(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 933 172 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
04.08.1999 Bulletin 1999/31

(51) Int Cl.[6]: **B26D 7/01**

(21) Application number: **99300650.1**

(22) Date of filing: **28.01.1999**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **31.01.1998 GB 9802148**

(71) Applicant: **Avery Dennison Office Products(UK) Ltd.**
Maidenhead SL6 7PU (GB)

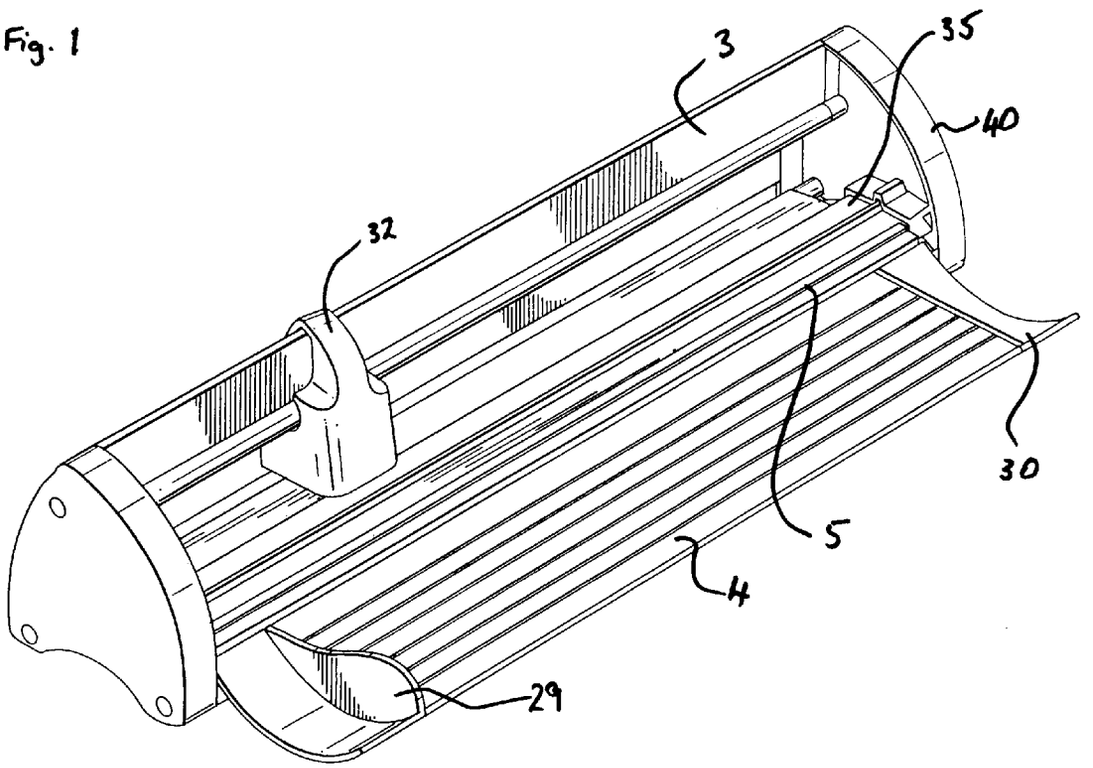
(72) Inventors:
- **Riddiford, Martin**
  London NW1 (GB)
- **Colquhoun, Charlie**
  London NW1 (GB)

(74) Representative: **Kirkham, Nicholas Andrew et al**
Graham Watt & Co.,
Riverhead
Sevenoaks, Kent TN13 2BN (GB)

(54) Paper cutting apparatus

(57) The present invention relates to an apparatus for cutting paper or similar sheets of material and a method of producing such an apparatus. The cutting apparatus includes a cutting means having a cutting line along which blade means are arranged to cut. A support surface extends from the cutting means to a distal edge and the support surface is pivotably mounted so that the distal edge is pivotable towards the cutting means.

Fig. 1



EP 0 933 172 A2

Description

[0001] The present invention relates to an apparatus for cutting paper or similar sheets of material and a method of producing such an apparatus.

[0002] Paper cutting apparatus are well know for example guillotines and paper slicers with rotatable blades which cut along a fixed edge. For example please see GB-A-2 085 792 and EP-A-0 234 016.

[0003] It is appreciated, *inter alia* from the above referenced documents, that the blades must be accurately and stably positioned in relation to one another for precise cutting. Furthermore all the apparatus are provided with a planar paper support to allow safe feeding of the paper to the blades and accurate positioning of the paper at the blades. However, this has led to the paper cutting apparatus of prior art being bulky and cumbersome objects.

[0004] The present invention seeks to provide another paper cutting apparatus.

[0005] According to a first aspect of the present invention there is provided a cutting apparatus for cutting paper, comprising cutting means having a cutting line along which blade means are arranged to cut, and further including a support surface extending from the cutting means to a distal edge, wherein the support surface is pivotably mounted so that the distal edge is pivotable towards the cutting means. This allows for a particularly compact design of cutting apparatus whilst maintaining the required structural rigidity and paper guides.

[0006] Preferably, the blade means is manually movable. Advantageously, the blade means includes a rotatable blade, the cutting edge of which is movable along the cutting line. This allows a particularly simple and compact apparatus.

[0007] The rotatable blade may be movable along a support beam and in which case the support beam may be connected to a back member which back member is a structural member of the a cutting apparatus. The cutting line will normally comprise the edge of a fixed blade on a base member. The base member is advantageously a structural member of the a cutting apparatus and the support surface comprises a front member which is also advantageously a structural member. The structural members comprise a housing which essentially enclose the cutting means when the distal edge of the support surface has been pivoted towards the cutting means.

[0008] In a preferred embodiment the, some or each of the structural components comprises an extruded component. The extruded component may be an extruded aluminium component.

[0009] The, some or each structural component of the cutting apparatus is advantageously shaped to resist a bending moment along the cutting line. For example the components may be curved to resist bending in a particular direction.

[0010] The support surface preferably includes guide means for guiding the paper to the cutting means.

[0011] According to a second aspect of the present invention there is provided a method of producing a cutting apparatus including the steps of providing:

a cutting means with a cutting line;
blade means arranged to cut along the cutting line;
a support surface extending from the cutting means to a distal edge and including pivot means so that the distal edge is pivotable towards the cutting means.

[0012] Preferably, the cutting apparatus includes structural members where the, some or each structural member is an extruded member, such as an extruded aluminium member. This allows particular savings in production cost especially when cutting apparatus sized for different sizes of paper are required as different tooling for the different sizes of apparatus is reduced.

[0013] A preferred embodiment of the invention will now be described with reference to the accompanying drawings in which:

Fig. 1 is a top perspective view of a preferred embodiment of the cutting apparatus of the present invention in a cutting position;

Fig. 2 shows the view of Fig. 1 with the apparatus in a closed position;

Fig. 3 is a exploded view of the apparatus of Figs. 1 and 2 illustrating the component parts.

[0014] As shown in the all Figures and especially in Fig. 3, the cutting apparatus of the present invention is formed from a number of component parts. These may be assembled in to the apparatus of Figs. 1 and 2.

[0015] The apparatus has structural components which form a housing about the cutting components . The main structural components are base member 5, the front member 4 and back member 3. These three member 3, 4 and 5 are connected together by means of a pair of opposed side plates 39, 40. Each end plate 39, 40 is attached to each structural components by screws 23.

[0016] A fixed cutting blade 12 is formed from mild steel and fixed to base member 5 by screws 21 underneath pressure rail 35. Two runners 47 form support feet for the apparatus and are inserted into channels in base member 5.

[0017] A cutter housing 32 houses a rotary cutter 13 made from stainless steel. The rotary cutter is fitted into the cutter housing 32 on a shaft 14. A splined cutter locator 37 holds one side the rotary cutter in position against a pressure wheel 45. The other side of the rotary cutter 13 is held in position by a spring 16 acting through washer 19 against a pressure plate 36 which abuts the rotary cutter 36.

[0018] The cutter housing 32 is slidably mounted in a channel on back member 3. The cutter housing is manually movable in the channel. The rotary cutter 13 rotates as the housing is slid along the channel. The interface between the rotary cutter 13 and the fixed cutter 12 defines a cutting line.

[0019] The front member 4 is mounted on to the side covers 39, 40 via a pair of pair guides 29, 30. The front member is mounted to be movable between a first position ('cutting' as shown in Fig. 1) and a second position ('closed' as shown in Fig. 2) by rotation about a an axis substantially parallel to the cutting line. Extrusions 42 on each paper guide 29, 30 fit in to corresponding recesses 41 in the respective side members 39, 40. The recesses 41 are shaped as a blind channel to allow the extrusion 42 to be moved between the two positions. The paper guide 39 includes a high level paper guide 43. Whereas the paper guide 30 includes a low level paper guide 44.

[0020] The pivotable nature of the front member 4 allows for the apparatus to be a particular compact design as it eliminates the large paper support surface when the apparatus is not in use. The physical dimensions of the apparatus are relatively small compared to previously known cutters having equivalent blade length. Preferably the cutting apparatus is made to be portable, i.e. transportable in a briefcase.

[0021] In part the relatively small size is attributable to the structural members 3, 4, 5 and the side panels 39, 40 being curved to resist a bending moment on the cutter housing support towards the fixed cutter 12. The generally triangular cross-sectional shape of the housing also provides additional strength to the apparatus.

[0022] In a preferred method of manufacturing the apparatus the structural member(s) 3, 4, 5 are extruded, preferably from aluminium or other suitable material such as a plastics material of suitable torsional strength. This allows for the blade length the be altered without requiring different plant and tooling for different blade lengths.

[0023] It will be appreciated that throughout out specification, references to paper or the cutting thereof refers to any sheet material, such as plastics sheet used with overhead projectors.

[0024] The present invention relates to an apparatus for cutting paper or similar sheets of material and a method of producing such an apparatus. The cutting apparatus includes a cutting means having a cutting line along which blade means are arranged to cut. A support surface extends from the cutting means to a distal edge and the support surface is pivotably mounted so that the distal edge is pivotable towards the cutting means.

Claims

1. A cutting apparatus for cutting paper, comprising cutting means having a cutting line along which blade means are arranged to cut, and further including a support surface extending from the cutting means to a distal edge, wherein the support surface is pivotably mounted so that the distal edge is pivotable towards the cutting means.

2. The cutting apparatus according to claim 1, wherein (a) the blade means is manually movable, and/or (b) the blade means includes a rotatable blade, the cutting edge of which is movable along the cutting line.

3. The cutting apparatus according to claim 2, wherein the rotatable blade is movable along a support beam, and optionally wherein the support beam is connected to a back member which back member is a structural member of the cutting apparatus.

4. The cutting apparatus according to any one of claims 1 to 3, wherein (a) the cutting line comprises the edge of a fixed blade on a base member, which base member is a structural member of the cutting apparatus and/or (b) the support surface comprises a front member which is a structural member.

5. The cutting apparatus according to claim 3 or claim 4, wherein (a) the structural members comprise a housing which essentially enclose the cutting means when the distal edge of the support surface has been pivoted towards the cutting means, and/or (b) the, some or each of the structural components comprises an extruded component, and optionally wherein the extruded component is an extruded aluminium component, and/or (c) the, some or each structural component is shaped to resist a bending moment along the cutting line.

6. The cutting apparatus according to any one of claims 1 to 5, wherein the support surface includes guide means for guiding the paper to the cutting means.

7. A method of producing a cutting apparatus including the steps of providing:

   a cutting means with a cutting line;
   blade means arranged to cut along the cutting line;
   a support surface extending from the cutting means to a distal edge and including pivot means so that the distal edge is pivotable towards the cutting means.

8. The method according to claim 7, wherein the cutting apparatus includes structural members, where the, some or each structural member is an extruded member, e.g. an aluminium extrusion.

9. The method according to either claim 7 or claim 8, wherein the cutting apparatus comprises the cutting apparatus according to any one of claims 1 to 6.

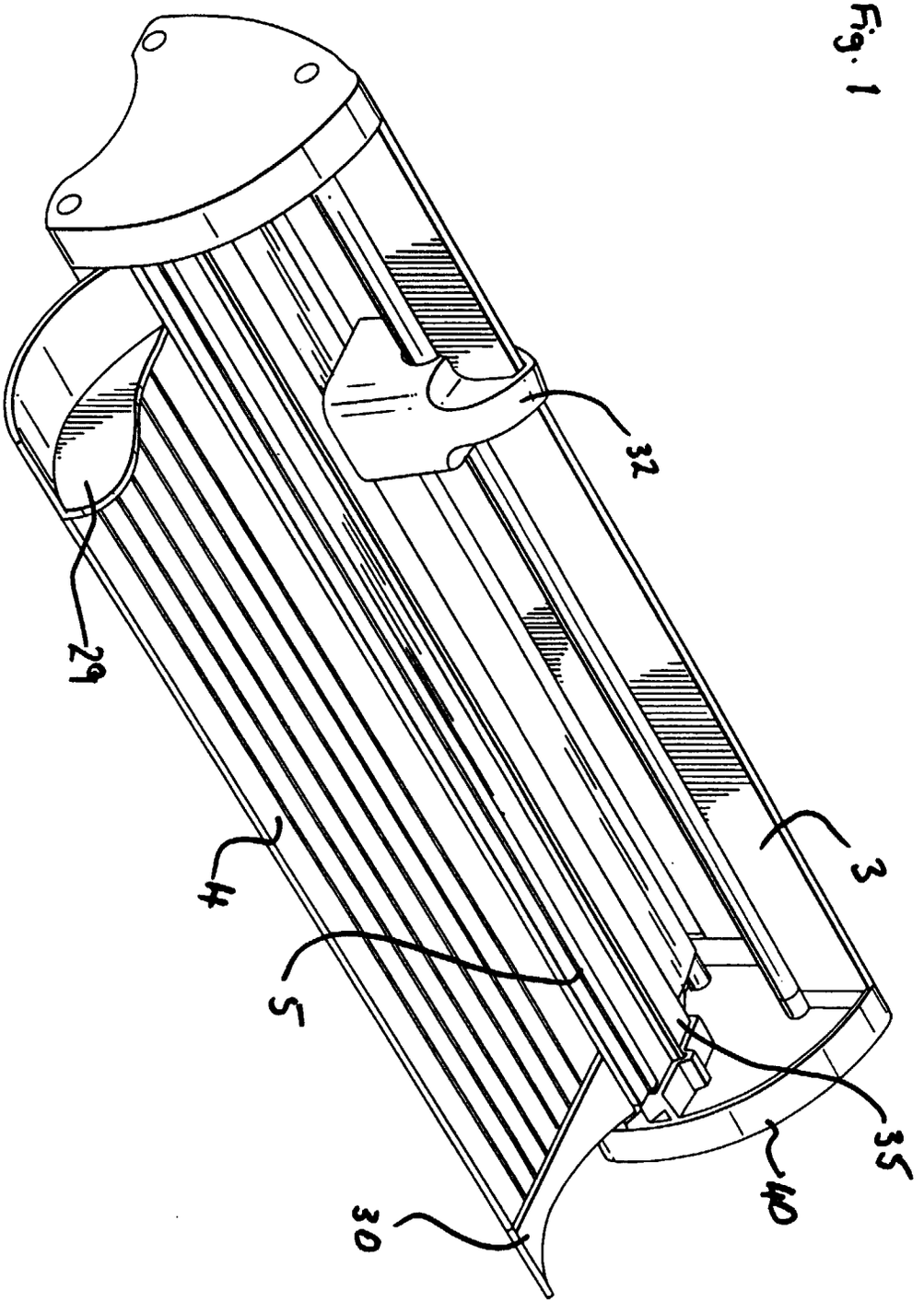


Fig. 1

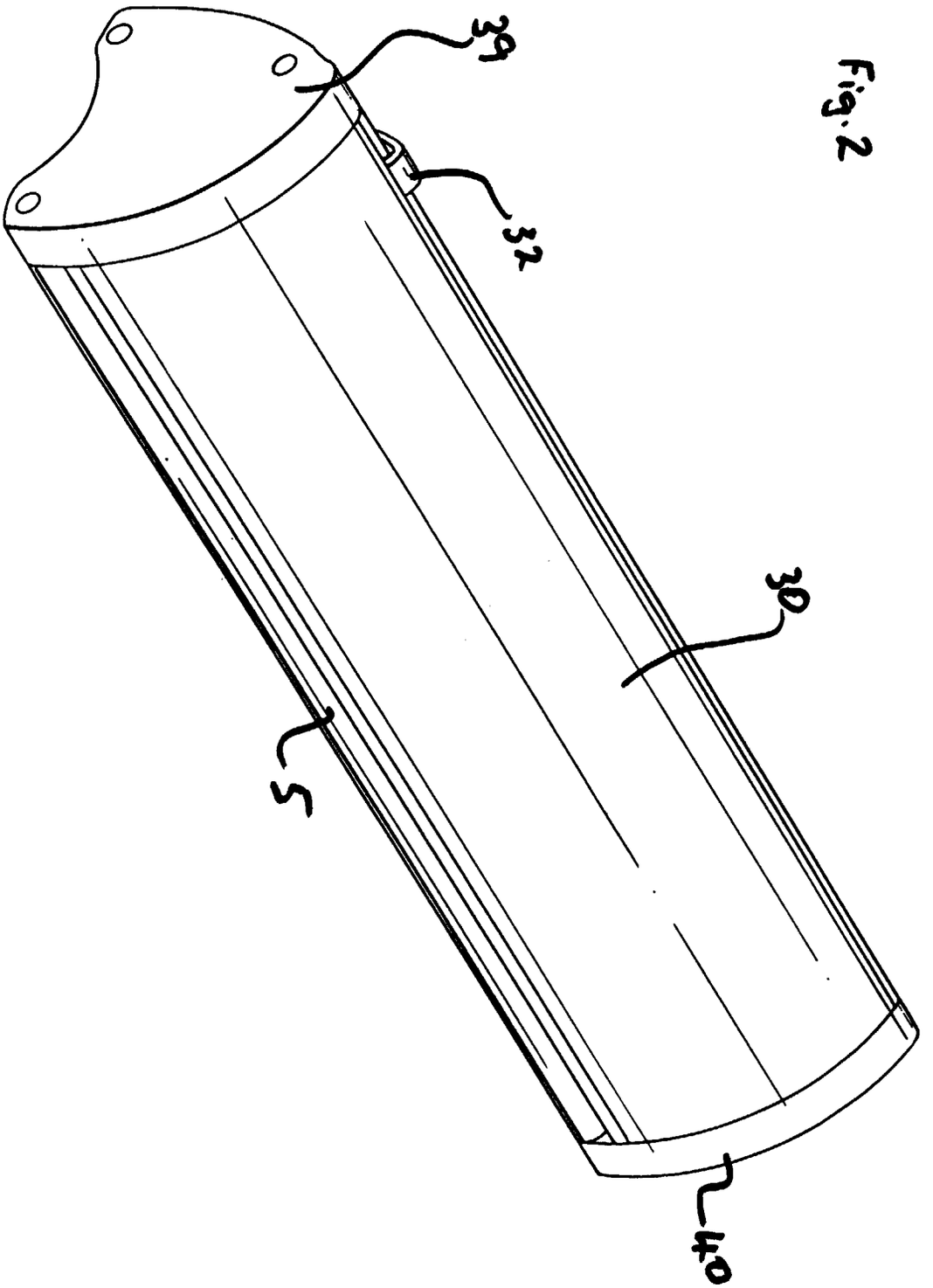


Fig. 2

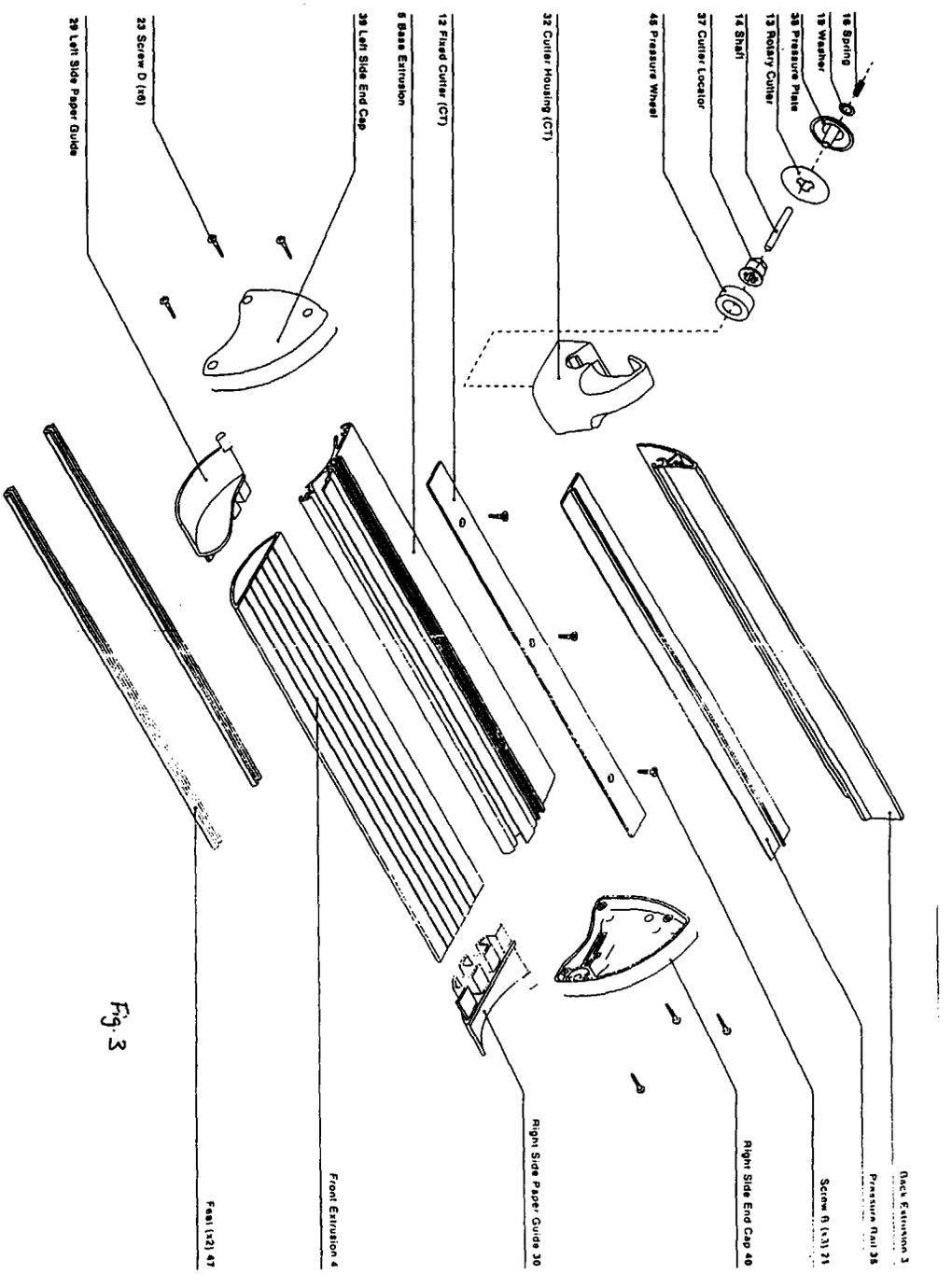

16 Spring
19 Washer
38 Pressure Plate
13 Rotary Cutter
14 Shaft
37 Cutter Locator
45 Pressure Wheel
32 Cutter Housing (CT)
12 Fixed Cutter (CT)
6 Base Extrusion
36 Left Side End Cap
23 Screw D (x6)
29 Left Side Paper Guide
Back Extrusion 3
Pressure Rail 35
Screw B (x3) 21
Right Side End Cap 40
Right Side Paper Guide 30
Front Extrusion 4
Feet (x2) 47

Fig. 3