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(54) **A gumming unit**

Gummierungseinheit

Unité de gommage

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Description

[0001] The present invention relates to a gumming unit.

[0002] The invention finds application to particular advantage in the art field of machines for the manufacture of tobacco products, namely cigarettes and the like, to which explicit reference is made throughout the following specification albeit with no limitation in scope implied.

[0003] The need exists in such machines for an adhesive substance to be spread along one longitudinal side edge of a continuous strip of paper that will be rolled ultimately around a ribbon of tobacco filler to fashion a continuous cylindrical cigarette rod.

[0004] It is standard practice in machines of the type in question to employ a gumming unit disposed facing a pass line along which the aforementioned continuous strip of paper is advanced; such a unit comprises at least one gumming device with a nozzle connected to a circuit by which the adhesive substance is supplied, and presenting an orifice that functions as an applicator from which the selfsame adhesive substance is delivered.

[0005] Gumming units of the conventional type described above betray the drawback that the nozzles require frequent cleaning, due in particular to the fact that residues of the adhesive substance tend to dry on the applicators whenever a temporary stoppage occurs during operation of the machine.

[0006] In most cases the cleaning operations are performed manually by an operator during the intervals when the machine is at a standstill.

[0007] The prior art also embraces gumming units furnished with devices by which the relative gumming devices are cleaned automatically. These units, however, are affected by drawbacks associated above all with the bulk and complexity of the automatic cleaning devices.

[0008] For example, the prior art embraces gumming units of a type comprising at least one gumming device, equipped with an element that serves to occlude the applicator of the device; the occluder element is shifted away from and toward the applicator during each pause in gumming operations, moving between a position in which the orifice of the applicator is closed, when a pad fixed to one end of the occluder is located in contact with the selfsame applicator, and a position in which the applicator is open, when the pad is washed clean by an atomized liquid substance sprayed onto its surface.

[0009] In this type of gumming unit, a special device is required to deliver the atomized liquid substance used for washing the pad. The device is somewhat costly and cumbersome as it comprises a battery of atomizer nozzles connected to a circuit supplying the liquid substance, which is held in a tank and delivered by a pump.

[0010] Also, this type of gumming unit is unsuitable for cigarette making machines of conventional design, in which the space around the applicator generally is not sufficient to accommodate a movable pad of the type

mentioned above.

[0011] It is known from document DE 19639260A a glue applicator nozzle that produces a spot or line of glue. It is associated with a glue collecting device which after a break in operation or before reusing the gluing device is positioned to interact directly with the applicator nozzle which is activated in cleaning bursts. The glue applicator nozzle and the glue collecting device are arranged to move relative to each other into a cleaning position before reusing the device. The cleaning position of the nozzle can correspond to its normal work position.

[0012] Document US A 5853812 discloses an apparatus comprising a nozzle for supplying a process solution to a substrate disposed on a supporting table, nozzle moving means for moving the nozzle between a waiting position apart from the substrate and an operating position, an endless belt stretched between the waiting position and the operating position of the nozzle, the endless belt being moved relative to the nozzle such that a solvent is adhered to the belt in the waiting position and the adhered solvent is brought into contact with the process solution present in the discharge port of the solvent so as to permit the process solution to be discharged and, at the same time, to remove the process solution present in the discharge port of the nozzle.

[0013] It is also Known from document US A 5766356 a coating apparatus including a slit die for applying a liquid to a surface of a resin film. The slit die has a die body which is rotatable between an operating position whereat an injection nozzle of the slit die faces a back-up roller for feeding the resin film and a rest position where the nozzle is spaced from the resin film or foil. A cleaning device is provided having a roll of a cleaning sheet, a take-up roller for taking up the cleaning sheet, and a cleaning roller, on which the cleaning sheet moves. The cleaning sheet on the cleaning roller faces the injection nozzle of the slit die when the latter is in its rest position for executing a cleaning operation.

[0014] The object of the present invention is to provide a gumming unit equippable with an automatic cleaning device whilst relatively simple and economical and of compact dimensions.

[0015] The stated object is realized in a gumming unit according to the present invention, comprising the features expressed in claim 1.

[0016] The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

- fig 1 illustrates a preferred embodiment of the gumming unit according to the present invention, shown in a schematic plan view with certain parts in section and others omitted for clarity, and seen in a first predetermined moment of operation;
- fig 2 shows the gumming unit of fig 1 in a second predetermined moment of operation;
- fig 3 illustrates the gumming unit of fig 2 in a sche-

matic front elevation, with parts omitted for clarity;

- fig 4 illustrates the gumming unit of fig 1 in a schematic side elevation, with certain parts shown in section and others omitted for clarity.

[0017] With reference to fig 1 of the drawings, 1 denotes a portion, in its entirety, of a cigarette-making machine (not illustrated).

[0018] The machine, more exactly, is a cigarette maker of the type disclosed in US Pat 4,336,812 by which two cigarette rods are fashioned simultaneously.

[0019] As discernible to advantage in fig 4, the portion 1 illustrated comprises a bed 2 carrying a beam 3 on which two continuous cylindrical cigarette rods 4 are formed.

[0020] The beam 3 follows a rectilinear and substantially horizontal path P along which the cigarette rods 4 are formed, and affords two channels 5 of varying section each accommodating a respective rod 4.

[0021] Each channel 5 establishes a pass line along which a respective cigarette rod 4 is fed and formed in a predetermined direction D.

[0022] A continuous strip 6 of paper is directed along each channel 5 following the pass direction D, in conventional manner, and a continuous ribbon of tobacco filler (not illustrated) deposited on the advancing paper. As the strips 6 of paper are fed along the two forming lines, each is constrained gradually by the changing section of the relative channel 5, again in conventional manner, to envelop the respective tobacco filler (not illustrated) and ultimately assume a cylindrical shape. Immediately before assuming the final cylindrical shape, each strip 6 advances with one longitudinal side edge 7 projecting upwards through a vertical slot 8 in the beam 3 and engaging in contact with a respective gumming device 9 that forms part of a gumming unit denoted 10 in its entirety.

[0023] As shown to advantage in fig 4, the gumming unit 10 and the beam 3 occupy positions substantially of symmetry in relation to a vertical plane S lying between the two pass lines along which the rods 4 are fed and formed. More exactly, the two inside faces of the side edges 7 and the relative gumming devices 9 are oriented respectively in opposite directions on either side of the plane S.

[0024] For the sake of simplicity, only the portion of the gumming unit 10 involved in forming one of the two cigarette rods 4 will be described in the course of the specification.

[0025] The aforementioned portion of the gumming unit 10 is denoted 11 in its entirety and comprises, in addition to the gumming device 9, a device 12 by which the device 9 is occluded and cleaned during pauses in the gumming operations.

[0026] The gumming device 9 is mounted to the bed 2 and incorporates a nozzle 13, connected by way of a pipeline 14 to a circuit (not shown) from which an adhesive substance is delivered, and affording an orifice that

serves as an applicator 15 by which the adhesive substance is metered and spread along the aforementioned side edge 7 of the respective strip 6.

[0027] The device 9 is mounted rigidly to a substantially cylindrical boss 16 rotatable about a substantially vertical axis 17 and keyed to the output shaft 18 of a motor (not indicated), in such a way that the device 9 can be made to describe a predetermined rotation about the axis 17 and the applicator 15 thus caused to travel along a first predetermined path P1 between an active gumming position A (figs 1 and 4) and an at-rest position B (figs 2 and 3).

[0028] More exactly, the gumming device 9 is positioned on the cylindrical boss 16 in such a manner that when the applicator 15 occupies the gumming position A, the axis 19 of the nozzle 13 will be disposed at right angles to the pass direction D, substantially horizontal and angled marginally downwards in the direction transverse to the selfsame direction D.

[0029] The occluding and cleaning device 12 is mounted to the bed 2 and positioned alongside the beam 3 at a point beyond the gumming device 9, relative to the pass direction D.

[0030] The device 12 consists in a substantially tubular pad 20 of sponge material impregnated preferably with water or with whatever substance will dissolve the adhesive substance, such as will occlude the relative applicator 15 when occupying the at-rest position B (figs 2 and 3), and a wheel 21 rotatable about an axis 22 disposed parallel to the axis 17 of the boss 16, of which the peripheral cylindrical surface 23 provides a support for the pad 20. As discernible from fig 2, the wheel 21 is rotatable freely and unidirectionally about the respective axis 22 along a second predetermined path P2, in a direction V opposite to the direction of rotation of the gumming device 9 when moving along the first predetermined path P1 from the gumming position A to the at-rest position B.

[0031] The second path P2 merges with the first path P1 for a given distance at a point coinciding with the at-rest position B.

[0032] Lastly, the occluding and cleaning device 12 is equipped with a scraper blade 24 positioned in tangential contact with the pad 20 at a point remote from the beam 3 and the gumming device 9.

[0033] The operation of the gumming unit 10 will now be described, starting from a situation in which the two gumming devices 9 occupy their active gumming positions A (figs 1 and 4) and the applicators 15 are offered in contact to the inside faces of the side edges 7 presented by the respective strips 6 as these advance along the pass direction D, each in the respective channel 5.

[0034] Whenever there is a pause in the operation of the cigarette making machine, a master controller (not illustrated) will pilot the gumming devices 9 to rotate about the respective axes 17 in such a way as to direct each applicator 15 along the relative path P1 toward the

at-rest position B.

[0035] On reaching the at-rest position B, where the first and second predetermined paths P1 and P2 coincide, each applicator 15 engages and drags the relative pad 20 in rotation about the relative axis 22, in the direction denoted V.

[0036] When in the at-rest position B, both applicators 15 are occluded by the respective pads 20, and more exactly, each applicator 15 is partially buried in the relatively soft sponge material from which the pad 20 is fashioned.

[0037] As the machine resumes operation, the controller (not illustrated) pilots the gumming devices 9 to rotate about the respective axes 17 in the opposite direction, or rather in such a way as to return the applicators 15 along the respective predetermined paths P1 toward the initial gumming position A.

[0038] Passing from the at-rest position B to the gumming position A, each applicator 15 brushes against the corresponding pad 20 which on this occasion remains motionless, for the reasons described above, in the position assumed previously. As a result the pad 20 performs a wiping action of which the effect is to clean the applicator 15.

[0039] It will be observed that with each successive pause in the operation of the cigarette making machine, the single pad 20 makes a discrete angular movement about the respective axis 22 in the predetermined direction of rotation V, and a clean portion of the outer surface 25 is brought thus into a position of readiness to engage the applicator 15 when the next pause occurs.

[0040] In the course of each rotation, moreover, the outer surface 25 of the pad 20 is cleaned by the scraper blade 24.

[0041] Notwithstanding the gumming unit according to the present invention is described and illustrated in the context of a cigarette maker equipped to turn out two cigarette rods, it will be obvious that the same unit might be used to equally good effect in a single rod type of machine or more generally in a machine for manufacturing or packaging products of whatever nature.

Claims

1. A gumming unit, comprising at least one gumming device (9) having a nozzle (13) equipped with a relative applicator (15) from which an adhesive substance is delivered, also occluding and cleaning means (12) serving to close and wipe the orifice of the applicator (15) during pauses in gumming operations, the gumming device (9) being movable in embodiment and the relative applicator (15) capable thus of movement along a first predetermined path (P1) between an active gumming position (A) and an at-rest position (B); the unit (10) comprising drive means (18) by which the applicator (15) is moved between the gumming and at-rest positions

(A, B); the occluding and cleaning means (12) being capable of movement along a second predetermined path (P2) of which a given section merges with the first path (P1) and coincides with the at-rest position (B), the unit (9) being **characterised in that** the movement of the occluding and cleaning means (12) along the second path (P2) is induced by the applicator (15).

2. A unit as in claim 1, wherein the occluding and cleaning means (12) are capable of movement along the second path (P2) unidirectionally and in a predetermined direction (V).
3. A unit as in claim 2, wherein the movement of the occluding and cleaning means (12) along the second path (P2) and in the predetermined direction (V) occurs when the applicator (15) assumes the at-rest position B.
4. A unit as in claim 3, wherein the occluding and cleaning means (12) comprise a pad (20) by which the orifice of the applicator (15) is closed when occupying the at-rest position (B), and means (21) by which the pad (20) is supported, both capable of movement along the second path (P2) in the predetermined direction (V).
5. A unit as in claim 4, wherein the second path (P2) is a circular path, the pad (20) is substantially tubular, and the support means (21) consist in a wheel (21) delimited by a cylindrical peripheral surface (23) supporting the pad (20).
6. A unit as in claim 4 or 5, wherein the occluding and cleaning means (12) comprise scraper means (24) of which the function is to clean the pad (20).
7. A unit as in claims 4 to 6, wherein the pad (20) is impregnated with a substance capable of dissolving the adhesive substance.

Patentansprüche

1. Gummierungseinheit, enthaltend wenigstens eine Gummiovorrichtung (9) mit einer Düse (13), die mit einem entsprechenden Auftragekopf (15) versehen ist, von welchem eine Klebesubstanz abgegeben wird, sowie ebenfalls Verschluss- und Reinigungsmittel (12), die dazu dienen, die Öffnung des Auftragekopfes (15) während der Unterbrechungen der Gummiovorgänge zu verschliessen und zu reinigen, wobei die Gummiovorrichtung (9) beweglich ausgeführt und der entsprechende Auftragekopf (15) somit in der Lage ist, eine Bewegung entlang einer ersten vorgegebenen Bahn (P1) zwischen einer aktiven Gummierposition (A) und einer Ruhe-

position (B) auszuführen; wobei die Einheit (10) Antriebsmittel (18) enthält, durch welche der Auftragekopf (15) zwischen den Gummier- und Ruhepositionen (A, B) bewegt wird; und wobei die Verschluss- und Reinigungsmittel (12) fähig sind, eine Bewegung entlang einer zweiten vorgegebenen Bahn (P2) auszuführen, von welcher eine bestimmte Strecke mit der ersten Bahn (P1) zusammenläuft und mit der genannten Ruheposition (B) übereinstimmt, wobei die Vorrichtung (9) **dadurch gekennzeichnet ist, dass** die Bewegung der Verschluss- und Reinigungsmittel (12) entlang der zweiten Bahn (P2) durch den Auftragekopf (15) bestimmt wird.

2. Einheit nach Patentanspruch 1, bei welcher die Verschluss- und Reinigungsmittel (12) in der Lage sind, eine Einrichtungs-bewegung entlang der zweiten Bahn (P2) in einer vorgegebenen Richtung (V) auszuführen.
3. Einheit nach Patentanspruch 2, bei welcher die Bewegung der Verschluss- und Reinigungsmittel (12) entlang der zweiten Bahn (P2) in der vorgegebenen Richtung (V) erfolgt, wenn der Auftragekopf (15) seine Ruheposition (B) einnimmt.
4. Einheit nach Patentanspruch 3, bei welcher die Verschluss- und Reinigungsmittel (12) einen Tampon (20) enthalten, durch welchen die Öffnung des Auftragekopfes (15) verschlossen wird, wenn letzterer sich in seiner Ruheposition (B) befindet, sowie Mittel (21), durch welche der Tampon (20) gehalten ist, beide in der Lage, eine Bewegung entlang der zweiten Bahn (P2) in der vorgegebenen Richtung (V) auszuführen.
5. Einheit nach Patentanspruch 4, bei welcher die zweite Bahn (P2) eine kreisförmige Bahn ist, der Tampon (20) im wesentlichen rohrförmig ist und die Haltemittel (21) aus einem Rad (21) bestehen, das durch eine den Tampon (20) tragende umlaufende zylindrische Oberfläche (23) eingegrenzt wird.
6. Einheit nach Patentanspruch 4 oder 5, bei welcher die Verschluss- und Reinigungsmittel (12) Abstreifmittel (24) enthalten, deren Aufgabe es ist, den Tampon (20) zu reinigen.
7. Einheit nach den Patentansprüchen von 4 bis 6, bei welcher der Tampon (20) mit einer Substanz getränkt ist, geeignet, die Klebesubstanz zu auflösen.

Revendications

1. Une unité de gommage comprenant au moins un

dispositif de gommage (9) ayant une buse (13) pourvue d'un applicateur (15) correspondant destiné à distribuer une substance adhésive, et comprenant également des moyens de fermeture et de nettoyage (12) servant à fermer et à essuyer l'orifice de l'applicateur (15) durant les pauses observées dans les opérations de gommage, le dispositif de gommage (9) étant de type mobile et l'applicateur (15) correspondant pouvant donc se déplacer le long d'un premier parcours (P1) prédéterminé entre une position active de gommage (A) et une position de repos (B) ; l'unité (10) comprenant des moyens d'entraînement (18) par l'intermédiaire desquels l'applicateur (15) est déplacé entre les positions (A, B) de gommage et de repos ; les moyens de fermeture et de nettoyage (12) pouvant se mouvoir le long d'un second parcours (P2) prédéterminé dont un tronçon donné fusionne avec le premier parcours (P1) et coïncide avec la position de repos (B), ladite unité (9) étant **caractérisée en ce que** le mouvement des moyens de fermeture et de nettoyage (12) le long du second parcours (P2) est provoqué par l'applicateur (15).

2. L'unité selon la revendication 1, **caractérisée en ce que** les moyens de fermeture et de nettoyage (12) peuvent se mouvoir le long du second parcours (P2) unidirectionnellement et dans une direction (V) prédéterminée.
3. L'unité selon la revendication 2, **caractérisée en ce que** le mouvement des moyens de fermeture et de nettoyage (12) le long du second parcours (P2) et dans la direction (V) prédéterminée a lieu quand l'applicateur (15) prend la position de repos (B).
4. L'unité selon la revendication 3, **caractérisée en ce que** les moyens de fermeture et de nettoyage (12) comprennent un patin (20) destiné à fermer l'orifice de l'applicateur (15) quand ce dernier occupe la position de repos (B), et des moyens (21) destinés à supporter le patin (20), ces moyens étant tous deux à même de se mouvoir le long du second parcours (P2) dans la direction (V) prédéterminée.
5. L'unité selon la revendication 4, **caractérisée en ce que** le second parcours (P2) est un parcours circulaire, le patin (20) est essentiellement tubulaire et les moyens de support (21) consistent en une roue (21) délimitée par une surface périphérique cylindrique (23) supportant le patin (20).
6. L'unité selon la revendication 4 ou 5, **caractérisée en ce que** les moyens de fermeture et de nettoyage (12) comprennent des moyens racleurs (24) dont la fonction est de nettoyer le patin (20).

7. L'unité selon les revendications de 4 à 6, **caracté-**

risée en ce que le patin (20) est imprégné d'une substance à même de dissoudre la substance adhésive.

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FIG. 1

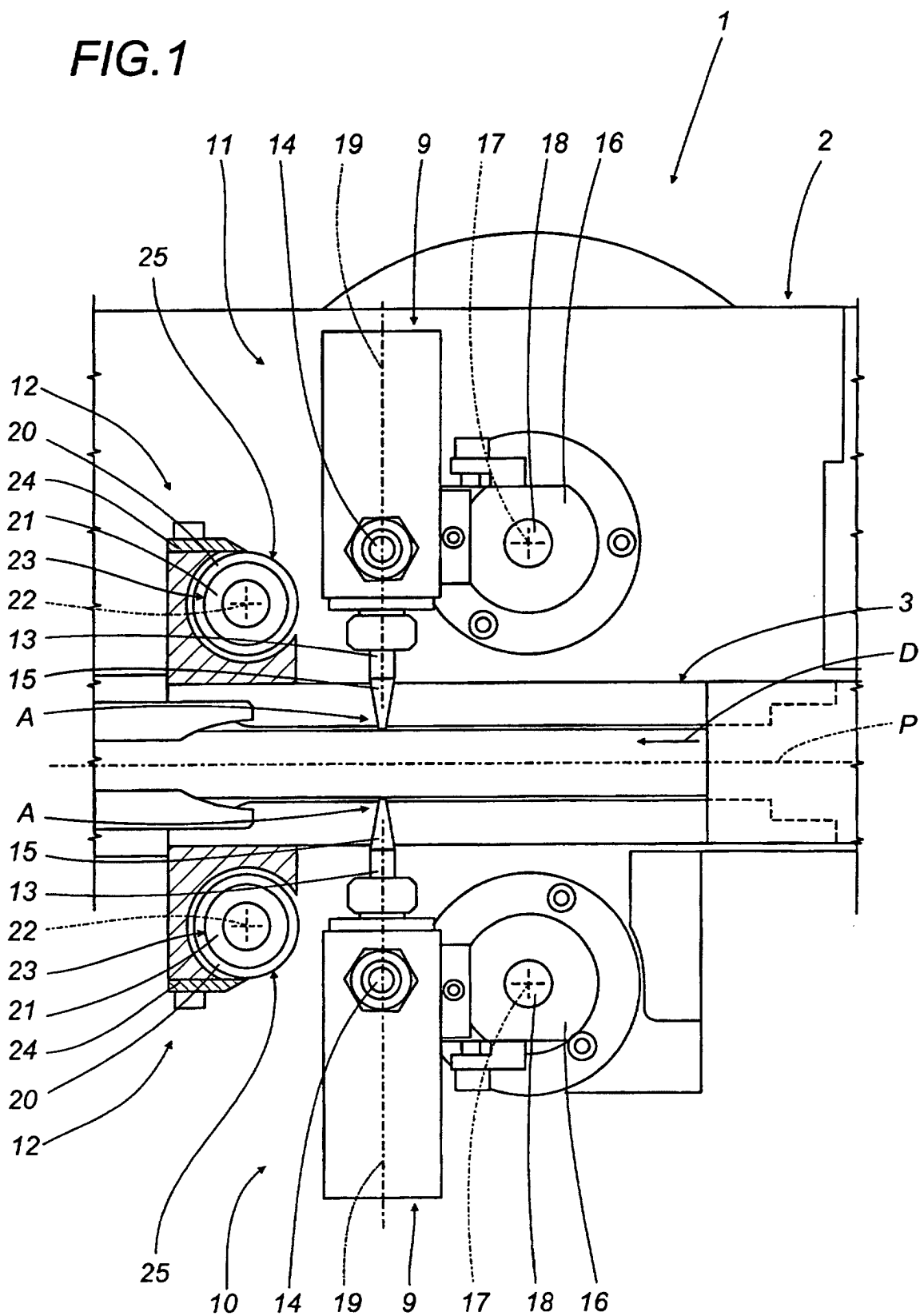


FIG.2

