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Declaration under Rule 4.17:

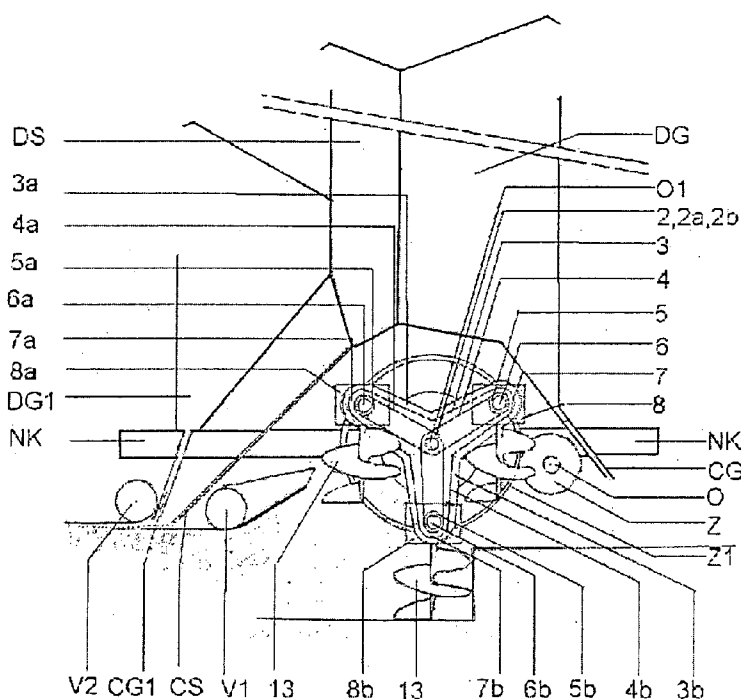
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(54) Title: ACCESSORY MACHINE FOR MONOPHASE COMPLEX AGRO TECHNOLOGY

Sheme 4; Accessory machine for monophase complex agrotechnology
- Verticak side cross-section



(57) Abstract: Accessory machine for monophase complex agro technology is used in sowing, and before that in soil preparation that includes all necessary physical and biological conditions for optimal growth and gain. This physical operation of classification, softening, mixing and homogenization of soil reduces the number of machinery passages to only one passage per sown unit, also reducing the pressing and flattening to the minimum, thus preserving and facilitating factors that affect the physical, biological and chemical characteristics of soil. Besides the precise individual deposition of each seed per desired depth, this machine performs the horizontal dispersion per entire surface in needed equidistance. The operation of multilayered condensation and flattening of homogenized soil provides proper layout and connection of seeds with soil, capillary structure, faster growth and transformation, suiting the demands of particular species for soil density above and below the laid seed. The homogenous spreading of fertilizer is done in the entire cross section and in an equal starting dosage per depth, including the means for protection, bioregulators

and structuring agents.

Accessory Machine for Monophase Complex Agro Technology

1. Technology area that the product refers to:

Invention belongs to the area of agro technology in production of plants, and performs all operations simultaneously.

According to the international classification of patents, the mark MKP is:

- A 01C 5/04 Machines for creation of surface holes (channels, holes etc.) for sowing and planting
- A 01C 5/06 Machines for overburden creation, or by spreading (surface spreading), drilling or plowing for crops and plants.
- A 01C 5/08 Machine for fertilization and planting, or both
- A 01C 7/08 Wide area sowing, sowing by deposition, in-line seed placement

2. Technical issue

The problem of sowing/planting, excluding some agro technical operations in land processing (basic processing, sowing preparation, sowing, fertilizing, protection and other activities) in order to decrease the land density by multiple pass-over by traction and accessory machines, and reduction of damaging influences on fertility.

Opposed to existing solutions and current state of technology, the application of this invention minimizes pressing of soil surface, increases its fertility (physical and biochemical characteristics), gains desired grainy structure, provides linear dispersion of seeds in width and length, regulates desired density of soil layers below and above the placed seeds, facilitates the dispersion of fertilizer, means for soil structuring and protection, growth stimulators etc, and reduces the usage of energy, mechanical devices and labor, achieving a higher degree of fruit growth.

3. State of current technology

Agricultural technology by which we address the physical, chemical and biological characteristics of soil, in order to provide suitable conditions for seed growth and transformation in mass production, consists of accessory machines for basic processing of soil, preparation for sowing, sowing, fertilizing and protection. Almost all of those operations are done individually, so that repeated intrusion causes surface pressure and higher soil density, which affects almost all fertility factors and demands more mechanical and human labor, also causing higher fuel and lubricant consumption. To facilitate these technological issues, a number of technical solutions is in use, in order to reduce the damaging effects of overrunning with machinery, to reduce fuel consumption and mechanical and human labor, with the goal to save time.

In this sense, the reduced agrotechnical operations provide results, but cannot be done in a repeated manner, because of other agrotechnical demands by different cultures of plants and soil.

There are known solutions that use only a single passage of accessory machines over the ground that provides a high degree of desired agrotechnical demands. The newest and most complex solutions offer machines for monophase agrotechnology, so called "super cultivators", which have until now fulfilled the agrotechnological demands.

4. Invention essentials

With the accessory machine for monophase complex agricultural technology, the goal achieved is a surface and in-depth processing of soil by one-time passage of machinery. It is based on an innovation in the mode of processing, by drilling, inverting, dispersion and crunching, that provides softening and granulation, thus facilitating the seed-soil contact. The process runs in such manner that the aggregated bores, driven by transmission mechanisms, drill frontally, cutting off and breaking the spiral layers, which are then, when bores retreat, mixed and grind to a crumb-like structure. This achieves the primary goal in the production, and that is to make the soil ready for sowing with only a one-time passage of machine over the ground. Operational depth can be arranged, and the process allows mixing of surface plants and plant residue with the soil. This principle is an innovation in agrotechnology, and gives new and key advantages in the following:

- The multilayer preparation above and below the placed seed and determination of density degree, including the proper preparation of soil for placing of seeds and its further growth and transformation.
- Sowing in which the seed can be individually placed on the precise given depth and in assigned mutual horizontal distance at entire surface, without lines or strips, succeeded by covering with a layer of sponge-structured soil, with the feature of density regulation. This allows for good contact of the seed with the ground, giving the capillary structure, facilitating seed growth and transformation and reducing the loss of moisture.
- Homogenous layout of fertilizer per depth, with the possibility to assign a start-up dosage right next to the seed.
- Incorporation of means for soil aggregation structuring, protective means, growth bioregulators, achieving a considerably better moisture and oxygen regime in the ground. Aided by this, the genetic potential of plants can give higher crop gain.

5. Short description and schemes

Blueprints illustrate and explain the basic principles of the invention:

Scheme 1: Accessory machine for monophase complex agrotechnology

- vertical cross-section through three-beamed bearing structure TN1

- horizontal cross-section through three-beamed bearer TN1 and TN2, and bore bearers: 8,8a and 8,8b and bores 13 (variance 1)

Scheme 2: Accessory machine for monophase complex agrotechnology

- Horizontal cross-section through three-beamed beare TN1 and TN2, and bore bearers 8,8a and 8b, and bores 13, with chain transmission 10 (variance 1)

Scheme 3. Accessory machine for monophase complex agrotechnology

- Horizontal cross-section through three-beamed bearer TN1 and TN2, and bore bearers: 8,8a and 8b, and bores 13, with the drive shaft with angle: 6,6a, 6b (variance 2)

Scheme 4. Accessory machine for monophase complex agro technology

- Vertical side cross-section

6. Detailed invention description

Drawings on pictures 1 – 4 show the accessory machine for monophase complex agro technology that receives the drive over the drive shaft or hydro-engine.

Basic construction is made of:

- Supporting structure NK, that connects to the tractor in three connecting points as a dependable accessory or as semi-dependable, with wheels on the side: T. that carries.
- Depot for seeds DS with pipes:CS for flow of seeds to the soil,
- Fertilizer depot DG with pipe system CG for the flow of fertilizer to the soil,
- Depot for other means (pesticides, bioregulators, structuralisers etc.)
- Shaft O with flywheels: Z and Z1, driven by hydro-engine HM, transmitting the the drive to the moving part of the machine.

Moving part:

- Three-beamed bearers: TN1 and TN2 driven by flywheel Z2 and Z3, connected with flywheels Z and Z1 by axle O, rotating around horizontal axis, with beams under the angle of 120 degrees, leaning to central part in which the driven shaft O1 with three parallel flywheels 2,2a and 2b is located, from which the rotation is passed from beams 3,3a and 3b by chains 4,4a and 4b to flywheels 5,5a and 5b, located on axles 6,6a and 6b in the housings of beam heads 7,7a and 7b.
- Bearers of aggregated bores: 8,8a and 8b leaning to basis in beam head housings: 7,7a and 7b of three-beamed bearers: TN1 and TN2. The rotation is transmitted through bearers of aggregated bores.

Variance 1:

From axles 6,6a and 6b, through housings of conus flywheels 9,9a and 9b and chains: 10 on flywheels 11 of axle 12 that carries the bores,

Variance 2:

Axles: 6,6a and 6b originating from the housing of three-beamed bearer heads: 7,7a and 7b have ankles and carry conus flywheels 14 who transmit the drive over the conus flywheels 15 to axles 12 on which the driven aggregated bores 13 are mounted.

- h) Bores: 13, aggregated on each bearer: 8,8a and 8b
- i) Rollers: V1 for rolling and condensing of dispersed soil below the seed and V2 for flattening and condensing of dispersed (soft and grind) soil above the seed. Hydraulic-tuned rollers have are affixed in four points to the side on the supporting structure: NK (instead of them, a plow can be affixed).

The functioning of elements and construction in whole:

The three-beamed roller: TN1 and TN2 seated in the supporting structure: NK are mutually connected in head housings of beams: 7,7a and 7b with bearers of aggregated bores: 8,8a and 8b, bearing aggregated bores 13. Interconnected in such manner with aggregated bore bearers 8,8a and 8b, the three-beamed bearers TN1 and TN2 rotate around their horizontal axis, driven by hydro-engine HM via flywheels: Z and Z1 from the axis O to the flywheels: Z3 and Z4, in a roller-like movements, in the direction of movement as a moving part. The rotation velocity of interconnected three-beamed bearers TN1 and TN2 is regulated and dependable on the depth and needed granule size of soil aggregates.

The drive from drive shaft or hydro-engine to axle O1 in the three-beamed bearer TN1 via parallel flywheels: 2,2a and 2b is redirected through beams: 3,3a and 3b via chains: 4,4a and 4b to flywheels: 5,5a and 5b mounted on axles: 6,6a and 6b in the head housings of beams: 7,7a and 7b of the three-beamed bearer TN1.

For further drive transmission to bores 13 there are two variances:

Variance 1:

Via chains,

From axles: 6,6a and 6b the drive is transmitted to conus flywheel housing: 9,9a and 9b on bearers of aggregated bores: 8,8a and 8b to chains 10 and flywheels 11 on axles 12 on which the driven aggregated bores 13 are located.

Variance 2:

By axles consisting of multiple ankles.

Axles: 6,6a and 6b coming from the beam head housings of beams: 7,7a and 7b is ankled and has conus flywheels 14 which transmit the drive via conus flywheels 15 on axles 12 on which the driven bores 13 are located.

The driven aggregated bores 13 with simultaneous rotation of the moving part of the machine in a roller-like manner, and in the direction of movement, drill the soil, cutting it

in spiral strips, which are then elevated by the bore spiral, mixing the layers and crushing them into aggregates of different fractions, where larger ones fall down and then get covered by smaller fractions. This spongy mass is then flattened by the roller V1 that flattens and presses until the desired density degree is achieved. To the conditioned soil, the pipes CS deliver the seed from the seed depot, and from a side, by DG pipes, the starting dosage of fertilizer is delivered, followed by the grind soil mass that covers the seeds and then gets flattened by V2 roller thus condensing the processed and sown surface. Layer density and their thickness, achieved by rollers V1 and V2, i.e. the depth of seed deposition, can be adjusted hydraulically on roller bearers.

The novelty in current sowing technology is the possibility of a better linear placement of seeds per depth, and a particular novelty is the possibility of deposition of seeds per width, at an exact distance from one another, depending on the desired number of plants per surface unit, which was not achievable with mechanized sowing of wheat cultures, because the sowing was always done in-line, and in this case it is done across entire surface, in equidistant layout of seeds. All technical possibilities in terms of operation supervision, i.e. operation depth, aggregate granulation, layer density and their flattening, depth of sowing, seed quantity, seed distance and similar operations can be steered by electronic control from the operator's cabin.

7. Modes for industrial and other applications of invention

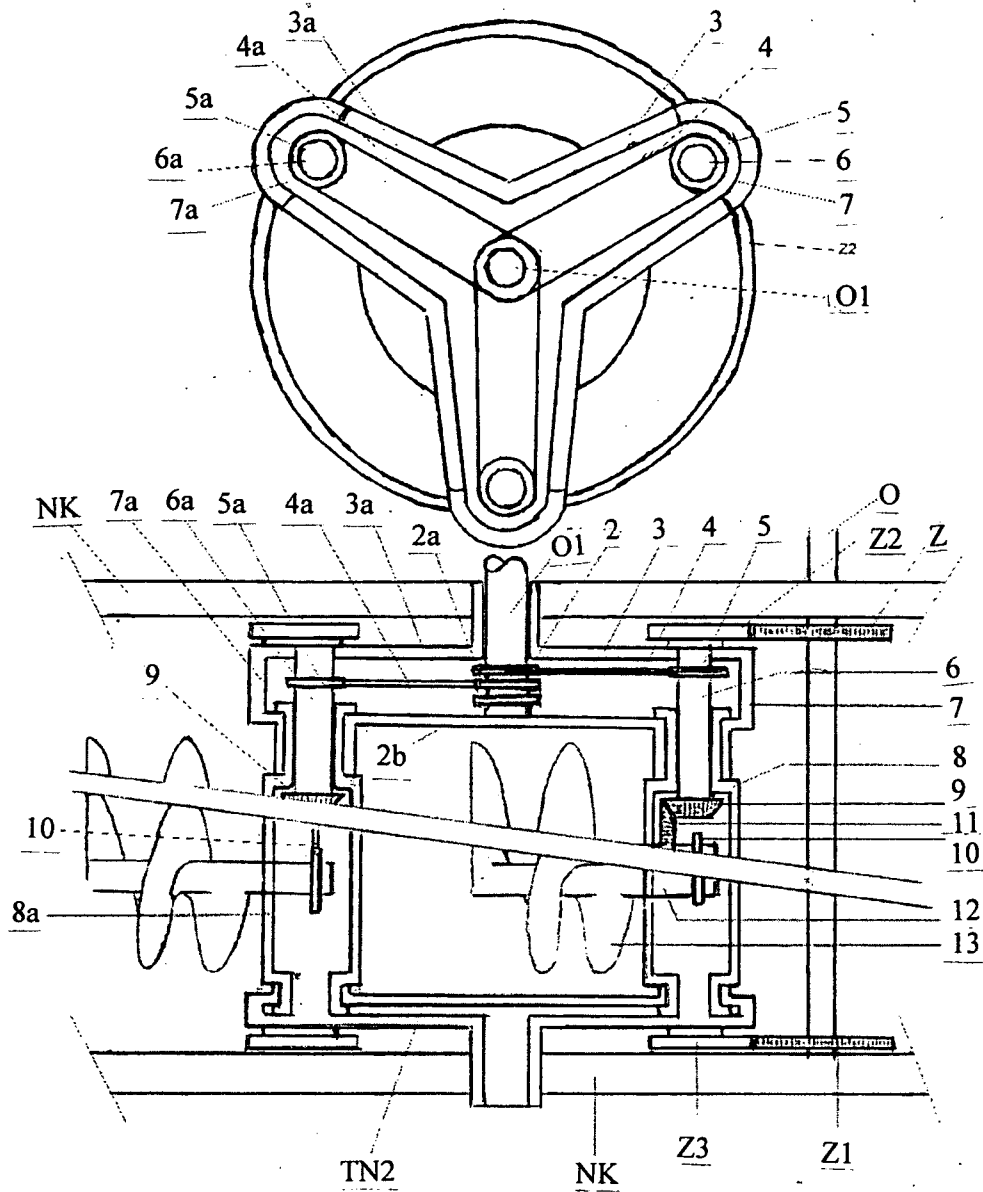
The accessory machine for monophase complex agro technology is technically and economically feasible accessory device, which has key advantages over the known machines used for this purpose, and in that sense can be applied not only in agriculture, but also in similar branches, such as forestry, horticulture, etc.

Patent application (CLAIMS)

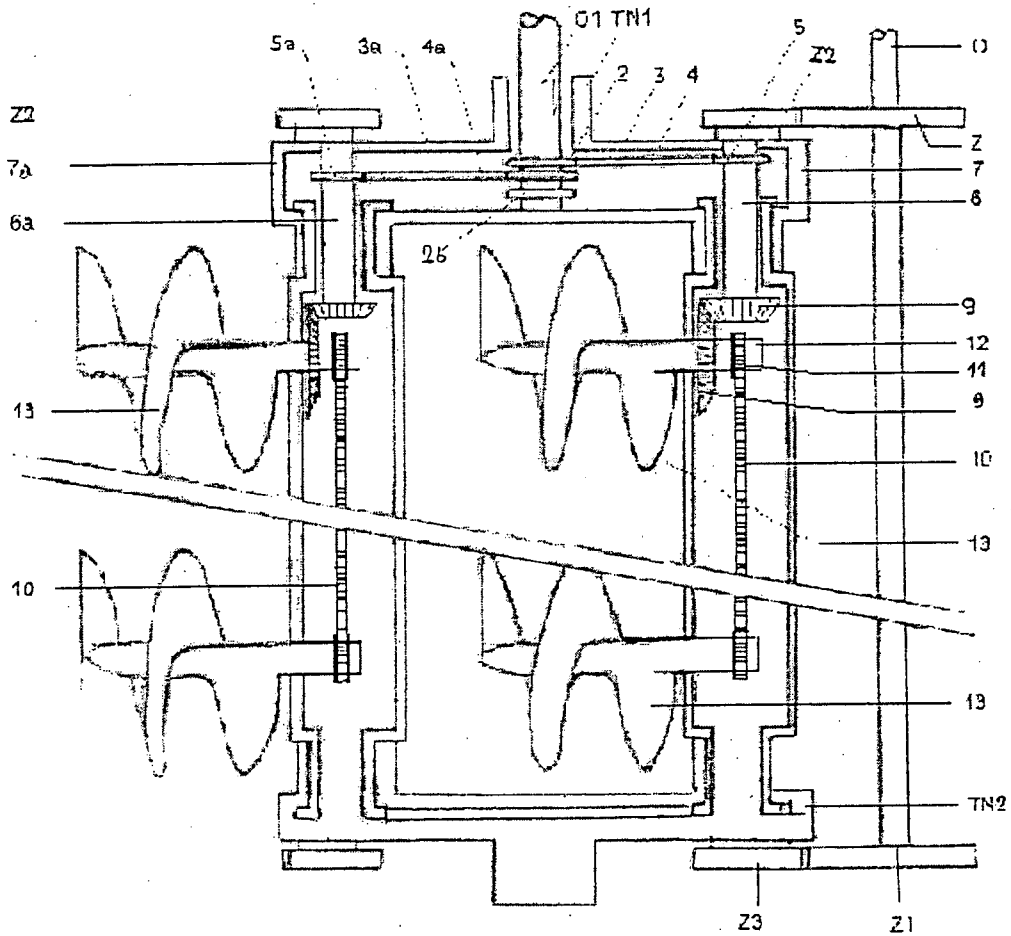
1. Accessory machine for monophase complex agro technology, marked as such, is a technological solution that uses the frontal operation of bores (13) that drill the soil, penetrating it under a changeable angle, crunching, mixing and grinding it to a crumb-like structure, ready for sowing with one passage of sowing machinery. This excludes excessive running over by machines, increasing fertility and optimal conditions for laying of seeds, its growth and transformation, reducing the use of labor, equipment and time. The bores are aggregated on bore bearers (8,8a, 8b) and three-beamed bearers (TN1 and TN2) driven by hydro-engine (HN) via axle (O1) and flywheels (2,2a, 2b), by chains (4,4a, 4b) through beams (3,3a, 3b) of the three-beamed bearer TN1, to flywheels (5,5a, 5b) located on axles (6,6a, 6b) in the housings of beam heads (7,7a, 7b) consisting of ankles and bearing conus flywheels (14) connected with flywheels (15) on axles (12) on which the bores (13) are affixed. As a variance 1a the three-beamed bearers (TN1 and TN) interconnected with bearers of aggregated bores, are driven by flywheels (Z2 and Z3) connected with flywheels (Z and Z1) from the shaft (O) with revolution control.
2. In connection to application 1, named as such, from the fertilizer dozer (DG) by pipes (CG) the fertilizer is equally distributed per entire depth during bore (13) operation, and the fertilizer from the dozer (DG1) by pipes (CG1) is equally distributed as a starting dosage for the laid seed.
3. In connection to application 1, named as such, the plow (g), roller (V1) and roller (V2), suspended on hydraulic suspenders, perform the flattening and multilayer preparation of soil below and above the laid seed, with crumb-like structure, and with considerably improved conditions for moisture and air soil regime.
4. In connection to application 3, named as such, the regulation of hydraulic bearers, plow (g) and rollers (V1, V2) perform the condensation of soil to a desired degree in order to achieve the best connection of seed with the soil, increase adhesion and capillary functions, facilitate seed growth and transformation and reduce the loss of moisture.
5. In connection to application 4, named as such, the pipes (CS) from the seed depot (DS) the individual laying of seeds is done on the soil rolled and flattened by roller (V1) and then covered by grinded soil layer, and then rolled by roller (V2)
6. In connection to application 5, named as such, the adjustment of pipes (CS) is done horizontally, achieving the seed equidistance without lines or strips.

Scheme 1; Accessory machine for monophase complex agrotechnology

- vertical cross-section through three-beamed bearing structure TN1
- horizontal cross-section through three-beamed bearer TN1 and TN2, and bore bearers; 8,8a,8b and bores 13 (variance 1)

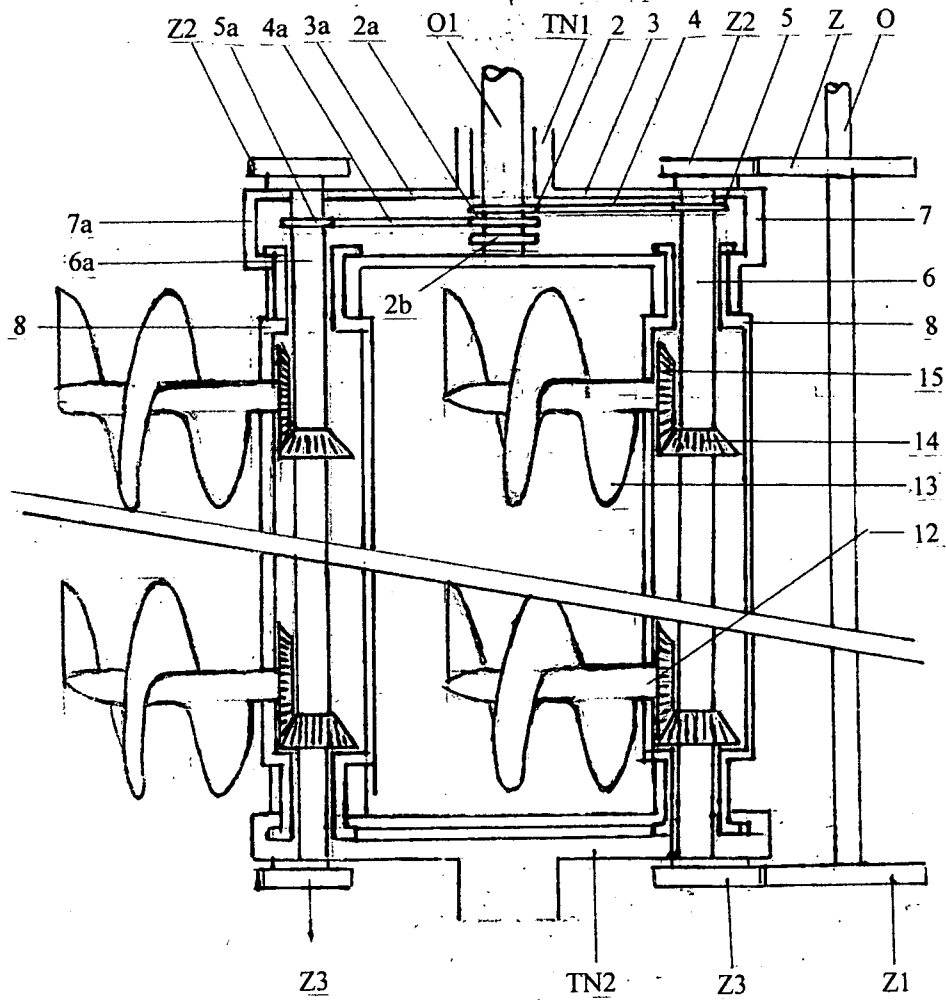


Scheme 2; Accessory machine for monophase complex agrotechnology
 -Horizontal cross-section through three-beamed beare TN1 and TN2, and bore
 bearers 8, 8a, 8b and bores 13, with chain transmission 10 (variance)

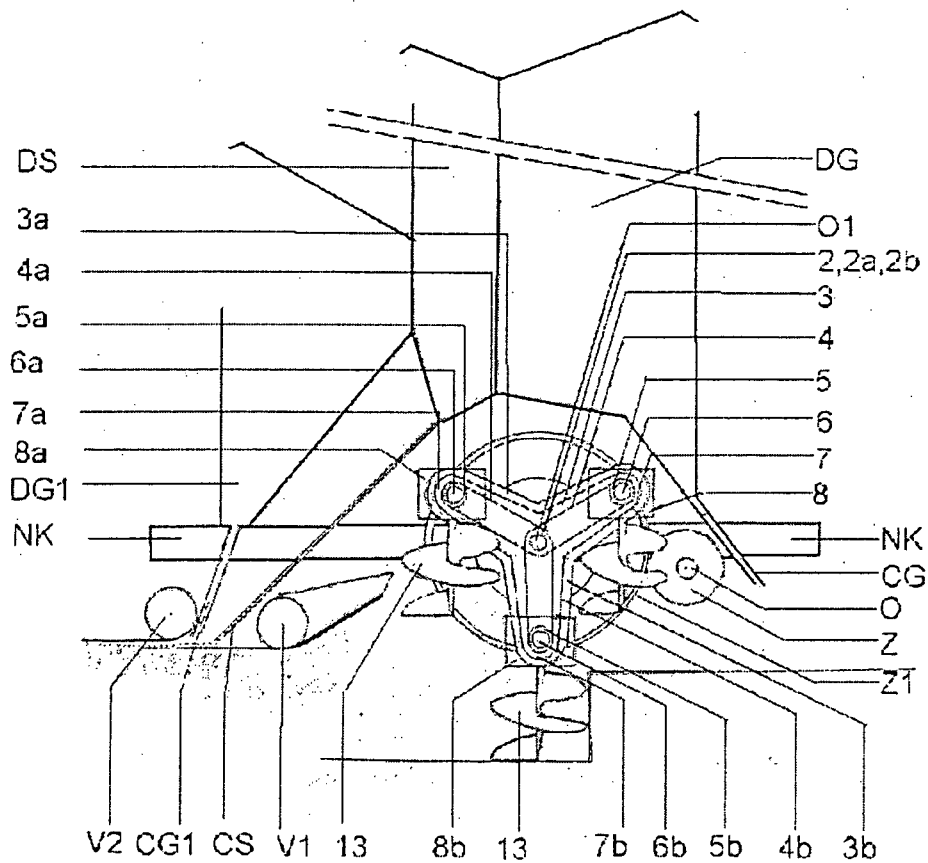


Scheme 3; Accessory machine for monophase complex agrotechnology

- Horizontal cross-section through three-beamed bearer TN1 and TN2, and bore bearers; 8, 8a and 8b, and bores 13, with the drive shaft with angle; 6, 6a, 6b (variance 2)



Scheme 4; Accessory machine for monophase complex agrotechnology
- Verticak side cross-section



INTERNATIONAL SEARCH REPORT

International application No
PCT/BA2008/000006

A. CLASSIFICATION OF SUBJECT MATTER
INV. A01B33/06 A01B49/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A01C A01B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005/161237 A1 (MANOR GEDALYAHU [IL]) 28 July 2005 (2005-07-28) abstract page 3, paragraphs 31,38 page 4, paragraph 43 claims; figures	1-6
A	DE 87 08 039 U1 (HOFER, HERBERT, 8319 VELDEN, DE) 30 July 1987 (1987-07-30) page 1, paragraph 1 page 5, paragraphs 1,3 page 6, paragraphs 1,2 claims; figures	1-6
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Further documents are listed in the continuation of Box C.



See patent family annex.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/BA2008/000006

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 732 227 A (WOLF DAN [IL] ET AL) 22 March 1988 (1988-03-22) abstract column 2, line 21 - line 56 claims; figures	1
A	FR 694 549 A (ROESER-STORCK, B) 4 December 1930 (1930-12-04) page 1, right-hand column, line 55 - line 60 page 2, right-hand column, line 58 - line 76 claims; figures	1
A	US 1 773 672 A (GRIM JOHN W) 19 August 1930 (1930-08-19) page 1, line 1 - line 6 page 2, line 19 - line 40 claims; figures	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/BA2008/000006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005161237	A1	28-07-2005	NONE
DE 8708039	U1	30-07-1987	NONE
US 4732227	A	22-03-1988	NONE
FR 694549	A	04-12-1930	BE 361346 A
US 1773672	A	19-08-1930	NONE