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

(11) EP 1 201 798 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
07.04.2004 Bulletin 2004/15

(51) Int Cl.[7]: **D01H 4/02**, D01H 4/48, D01H 15/00

(21) Application number: **01124725.1**

(22) Date of filing: **16.10.2001**

(54) **Yarn-threading device**

Garnführungseinrichtung

Dispositif de guide-fil

(84) Designated Contracting States:
CH DE LI

(30) Priority: **26.10.2000 JP 2000326247**

(43) Date of publication of application:
02.05.2002 Bulletin 2002/18

(73) Proprietor: **Murata Kikai Kabushiki Kaisha**
Minami-ku, Kyoto-shi, Kyoto 601 (JP)

(72) Inventor: **Tanaka, Katsuya**
Kyoto-shi, Kyoto (JP)

(74) Representative: **Liedl, Christine, Dipl.-Chem. et al**
Hansmann & Vogeser
Patentanwälte
Postfach 70 08 60
81308 München (DE)

(56) References cited:
EP-A- 0 874 071

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 1 201 798 B1

Printed by Jouve, 75001 PARIS (FR)

Description

Field of the Invention

[0001] The present invention relates to a yarn-threading device, which makes yarn pass from a large-diameter inlet to a small-diameter outlet by use of the compressed air.

Background of the Invention

[0002] In the previous application of the Japanese Unexamined Patent Application Publication (Tokkai-Hei) No. 10-298835, the applicant showed an example of the yarn-threading device and proposed a spinning device such that the yarn-threading device threads a yarn from the back end of a spindle to the direction of a front roller of a drafting device by spraying the compressed air from the back of the spindle members and pieces yarn.

[0003] The outline of the spinning device mentioned above will be described using Figure 3.

[0004] A nozzle member 1 has a plurality of air jet holes 1a tangential to the inside surface, and a fiber introduction hole 1b' is formed in a front roller 2 side of the nozzle member 1 and a fiber introduction block 1b having a guide pin 1b" is installed in the nozzle member 1.

[0005] A spindle member 3, which an outer pipe 3a having the suitable number of eyeholes 3a' and a hollow spindle 3b are installed, has a cover plate 3c in a circular shape which fits into the outer pipe 3a and a holder 3d which fits into the outer pipe 3a in the opposite side of the cover plate 3c. A hole 3d' is formed in the central part of the holder 3d, and a duct 3e whose tip is facing the spindle 3b at the prescribed interval in the outer pipe 3a is installed in the hole 3d'. Moreover, a bell mouth duct 3f positioned in the outside of the outer pipe 3a is installed in the hole 3d' formed in the holder 3d, and a slit 3g connected to the duct 3e is formed between the bell mouth duct 3f and the holder 3d, and a compressed air supply hole 3d" connected to the slit 3g is formed in the holder 3d, and connects to a compressed air supply source through a pipe (not shown in the drawing). A porous filter 3h is supported by the cover plate 3c and the holder 3d at the prescribed interval to the outer pipe 3a in the outer pipe 3a.

[0006] Regarding the spindle member 3 having the above-mentioned structure, the tapered tip of the spindle 3b faces the guide pin 1b" of the nozzle member 1, and is positioned so as to form the prescribed intervals between the outer surface of the spindle 3b and the inner surface of the nozzle member 1. The spinning member that the production field of the spun yarn is formed is conposed by the nozzle member 1 and the spinning member 3.

[0007] A fiber composing a fiber bundle (sliver) which is supplied from a front roller 2 to the nozzle member 1 through the fiber introduction hole 1b' and the guide pin 1b", passes through a hollow path 3b' of the spindle 3b, the duct 3e and the bell mouth duct 3f wi th the spun yarn (y) twisted by the revolving airflow which is formed by jetting from the air jet hole 1a, is guided to the direction of a winding package by nipping by a delivery roller 4a and a nip roller 4b and is taken up by the winding package (not shown in the drawing).

[0008] In piecing, the drive of the spinning member which is composed by the nozzle member 1 and the spindle member 3 is stopped, for example the supply of the compressed air to the air jet hole 1a is stopped, and the tip part of a parent yarn (leading yarn) in the vicinity of the bell mouth duct 3f is positioned. Next, the airflow to the direction of the spindle 3b is formed in the duct 3e through the slit 3g by the compressed air supplying to the compressed air supply hole 3d" of the holder 3d, so that the parent yarn positioned in the vicinity of the bell mouth duct 3f rides the airflow to the direction of the spindle 3h and is passed by inserting into the nozzle member 1 by way of the duct 3e and the hollow path 3b' of the spindle 3b. In this operation, this yarn-threading device is composed so that the compressed air which is jet from the tip of the duct 3e is discharged to the outside through the filter 3h and the eyehole 3a' of the outer pipe 3a and the compressed air which is supplied from the compressed air supply hole 3d" of the holder 3d does not flow back to the duct 3e.

[0009] As described above, after the parent yarn is passed by inserting into the spinning member which is composed by the nozzle member 1 and the spindle member 3, the supply of the fiber bundle is restarted and the supply of the compressed air is also restarted for developing the revolving airflow, and the yarn piecing is carried out by the fiber composing the fiber bundle entwining to the transferred parent yarn to the direction of the winding package by a delivery roller and a nip roller (not shown in the drawing).

[0010] The above-mentioned yarn threading has some problems. In producing the spun yarn normally, the dirt like a fluff and a trash which generates in the spinning member floats in the spinning member and adheres to the produced spun yarn or is taken into the spun yarn, so that the quality of the spun yarn is deteriorated, and in the above-mentioned yarn piecing the dirt like the fluff and the trash adheres to the filter 3h and the compressed air which is jet from the tip of the duct 3e is not fully discharged through the filter 3h and the eyeholes 3a' of the outer pipe 3a, and flows back to the duct 3e, so that the parent yarn fails to pass through the spinning member.

[0011] The present invention is provided in view of the above problems, and the object is to provide the yarn-threading device that the yarn threading to the yarn passage can be surely carried out without deteriorating the yarn quality.

Summary of the Invention

[0012] In order to achieve the above-mentioned ob-

ject, the present invention is the yarn-threading device that the yarn passes from the large-diameter inlet to the small-diameter outlet by use of the compressed air, and the device comprises the compressed air jet part having the yarn passage from the inlet to the jet hole, the space part which is in the downstream of the compressed air jet part and the tip part in the downstream of the space part. The tip part is equipped with a plurality of the guide plate parts which a pass hole is formed in the central part at the prescribed interval, and the device characterizes in that the yarn passes from the inlet to the outlet by way of the yarn passage, jet hole and the tip part with a part of the compressed air which is jet from the jet hole through the yarn passage letting out of the space between the space part and the guide plate parts.

[0013] Due to this invention, the fluff and the trash, which are generated from the yarn and are jet from the space part, are prevented from adhering to the produced yarn or taking into the yarn.

[0014] The present invention characterizes in that the diameter of the pass hole of the guide plate part becomes smaller to the downstream. This invention makes the yarn passing easier as the diameter of the pass hole is composed to become smaller to the downstream, from the large-diameter which is easy for yarn to pass through to the small-diameter sequentially.

[0015] The present invention characterizes in that the yarn-threading device is positioned between the adjacent guide plate parts and is equipped with the support part which keeps the guide plate parts at the prescribed interval and the guide plate parts and the support part are composed as one.

[0016] This invention makes the assembly of the yarn-threading device easier, and the high accuracy positioning between the respective guide plate parts is not needed.

[0017] The present invention characterizes in that the connecting part that connects the compressed air jet part and the tip part is provided and the guide plate part, the support part and the connecting part are composed as one.

[0018] This invention makes the assembly of the yarn-threading device easier, and in the physical relationship between the jet hole of the compressed air jet part and the tip part, the high accuracy positioning is not needed.

Brief Description of the Drawings

[0019]

Figure 1 is a vertical sectional view of the yarn-threading device in an embodiment of the present invention.

Figure 2 is an exploded perspective view of the yarn-threading device shown in Figure 1.

Figure 3 is an important sectional view of the spinning device applying the conventional yarn-threading device.

Detailed Description of the Preferred Embodiments

[0020] Embodiments of the present invention will be described below with reference to the drawings, but the present invention is not limited to the following embodiments.

[0021] As shown in Figure 1, a yarn-threading device (S) is composed of a hollow guide part 13 comprising a pipe part 13a which can abut on a hollow yarn passing target member 12 (shown in a dot-dash line) that a yarn passing hole 12a is formed and a flange part 13b which is formed in the end part of the pipe part 13a, a plurality of guide plate parts 14a, 14b, 14c, an interval reserving part 15 and a compressed air jet part (S2) comprising the after-mentioned sucker 16 and a guide pipe body 17. Moreover, the hollow guide part 13 can abut on the end surface of the hollow yarn passing target member 12, and a tip part (S1) is composed of the hollow guide 13 and a plurality of the guide plate parts 14a, 14b, 14c.

[0022] Moreover, the aforementioned guide plate parts 14a, 14b, 14c are respectively provided at the prescribed interval. As shown in Figure 2, in the above-mentioned guide plate parts 14a, 14b, 14c, yarn passing holes 14a', 14b', 14c' are made in the abbreviated central part.

[0023] Furthermore, a pair of interval reserving pipe parts 14d is formed as a supporting part between the hollow guide part 13 and the guide plate part 14a, and likewise, a pair of interval reserving pipe parts 14e is formed as a supporting part between the guide plate part 14b and the guide plate part 14c, and a pair of interval reserving pipe parts 14f is formed as a supporting part between the guide plate part 14b and the guide plate part 14c. In Figure 2, the aforementioned hollow guide part 13, the guide plate parts 14a, 14b, 14c, the interval reserving pipe parts 14d, 14e, 14f, 15 and a connecting disk part 19 mentioned later are explained by using the exploded perspective view, but the aforementioned members are composed as one by using the aluminum die cast and the like in this embodiment of the present invention.

[0024] As shown in Figure 1, the compressed air jet part (S2) is composed of the sucker 16 and the guide pipe 17, and the sucker 16 is connected to the longer interval reserving pipe part (the connecting part) 15 than the aforementioned interval reserving pipe part 14d, 14e, 14f to the direction of the yarn passage through the after-mentioned connecting disk part 19. Therefore, the space part (A) is formed between the compressed air jet part (S2) and the tip part (S1). Here, the connecting disk part 19 which a hole 19a is made in the central part is positioned in the sucker 16 side end part of the interval reserving pipe part 15, and the connection disk part 19 and the interval reserving pipe part 15 are composed as one, for example by using the aluminum die cast. Moreover, a pair of holes 19b is made in the both sides of the hole 19a in the aforementioned connecting disk part 19. Furthermore, the sucker 16 has a pipe 16b that a first

nozzle 16a extended to the direction of the guide plate part 14a, 14b, 14c is formed and a second nozzle 16c that the tip part is inserted into a yarn passing hole 16a' of the first nozzle 16a with fitting into the pipe 16b. Furthermore, a loop slit 16d is formed between the inner surface of the first nozzle 16a and the outer surface of the tip part of the second nozzle 16c which is inserted into the yarn passing hole 16a' of the first nozzle 16a. A compressed air supply hole 16e is formed in the pipe 16b, and a connecting pipe 16f inserted into the compressed air supply hole 16e is connected to the compressed air supply source by way of the pipe not shown in the drawing.

[0025] The guide pipe 17 having a yarn passing hole 17a is attached to the one end surface of the sucker 16 by the suitable fixture like a screw and a volt or the suitable connecting tool. Furthermore, the one end surface side of the yarn passing hole 17a in the guide pipe 17 is formed in the bell mouth shape that gradually becomes broader to the outside for the yarn passing to the yarn passing hole 17a, and a frustum cone part 17b is formed on the end surface of the second nozzle 16c side of the guide pipe 17 and is inserted into a part of a jet hole 16c' of the second nozzle 16c.

[0026] A link 18, which is in the abbreviated C-shape, is composed to install on the pipe 16b in the sucker 16 by an end part 18a fitting into the slit 16g which is formed on the outer surface of the pipe 16b in the sucker 16, and a slit 18c that the tip part of the first nozzle 16a of the aforementioned sucker 16 is inserted is formed in a central part 18b of the link 18. Furthermore, a pair of boltholes 18d that is made in the both sides of the slit 18c is installed in the central part 18b of the link 18.

[0027] Next, the assembly of the yarn-threading device (S) will be described.

[0028] First, a pair of boltholes 18d which are made in the both sides of the slit 18c and a pair of boltholes 19b which are made in the both side of the hole 19a in the connecting disk 19 are adjusted in the central part 18b in the link 18 and a bolt 20 is inserted and screwed into the boltholes 18d, 19b, so that the yarn-threading device (S) is assembled from the hollow guide part 13 to the link 18. Next, the end part 18a in the link 18 is fit into the slit 16g which is formed on the outer surface of the pipe 16b in the sucker 16, so that the assembly of the yarn-threading device (S) is completed by that the part from the hollow guide part 13 to the link 18 which is assembled in the aforementioned way is installed in the pipe 16b in the sucker 16.

[0029] By assembling the yarn-threading device (S) as described above, the center lines of a yarn passing hole 13d of the hollow guide part 13, the respective yarn passing holes 14a', 14b', 14c' of the guide plate parts 14a, 14b, 14c, the hole 19a in the connecting disk 19, the jet hole 16c' of the second nozzle 16c and the yarn passing hole 17a of the guide pipe 17 are all composed to adjust. By composing the hollow guide part 13, the guide plate parts 14a, 14b, 14c, the interval reserving pipe parts 14d, 14e, 14f, 15 and the connecting disk 19 as one, the high accuracy positioning of the cores of the aforementioned respective yarn passing holes 14a', 14b', 14c', the jet hole 16c' and the tip part (S1) by using the exclusive jig in assembling is not needed. Moreover, the number of the necessary members for assembling can be reduced, so the assembling work will be easier.

[0030] Moreover, the diameters of the yarn passing hole 12a in the yarn passing target member 12 and the yarn passing hole 13d of the hollow guide 13 are substantially same. In this embodiment of the present invention, the aforementioned yarn passing target member 12 and the above-mentioned assembled yarn-threading device (S) are formed separately. However, the aforementioned yarn passing target member 12 and the above-mentioned assembled yarn-threading device (S) can be formed as one, for example by using the aluminum die cast.

[0031] In Figure 2, it is preferable that the diameter of the yarn passing hole 14a' in the guide plate part 14a is formed slightly larger that the one of the yarn passing hole 13d of the hollow guide part 13. Moreover, the diameter of the yarn passing hole 14b' in the guide plate part 14b is preferable to form slightly larger than the one of the yarn passing hole 14a' of the guide plate part 14a. Furthermore, the guide plate part 14c is formed slightly thicker than the guide plate parts 14a, 14b, and the diameter of the yarn introduction hole 14c' is larger than the one of the yarn passing hole 14b' of the guide plate part 14b and the sucker 16 side is formed gradually broader in the bell-mouth chamfered shape to the first nozzle 16a of the sucker 16. Furthermore, it is preferable that the diameter of the yarn passing hole 16a' in the first nozzle 16a is smaller than the end part diameter of the sucker 16 side of the yarn passing hole 14c' in the guide plate part 14c.

[0032] The yarn passing process from the guide pipe 17 to the yarn passing target member 12 by the yarn-threading device (S) that has the above-mentioned composition will be described. The aforementioned guide pipe 17 side will be considered the upstream, and the yarn passing target member 12 side the downstream.

[0033] A yarn end (not shown in the drawing) is positioned in the vicinity of the yarn passing hole 17a in the guide pipe 17 and the compressed air is supplied from the compressed air supply source (not shown in the drawing) to the compressed air supply hole 16e which is formed in the pipe 16b of the sucker 16, and the compressed air is jet from the second nozzle 16c to the direction of the guide plate part 14c by way of the loop slit 16d which is formed between the inner surface of the first nozzle 16a and the outer surface of the tip part of the second nozzle 16c which is inserted into the yarn passing hole 16a' of the first nozzle 16a. By jetting the air from the second nozzle 16c, the pressure of the yarn passing hole 17a of the guide pipe 17 becomes negative, and the air from the yarn passing hole 17a of the

guide pipe 17 and the air which is jet from the compressed air supply hole 16e to the direction of the guide plate part 14c through the loop slit 16d passes through the yarn introduction hole 17a' of the yarn passing hole 17a in the guide pipe 17 to the yarn passing hole 13d of the hollow guide part 13 through the jet hole 16c' of the second nozzle 16c, the guide plate part 14c' of the guide plate part 14c, the guide plate part 14b' of the guide plate part 14h and the guide plate part 14a' of the guide plate part 14a in turn, and the airflow that is discharged from the end part of the yarn passing hole 12a of the yarn passing target member 12 is formed.

[0034] Next, as a yarn is discharged to the direction of the yarn passing hole 17a in the guide pipe 17, the discharged yarn passes from the yarn introduction hole 17a' of the yarn passing hole 17a in the guide pipe 17 to the downstream through the yarn passing hole 16a' of the first nozzle 16a, the yarn passing hole 14c' of the guide plate part 14c, the yarn passing hole 14b' of the guide plate part 14b, the yarn passing hole 14a' of the guide plate part 14a, the yarn passing hole 13d of the hollow guide part 13 and the yarn passing hole 12a of the yarn passing target member 12, riding the aforementioned airflow.

[0035] In the present invention, as described above, the yarn-threading device (S) is composed by the hollow guide part 13, the guide plate parts 14a, 14b, 14c which are positioned at the prescribed interval and the compressed air jet part (S2) which is made by the sucker 16 and the guide pipe 17, and a housing and a cover which covers the part between the tip part (S1) composed by the hollow guide part 13 and a plurality of the guide plate parts 14a, 14b, 14c and the compressed air jet part (S2) which is composed by the sucker 16 and the guide shaft 17 are not formed, and the space part (A) is always open to the outside air. Therefore, the dirt like the fluff or the trash which is produced in making yarn is discharged outside from the space part (A) which is formed between the aforementioned tip part (S1) and the compressed air jet part (S2), and the deterioration of the yarn quality can be prevented as the dirt like the fluff or the trash does not attach to the yarn which is going to pass through or the dirt does not get into the yarn.

[0036] In the conventional art mentioned above (Figure 3), the dirt like the fluff or the trash attaches to the filter 3h, however, the present invention can prevent the back flow in yarn passing as the compressed air supplied from the conpressed air supply hole 3d" which is formed in the holder 3d into the spindle member 3 through the slit 3g passes through the filter 3h and the eyeholes 3a' which is formed in the outer pipe 3a and discharges fully, so that the success rate of the yarn passing will be improved.

[0037] For example, the yarn-threading device (S) in this embodiment can be used in case that the high stretchy elastic yarn (spandex) is automatically supplied to the spinning part by using the above-mentioned compressed air. In this case, the highly pressured compressed air can be supplied, so that the deformation accompanied by the stretching is restrained by the power of this compressed air, that is the power for the yarn passing to the downstream, and the yarn can be surely passed to the downstream more smoothly.

[0038] In this embodiment of the present invention, a plurality of the guide plate parts 14a, 14b, 14c having the yarn passing holes 14a', 14b', 14c' positioned at the prescribed interval is made, so that the produced yarn can be transferred in the stable condition and the yarn passes stably.

[0039] As the diameter of the yarn passing holes 14a', 14b', 14c' which are made in the guide plate parts 14a, 14b, 14c is composed from the large diameter that makes the yarn passing easier to the small diameter to the downstream, the yarn passing to the respective guide plate parts 14c, 14b, 14a becomes easier.

[0040] The present invention composed as described above, demonstrates the following advantages.

[0041] According to the present invention, the yarn-threading device, that the yarn is passed from the large-diameter inlet to the small-diameter outlet by using the compressed air, comprises the compressed air jet part having the yarn passage extended from the inlet to the jet hole, the space part which is in the downstream of the compressed air jet part and the tip part which is in the downstream of the space part. The tip part is equipped with a plurality of the guide plate parts that the passing hole is formed in the central part at the prescribed interval, and a part of the compressed air which is jet from the jet hole through the yarn passage is discharged outside from the space part and the space among the guide plate parts and the yarn is passed from the inlet to the outlet through the yarn passage, the jet hole and the tip part, so that the fluff and the trash produced by the yarn is discharged from the space part and the deterioration of the yarn quality can be prevented as the fluff and the trash does not attach to the produced yarn or get into the yarn. Moreover, as there is no filter in the compressed air discharging part in passing yarn, the yarn passing can always surely be executed without disturbing the discharge of the compressed air by the fluff or the trash attaching to the filter.

[0042] According to the present invention, as the diameter of the passing hole of the guide plate part is composed to gradually become smaller to the downstream, that is from the large-diameter which is easy for the yarn to pass through to the smaller diameter sequentially, only the central-part airflow passes through a plurality of the passing holes and the other airflow can be discharged to the surrounding, so that the yarn passing becomes easier.

[0043] According to the present invention, the yarn-threading device is positioned between the adjacent guide plate parts and is equipped with the supporting part which keeps the guide plate parts at the prescribed interval and the guide plate part and the supporting part are composed as one, so that the assembly of the yarn-

threading device becomes easier and the high accuracy positioning of the respective guide plate parts does not need. Therefore, it is prevented that the accuracy of the cores positioning in each assembly is different and the success ratio of the yarn passing differs in each case. Moreover, the number of the assembly parts can be reduced, so that the effect to the assembly accuracy can be relieved.

[0044] According to the present invention, the yarn-threading device has the connecting part which connects the compressed air jet part and the tip part, and the guide plate part, the supporting part and the connecting part are composed as one, so that the assembly of the yarn-threading device becomes easier and the high accuracy positioning in the positioning relation between the jet hole of the compressed air jet part and the tip part is not needed. Therefore, it is prevented that the accuracy of the core positioning is different depending on the assembly, and the yarn passing success ratio changes. Moreover, the number of the assembly part can be reduced, so that the effect on the assembly accuracy can be reduced more.

Claims

1. A yarn-threading device that makes the yarn pass from a large-diameter inlet to a small-diameter outlet by use of the compressed air, is equipped with a compressed air jet part having a yarn passage from an inlet to a jet hole, a space part which the downstream of the compressed air jet part and a tip part downstream of the space part, characterizes in that the tip part is equipped with a plurality of the guide plate parts which passing holes are formed in the central part at prescribed interval, and in that a part of the compressed air which is jet from the jet hole through the yarn passage is discharged from the space part and the space among the guide plate parts, the yarn is passed from the inlet to the outlet through the yarn passage, the jet hole and the tip part.

2. The yarn-threading device according to Claim 1, having the guide plate part whose passing hole gradually becomes narrower to the downstream.

3. The yarn-threading device according to Claim 1 or Claim 2, having the support parts which are positioned among the adjacent guide plate parts and keeps those guide plates at the prescribed interval, and the guide plate parts and the support part are composed as one.

4. The yarn-threading device according to Claim 3, equipped with the connecting part which the compressed air jet part and the tip part are connected, and the guide plate parts, the supporting part and the connecting part are composed as one.

Patentansprüche

1. Fadeneinfädelvorrichtung, die einen Faden von einem Einlass mit großem Durchmesser zu einem Auslass mit kleinem Durchmesser mittels Druckluft durchlaufen lässt, aufweisend einen Druckluftdüsenabschnitt mit einem Fadenkanal von einem Einlass zu einer Düsenöffnung, einem Raum stromabwärts des Druckluftdüsenabschnitts und einem vorderen Ende stromabwärts des Raums,
dadurch gekennzeichnet, dass
das vordere Ende mit mehreren Führungsplattenteilen versehen ist, die Durchgangsöffnungen im zentralen Teil in einem vorbestimmten Abstand aufweisen, und dass ein Teil der Druckluft, die aus der Düsenöffnung durch den Fadenkanal austritt, aus dem Raum und dem Raum zwischen den Führungsplattenteilen abgegeben wird, und der Faden vom Einlass zum Auslass durch den Fadenkanal, die Düsenöffnung und den Endabschnitt läuft.

2. Fadeneinfädelvorrichtung nach Anspruch 1, bei der die Durchgangsöffnung der Führungsplattenteile in stromabwärtiger Richtung schmäler wird.

3. Fadeneinfädelvorrichtung nach Anspruch 1 oder 2, aufweisend Stützteile, die zwischen den benachbarten Führungsplattenteilen angeordnet sind und diese in einem vorbestimmten Abstand halten, wobei die Führungsplattenteile und die Stützteile einstückig ausgebildet sind.

4. Fadeneinfädelvorrichtung nach Anspruch 3, aufweisend ein Verbindungsteil, durch das der Druckluftdüsenabschnitt und der Endabschnitt verbunden sind, wobei die Führungsplattenteile, die Stützteile und die Verbindungsteile einstückig ausgebildet sind.

Revendications

1. Dispositif d'enfilage de fil qui fait passer le fil d'une entrée de large diamètre à une sortie de petit diamètre en utilisant l'air comprimé, qui est équipé d'une partie de jet d'air comprimé ayant un passage de fil d'une entrée à un trou de jet, un espace en aval de la partie du jet d'air comprimé et une partie en pointe en aval de la partie d'espace **caractérisé en ce que** la partie d'espace est équipée d'une pluralité de parties de plaque de guidage dont les trous de passage sont formés dans la partie centrale à un intervalle prescrit et **en ce qu'**une partie de l'air comprimé, qui est projetée par le trou de jet à travers le passage de fil, est déchargée de la partie

d'espace et l'espace parmi les parties de plaque de guidage, le fil est passé de l'entrée à la sortie à travers le passage de fil, le trou de fil et la partie de pointe.

2. Dispositif d'enfilage de fil selon la revendication 1, ayant la partie de plaque de guidage dont le trou de passage devient graduellement plus étroit vers l'aval.

3. Dispositif d'enfilage de fil selon la revendication 1 ou la revendication 2, ayant les parties de supports qui sont positionnées parmi les parties de plaque de guidage adjacentes et qui conservent ces plaques de guidage à l'intervalle prescrit, et les parties de plaque de guidage et la plaque de support sont composées en un seul morceau.

4. Dispositif d'enfilage de fil selon la revendication 3, équipé de la partie de connexion avec laquelle la partie de jet d'air comprimé et la partie de pointe sont connectées et les partie de plaque de guidage, la partie de support et la partie de connexion sont composées en une seule fois.

FIG. 1

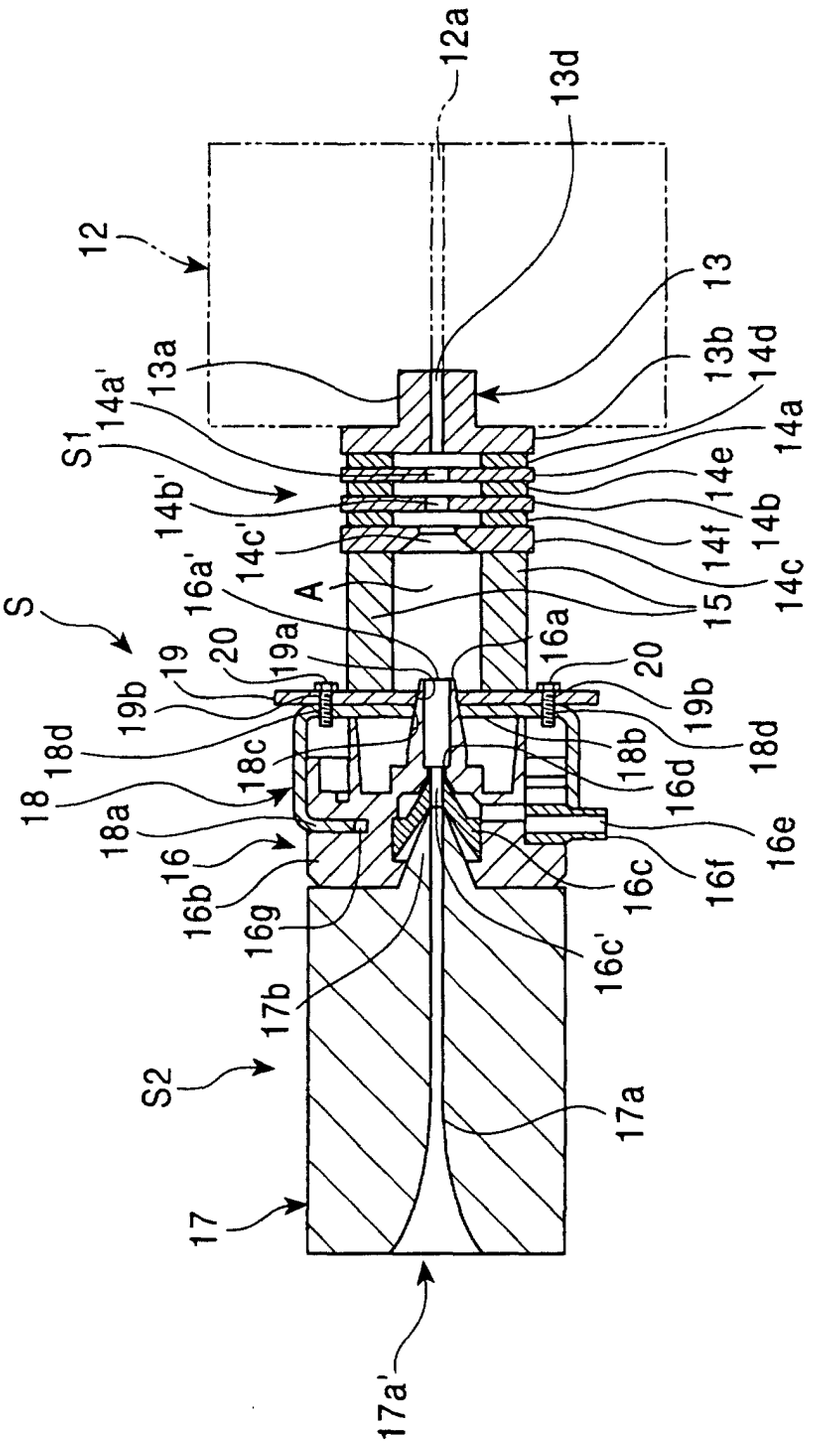

12a
13d
12
13
13a
13b
14d
14a'
S1
14a
14e
14b'
14f
14b
14c'
14c
16a'
A
15
S
16a
19a
20
19
19b
18d
18c
18b
16d
18
18a
16e
16
16b
16f
16c
16g
16c'
17b
S2
17a
17
17a'

FIG. 2

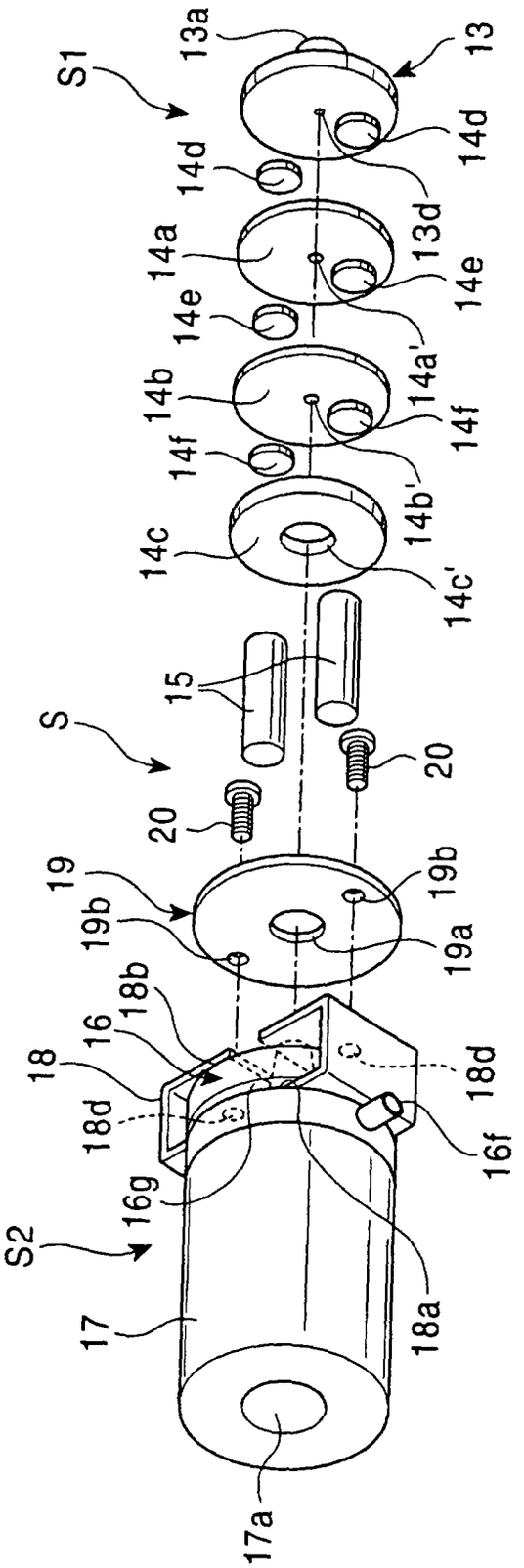

S1
13a
13
14d
14d
13d
14a
14e
14e
14a'
14b
14f
14f
14b'
14c
14c'
S
15
20
20
19
19b
19b
19a
18b
16
18
18d
18d
18d
16f
16g
S2
17
18a
17a

FIG. 3
PRIOR ART

