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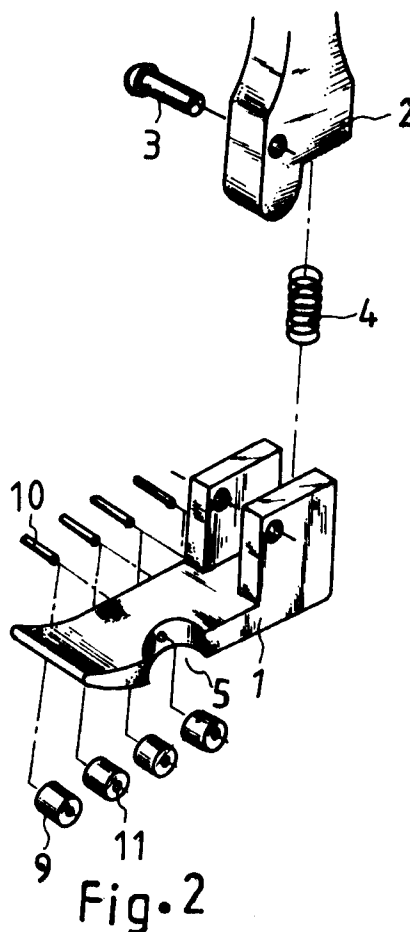
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(54) **A sewing machine pressing leg and an adjusting device therefor.**

(57) A sewing machine pressing leg and an adjusting device therefor is disclosed, wherein several rollers are disposed under the pressing leg to contact a sewed material so as to ensure the smoothness of material feeding and avoid crimp of the sewed material. Therefore, the seam is kept straight, smooth and beautiful. The contact area between such pressing leg and sewed material is larger so that a smaller pressure is applied to acquire better material pressing effect so as to avoid a pressing track left on the surface of the sewed material by the rollers. The pressing leg is mounted on a transverse and a longitudinal adjusting bar by means of which the pressing leg can be adjusted to an optimum position to press the sewed material and facilitate the sewing operation.



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Conventional high leg type of sewing machine is used to sew leather material. Since leather material is thicker than general cloth, a greater pressing force is required to facilitate the feeding of the leather. Such pressing leg is often of roller type, as shown in Fig. 1. Because the roller type of pressing leg contacts the sewed material substantially at a point, therefore the sewed material can acquire larger pressing force and smaller feeding resistance so that the material can be smoothly fed to facilitate the operation of sewing. However, although this roller type of pressing leg can delete the shortcomings of poor sewing of leather existing in a plane pressing leg, such roller type of pressing leg possesses the following disadvantages:

1. Since the roller contacts the sewed material at a point with smaller area, a roller pressing track is often left on the surface of the sewed material.
2. The point contact between the sewed material and the roller permits a higher freeness of the sewed material and also makes the feeding direction hardly maintained and therefore the seam is difficult to keep straight and smooth.
3. When the sewed material is returned, because the positions of the sewing needle and pressing point change, the sewed material is easy to be pulled up to incur a stitch drop.
4. In case of two needle sewing, since the needles are located in front/rear order, one of the two needles can not acquire good pressing effect during sewing operation so that the seam structure will be loose. and
5. The point contact between the sewed material and roller will cause unsmoothness of material feeding and incur uneven seam.

The above disadvantages of conventional roller type of pressing leg greatly ill affect the quality and appearance of the seam of the leather or relatively thick material.

It is therefore tried by the applicant to provide an improved roller type of pressing leg wherein larger contact area between the pressing leg and sewed material and smaller feeding resistance are acquired to facilitate the sewing operation.

It is therefore a primary object of this invention to provide a sewing machine pressing leg with large contact surface and low material feeding resistance, and an adjusting device for the pressing leg.

It is a further object of this invention to provide the above pressing leg and adjusting device suitable for both single needle and two needle sewings wherein the pressing leg can be easily adjusted to an optimum position.

It is still a further object of this invention to provide the above pressing leg and adjusting device therefor wherein the material feeding direction is

easy to be maintained to keep the seam straight, smooth and beautiful.

It is still a further object of this invention to provide the above pressing leg and adjusting device therefor wherein a smaller pressing force is applied to the sewed material to stably press the same to avoid the pressing track left on the surface of the sewed material by the roller.

The present invention can be best understood through the following description and accompanying drawings wherein:

Fig.1 shows a conventional roller-type of pressing leg of a sewing machine.

Fig.2 is a perspective exploded view of this invention.

Fig.3 is a side elevation of the pressing leg of this invention.

Fig.4 is a perspective view of the pressing leg of this invention.

Fig.5 is a perspective view of one embodiment of the adjusting device of this invention.

Fig.6 is a perspective view of another embodiment of the adjusting device thereof.

Fig.7 is a perspective view, showing the relationship between this invention and some other elements of a sewing machine ; and

Fig.8 shows a sewing machine provided with this invention.

Please now refer to Fig.2 The present invention includes a pressing leg 1 connected to a head seat 2 by pin 3, a spring 4 disposed between the pressing leg 1 and the head seat 2 for balancing the pressing leg 1. (This pertains to prior art.) The pressing leg 1 is formed with a recess 5 on one side, through which a sewing needle 6 goes for sewing. As shown in Fig 3, in case two needles are used for sewing, the other needle 7 can be located at a position 8 beside the needle 6 so that both the needles 6,7 can sew under desirable pressing effect to avoid stitch drop. A first roller 9 is mounted by a pin 10 under the pressing head 1 with its rotary shaft radially aligned with the center of the recess 5. Several additional rollers 11 are further mounted under the pressing head 1 as necessary, as shown in Figs.3 and 4, whereby when a material 12 to be sewed is pressed by the rollers 9, 11 against feeding teeth 13, the sewing needle can go through the sewed material 12 back and forth with the material 12 stably pressed by the rollers 9,11 without being pulled up. so that the sewing thread can be smoothly knotted. Because the contact surface between the rollers 9,11 and the sewed material 12 as well as the feeding teeth 13 is a larger plane surface so that the feeding teeth can easily feed in the sewed material 12 with greater pressing area. Also, due to the larger plane contact surface, the feeding direction of the sewed material 12 is easy to be maintained so as to keep the seam

straight and beautiful. Moreover, according to equation $P = MA^2$, the pressing force is in proportion to the square of the forcing area. Therefore, in case of equal pressing force, the pressure applied to the pressing leg 1 of this invention is only $1/A^2$ that of conventional roller type of pressing leg so as to prevent the sewed material 12 from being pressed with pressing track by the rollers 9,11, to ill affect the appearance quality of the sewed material.

Please now refer to Fig.5. The head seat 2 is integrally connected with a transverse adjusting bar 14 formed with a slot 15. A longitudinal adjusting bar 17 is formed with a transverse adjusting groove 18 corresponding to the transverse adjusting bar 14. A screw 16 can go through the slot 15 to releaseably fasten the adjusting bar 14 to the adjusting bar 17, permitting the adjusting bar 14 to slide left and right along the groove 18 for adjusting transverse position. Fig.6 shows an alternative embodiment wherein a transverse adjusting rod 19 is slidably disposed in a sleeve 20 of the adjusting bar 17 to achieve an adjusting effect similar to the effect of aforesaid embodiment. Also, a dovetail seat, a rack, etc can achieve the same effect.

Please now refer to Fig.7 A screw 21 can releaseably go through a slot 22 of the longitudinal adjusting bar 17 to fasten the same to a pressing rod 23. A spring 24 provides the pressing leg 1 with pressure. Since this invention can achieve pressing effect with smaller pressure, an adjusting swivel 25 can be rotated to reduce the pressure of the spring 24 to avoid the pressing track left on the surface of sewed material by the pressing leg 1.

The features disclosed in the foregoing description, in the claims and/or in the accompanying drawings may, both, separately and in any combination thereof, be material for realising the invention in diverse forms thereof.

Claims

1. A sewing machine pressing leg and an adjusting device therefor, said pressing leg being formed with a recess on one side, through which a sewing needle goes, a first roller being disposed under said pressing leg with its rotary shaft radially aligned with a center of said recess, several additional rollers being disposed behind said first roller whereby said rollers slightly protrude beyond a bottom surface of said pressing leg so as to press a sewed material.
2. A pressing leg and adjusting device as claimed in claim 1, wherein said rollers are rotatably disposed under said pressing leg by pin members.
3. A pressing leg and adjusting device as claimed in claim 1, wherein said pressing leg is integrally connected with a head seat which is connected with a transverse adjusting bar formed with a slot, a screw going through said slot to releaseably mount said transverse adjusting bar on a transverse adjusting groove of a longitudinal adjusting bar, permitting said transverse adjusting bar to slide therealong, said longitudinal adjusting bar being also formed with a slot and a screw going through said slot of said longitudinal adjusting bar to releaseably mount said longitudinal adjusting bar on pressing rod of a sewing machine whereby by means of said two adjusting bar, said pressing head is adjustable left and right and back and forth.
4. A pressing leg and adjusting device as claimed in claim 3, wherein said transverse and longitudinal adjusting bars can be substituted with a sleeve, a dovetail, a gear and other equivalent devices.
5. A pressing leg and adjusting device constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

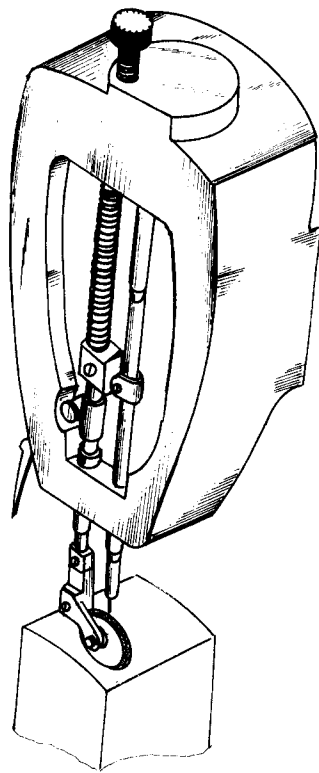
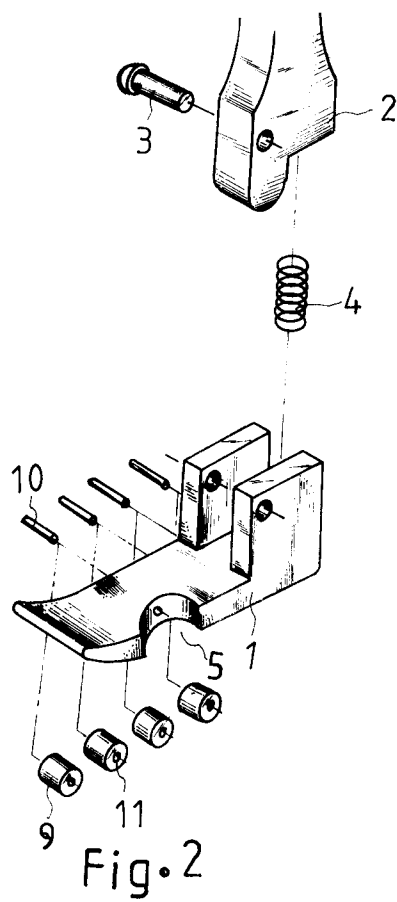
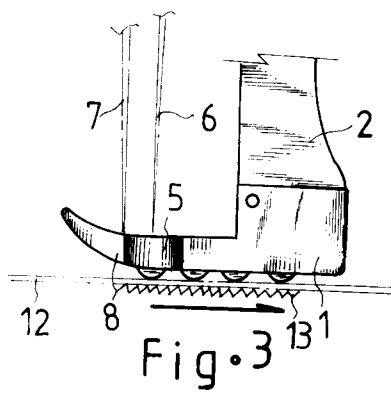


Fig.1



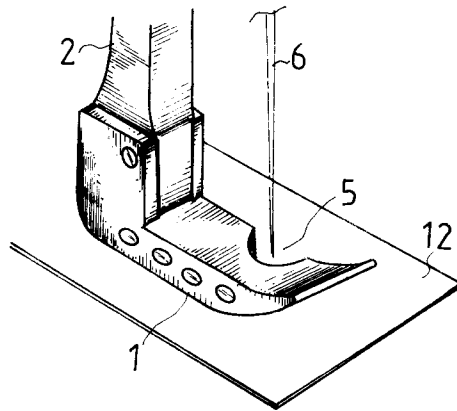


Fig. 4

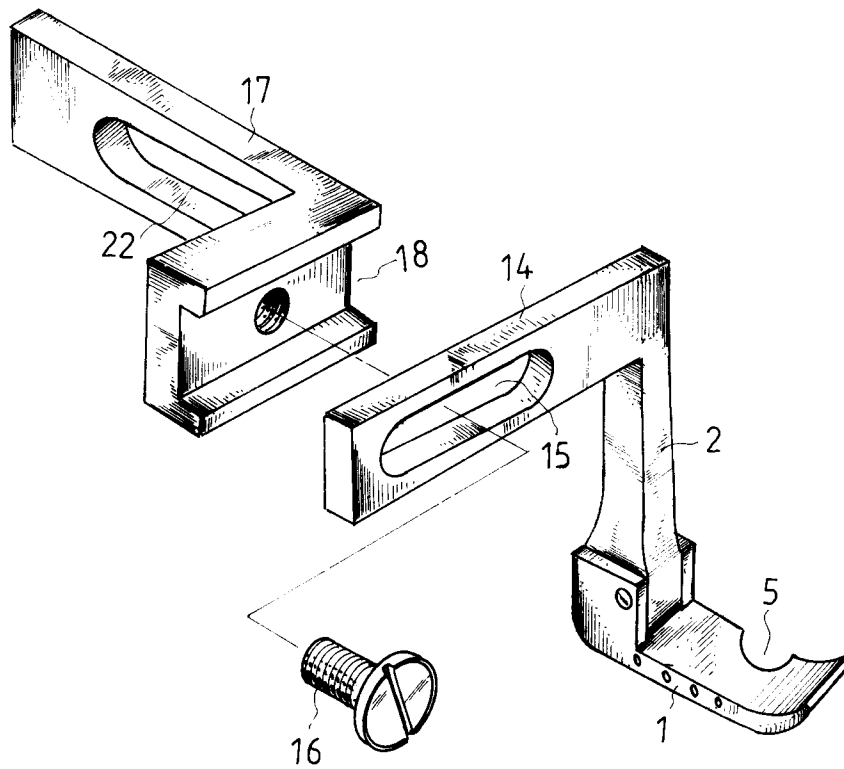


Fig. 5

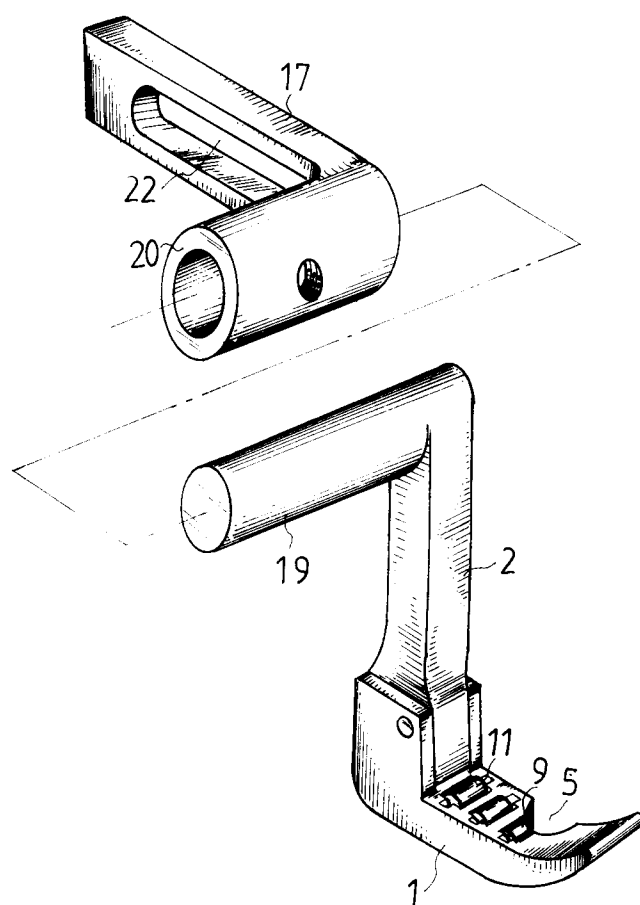


Fig. 6

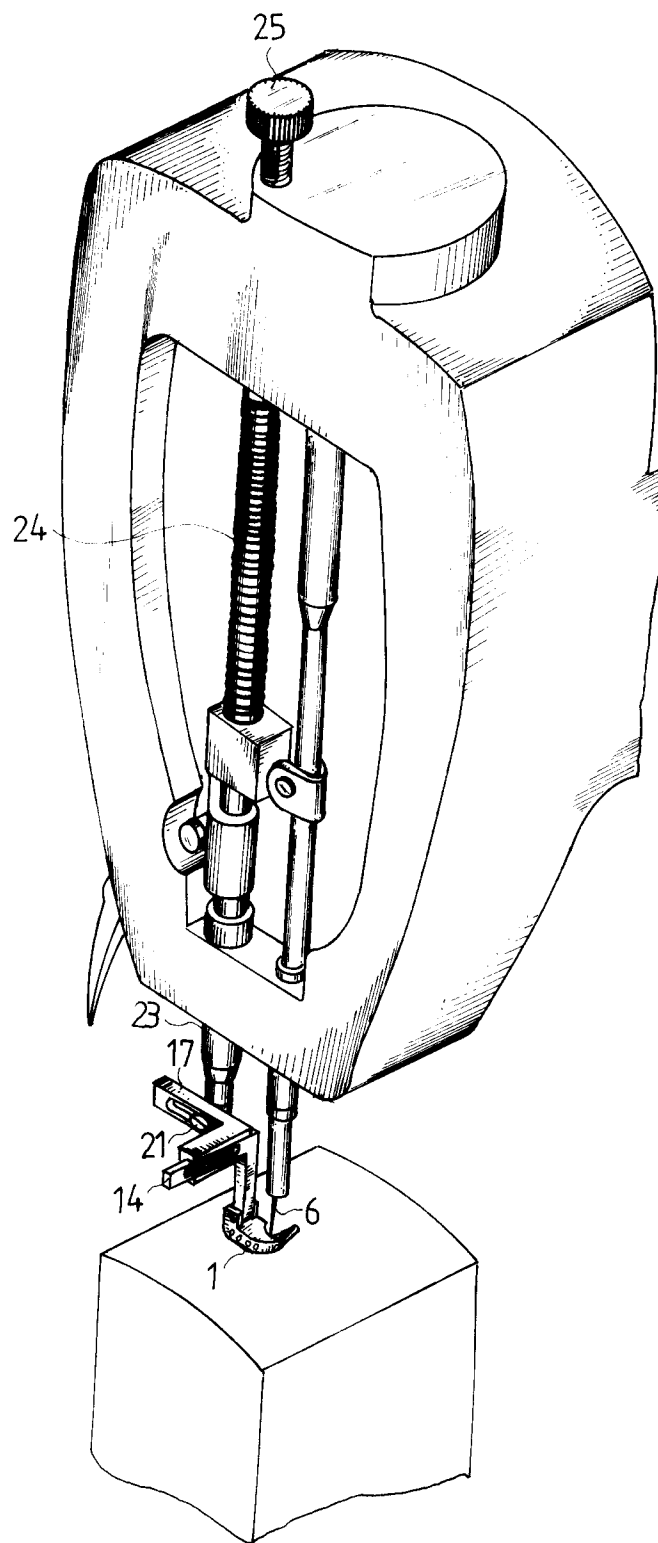


Fig. 7

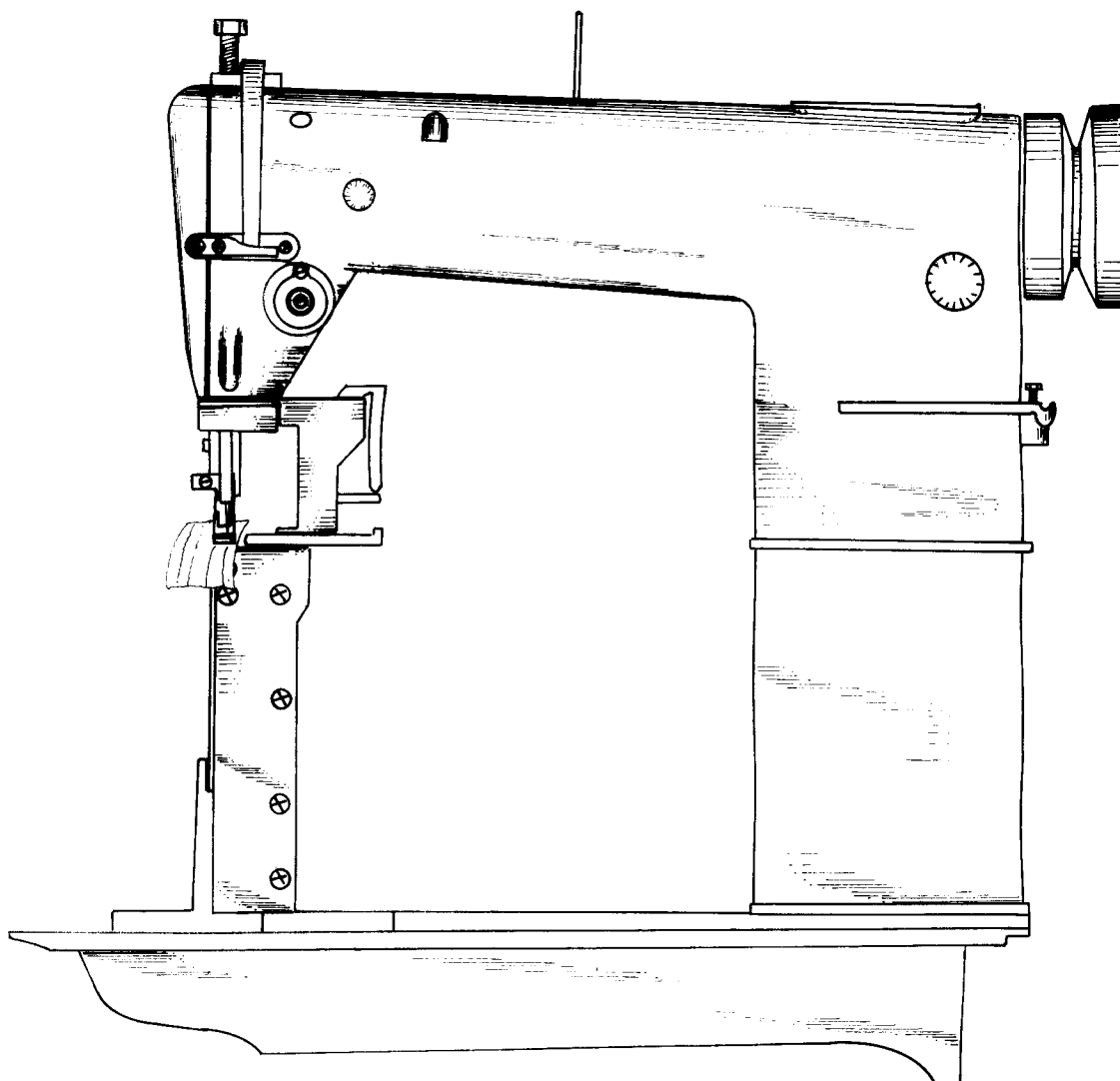


Fig. 8



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EUROPEAN SEARCH REPORT

Application Number

EP 90 12 5746

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	GB-A-2 212 822 (K-J LEE) * the whole document * ---	1, 2, 5	D05B29/10 D05B29/12
A	GB-A-729 355 (W. & J. BOGOD & COMPANY LIMITED) * the whole document * ---	1, 2, 5	
A	US-A-2 948 242 (A. SHUMAN) * the whole document * ---	1, 2, 5	
A	GB-A-2 034 777 (K. IWAMOTO) * figures 1-6 * ---	1	
A	GB-A-1 297 441 (ROBERT BROWN HOWELL) * page 2, line 62 - line 86 * * page 3, line 84 - line 96 * ---	1-5	
A	GB-A-1 297 442 (ROBERT BROWN HOWELL) * figures * ---	4	
A	US-A-2 804 037 (J. CONNORS) * figures * ---	3	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	US-A-3 294 048 (A. MICALE) ---		D05B
A	US-A-4 278 039 (S. HANYU; A. KOIDE) ---		
A	US-A-3 433 192 (D.C. PINGITORE; J.N. RICCI) -----		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28 AUGUST 1991	Examiner D HULSTER E.W. F.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	