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54 **A continuous paper and the like delivery mechanism.**

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DE-B- 2 003 354
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Description

The present invention relates to mechanisms for delivering pieces of paper or the like material, which are severed from a continuous source of continuous paper band, such as those used, for example, for supplying paper towels for hand drying or cleaning purposes.

BACKGROUND OF THE INVENTION

Mechanisms for delivering pieces of continuous or band paper, comprising a pair of mutually tangent pressure rollers are well known, wherein a first one of the said rollers is mounted rotating about a fixed axis while the other, second roller, is mounted on an oscillating frame which is spring biased against the first roller, the end of a paper band issuing from a bobbin being caught between both rollers, the mechanism further comprising a locking device associated to the shaft of one of the rollers and restricting the length of paper which is delivered each time that a pull is applied to the paper band end, a timer holding the mechanism locked during a restricted period, and an ejector device operating one of the rollers once a paper band length has been withdrawn, to eject a short paper length to make its grasping easier, the ejector device including a cam biased by a spring, the ensemble being located within a box provided with a paper outlet opening.

A mechanism of the above features makes the subject of the Spanish Utility Model N^o 290 203 of which the applicant is the owner.

The patent DE-A-2 527 218 discloses a mechanism comprising the features indicated in the preamble of the accompanying Claim 1, for delivering a continuous band of paper or the like which allows for supplying pieces of different lengths. The continuous paper band is drawn from a bobbin and guided between transport rollers and pressure rollers, the transport rollers being coupled to a timing and locking device.

The transport rollers are mounted on a hollow axle which in turn is mounted on a concentric shaft coupled to the timing and locking device.

This mechanism is also provided with a gear between the hollow axle and the shaft, the sprocket wheels forming the gear being optionally engageable in order to obtain different gear ratio. Said different gear ratio provides the pieces of different lengths.

This patent also describes several gear embodiments so as to obtain different gear ratio. The sprocket wheels are mounted on the hollow axle and on the shaft, and a third axle with at least two different sprocket wheels is always necessary.

The practice has shown that some aspects of this kind of delivery mechanisms are subject to improvement.

For example, in the mechanism of the Spanish

utility model, the ejector device which automatically supplies a short paper length once a user has taken out the band and detached a length of it corresponding to a towel or the like dose, acts directly upon the shaft of one of the band drawing rollers by means of a cam biased by a spring which is released under the control of a timing system and which is loaded through a reducing transmission connected to the shaft of the said roller. The fact that the ejector device for delivering the short band length acts directly upon the shaft of the roller, and the timer winding mechanism acts through a reducing transmission creates a lack of timing of the number of turns which is necessary to place the winding mechanism in working position. Consequently, the triggering of the mechanism supplying the short paper length operates in two steps with a short time period between these latter, which may induce the user to apply a pull on the paper band in order to obtain a new dose, in the wrong timing thus causing the mechanism to become blocked.

Such as explained above, the mechanism of the patent DE-A-2 527 218 provides paper pieces of different lengths but it presents the same problem as the prior mechanism when the hollow axle and the shaft engage.

The device for cutting the pulled paper band can also be subject of improvement with a view of simplifying its conformation though with no loss in efficiency.

DESCRIPTION OF THE INVENTION

According to the above feasibilities, in a mechanism defined in the preamble of Claim 1, the present invention have been devised to provide higher performance of the mechanism.

According to the present invention, the spring loading cam of the ejector device for delivering the short paper length when the mechanism has been unlocked, is mounted on the shaft of a set of sprocket wheels having different diameters and adapted to be selectively engaged by another set of different diameter sprocket wheels secured to the shaft of one of the paper band drawing rollers, both sets of wheels forming a changeable gear.

Advantageously, the ejector device and the timer winding device, which are of a common construction, are mounted on the same shaft of the set of sprockets selectively meshing with the sprockets mounted in a position which is displaceable at will on the shaft of one of the paper band drawing rollers.

In a preferred embodiment, the oscillating frame carrying mounted thereon the movable roller is formed with an arcuate gutter or ramp located immediately under the opening through which the paper band coming from the supply bobbin issues, the said gutter or ramp receiving the engagement of one end of springs having their opposite ends anchored in

fixed points of the support structure of the mechanism, thus forcing the supported roller to rest onto the other roller.

Optionally, the border of the paper exit opening formed in the enclosure containing the mechanism, has a cutting edge, which can be toothed, for cutting the withdrawn paper band.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the description in the present specification, a set of drawings is enclosed showing, only by way of example, a practical case of embodiment of the mechanism. In the said drawings:

Figure 1 is a plan view from above the mechanism;

Figure 2 is a detail, as seen from above, of the sprocket transmission associated with the device which automatically delivers a short paper run, though in a different position as regards the position shown in the previous Figure;

Figure 3 is a detail in longitudinal section showing the opening through which the paper band coming from the bobbin issues, the two rollers trapping the band, the ramp or gutter of the oscillating support, and the toothed cutting edge located at the paper band issuing mouth, and

Figure 4 is a detail in side elevation showing the device for delivering the short paper run.

DESCRIPTION OF A PREFERRED EMBODIMENT

The continuous paper delivery mechanism according to the invention consists, in the drawings, of two rollers 1,2 trapping a paper band 3 coming from a bobbin 4 located within a container 5, the bottom of which is shaped as a funnel 6, according to a known embodiment.

The roller 1 is mounted on an oscillating frame 7 provided with wings 8 which are articulated about a shaft 9 mounted on fixed lugs 10. This oscillating support 8 is biased by springs 11 having one end anchored to the fixed lugs 10 and the opposite end resting upon the back of an arcuate gutter or ramp 12 extending upwards of the support, thus forming a guide for the paper band 3 at the outlet of this latter from the funnel 6 (Fig. 3).

A conventional escapement device, formed of a sprocket wheel 13 against which a tooth 14 impinges under the biasing of a spring 15 to prevent the back motion of the roller 2, is mounted at one end of the shaft 2a of the said roller 2.

The opposite end of the shaft 2a has mounted thereon two sprocket wheels 16,17 having different diameters and adapted to mesh selectively and alternately with two sprocket wheels 18,19 which are fast with a shaft 20 mounted for rotation on a support

21. The same shaft 20 has secured thereon a cam 22 with a spring 23 constituting the automatic ejector device of the shaft 2a for delivery of a short run or length of the band 3. This ejector device is associated, according to a known embodiment, to a timer device formed of two mutually faced suction cups 24,25 of which the cup 24 can be displaced by a movable arm 26 in turn operated by a cam 27 joined to the shaft 20 of the sprocket wheels 18,19.

The described mechanism is housed in a pan 28 having an opening 29 for the outlet of the band 3a and formed with a toothed wing 30 for severing the delivered band.

From the above description and looking to the drawings, it follows that it is possible to vary the length of the run obtained by pulling out the band 3a, by changing the position of the sprocket wheels 16,17 as regards the sprocket wheels 18,19 (Fig. 1 and 2).

It is also to underline that, thanks to the relation between the sprocket wheels 16,17 and 18,19 and to the location of the cam or eccentric 22 on the same shaft 20 of the set of sprocket wheels 18,19, it is obtained that the cam 27 drives the arm 26 with a single turn of the shaft 20, to place the timer movable suction cup 24 in the locking position.

Another advantage as regards the known embodiments consists in the arrangement of the springs 11 to act directly upon the arcuate ramp 12, thus forcing the support 7 to move in order that the roller 1 comes to rest onto the roller 2 for trapping the band 3.

It is to be emphasized the embodying of the toothed cutting edge 30 instead of a cutter blade joined by conventional means to the structure which the mechanism is secured upon, for severing the delivered band run 3a. This cutting edge 30 may be obtained directly integral with the pan 28, or by inserting on this latter a stiffer part, either of plastics or metallic material.

Claims

1. A continuous paper and the like delivering mechanism, of the type comprising a pair of mutually tangent rollers (1,2), one of which (1) is mounted on an oscillating frame (7) which is spring biased against the other roller (2), the end (3a) of a paper band (3) issuing from a bobbin (4) being caught between both rollers; a locking device (16-27) associated to the shaft of one of the rollers and restricting the length of paper which is delivered each time that a pull is applied to the paper end; a timer (24,25) holding the mechanism locked during a restricted period, and an ejector device (22,23) operating one of the rollers (2) once a paper length (3) has been withdrawn, to draw off a short paper length to make its grasping

easier, the ejector device including a cam (22) biased by a spring (23), the ensemble being located within a box (4) provided with a paper outlet opening (6), the mechanism being characterized in that the cam (22) of the ejector device (22,23) for the short paper run when the mechanism has been unlocked, is mounted on the shaft (20) of a set of sprocket wheels (18,19) having different diameters and adapted to be selectively engaged by another set of different diameter sprocket wheels (16,17) secured to the shaft (2a) of one of the paper band drawing rollers (2), both sets of wheels forming a changeable gear.

2. A delivering mechanism, according to claim 1, characterized in that the ejector device (22) and the timer winding device (26,27) are mounted on the same shaft (20) of the set of sprocket wheels (18,19) selectively meshing with the different diameter sprocket wheels (16,17) mounted in a position which is displaceable at will on the shaft (2a) of one of the paper band drawing rollers.
3. A delivering mechanism, according to claim 1, characterized in that the oscillating frame (7) carrying mounted thereon the movable roller (1) is formed with an arcuate gutter or ramp (12) located immediately under the opening (6) through which the paper band (3) coming from the supply bobbin issues, the said gutter or ramp (12) being engaged by one end of springs (11) having their opposite ends anchored in fixed points (10) of the support structure of the mechanism, thus forcing the supported roller (1) to rest onto the other roller (2).
4. A delivering mechanism, according to claim 1, characterized in that the border of the paper exit opening (6) formed in the enclosure (28) containing the mechanism, has a cutting edge (30), which can be toothed, for cutting the withdrawn paper band (3).

Patentansprüche

1. Vorrichtung zur Abgabe von Endlospapier und dergleichen, bestehend aus einem Paar sich gegenseitig berührender Walzen (1, 2), von denen eine (1) an einem Schwingrahmen (7) montiert ist, der federnd gegen die andere Walze (2) vorgespannt ist, wobei das Ende (3a) eines Papierbandes (3), das von einer Spule (4) abgegeben wird, zwischen den beiden Walzen greifbar ist; einer Verriegelungseinrichtung (16-27), die der Welle einer der Walzen zugeordnet ist und die Länge des Papiers begrenzt, die jedes Mal liefer-

bar ist, wenn ein Zug auf das Ende des Papiers ausgeübt wird;

einem Timer (24, 25), durch den die Vorrichtung während einer begrenzten Zeitdauer blockiert haltbar ist, und aus einer Ausschubeinrichtung (22, 23), die nach Abziehen einer Papierlänge (3) eine der Walzen (2) zum Abziehen einer kurzen Papierlänge zu dessen einfacheren Ergreifen betätigt, wobei zu der Ausschubeinrichtung eine Steuerscheibe (22) gehört, die mittels einer Feder (23) vorgespannt ist, wobei die Anordnung innerhalb eines Behälters (4) vorgesehen ist, der mit einer Papierauslaßöffnung (6) versehen ist, **dadurch gekennzeichnet,**

daß die Kurvenscheibe (22) der Ausschubeinrichtung (22, 23) für eine kurze Papierabgabe nach Freigabe der Vorrichtung auf der Welle (20) einer Gruppe von Zahnrädern (18, 19) montiert ist, welche unterschiedliche Durchmesser besitzen und wahlweise in Eingriff mit einer anderen Gruppe von unterschiedlichen Zahnrädern (16, 17) bringbar sind, die an der Welle (2a) einer der Papierbandzugrollen (2) befestigt sind, wobei beide Gruppen von Zahnrädern ein Wechselgetriebe bilden.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Ausschubeinrichtung (22) und die Wickeltimereinrichtung (26, 27) auf derselben Welle (20) der Gruppe von Zahnrädern (18, 19) montiert sind, welche wahlweise mit unterschiedliche Durchmesser aufweisenden Zahnrädern (16, 17) kämmen, die in einer Stellung montiert sind, welche bei Bedarf an der Welle (2a) einer der Papierbandzugwalzen verschiebbar ist.
3. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß der Schwingrahmen (7), auf dem die bewegbare Walze (1) montiert ist, mit einer gebogenen Rinne bzw. Rampe (12) gebildet ist, welche unmittelbar unter der Öffnung (6) angeordnet ist, durch die das von der Vorratsspule kommende Papierband (3) austritt, wobei die Rinne bzw. Rampe (12) sich in Eingriff mit einem Ende von Federn (11) befindet, deren gegenüberliegenden Enden an fixierten Stellen (10) des Halteaufbaus der Vorrichtung verankert sind, wodurch die gehaltene Walze (1) zum Ruhen auf die anderen Walze (2) drückbar ist.
4. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß der Rand der Papieraustrittsöffnung (6), der in dem die Vorrichtung enthaltenen Gehäuse (28) gebildet ist, eine ggf. gezahnte Schneidkante (30) zum Schneiden des abgezogenen Papierbandes aufweist.

Revendications

1. Mécanisme de distribution de papier continu et analogue, du type qui comprend deux rouleaux (1, 2) qui sont tangents l'un à l'autre et dont l'un (1) est monté sur un châssis oscillant (7) qui est rappelé élastiquement contre l'autre rouleau (2), l'extrémité (3a) d'une bande de papier (3) provenant d'une bobine (4) étant serrée entre les deux rouleaux, un dispositif de blocage (16-27) associé à l'arbre de l'un des rouleaux et limitant le longueur de papier qui est distribué chaque fois qu'une force de traction est appliquée à l'extrémité de la feuille de papier, un minuterie (24, 25) maintenant le mécanisme bloqué pendant une période limitée, et un dispositif éjecteur (22, 23) commandant l'un des rouleaux (2) lorsqu'un tronçon (3) de papier a été tiré afin qu'un court tronçon de papier soit tiré et que sa saisie soit facilitée, le dispositif éjecteur comportant une came (22) rappelée par un ressort (23), l'ensemble étant disposé dans un caisson (4) ayant une ouverture (6) de sortie de papier, le mécanisme étant caractérisé en ce que la came (22) du dispositif éjecteur (22, 23) du court tronçon de papier, lorsque le mécanisme a été débloqué, est montée sur l'arbre (20) d'un jeu de roues dentées (18, 19) ayant des diamètres différents et destinées à coopérer sélectivement avec un autre jeu de roues dentées (16, 17) de diamètres différents fixées à l'arbre (2a) de l'un des rouleaux (2) de traction de bande de papier, les deux jeux de roues dentées formant un engrenage donnant un rapport qui peut être changé.

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2. Mécanisme de distribution selon la revendication 1, caractérisé en ce que le dispositif éjecteur (22) et le dispositif (26, 27) d'enroulement à minuterie sont montés sur le même arbre (20) que le jeu de roues dentées (18, 19) qui est sélectivement en prise avec les roues dentées de diamètres différents (16, 17) qui sont montées en position afin qu'elles puissent être déplacées à volonté sur l'arbre (2a) de l'un des rouleaux de traction de bande de papier.

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3. Mécanisme de distribution selon la revendication 1, caractérisé en ce que le châssis oscillant (7) qui porte le rouleau mobile (1) a une rampe ou gouttière courbe (12) placée juste au-dessous de l'ouverture (6) par laquelle sort la bande de papier (3) qui provient de la bobine de réserve, la rampe ou gouttière (12) étant retenue par une première extrémité de ressort (11) dont l'autre extrémité est fixée en des points fixes (10) de la structure de support du mécanisme, si bien que le rouleau supporté (1) peut être en appui sur l'autre rouleau (2).

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4. Mécanisme de distribution selon la revendication 1, caractérisé en ce que la bordure de l'ouverture (6) de sortie de papier formée dans l'enceinte (28) contenant le mécanisme a un bord de coupe (30) qui peut être dentelé pour la coupe de la bande de papier (3) qui est tirée.

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FIG. 1

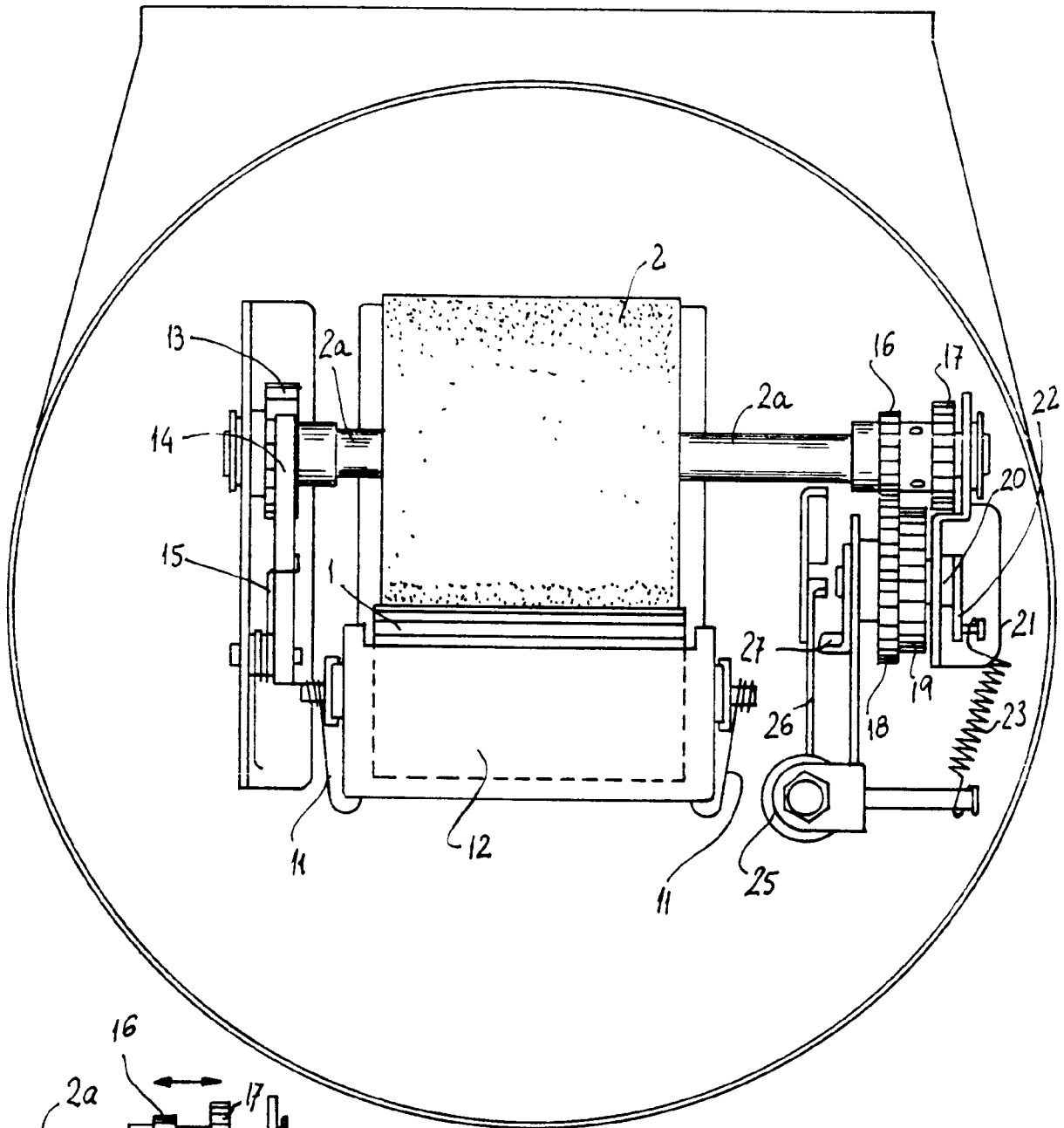
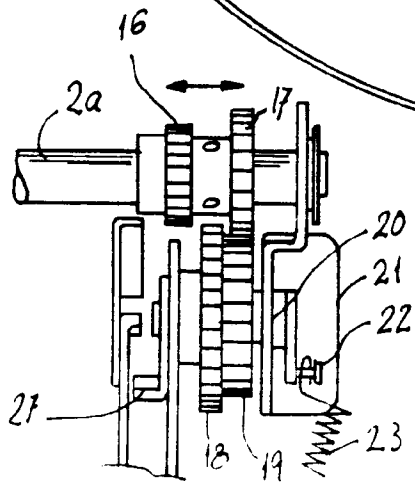


FIG. 2



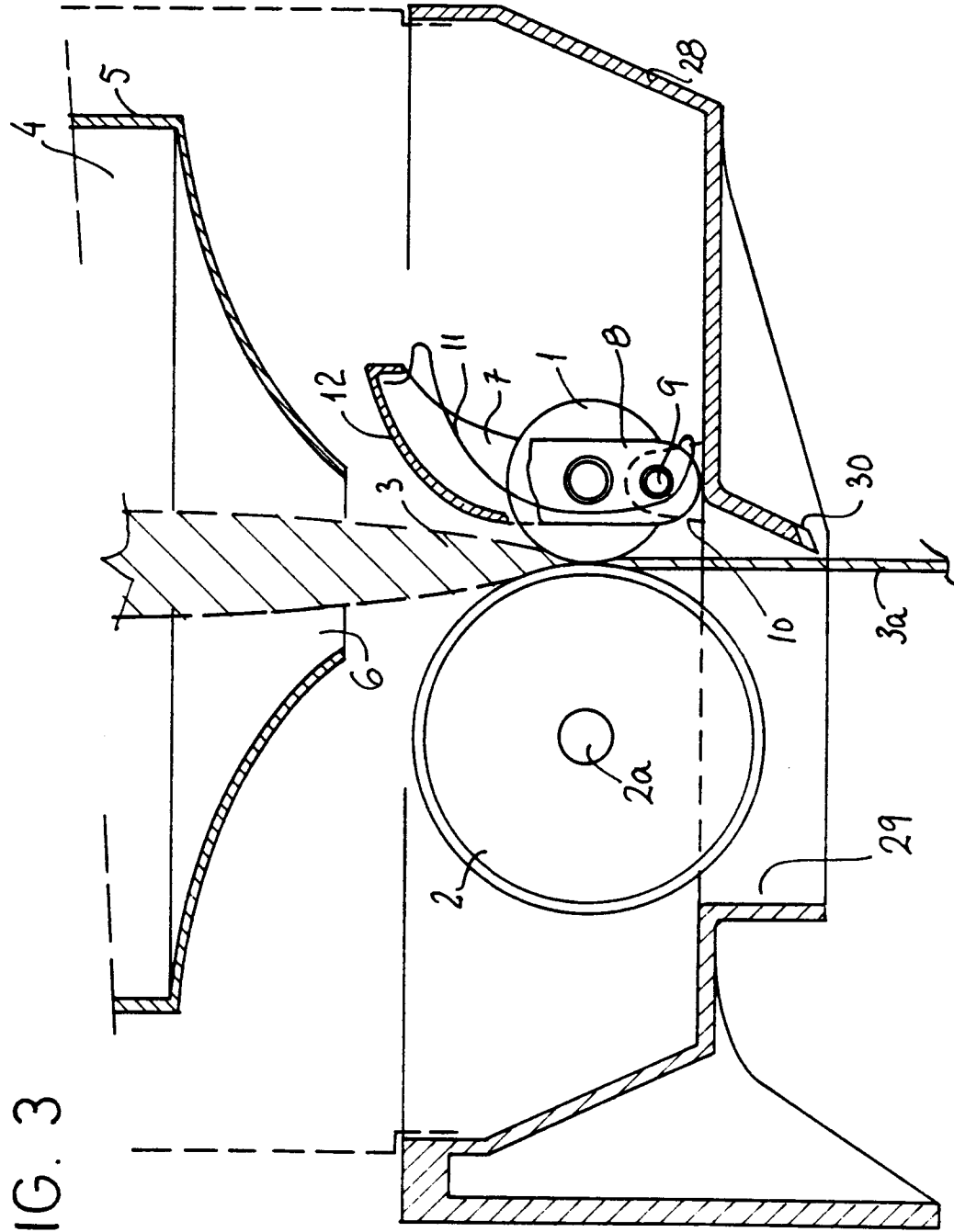


FIG. 3

FIG. 4

