July 3, 1956 A. B. GRÖNBERG 2,752,969

DEVICE TO TREAT STRAW OR THE LIKE

Filed July 23, 1951 2 Sheets-Sheet 1

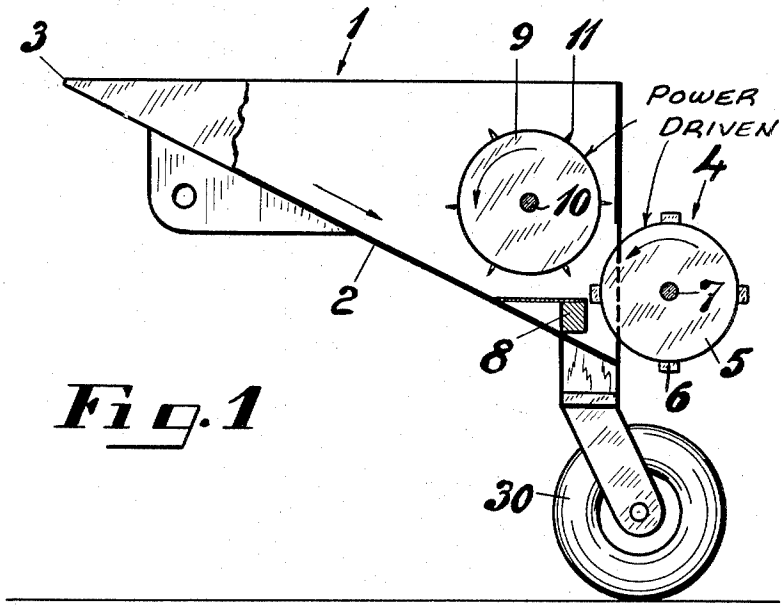


Fig. 1

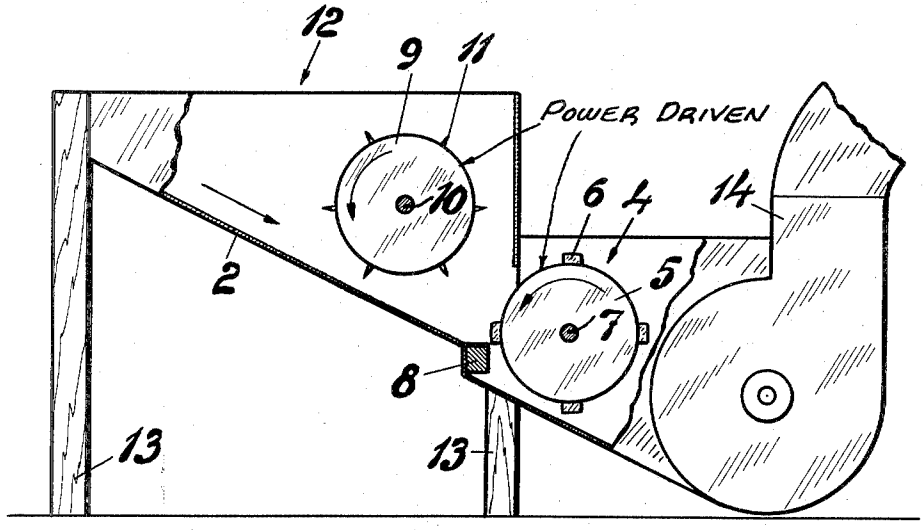


Fig. 2

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DEVICE TO TREAT STRAW OR THE LIKE

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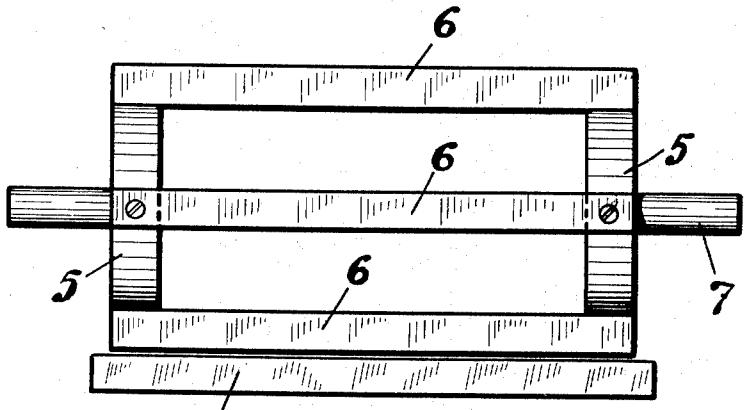


Fig. 3

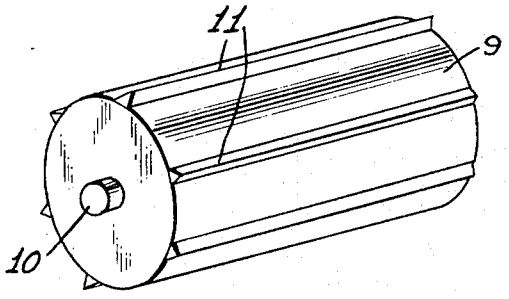


Fig. 4

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DEVICE TO TREAT STRAW OR THE LIKE

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Application July 23, 1951, Serial No. 238,082

Claims priority, application Sweden July 25, 1950

5 Claims. (Cl. 146—120)

This invention relates to a device for simultaneously cutting and crushing straw.

It is well known that straw can be broken up by cutting it crosswise in order to facilitate storage and to prepare it for chemical treatment. Further, experiments have shown that simultaneously cutting and crushing the straw increases the desired effect and renders the so-prepared straw resistant to rotting in storage.

The devices of the present invention comprise cutting members, which perform in addition to the cutting, one part of the desired crushing and other means for crushing the straw in such a way that the fibers are torn off in a longitudinal direction.

An object of the invention is to provide a device for the simultaneous cutting and crushing of straw.

Another object of the invention is to provide a device whereby it is possible to obtain a crosswise cutting of the straw in relation to the longitudinal direction of said straw simultaneous with the crushing of said straw.

Other objects and features will be apparent from the following detailed description.

Figure 1 is a vertical view in section of a pivot car which may be coupled to a reaping thresher and which is provided with a cutting and crushing device.

Figure 2 shows a vertical view in section of a similar stationary device.

Figure 3 shows side view of the straw cutting and crushing members.

Figure 4 is a perspective view of the drum for feeding and crushing the straw.

Fig. 1 shows a trailer car **1**, which may be of a kind known per se, the bottom **2** of which slopes outwards and downwards from a part **3**, which is to be coupled to the towing car. The trailer car is carried on one or more wheels **30**, which are attached to bearing members, which are swingable around vertical axes in a way, well-known per se. At the rear end of the car **1**, at the lower end of the sloping bottom **2**, a device **4** is arranged according to the invention to treat straw or the like. Straw is fed into the car from the reaping thresher in such a way that the straws move mainly in their longitudinal direction. The device **4** comprises bars **6**, which are arranged at the periphery of wheels **5** or the like, and said bars are mainly parallel with a shaft **7**, around which the wheels with the bars are swung. The shaft **7** is mounted in the car **1** in bearings not shown in the drawing, and suitably said shaft may be driven by the reaping thresher, by means of members not shown. The bars **6** are designed to cooperate with a fixed bar **8**, which is attached to the car, adjacent to its bottom, so that straw is fed over the bar **8** and in between the rotating bars **6**, so that the straws are treated by crosswise cutting, at the same time being partly crushed. The bars **6** and **8** may be designed with edges so that the straws are cut into short pieces.

At the example shown in Fig. 1 the car is provided with a rotating drum **9** or the like, which is carried by a shaft **10** and at its periphery provided with extending

teeth **11** or the like, which suitably may consist in axially arranged and comparatively thin plates. Suitably the drum **9** on the shaft **10** is driven in correspondence with the rotation of the wheels **5**. The drum serves to perform a certain compression as well as a feeding of straw in direction to the bar **8**. Said teeth **11** may be provided with edges so that the straws are partly broken and also somewhat crushed before it is treated by the bars **6** and **8**.

Fig. 2 shows a similar device, which is, however, stationary, and the details which correspond to details in Fig. 1 are provided with the same reference numbers. A feeding hopper **12** is formed in a way corresponding to the car **1** except that the feeding hopper **12** is carried on legs **13** instead of wheels **30**. In Fig. 2 there is a fan **14** arranged to discharge the straws for storage or further treatment.

Above mentioned embodiments are common in that the treating members **6** and **8** are mainly parallel with the rotating shaft **7**.

Figure 4 shows the drum **9** mounted on shaft **10** and clearly indicates how the longitudinal teeth **11** are mounted on the drum. It is essential that the teeth extend the full length of the drum so that all the straw passing through the hopper will be crushed as it is fed toward the discharge opening.

The invention is not, however, limited to the embodiments shown and described above but may be varied considerably within the scope of the invention. Most important is, that the device is arranged in such a way, that it is possible to obtain a crosswise cutting in relation to the longitudinal direction of the straws and that the straws are crushed at the same time, at least partially and it is not necessary that the cutting operation cuts off the straws in parts during the treatment.

At the embodiment shown in Figs. 1–2 the drums **9** may be arranged in such a way that they are spring actuated in direction to the hopper bottom **2**, and said spring actuation may be adjusted in order to adjust the pressure of the teeth **11** against the straw. It is also possible to provide the bars **8**, as well as the bars **6**, with grooved surfaces, which facilitate the crushing and milling of the straw.

What I claim is:

1. A trailer-car for receiving straws discharged from a thresher and for discharging straw in a desired broken condition for further processing, said trailer-car comprising a hopper having a bottom sloping toward a discharge opening, a power driven toothed rotary drum located close to the hopper bottom so as to partially break and somewhat crush the straw as said drum is driven to feed the straw toward said discharge opening, a blade fixed to the hopper bottom to lie substantially crosswise of the direction of flow of the straws as they are fed toward the discharge opening, a plurality of bars mounted on a power driven rotatable shaft and so positioned as to pass close to said fixed blade to crush and break the straws into short pieces.

2. The device of claim 1 in which the teeth on said toothed drum each consists of an axially arranged piece of thin plate projecting edgewise radially from the drum.

3. A device for crushing and breaking straw to prepare it for processing comprising a hopper with a bottom sloping toward a discharge opening, a power driven toothed rotary drum spaced a short distance above the hopper bottom to form a restricted passage so as to partially break and somewhat crush the straw as said drum is driven to feed the straw toward said discharge opening, a blade fixed to the hopper bottom to lie substantially crosswise of said hopper at the discharge opening, a plurality of bars mounted on a rotatable driven

shaft so positioned as to pass close to said fixed blade to cut and break the straws into short pieces.

4. The device of claim 3 in which the said plurality of bars lie parallel to said rotatable shaft on which they are mounted.

5. The device of claim 3 in which the teeth of said toothed drum each consists of a piece of thin plate extending lengthwise of the drum with its edge presented radially therefrom.

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