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

(11) **EP 1 952 846 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
06.08.2008 Bulletin 2008/32

(51) Int Cl.:
A62C 39/00 *(2006.01)* ***A62C 3/02*** *(2006.01)*

(21) Application number: **07122889.4**

(22) Date of filing: **11.12.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

(30) Priority: **12.12.2006 HU 0600906**

(71) Applicant: **Forest7 Kft.**
1171 Budapest (HU)

(72) Inventor: **Szeverényi, Tamás**
1171 Budapest (HU)

(74) Representative: **Kovari, György**
Advopatent,
Office of Patent and Trademark Attorneys,
Fö u. 19
1011 Budapest (HU)

(54) **Procedure for the creation and transformation of line clearances, and line clearances**

(57) The object of the invention relates to a method for the creation and transformation of line clearances during which we cut down individual plants on the area destined for the line clearance and characteristic of which method is that we cut down the individual plants that grow higher than the shrub level and, optionally on one or more parts or on the entire area destined for the line clearance we cut down the individual plants growing up to the shrub level or lower than that in a first procedural step in order to establish an initial stand of shrub, then in a second procedural step we stabilise the initial shrub stand obtained as a result of the first step in such a way that we cut down the individual plants discovered that grow higher than the shrub level.

Our invention, furthermore, also relates to line clearances that are either partially or entirely colonised by vegetation and the vegetation of which line clearances consists of a closed shrub stand.

EP 1 952 846 A1

Description

[0001] The object of the invention relates to a method for the creation and transformation of line clearances for ensuring the safety distance of overhead cables, as well as to such line clearances.

[0002] The trace lines of overhead cables, for example high voltage electric cables, or telecommunications cables, or aerial lifts, e.g. ski-lifts also need to be ensured in areas covered in forest in the interest of preventing the vegetation from endangering the reliable operation of these technical installations, and, furthermore, so that they may be accessed easily for the purpose of maintenance and repair. Due to this overhead cables are led through line clearances.

[0003] A line clearance is an area on which the extent of the vegetation is located at a safe distance from the overhead cable running along it. Therefore, the vegetation of the line clearance should not only remain under a certain height limit under the cable, but it should also be taken into consideration that trees possibly falling from the edge of the line clearance towards the overhead cables do not endanger the overhead cables, in other words the line clearance must be of the appropriate width. The line clearances may pass over forestry areas, arable lands, roads, tracts of water, etc.

[0004] As vegetation is a living association that is in a state of continuous change - growth - it is necessary to continuously monitor the vegetation located on the area of the line clearance and regularly reduce the extent of the vegetation in some way. The present invention specification primarily relates to line clearances running through forestry areas. In essence we mean forest when we mention forestry area but this also includes all areas affected by the succession process (e.g. meadow, water habitat, etc.), so all areas where plants may be established that endanger the overhead cables.

[0005] Certain members of the vegetation of neglected line clearances that are not regularly maintained (generally types of tree) may dangerously approach the overhead cables and damage them firstly in the times of storms, and later on after growing large even in calm period, causing, for example, electric short circuits or the breakage of the cable. The consequences of this damage may include accidents, e.g. electric shock accidents involving serious personal injury or even death, and breaks in the power supply, even extending to whole regions of the country.

[0006] In order to avoid such damage and through this preventing accidents, power cuts, and cessation of other services the regulations prescribe a significant, safe protective distance between the overhead cable running along the line clearance and the members of the plant association. The protective distance prescribed in this way in Hungary for 120 kV electric cables, for example, is 2 m, for 220 kV cables 3 m, for 400 kV cables 4 m and for 750 kV cables 7 m.

[0007] The current line clearance creation and maintenance practice essentially involves the frequent cutting of the shrubs and trees in the line clearance (effect range) of the overhead cables and the neutralisation of the biomass produced or transporting it to the edge of the line clearance. From the point of view of nature protection (and from the point of view of soil protection) this procedure is especially damaging. As in most of the cases line clearance creation and maintenance carried out with a slash chopper chops up everything without selection, including the shrubs that do not endanger the overhead cables, protected herbaceous plants, shrubs and other plant species as well as protected and non-protected animals (amphibians, reptiles, small mammals, etc.). Apart from their direct destruction, the populations of such creatures are affected by the destruction of their habitats, shelter, nesting places and sources of food. By transporting the cut down plants away or by chipping them the habitats of creatures living in decaying vegetation also disappear. So apart from the application of this maintenance technology being costly and labour-intensive, it is a damaging procedure from an ecological point of view as well.

[0008] The present line clearance creation and maintenance procedure also involves damage to the soil. The use of heavy machinery and vehicles, the mobilisation, the regular monitoring and the vehicle traffic involved, the very low cutter of the line clearance maintenance machines and the tyres of the heavy machinery leaving deep impressions all involve the damaging of the soil and so open patches without vegetation appear. This damage does not only appear in the area of the line clearance, but also partially on the route leading there. Soil without vegetation coverage is easily eroded and the establishment of new plants there or the planting of new vegetation is a slow process. What is more it is not certain that native plants colonise the open areas of soil made in the way, it frequently happens that foreign species colonise them. The presence of these species is on many occasions not only disadvantageous, but in certain cases exceptionally damaging (e.g. common ragweed). The seeds of non-native species arriving on the machinery, primarily on their wheels contribute to the spreading of the non-native species.

[0009] Non-native species are able to colonise easily also for another characteristic feature of the current unfavourable line clearance creation and maintenance procedure. As the vehicle traffic involved with the creation and maintenance and other related machine usage disturb the plants and animals living there, the communities of which would be are only able to regenerate slowly and/or incompletely, so promoting the colonisation and spreading of invasive species. The damaging process, from a nature protection point of view, may force out native species either partially or entirely from the damaged area, from the line clearance and its environment. This process may have further escalating effects, like, for example, the disappearance of the food plants of native animal species, the appearance of possibly poisonous

or allergenic species.

[0010] Among the unfavourable effects of the heavy vehicles we must mention the undesirable soil-compaction effect as well, which from an ecological point of view is also unfavourable, as it can result in the elimination of the animals living in the soil and the blocking of their tunnels, and such compacted soil makes the development of plants difficult and reduces its ability to permit the permeation of water and air.

[0011] A further disadvantage of the current line clearance creation and maintenance procedure is that in the place of the removed vegetation forestation begins again due to the effect of succession processes. During this process the individual plant species appear at the same time, their becoming dominant, however, takes place in various periods. First it is the shrub species that become dominant, following these the pioneer tree species, then the closed forest tree species. In unmixed, single-species forests this succession process is slower. However, for example in acacia stands high-growing acacia shoots colonise very quickly, which are not desirable in the line clearance because of their ability to grow high. Therefore, the current technique requires maintenance from time to time involving significant expense, as from time to time all plants have to be removed from the line clearance.

[0012] We set as a task to work out a method for the creation and establishment of a line clearance that overcomes the aforementioned disadvantages of the present line clearance creation and maintenance procedures and that as a consequence of which a line clearance can be established in forestry areas that is suitable from a technical and ecological point of view which requires significantly less maintenance than what is required by the current procedures, so causing significantly less ecological damage, and, furthermore, which is cheaper as well.

[0013] Our invention is based on the recognition that if we establish a stable, closed shrub stand on the area of the line clearance that, on the one hand, does not permit the colonisation and growing of high trees (that endanger the overhead cables), and, on the other hand, that does not require maintenance, only, regular, periodical inspection, then we can overcome the disadvantages and damage listed above coming from the traditional method (stem crushing and other methods listed above) and using an environmentally friendly solution with costs and work investment involving a maximum of a fraction of the costs of this method we can ensure the creation, transformation and maintenance of the line clearances.

[0014] On the basis of our recognition we have solved the set task with a method that consists of two steps: in the first procedural step we create an initial stand of shrubs so that in the area intended for the line clearance we cut down the individual undesirable plants that grow high (endangering the overhead cable) or on the area intended for the line clearance we partially or completely cut down all of the plants and let a stand of shrubs develop on its own on these plant-free areas, and/or we plant shrubs or, optionally third order trees on these areas, then in a second procedural step we stabilise the initial stand of shrubs by preventing the development of undesirable plant species, we cut down individual cases of these. By the end of the stabilisation step a closed stand of shrub is established from which, due to it being closed, undesirable plant species are unable to grow.

[0015] According to the above, therefore, the present invention relates to a method for the creation and transformation of a line clearance during which we cut down individual plants on the area destined for the line clearance and which method is characterised by that we cut down the individual plants that grow higher than the shrub level and, optionally on one or more parts or on the entire area destined for the line clearance we cut down the individual plants growing up to the shrub level or lower than that in a first procedural step in order to establish an initial stand of shrub, then in a second procedural step we stabilise the initial shrub stand obtained as a result of the first step in such a way that we cut down the individual plants discovered that grow higher than the shrub level.

[0016] According to a preferred embodiment of the method according to the invention in the first step we plant shrubs, optionally native shrubs, and optionally third order tree species partially or entirely in the place of the cut down plants in order to establish the initial stand of shrubs.

[0017] In accordance with another preferred embodiment of the method according to the invention we plant one or more plant species selected independently of one another from the following group as shrubs, native shrubs or third order trees: tatarian maple, green alder, shadbush, desert falseindigo, dwarf Russian almond, barberry, heather, ground cherry, common bladder senna, cornelian cherry, common dogwood, scorpion senna, smoke tree, cotoneaster species, hawthorn species, species of *daphne,* silverberry, spindle-tree species, alder buckthorn, sea buckthorn, common juniper, laburnum, privet, honeysuckle, spiny box-thorn, blackthorn, buckthorn species, gooseberry species, rose species, bramble species, butcher's broom, certain willow species, common elder, spirea species, bladder nut tree, bilberry species, viburnum species, vine species.

[0018] Our invention, furthermore, also relates to line clearances that are either partially or entirely colonised by vegetation and the vegetation of which line clearances consists of a closed shrub stand.

[0019] According to a preferred embodiment of the line clearance according to the invention, the closed shrub stand is formed by shrubs, optionally native shrubs and optionally by third order trees.

[0020] According to a further preferred embodiment of the invention the closed shrub stand is formed by one or more plant species selected independently of one another from the following group: tatarian maple, green alder, shadbush, desert false indigo, dwarf Russian almond, barberry, heather, ground cherry, common bladder senna, cornelian cherry, common dogwood, scorpion senna, smoke tree, cotoneaster species, hawthorn species, spe-

cies of *daphne,* silverberry, spindle-tree species, alder buckthorn, sea buckthorn, common juniper, laburnum, privet, honeysuckle, spiny box-thorn, blackthorn, buckthorn species, gooseberry species, rose species, bramble species, butcher's broom, certain willow species, common elder, spirea species, bladder nut tree, bilberry species, viburnum species, vine species.

[0021] Through our invention then we create a stable, closed stand of shrub on the area destined for the line clearance, after which creation it works as a self-sustaining system. Due to its unique ecological features (e.g. thick vegetation, little sunlight let in, large degree of root and growth area competition, etc.) trees growing higher than the shrub level are not able to grow out, therefore a plant association such as this will not endanger the overhead cables even in the long term. After the establishment and stabilisation of the closed shrub stand, the line clearance created in this way does not require regular maintenance, as opposed to the traditional line clearances, merely a periodical inspection (e.g. every few years).

[0022] When establishing the line clearance according to the invention we cut down the individual undesirable plants that endanger the overhead cable. Following this we can leave the cut down plants as they are, cut into parts or chipped at the site for the animal that live in rotting vegetation, the more valuable pieces are prepared for transportation, or all of the cut down plants may be removed. It is obvious that the advantage of the method according to the invention is that - as opposed to the current procedure - it is not necessary to remove the cut down plants, instead they may be left on the site. One of the disadvantages of the current line clearance creation and maintenance methods is that the transportation and processing of the cut down plants significantly increases the costs. Within the scope of the present invention cutting down means the removal of all types of stem.

[0023] On the creation or transformation of the line clearance according to the invention the relief features of the land must be taken into consideration. As if there is a hill in between two towers, then depending on its height the plants forming the shrub level must be selected from among the shorter ones, as the plants growing on the top part of the hill may reach the protective distance of the overhead cables in spite of them being shrubs or third order trees. On the other hand if there is a valley between two towers, then depending on its depth it might not be necessary to create a line clearance at all, as the height of the tree species growing here can not reach the protective distance of the overhead cables.

[0024] It is also obvious for the person skilled in the art, that different plant species should be used for creating the line clearances according to the invention in case of high voltage cables running at high levels, and other plant species in case of low running aerial lifts, since for the latter kind of line clearances only definitely shorter species can be taken into account in most of the cases.

[0025] In the light of the above the shrub level according to the invention cannot be determined by a single height value. The shrub level is always given by the distance between the ground and the protective distance of the overhead cables, and this may change continuously along the line clearance due to the relief features. Nevertheless, the shrub level may extend at the maximum to the height that, in forestry terms, the shrubs and third order trees forming the shrub stand are able to grow to.

[0026] Within the scope of the present invention the term of initial shrub stand means a shrub stand (in other words a plant association consisting of shrubs and third order trees), which is not yet a close plant association, but includes an area that is more or less open, not completely covered in vegetation (e.g. where taller tress have been removed from). Individual plants from undesirable plant species that grow to large heights may still grow from the open areas of the initial shrub stand. The vegetation of the initial shrub stand consists of the plants retained on the area destined for the line clearance growing up to the shrub level and/or and plants growing up to the shrub level that have been planted there.

[0027] So as the first step of the line clearance creation or line clearance transformation method according to the invention we establish the initial shrub stand so that we cut down all plants on the area destined for the line clearance that may reach the protective distance of the overhead cable at any given place (first method), or we cut down all the plants and plant plants on the area that do not reach the protective distance (second), or we combine these two methods.

The combination of the two methods can be implemented by only cutting down the undesirable plants in certain areas of the area destined for the line clearance, and cutting down all the plants in other areas. Using any of these methods or their combination we get either partially or completely empty areas on the area destined for the line clearance. In these open areas we either allow for the shrub stand to develop on its own or assist the development of the shrub stand by planting appropriate species of plant. These two solutions may be combined, that is, in certain open areas we leave them to allow the shrub stand to develop on its own, and in other open areas we plant suitable plants. In this way we create the initial shrub stand as the first step of the method according to the invention.

[0028] Within the scope of the present invention the term of stabilisation means the process during which we monitor the composition of the initial shrub stand and if during this we find that an individual of an undesirable plant species that is one that grows to a height greater than the shrub level on the area destined for the line clearance then this is cut down. So in the initial shrub stand only individuals of plant species that grow to the appropriate size remain in the long term, these plants grow, propagate and spread, so the initial shrub stand become an increasingly closed association. At the completion of stabilisation from the initial shrub stand we get a closed, stable plant association, the closed nature of which does not make it possible for undesirable plant

species to develop here. In other words the plant species composition of the closed shrub stand will be stable.

[0029] In general the establishment of a stable, closed shrub stand takes about five years, so about this much time is required to stabilise the line clearance. The stable closed shrub stand established as a consequence provides an undisturbed ecosystem, following this the amount of human presence required is minimal (also including the disturbing presence of machinery). For a person skilled in the art it is obvious that the period of time required for the stabilisation of the line clearance depends on the composition of the vegetation developing in the line clearance, on the associations in the vicinity of the line clearance, and on the climate and other environmental conditions. In warmer and wetter climates allowing faster plant development, for example, a line clearance according to the invention will stabilise faster.

[0030] Within the scope of the present invention native shrubs means those shrubs that live on the area destined for the line clearance even if a line clearance is not established there, so in space and time the area destined for the line clearance is deemed to be their natural habitat.

[0031] The cutting down of the plants growing to a height endangering the overhead cables may take place in several ways. The simplest method of cutting is to manually cut down the individuals of such plants, using a hand tool (using a hand saw, spade, etc.) or using a machine (e.g. bush saw, or chainsaw in the case of larger trees). In certain cases it is practical to remove the parts of undesirable plants (e.g. acacia) that are under the ground (e.g. the roots) as well (root-raking), which, on the one part, prevents these undesirable plants from developing again, and on the other part, provides living space for on or more members of the future shrub stand.

[0032] Apart from physical cutting down according to the invention there is also the possibility of destroying the undesirable plants chemically or biologically, namely to use a specific chemical, virus, bacterium, fungus, insect or other living things having an effect against the undesirable plant. However, great care should be taken when using such chemical or biological instruments, as according to the invention our objective is primarily to remove the undesirable plants from the area of the line clearance, therefore, in a given case care should be taken that the effect of the chemical or biological instrument does not extend over the limits of the line clearance. However, in certain cases, it may be permitted that the effect of the specific chemical or biological instrument used during the line clearance creation and transformation to extend over the borders of the line clearance, e.g. when non-native species have colonised in the line clearance and its vicinity during the application of the current line clearance creation and maintenance method detailed above. For example the aggressively spreading and low association-forming acacia can be destroyed with the chemicals Glialka, Medallon or Lontrel being sprayed on the leaves. Within the scope of the present invention the term of cutting down shall be deemed as to include the destruction of the plants chemically or biologically as well.

[0033] In the sense of the present invention it is preferred if when implementing the method serving to create the line clearance we endeavour to retain or plant one or more of the plant species belonging to the following group - also taking into consideration the ecological and climatic characteristics of the environment of the line clearance: tatarian maple *(Acer tataricum),* green alder (*Alnus viridis),* shadbush *(Amelanchier ovalis),* desert false indigo (*Amorpha fruticosa*), dwarf Russian almond (*Amigdalus nana),* barberry *(Berberis vulgaris),* heather *(Calluna vulgaris),* ground cherry (Cerasus *fruticosa*), common bladder senna *(Colutea arborescens),* cornelian cherry (*Cornus mas),* common dogwood (*Cornus sanguinea),* scorpion senna *(Coronilla emereus),* smoke tree (Cotinus *coggygria),* cotoneaster species *(Cotoneaster sp.),* hawthorn species *(Crataegus sp.),* species of *daphne (Daphne sp.),* silverberry (Elaegnus angustifolia), spindle-tree species (*Euonymus* sp.), alder buckthorn *(Frangula alnus),* sea buckthorn *(Hippophae rhamnoides),* common juniper *(Juniperus* communis), laburnum *(Laburnum anagroides*), privet *(Ligustrum vulgare),* honeysuckle species *(Lonicera sp.),* spiny box-thorn *(Lycium barbarum),* blackthorn *(Prunus* spinosa), buckthorn species *(Rhamnus* sp.), gooseberry species *(Ribes sp.),* rose species *(Rosa sp.),* bramble species *(Rubus sp.),* butcher's broom (Ruscus aculeatus), certain willow species *(Salix sp.),* common elder (Sambucus *nigra),* spirea species *(Spirea sp.),* bladder nut tree (*Staphylea pinnata*), bilberry species *(Vaccinium sp.),* viburnum species *(Viburnum sp.),* vine species *(Vitis sp.).*

[0034] According to the present invention the preferred selection of the implementation methods detailed above of the procedure for the establishment of a close shrub stand according to the present invention, and the advantageous degree of the combination of the methods serving for the establishment of the initial shrub stand, and furthermore, the preferred method for cutting down the individual plants of the undesirable plant species are primarily determined by the protective distance of the overhead cables, and the composition of the plant associations living on the area where the line clearance is to be established, the relief features, the flora and fauna in the area and the climate.

[0035] In the following we present the invention in detail through examples.

[0036] According to the example we create a line clearance for 120 kV high voltage electric overhead cables. The distance between the towers supporting the overhead cables is approx 400 m, and the width of the line clearance to be established is approx. 40 m. On the majority of a part of the area destined for the line clearance there are white poplar trees growing, which during their development may reach a height endangering the overhead cables. During the implementation of the method according to the invention we cut down all plants on the area, we prepare the individual white poplar trees with thick trunks for transportation (we cut the branches from

the trunk, and we cut up the trunks into approximately equal sized logs), the thinner trees and the branches cut off the thicker ones are chipped on site and left there for the animals that live in decaying material. We plant common dogwood onto the area prepared in this way. In another area destined for the line clearance sea buckthorn is also growing next to the white poplar. As sea buckthorn is a protected shrub, we only cut down the white poplar on this area, and we retain the sea buckthorn and the other shrubs. So on the area destined for the line clearance we have established the initial shrub stand, the majority of which consists of common dogwood and sea buckthorn. During stabilisation on the sea buckthorn area, the shrubs have grown over the area of the cut out white poplar over 2-3 years. During the stabilisation period a couple of white poplars started to grow out from among the common dogwood and sea buckthorn, which we cut down when noticed leaving the cut tree onsite. The stable, closed shrub stand consisting mainly of common dogwood and sea buckthorn became stable and closed in 5 years.

[0037] It is necessary to regularly inspect the line clearance containing a closed, stable shrub stand established with the method according to the invention about every 2-4 years in the interest of any taller plants that may possibly grow being identified and cut down. Undesirable plant species may appear in closed shrub stands because the line clearance and its environment is a continuously changing ecosystem. Infections may occur, environmental pollution, new animal and plant species may appear in the area, which may all endanger the stability of the line clearance plant association. Such dangers may occur when, for example, in certain places an individual plant or plant species dies as a consequence of causes originating from the previously mentioned factors and on these occasions the closed nature of the line clearance ceases. Plant species that may endanger the overhead cables may appear in such continuity gaps and grow over the shrub level.

[0038] Although the line clearance created during the method according to the invention requires little maintenance, the necessary routes (e.g. a 3-4 m wide zone established along the line clearance enabling access), and access to the post/towers remain to be important requirements, which we can only comply with complete stem removal.

[0039] The method according to the invention provides a desirable, advantageous solution from the point of view of ecology as well. As a stable shrub stand, for example, provides an excellent nesting and feeding place for numerous protected bird species and other that are worth protecting. The stable shrub stand is permanent and so provides a safe habitat for all animals and plant species that live here, e.g. for amphibians, reptiles and small mammals. This type of stability increases the number of native populations and their sizes. On the other hand, during the method according to the invention it is not necessary to remove the cut down trees, these may be left onsite, so providing a habitat for organisms living in decaying material, which makes the ecosystem complete.

[0040] Due to its nature the currently used line clearance creation and maintenance procedure fragments the biotopes, however, the line clearance maintained with the method according to the invention, as a consequence of the stable shrub stand, it may provide a migration route between fragmented biotopes. So animals avoiding cleared line clearances may pass along the line clearance with its closed, stable shrub stand, so ensuring that the populations remain with each other. The continuous, closed shrub stand better separates the people inspecting the technical installations running along the line clearance from the animals hiding in the shrubs, and so they prefer to choose the line clearance according to the invention and its environment as a habitat.

[0041] The method serving for the creation and maintenance of the line clearance according to the invention forms an ecologically stable corridor where previously there had been an ecological injury due to the previously used procedure. A further advantage of this ecologically stable shrub stand according to the invention is that if the neighbouring forests are clear-cut or are affected by an abiotic event (e.g. wind felling, ice breakage), a closed shrub stand normally would be resistant to such effects and the animals can escape from the destroyed forest to the area of the line clearance.

Claims

1. Method for the creation and transformation of a line clearance during which we cut down individual plants on the area destined for the line clearance **characterised by** that we cut down the individual plants that grow higher than the shrub level and, optionally on one or more parts or on the entire area destined for the line clearance we cut down the individual plants growing up to the shrub level or lower than that in a first procedural step in order to establish an initial stand of shrub, then in a second procedural step we stabilise the initial shrub stand obtained as a result of the first step in such a way that we cut down the individual plants discovered that grow higher than the shrub level.

2. The method according to claim 1, **characterised by** that in the first step we plant shrubs, optionally native shrubs, and optionally third order tree species partially or entirely in the place of the cut down plants in order to establish the initial stand of shrubs.

3. The method according to claim 2, **characterised by** that we plant one or more plant species selected independently of one another from the following group as shrubs, native shrubs or third order trees: tatarian maple, green alder, shadbush, desert falseindigo, dwarf Russian almond, barberry, heather,

ground cherry, common bladder senna, cornelian cherry, common dogwood, scorpion senna, smoke tree, cotoneaster species, hawthorn species, species of daphne, silverberry, spindle-tree species, alder buckthorn, sea buckthorn, common juniper, laburnum, privet, honeysuckle, spiny box-thorn, blackthorn, buckthorn species, gooseberry species, rose species, bramble species, butcher's broom, certain willow species, common elder, spirea species, bladder nut tree, bilberry species, viburnum species, vine species.

4. Line clearance that are either partially or entirely colonised by vegetation **characterised by** that the vegetation of the line clearance consists of a closed shrub stand.

5. The line clearance according to claim 4, **characterised by** that the closed shrub stand is formed by shrubs, optionally native shrubs and optionally by third order trees.

6. The line clearance according to claim 4, **characterised by** that the closed shrub stand is formed by one or more plant species selected independently of one another from the following group: tatarian maple, green alder, shadbush, desert false indigo, dwarf Russian almond, barberry, heather, ground cherry, common bladder senna, cornelian cherry, common dogwood, scorpion senna, smoke tree, cotoneaster species, hawthorn species, species of *daphne,* silverberry, spindle-tree species, alder buckthorn, sea buckthorn, common juniper, laburnum, privet, honeysuckle, spiny box-thorn, blackthorn, buckthorn species, gooseberry species, rose species, bramble species, butcher's broom, certain willow species, common elder, spirea species, bladder nut tree, bilberry species, viburnum species, vine species.

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 12 2889

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CA 2 175 933 A1 (BUJALSKI WLODZIMIERZ [CA]) 12 December 1997 (1997-12-12) * page 4, paragraph 4; figures * -----	1-6	INV. A62C39/00 A62C3/02
X	DATABASE WPI Week 200023 Derwent Publications Ltd., London, GB; AN 2000-268847 XP002472685 & RU 2 127 512 C1 (PYATIN V V) 20 March 1999 (1999-03-20) * abstract; figures * -----	1-6 1-6	
X	US 5 975 167 A (BROWN STANLEY L [US]) 2 November 1999 (1999-11-02) * column 1, line 14 - line 19; figures * -----	1-6	
X	US 5 378 852 A (MANOR GEDALYAHU [IL]) 3 January 1995 (1995-01-03) * abstract; figures * -----	1-6	
			TECHNICAL FIELDS SEARCHED (IPC) A62C A01G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 March 2008	Forjaz, Alexandra

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 07 12 2889

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-03-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CA 2175933 A1	12-12-1997	NONE	
RU 2127512 C1	20-03-1999	NONE	
US 5975167 A	02-11-1999	CA 2280321 A1	14-06-2000
US 5378852 A	03-01-1995	AU 668586 B2	09-05-1996
		AU 4747993 A	19-05-1994
		IL 103671 A	18-06-1996

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82