ABRASION TYPE HULLING MACHINE

Filed Oct. 29, 1949

INVENTOR, BERNHARD KELLER

BY
UNITED STATES PATENT OFFICE

2,618,307

ABRASION TYPE HULLING MACHINE

Bernhard Keller, Zurich, Switzerland

Application October 29, 1949, Serial No. 124,349

In Switzerland October 31, 1948

3 Claims. (Cl. 146—277)

1. The present invention refers to a dehusking machine, in particular for legumes, having rotating grinding wheels arranged one above the other and, surrounding said grinding wheels, a dehusking skirt with fine slots, the column of material to be dehusked moving downwardly and the husks being exhausted through the slots provided in the dehusking skirt, the machine being characterized by having means for adjusting the speed of passage of the material to be dehusked through the machine, and means for slowing down the rotational speed of said material.

Preferably the means for adjusting the speed of passage of the material to be dehusked can be arranged below the dehusking means and be formed of a number of circular-shaped segmental slides under the operative action of adjustment means.

By way of example an embodiment of the present invention is described hereafter and is shown in the accompanying drawing in which:

Fig. 1 is a vertical section through the dehusking machine,

Fig. 2 is a cross section taken along line 2—2 of Fig. 1.

Fig. 3 is a cross section taken along line 3—3 of Fig. 1.

The dehusking machine shown has a casing consisting of the bottom casing part 1, the top casing part 1' and the feed opening 2. Running axially through the casing there is the shaft 3 mounted in the bearings 3', 3" and carrying at one end a driving gear wheel 4. This gear wheel preferably has the shape of a bevel gear and meshes with a corresponding bevel gear 7 secured to the shaft 5 driven by an electric motor 6.

The shaft 5 is mounted in the bearings 5', 5" in the bottom part of the casing 1 to the outer wall surface thereof is attached the electric motor 6. Equally spaced on the shaft 3 a number of grinding wheels 8—in the example shown there are arranged 5 grinding wheels—which are surrounded by a cylindrical dehusking skirt 9, which by way of example can be made of steel, and which is provided with spaced passageways or slots 10. The diameter of the grinding wheels 8 is chosen in relation to the inside diameter of the dehusking skirt 9 in such a manner that the husks of the material to be dehusked is ground off between the grinding wheels and the dehusking skirt 9 on rotation of said grinding wheels 8. During this operation the husks are exhausted and removed in the direction of the arrow F1 through the slots 10 of the dehusking skirt by means of the fan 13 mounted on the lower end of shaft 3, and the dehusked material is led to a central outlet chute 11 in the direction of the arrow F2.

To prevent accumulation of the material dehusked in the outlet chute 11 means for adjusting the speed of passage of said dehusked material are provided. According to the example of embodiment shown said means are arranged below the dehusking means 8 and consist of an obstruction formed of the slides 12 which adjustably close more or less the mouth of the outlet chute 11 in the casing top part 1'. The slides 12 take the form of circular-shaped segments and are under the operative action for adjusting means 14. The slides 12 are adjustable independently of each other.

To counteract the detrimental effect of the high circumferential speeds of the dehusking means 8 necessary for the dehusking operation at which speeds the grains would be carried along and flung against the dehusking skirt 9 where they would be damaged the dehusking machine is provided with means for slowing down the material to be dehusked during its treatment. Said means according to the first example of embodiment shown in Fig. 1 can consist of comb-shaped slowing-down elements 15 extending between the grinding wheels 8 and the dehusking skirt 9 in the vertical position and being adjustably arranged in relation to the dehusking elements. The projecting comb-teeth of the slowing-down elements engage between the grinding wheels arranged one above the other and prevent the material to be dehusked from being carried along by the rotation of said grinding wheels. Said slowing-down elements 15 are mounted for adjustment in the radial direction by means of the slots 16.

The dehusking machine described is suitable for the dehusking of legumes or vegetables of any suitable kind such as peas, beans, grain. It has the advantage that both the circumferential as well as the passing-through speeds of the material to be dehusked can be adjusted so that undesired accumulations can be prevented and a continuous operation with a simultaneous greatest possible preservation of the material dehusked is achieved.

It can thus be seen that there has been provided, in accordance with the present invention, a dehusking machine, in particular for legumous and like leguminous material, comprising a substantially vertical shaft, rotatable abrasive wheels spacedly arranged from each other on said shaft, a skirt surrounding said wheels and provided
2,618,307

with slots therethrough to facilitate discharge of husks accumulated within the confines of said skirt, a channel provided between the periphery of said abrasive wheels and said skirt whereby material fed to be dehulled is caused by gravity to move in the direction of said shaft along said channel and in contact with said abrasive wheels, means for regulating the speed of passage of said fed material through said channel, and projecting means comprising a member extending longitudinally of the axis of said shaft and located within said channel for reducing the rotational speed of said material caused by said abrasive wheels, said member having portions extending within the spaces between said abrasive wheels and between said skirt and said abrasive wheels and in radial direction from said skirt.

What I claim and wish to secure by Letters Patent is:

1. A hulling machine, in particular for grain and like leguminous material, comprising a substantially vertical shaft, rotatable abrasive wheels, spacedly arranged from each other on said shaft, a skirt surrounding said wheels and provided with slots therethrough to facilitate discharge of husks accumulated within the confines of said skirt, a channel provided between the periphery of said abrasive wheels and said skirt whereby material fed to be dehulled is caused by gravity to move in the direction of said shaft along said channel and in contact with said abrasive wheels, means for regulating the speed of passage of said fed material through said channel, and projecting means comprising a member extending longitudinally of the axis of said shaft and located within said channel for reducing the rotational speed of said material caused by said abrasive wheels, said member having portions extending within the spaces between said abrasive wheels and between said skirt and said abrasive wheels and in radial direction from said skirt.

2. A machine according to claim 1, wherein said regulating means comprise a plurality of circular shaped segmental slides extending at one end of said passageway, and means outside said skirt and associated with a respective slide for adjusting the same in radial direction to said shaft.

3. A machine according to claim 1, including means for adjusting said projecting means in position relatively to the periphery of said abrasive wheels and within the spaces between said abrasive wheels.

BERNHARD KELLER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>161,367</td>
<td>Wallace et al.</td>
<td>Mar. 30, 1875</td>
</tr>
<tr>
<td>243,153</td>
<td>Prinz</td>
<td>May 31, 1881</td>
</tr>
<tr>
<td>374,002</td>
<td>Jürt</td>
<td>Mar. 13, 1883</td>
</tr>
<tr>
<td>398,538</td>
<td>Provost</td>
<td>Feb. 26, 1889</td>
</tr>
<tr>
<td>439,485</td>
<td>Dietzendorf</td>
<td>Oct. 28, 1880</td>
</tr>
<tr>
<td>999,118</td>
<td>Lyon</td>
<td>July 25, 1911</td>
</tr>
<tr>
<td>1,017,326</td>
<td>Schacht</td>
<td>Feb. 15, 1912</td>
</tr>
</tbody>
</table>