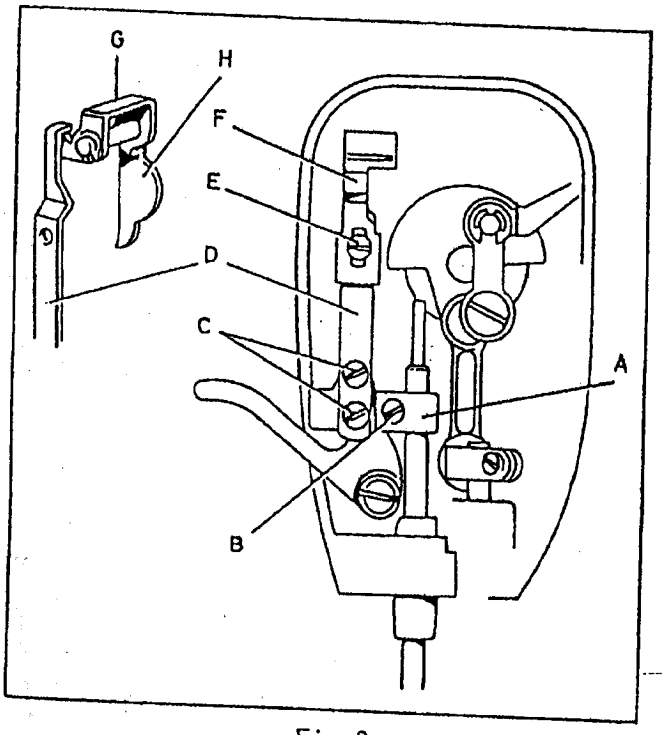


Fig. 3

- insert between foot (normal one) and needle plate a piece of fabric with a thickness of 6.5 mm. (gauge symb. 979101040-00) and lower the foot on it;
- tighten screw B.

After having replaced the normal foot by the skipping foot (for embroidery works) and after having lowered the presser bar lever and put the needle bar at its lower dead centre, the foot sole must be at a distance of 0.5 mm. from the surface of the needle plate (check this by means of gauge symb. 979101100-00).

In this position the tooth of small rod D of the skipping foot must engage plate G in order that finger H may touch the cam.

If these conditions are not met, proceed as follows:

- bring skipping foot to a distance of 0.5 mm. from the needle plate, interposing the gauge symbol 979101100-00 already mentioned;
- displace the small rot D until its tooth, after having engaged plate G, makes this rotate around its axis until finger H is in contact with the cam;
- tighten the two screws C;
- put tension holder plate back in its place;
- check again the opening of the tension discs, after having assembled the normal foot, as said above.

So as to regulate the disc-opener, proceed as follows:

- bring the foot sole at a distance of 5.5 mm. from the needle plate, interposing between them a piece of fabric having a similar thickness (gauge symb. 979101040-00);

- take off the bulb holder from the tension holder plate;
- inserting a screwdriver into the slot of the plate, loosen screw E without taking it off;
- by means of the blade of the screwdriver, move F until this comes into contact with the tension pin, without determining the opening of the discs;
- tighten screw E;
- re-insert the lamp holder;
- bring the presser bar lever upwards und check that the opening of the discs occurs in a correct way;
- re-insert bulb cover and needle.

9. CENTERING OF ZIGZAG DEVICE IN RESPECT TO NEEDLE PLATE SLOT

- Put selector knob in position of max. zigzag width;
- turn balance wheel by hand and check that the distance between the needle and the lateral ends of the needle plate slot is the same, both when needle is at left and when it is at right.

If this does not occur, proceed as follows (fig.4):

- loosen nut C;
- act on the regulating threaded pin D, either screwing or unscrewing it, according to need, until obtaining the above-described centering;
- then tighten nut C again.

N.B. - Since the centering has been effected under conditions of maximum zigzag width, it may happen that, when in position for straight sewing, the needle is slightly away from the middle of the needle plate slot.

10. ZIGZAG - NEEDLE BAR TIMING

In order to check this timing, proceed as follows:

- put selector knob in the position of maximum zigzag width;
- turn balance wheel by hand in the normal direction (counter-clockwise) and check that the needle, when descending at the left, does not move laterally after having reached the fabric. It is on the other hand tolerable that the needle moves a little laterally before its point leaves the fabric.

If this condition is not met, proceed as follows:

- put selector knob in the position of straight sewing;
- loosen the two grub screws N (fig.4) of the

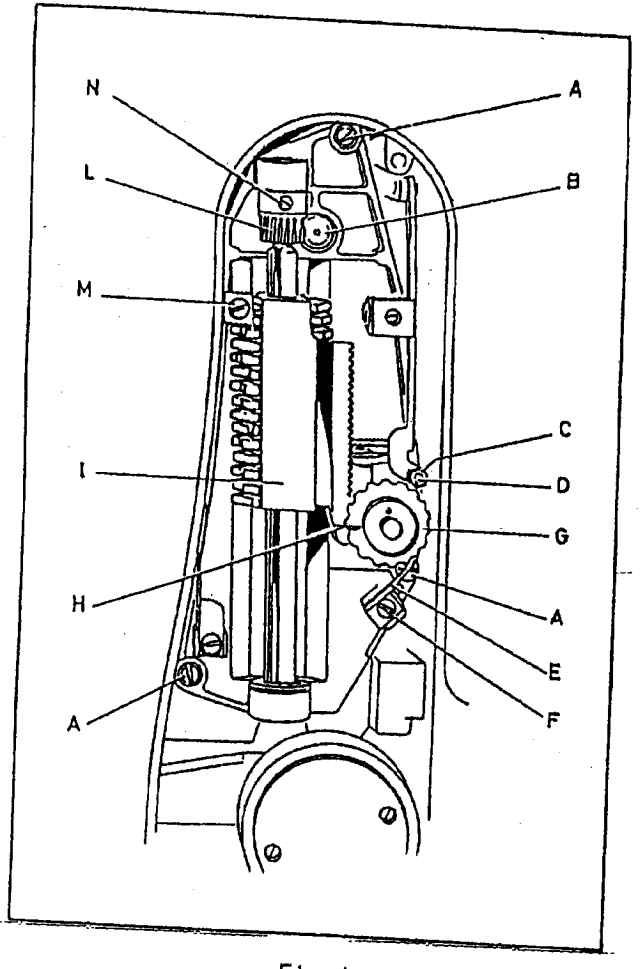


Fig. 4

helicoidal gear L mounted on the plate of the automatic device and, while keeping the cam stack motionless, turn balance wheel slowly in either direction;

- tighten only one of the grub screws N, check visually the timing, after having put the selector knob in the position of maximum zigzag width and, eventually, make a further correction. Once the correct position is found, tighten also the other grub screw N, so as to eliminate the axial play of the cam shaft.

The play between gear L of the cam shaft and worm screw B of the upper shaft must be nil. Eliminate it eventually by bringing gear L near worm screw B, after having loosened the three screws A;

- then tighten them again, while checking that the transmission between the worm screw and the driven gear is smooth and without points of major friction.

11. AUTOMATIC DEVICE TIMING (fig. 4)

The reference lines engraved on the rack and on the driving gear must coincide and the finger must be centered in respect to the cams so as to touch only one of them in turn.

If this is not the case, proceed as follows:

- loosen screw F;
- shift either upwards or downwards leaf spring according to need;
- tighten screw F again.

If the reference lines do not coincide (this is likely to occur after an unaccurate assembly), it is necessary to shift the rack by one or more teeth is respect to gear G.

To do this, proceed as follows:

- loosen screw F;
- loosen the grub screws of gear G and take this off its shaft;
- insert it again, taking care that the reference lines H coincide, and check also that the grub screw which is in a symmetrical position in respect to the pin which the selector knob is engaged, tightens the flat spot of the shaft;
- check the centering of the finger again, eventually correct it, and then tighten screw F.

If it is necessary to center the drawings appearing through the lens, proceed as follows:

- loosen screw M and shift either upwards or downwards the small hook which retains the drawing-bearing plate;
- tighten screw M.

12. HOOK INCLINATION

The rotary hook of both the NECCHI 542 and 544 is inclined at 45° from a vertical line.

Such inclination ensures, among other things, great ease in extracting and re-positioning the bobbin case group.

The hook shaft A (fig. 5) is assembled on supporting bushing E. This bushing is fastened to the machine casting by means of allen screw B, while bushing C is fastened to supporting bushing E by means of screw D.

By loosening allen screw B, supporting bushing E is released and therefore the hook axis can rotate and change inclination.

For all disassembly and assembly operations it is not necessary to remove supporting bushing E, and therefore allen screw B will never be loosened, lest it is necessary to replace supporting bushing E (which is very unlikely to occur).

Consequently, the hook inclination will be very unlikely to be varied.

Only if allen screw B is loosened accidentally, will it be necessary to restore the correct hook inclination by using the special gauge symb. 979105040-00, as explained hereunder.

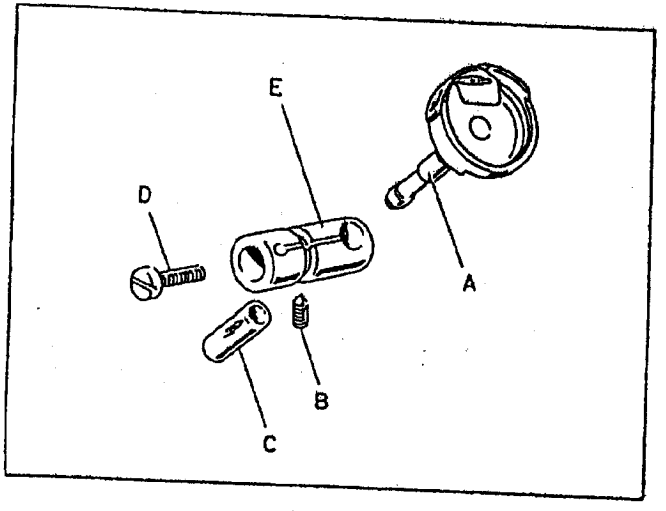


Fig. 5

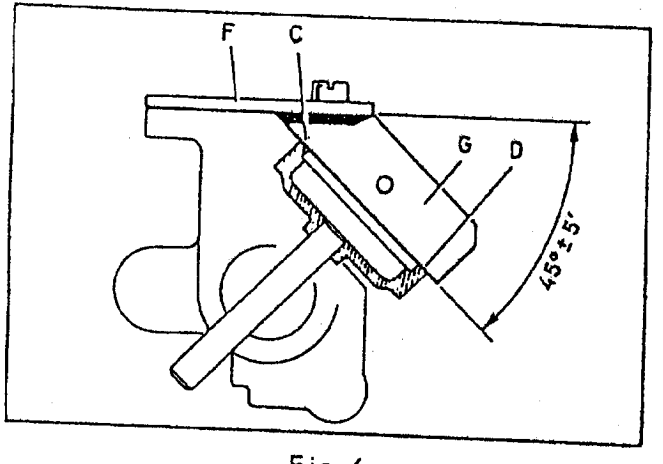


Fig. 6

Extract needle plate and insert plate F of the gauge in its place (fig. 6);

- check that the hook touches the slanting plate G in both points C and D.

If this is not the case, proceed as follows :

- loosen allen screw B (fig. 5) and screw D;
- correct the hook inclination until obtaining the condition shown in fig. 6;
- then tighten allen screw B and screw D strongly (fig. 5);
- extract the gauge and reassemble the needle plate.

WARNING : The end of the lubricating wick resting on the groove of the supporting bushing E must be inserted by a few tenths of millimetre into the lateral small hole of bushing C, so that it touches small shaft A lightly.

13. NEEDLE - HOOK DISTANCE (fig.7)

Put selector knob in position of maximum zigzag width.

- Extract the needle plate, the retaining finger and the bobbin case;
- turn balance wheel until the needle goes completely to the left and the point of the hook is in the middle of the needle;
- in this position the distance between the point of the hook and the needle must be comprised between mm. 0.5 and mm. 0.15.

If it was different, proceed as follows :

- loosen the two grub screws B fastening the driving gear C, and move it axially, disengaging it from the driven gear E;
- loosen screw F and move hook A axially until meeting the conditions shown in fig.7;
- tighten screw F strongly.

If the hook has some axial play, proceed as follows :

- loosen grub screws D of the driven gear E;
- by making the gear slide along the hook bearing shaft, eliminate the play, without injuring the smoothness of the hook;
- tighten grub screws D strongly, while taking care

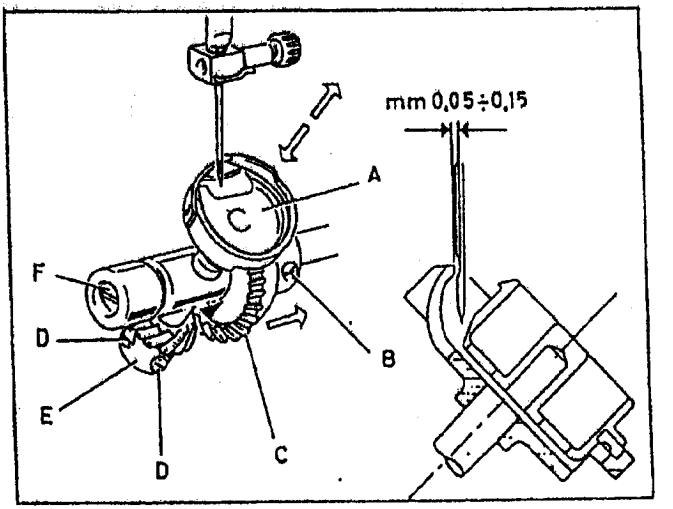


Fig. 7

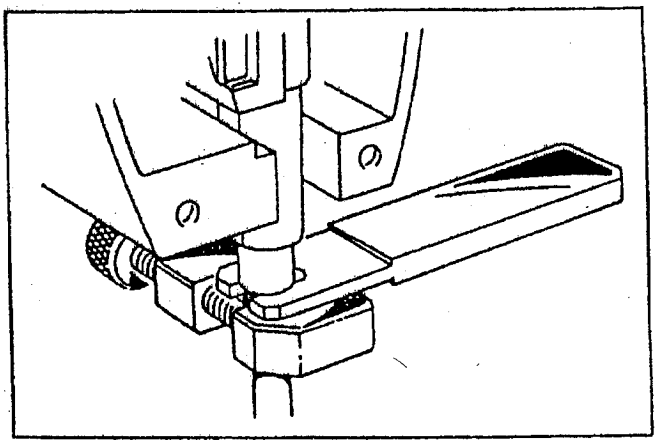


Fig. 8

that one of them must screw tight on the flat surface of shaft;

- by keeping the hook point in the middle of the needle, move driving gear C until engaging it with driven gear E;
- tighten grub screws B while checking that the junction of the two gears is uniformly smooth, with a very little play.

  The smoothness and noiselessness of the machine depend on this adjustment: it is therefore recommended to carry it out with the greatest care;
- then check the needle-hook timing (see paragraph hereunder).

14. NEEDLE - HOOK TIMING (fig. 8)

Put selector knob in position of straight sewing.

- By turning balance wheel, bring the needle bar to its lower dead centre;
- insert gauge symb. 979105032-00 (mm. 2) on the needle bar, so that it touches its bushing, and fasten it in this position by means of clamp symb. 979105012-00;
- take off the gauge and turn balance wheel by hand, in its normal direction (counter-clockwise) until the clamp touches the bushing; in this position the hook point must be in the middle of the needle (fig. 9).

  If this is not the case, proceed as follows:
- loosen grub screws B of driving gear C, while keeping balance wheel motionless;
- turn the hook until its point is on the axis of the needle;
- tighten grub screws B strongly (which screws fasten the driving gear C), eliminating almost all the play existing between the two gears, without impairing the smoothness of the movement.

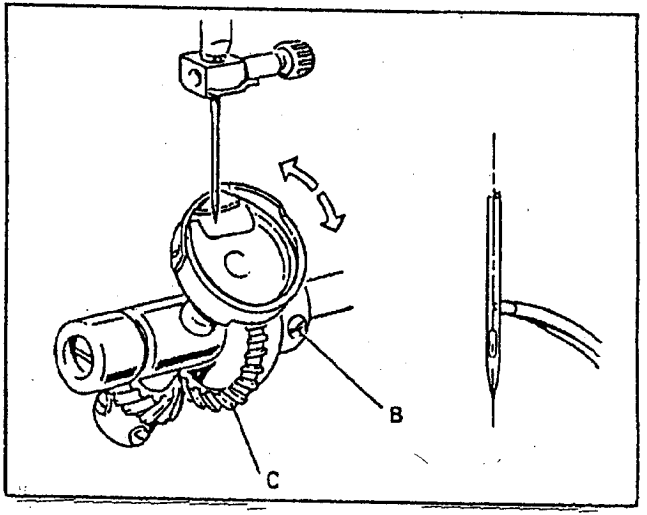


Fig. 9

15. HEIGHT OF NEEDLE (fig. 10)

Put selector knob in position of maximum zigzag width and, by turning the balance wheel by hand, shift the needle leftwards and let it descend until the hook point reaches its middle.

In this position, the distance between the upper part of the hook point and the upper part of the needle eye must be of mm. 70.

If this were not the case, proceed as follows :

- loosen screw A of the junction and either raise or lower the needle bar according to need, until reaching the correct position specified above.

  This adjustment is important for the regulatity of sewing and for the NECCHI 544 it is even more important on account of tacking, and therefore a further checking is needed.
- After having replaced the normal needle by the «golden needle» symb. 9965100, and while the needle bar remains in its left position as above, check that when the hook point is in the middle of the needle it is also somewhat under the lower part of the needle eye;
- tighten screw A;
- carry out a tacking test on two pieces of fabric.

  Tacking is regular when every locked stitch at right is followed by five open stitches at left and then by a new locked stitch at right, and so on.

  If the machine skips stitches at right, this means that the needle bar is too high; if it locks stitches also at left, this means that the needle bar is too low.

  Eventually, after the tacking test, effect a further and more accurate regulation of the needle height.

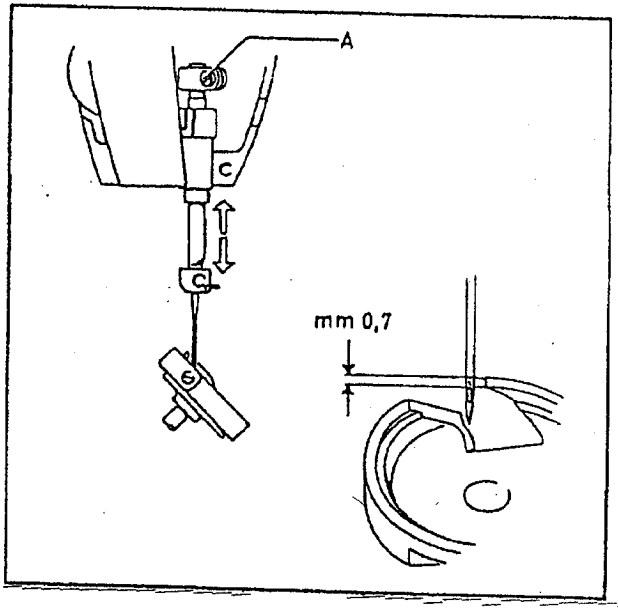


Fig. 10

16. DISTANCE BETWEEN BOBBIN CASE AND LATCH (fig. 11)

The distance between latch B and bobbin case A must be comprised between mm. 0.20 and mm. 0.55.

After having inserted the bobbin case into the hook, this distance can be checked by means of a small card having a thickness comprised between the above two measures. This card must be inserted between the gib plate and the latch when the hook shutter is closed. (To do this, remember to extract the gib plate retainer first).

If the distance is outside the above limits, proceed as follows:

- loosen grub screw C and move the hook gate either upward or downward, according to need:
- then tighten grub screw C again.

17. GIB PLATE RETAINER DISTANCE

Put gib plate retainer back in its place.

The distance between the tooth of the gib plate retainer and the bottom of the gib plate fork must be comprised between mm. 0.40 and mm. 0.80.

A too narrow distance would render the thread passage difficult; whereas a too large one would make the machine noisy.

To adjust this distance, proceed as follows:

- loosen the screw which fastens the gib plate retainer to the machine casting;
- move the gib plate retainer either onwards or backwards, until reaching the correct position;
- tighten the screw which fastens the gib plate retainer;
- put the needle plate back in its place, as well as the foot, the right cover, the rear base cover, the detachable sewing surface.

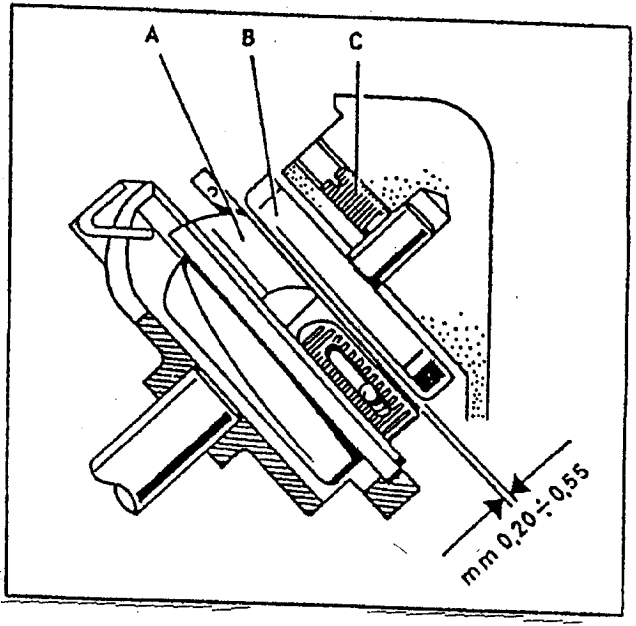


Fig. 11

PART 3

DISASSEMBLY AND ASSEMBLY

18. PRESSER BAR - NEEDLE BAR GROUP

Disassembly (fig. 12)

- Extract needle, foot, bulb cover, front plate, tension bearing plate;
- loosen screw H of guide G of presser bar F and push the bar itself downwards, extracting it from the guide;
- extract the guide-pin N together with the presser bar spring which is inserted on its lower end;
- unscrew screw A and remove return spring B and the needle bar support E;
- remove the group consisting of: guide G, control rod of skipping foot M, and tension opening plate O;
- extract presser bar F from its bushing, pulling it upwards.

Assembly (figs. 12 and 13)

- Put the needle bar support E back in its place, inserting junction P of the needle bar into connecting rod C, and junction R on the end of rod Q which controls the needle bar support;

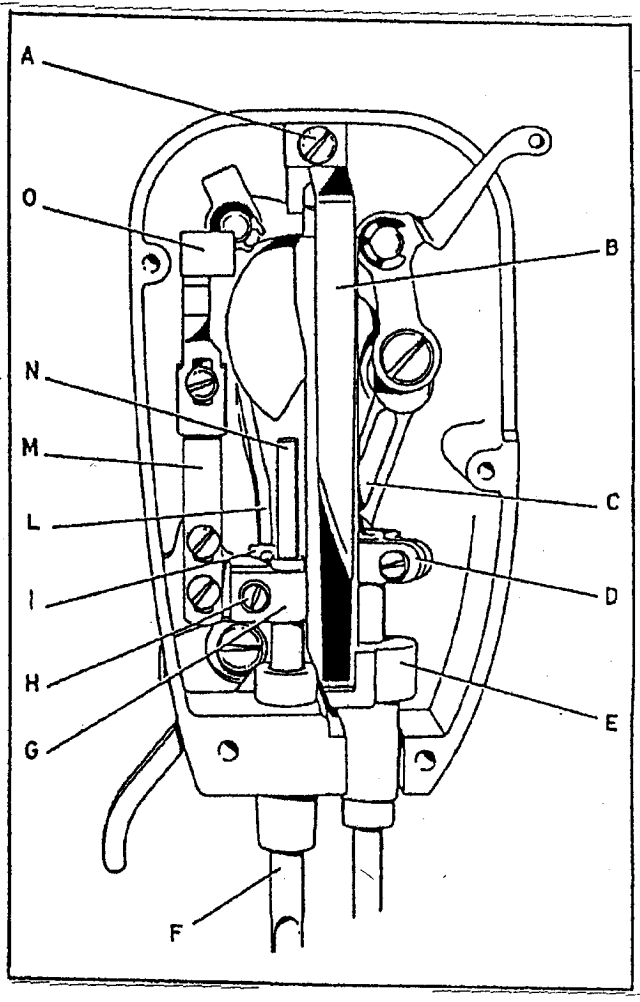


Fig. 12

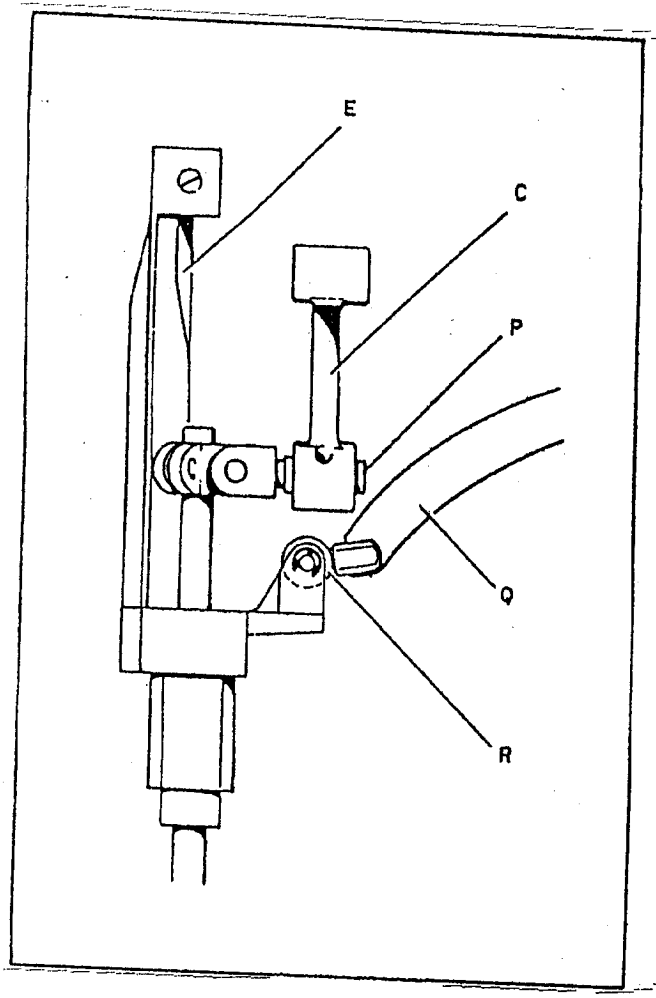


Fig. 13

- insert presser bar F from above into its bushing;
- position the group composed by guide G, rod M, tension opening plate O, by inserting the guide in the special flat surface on the arm;
- lift presser bar F, inserting it into guide G;
- put return spring B back in its place and, after having interposed the piece of fabric, tighten screw A;
- put needle plate in its place again;
- insert the foot, restoring the height of mm. 6.50 of its sole from the needle plate (see para. 8);
- tighten screw H strongly;
- insert the spring with its guide-pin N into the presser bar;
- put in its place again the tension bearing plate and, while pressing pin N downward, get this inserted under the swell of the regulating plate;
- strongly tighten the two screws of the plate;
- by moving the presser bar lever, check the opening of the tension discs and then, after having replaced the normal foot by the skipping foot (for darning works), check the height of its sole from the needle plate (see para. 8);
- put back in their places: the front plate, the bulb socket, the foot and the needle.

19. AUTOMATIC ZIGZAG GROUP

Disassembly (fig. 14)

- Take off the foot, the needle, the bulb cover, the tension bearing plate, the front plate, the right cover;
- take off the three screws A and extract the complete group of the zigzag plate (with square and control rod for needle bar support). If some difficulty is met in inserting the rod, move needle bar from left to right and vice versa.

a) Disassembly of the zigzag automatic group (fig. 15)

- Unscrew screw D and remove cam spring C;
- loosen the two grub screws of the cam shifting gear, and extract them;
- loosen the two screws N of the helicoidal gear M for the automatic device;
- extract Benzing ring F;
- extract cam shaft L by pulling it upwards.

b) Assembly of the zigzag automatic group

- Insert from below the cam shaft L into the lower hole of the zigzag plate, and then: the washer E, the rack support G, the cam bearing bushing H,

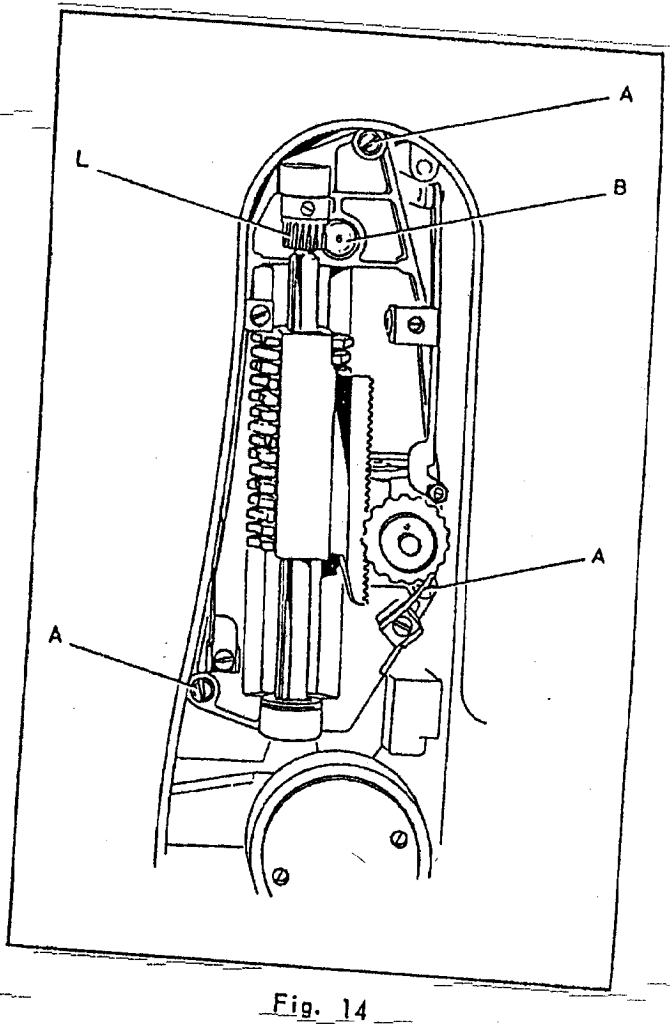


Fig. 14

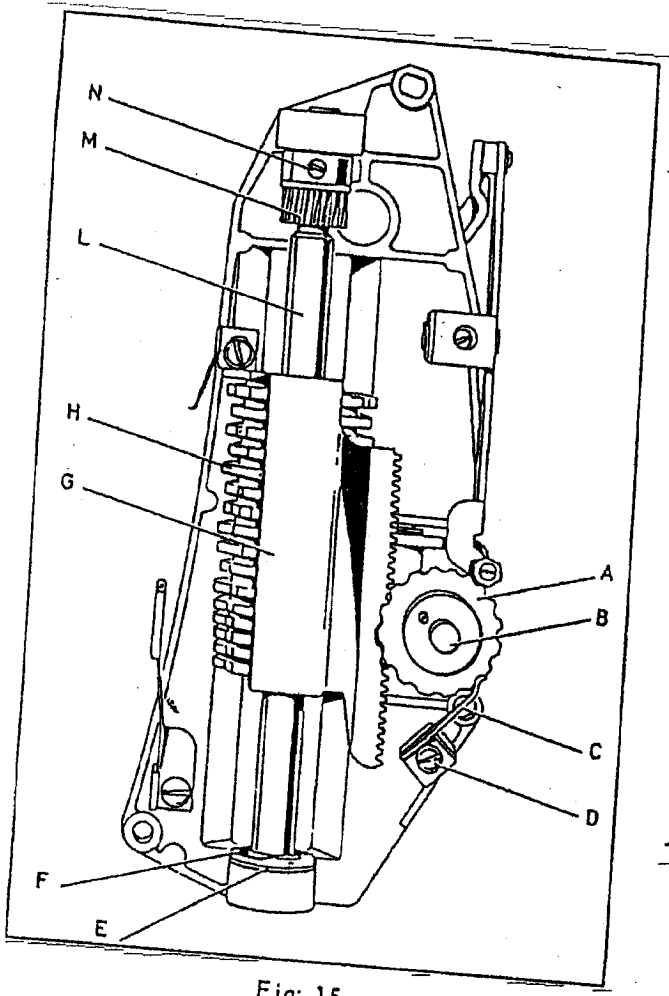


Fig: 15

the helicoidal gear M and the two small washers. Then insert also its thin end into the upper hole of the plate;

- put back in its place benzing ring F;
- tighten the grub screws N of the gear M, eliminating the axial play of cam shaft L, without impairing its smoothness;
- reassemble cam shifting gear A in its pin B;
- make reference lines of gear A and rack G coincide;
- tighten grub screw, which is in a symmetrical position in respect to the pin on which the selector knob is engaged, on the flat surface of pin B, eliminating the play of the pin itself (fig. 15);
- tighten also the other grub screw of gear A;
- position one side of spring C into the special groove and the other side on the toothed crown connected with gear A, and lock it by means of screw D;
- check that the finger touches one cam only, otherwise, loosen the fastening grub screw of its pin (accessible from rear part of the automatic device bearing plate) and shift this either upwards or downwards as needed.

Then tighten down grub screw again.

Assembly (fig. 14)

- Put zigzag plate in its place again, introducing the rod for controlling the needle bar support between the upper toothed pulley and the machine casting, inserting its cylindrical end into the hole of the junction between the rod and the needle bar support (see para.18);
- re-screw the three screws A for fastening the zigzag plate, interposing the relevant washers, and tighten them after having eliminated the play between the helicoidal gear L and the worm screw B of the upper shaft (see para. 10);
- put in its place again the tension bearing plate, the front plate, the bulb cover, the right cover, the foot and the needle.

20. BELTS

Disassembly

- Take off the right cover, the machine bed and the right plate;
- pull said plate towards the exterior, without detaching the electric wires;
- disassemble also the zigzag automatic group (see para. 19);
- take off from the pulley the «V» transmission belt between the motor and the balance wheel;
- take off from the upper toothed pulley the toothed transmission belt between the lower and the upper shafts, passing under the balance wheel.

Assembly

- Put the needle bar in its top dead centre and the lower pulley with its dowels turned downward;
- insert the toothed belt on the two toothed pulleys;
- insert also the «V» belt first on the motor pulley and then on the lower shaft pulley;
- put the right plate again in its place, centering it in a correct manner, and tighten its screws;
- reassemble the zigzag automatic group (see para. 19);
- effect the timing between the needle and feed dog (para. 5) and the timing of zigzag (para. 10);
- put the right cover again in its place and the base of the machine, and tighten their screws.

21. UPPER SHAFT

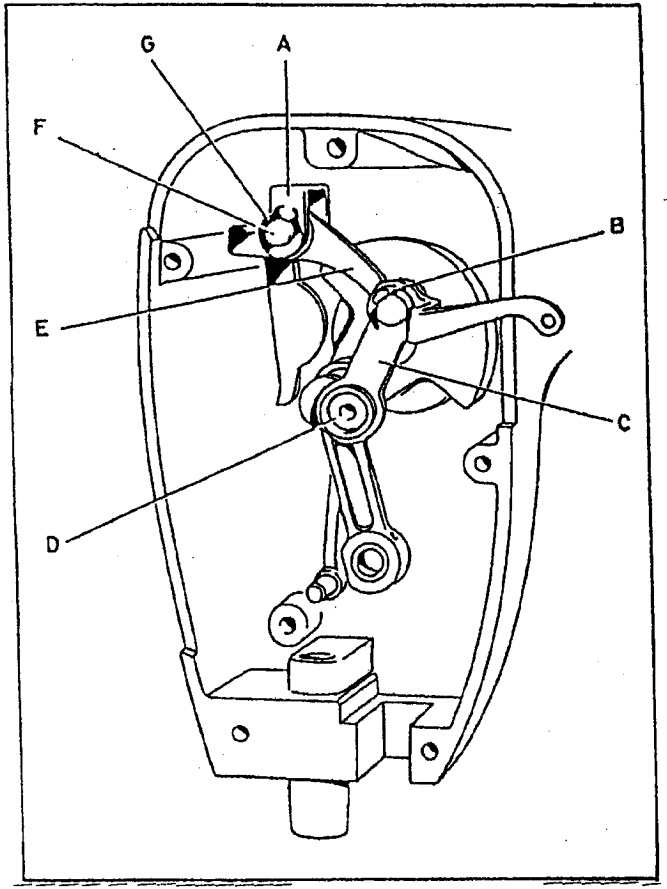


Fig. 16

Disassembly (fig. 16)

- Take off the foot, the needle, the bulb cover, the front plate, the tension bearing plate, the right cover, the zigzag plate, the needle bar-presser bar group, the two belts (see paras. 18, 19, 20);
- take off the left screw fastening the take up lever C to the handle D;
- take off Kalwas ring G and Benzing ring, which is mounted in the same pivot, between push rod A and take up lever E;
- take off connecting rod E with push rod A for darning together with its return spring.
- Upturn the machine and insert, forcing it slightly, a wooden layer between the worm screw of the upper shaft and the machine casting;
- by means of a long punch, extract the conical pin driven into the hub of the toothed pulley C (fig. 17);
- extract the pulley towards the exterior.
- Loosen the grub screw which, in the inside of the arm (front section), under the counterweight, fastens the front upper bushing E;
- knock with a resin hammer on the worm screw B of the upper shaft, according to its axis, and make the upper shaft complete with counter-

weight, front bushing E and regulating ring D come out from the arm (front section) (if you have not a resin hammer, use another one by interposing a small copper or aluminium bar).

Assembly (fig. 17)

- Insert from the arm (front section) into the arm the upper shaft complete with counter-weight, bushing E and regulating ring, after having adjusted the axial play between bushing E and ring D. (This axial play must be the minimum possible, compatibly with the uniform smoothness of the movement);
- knock with a hammer on the counter-weight (interposing again the copper or aluminium small bar) until the flat spot F of bushing E is laid against the internal surface of the arm (front section);
- tighten the grub screw which fastens the bushing to the arm;
- insert the driven toothed pulley with wheel C on the upper shaft;
- position the hole for pin on the hub of the pulley on the similar axis with the hole of the upper shaft;
- put a wooden layer again between the worm

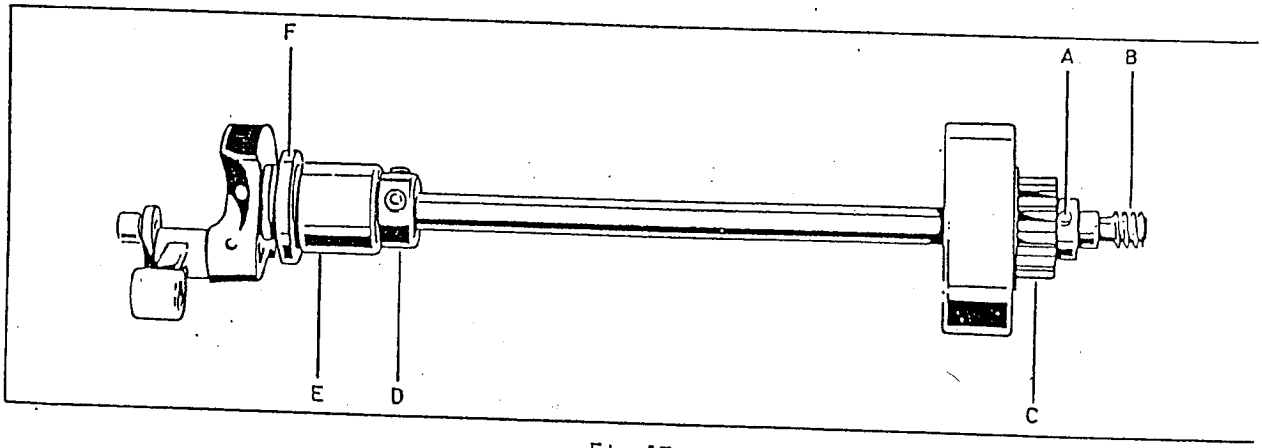


Fig. 17

screw and the machine casting;

- insert the conical pin A into the hole of the pulley, knocking with a hammer on it, using also a long punch;
- insert finger A for darning (fig. 16) on pin F, together with its small return spring and take up lever E;
- push toward the interior the group of these three parts inserting also the head of connecting rod C on lever D of the counter-weight and charging suitably the return spring A of the finger (fig.18).

N.B. - Before carrying out this assembly it is advisable to position the return spring A on push rod B (fig. 18) by making it adhere to the push rod by means of some grease. After the assembly has been finished, the straight end of the spring must rest on the horizontal ribbing of the machine casting C, so as to have a sufficient charge.

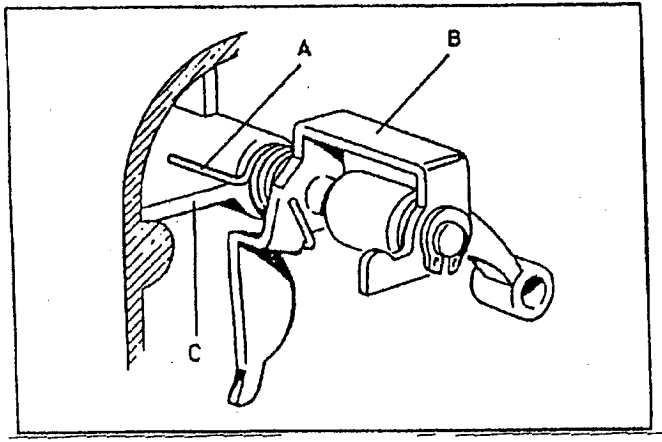


Fig. 18

- Insert Benzing ring on pin F (fig. 16), between the take up lever and the finger for darning;
- eliminate the axial play of the finger by putting the Kalwas ring on pin F again;
- put back in its place and tighten down the left screw for fastening connecting rod C to handle D.
- Put back: the zigzag plate unit, the needle bar-presser bar group, the tension bearing plate, the two belts (see paras. 18, 19, 20);
- time everything (paras. 4, 8, 9, 10, 14, 15) and then:
- put back the right cover, the right plate, the front plate, the bulb cover, the foot and the needle.

22. BALANCE WHEEL

Disassembly (fig. 19)

- Take off the right cover, the right plate and the «V» belt;
- take off cover A of the balance wheel, after having unscrewed its fastening screws;

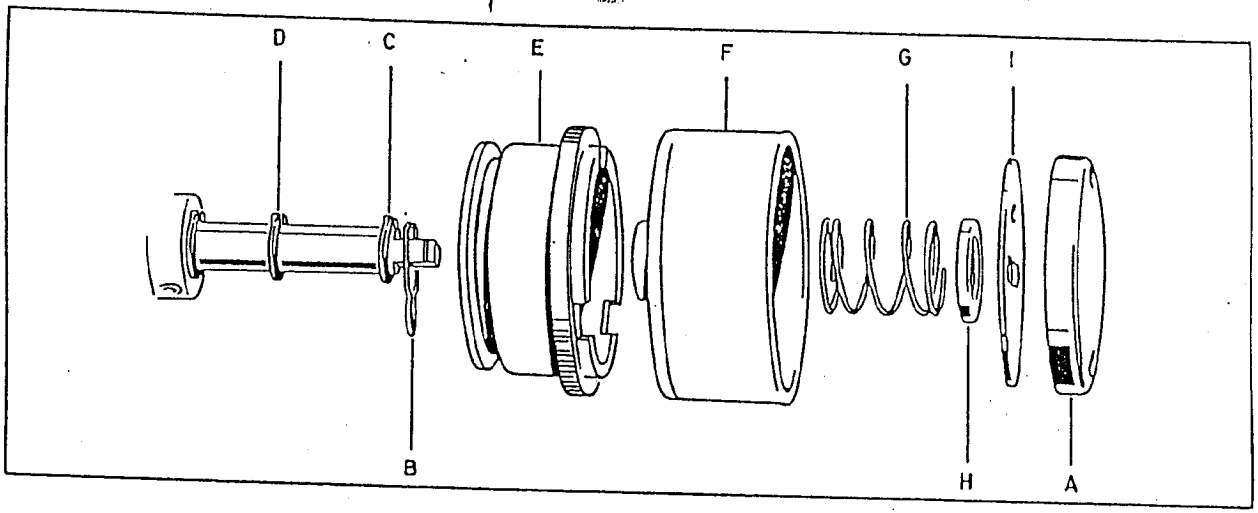


Fig. 19

- extract spring V for connecting the balance wheel and remove connecting disc I;
- take off Kalwas ring C and extract cup H, spring G and balance wheel F;
- take off Kalwas ring D and extract also the balance wheel pulley E.

Assembly (fig. 18)

- Insert the balance wheel pulley on the end of the lower shaft;
- insert balance wheel F, spring G and the cup, and fasten them by means of Kalwas ring C (take care that this enters into the throat of the shaft);
- put back in its place connecting disc I, with the spring catching swell turned towards the exterior;
- insert spring B on the end of the shaft, and position it on the swell of connecting disc I;
- put back in its place cover A and fasten it by means of its two screws;
- put back in its place «V» belt, the right plate and the right cover.

23. LOWER SHAFT

Disassembly (figs 20 and 21)

- Take off the detachable working surface, the right cover, the zigzag plate, the two belts, the bulb cover, the front plate, the base rear cover;
- loosen the two grub screws P of driving gear 0 (fig. 21);
- take off the two grub screws of ring I (fig. 20);
- loosen screw H which fastens bushing G;
- extract, from the side of the balance wheel, the lower shaft D complete with: eccentrics of lifting and feeding devices, plugged on the shaft itself, bushing G and ring I.

The driving gear 0 remains tied under the feed shaft T (fig. 21): if you want to replace it, it is necessary to disassemble shaft T first (see para. 24).

Assembly (figs. 20 and 21)

The driving gear 0 must have been put back in its place before mounting the feed shaft T (fig. 21);

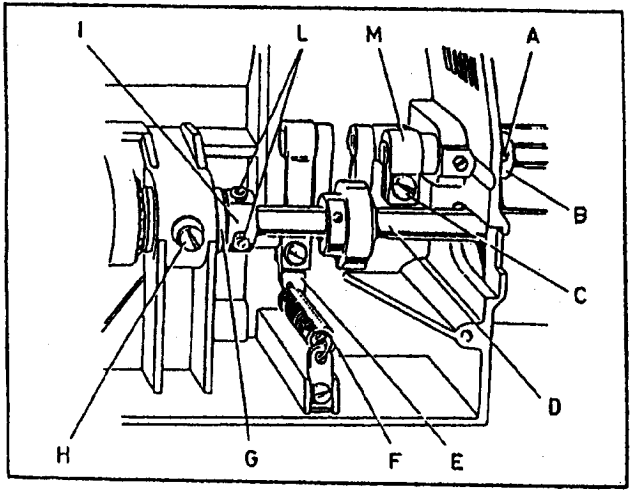


Fig. 20

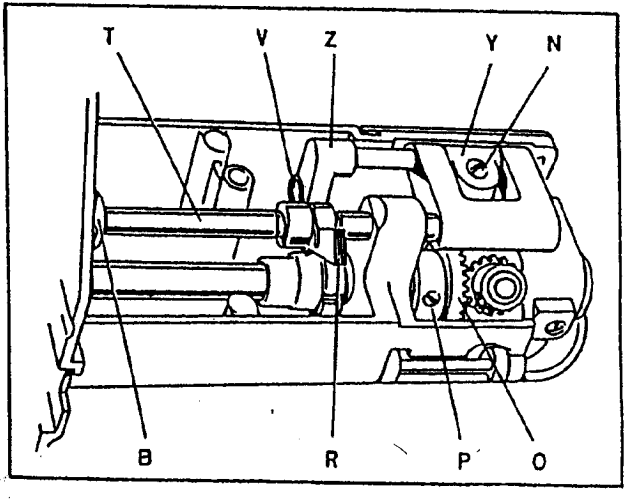


Fig. 21

- insert, from the side of the balance wheel, the lower shaft-balance wheel complete group, inserting subsequently: the first support of the base, the connecting rod of the feed dog remained in its place, the second support of the base and the driving gear 0 (figs. 20 and 21);
- position bushing G in such a manner that it protrudes from the machine casting, towards the exterior, by about 3÷4 mm.;
- tighten down screw H;
- screw down grub screws L again into ring I, eliminating the axial play of shaft D, without altering the uniform smoothness of the movement;
- put back the two belts (see para. 20) on the pulleys and re-assemble the zigzag plate (see para. 19).

24. FEED SHAFT

Disassembly (fig. 21)

- Loosen screw N of the feed dog holder Y;
- disconnect the return spring of lifting lever Z;
- loosen screw C of junction M (fig. 20);
- loosen the two grub screws A of ring B;
- remove spring V of the feed dog lowering lever R;
- extract feed shaft T towards the exterior.

If necessary, at this point, it is possible to remove the driving gear 0, when the lower shaft has been disassembled.

Assembly

If you had removed it, put driving gear 0 in its place again;

- insert from the exterior feed shaft T and then insert feed dog lowering lever R in it, ring B and, after the second support, also junction M (fig. 20);
- eliminate the axial play of the feed dog holder Y by tightening screw N a little (fig. 21);
- center transversally the feed dog in respect to the needle plate slots, by shifting either rightwards or leftwards, according to need, the feed shaft T;
- after this has been done, eliminate the axial play by means of ring B, without altering the uniform smoothness of the movement, and tighten screw C;
- tighten down the two grub screws A strongly.
- Hook the return spring of the lifting lever Z;
- put spring V again on the hub of feed dog lower-

ing lever R, within the special flat surfaces;

- tighten a little screw C of junction M (fig. 20).

Carry out the following adjustments: needle-feed dog timing (para. 5), height of feed dog teeth (para. 6), division of the feed dog stroke (para. 7), zigzag timing (para. 9-10) and needle-hook timing (para. 14).

- Tighten down screw C (fig. 20) and screw N (fig. 21);
- put back in its place: the right cover, the front plate, the bulb cover, the rear base cover, the base and the detachable working surface.

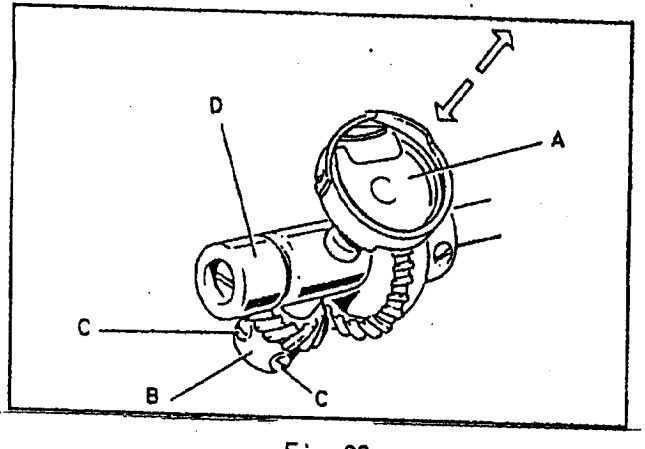


Fig. 22

25. HOOK BEARING SMALL SHAFT

Disassembly (fig. 22)

- Remove the detachable working surface, the needle plate, the rear base cover, and the gib plate holder;
- loosen the two grub screws C of the driven gear B;
- extract the rotary hook A, complete with small shaft, from bushing D.

Assembly

- Insert the small shaft with the rotary hook A into the bushing D and insert the driven gear B on it;
- tighten the two grub screws C, one of which on the flat spot of the small shaft, while eliminating its play, without altering its smoothness;
- effect the complete needle-hook timing and re-assemble the gib plate holder (paras. 13, 14, 15, 16, 17).
- Re-assemble the needle plate, the base rear cover, the detachable working surface.

26. MOTOR GROUP

Disassembly

- Take off the «V» belt (see para. 20);
- unscrew the three screws which fasten the motor-four-way plug group under the base of the machine;
- extract the whole group, still connected with the wires;
- take off the lamination of bakelite covering the motor support;
- loosen the grub screw of the cable fastening plate and the two grub screws which fasten, in the terminals, the ends of the internal wires the cable, and detach it from its support.
- Now you can remove the whole four-way pl motor-switch-plate group.

Assembly

- Connect with the terminals the internal wires lighting cable (blue with blue, white with whit and tighten the grub screws;
- fasten the cable to the support by means of t special cable fastening plate;
- close the motor support by means of the bakeli plate;

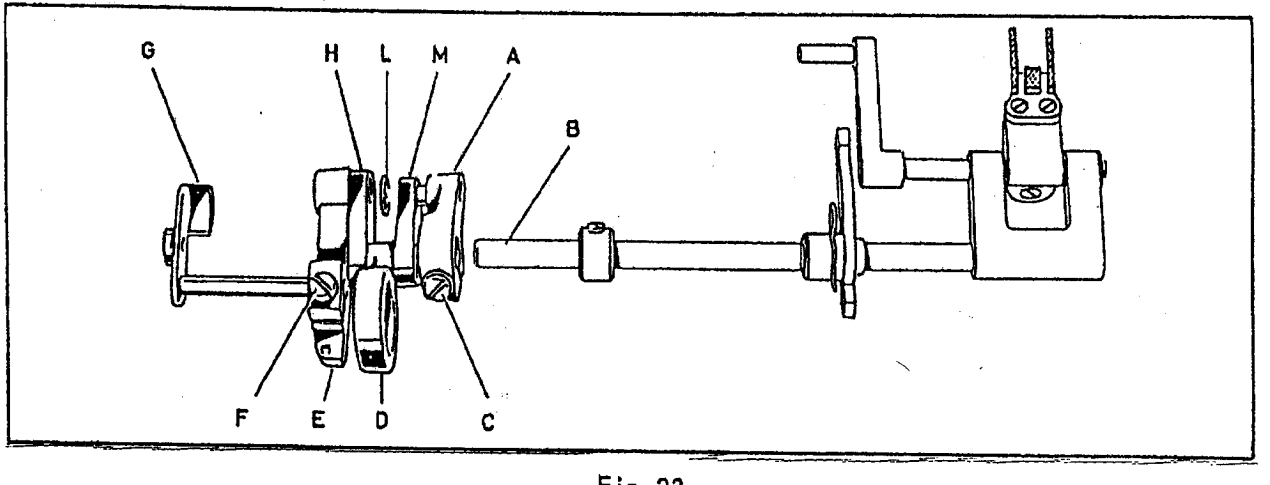


Fig. 23

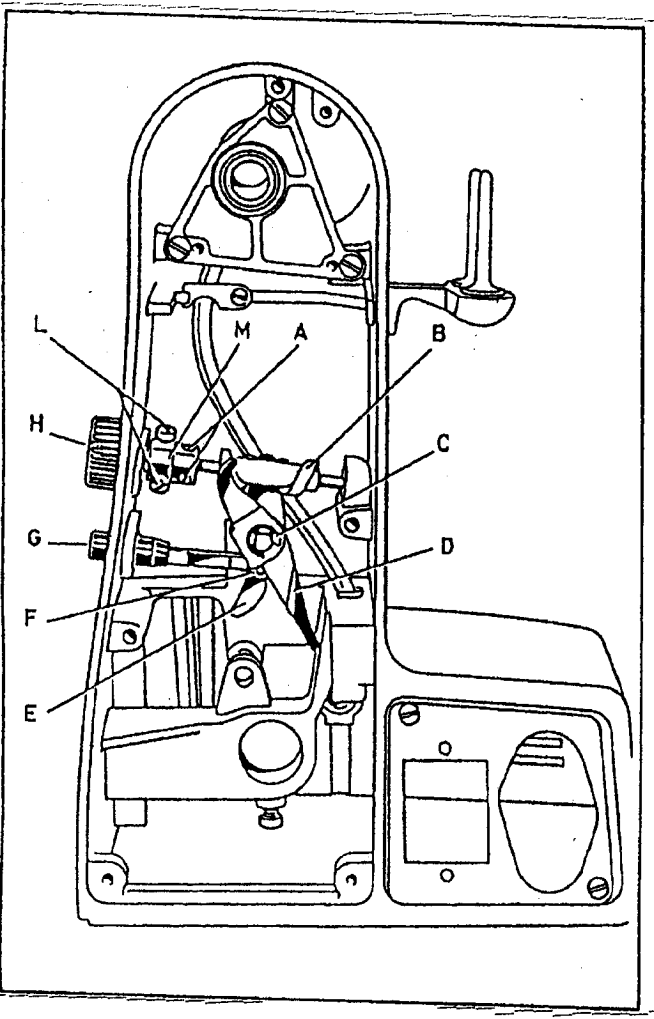


Fig. 24

- connect the group under the base of the machine, by tightening down the three screws (the longest one near the four-way plug).
- Put back the «V» belt in its place.
- Check that the tension of the belt is correct: if it is too loose, it causes slippages, if it is too tight, it causes motor overheating.
- The tension of the belt is adjusted by utilizing the holes on the motor support.

N.B. - If you want to replace the motor by another with a different voltage or frequency, change also the rating plate or modify it accordingly.

27. STITCH REGULATOR GROUP

Disassembly (fig. 23)

- Remove the detachable working surface, the bulb cover, the right cover, the zigzag plate, the two belts, the balance wheel, the machine bed;
- remove the motor group (para. 26);
- disconnect spring F from junction E (fig. 20);
- loosen screws F and C (fig. 23);
- extract the lower lever G for reverse feeding;
- remove junction E with stitch regulating connecting rod H;
- shift the feed connecting rod D toward the

balance wheel, extract Benzing ring and remove junction A and stitch regulator connecting rod M.

- loosen the two screws L and the two grub screws A (fig. 24);
- remove knob H, limiting device B, ring M and relevant washers;
- extract Benzing ring C and remove the feed control finger D (which does not exist in the 542);
- extract the second Benzing ring, which fastens lever E and Benzing ring F axially, and remove knob G for reverse feed and the upper lever E also for reverse feed.

Assembly (fig. 24)

- Insert knob G of reverse sewing and feed reverse lever E in their appropriate seats;
- insert Benzing ring F and the Benzing ring that fastens lever E axially;
- insert the stitch regulator knob H, simultaneously with the limiting device B and the regulating ring M, interposing between ring M and the machine casting the normal washers (two or three of them generally) and the two cup shaped ones. The concave faces of these must be in contact one against the other like the valves of a shell.

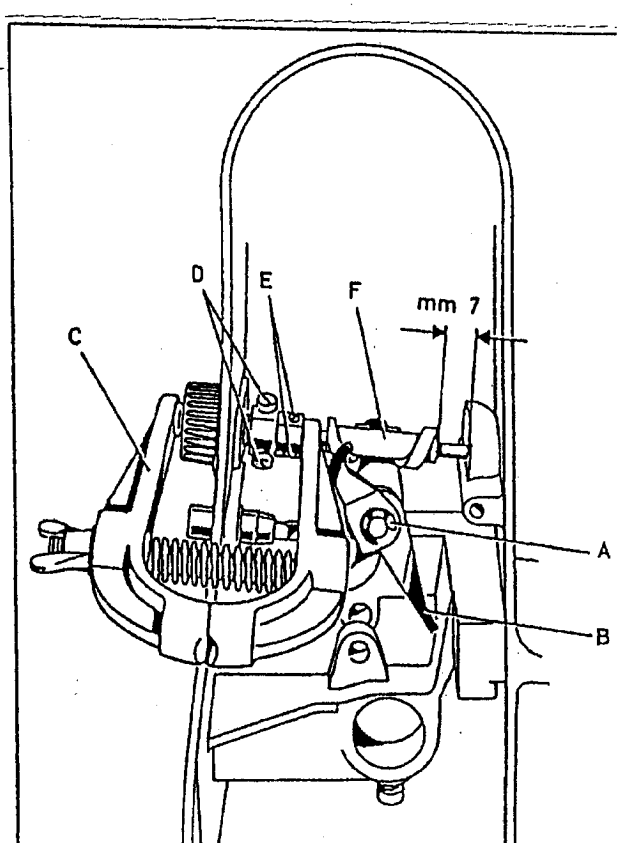


Fig. 25

- Tighten a little one of the two grub screws A (the pointed one) into the groove of the limiting device;
- after having arranged gauge C (symbol 592452080-00) as shown in fig. 25, after having put the stitch regulator knob on zero and the limiting device at the end of its stroke, turn the wing nut so as to charge the elastic washers (cup shaped) as required;
- tighten the two screws D;
- remove clamp C. The movement of the stitch regulator knob will thus be «frictioned».

While leaving the stitch regulator knob on zero and the limiting device in its position of end of stroke (fig. 25):

- axially shift the limiting device F either leftwards or rightwards until obtaining a space of about 7 mm. between the machine casting and the limiting device itself;
- tighten down the two grub screws E.
- Apply on its pin the control finger B (in the NECCHI 542 this does not exist) and fasten it by means of Benzing ring A.
- Insert stitch regulator connecting rod M into feed connecting rod D and junction A into shaft B (fig. 23);
- fasten by means of Benzing ring L connecting rod M to junction A;
- position connecting rod H with junction E, inserting connecting rod H into feed connecting rod D.
- Then insert lower lever G for feed inversion into its seat, introducing it into junction E, after having interposed between this and the machine casting one or more washers.
- Tighten screws F and C a little;
- re-connect spring F (fig. 20) in both ends;
- re-assemble: the toothed belt, the balance wheel, the zigzag plate (see paras. 19, 20, 22).
- After having put stitch regulator knob on zero, place a cardboard layer under the foot and turn balance wheel by hand. The machine should not feed (feeding set to zero).

If, on the other hand, feed dog moves (fig. 23), proceed as follows:

- loosen screw F and turn junction E upwards or downwards until obtaining a perfect setting to zero.
- Tighten screw F;
- divide the stroke of feeding (para. 7);

tighten screw C;

- re-assemble the motor group and restore the electric connections (para. 26);
- put back belt «V» in its place (see para. 20);
- fasten the right plate and re-assemble: the front plate, the bulb cover, the right cover, the machine bed, the detachable working surface.

N.B. - After each assembly operation it is advisable to check the needle-hook timing (paras. 14,15). On the right cover, near the balance wheel, (fig. 26) there is the bobbin winder with its stop knob, by means of which it is possible to wind up the bobbin. It is sufficient to loosen screw A and turn, in either direction, the eccentric knob B according to need.

In order to disassemble the bobbin winder and the stop knob, after having detached the closing plate, extract the benzing rings applied to their pins.

28. TENSION GROUP

Disassembly (fig. 27)

- Take off the bulb cover, the front plate and the tension bearing plate;
- after having unscrewed the fastening screws, remove spring B and the graduated knob G;
- take off Benzing ring E and extract, from the front, spacer F and the three discs, and from the rear, the axle of tension H and spring D.

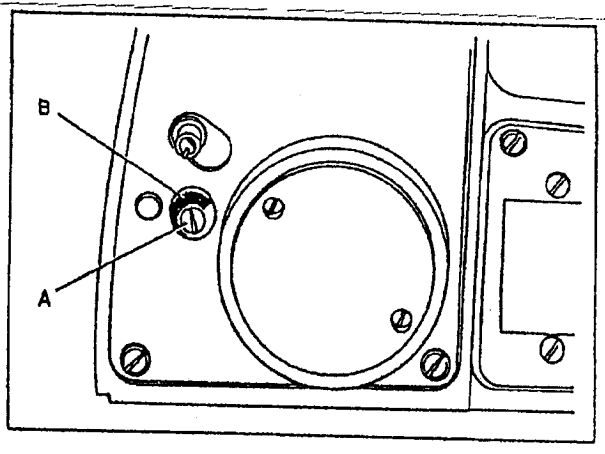


Fig. 26

Assembly (fig. 27)

- Insert axle H from the rear, after having inserted spring D in it, managing to have the «swell» of threaded bushing A enter the slot of the external bushing;
- position the three discs: the first one with its concave part in contact with the plate, the second one, which is flat and has a greater diameter, with its slot inserted on the pin, and

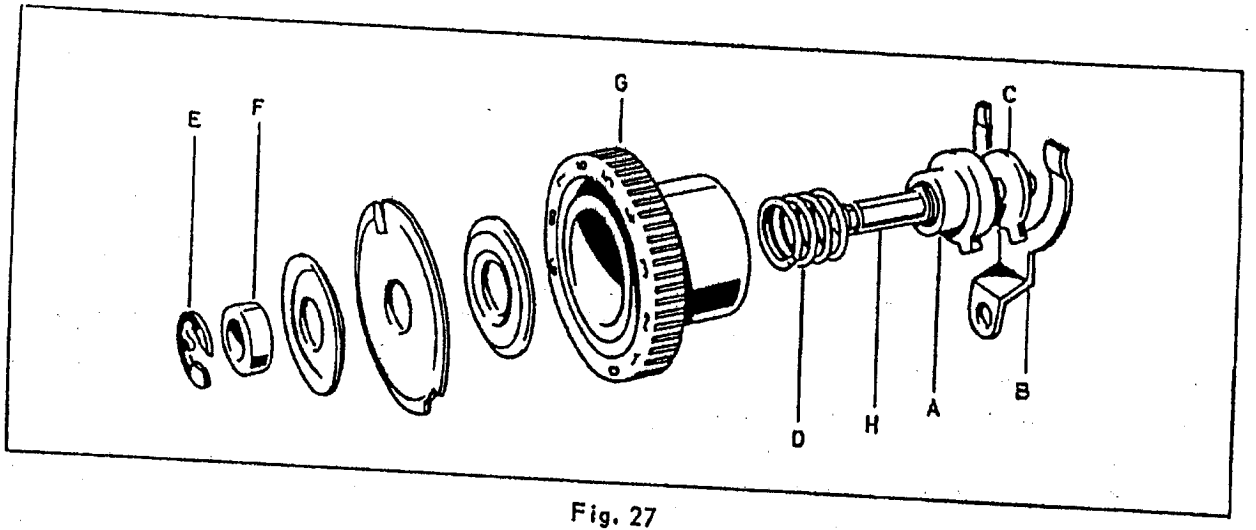


Fig. 27

the third one with its concave part turned towards the exterior;

- insert spacer F;
- fasten the whole group by means of Benzing ring E.
- Position the numbered knob G on the external bushing, in order that the «swell» of the dragging disc C remains engaged in the internal groove of the knob hub.
- Put back spring B in its place fastening it to the plate by means of its screw.

IMPORTANT - We recommend to effect a sewing test after each assembly and disassembly operation, total or partial, so as to check and eventually improve the machine setting according to the result of the test.

For the NECCHI 544, carry out also the tacking test with the «golden needle».

Finally, lubricate the vital points of the machine, which are indicated in the instruction booklet, using only NECCHIOIL.

29. NEEDLE PLATE MODIFIED WITH TACKING DEVICE (fig. 28)

So as to render tacking easier, we have modified the needle plate with the addition of lever D. When said lever is moved to the left, its presence has no effect: it is moved rightwards only when tacking is required and, in this position, when the needle comes down at left, the distance between its free end A and the needle must be of mm. 0,10. If this distance were greater or smaller, proceed as follows:

- loosen the two screws B;
- according to need, shift lever guide C in either direction, the right hole of which is oval to permit the adjustment.

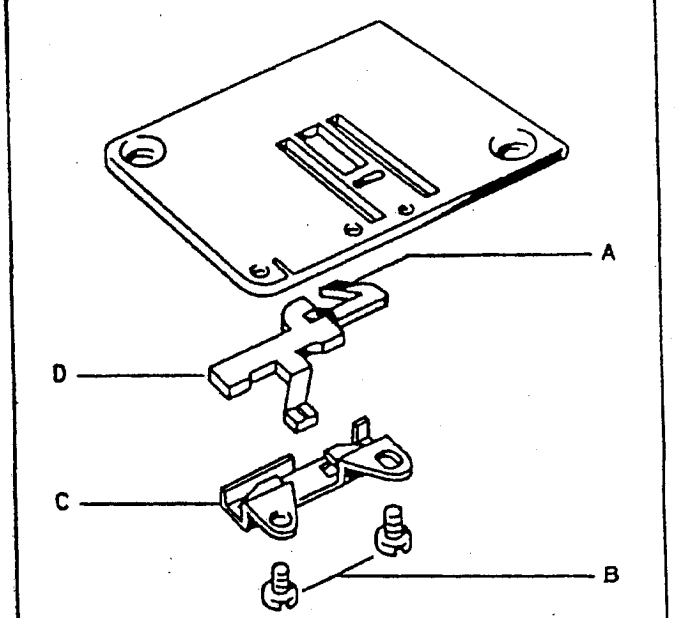


Fig. 28

SUPPLEMENT TO THE SERVICE MANUAL SYMB. 754125002

(FOR THE NECCHI LYDIA 544-542 MK2)

FOREWORD –

The new performances of these machines have been obtained by modifying a few parts and by adding some new ones to the stitch-length regulator/reverse sewing device unit and to the automatic device.

Hereunder are illustrated only the disassembly, reassembly and adjustment operations for the parts and units which differ from those of the previous series.

Obviously, the transmission between motor and lower shaft in the NECCHI 544 and 542 MK2 is by means of a toothed belt.

1. NECCHI LYDIA 544 MK2

MAIN FEATURES

Flat base convertible into free-arm.
Gate type rotary hook with 45° slanting axis, set frontally and rotating at a constant speed with 2:1 ratio.
Link thread take-up lever.
Pendulum-wise oscillating needle bar.
Lighting by local mains' voltage.
Electric drive only, with built-in motor running at variable speed.
Pedal type foot-control.
Lock-stitch, invertible, straight and zigzag sewing, with automatic control.
Bobbin-winder placed on the same axle as the motor, with automatic disengagement of the machine at the insertion of the bobbin.
Built-in cams for making embroideries and stretch stitches with automatic return of feed.
Needle syst. 130/705 H.

2. NECCHI LYDIA 542 MK2

MAIN FEATURES

Flat base convertible into free-arm.
Gate type rotary hook with 45° slanting axis, set

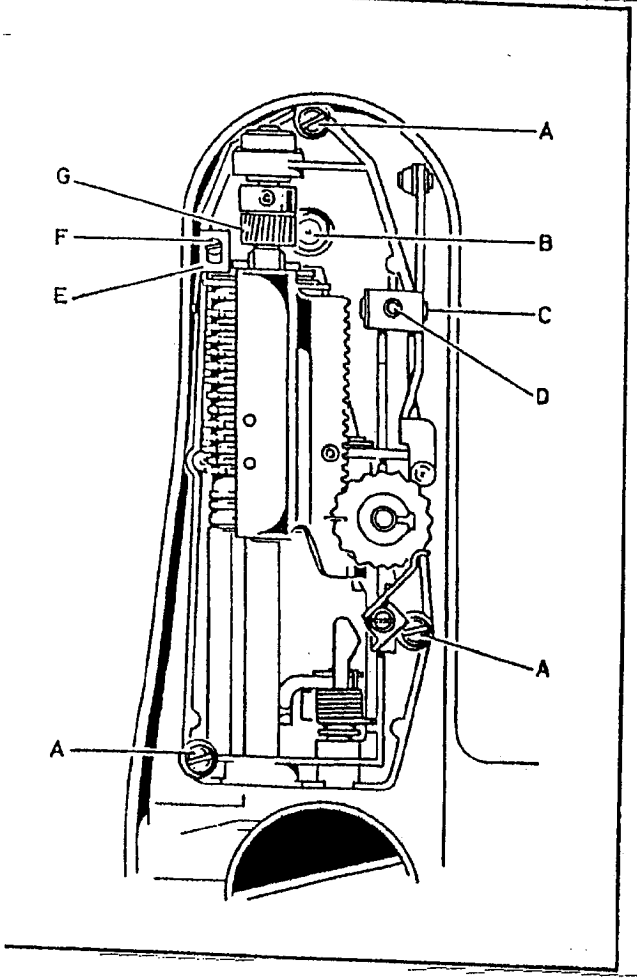


Fig. 1

frontally and rotating at a constant speed with 2 : 1 ratio.
Link thread take-up lever.
Pendulum-wise oscillating needle bar.
Lighting by local mains' voltage.
Electric drive only, with built-in motor running at variable speed.
Pedal type foot-control.
Lock-stitch, invertible, straight and zigzag sewing.
Bobbin-winder assembled on the same axle as the motor, with automatic disengagement of the machine at the insertion of the bobbin.
Built-in cams for making embroideries and for blind-stitching.
Needle syst: 130/705 H.

ZIGZAG AUTOMATIC UNIT

(see para. 19, page 16)

Disassembly of the unit from the machine (fig. 1)

- Remove foot, needle, face plate, light cover, selector knob and right closing plate;
- loosen grub screw D and extract pin C from the inside;
- remove screw F with relevant washer and extract the design bearing small plate with its small hook E from its guide;
- remove the three screws A and extract the complete zigzag automatic unit.

a) Disassembly of the zigzag automatic unit (fig.2)

- Unscrew screw D and remove cam releasing spring C;
- loosen the two grub screws of adjusting ring A (fig. 3) and extract cam displacing gear B;
- loosen the two grub screws C extracting ring N from above;
- loosen the two socket grub screws L of helical gear I for the automatic unit;
- extract benzing ring M and, from below, cam shaft F;
- extract, from rack H, the cam unit and relevant small key;
- the following parts will remain assembled on the automatic device holding plate: contact finger B (fig.6) for needle displacement control and contact finger E (fig.2) for automatic feed control.

If not absolutely necessary, please do not modify the height of the two contact fingers, because this would alter also the lining up between contact fingers and discs.

b) Assembly of the automatic and zigzag unit (fig.2)

- Insert the cam unit with relevant small key into the rack;
- insert, from below, cam shaft F into the lower hole of the zigzag plate, and then: rack support H with cam unit G inserted, helical gear I and washer;

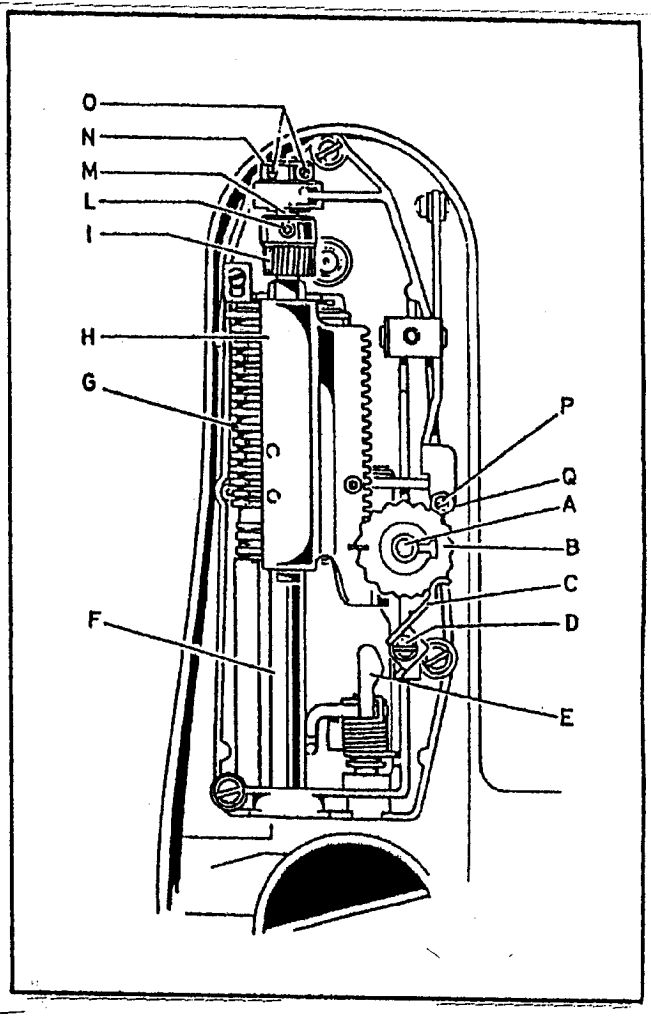


Fig. 2

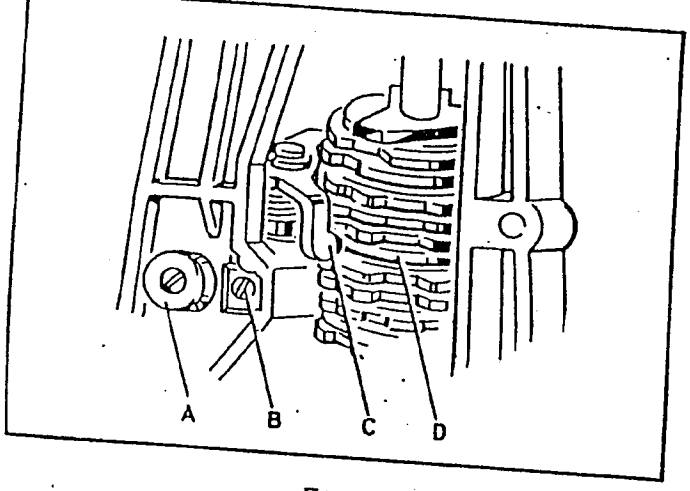


Fig. 3

- then insert the thinned end of the cam shaft into the upper hole of the plate;
- insert benzing ring M, while holding the washer between the plate and the benzing ring;
- put ring N back in its place;
- tighten grub screws O eliminating the axial clearance of cam shaft F, without jeopardizing the smoothness of its movement;
- slightly engage the two socket grub screws L;
- insert pin B of cam displacing gear into the hole of the plate; make reference lines of rack support H coincide with those of cam displacing gear B;
- put back in its place adjusting ring A (fig. 3), adjust the relevant axial clearance and tighten the grub screws;
- position release spring C into the special groove on one side and into the toothed crown of gear B on the other;
- tighten screw D;
- insert selector knob on pin A (fig. 2) of cam displacing gear;
- move the cam unit up and down and make sure that the axial clearance of the rack does not exceed 0.05 mm.

If necessary, carry out a more careful adjustment of the cam displacing shaft.

c) Lining up of contact fingers and discs

- Turn selector knob until bringing disc D (fig. 3) - the sixth one from above - against contact finger C and, simultaneously, by turning the cam unit by hand, make sure that the sides of the contact finger do not hit other discs.

If, on the other hand, this occurs:

- loosen grub screw B (fig. 3) and move contact finger C with relevant pin either upward or downward until the desired condition is obtained;
- turn selector knob again until bringing disc C (fig. 5) - the second one from below - against contact finger B and, simultaneously, by turning cam unit by hand, make sure that the sides of the contact finger do not hit any other discs.

If, on the other hand, this occurs:

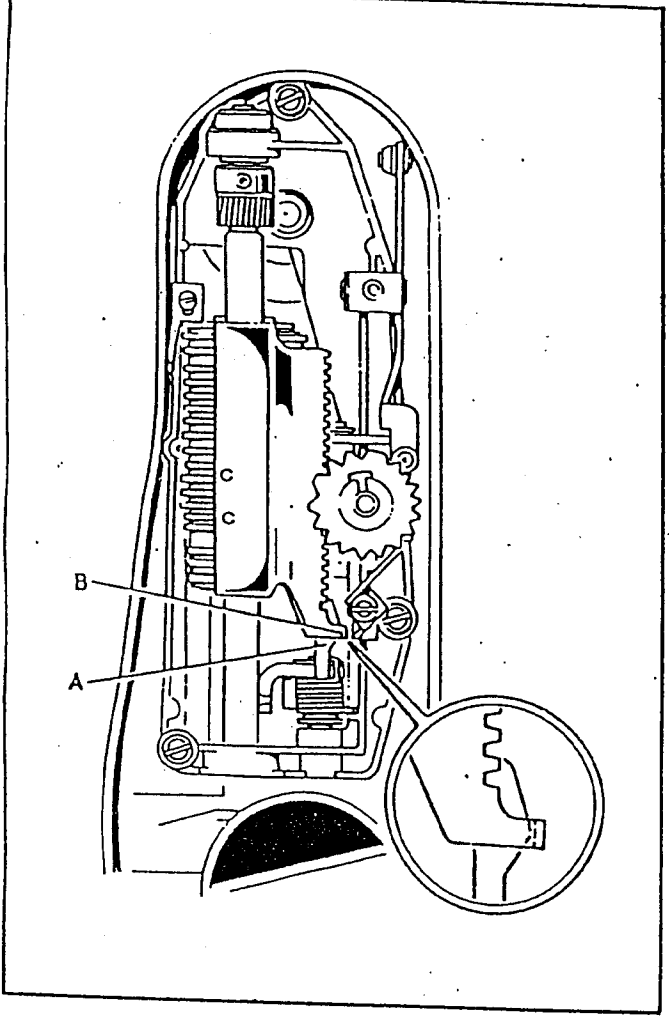


Fig. 4

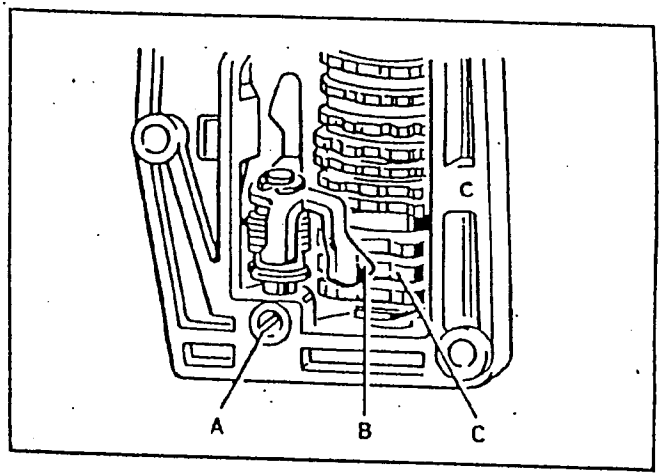


Fig. 5

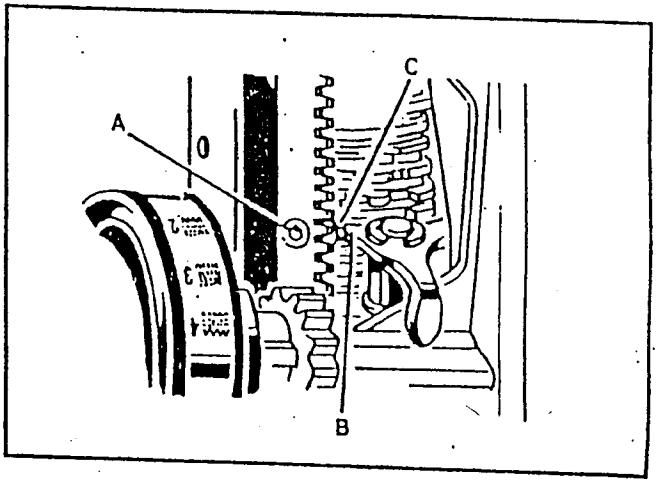


Fig. 6

- loosen grub screw A (fig. 5) and move contact finger B with relevant pin either upwards or downwards until the desired condition is obtained.

N.B. - It is advisable to check the lining up of the contact fingers and discs on all remaining discs in order to make sure that every contact finger works only on one disc at a time.

Assembly of the unit on the machine (figs. 7-8)

- Set stitch length regulating knob on no. 0 (pin A fig. 8);
- hold the automatic unit as shown in fig. 7, insert it inside the machine so that contact finger A rests before lever B;
- put back in their place the three screws which fasten the automatic and zigzag device, and after eliminating the clearance between helical gear G (fig. 1) and worm screw B, tighten them strongly;
- put back in its place the design bearing plate and fasten it to the rack support by means of screw F;
- connect the needle displacing lever to the plate of the automatic device by means of pin C (fig. 1) and tighten grub screw D again.
- Restore the zigzag centering with respect to the needle plate slot and the needle bar timing (see paras. 9-10, page 8).

d) Needle/needle plate centering in straight sewing machines

- Set the selector knob on straight sewing position;
- place on the presser bar the foot with hole for straight sewing (symb. 9551865-00), and make sure that the needle is perfectly centered in said hole.

If this is not the case (see fig. 6):

- make sure that contact finger B is lined up with point C of grub screw A, or at least half covered by it, and, by means of hexagonal spanner symb. 9965030-00, either tighten or loosen grub screw A as the need may be.

e) Adjustment of automatic feeding (fig. 7)

- Insert a no. 90 needle and the foot for zigzag sewing;
- set the design selector knob for Paris stitch;
- set stitch length regulating knob on no. 4;
- insert a piece of cardboard under the foot;
- turn the balance wheel by hand and make three complete cycles of Paris stitch.

Make sure that the needle, during the back and forth movement of the cardboard piece, always enters into the holes made before.

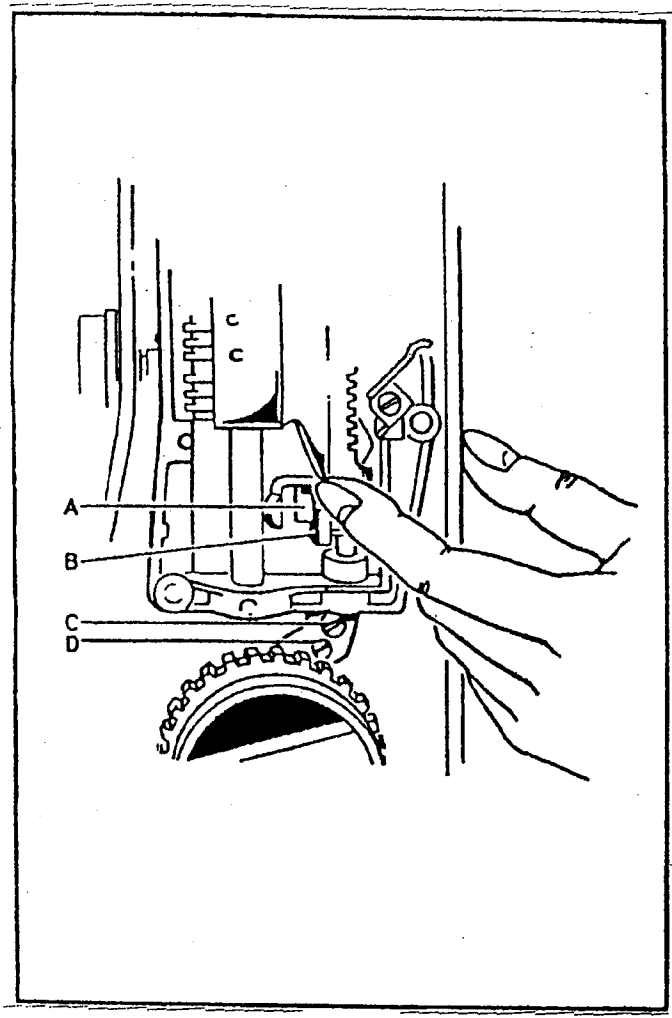


Fig. 7

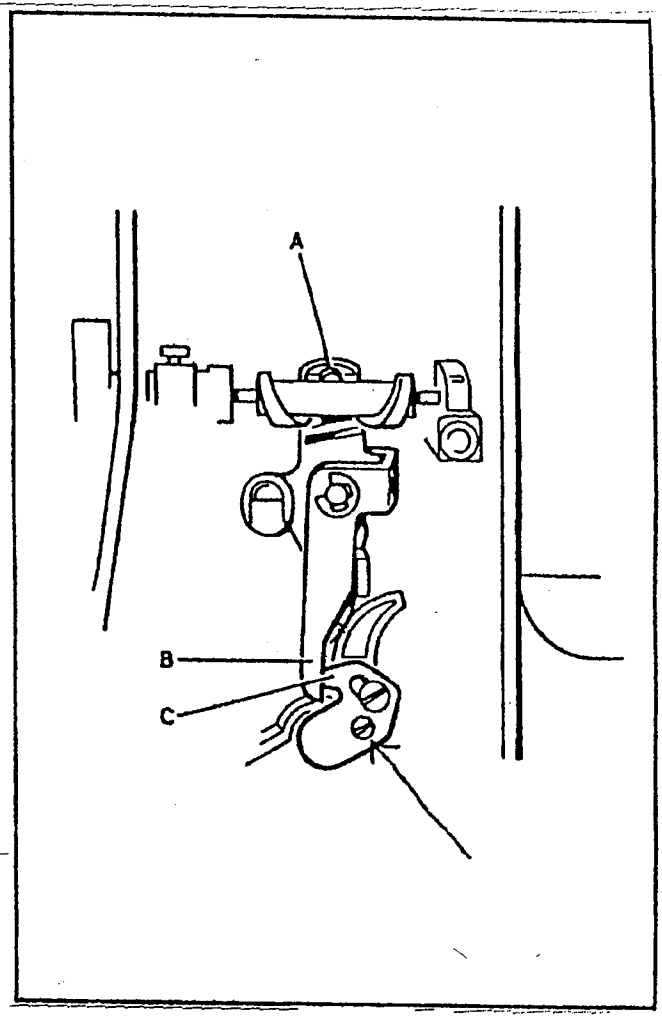


Fig. 8

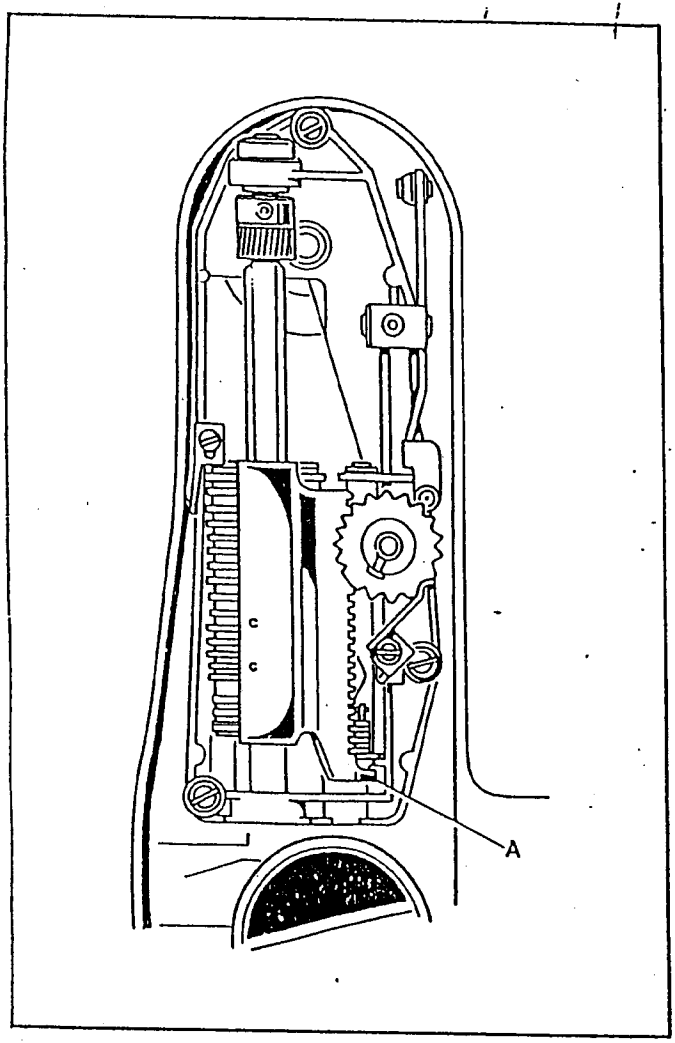


Fig. 9

if this is not the case :

- take off the motor/balance wheel connecting belt;
- set the stitch length regulating knob on no. 0;
- loosen screw C and, by means of a screwdriver, turn pin D so as to obtain the displacement of lever C (fig. 8) to the left, if it is necessary to lengthen the stitch backward, and vice versa if it is necessary to shorten it;
- by means of a screwdriver laid down on the back of lever C (fig. 8), tighten screw C (fig. 7),
- set the stitch length regulating knob on no. 4, and make a new checking.
- Put back the toothed belt on the balance wheel pulley.

f) Checking of the return feed for buttonholing

- Set the selector knob on position 3 of the buttonhole (straight reverse sewing) (see fig. 4 A-B);
- insert piece of cardboard under the foot, turn the balance wheel by hand and make eleven holes;
- the distance between the first hole and the last one must neither be less than 7 mm nor exceed 13 mm;
- if this is not the case, by turning the selector knob, lower rack A (fig. 9) and, by means of pliers, slightly bend tail B of the rack towards contact finger A (fig. 4), if the distance of the eleven holes is less then 7 mm, and vice versa if said distance exceeds 13 mm.