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(54) **A DEVICE FOR CUTTING ACTION UPON OBJECTS AND USE THEREOF**

AUF GEGENSTÄNDE EINWIRKENDE SCHNEIDVORRICHTUNG UND DEREN VERWENDUNG
DISPOSITIF PERMETTANT D'EXERCER UNE ACTION DE COUPE SUR DES OBJETS ET SON
UTILISATION

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(56) References cited:
WO-A-88/07818 **DE-C- 4 305 315**
FI-B- 64 901

EP 0 918 564 B1

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Description

BACKGROUND OF THE INVENTION AND PRIOR ART

[0001] The present invention relates to a device for cutting action upon objects according to the preamble of appended claim 1.

[0002] Even though the invention relates to such devices adapted for cutting action upon objects in general, it is particularly directed to cutting action upon such objects as sacks, string bags, cardboard boxes and the like, where it is desired to open them for releasing objects located therein. Such contexts in which the device is a part of a system for handling compostable waste material are especially concerned, in which the device has in particular the task to open string bags and the like, in which waste material is enclosed when it is supplied to the system. For the sake of a non-limitative example the device defined in the introduction will hereinafter be described with respect to such an application.

[0003] Such devices are also suited for cutting action upon such objects as vehicle tyres, which are to be decomposed or cut into smaller parts for the sake of recycling when they have been worn out. The device will therefore further on in the description be described with respect to this application.

[0004] A device of the type defined in the introduction is described in DE-A-4 305 315, which is designed for disintegrating refuse sacks, in which the cutting means are arranged on axles in common, and these axles are movable in the direction substantially perpendicularly thereto.

[0005] However, owing to this construction, in which the cutting means arranged on different axles are comparatively much displaced with respect to each other in the axial direction, no efficient disintegration of especially sticky material is obtained, but this will have a tendency to stick and get caught between the cutting means.

SUMMARY OF THE INVENTION

[0006] The object of the present invention is to provide a device of the type defined in the introduction, which is able to cut especially sticky material in a considerably more efficient way than is possible through the device described in DE-A-4 305 315.

[0007] This object is according to the invention obtained by arranging in such a device a surface utilized as a counter surface in the cutting action and between which and the cutting means the objects exerted to the cutting action are located and towards and away from which the rotary cutting means are translationally movable.

[0008] By arranging such a counter surface in combination with the movable arrangement of the cutting means towards and away therefrom, a considerably more efficient cutting action upon objects, especially

sticky objects, than through the device described is mainly obtained. Furthermore, the risk of having sticky objects getting caught on lateral surfaces of the cutting means is reduced. Another advantage of this device occurs in the case that the objects exerted to the cutting action are fed to or are located between said counter surface and the cutting means and anything being too hard to be cut is present among these objects and which could cause a severe wear or degradation of the cutting edge and possibly block the continued rotation of the cutting means would it not be possible to displace the cutting means. Thus, this feature is important both for a long lifetime of the cutting means and for a continuous function of the device as such without interruptions.

[0009] It should be realised that this surface not in any way necessarily prevents objects exerted to said cutting action from simultaneously therewith being fed between the cutting means and the surface, in which the fed may depend upon on one hand the rotation of the cutting means and on the other that any particular feeding arrangement feeds the objects in this direction. This is especially the case in a composting plant, in which the device for cutting action primarily has the function as sack opener and primarily functions as a station to which these objects, preferably sacks, are delivered for being transported further on in the system after being exerted to said cutting action.

[0010] Furthermore, WO-A-8807818 describes a device for cutting slices of meat, and this device has a plurality of disc-like, circular cutting blades arranged next to each other on an axle (shaft) in common. However, this axle is not translationally movable at all and by that neither with respect to any counter surface.

[0011] According to a preferred embodiment of the device according to the invention the cutting edges are designed substantially without cutting edges transversally to the circumferential direction of the discs, which means that these have no sawtooth-like outline, but they follow a smooth path in absence of remarkable changes of direction. However, the cutting edge is itself more or less pointed.

[0012] Through this design of the cutting edges the risk of parts of the material exerted to or which has been exerted to the cutting action also thereafter will follow the cutting edge during the rotation of the cutting means is minimized. Furthermore, the cutting edge has then not the type of sharp points, which in saw blades and the like after a certain time of use tend to be made blunt, but they do instead constitute a smooth surface, which may easily be sharpened when it after a period of time starts to get blunt.

[0013] According to a further preferred embodiment of the device according to the invention this is characterized in that the cutting edges are wave-shaped in the circumferential direction of the discs, i.e. the cutting edges have a distance to the center of the disc, which is varying without, as for a saw blade, having any point formations in this circumferential direction.

[0014] The total length of the cutting edge gets by that longer than would there not be any wave shape and the distance of the cutting edges to the central of the disc would be constant. Upon rotation in a certain direction the front surface seen in the direction of the rotation of each wave will form a cutting surface and by that be made blunt earlier than the rear surface of this wave. When these front wave surfaces have been made blunt it is only necessary to turn the discs or change the direction of rotation, so that the previous rear wave surface now instead will function as a front wave surface, by which it is possible to utilize the higher degree of sharpness still there for these surfaces.

[0015] According to a further preferred embodiment of the device this comprises means arranged between the cutting means for wiping of object parts followed the rotation of the cutting means after being exerted to the cutting action thereof.

[0016] The risk that the objects or the material exerted to the cutting action would follow the cutting means in the rotation thereof and prevent the function of the latter in a continuous cutting action is thereby further prevented.

[0017] According to a further preferred embodiment of the device the wiping means are bent, at least in the region of the periphery of the cutting means in the direction of rotation of the cutting means. It is then in particular valid that the wiping means are arranged close downstream of the region in which the cutting action of the cutting means takes place with respect to the direction of rotation of the latter.

[0018] A particular advantage is obtained by means of this embodiment by the fact that object parts remaining on the cutting means and being wiped off the cutting means by the wiping means to a smaller extent risk to be wedged up between the cutting edge and the wiping means then should there be an opposed bending or no such bending be there at all.

[0019] According to a further preferred embodiment of the device according to the invention this comprises a first grid structure, against which objects to be exerted to a cutting action are intended to be placed and through the grid openings of which the cutting means are designed to be brought for achieving the cutting action.

[0020] It will then be possible to more completely decompose the objects exerted to a dividing action and it will then be possible to completely decompose objects being unmovable between the grid structure and the cutting means only by moving the cutting means with respect to the grid structure. A grid structure is in a preferred embodiment located under the cutting means in a substantially horizontal plane, but also other positionings are possible.

[0021] According to a further preferred embodiment of the device according to the invention this comprises means for compressing objects before and/or at the same time as these are exerted to a cutting action.

[0022] It will by that be possible to use the device ac-

cording to the invention to create a cutting action, and then in particular a decomposing action, also upon objects being made of such a material and with such a structure thereof, that these, should they not be held by the means for compressing, would either have a shape not being suited for said cutting action or for this or any other reason would tend to move in an attempt to obtain a cutting action thereof.

[0023] The invention also relates to a use of the device as defined above for in particular cutting action of sacks, string bags, bags and cardboard boxes for opening thereof and releasing of the contents therein. This is particularly valid when at least a part of the contents in said sacks is waste material being compostable and designed to be composted after said release.

[0024] The invention also relates to a use of a device as defined above for cutting action upon piece-like, sticky material, in which especially cutting action upon vehicle tyres is intended, in which the cutting action relates to decomposing thereof into strips.

[0025] Further advantages and preferred characteristics of the invention will appear from the following description and the other claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] With reference to the appended drawings, below follows a detailed description of preferred embodiments of the invention in the form of non-limitating examples.

[0027] In the drawings:

Fig 1 is a partially sectioned side-elevation view of the device according to the invention, including means for supplying and feeding away,

Fig 2 shows the device according to Fig 1 from above,

Fig 3 is a partially sectioned side-elevation view of an alternative embodiment of the device according to the invention, particularly suited for cutting action upon vehicle tyres,

Fig 4 shows the device according to Fig 3 from above,

Fig 5 is a side-elevation view of an alternative embodiment of the device according to the invention,

Fig 6 shows the device according to Fig 5 from above, and

Fig 7 is a side-elevation view of a cutting means, in which the wave shape thereof in a circumferential direction is partially shown.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0028] The device according to the invention for cutting action upon objects is shown in Fig 1. Objects as sacks, bags, string bags, cardboard boxes and the like, in which household waste and industrial waste are stored are particularly concerned. The device comprises cutting means 2 having cutting edges 1 and being rotary arranged. The cutting means 2 comprise a number of discs arranged side by side, being provided with a substantially circular periphery and having cutting edges for said action. The discs 2 are in a preferred embodiment comparatively thin and have each a thickness being substantially constant over the entire cross-section thereof, except from the cutting edge regions, where they taper so as to form a point. However, it should be realised that it is not necessary that the discs are particularly thin or have a thickness being constant over the cross-section thereof. They may even be partially stuck together while forming one single piece. However, in the embodiments of the device according to the invention shown they are separated and arranged side by side on a common carrier 3, which has the form of an axle centrally extending through the discs and being driven by a power means mounted at the device and rotating the cutting means, which power means here is an electric motor 4 adapted for that purpose.

[0029] The cutting means 2 are carried by cutting members 5 belonging to the device. The cutting members 5 are arranged to allow a translation movement of the cutting means 2. This is in the preferred embodiments possible by the fact that the carrying members 5 are pivotably connected to a stationary structure 6 in connection to the device. The carrying members 5 are in Fig 1-4 two parallel arms, which are substantially in the middle of the length thereof penetrated by the axle 3 on which the cutting means 2 are arranged and they form by that a yoke in which the assembly of the axle 3 and the carrying means 5 is suspended.

[0030] The structure 6, in which the carrying means are hingedly arranged is in Fig 1 and Fig 2 a container for a means 7 for supplying the objects to be exerted to a cutting action to the container 8 in connection thereto, in which the cutting action is intended to take place and in which the cutting means 2 are arranged. The supplying means shown in Fig 1 and 2 is a rotary spiral driven by a motor 9. Sacks, string bags, bags and the like to be fed to the cutting means 2 by the supplying means 7 are supplied to the supplying means through a hopper-like member 10.

[0031] The carrying means 5 are in end opposed to the end in which they are hingedly arranged connected to a transversal element 11. Elongated wiping means 12 are also extending from the transversal element 11 in between the respective cutting means 2 and towards the centre thereof. As appears from especially Fig 1, the wiping means have a slight bend in the direction of ro-

tation of the cutting means, which contributes to an easier wiping off from the cutting means 2 of such material that possibly follow the cutting means after they have passed the region for the cutting action, which here is the lower part of the container 8, than should the bend be in the opposite direction or there would be no bend at all. Substantially directly under the portion of the wiping means 12 where these are in the region of the cutting edges, and where material wiped off by the wiping means 12 may be expected to fall down therefrom, an outlet 13 is arranged in the container 8. In the outlet channel 13 is for the rest a means 14 for feeding the material exerted to the cutting action away arranged, which means here is a spiral similar to the spiral forming the supplying means 7.

[0032] The container 8 has a surface 15 utilized as counter surface in the cutting action and between which and the cutting means the objects exerted to said cutting action are localized. As appears from Fig 1 this surface 15 is formed by the bottom of the container 8. The distance between the cutting edges 1 and this surface 15 is comparatively short, preferably in the region of 0-10 mm, but more preferred in the region 1-5 mm and most preferred approximately 3 mm. This is particularly valid when the objects intended to be exerted to a cutting action are sacks, string bags, cardboard boxes and the like with the aim previously mentioned.

[0033] The distance between the cutting edges 1 of adjacent cutting means 2 is in the order of 3-10 cm, preferably approximately 5-7 cm. The cutting means 2, or at least the cutting edges 1 thereof, are preferably manufactured of a AR steel, i.e. a wear steel, which guarantees a long lifetime and a good economy.

[0034] An alternative embodiment of the device according to the invention is shown in Fig 3 and 4, which in practice has turned out to be well suited for cutting action upon piece-like, sticky material, especially cutting of vehicle tyres into strips.

[0035] The surface utilized as counter surface with respect to the cutting edges in the cutting action is here formed by a first grid structure 16, against which objects to be exerted to the cutting action are adapted to be placed and through the grid openings 17 of which the cutting means 2 are adapted to be moved for obtaining the cutting action. The device comprises a respective grid opening 17 for each of the cutting means 2. The width of the grid openings is only slightly larger than the thickness of the cutting means 2, which stabilizes the object to be exerted to the cutting action and prevents that this to any larger extent is folded into the grid openings 17, when this is exerted to this cutting action.

[0036] The device also comprises means 18 for compressing objects to be exerted to the cutting action before and/or at the same time as these are exerted to this action. The means 18 for compressing comprise a second grid structure, which is adapted to press objects to be exerted to a cutting action between itself and the first grid structure 16. Also the second grid structure 18 is

provided with grid openings, through which the cutting means 2 are arranged to be moved. These grid openings correspond to the grid openings 17 of the first grid structure 16, with respect to the number as well as the positioning with respect to the number and positioning of the cutting means 2. The means 18 for compressing are movable, in this embodiment in the vertical direction, with respect to the surface 15 on which the objects rest. This movability is preferably achieved by the fact that the second grid structure 18 is displaceable by means of hydraulic, in this embodiment vertically, with respect to a stationary frame 19 connected to the device. Also the cutting means 5 are for the rest in this embodiment hingedly connected to the frame 19, which by that also corresponds to the structure part 6 previously mentioned.

[0037] The device also comprises means for holding the objects when these are exerted to the cutting action. These means are in the preferred embodiment shown in Fig 3 and 4 the first and second grid structure 16 and 18, respectively.

[0038] The supplying means 7 is in the embodiment shown in Fig 3 and 4 an endless belt instead of a spiral, as in Fig 1 and 2. The objects to be exerted to a cutting action, in this case vehicle tyres, are placed on this supplying means 7 through the hopper-like member 10 and sent to the device where they are exerted to said cutting action while being compressed between the means 18 and the grid structure 16. It is for the rest indicated in Fig 3 by dashed lines a position in which the cutting edges 1 may be present in a position in which the cutting means 2 are pivoted downwardly, in which position a cutting action takes place. Furthermore, only one wiping means 12 is indicated by a dashed line in Fig 4, but it should be realised that such means are placed between all the cutting means.

[0039] A further embodiment of the device according to the invention is shown in Fig 5, in which the cutting means 5 here are arms of a crane device 20 and by that arranged in series and not as above in parallel to each other. The support structure 6 is here formed by a part of a container in which the objects to be exerted to the cutting action are present. The cutting means 5 may also here be considered to be hingedly connected to the support structure 6 in a way allowing a vertical displacement of the cutting means 2. The crane device 20 may also be rotary arranged with respect to the support structure 6. This embodiment also allows to a large extent displacement of the cutting means forwardly and rearwardly as well as in the lateral direction in the container, which may be desired should the cutting means be small with respect to the container and the objects to be exerted to the cutting action not be supplied to the cutting means 2 by any particular arrangement, but these had instead to be moved to enter into contact with the objects to be cut.

[0040] Fig 5 and 6 are strongly simplified, but it should nevertheless be understood that the principles men-

tioned above with respect to the positioning and the design of the wiping means with respect to the direction of rotation of the cutting means are also applicable to this embodiment.

[0041] Fig 7 shows a preferred embodiment of a cutting means 2, in which the cutting edges 1 are wave shaped in the circumferential direction of the disc forming the cutting means 2. For a good technical effect in connection with cutting action upon for example string bags, sacks, bags and the like it has in practice turned out to be suitable for releasing the content thereof to have a disc diameter in the order of 800 mm, a distance between the wave top and the wave bottom of about 40 mm as well as a distance between adjacent wave tops of about 150 mm. The cutting action upon exactly string bags, bags, sacks and the like for the purpose mentioned above a speed on the cutting means in the order of 5-100 revolutions/minute, is preferably utilized, more preferably 10-50 revolutions/minute and most preferred 20-25 revolutions/minute. However, considerably higher cutting means speeds are utilized for cutting action upon tyres.

[0042] The described invention is of course not in any way restricted to the embodiments described above, but many possibilities to modifications thereof would be apparent to a man skilled in the art.

[0043] The idea of the invention is instead to be primarily interpreted as restricted by the appended claims.

[0044] The preferred embodiments described above have for example devices in which counter surfaces 15, holding and compressing means 16, 18 extend in a substantially horizontal plane and in which the translation movement of the cutting means takes place mainly in the vertical direction. Such embodiments have turned out to be particularly advantageous. However, it should be realised that this not in any way prohibit the utilization of positionings and translation movements departing from those mentioned above. Also such alternatives are namely covered by the appended claims defining the idea of the invention.

[0045] Furthermore, it has to be pointed out that the expression "without sharp edges transversally to the circumferential direction of the discs" means that no sharp edges are there transversally to the cutting edges 1 along the extension thereof.

[0046] Thus, if a hand is moved along the cutting edge 1 of a cutting means this will not meet any sharp edge or point independently in which direction along the edge the hand is moved.

[0047] "Wave-shaped" means softly shaped waves without any tendency to such sharp waves that these form pointed wave tops or bottoms.

Claims

1. A device for cutting action upon objects, comprising cutting means (2) having cutting edges (1) and be-

ing rotary arranged, said cutting means (2) comprising a number of discs arranged side by side, being provided with a substantially circular periphery and having cutting edges for said action, said rotary cutting means (2) being movably carried by carrying members (5) belonging to the device in a way allowing a translation movement thereof, **characterized in that** it comprises a surface (15) utilized as a counter surface in the cutting action and between which and the cutting means (2) the objects exerted to the cutting action are located and towards and away from which the rotary cutting means (2) are translationally movable.

2. A device according to claim 1, **characterized in that** the cutting edges (1) are designed substantially without cutting edges transversally to the circumferential direction of the discs.
3. A device according to claim 1 or 2, **characterized in that** the cutting edges (1) have a wave shape in the circumferential direction of the discs.
4. A device according to any of the preceding claims, **characterized in that** an axle (3) is arranged as a carrier in common for the cutting means (2).
5. A device according to any of the preceding claims, **characterized in that** the distance between the cutting edges (1) of adjacent cutting means (2) is in the order of 3-10 cm.
6. A device according to any of the preceding claims, **characterized in that** it comprises means (12) arranged between the cutting means (2) for wiping object parts carried on by the cutting means (2) after they have been exerted to a cutting action of the cutting means.
7. A device according to claim 6, **characterized in that** the wiping means (12) are arranged immediately downstream of the region in which the cutting action of the cutting means (2) takes place with respect to the direction of rotation of the latter ones.
8. A device according to claim 6 or 7, **characterized in that** the wiping means (12) are bent in the direction of rotation of the cutting means at least in the region of the periphery of the cutting means (2).
9. A device according to any of the preceding claims, **characterized in that** it comprises a first grid structure (16), against which objects to be exerted to a cutting action are arranged to be placed and through the grid openings (17) of which the cutting means (2) are designed to be brought for obtaining the cutting action.

10. A device according to any of the preceding claims, **characterized in that** it comprises means (18) for compressing objects before and/or at the same time as they are exerted to a cutting action.

11. A device according to claims 9 and 10, **characterized in that** the compressing means (18) comprise a second grid structure, which is designed to press objects to be exerted to a cutting action between itself and the first grid structure (16), and through the grid openings of which the cutting means (2) are designed to be moved.

12. A device according to claim 10 or 11, **characterized in that** the compressing means (18) are movable with respect to the surface (15), on which the objects rest.

13. A device according to any of the preceding claims, **characterized in that** it comprises means (16, 18) for holding the objects while they are exerted to the cutting action.

14. A use of a device according to any of claims 1-9 for cutting action upon sacks, string bags, bags and cardboard boxes for opening them and releasing the contents thereof.

15. A use according to claim 14, in which at least a part of the contents in the sacks, string bags, bags and the cardboard boxes are compostable waste material designed to be composted after said release.

16. A use of a device according to any of claims 1-13 for cutting action upon piece-like, sticky material.

17. A use according to any of claims 1-13 or 16 for cutting action upon vehicle tyres, in which the cutting action relates to decomposition thereof in strips.

Patentansprüche

1. Vorrichtung zum Schneiden von Gegenständen mit Schneidmitteln (2), welche Schneidkanten (1) aufweisen und rotieren, wobei die Schneidmittel (2) mehrere, nebeneinander angeordnete Scheiben mit im wesentlichen kreisförmigen Umfang und mit Schneidkanten aufweisen, wobei ein Trägerelement (5) die rotierenden Schneidmittel (2) bewegbar hält und zum Ausführen von Translationsbewegungen ausgebildet ist, **dadurch gekennzeichnet, daß** eine Oberfläche (15) als Gegenfläche für die Schneidaktion vorgesehen ist, wobei die zu schneidenden Gegenstände zwischen der Oberfläche (15) und den Schneidmitteln (2) angeordnet sind und die rotierenden Schneidmittel (2) translatorisch

zu dem dort angeordneten, zu schneidenden Gegenstand hin und von diesem weg bewegbar sind.

2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, daß** die Schneidkanten (1) im wesentlichen ohne Schneidkanten quer zur Umfangsrichtung der Scheiben ausgebildet sind. 5
3. Vorrichtung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, daß** die Schneidkanten (1) in Umfangsrichtung der Scheiben wellenförmig ausgebildet sind. 10
4. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** eine Achse (3) als gemeinsamer Träger für das Schneidmittel (2) vorgesehen ist. 15
5. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** der Abstand zwischen den Schneidkanten (1) der benachbarten Schneidmittel (2) in der Größenordnung von 3 cm bis 10 cm liegt. 20
6. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** zwischen den Schneidmitteln (2) Mittel (12) zum Abstreifen von Teilen der geschnittenen Gegenstände angeordnet sind, welche von den Schneidmitteln (2) nach dem Schneiden des Gegenstandes durch die Schneidmittel mitgenommen werden. 25 30
7. Vorrichtung nach Anspruch 6, **dadurch gekennzeichnet, daß** die Abstreifmittel (12) unmittelbar stromab bezüglich der Rotationsrichtung der Schneidmittel (2) des Bereiches, in dem die Schneidmittel (2) schneiden, angeordnet sind. 35
8. Vorrichtung nach Anspruch 6 oder 7, **dadurch gekennzeichnet, daß** die Abstreifmittel (12) wenigstens im Bereich benachbart zum Umfang der Schneidmittel (2) in Richtung der Rotation der Schneidmittel gebogen sind. 40
9. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** eine erste Gitterstruktur (16) vorgesehen ist, gegen die zu schneidende Gegenstände zur Positionierung angeordnet sind, wobei die Schneidmittel (2) derart ausgebildet sind, daß diese zum Ausführen der Schneidaktion durch Gitteröffnungen (17) der Gitterstruktur (16) hindurch greifen. 45 50
10. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** Mittel (18) zum Pressen der Gegenstände vor und/oder während des Schneidens vorgesehen sind. 55

11. Vorrichtung nach einem der Ansprüche 9 und 10, **dadurch gekennzeichnet, daß** die Preßmittel (18) eine zweite Gitterstruktur aufweisen, welche zum Pressen von zu schneidenden Gegenständen zwischen sich und der ersten Gitterstruktur (16) ausgebildet sind, wobei die Schneidmittel (2) durch deren Gitteröffnungen greifen.
12. Vorrichtung nach einem der Ansprüche 10 oder 11, **dadurch gekennzeichnet, daß** die Preßmittel (18) bewegbar bezüglich der Oberfläche (15), auf der die Gegenstände ruhen, sind.
13. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** Mittel (16, 18) zum Halten der Gegenstände während des Schneidens vorgesehen sind.
14. Verwendung einer Vorrichtung gemäß wenigstens einem der Ansprüche 1 bis 9 zum Schneiden von Säcken, Schnürbeuteln, Beuteln und Kartonschachteln, um diese zu Öffnen und deren Inhalt freizugeben.
15. Verwendung nach Anspruch 14, **dadurch gekennzeichnet, daß** der Inhalt der Säcke, Schnürbeutel, Beutel und Kartonschachteln wenigstens teilweise kompostierbarer Abfall ist, welcher nach der Freigabe zu kompostieren ist.
16. Verwendung einer Vorrichtung gemäß wenigstens einem der Ansprüche 1 bis 13 zum Schneiden von stückartigem, klebrigem Werkstoff.
17. Verwendung gemäß wenigstens einem der Ansprüche 1 bis 13 oder 16 zum Schneiden von Fahrzeugreifen, wobei die Schneidaktion eine Zerlegung in Streifen betrifft.

Revendications

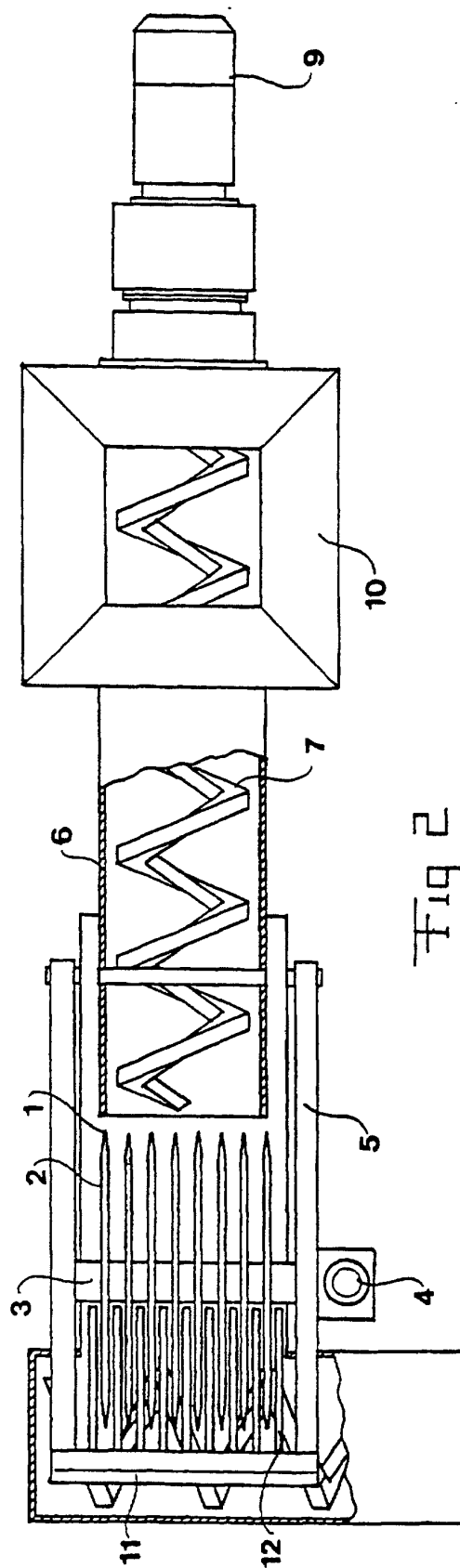
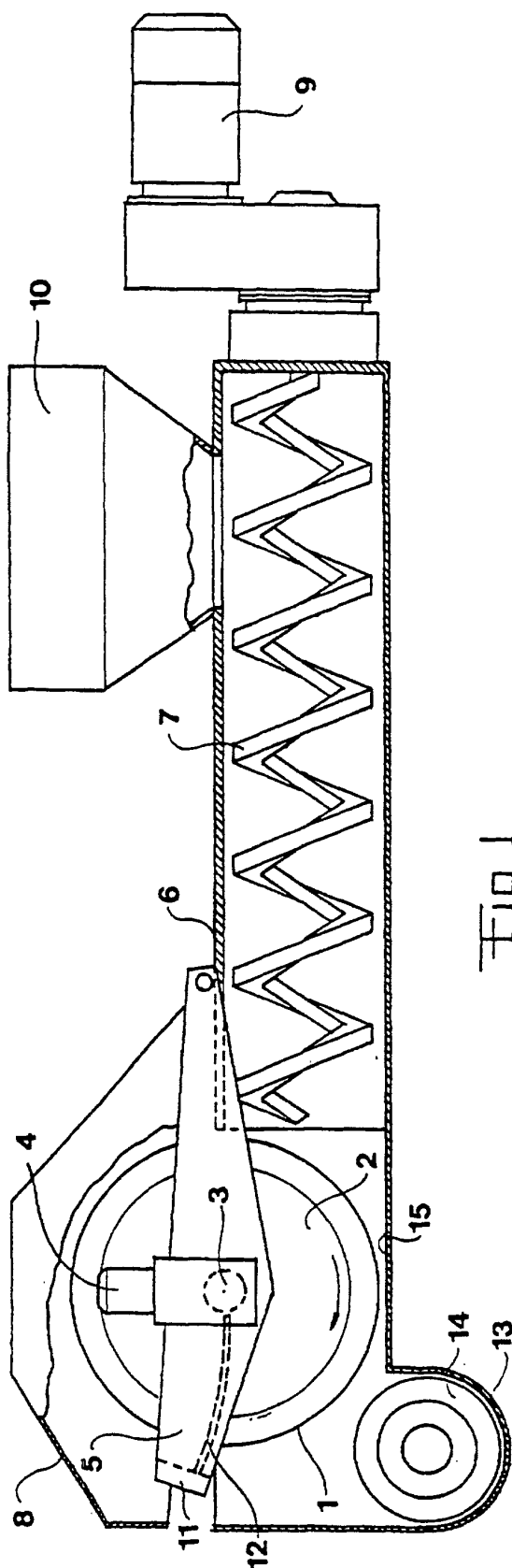
1. Dispositif pour exercer une action de coupe sur des objets, comprenant des moyens de coupe (2) ayant des bords de coupe (1) et étant agencés en rotation, lesdits moyens de coupe (2) comprenant une pluralité de disques agencés côte à côte, qui sont pourvus d'une périphérie sensiblement circulaire et qui ont des bords de coupe pour ladite action, lesdits moyens de coupe rotatifs (2) étant portés de façon mobile par des éléments de support (5) appartenant au dispositif d'une façon permettant un mouvement de translation de ceux-ci, **caractérisé en ce qu'il** comprend une surface (15) utilisée comme une contre-surface dans l'action de coupe et entre laquelle et les moyens de coupe (2) sont situés les objets subissant l'action de coupe et vers et au loin de laquelle les moyens de coupe ro-

tatifs (2) sont déplaçables en translation.

2. Dispositif selon la revendication 1,
caractérisé en ce que les bords de coupe (1) sont
conçus sensiblement sans bords de coupe trans- 5
versalement à la direction circonférentielle des dis-
ques.
3. Dispositif selon la revendication 1 ou 2,
caractérisé en ce que les bords de coupe (1) ont 10
une forme ondulée dans la direction circonférentiel-
le des disques.
4. Dispositif selon l'une quelconque des revendica-
tions précédentes,
caractérisé en ce qu'un axe (3) est agencé comme 15
un support en commun pour les moyens de coupe
(2).
5. Dispositif selon l'une quelconque des revendica-
tions précédentes,
caractérisé en ce que la distance entre les bords 20
de coupe (1) des moyens de coupe adjacents (2)
est de l'ordre de 3-10 cm.
6. Dispositif selon l'une quelconque des revendica-
tions précédentes,
caractérisé en ce qu'il comprend des moyens (12) 25
agencés entre les moyens de coupe (2) pour es-
suyer des parties d'objets transportées par les
moyens de coupe (2) après qu'ils ont été soumis à
une action de coupe des moyens de coupe. 30
7. Dispositif selon la revendication 6,
caractérisé en ce que les moyens d'essuyage (12) 35
sont agencés immédiatement en aval de la région
dans laquelle l'action de coupe des moyens de cou-
pe (2) a lieu par rapport au sens de rotation de ces
derniers.
8. Dispositif selon la revendication 6 ou 7,
caractérisé en ce que les moyens d'essuyage (12) 40
sont courbés dans le sens de rotation des moyens
de coupe au moins dans la région de la périphérie
des moyens de coupe (2). 45
9. Dispositif selon l'une quelconque des revendica-
tions précédentes,
caractérisé en ce qu'il comprend une première 50
structure à grille (16), contre laquelle des objets
destinés à subir une action de coupe sont agencés
pour être placés et à travers les ouvertures de grille
(17) de laquelle les moyens de coupe (2) sont con-
çus pour passer pour obtenir l'action de coupe. 55
10. Dispositif selon l'une quelconque des revendica-
tions précédentes,
caractérisé en ce qu'il comprend des moyens (18)

pour comprimer les objets avant et/ou en même
temps qu'ils sont soumis à une action de coupe.

11. Dispositif selon les revendications 9 et 10,
caractérisé en ce que les moyens de compression 5
(18) comprennent une seconde structure à grille,
qui est conçue pour presser les objets subissant
une action de coupe entre elle-même et la première
structure à grille (16), et à travers les ouvertures de
grille de laquelle les moyens de coupe (2) sont con-
çus pour se déplacer.
12. Dispositif selon la revendication 10 ou 11,
caractérisé en ce que les moyens de compression 10
(18) sont déplaçables par rapport à la surface (15)
sur laquelle reposent les objets.
13. Dispositif selon l'une quelconque des revendica-
tions précédentes,
caractérisé en ce qu'il comprend des moyens (16, 18) 15
pour maintenir les objets tandis qu'ils sont sou-
mis à l'action de coupe.
14. Utilisation d'un dispositif selon l'une quelconque
des revendications 1-9 pour une action de coupe 20
sur des sachets, sacs à cordon, sacs et boîtes en
carton pour les ouvrir et libérer le contenu de ceux-
ci.
15. Utilisation selon la revendication 14, dans laquelle
au moins une partie du contenu dans les sachets, 25
sacs à cordon, sacs et boîtes en carton sont des
déchets compostables conçus pour être compostés
après ladite libération.
16. Utilisation d'un dispositif selon l'une quelconque
des revendications 1-13 pour une action de coupe 30
sur un matériau collant, sous forme de morceaux.
17. Utilisation selon l'une quelconque des revendica-
tions 1-13 ou 16 pour une action de coupe sur des 35
pneus de véhicule, où l'action de coupe concerne
la décomposition de ceux-ci en bandes. 40



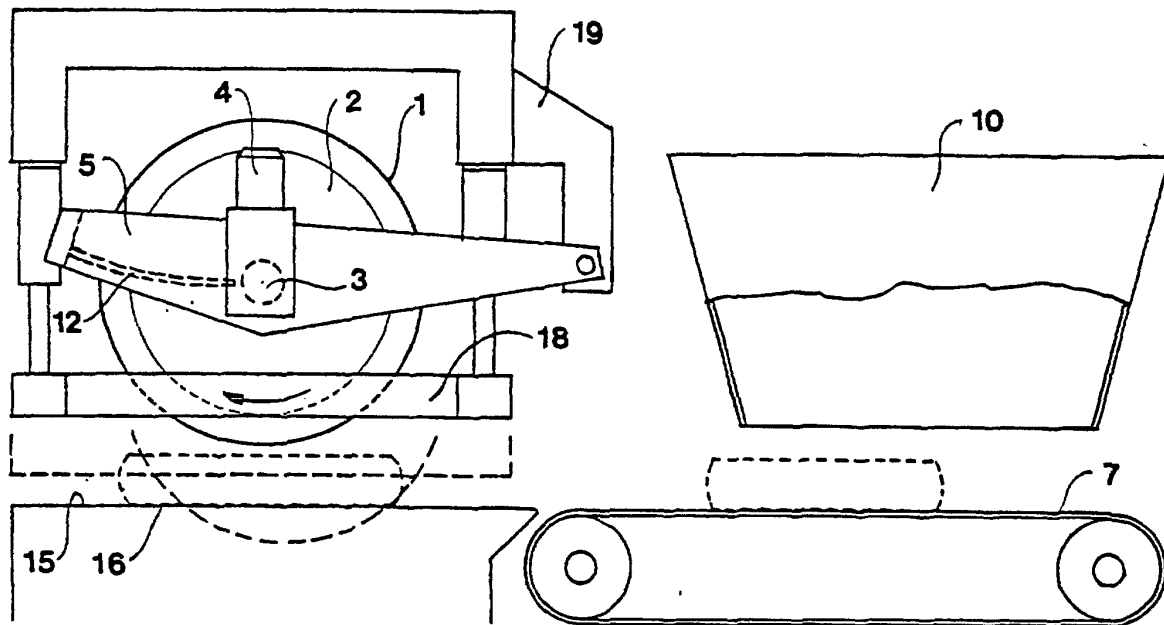


Fig 3

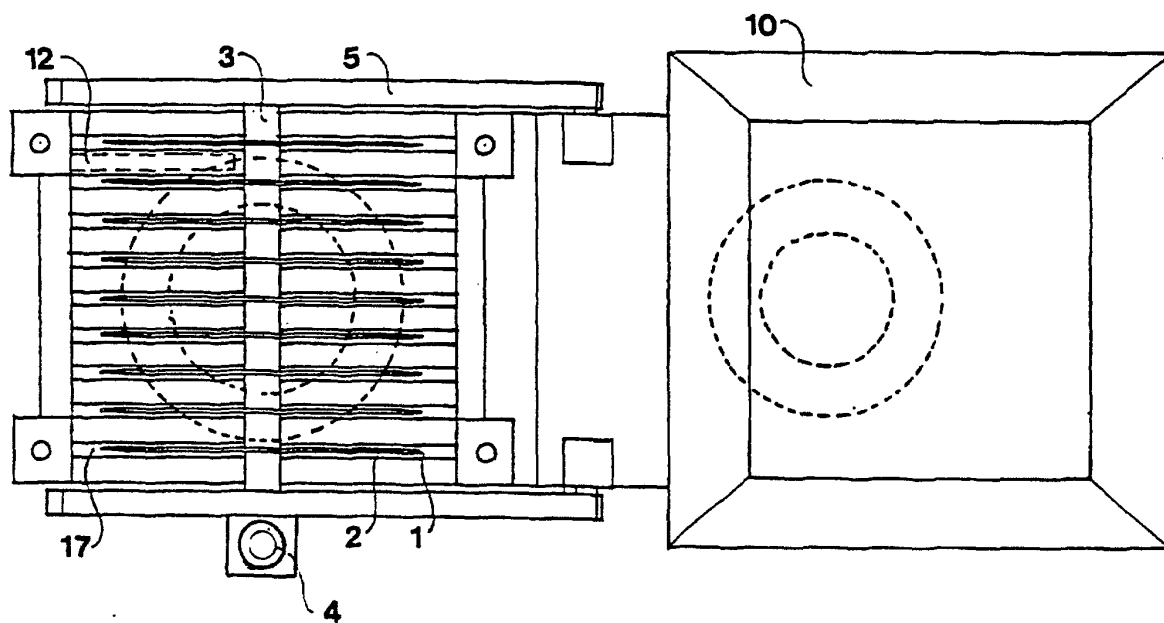


Fig 4

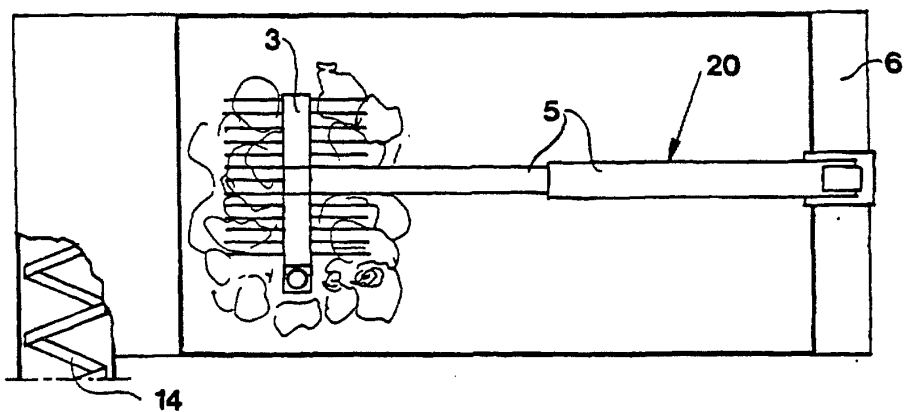
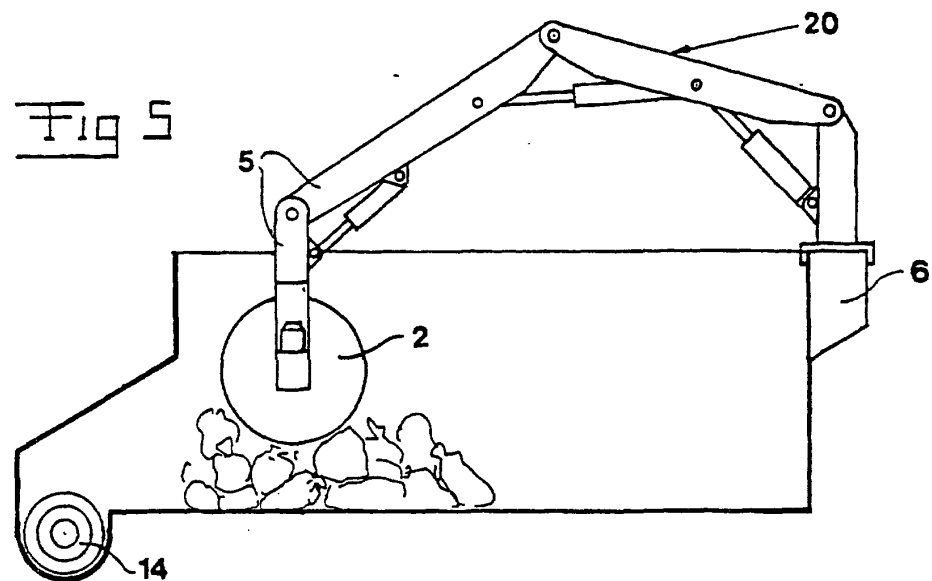


Fig 6

Fig 7

