No. 810,625. PATENTED JAN. 23, 1906.

J. D. CRANE.

SEPARATOR.

APPLICATION FILED JULY 7, 1905.

2 SHEETS—SHEET 1.

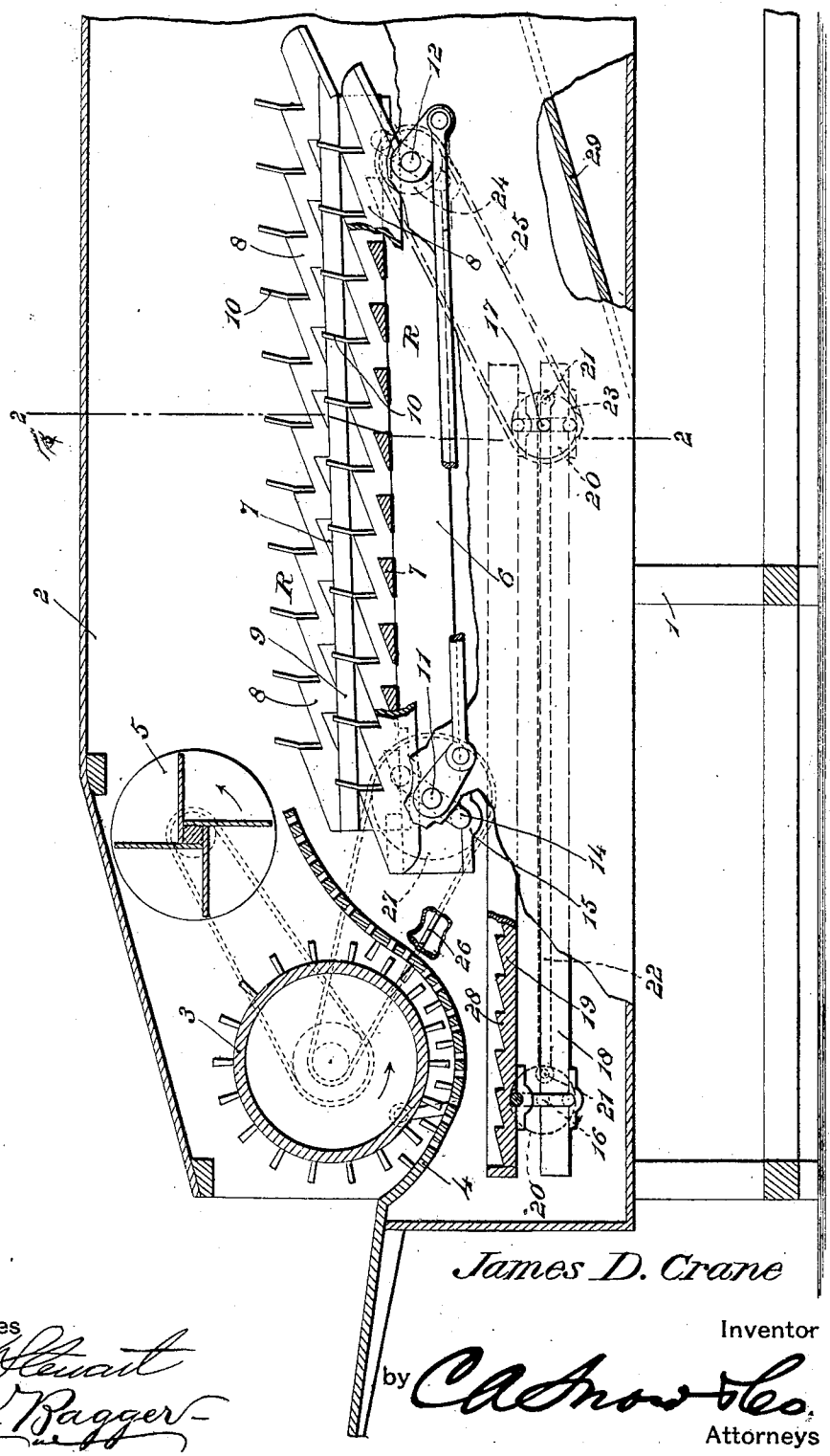


Fig. 1.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

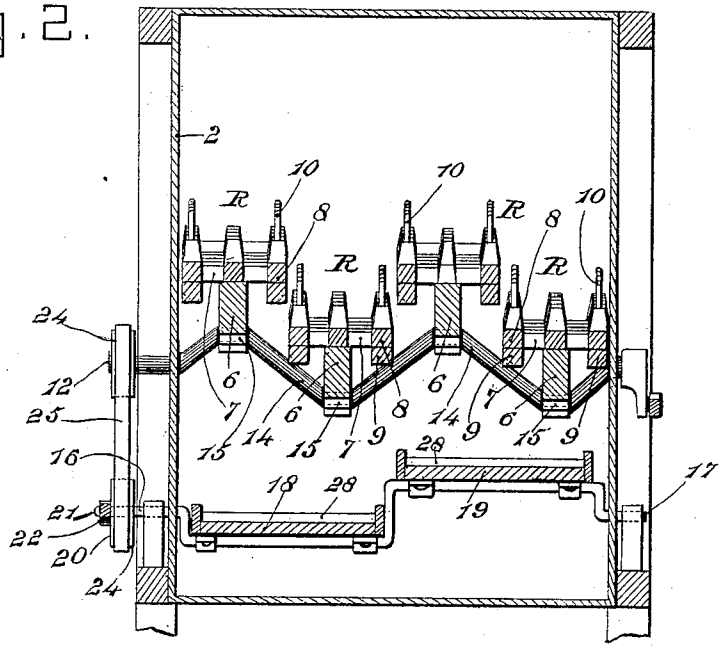
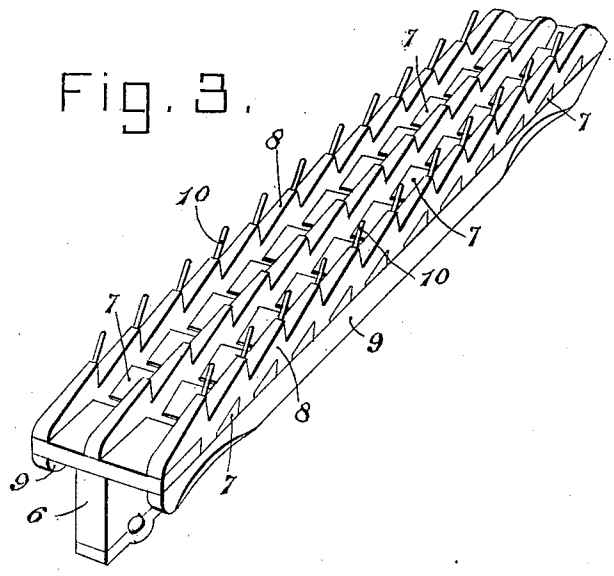


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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No. 810,625. Specification of Letters Patent. Patented Jan. 23, 1906.

Application filed July 7, 1905. Serial No. 268,698.

To all whom it may concern:

Be it known that I, JAMES D. CRANE, a citizen of the United States, residing at Aledo, in the county of Parker and State of Texas, have invented a new and useful Separator, of which the following is a specification.

This invention relates to separators for separating grain from the straw in threshing-machines; and among the objects of the invention are to simplify and improve the construction and operation of this class of devices.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that the right is reserved to any changes, alterations, and modifications to which recourse may be had within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a sectional elevation of a threshing-machine equipped with the improved separating device which constitutes the present invention. Fig. 2 is a transverse sectional view taken on the plane indicated by the line 2 2 in Fig. 1. Fig. 3 is a perspective detail view of one of the members of the straw-carrier.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

The frame 1 and casing 2 of the machine are of the ordinary or any well-known and approved construction, supporting means being provided for the cylinder 3, the concave 4, and for a rotary beater 5. These parts have been shown only in order that the construction, location, and operation of the parts constituting the invention may be better understood.

The straw rack or carrier is composed of a plurality of individual rake-sections, each designated R. Of these rake-sections any desired number may be used; but it is to be understood that the number of said sections employed is preferably even in order that the work of the machine may be evenly balanced. Thus in the accompanying drawings four such sections have been shown, with the understanding, however, that two or any desired multiple of two sections may be employed, if desired. Each of the rake-sections R includes a straight central beam 6, rectangular in cross-section and of any suitable dimensions, said beam being disposed on edge, as will be readily seen by reference to Fig. 2 of the drawings. Upon the upper edge of said supporting-beam are mounted a plurality of slats 7, said slats being triangular or wedge-shaped in cross-section with beveled upper sides, as shown. Supported upon the upper sides of the slats 7 are zigzag-shaped strips 8, which are reinforced by longitudinal strips 9, attached to the under sides of the slats 7 at the ends of the latter and to the portions of the zigzag strips which intervene between the slats 7, the latter being suitably spaced apart, as will be best seen in Fig. 1 of the drawings. The upper sides of the zigzag strips 8 form ratchets or fish-backs, whereby the straw will be operated upon, as will be hereinafter described. Said zigzag strips 8, which are supported upon the ends of the slats 7, are also preferably provided with upwardly-extending and rearwardly-inclined prongs 10, whereby the operation will be facilitated and improved, as will be hereinafter described.

By the construction herein set forth each rake-section is entirely independent of the adjacent rake-sections, and, as stated, any desired number of said rake-sections may be employed, the total number being a multiple of two.

For the support of the front and rear ends of the rake-sections shafts 11 and 12 are provided, said shafts being provided with cranks 14, which are journaled in boxes 15 upon the under sides of the bars 6. The crank-shafts may be of any desired construction, provided that the cranks extend alternately in opposite directions from the axes of the shafts, the cranks of the front and rear shafts being, however, in registry with each other. It follows that when the shafts are simultaneously rotated the rake-sections will receive a gyratory movement, alternate rake-sections being moved in one direction, while the intermediate rake-sections are moved in the opposite directions. In other words, when the cranks of the supporting-shafts are disposed in an approximately horizontal plane all of the rake-sections will be disposed approximately

in a horizontal plane, while when the cranks are approximately vertically disposed alternate rake-sections will be disposed in two approximately horizontal planes, one above the other. The direction of movement of the rake-sections being downward, forward, upward, and rearward, it follows that material deposited upon the said rake-sections composing the straw-carrier from the threshing mechanism will be thoroughly shaken and agitated and at the same time moved rearwardly in the direction of the tail end of the machine to the point of final discharge. The material passing over the straw-carrier will thus be torn asunder and spread out into a comparatively thin even sheet or layer, permitting the grain and heavy particles to escape between the slats 7, as will be readily understood.

Upon a pair of double crank-shafts 16 and 17, supported in suitable bearings beneath the concave and the straw-carrier are mounted a pair of grain-pans 18 and 19, which extend under the concave 4 and under the forward portion of the straw-carrier. The grain-pans are connected with the crank-shafts for gyratory movement, it being obvious that as the one grain-pan descends the other will ascend. The weight of the pans will thus be counterbalanced and the operation of the machine will be facilitated and rendered more effective. For the purpose of driving the crank-shafts 16 and 17 they may be provided with disks 20, having wrist-pins 21 connected by means of a link-rod 22. One of said shafts may be provided with a pulley 23, driven from a pulley 24 upon the crank-shaft 12 by means of a belt 25. The crank-shaft 11 has been shown as driven from the cylinder-shaft by means of a belt 26 engaging a pulley 27 upon the shaft 11.

The grain-pans are provided in the bottoms thereof with inclined notches 28, whereby the grain will be fed in a rearward direction until discharged over the rear ends of the grain-pans onto an inclined board or chute 29, whereby the grain will be conveyed to a carrier or to some suitable place of deposit. (Not shown.)

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains. The material passing from the threshing mechanism onto the straw-rack will be thoroughly shaken and agitated by the action of the individual rake members, which operate to toss the material in an upward and rearward direction, thoroughly loosening the same, breaking up all knotted and matted portions, and facilitating the separation from the straw and lighter particles of the grain and heavy particles, including bits of ears with grain adhering thereto, the same passing between the slats 7 into the grain-pans or onto the inclined chute 29, upon which the overtail of the grain-pans is likewise deposited.

The construction, as will be seen, is simple and applicable to threshing-machines of ordinary construction, and the operation of the device has proven to be thoroughly efficient in practice.

Having thus described the invention, what is claimed is—

1. In a separator, a straw-rack including a plurality of independent rake-sections; each of said rake-sections including a longitudinal supporting bar or beam, wedge-shaped slats supported transversely upon said beam, and zigzag bars supported upon said cross-slats.

2. In a device of the class described, a rake-section including a longitudinal supporting-bar, cross-slats upon said bar having inclined upper sides, zigzag bars supported upon said cross-slats, and reinforcing-bars connected with the under sides of the cross-slats and with the intervening portions of the zigzag bars.

3. In a device of the class described, a rake-section including a longitudinal supporting-bar, wedge-shaped cross-slats upon said bar, zigzag bars upon said cross-slats, and upwardly and rearwardly inclined prongs connected with said bars.

4. In a separator, a straw-rack including a plurality of independent sections, a pair of crank-shafts, having cranks supporting said independent sections for gyratory movement in vertical planes, a plurality of grain-pans disposed adjacent to each other and extending beneath the straw-rack, a pair of shafts having cranks supporting said grain-pans for gyratory movement in vertical planes and in opposite directions, driving means applied to one of the crank-shafts supporting the straw-rack sections, and means for transmitting motion between the shafts supporting the straw-rack sections and the shafts supporting the grain-pans.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES D. CRANE.

Witnesses:
A. J. Hood,
J. O. Perry.