

BEANSPROUTS ROOTS & HUSKS CLEANING MACHINE

This invention relates to improvements in machinery for cleaning roots and husks of mung and soyer beansprouts.

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5 The lack of good quality sprouts (without roots and husks) has been a problem for cooking dishes. Not only it affects the appearance of the untidiness in the dish, it also causes the natural taste of the vegetable to taste less.

10 There have been some proposals to clean the sprouts with machinery, but proving not effective. The percentage of the by-products (root, husks) along with the sprouts was just as high as the sprouts which have not gone through the machine. For example, one previous machine proposed a group of device, beating and pushing the sprouts within a container of water, with the addition of a suction machine to vacuum the floating by-products.

These proposals have the disadvantage of limited roots being removed, still leaving a number of husks and roots along with the sprout.

15 Another disadvantage is in the process, whereby many sprouts become broken from the machinery action. In the final, the quality of the sprouts is not as high as it should. Even though the consumers can remove the by-products, the problem of the broken sprouts still remains.

20 These problems are overcome by the present invention, which provides a roots, husks cleaning machine comprising a non-elastic rotation cylinder inside a casing cylinder.

The rotating cylinder is adapted to brake "only the roots" of the beansprouts and at the same time, separates the by-products from the sprouts.

25 In one form of the invention, the rotation cylinder comprises perforated holes throughout, each hole size a diameter ranging from 7.94mm to 12.70mm to form a screen with maximum open area ranging from 49% to 62%.

Caused by the spinning motion of the rotating cylinder, the path of the by-products travelling through the perforated holes will end up "trapped" in between the gap of the casing cylinder and of the rotating cylinder.



In another form of the invention, the rotation cylinder may comprise an internal and external spiral strip, attached so that when the cylinder rotates the spiral will travel in an opposing direction from the other. The internal spiral will transport the clean sprouts in one direction (within the internal rotating cylinder), and the external spiral transporting the by-products in another direction between the gap of the rotation cylinder and its outer casing.

In respect to the spirals, a restriction in size of the height is required for its purpose of transportation to work effectively.

The external spiral strip must range between 7.50mm to 15.00mm in height, from the outside of the rotation cylinder leaving a gap size of 3-6mm between the external spiral strip and the casing cylinder.

The internal spiral strip must range between 30mm to 150mm in height from the internal rotation cylinder.

In another form of the invention, a full length brush is located against the inner surface of the rotating cylinder supported by brackets to the external casing cylinder, whereby the bristles touch the inner surface of the rotation cylinder and spiral strip.

This in effect assists the removal of the build up of the by-products from the perforated holes and the spiral strip, constantly keeping the holes open and free of buildup on the spiral; resulting in a effective screening work all time.

The diameter of the rotating cylinder play an important role in the invention. The recommended diameter of the rotation cylinder is between 300mm to 600mm. For example, the smaller the diameter, the loading capacity is decreased resulting in less output capabilities Vs time. As the diameter is greater than the recommended diameter, it will result in an incomplete cleaning cycle and in unclean sprouts.

The rotation speed of the rotating cylinder plays a crucial role to the invention.

A recommended rotation speed between 40rpm to 70rpm is required to make this invention workeable.

For example, if the speed is lower than 40rpm, the beansprouts will become broken. If the speed is higher than the specified range of rotation it will also



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result in unclean sprouts.

The composition of the casing and the rotation cylinder can be manufactured from any material which are non-elastic.

Examples could be moulded plastic or metal.

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To assist with understanding the invention, reference will now be made to the accompanying drawings which show one example of the invention.

In the drawings:

FIG.1 shows one example of a beansprouts roots, husks cleaning machine according to this invention;

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FIG.2 shows the application of such a beansprouts roots, husks cleaning machine in the first stage of process;

FIG.3 shows the application of such a beansprouts roots, husks cleaning machine in the second stage of the process.

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Referring to FIG.1 it can be seen that the beansprouts roots,husks cleaning machine according to this invention comprises a non-elastic rotating cylinder 3 driven by a motor . . . ,rotating inside of a non-elastic casing cylinder 1 which in turn are supported by three groups of bearings 9 built on to the rotating cylinder 9 .

On the rotating cylinder 3 there are specified sizes of perforated holes 4 throughout the cylinder 3 to form a screen with a maximum "open area" for the passage of the by-products 10 to pass through.

The rotation cylinder 3 comprises two spirals,internally 7 and externally 6 , in opposite directions 8 .

The specified diameter of the rotating cylinder 3 allows the maximum volume of unclean sprouts along with a specified rotation speed to become separated. As the external spiral 6 pushes the by-products towards the loading direction 13 inside the gap 5 (between the rotation cylinder 3 and the casing 1) then falls out.

As the rotation cycle continues,the unclean sprouts travelling away from the loading direction 13 due to the driving of the internal spiral 7 ,it then falls out from the rotating cylinder 3 as clean products.

Referring to FIG.2 it shows the beansprouts roots,husks cleaning machine in operation.It can be seen the unclean sprouts 12 loading into the rotating cylinder . In every rotation the roots are being broken instantaneously. The fragile roots are broken,apart from the sprouts;and the husks easily removed from the beansprout head during this process. Afterwards,it then travels(the roots and husks) through the specified size of hole . into the gap between the rotating cylinder and the casing cylinder .

From then the external spiral removes these by-products 10 in an opposite direction to the loading direction 13 and ends up falling into a bin 14.

By the process of the beansprouts roots,husks cleaning machine,most of the by-products 10 are separated from the clean-sprouts .

Referring to FIG.3 it shows the beansprouts roots,husks cleaning machine in operation at stage 2.

It can be seen the unclean sprouts are continuously being pushed and transported by the internal spiral at a respectable length from the loaded area to the end of the cylinder . Thus the by-products of the beansprouts



becomes less and less mixed within the beansprout as the distance progresses. At the final, it travels to the end of the rotating cylinder and then falls out into the other bin 15 at the same direction as the loading.

5 From the process of the beansprouts roots, husks cleaning machine, most of the by-products have been separated out, leaving very high quality rootless, huskless clean beansprout products 16. Therefore making the sprouts 16 look very nice in appearance and producing a much better tasting vegetable than previously before.

10 It will be realised that the beansprouts roots, husks cleaning machine according to this invention is not restricted to the form as a single cylinder shown in the example, but may also be used as a double cylinder machine, or may be used as much cylinders required to suit the market demand.

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The claims defining the invention are as follows:

1. A beansprouts roots, husks cleaning machine comprising a non-elastic rotating and casing cylinder whereby the rotating cylinder comprises the attachment of a full length brush and an internal, external spiral strip; whereby in between the external spiral and the casing, a gap size exists.
2. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder comprise perforated holes within a diameter range of 7.94mm to 12.70mm.
3. The beansprouts roots, husks cleaning machine of claim 2 wherein the percentage of the open area of the perforated holes are a range between 49%-62%.
4. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder comprise an internal and external spiral strip rotating opposite directions to each other.
5. The beansprouts roots, husks cleaning machine of claim 4 wherein the height of the external spiral strip from the external surface strip of the rotation cylinder is between 5mm to 15mm.
6. The beansprouts roots, husks cleaning machine of claim 4 wherein the height of the internal spiral strip from the internal surface of the rotation cylinder is between 30mm to 150mm.
7. The beansprouts roots, husks cleaning machine of claim 1 wherein the gap size between the external spiral strip and the casing cylinder is between 3mm to 6mm in length.
8. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder, a full length bristle brush touches the internal surface, and is also in contact with the internal strip.

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9. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder its diameter is no less than 300mm and no greater than 700mm.

5 10. The beansprouts roots, husks cleaning machine of claim 1 wherein the speed of the rotation cylinder in rpms will not be lower than 40rpm and will not be higher than 70rpms.

11. The beansprouts roots, husks cleaning machine of claim's 1-6 wherein the non-elastic rotating cylinder is produced either with metal or moulded plastic.

10 12. The beansprouts roots, husks cleaning machine of claims 1 and 6 wherein the non-elastic casing cylinder is produced either with metal or moulded-plastic.

13. A beansprouts roots, husks cleaning machine substantially as herein described with reference to the accompanying drawings.



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ABSTRACT**BEANSPROUTS ROOTS & HUSKS CLEANING MACHINE**

A beansprouts roots, husks, cleaning machine is disclosed. The machine has an internal spiral (7) and external spiral (6) in opposite directions mounted on the perforated cylinder (3) with integrated grouts bearings (8) driven by a motor rotating inside a casing cylinder (1). When the unclean sprouts are loaded by the given direction into the rotating perforated cylinder (3); causing by the rotating cycle, the roots are broken and the husks separated which then gets through holes (4) into the gap (5) between the rotating cylinder (3) and casing (1), pushing out in one direction by the external spiral (6) as by-product. The clean sprouts are being pushed out by the internal spiral (7) in another direction as products.

This machine can be used as a single or double, even multicylinders to clean the roots and husks in different quantities of product in demand.

Fig. 2



1. CASING CYLINDER
2. ROLLER BRUSH
3. ROTATING CYLINDER
4. PERFORATED HOLES
5. GAP BETWEEN 2 CYLINDER
6. EXTERNAL SPIRAL STRIP
7. INTERNAL SPIRAL STRIP
8. DIRECTIONS SPIRAL TRAVELS
9. GROUP BEARINGS
11. DIAMETER OF ROT. CYLINDER
13. LOADING DIRECTION

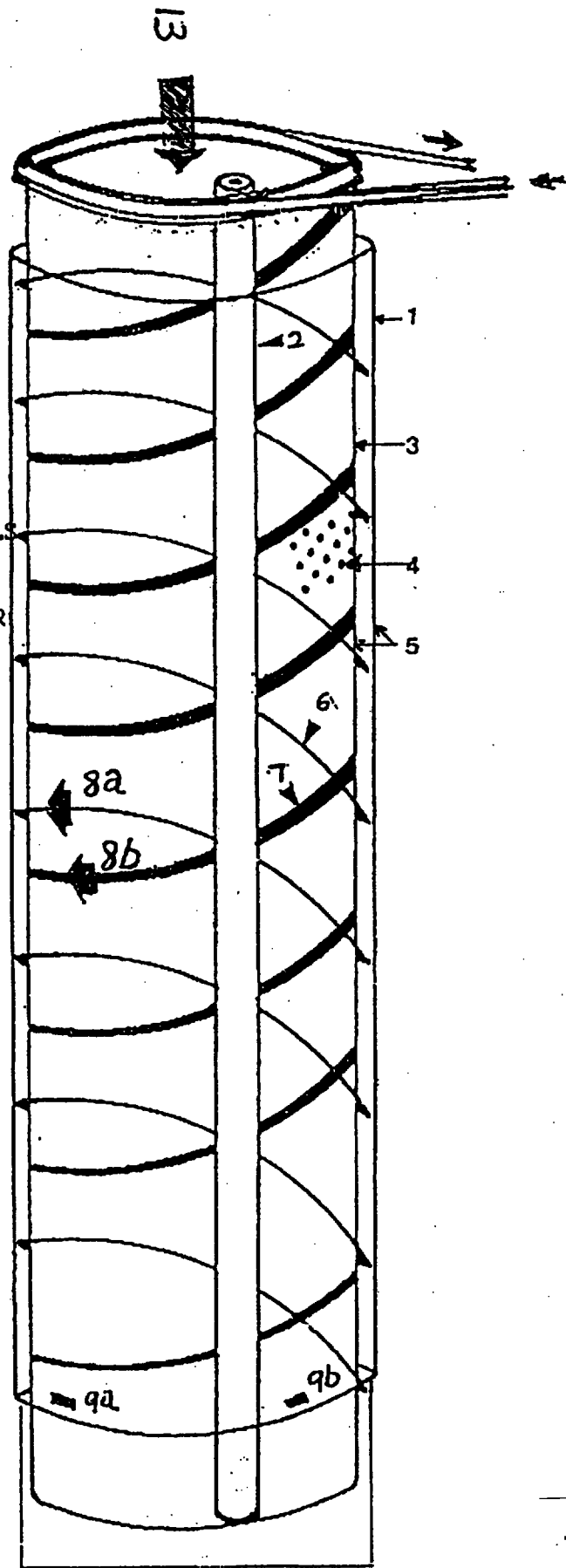


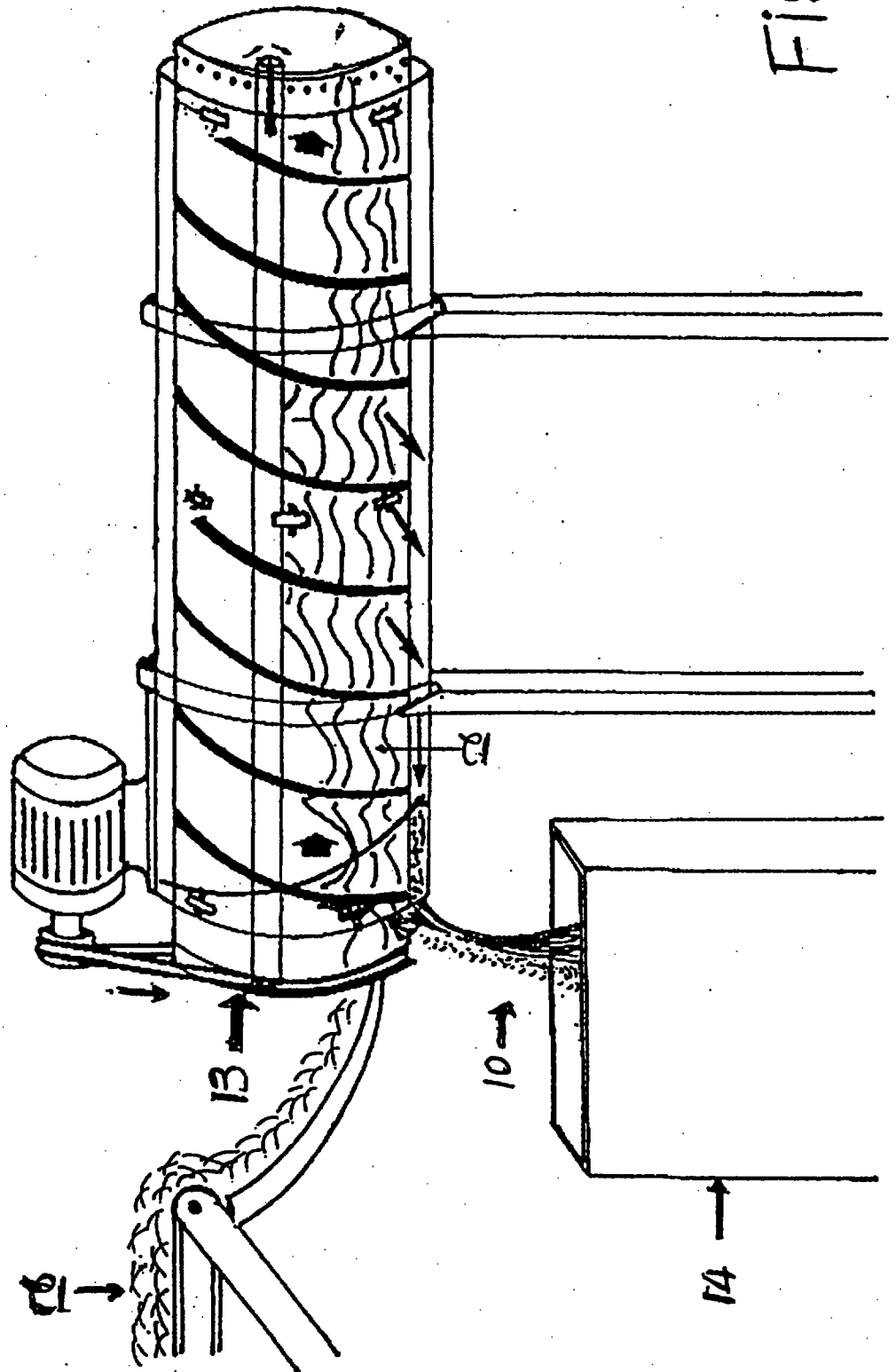
Figure 1

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- 10. BY-PRODUCT
- 12. UNCLEAN SPROUTS
- 13. LOADING DIRECTION
- 14. BY-PRODUCT COLLECTION BIN

Figure 2



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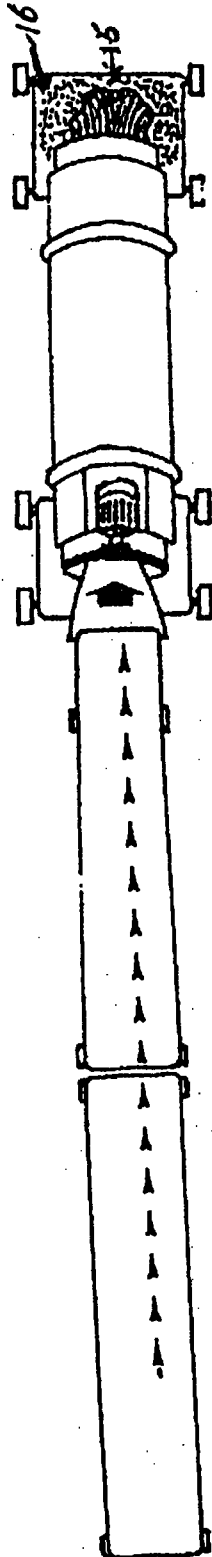


A. B

5. CLEAN PRODUCT COLLECTING BIN

6. CLEAN PRODUCT

B Top



A Side

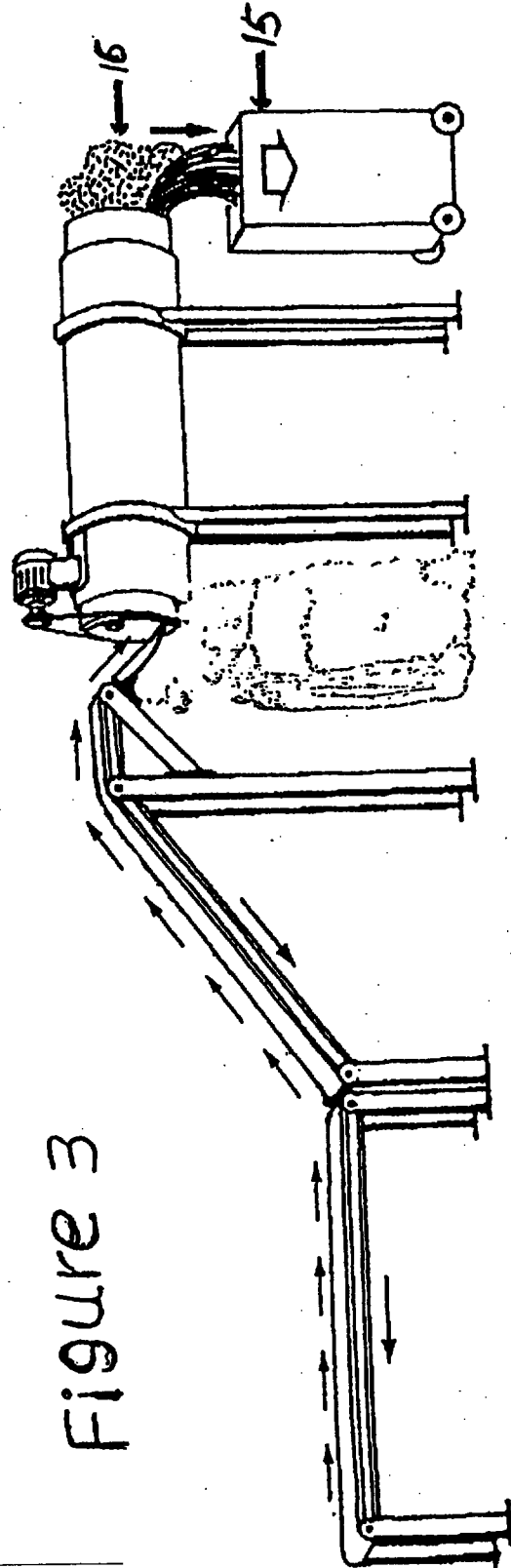


Figure 3

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BEANSPROUTS ROOTS & HUSKS CLEANING MACHINE

This invention relates to improvements in machinery for cleaning roots and husks of mung and soya beansprouts.

The lack of good quality sprouts (without roots and husks) has been a problem for cooking dishes. Not only it affects the appearance of the untidiness in the dish, it also causes the natural taste of the vegetable to taste less.

There have been some proposals to clean the sprouts with machinery, but proving not effective. The percentage of the by-products (root, husks) along with the sprouts was just as high as the sprouts which have not gone through the machine. For example, one previous machine proposed a group of device, beating and pushing the sprouts within a container of water, with the addition of a suction machine to vacuum the floating by-products.

These proposals have the disadvantage of limited roots being removed, still leaving a number of husks and roots along with the sprout.

Another disadvantage is in the process whereby many sprouts become broken from the machinery action. In the final, the quality of the sprouts is not as high as it should. Even though the consumers can remove the by-products, the problem of the broken sprouts still remains.

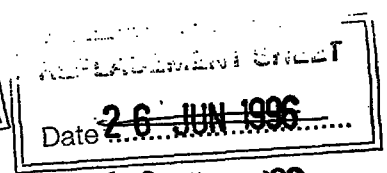
These problems are overcome by the present invention, which provides a roots, husks cleaning machine comprising a non-elastic rotation cylinder inside a casing cylinder.

The rotating cylinder is adapted to break "only the roots" of the beansprouts and at the same time, separates the by-products from the sprouts.

In one form of the invention, the rotation cylinder comprises perforated holes throughout, each hole size a diameter ranging from 7.94mm to 12.70mm to form a screen with maximum open area ranging from 49% to 62%.

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Caused by the spinning motion of the rotating cylinder, the path of the by-products travelling through the perforated holes will end up "trapped" in between the gap of the casing cylinder and of the rotating cylinder.

In another form of the invention, the rotation cylinder may comprise an internal and external spiral strip, attached so that when the cylinder rotates the spiral will travel in an opposing direction from the other. The internal spiral will transport the clean sprouts in one direction (within the internal rotating cylinder) and the external spiral transporting the by-products in another direction between the gap of the rotation cylinder and its outer casing.

In respect to the spirals, a restriction in size of the height is required for its purpose of transportation to work effectively.

The external spiral strip must range between 7.50mm to 15.00mm in height, from the outside of the rotation cylinder leaving a gap size of 3-6mm between the external spiral strip and the casing cylinder.

The internal strip must range between 30mm to 150mm in height from the internal rotation cylinder.

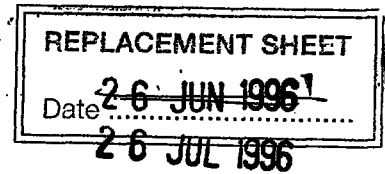
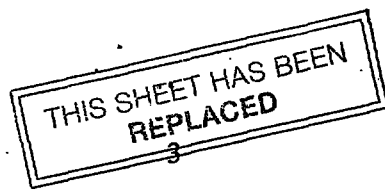
In another form of the invention, a full length brush is located against the inner surface of the rotating cylinder supported by brackets to the external casing cylinder, whereby the bristles touch the inner surface of the rotation cylinder and spiral strip.

This in effect assists the removal of the build up of the by-products from the perforated holes and the spiral strip, constantly keeping the holes open and free of the build up on the spiral; resulting in a effective screening work all time.

The diameter of the rotating cylinder play an important role in the invention. The recommended diameter of the rotation cylinder is between 300mm to 600mm. For example, the smaller the diameter, the loading capacity is decreased resulting in less output capabilities

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vs time. As the diameter is greater than the recommended diameter, it will result in an incomplete cleaning cycle and in unclean sprouts.

The rotation speed of the rotating cylinder plays a crucial role to the invention.

A recommended rotation speed between 40rpm to 70rpm is required to make this invention workable.

For example, if the speed is lower than 40rpm, the beansprouts will become broken. If the speed is higher than the specified range of rotation it will also result in unclean sprouts.

The composition of the casing and the rotation cylinder can be manufactured from any material which are non-elastic. Examples could be moulded plastic or metal.

To assist with understanding the invention, reference will now be made to the accompanying drawings which show one example of the invention.

In the drawings:

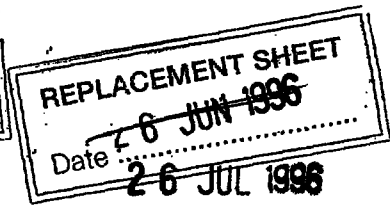
FIG.1 shows one example of a beansprouts roots, husks cleaning machine according to this invention:

FIG.2 shows the application of such a beansprouts roots, husks cleaning machine in the first stage of process:

FIG.3 shows the application of such a beansprouts roots, husks cleaning machine in the second stage of the process.

Referring to FIG.1 it can be seen that the beansprouts roots, husks cleaning machine according to this invention comprises a non-elastic rotating cylinder 3 driven by a motor, rotating inside of a non-elastic casing cylinder 1 which in turn are supported by three groups of bearings 9 built on to the rotating cylinder 9.





On the rotating cylinder 3 there are specified sizes of perforated holes 4 throughout the cylinder 3 to form a screen with a maximum "open area" for the passage of the by-products 10 to pass through. The rotation cylinder 3 comprises two spirals, internally 7 and externally 6. in opposite directions 8.

The specified diameter 11 of the rotating cylinder 3 allows the maximum volume of unclean sprouts along with a specified rotation speed to become separated. As the external spiral 6 pushes the by-products towards the loading direction 13 inside the gap 5 (between the rotation cylinder 3 and the casing 1) then falls out.

As the rotation cycle continues, the unclean sprouts travelling away from the loading direction 13 due to the driving of the internal spiral 7, it then falls out from the rotating cylinder 3 as clean products.

Referring to FIG.2 it shows the beansprouts roots, husks cleaning machine in operation. It can be seen the unclean sprouts 12 loading into the rotating cylinder. In every rotation the roots are being broken instantaneously. The fragile roots are broken, apart from the sprouts; and the husks easily removed from the beansprout head during this process. Afterwards, it then travels (the roots and husks) through the specified size of hole into the gap between the rotating cylinder and the casing cylinder.

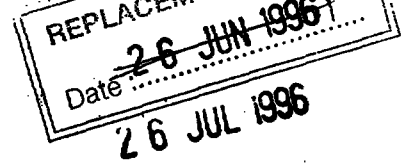
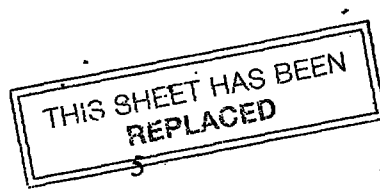
From then the external spiral removes these by-products 10 in an opposite direction to the loading direction 13 and ends up falling into a bin 14. By the process of the beansprouts roots, husks cleaning machine, most of the by-products 10 are separated from the clean sprouts.

Referring to FIG.3 it shows the beansprouts roots, husks cleaning machine in operation at stage 2.

It can be seen the unclean sprouts are continuously being pushed and transported by the internal spiral at a respectable length from the loaded area to the end of the cylinder. Thus the by-products of the beansprouts become less and less mixed within the beansprout as the

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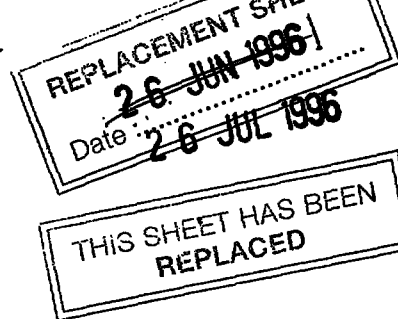
distance progresses. At the final, it travels to the end of the rotating cylinder and then falls out into the other bin 15 at the same direction as the loading.

From the process of the beansprouts roots, husks cleaning machine, most of the by-products have been separated out, leaving very high quality rootless, huskless clean beansprout products 16. Therefore making the sprouts 16 look very nice in appearance and producing a much better tasting vegetable than previously before.

It will be realised that the beansprouts roots, husks cleaning machine according to this invention is not restricted to the form as a single cylinder shown in the example, but may also be used as a double cylinder machine or may be used as much cylinders required to suit the market demand.

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CLAIMS:

The claims defining the invention are as follows:

1. A beansprouts roots, husks cleaning machine comprising a non-elastic rotating and casing cylinder whereby the rotating cylinder comprises the attachment of a full length brush and an internal , external spiral strip; whereby in between the external spiral and the casing, a gap size exists.
2. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder comprise perforated holes within a diameter range of 7.94mm to 12.70mm.
3. The beansprouts roots, husks cleaning machine of claim 2 wherein the percentage of the open area of the perforated holes are a range between 49%-62%.
4. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder comprise an internal and external spiral strip rotating opposite directions to each other.
5. The beansprouts roots, husks cleaning machine of claim 4 wherein the height of the external spiral strip from the external surface strip of the rotation cylinder if between 5mm to 15mm.
6. The beansprouts roots, husks cleaning machine of claim 4 wherein the height of the internal spiral strip from the internal surface of the rotation cylinder is between 30mm to 150mm.
7. The beansprouts roots, husks cleaning machine of claim 1 wherein the gap size between the external spiral strip and the casing cylinder is between 3mm to 6mm in length.
8. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder, a full length bristle brush touches the internal surface, and is also in contact with the internal strip.
9. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder its diameter is no less than 300mm and no greater than 700mm.



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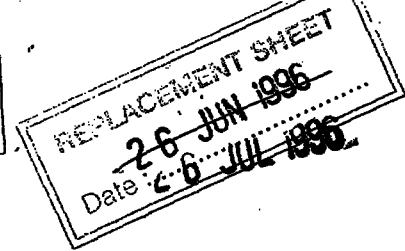
10. The beansprouts roots, husks cleaning machine of claim 1 wherein the speed of the rotation cylinder in rpms will not be lower than 40rpm and will not be higher than 70rpms.
11. The beansprouts roots, husks cleaning machine of claims 1-6 wherein the non-elastic rotating cylinder is produced either with metal or moulded plastic.
12. The beansprouts roots, husks cleaning machine of claims 1 and 6 wherein the non-elastic casing cylinder is produced either with metal or moulded-plastic.
13. A beansprouts roots, husks cleaning machine substantially as herein described with reference to the accompanying drawings.

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ABSTRACT

BEANSPROUTS ROOTS & HUSKS CLEANING MACHINE

A beansprouts roots, husks, cleaning machine is disclosed. The machine has an internal spiral (7) and external spiral (6) in opposite directions mounted on the perforated cylinder (3) with integrated grouts bearings (8) driven by a motor rotating inside a casing cylinder (1). When the unclean sprouts are loaded by the given direction into the rotating perforated cylinder (3); causing by the rotating cycle, the roots are broken and the husks separated which then gets through holes (4) into the gap (5) between the rotating cylinder (3) and casing (1), pushing out in one direction by the external spiral (6) as by-product. The clean sprouts are being pushed out by the internal spiral (7) in another direction as products.

This machine can be used as a single or double, even multicylinders to clean the roots and husks in different quantities of product in demand.

Fig. 2.

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1. CASING CYLINDER
2. ROLLER BRUSH
3. ROTATING CYLINDER
4. PERFORATED HOLES
5. GAP BETWEEN 2 CYLINDER
6. EXTERNAL SPIRAL STRIP
7. INTERNAL SPIRAL STRIP
8. DIRECTIONS SPIRAL TRAVELS
9. GROUP BEARINGS
11. DIAMETER OF ROT. CYLINDER
13. LOADING DIRECTION

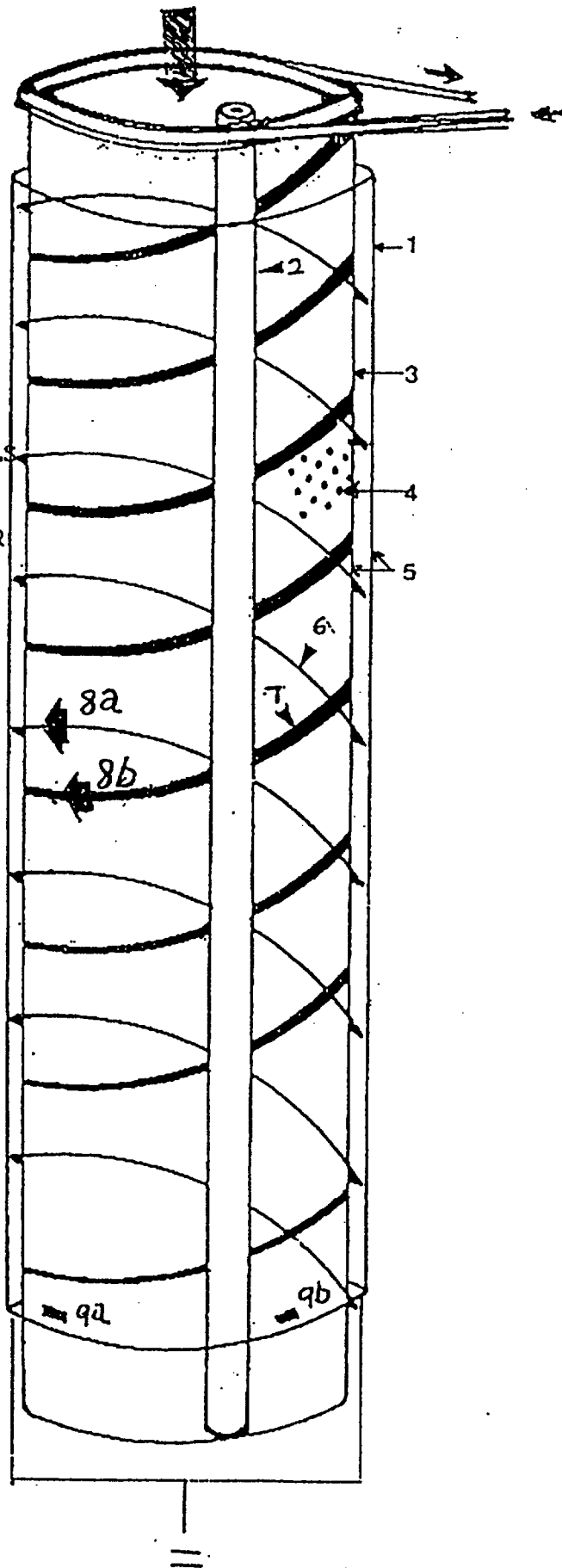


FIGURE 1

- 10. BY-PRODUCT
- 12. UNCLEAN SPROUTS
- 13. LOADING DIRECTION
- 14. BY-PRODUCT COLLECTION BIN

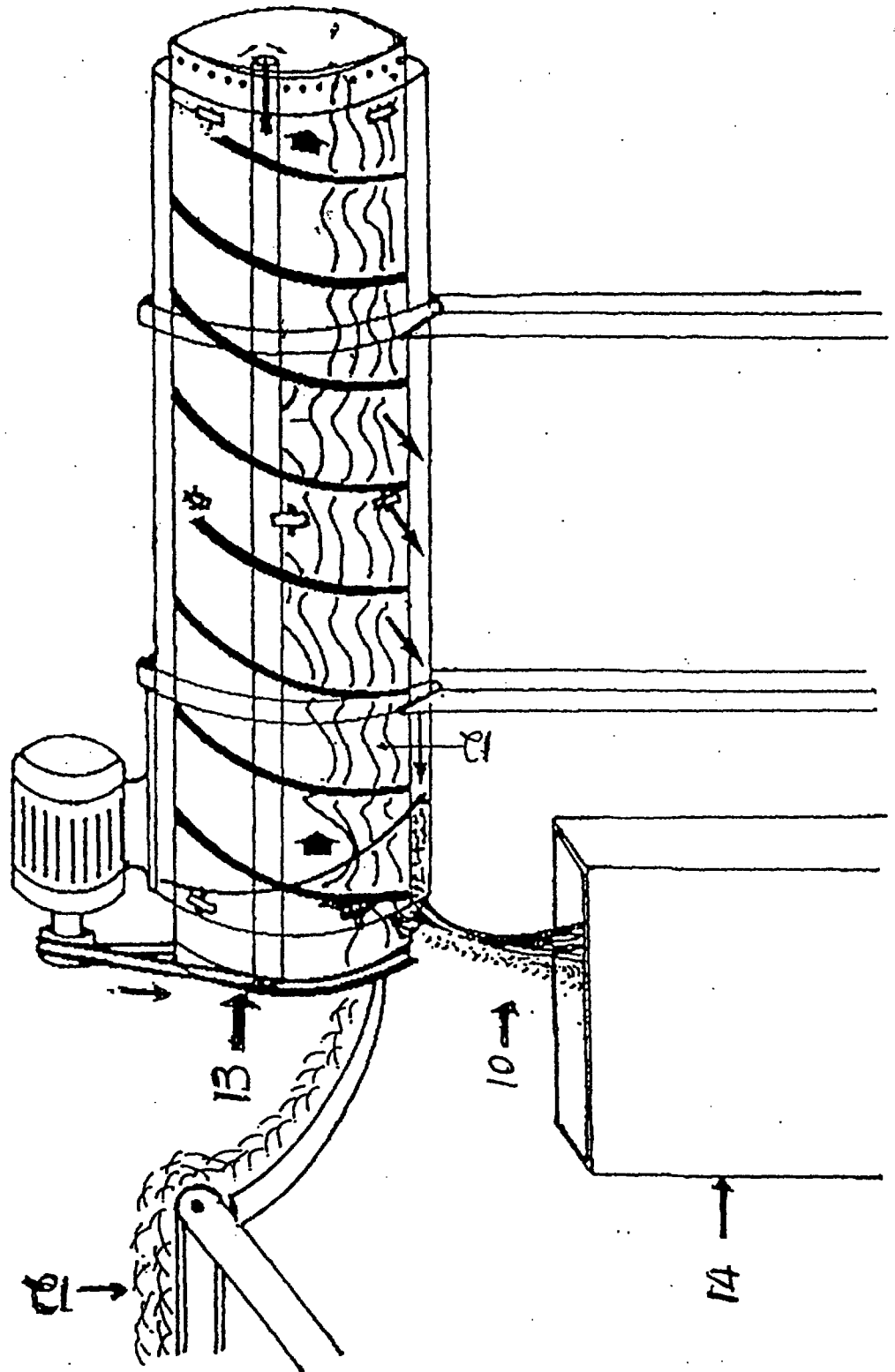


FIGURE 2

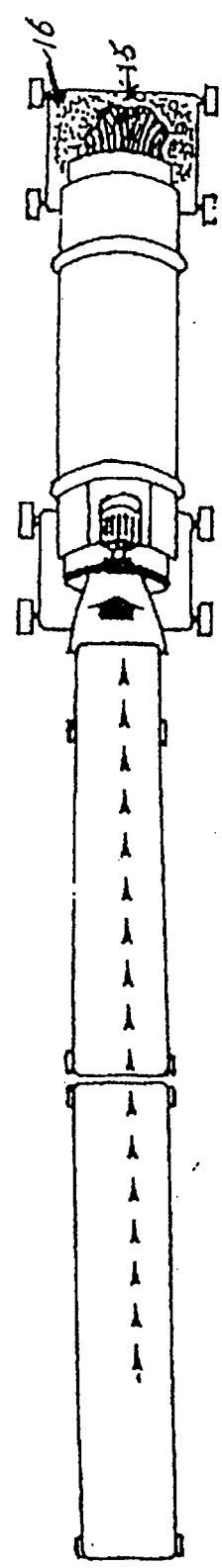
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A. B

- 5. CLEAN PRODUCT COLLECTING BIN
- 6. CLEAN PRODUCT

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A Side

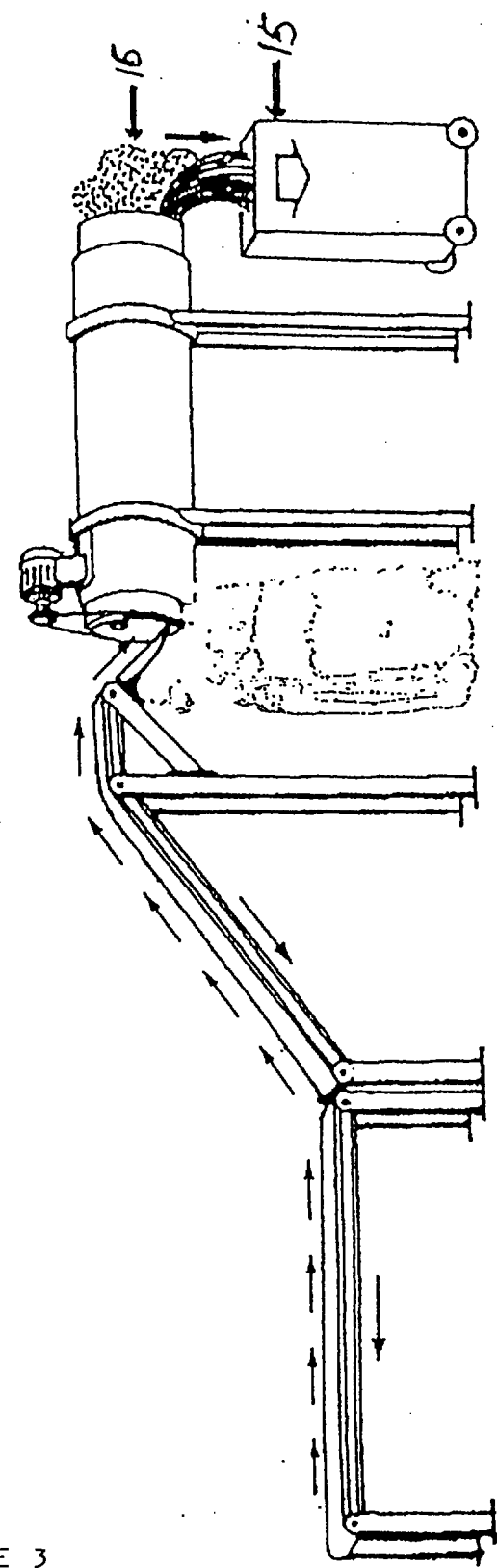


FIGURE 3

BEANSPROUTS ROOTS AND HUSKS CLEANING MACHINE

This invention relates to improvements in machinery for cleaning roots and husks of mung and soya beansprouts.

5 The lack of good quality sprouts (without roots and husks) has been a problem for cooking dishes. Not only it affects the appearance of the untidiness in the dish, it also causes the natural taste of the vegetable to taste less.

There have been some proposals to clean the sprouts with machinery, but proving not effective. The percentage of the by-products (roots, husks) along with the sprouts was just as high as the sprouts which have not gone through the machine. For example, one previous machine proposed a group of device, beating and pushing the
10 sprouts within a container of water, with the addition of a suction machine to vacuum the floating by-products.

These proposals have the disadvantage of limited roots being removed, still leaving a number of husks and roots along with the sprout. Another disadvantage is in the process, whereby many sprouts become broken from the machinery action. In the
15 final, the quality of the sprouts is not as high as it should. Even though the consumers can remove the by-products, the problem of the broken sprouts still remains.

These problems are overcome by the present invention, which provides a roots, husks cleaning machine comprising a non-elastic rotation cylinder inside a casing cylinder.

20 The rotating cylinder is adapted to break only the roots of the beansprouts and at the same time, separates the by-products from the sprouts.

In one form of the invention, the beansprouts, roots, husks cleaning machine comprises a perforated rotating cylinder inside a casing.

Due to the spinning motion of the rotating cylinder, it enables the by-products to become separated from the products by travelling through the perforated holes and ending between the gap of the rotating cylinder and the casing.

5 In another form of the invention the rotating cylinder may comprise two spiral strips internally and externally attached so that as the rotating cylinder rotates, the spirals will travel in opposite directions to another. The spirals are shaped so that once screening takes place due to the rotating cylinders rotation the by-products are screened through the perforated holes and then be transported within the gap between the rotating cylinders and the casing in the direction of the loading inlet.

10 In this instance the external spiral acts as a pushing device for transporting the by-products out of the machine.

As the unprocessed sprouts are loaded continuously, a direct horizontal force is exerted, enabling the rotating sprouts to be transported from one end to the other as products, separated from its by-products already through the continual rotating
15 screening process.

Let it be known that the internal spiral assists only in the guiding of the products from one end to the other, but is not a necessity to the sprouts transportation.

Throughout the rotating cylinder perforated holes form a screening mechanism which enables the separation of the husks and roots from the sprouts during the rotating
20 cycle.

It is essential that the range in diameter of the perforated holes lie between 5.00mm to 12.70mm only, allowing only roots and husks to travel through the perforated holes leaving the sprouts within the rotating cylinder. Outside this range the roots and husks may not get through the perforated holes or otherwise more of the
25 unprocessed sprouts getting through will occur.

The screening performance depends on the percentage of open space of the perforated holes throughout the rotating cylinder. The greater the open space the more by-products will travel through the holes.

5 Between a range of 49% to 62% of open space throughout the rotating cylinder, will produce satisfactory screening performance.

A smaller or greater percentage in open area than the specified range will result in poor screening performances and will also produce a weakening to the rotating cylinders required rigid structure.

10 Between the rotating cylinder and the casing, and additional 5.00mm to 15.00mm. In addition to the external spirals height is required to ensure the smooth spinning of the rotating cylinder inside the casing.

15 The height of the external spiral is restricted between 7.50mm to 15.00mm. This height plays a crucial role in the invention. Once the by-products have reached in the gap between the rotating cylinder and the casing, an under in the minimal height to the the external spiral will result in the jamming of the by-products within the gap.

If above the maximum height, the result will be in the higher percentage in unprocessed or processed sprouts getting through the perforated holes into the gap, wasted as by-products.

20 As the screening process continues the build up of the by-products within the perforated holes creates a decreasing amount in the open space. It is then essential to have a full length brush.

The brush is located against the inner surface of the rotating cylinder supported by brackets to the casing.

25 In effect the bristles are constantly in contact with the inner surface of the rotating cylinder and the internal spiral.

Effectively the brush assists in the removal of the by-products building up on the perforated holes and to the internal spiral; constantly keeping the perforated holes open and free of build up to the internal spiral. This results in the optimum open space for screening to work.

- 5 The diameter of the rotating cylinder play an important role in the invention. The recommended diameter of the rotating cylinder is between 300mm to 900mm.

For the roots and husks to get through the perforated holes, time is required. The smaller the diameter of the rotating cylinder requires less distance to travel through the perforated holes, resulting in a quicker time of screening the by-products.

- 10 But in this effect the loading capacity is decreased, resulting in a less output capability Vs time.

While the greater the diameter of the rotating cylinder requires a longer time of screening due to its greater distance, it results in a less performance in output.

Unclean products may also result in a greater diameter range than specified.

- 15 The rotation speed of the rotation cylinder plays a crucial role to the invention.

A recommended rotation speed between 30rpm to 120rpm is required to make this invention workable.

- 20 Within the specified rotation speed three forces (centrifugal, gravity, friction) act together to create the optimum screening process of removing the by-products from the products successfully.

Once the unprocessed sprouts are rotated inside the rotating cylinder, the forces of centrifugal, gravity and friction act on the sprouts, creating a scrubbing action with each other enabling the fragile roots to break from the stronger stem of the sprout.

As this process is continued from the continuous rotation of the rotating cylinder, a greater amount of the by-products are screened through the perforated holes where at the end the products are separated from the by-products and fall as clean sprouts.

5 The composition of the rotating and the casing cylinders can be manufactured from any material which are non-elastic.

This enables a strong rigid structure from the rotating cylinder and the casing. Examples could be moulded plastic of metal material.

To assist with understanding the invention, reference will now be made to the accompanying drawings which show one example of the invention;

10 In the drawings;

FIG.1. shows one example of a beansprouts, roots, husks cleaning machine according to this invention;

FIG.2 shows the application of such a beansprouts, roots, husks cleaning machine in operation.

15 Referring to FIG.1. it can be seen that the beansprout roots, husks cleaning machine according to this invention comprises a non-elastic rotating cylinder 3 driven by a motor, rotating inside of a non-elastic casing cylinder 1 which in turn are supported by three groups of bearings 8 built on to the rotating cylinder 3.

20 On the rotation cylinder 3 there are specified sizes of perforated holes 4 throughout the cylinder 3 to form a screen with a maximum "open area" for the passage of the by-products to pass through.

The rotating cylinder 3 comprises two spirals, internally 7 and externally 6 in opposite directions.

The specified diameter of the rotating cylinder 3 allows the maximum volume of unclean sprouts along with a specified rotation speed to become separated. As the external spiral 6 pushes the by-products towards the loading direction inside the gap 5 (between the rotation cylinder 3 and casing 1) then falls out.

- 5 As the rotation cycle continues, the unclean sprouts travelling away from the loading direction due to the driving of the internal spiral 7, it then falls out from the rotating cylinder 3 as clean products.

As the brush 2 touches the inner surface of the rotating cylinder 3, it keeps the holes open continuously.

- 10 Referring to FIG. 2 it shows the bean sprouts roots, husks cleaning machine in operation. It can be seen the unclean sprouts 9 loading into the rotating cylinder. In every rotation the roots are being broken instantaneously. The fragile roots are broken, apart from the sprouts; and the husks are easily removed from the beansprout head during this process.

- 15 Afterwards, it then travels (the roots and husks) through the specified size of hole into the gap between the rotating cylinder and the casing cylinder. From then, the external spiral removes these by-products 10 in an opposite direction to the loading direction and ends up falling into a collection bin 12.

- 20 By the process of the beansprouts roots, husks cleaning machine, most of the by products 10 are separated from the clean sprouts 11.

It can be seen the unclean sprouts 9 are continuously being pushed and transported by the internal spiral at a respectable length from the loaded area to the end of the cylinder. Thus the by-products 10 of the beansprouts becomes less and less mixed within the beansprout as the distance progresses.

- 25 At the final, it travels to the end of the rotating cylinder and then falls out into the collection bin 13 as clean sprouts 11 at the same direction as the loading.

From the process of the beansprouts roots, husks cleaning machine, most of the by-products 10 have been separated out, leaving very high quality rootless, huskless clean beansprout products 11. Therefore making the sprouts look very nice in appearance and producing a much better tasting vegetable than previously before.

- 5 It will be realised that the beansprouts roots, husks cleaning machine according to this invention is not restricted to the form as a single cylinder shown in the example, but also be used as a double cylinder machine, or may be used as many cylinders required to suit the market demand.

CLAIMS:

The claims defining the invention are as follows:

1. A beansprouts roots, husks cleaning machine comprising a design diameter of perforated non-elastic cylinder in the design speed rotating inside a non-elastic casing cylinder whereby the broken roots and husks caused by the rotating cycle pass through the perforated cylinder into the gap between the two cylinders and are pushed out by the outer mounted spiral on the inner rotating cylinder as by-product, wherein a brush is located against the inner surface of the rotating cylinder whereby keeping the perforated holes free of build up of broken roots and husks therefore the cleaner sprouts traveling to the end of inside the rotating cylinder will fall out as product.
2. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder comprise perforated holes within a diameter range of 5.00mm to 12.70mm.
3. The beansprouts roots, husks cleaning machine of claim 2 wherein the percentage of the open area of the perforated holes are a range between 49%-62%.
4. The beansprouts roots, husks cleaning machine of claim 1 where in the rotating cylinder comprise an external spiral strip rotating opposite the unclean sprouts loading direction.
5. The beansprouts roots, husks cleaning machine of claim 4 where in the height of the external spiral strip from the external surface of the rotation cylinder is between 5mm to 15mm.
6. The beansprouts roots, husks cleaning machine of claim 1 wherein the gap size between the external spiral strip and the casing cylinder is between 3mm to 6mm in length.



8. ~~7~~. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder, a full length bristle brush is located against the inner surface of the rotating cylinder.
- 10 ~~9~~. The beansprouts roots, husks cleaning machine of claim 1 wherein the speed of the rotation cylinder in rpm will not be lower than 30rpm and will not be higher than 120rpms.
- 11 ~~10~~. The beansprouts roots, husks cleaning machine of claim 1 wherein the non-elastic rotating cylinder is produced either with metal or moulded plastic.
- 12 ~~11~~. The beansprouts roots, husks cleaning machine of claim 1 wherein the non-elastic casing cylinder is manufactured either with metal or moulded elastic.
- 13 ~~12~~. A beansprouts roots, husks cleaning machine substantially as herein described with reference to the accompanying drawings.



* C L H S *

ABSTRACT**BEANSPROUTS ROOTS AND HUSKS CLEANING MACHINE**

A beansprouts roots, husks, cleaning machine is disclosed. The machine has an internal spiral (7) and external spiral (6) in opposite directions mounted on the perforated cylinder (3) with integrated grouts bearings (8) driven by a motor rotating inside a casing cylinder (1). When the unclean sprouts are loaded by the given direction into the rotating performed cylinder (3); causing by the rotating cycle, the roots are broken and the husks separated which then gets through the holes (4) into the gap (5) between the rotating cylinder (3) and casing (1), pushing out in one direction by the external spiral (6) as by-product. The clean sprouts are being pushed out by the internal spiral (7) in another direction as products. The machine can be used as a single or double, even multicylinders to clean roots and husks in different quantities of product in demand.

FIG.2