

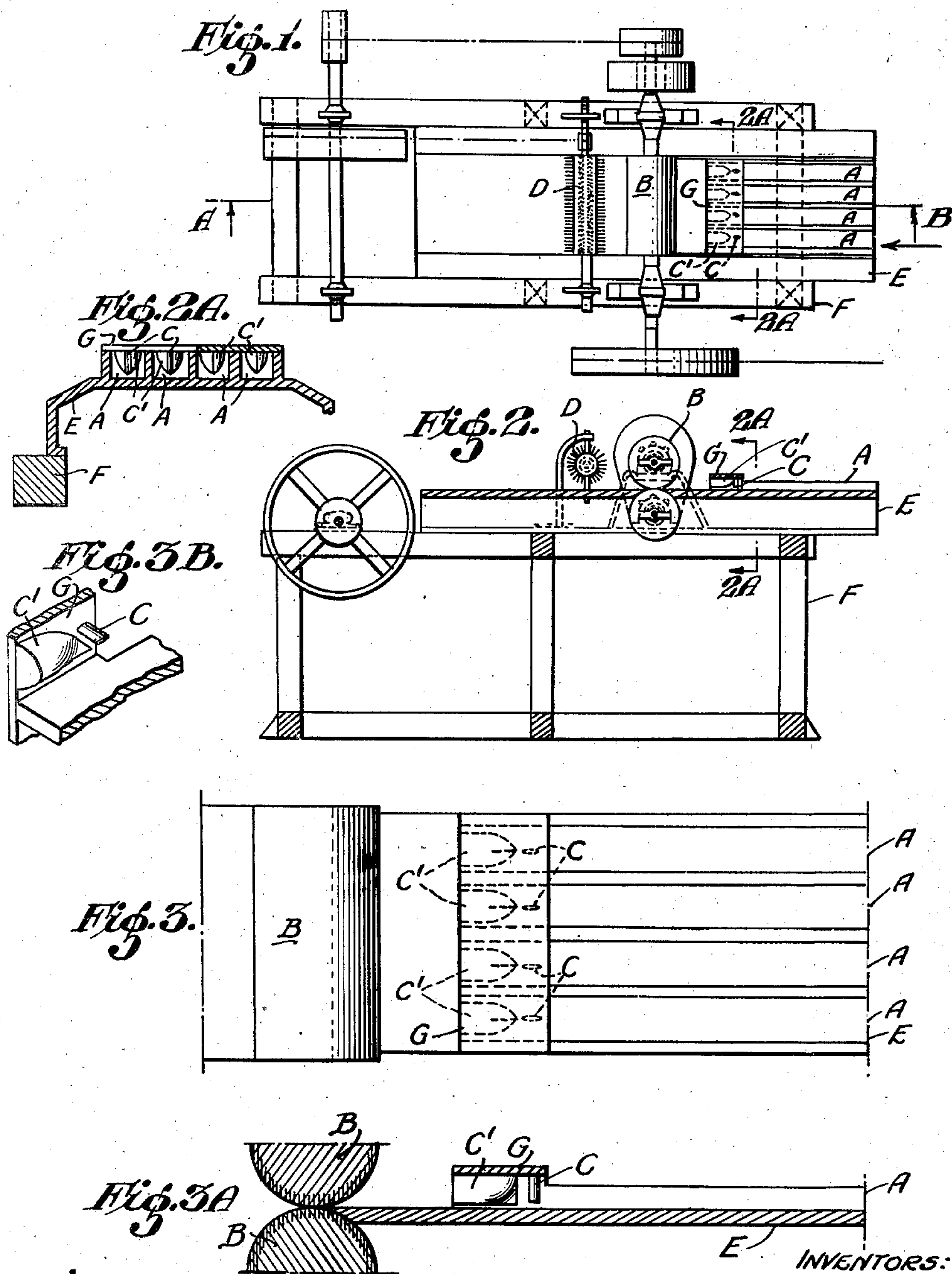
July 23, 1946.

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2,404,762

UTILIZING MAIZE CANE AND SORGHUM CANE

Filed Sept. 24, 1940



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# UNITED STATES PATENT OFFICE

2,404,762

## UTILIZING MAIZE CANE AND SORGHUM CANE

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Application September 24, 1940, Serial No. 358,094  
In Italy October 7, 1939

3 Claims. (Cl. 146—164)

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Our invention relates to an improved process and device for utilizing maize cane cornstalks and sorghum cane by contemporaneously producing cellulose fibres and a medulla forage from these materials. At the present time the maize cane is for the most burned in order to destroy the larvae of *Pyrausta nubilalis* or it is used for shake-down. If used for forage, only the top portion and some residual leaves are utilized, whereas the cane is refused. The sorghum cane is generally entirely abandoned as the countrymen can not convert it, at the present state, into forage. According to the process and with the device forming the object of our invention the great mass of these materials is transformed into cellulose fibres and a medulla forage for the cattle.

According to the invention, from the ligneous portion forming the case of the cane, the cellulose is extracted whereas from the inner portion, viz. from the medulla, an excellent food is obtained which may be given alone or mixed with other foods. Hitherto it was not possible to obtain a clean separation of the two products, but it was only known to extract the fibres from the cane and to separate the two products by means of seaving. In this way it is impossible to obtain pure products; only two masses may be obtained containing the one a predominating portion of cellulose and the other a predominating portion of mark to be used as forage. Of course this was prejudicial for both the products.

The device forming the object of the present invention allows to obtain on the one hand the cellulose fibre completely free from medulla in any part and on the other hand the medulla ready for use as forage and therefore immediately to be utilized.

A device according to the invention is shown by way of example in the accompanying drawing.

Fig. 1 is a plan view and

Fig. 2 a longitudinal sectional view of the said device;

Fig. 2A is a sectional view taken along line 2A—2A in Figs. 1 and 2;

Figs. 3 and 3A show in a larger scale, respectively in plan view and in side view, the slicing, turning and pressing means;

Fig. 3B is an isometric detail view of the slicing and turning means.

The operation of the device is as follows: The maize or the sorghum cane is introduced in suitable guideways A and adduced to special stationary cutting and opening devices C and subsequent

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knives C' adapted to slice and open the cane so as to orient the whole outside of the cane (fibres of cellulose) downwards and the whole inner part (medulla) upwards before the canes reach a pair of cylinders B. The guideways A are substantially parallel and formed in the upper surface of an inverted U-shaped plate E, which in turn rests upon a framework F. The stationary slitting and opening members C and C' have their cutting edges alined one with another in the respective grooves or guideways A, said members depending from the lower side of a supporting means such as plate G which is positioned transversely of the guideways. The said cylinders provide for reducing the two sections of the cane to ribbons of a constant thickness adapted to uniformly receive the treatment of a special system of rotating blades and brushes D. The maize cane or the sorghum cane is thus transformed into ribbons of cellulose fibres, whereas the medulla, previously compressed by the cylinders B and then crushed by the rotating blades and the brushes D, is entirely separated and ready for use as an excellent forage.

By the invention are thus obtained contemporaneously three objects, viz.:

(1) The production of cellulose fibres,

(2) The production of a forage,

(3) The destruction of the larvae of *Pyrausta nubilalis*.

What we claim is:

1. A device for producing contemporaneously cellulose fibres and a medulla forage from maize cane and sorghum cane, comprising guide means for the canes, fixed means for longitudinally slitting one side only of said canes, fixed means alined with said slitting means for engaging the opposite sidewalls of the slit to turn the medulla section of the canes upwards and the cellulose fibres downwards, means for pressing the opened canes and means for crushing and brushing off the medulla from the cellulose fibres.

2. A device for simultaneously producing cellulose fibers and a medulla forage from maize stalks, sorghum cane, and the like, comprising stationary guide means for the stalks or canes, a frame supporting said guide means, there being means for propelling the stalks or canes through the device upon said frame, a fixed member mounted transversely of the part of movement of the stalks or cane upon said frame intermediate the propelling means and the guide means, a transverse row of splitting knives projected from said fixed member within the leading edge thereof of facing the guide means, and a second row of



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relatively larger opening knives mounted upon said fixed member following the first row and relatively nearer to the propelling means than said first row, said opening knives cooperating with said propelling means for maintaining each opened stalk or cane in opened position with the medulla thereof facing upward and the casing of the cane downward.

3. A device for simultaneously producing cellulose fibres and a medulla forage from maize stalks, sorghum cane, and the like, comprising stationary guide means for the stalks or canes, a frame supporting said guide means, there being means for propelling the stalks or canes through the device upon said frame, a fixed member transversely bridging said frame with the main por-

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tion thereof spaced above the latter in substantial parallelism therewith, a transversely disposed row of pendant splitting knives extending downwardly from said main portion of the fixed member, and a second row of opening knives respectively alined with said splitting knives and spaced in a following position from the first row, said opening knives also extending pendantly downward toward the frame from said fixed member and cooperating with said propelling means for maintaining each opened stalk or cane in opened position so that each stalk or cane is treated as a continuous ribbon with the medulla section upward and a casing of the stalk or cane downward.

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