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DESCRIPTION

Field of the Invention

[0001] The present invention relates to a wiper blade for removing waste materials from a roller and in particular from a printer roller.

Background of the Invention

[0002] In the printing industry, waste material is removed from rollers by using a wiper blade. The wiper blade includes a tip for engaging a rotating roller to scrape any waste material, typically ink, from the roller.

[0003] Typically, waste material scraped off the roller is directed to a collection tray.

[0004] It has been common for wiper blades to be formed of rubber tip that is vulcanised onto a steel plate. However, the printing industry has begun to use polyurethane tipped wiper blades because of their useful properties in the removal of certain materials. Also, polyurethane has been found to have desirable wear resistance and resistance to ultraviolet (UV) radiation. However, polyurethane does not vulcanise well.

[0005] WO2007/113492 describes an alternative construction of wiper blade and support plate. The support plate includes a jaw that is adapted to receive a corresponding part of the wiper blade. The jaw is then crimped so as to grip the wiper blade and secure it to the plate. Adhesive may be applied to one or both of the support plate and the wiper blade to ensure that the wiper blade is secured fast with the support blade.

[0006] The solvents used in printing inks cause the wiper blades to wear and therefore the blades must be replaced from time to time. Whilst the device described in WO2007/113492 does provide an alternative to vulcanisation for attaching the blade to the support plate, nevertheless, when the blade is worn and needs to be changed, the whole device must be removed from the printer. This involves removing a plurality of bolts (fifteen for example), each of which is likely to need to be cleaned of ink prior to removal. In most printers, in order to change the blade the waste ink tray into which waste material removed from the roller by the wiper is deposited must be emptied and cleaned to allow the blade assembly to be removed, as the bolts attaching the blade assembly to the tray pass through the tray.

[0007] It will be appreciated that changing the wiper blade is a time consuming and messy task.

[0008] It would be desirable to provide an improved wiper blade assembly.

[0009] EP1112187 describes a waste catchment system which incorporates a wiper assembly comprising a wiper blade attached to a support plate. The blade is configured to receive a lip of a replaceable tray of the waste catchment system so that in use the blade is attached to the replaceable tray.

[0010] It would be desirable to provide an improved wiper blade assembly suitable for use with a waste catchment system of the type described in EP1112187.

Summary of the Invention

[0011] According to an aspect of the invention there is provided a blade assembly of a waste catchment system for a roller as specified in claim 1.

[0012] It is preferred the blade holder includes a channel, the blade received and retained in the channel.

[0013] It is preferred that the co-operating elements include at least one indent in one of the blade and the blade holder and at least one protrusion so shaped and dimensioned as to engage the at least one indent to slide in the longitudinal direction of the indent. Advantageously, the or each indent is a rebate.

[0014] The blade holder may include a closed end adapted to limit the said sliding of the blade relative to the blade holder.

[0015] The blade assembly may further comprise blade retaining means associated with the blade holder said blade retaining means having a first position in which the blade may slide relative to the blade holder, and a second position in which the blade retaining means prevents sliding of the blade relative to the blade holder.

[0016] Advantageously, the blade retaining means comprises a plate that is pivotally mounted at one end of the blade holder. The blade retaining means may further comprise a lock configured to secure the plate in the blade retaining position.

[0017] Preferably, in the second position the blade retaining means is removed from the blade holder.

[0018] The blade assembly may further comprise a sloping surface configured to engage the blade and direct waste material removed from the roller by the blade towards the tray. The sloping surface may be a part of the blade holder or is a part of a component mounted in the blade holder. The blade assembly may be adapted to attach to a liner for lining the tray.

[0019] Preferably, the blade assembly and one edge of the tray are provided with co-operating

male/female elements, the male/female elements providing a releasable sealing connection therebetween.

[0020] Preferably, the co-operating male/female elements are a friction push-fit one into the other.

[0021] Advantageously, the blade assembly includes a deformable component and wherein the deformable component provides at least a part of the female element.

[0022] Preferably, a longitudinal face of the deformable element is situated adjacent a longitudinal face of the blade and wherein the female element is comprised in the deformable component.

[0023] Advantageously, the deformable component is configured such that when the male element is inserted into the female element the longitudinal face of the deformable component is pressed against the adjacent face of the blade.

[0024] Advantageously, the deformable component is formed of a plastics material or rubber or polyurethane.

[0025] It is preferred that the deformable component includes the sloping surface.

[0026] The blade holder may include a channel and a part of the deformable component is received in the channel.

[0027] One of the channel and the deformable component may include an indent and the other a protrusion, the indent and protrusion co-operating to secure the deformable component in the blade holder. The protrusion may be a longitudinally extending lip or barb.

[0028] The deformable component may form a first part of the female element and the blade holder forms a second part of the female element.

[0029] The second part of the female element may be situated beneath the sloping surface.

[0030] The blade assembly may be attached to the liner magnetically.

[0031] It is preferred that at least one of the blade assembly and the liner is provided with a magnetic element, and where both the blade assembly and liner are not provided with magnetic elements, one of the blade assembly and liner is provided with a magnetically attractive metallic element.

[0032] Where both the blade assembly and the liner are provided with a magnetic element, the polarities of the respective elements may be configured such that the liner locates in a desired position with respect to the blade assembly. Each of the magnetic elements may include

repeating alternating polarities.

[0033] In one embodiment, the co-operating elements comprise a recess in the blade and the blade holder includes a protrusion, the protrusion engaging in the recess.

[0034] It is preferred that the blade includes an indent extending from the recess and wherein the blade includes an element for engaging with the indent.

[0035] Preferably, the blade holder includes a channel, the blade received and retained in the channel.

[0036] The blade may include a sloping surface configured to engage the roller and direct waste material removed from the roller by the blade towards the tray.

[0037] The sloping surface may be formed in part by a lip extending from the blade.

[0038] Preferably, the lip is configured so that it extends beyond an attachment member attaching the blade assembly to the liner.

[0039] According to another aspect of the invention there is provided a waste catchment system as specified in Claim 17. Preferably, the waste catchment system further comprises a liner for lining the tray, the blade assembly releasably attachable to the liner.

Brief Description of the Drawings

[0040] In the drawings, which illustrate the prior art and exemplary embodiments of the wiper blade assembly of the invention;

Figure 1 illustrates a waste catchment system of the prior art;

Figures 2a to 2c illustrate a wiper blade assembly of the prior art;

Figure 3 is a side view of a first embodiment of a wiper blade assembly of the invention;

Figure 4 is a side view of a second embodiment of a wiper blade assembly of the invention;

Figure 5a is a schematic representation of the wiper blade assembly illustrated in Figure 3 viewed from one side;

Figure 5b is a schematic representation of the wiper blade assembly illustrated in Figure 3 with the blade element in a state of partial insertion;

Figure 5c is a schematic representation of the wiper blade assembly illustrated in Figure 3 viewed from the other side to Figure 5a;

Figure 6 is a schematic representation of a waste catchment system of the present invention;

Figure 7 is a schematic side view of a wiper blade assembly according to another aspect of the invention;

Figure 8 is a schematic side view of another alternative embodiment of the invention;

Figure 9 is a schematic side view of the embodiment of the invention illustrated in Figure 8 comprising magnetic elements on both the blade and the tray liner;

Figure 10 is a schematic side view of a waste catchment system of an alternative embodiment of the invention;

Figure 11 is a schematic side view of the wiper blade of the waste catchment system illustrated in Figure 10;

Figure 12 is a side view of another embodiment of the invention; and

Figure 13 is a side view of a variation of the embodiment illustrated in Figure 12.

Description of the Prior Art

[0041] Figure 1 illustrates a waste catchment system for receiving waste material from the surface of a rotating roller 2, which is typically part of an industrial printing press mechanism.

[0042] The waste catchment system includes a wash up tray 4 and a blade assembly 6, which comprises a support plate 8 and a blade 10, which scrapes waste material from the roller 2. This arrangement is common not only to the waste catchment system of EP1112187, but also waste catchment systems that do not use the liner described in EP1112187.

[0043] The waste catchment system described in EP1112187 also includes a liner 12 which is mounted in a support element 14. The liner 12 includes an attachment strip 16 which comprises a flange portion 18 that is attached to the liner 12 and a bead portion 20 which is configured to engage with and attach to a recess 22 in the blade 10. This is best shown in Figure 2.

Detailed Description of the Preferred Embodiments

[0044] Referring now to Figure 6, there is shown a waste catchment system 30 according to the invention comprising a wash up tray 31 and a blade assembly 32, which comprises a support plate 33 and a blade 40, which scrapes waste material from the roller 42.

[0045] The support plate 33 rests on an inner wall 31a of the wash up tray 31 and is attached thereto by a bracket 41.

[0046] Referring also to Figure 3, the support plate 33 includes a blade holder 34 that is configured to receive one end of the blade 40. The blade holder 34 comprises a leg 35 which provides a channel for receiving a part of the blade 40. The leg 35 includes a portion 35a so that the channel comprises a first channel portion 36a and a second channel portion 36b, the channel portion 36b being wider than the channel portion 36a.

[0047] The blade 40 includes a tip portion 40a for engaging the surface of the roller 42. One surface of the blade 40 includes a rebate 40b which is situated on the blade 40 such that with the end face of the blade 40 sitting on the bottom of channel 36b the portion 35a engages with the rebate 40b.

[0048] With the blade 40 mounted in the blade holder 34 the blade 40 is restricted against movement in the direction indicated by arrow "X" in Figure 6. However, as can be seen from Figure 5b in particular, the blade 40 is withdrawn from or inserted into the blade holder 34 by moving the blade 40 in the direction indicated by arrow "Z" in Figure 5b.

[0049] Whilst providing for the blade 40 to be removed from the blade holder 34, it is also necessary to constrain the blade 40 against movement in the direction "Z" whilst the blade is in scraping engagement with the surface of the roller 2. This is because the roller 2 can transfer forces to the blade 40 causing it to move in the direction "Z". Figures 5a to 5c illustrate the means by which the blade 40 may be constrained against movement in the direction "Z" whilst in scraping engagement with a roller 2, yet removed from the blade holder 34 when required.

[0050] As shown in Figure 5a, the support plate 33 mounts a removable closure member 50 which includes a leg 51 having a foot 52 at the free end thereof, the foot 52 covering the end of the channel formed by the leg 35 of the blade holder 34. The closure member is removably attached to the support plate 33, in the illustrated example by a screw 53.

[0051] Figure 5c shows the blade assembly 32 from the other side thereof. It can be seen that the channel formed by the leg 35 is permanently closed by a plate 54, which provides that the blade 40 may only be removed from one side of the blade assembly, by moving the closure member 50. Alternatively, instead of plate 54 permanently closing the channel, the plate 54 may be replaced by another closure member 50.

[0052] Figures 3 and 4 illustrate two different embodiments of a blade assembly 32, 32'. Both embodiments provide for attachment of the bead 20 shown in Figures 1 and 2 to the blade holder 34.

[0053] In the embodiment shown in Figure 3 the blade holder 34 includes a wall 34a which lies at an angle of approximately 45 degrees to the axis a-a of the support plate 33. The blade

holder 34 further includes a channel 34c enclosed by the wall 34a and the support plate 33. The channel 34c includes a lip 34d extending from wall 34a towards the support plate 33. The channel 34c receives one end of a flexible member 37. The end of the flexible member 37 received in the channel 34c includes a barb 37a. As can be seen from Figure 3, the flexible member is configured such that the free end of the barb 37a engages with the lip 34d, thereby securing the flexible member 37 in the channel 34c. The flexible member 37 may be inserted into and/or removed from the channel 34 from one end thereof in the same manner as the blade 40. Alternatively, the flexible member 37 may be pushed through the opening between the lip 34d and the support plate 33, the barb 37a being compressed as it passes through said opening. Once inserted, engagement of the barb 37a with the lip 34d secures the flexible member 37 in place.

[0054] The wall 34 includes a curved portion 34b. The flexible member 37 also includes a curved portion 37b. Together the curved portion 34b of the wall 34 and the curved portion 37b of the flexible member 37 are adapted to receive and retain the bead 20 of the liner 12 shown in Figures 1 and 2.

[0055] The embodiment of Figure 4 is an alternative configuration that provides the same function as the embodiment illustrated in Figure 3.

[0056] The blade assembly 32' comprises a support plate 33' and a blade holder 34' at one end thereof. The blade holder 34' is configured to receive the blade 40' and a bead attachment member 80.

[0057] The blade holder 34' comprises a base 60 and three spaced apart walls 61, 62 and 63. The wall 62 is situated substantially centrally between two outer walls 61, 63. The free end of the central wall 62 extends beyond the free ends of outer walls 61, 63 in the direction of the axis a-a.

[0058] The outer wall 63 includes a lip 63a projecting from the inner face of the outer wall 63 towards the central wall 62. In the illustrated example the lip 63a extends from the upper edge of the outer wall 63.

[0059] The outer wall 61 includes a similar lip 61a projecting from the inner face of the outer wall 61 towards the central wall 62. In the illustrated example the lip 61a extends from the upper edge of the outer wall 61.

[0060] The outer walls 61, 63 and central wall 62 together form two substantially parallel channels 64, 65. The channel 64 receives a part of the bead attachment member 80 in the form of a rib 81. The rib 81 includes a rebate 81a extending in the longitudinal direction of the bead attachment member 80. The rebate 81a is so shaped and dimensioned as to engage with the lip 61a of the blade holder 34'.

[0061] The bead holder 80 further includes a longitudinally extending channel 82, which is

configured to receive the bead 20 illustrated in Figure 1 so that the bead 20 may be introduced into and removed from the said channel 82. The channel 82 includes a longitudinally extending opening 82a. The bead 20 is introduced into or removed from the channel 82 through the opening 82a, which deforms to permit this.

[0062] The blade 40' is secured in the channel 65 formed between the central wall 62 and outer wall 63. The blade 40' includes a longitudinally extending rib 40'b, which itself includes a longitudinally extending rebate 40'c. The rib 40'b sits in the channel 65 with the lip 63a engaging with the rebate 40'c.

[0063] As can be seen from Figure 4, the bead holder 80 includes a surface 83 which lies on a slope of approximately 45 degrees to the axis a-a of the support plate 33'. The wiper blade 40' also includes a sloping surface 40'd extending in the longitudinal direction of the blade 40'. The lower edge of the sloping surface 40'd is substantially aligned with the upper edge of the sloping surface 83. This is so that waste material flowing off the sloping surface 40'd flows onto the sloping surface 83, and with the bead 20 engaged in the channel 82 into the waste collection liner.

[0064] The channel 82 in cross-section forms the major part of a circle. It is preferred that the radius thereof is fractionally smaller than the radius of the bead 20. This is so that when the bead 20 is inserted into the channel 82, the channel 82 and hence the bead holder 80 is slightly deformed. It has been found that such an arrangement assists in pressing the upper free edge of the sloping surface 83 against the wiper blade 40', which is advantageous in avoiding waste material removed by the wiper blade 40' finding its way between the adjacent parallel surfaces of the wiper blade 40' and the bead holder 80.

[0065] Both the wiper blade 40' and the bead holder 80 are removed from and inserted into the channels between the centre wall 62 and the outer walls 61, 63 by sliding the wiper blade 40', bead holder 80 in the manner described with reference to the wiper blade 40 in Figures 5a and 5b.

[0066] Figure 7 illustrates an alternative embodiment of the wiper blade assembly of the invention. In this example, the blade assembly is of substantially the same design as that shown in Figure 3, except that the blade assembly 32 is not required or designed to connect to a wash up tray liner. The blade holder 34" of the blade assembly 32 shown in Figure 7 therefore omits those parts of the blade holder 34 shown in Figure 3 provided for attachment to the wash up tray liner. The wall 34a is therefore an extension of the support plate 33, the tip of the wall 34a engaging with the blade 40. The embodiment shown in Figure 7 may be provided with a closure member 50 and end stop 55 as shown in Figures 5a to 5c.

[0067] Figure 8 illustrates another alternative embodiment of the wiper blade assembly of the invention. In this example, the blade assembly is of substantially the same design as that shown in Figures 3a and 5a to 5c, except that the means of attachment of the blade assembly 32 to the wash up tray liner 12 is magnetic. At least one of the wash up tray liner and the blade

assembly 32 is provided with a magnetic element 70 and where only one of the wash up tray liner 12 and the blade assembly 32 is provided with a magnetic element 70 the other is provided with a metallic element 71 that is subject to magnetic attraction. In the embodiment illustrated in Figure 8 the metallic element 71 is attached to the outer surface of the wash up tray liner 12. In use, the free end of the wash up tray liner 12 on which the metallic strip 71 is mounted sits behind and in close proximity to the lip 34d. The ink and solvent collected by the wiper blade 40 will fall from the lip 34d onto the inner surface of the wash up tray liner 12 in which it is collected. In the illustrated embodiment, the magnetic element 70 is attached to the blade assembly 32 by adhesive. The aforementioned arrangement for directing the flow of ink and solvent to the wash up tray liner mitigates against such ink and solvent coming into contact with the adhesive holding the magnetic element 70 in place. It is preferred that the magnetic element 70 is a strip corresponding substantially in size to the metallic strip 71. Note, the magnetic element may be provided on the liner with the metallic element 71 being provided on, or forming part of the blade assembly.

[0068] It is particularly advantageous that the metallic strip 71 should also be a magnetic element. In this case, by suitable arrangement of the polarity of the magnetic elements of the wash up tray liner and the blade assembly 32 the components being connected together can be caused to attach to one another such that they are correctly positioned. This is illustrated in Figure 9. The magnetic elements 70, 70a are provided with alternating polarities and are configured respectively so that when the free end of the wash up tray 12 is in the channel 34c the south poles of the magnetic strip 70 are aligned with the north poles of the magnetic strip 70a. By so arranging the polarity of the magnetic elements, the free edge of the wash up tray liner 12 is caused to take up the desired position in the channel 34c. This is advantageous because if the wash up tray liner is incorrectly positioned, i.e. not sufficiently far into the channel 34c, ink and solvent removed by the blade may find its way onto the metallic strip or magnetic element, and this may cause the adhesive attaching the magnetic element and/or metallic strip to the wash-up tray liner or blade assembly to fail. Whilst a person fitting the wash up tray liner 12 to the blade assembly 32 can position a metallic strip 71 correctly, an arrangement that ensures the correct fitting of the wash up tray liner mitigates against human error. The magnetic elements 70, 70a are formed of a magnetic tape which may be provided with adhesive to one side thereof for attachment to a surface. It can be seen from Figure 9 that the magnetic elements 70, 70a provide repeating and alternating north and south polarities. It will also be understood that the provision of magnetic elements 70, 70a as well as assisting in correct positioning of the free edge of the wash up tray in the channel 34c, they also provide an obvious indication of incorrect positioning to a fitter, since slight misalignment is not permitted by the magnet polarities. Either the free edge of the wash up tray is correctly positioned in the channel 34c, or it is significantly out of position.

[0069] Figures 8 and 9 show the blade assembly attached to the wash up tray liner 12. The magnetic attachment illustrated in Figure 8 may be adapted to an arrangement of the type shown in Figure 6, where a wash up tray liner is not used. If the wash up tray 31 is metallic and attracted to a magnet, the blade assembly must be provided with a suitably located magnetic element.

[0070] Figures 10 and 11 illustrate a further alternative embodiment of the invention. In this embodiment of the invention the blade holder 34 includes a portion 34e of substantially circular cross-section, thereby providing protrusions extending from the surface of the support plate 33. The blade 40 includes a recess 40c which is configured to receive the portion 34e.

[0071] In use, the edge 40a engages the roller to remove waste therefrom. Torque transmitted from the roller to the blade 40 would tend to rotate the blade 40 about the portion 34e. In order to resist such rotational forces, the blade holder 34 includes a element 34f which extends into a recess 40d.

[0072] The recess 40c includes an opening 40e. The blade holder is pressed into the recess through the opening, the opening deforming to allow passage of the portion 34e. The material from which the blade is formed: plastic, rubber or polyurethane for example allows for deformation of the opening 40e for the purposes of both inserting the blade holder 34 into the recess 40c and removing the blade holder 34 from the recess 40c. Further, the material from which the blade 40 is made and the configuration of the recess 40c ensure that the blade holder 34 is gripped by the blade 40 when the portion 34c sits in the recess 40c.

[0073] The blade 40 also includes a lip 40f that extends beyond the opening 40e of the recess 40c. As can be seen from Figure 10, the lip 40f extends sufficiently that waste removed from a roller cannot find its way to the attachment of magnetic element 70 to the blade support or the magnetic element 70 to the magnetic element 71.

[0074] Figures 12 and 13 illustrate an alternative embodiment of the invention. Whereas in the embodiment of the invention illustrated in Figures 10 and 11 the blade 40 is pressed on to the blade holder 34, in Figures 12 and 13 the blade slides into the blade holder 34 forms a channel for receiving the blade 40 which slides into the blade holder 34 laterally, in a similar manner to the embodiment shown in Figure 3. However, in the embodiment illustrated in Figures 12 and 13, the channel is formed in the blade holder 34 by legs 35, 35' and portions 35a, 35a' which extend towards each other from the free ends of legs 35, 35'. The legs 35, 35' and the portions 35a, 35a' form first and second channel portions 36a, 36b, the first channel portion 36a being smaller than the channel portion 36b. The portions 35a, 35a' extend into respective recesses 40b, 40b'. Hence, when the blade 40 is inserted into the blade holder 34 the blade 40 is constrained in the longitudinal direction of the blade assembly 32.

[0075] The blade 40 in the embodiment of Figure 12 is formed from a plastic material, whereas in the embodiment shown in Figure 13 the blade is formed of rubber. The blade 40 in Figure 12 includes a recess 40g, which provides the blade 40 with a degree of flexibility so that the edge 40a of the blade 40 may engage with the roller with sufficient force to remove ink therefrom. The embodiment shown in Figure 13, being formed from rubber, has sufficient resilience that the recess 40g is not required. In both the Figure 12 and 13 embodiments, the lip 40f and the edge 40a are connected to one another by a surface 40h, which carries ink from the edge 40a to the lip 40f. Ink falls off the lip 40f into a liner of a wash up tray, for

example, the same manner as shown in Figures 9 and 10. It is preferred that the means of attachment of the liner to the blade assembly is as shown in Figure 9 and 10.

[0076] The surface 40h lies on two intersection planes, whereas in Figure 13 the surface 40h lies in a single plane.

[0077] One end of the blade holder 34 may be closed and the other may be provided with a locking means. For example, the blade 40 may be introduced and removed from the blade holder 34 and also held in place in the blade holder in the manner as described with reference to Figures 5a to 5c.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO2007113492A [0005] [0006]
- EP1112187A [0009] [0010] [0042] [0042] [0043]

PATENTKRAV

1. Bladsamling (32, 32') i et affaldsopsamlingssystem (30) til en valse (42), hvilken bladsamling (32, 32') omfatter en støtteplade (33) til fastgørelse til en bakke (31) på affaldsopsamlingssystemet og en bladholder (34), idet bladholderen er konfigureret til at modtage et blad (40, 40') med en længdeakse og en fri kant, der strækker sig i retning af længdeaksen og er tilpasset til at gå i indgreb med den valse (42), der skal rengøres, hvor bladholderen (34) er konfigureret til at modtage og fastholde bladet (40, 40'), og hvor bladholderen og bladet omfatter respektive samvirkende elementer, der er konfigureret til at begrænse bladet mod bevægelse i forhold til bladholderen i en retning vinkelret på bladets længdeakse, kendetegnet ved, at bladet kan fastgøres aftageligt til bladholderen, således at bladet kan fjernes fra bladholderen og kan indsættes i bladholderen ved at bevæge bladet i retning af længdeaksen.
2. Bladsamling ifølge krav 1, hvor aftagelig fastgørelse af bladet (40, 40') til bladholderen (34) er tilvejebragt ved, at bladet kan indsættes i og fjernes fra bladholderen ved at glide i forhold hertil, idet bladholderen og bladet omfatter respektive samvirkende elementer, der er konfigureret til at tillade glidning af bladet i forhold til bladholderen i bladets længderetning og til at begrænse bladet mod bevægelse i forhold til bladholderen i en retning vinkelret på nævnte længdeakse.
3. Bladsamling ifølge krav 2, hvor bladholderen (34) omfatter en kanal (36a, 36b), hvor bladet (40, 40') modtages og fastholdes i kanalen.
4. Bladsamling ifølge et hvilket som helst af de foregående krav, hvor de samvirkende elementer omfatter mindst én kærvi i ét af bladet og bladholderen og mindst ét frem-spring, der er formet og dimensioneret til at gå i indgreb med den mindst ene kærvi for at glide i kærvens længderetning.
5. Bladsamling ifølge et hvilket som helst af kravene 2 til 4, hvor bladholderen omfatter en lukket ende (50, 55), der er indrettet til at begrænse bladets glidning i forhold til bladholderen.

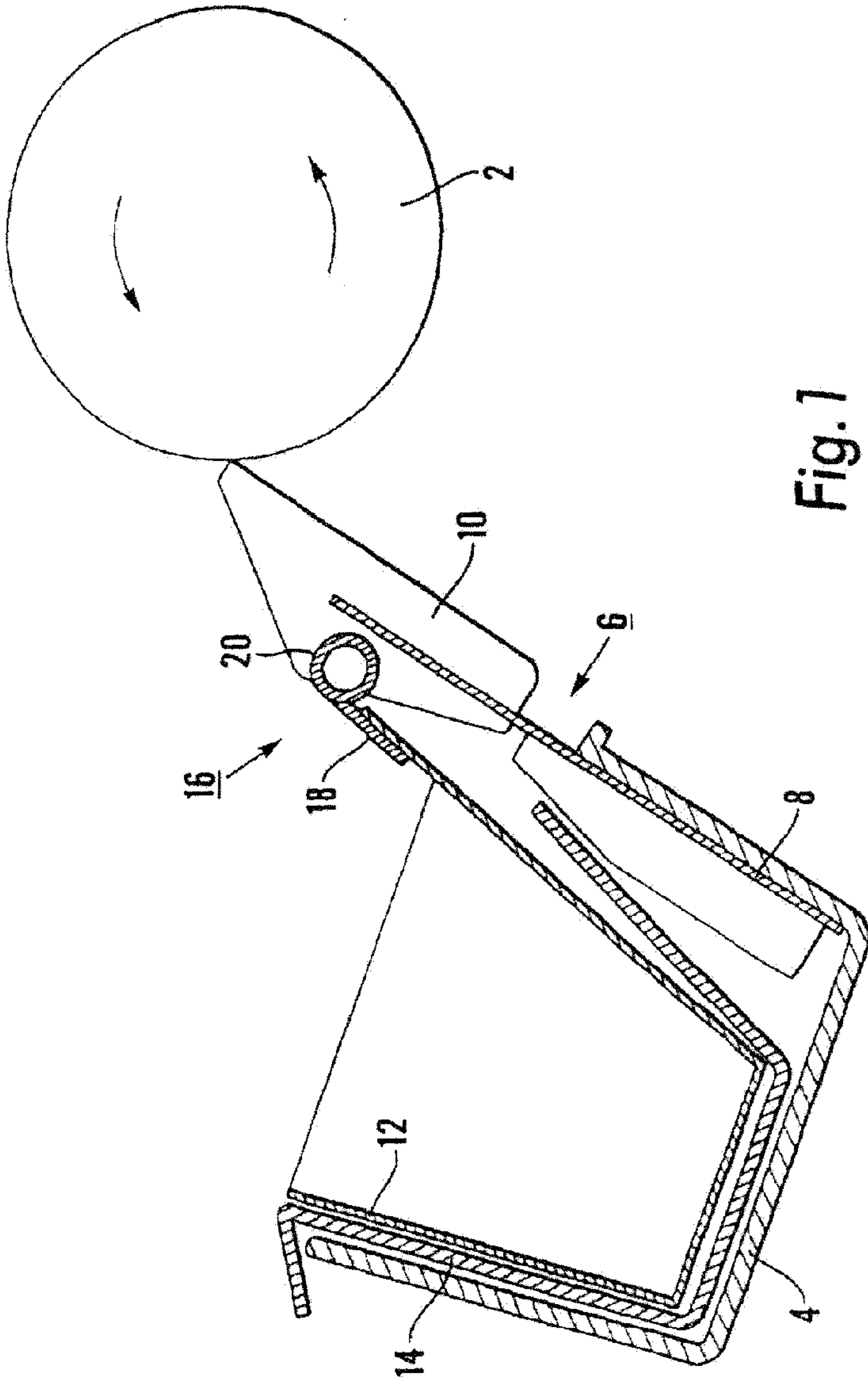
6. Bladsamling ifølge et hvilket som helst af de foregående krav, som yderligere omfatter en skrånende overflade, der er konfigureret til at gå i indgreb med bladet og lede affaldsmateriale, som er fjernet fra valsen af bladet, hen mod bakken.
- 5 7. Bladsamling ifølge krav 6, hvor den skrånende overflade (83) er en del af bladholderen eller er en del af en komponent, som er monteret i bladholderen.
8. Bladsamling ifølge et hvilket som helst af de foregående krav, hvor bladsamlingen er indrettet til at fastgøres til en foring (12) til foring af bakken (31).
- 10 9. Bladsamling ifølge krav 8, hvor bladsamlingen er fastgjort til foringen magnetisk.
10. Bladsamling ifølge krav 9, hvor mindst én af bladsamlingen og foringen er forsynet med et magnetisk element (70), og hvor både bladsamlingen og foringen ikke er forsynet med magnetiske elementer, og én af bladsamlingen og foringen er forsynet med et magnetisk tiltrækkende metalelement (71).
- 15 11. Bladsamling ifølge krav 1 eller 8, hvor de samvirkende elementer omfatter en fordybning (40c) i bladet, og bladholderen omfatter et fremspring (34e), hvor fremspringet griber ind i fordybningen.
- 20 12. Bladsamling ifølge krav 11, hvor bladet (40, 40') omfatter en kærv (40d), der strækker sig fra fordybningen (40c), og hvor bladholderen (34) omfatter et element (34f) til indgreb med kærven (40d).
- 25 13. Bladsamling ifølge krav 11, hvor bladholderen (34) omfatter en kanal (36a, 36b), og bladet (40, 40') omfatter en del (40b), som er konfigureret til at blive anbragt i kanalen.
14. Bladsamling ifølge krav 11 eller 12, hvor bladet (40, 40') omfatter en skrånende overflade (40d'), som er konfigureret til at gå i indgreb med valsen (42) og lede affaldsmateriale, der er fjernet fra valsen af bladet, hen mod bakken (31).
- 30 15. Bladsamling ifølge krav 14, hvor den skrånende overflade delvist er dannet af en overkant (40f), der strækker sig fra bladet.
- 35

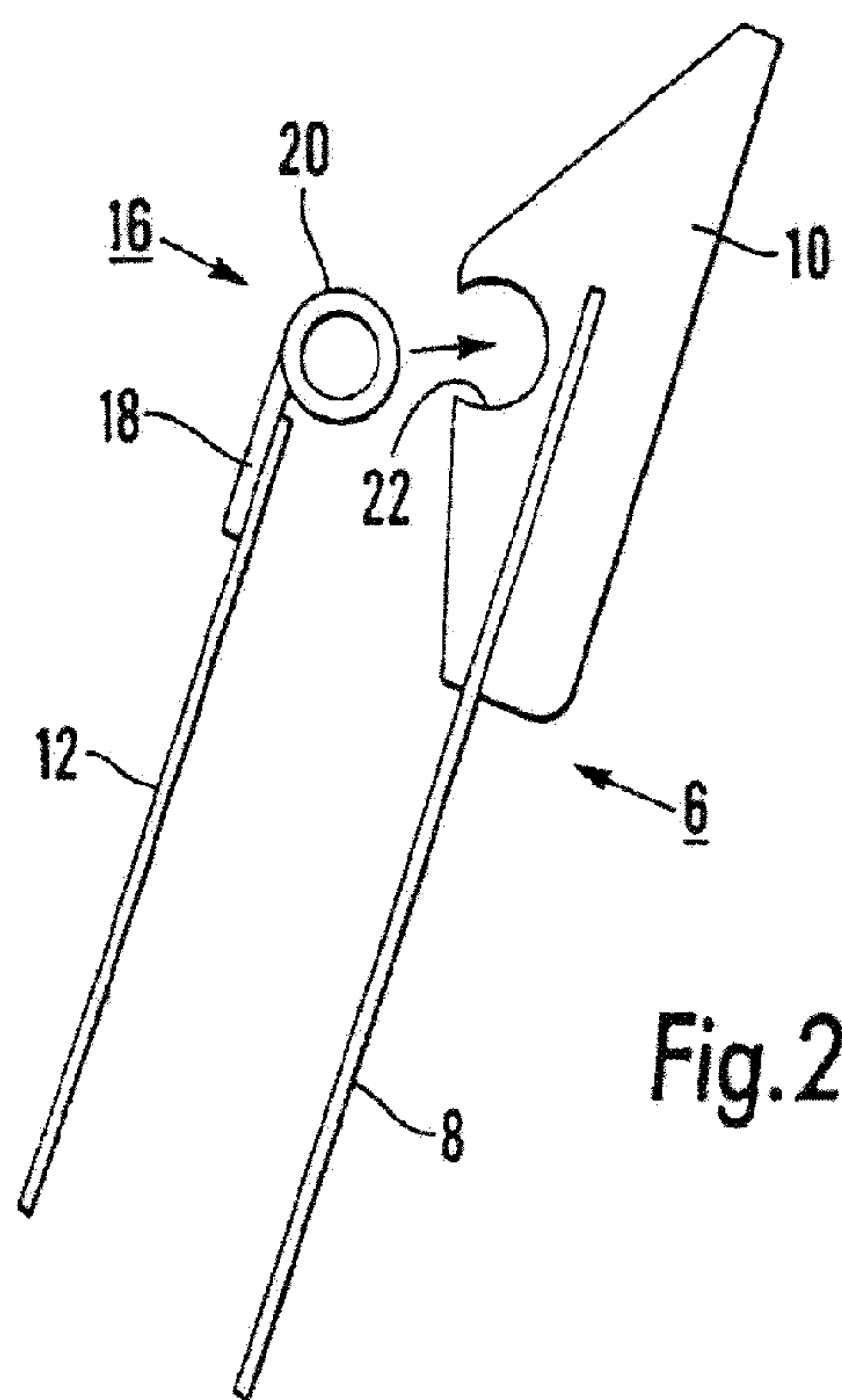
16. Bladsamling ifølge krav 14, når det er afhængigt af krav 8, hvor overkanten (40f) er konfigureret således, at den strækker sig ud over et fastgørelseselement, der fastgør bladsamlingen til foringen.

5 17. Affaldsopsamlingssystem til en valse omfattende en langstrakt bakke (31) og en bladsamling (32) ifølge et hvilket som helst af kravene 1 til 16, som er fastgjort til bakken (31) for at forlænge dens længde.

10 18. Affaldsopsamlingssystem ifølge krav 17, når det er afhængigt af krav 16, som yderligere omfatter en foring (12) til foring af bakken (31), og bladsamlingen (32) kan fastgøres aftageligt til foringen (12).

DRAWINGS





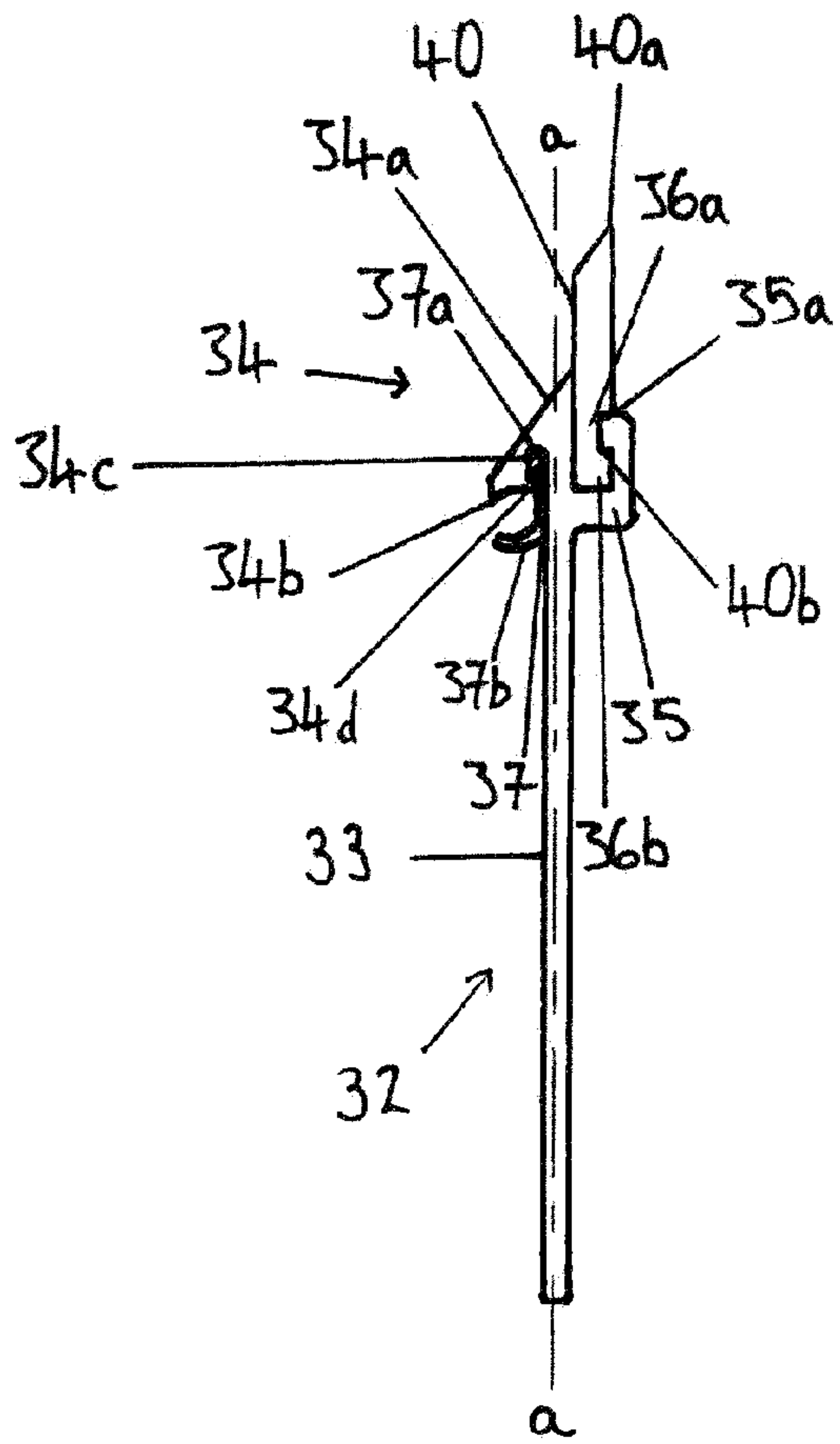


FIGURE 3

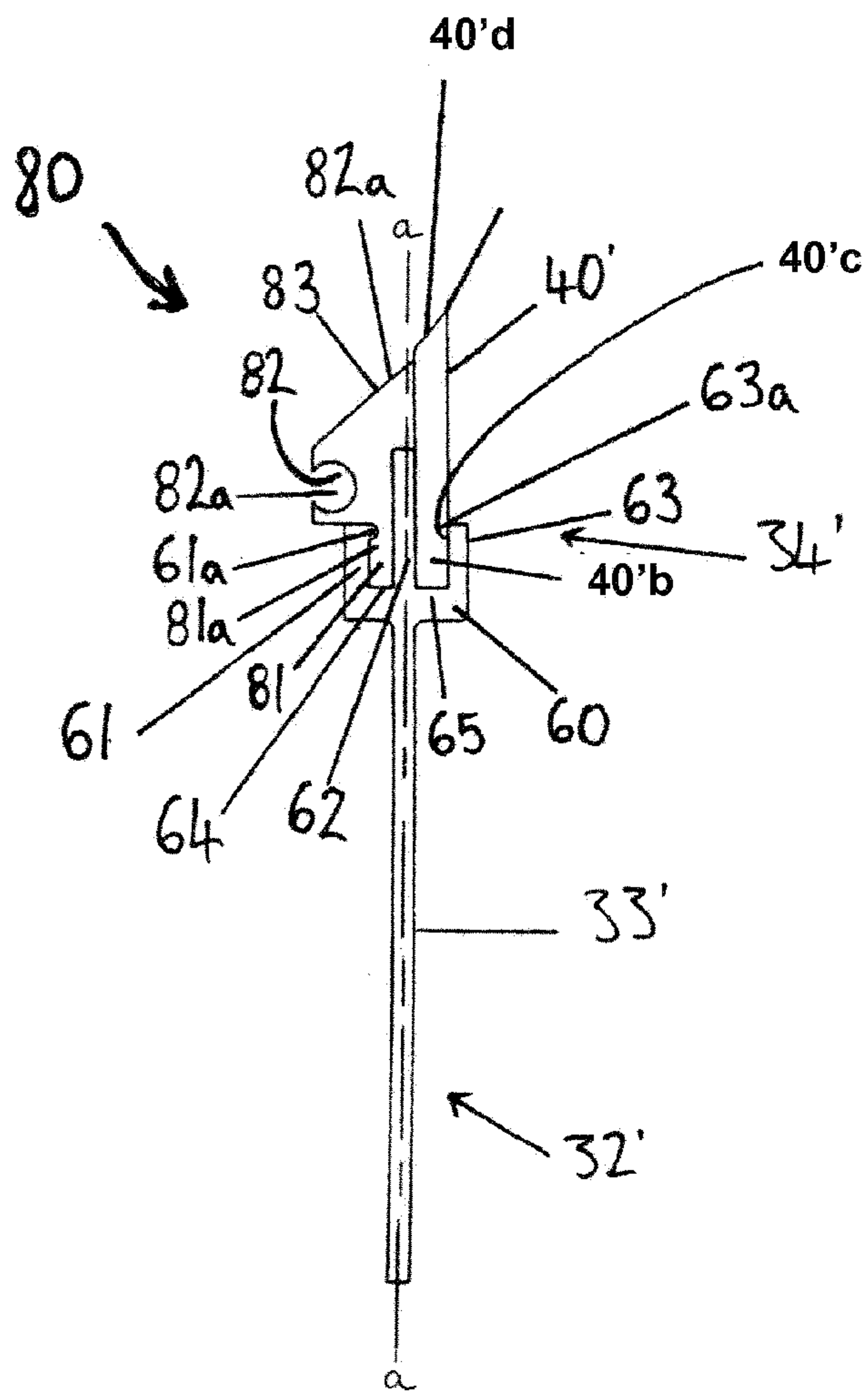


FIGURE 4

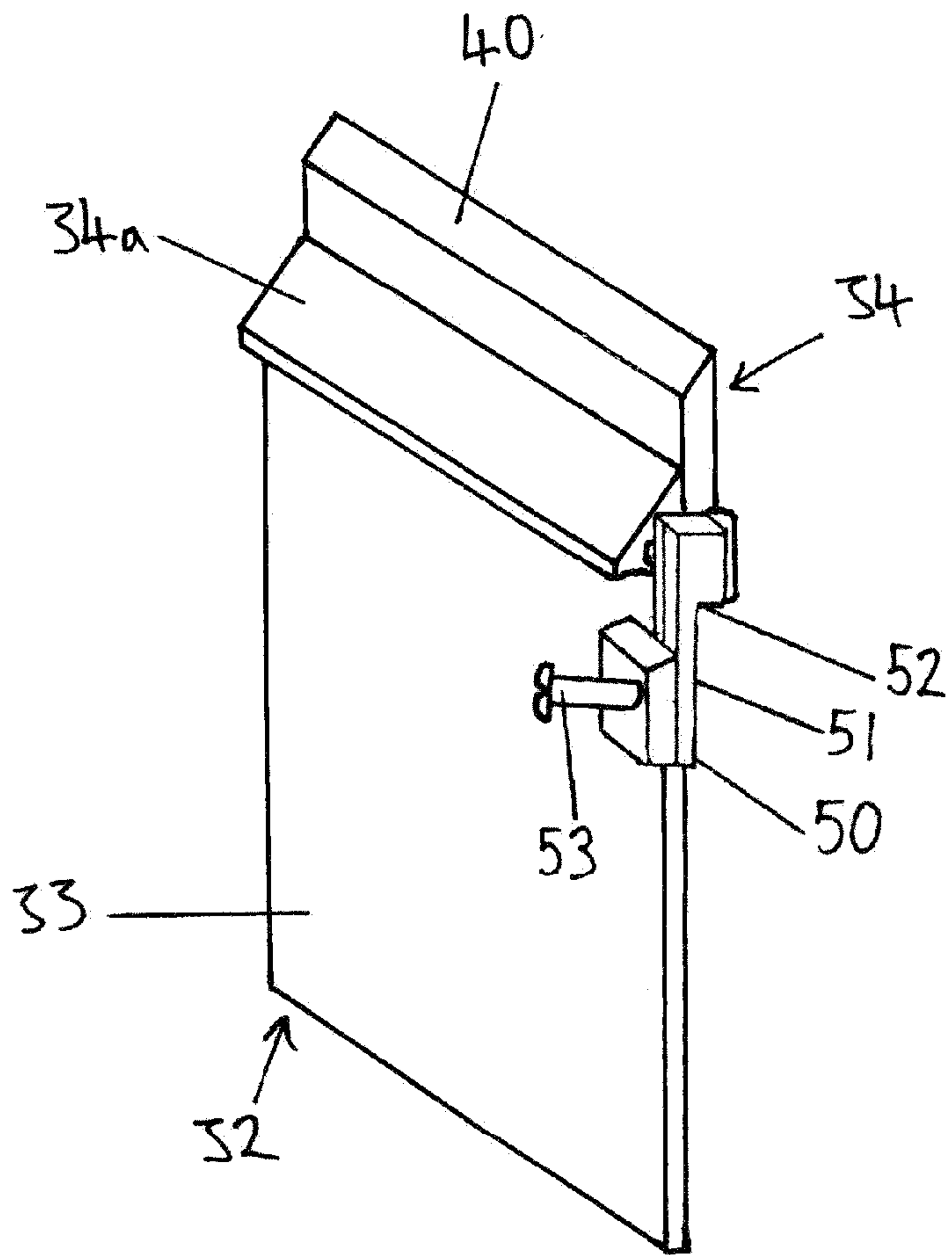


FIGURE 5a

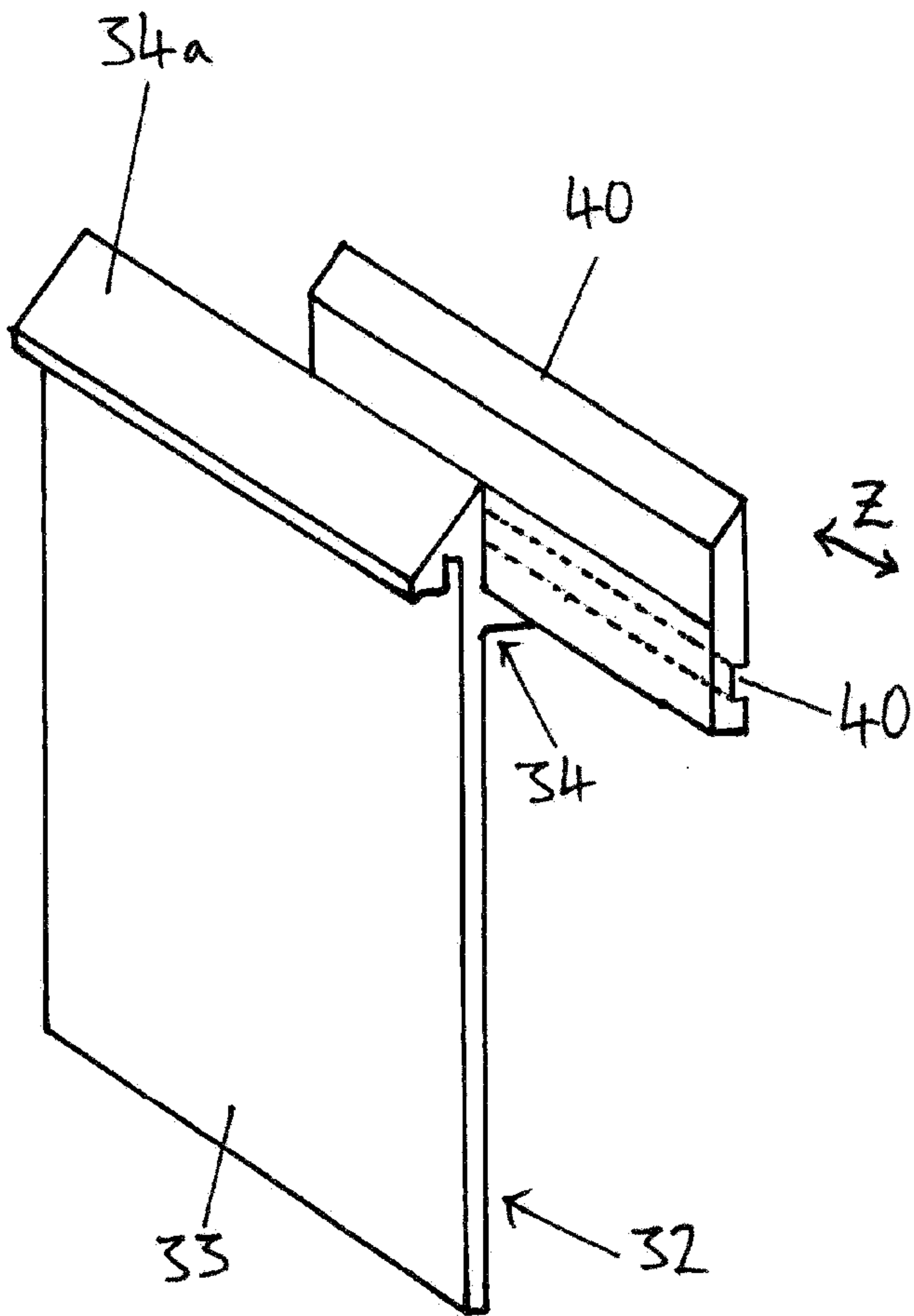


FIGURE 5b

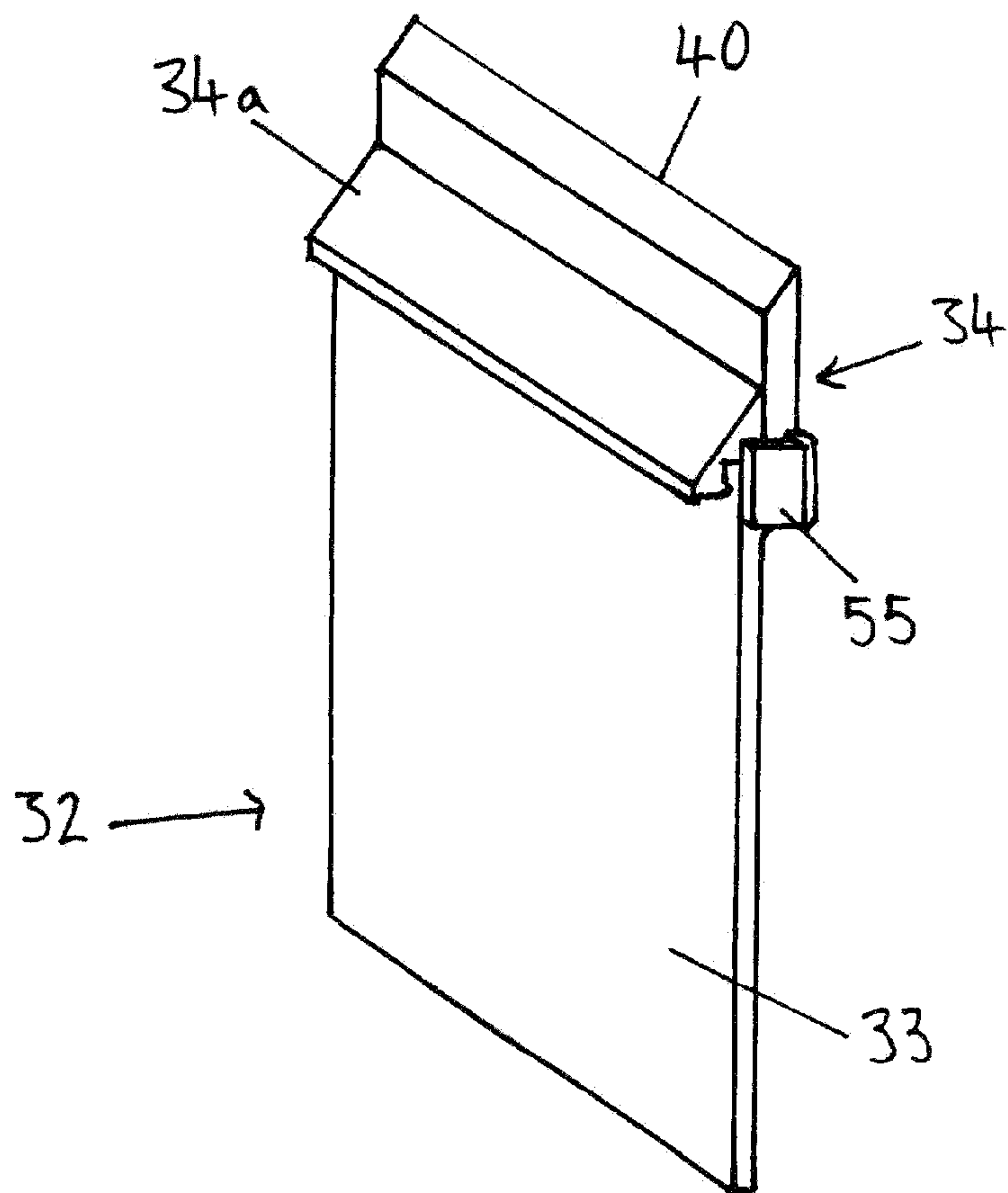


FIGURE 5c

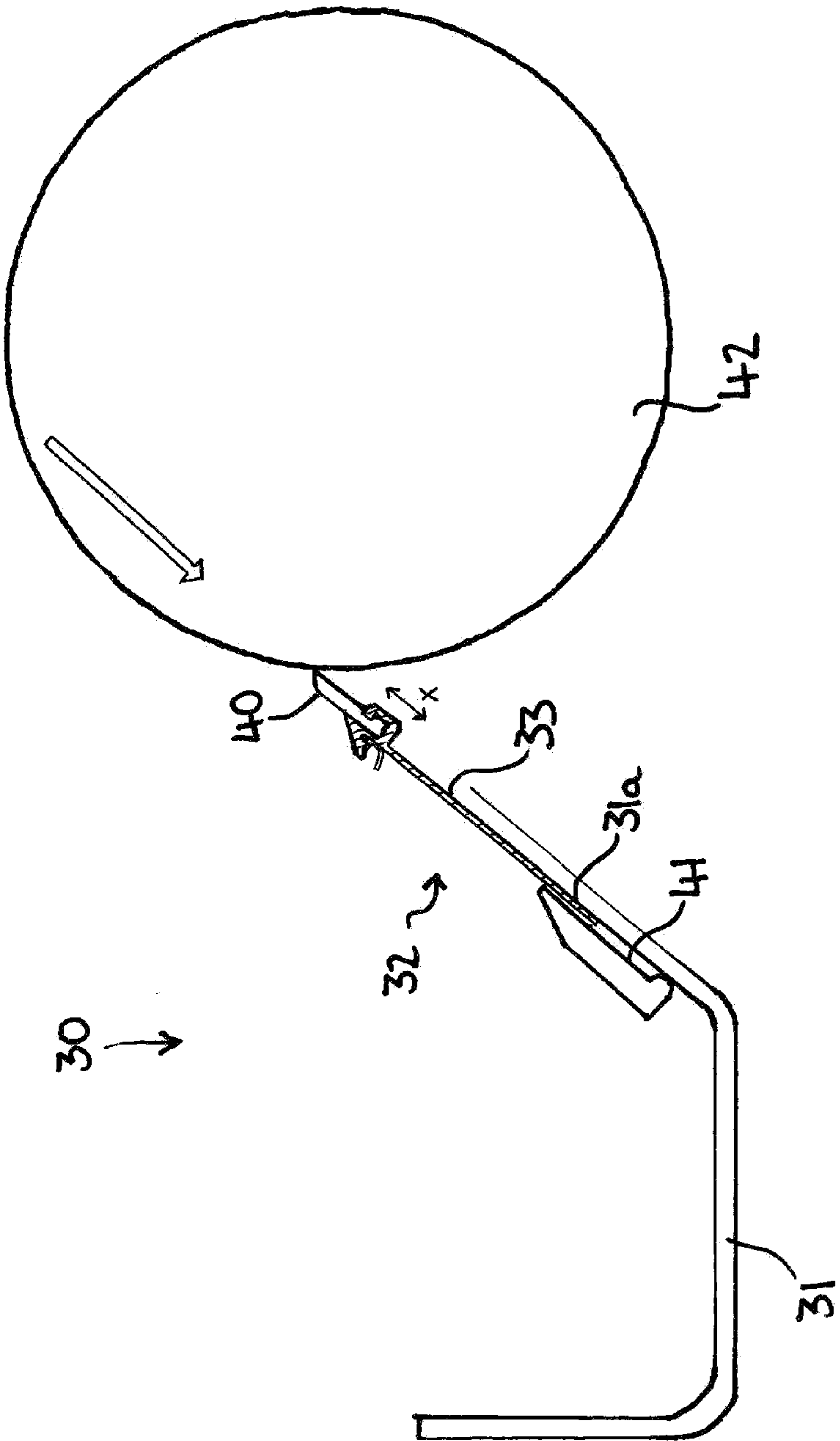


FIGURE 6

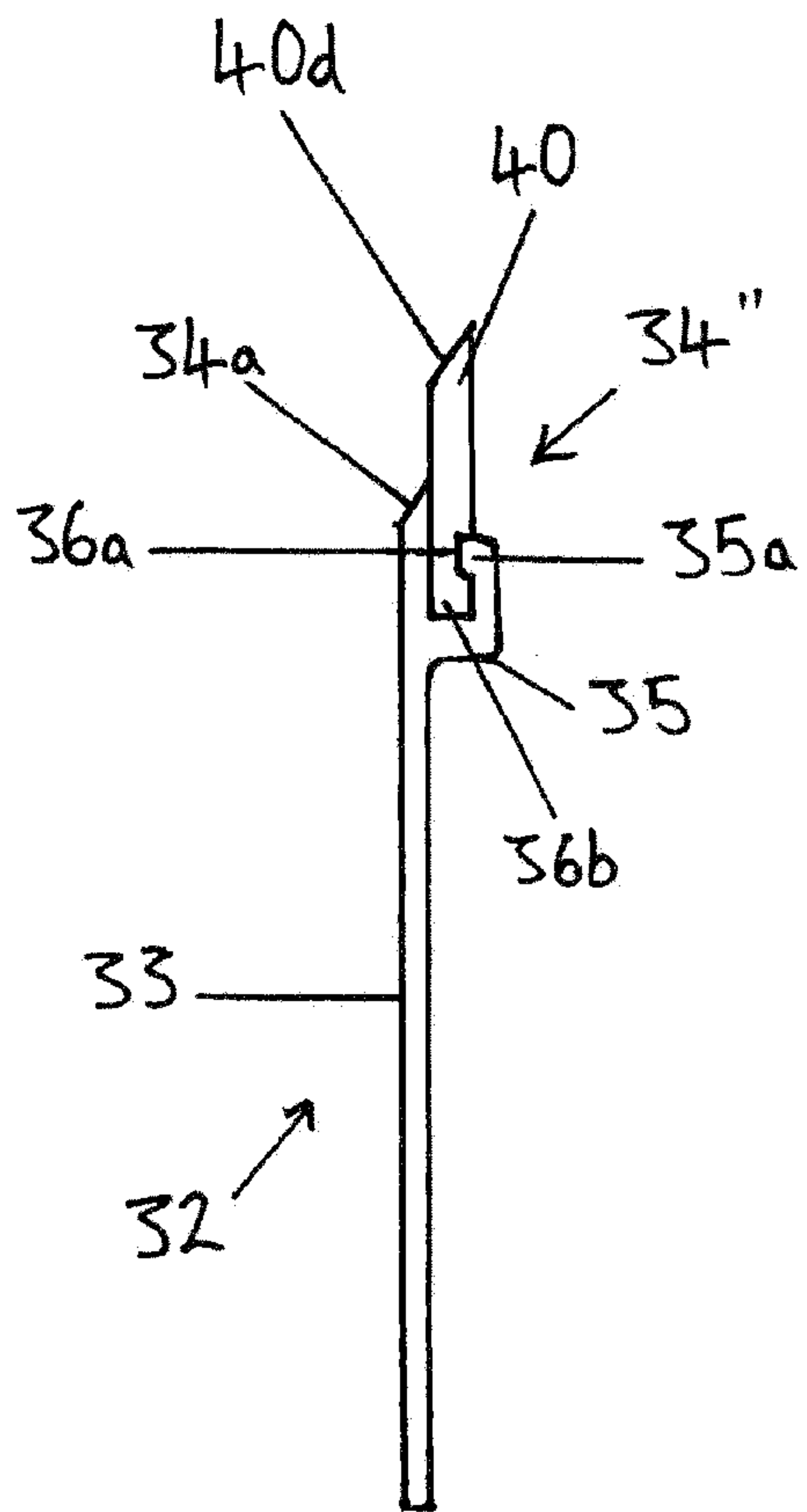


FIGURE 7

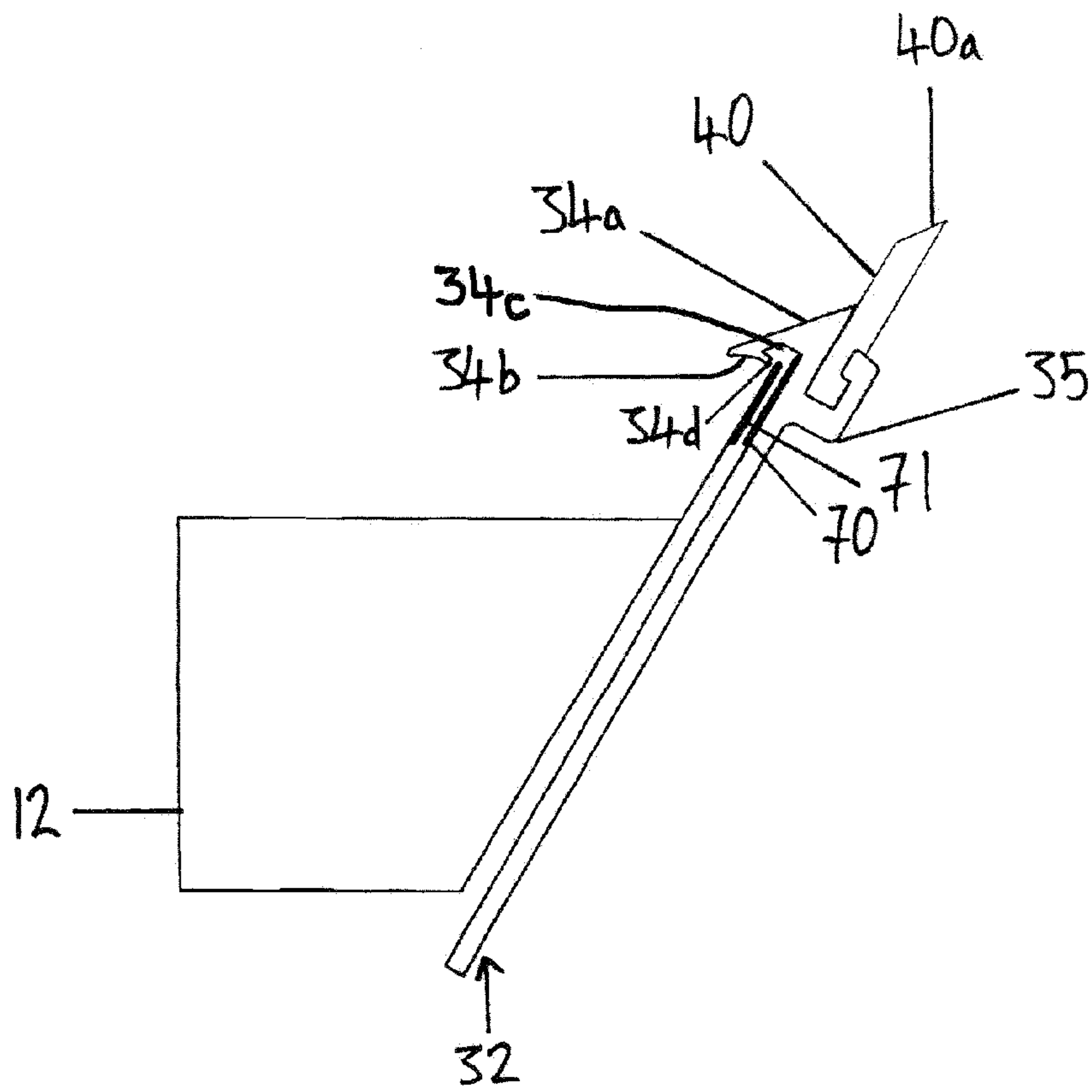


FIGURE 8

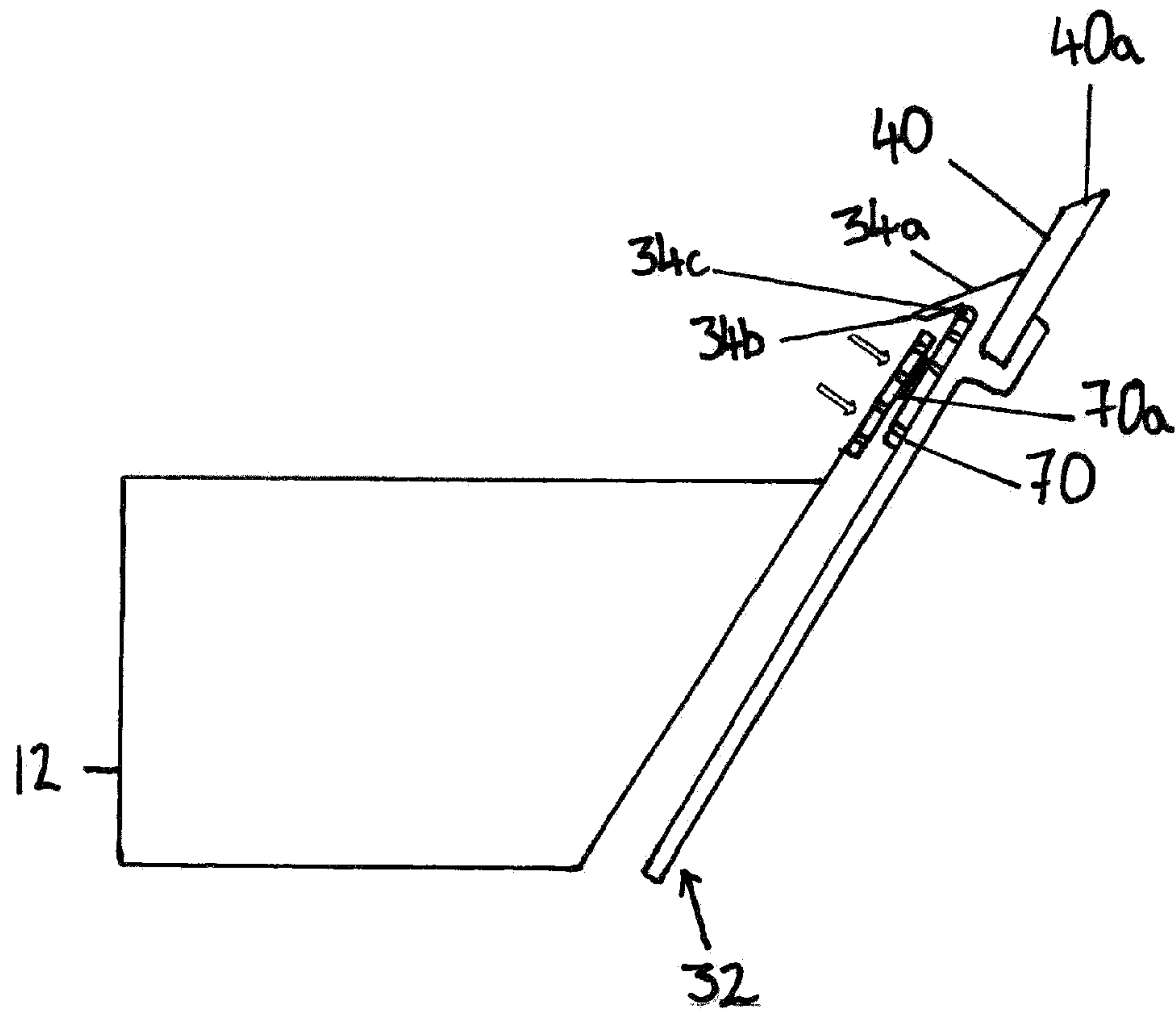
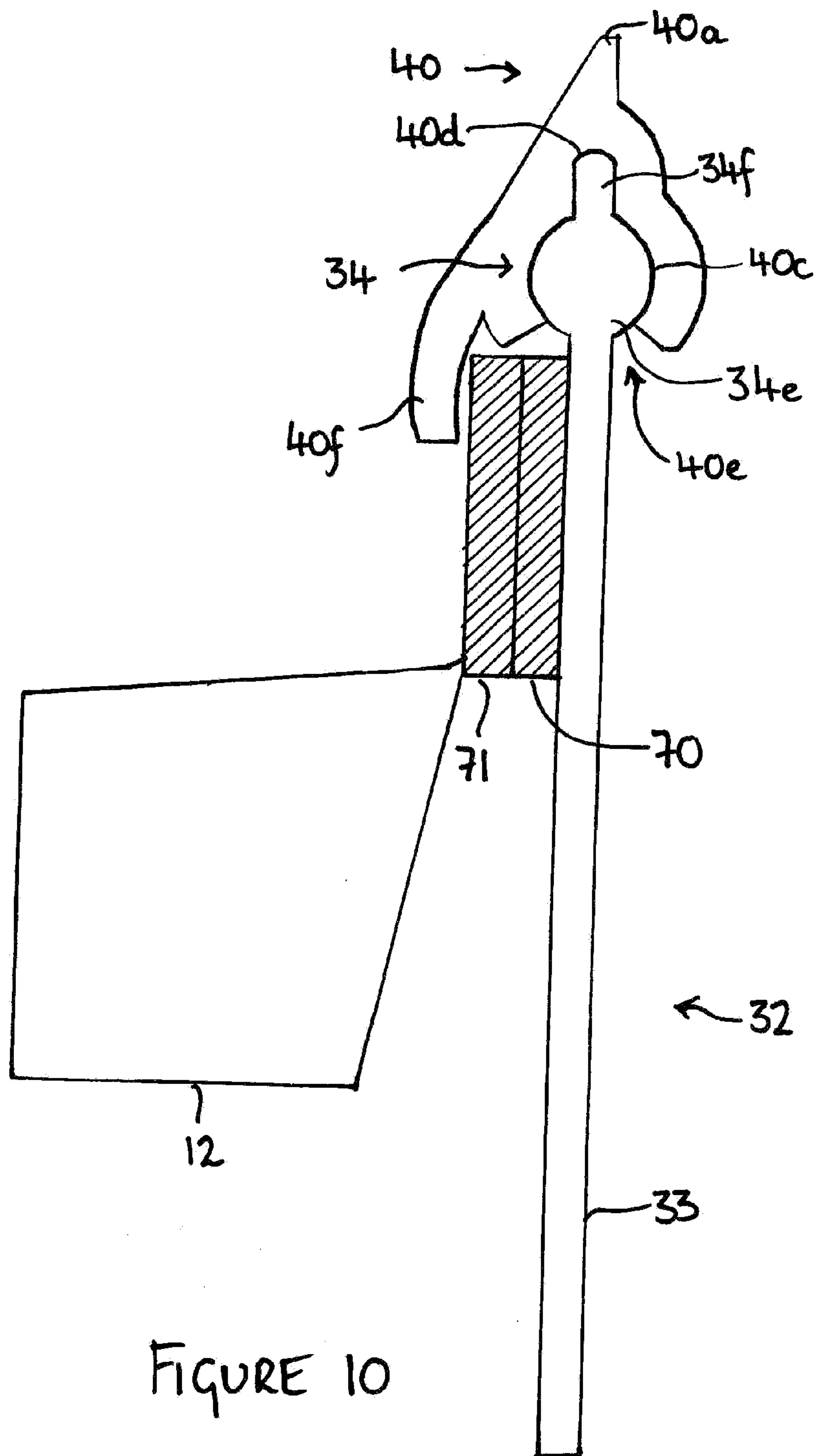


FIGURE 9



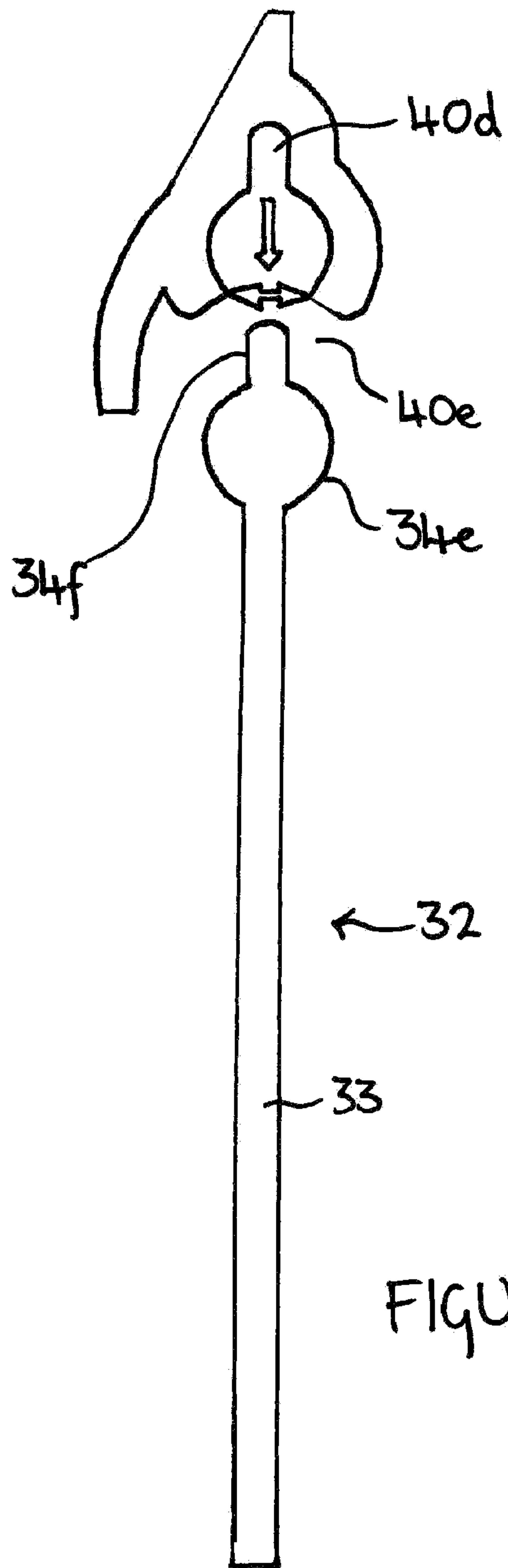


FIGURE 11

