(No Model.) 2 Sheets—Sheet 1.

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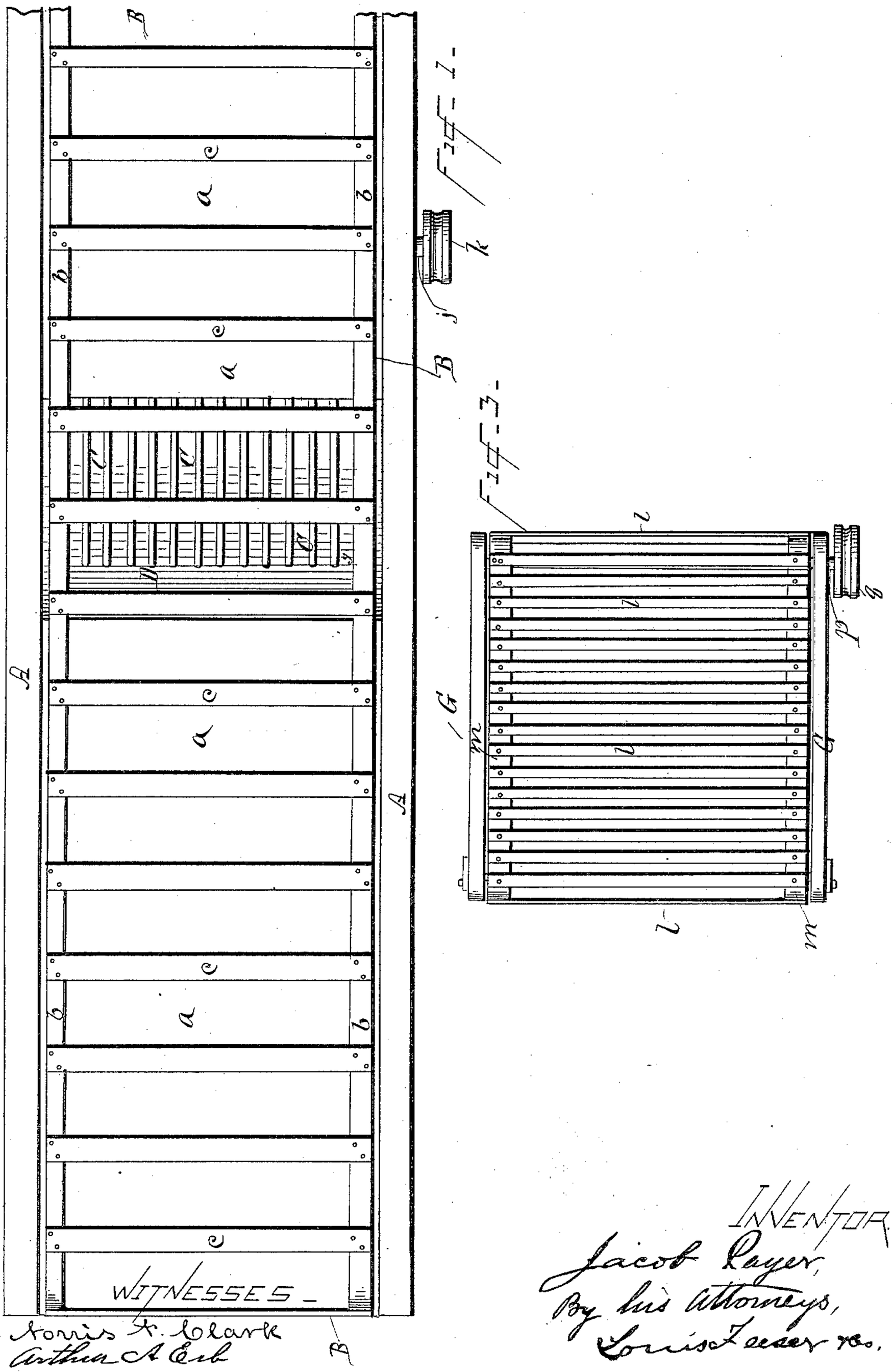
GRAIN SEPARATOR.

No. 411,256. Patented Sept. 17, 1889.



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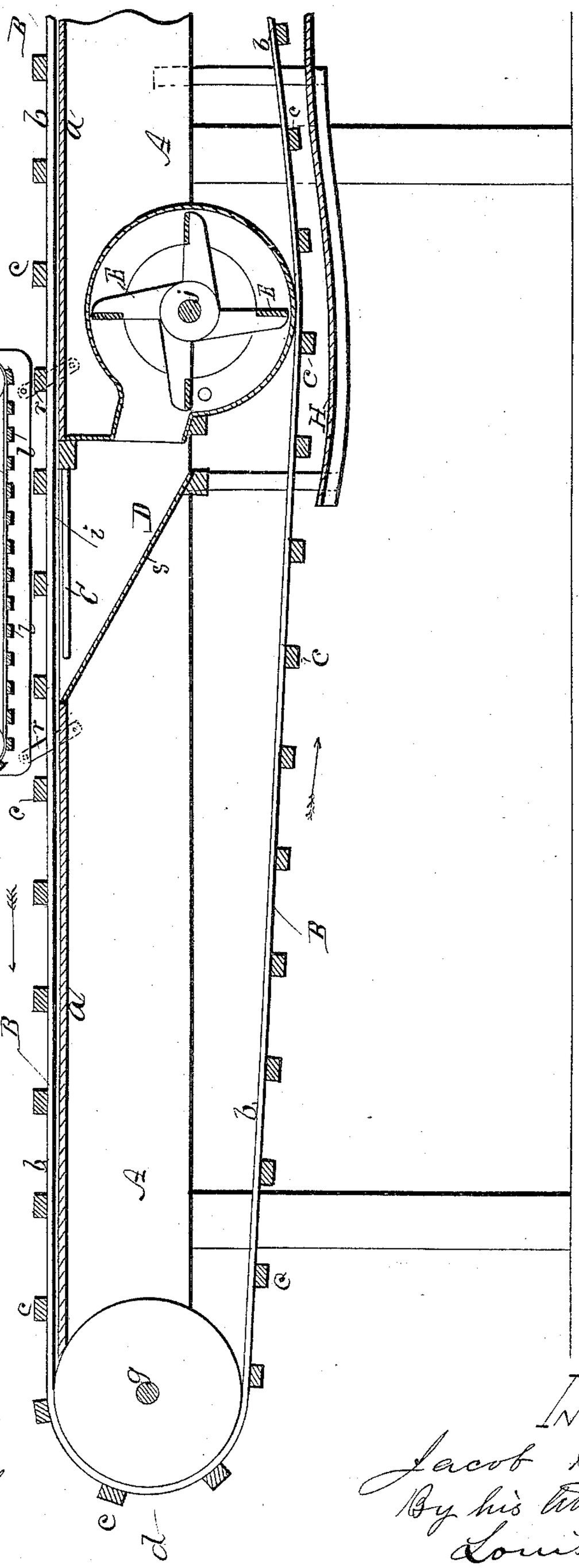

UNITED STATES PATENT OFFICE.

JACOB PAYER, OF ST. PAUL, MINNESOTA.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 411,256, dated September 17, 1889.

Application filed May 5, 1888. Serial No. 272,962. (No model.)

To all whom it may concern:

Be it known that I, JACOB PAYER, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented an Improvement in Grain-Separators; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification.

My invention is applied to the straw-carriers of thrashing-machines or to the straw-stackers; and the purpose of it is to effectually separate all the grain from the chaff and straw, and to allow a thrashing-machine to run at full speed and to its utmost capacity of work without the waste of any grain thereby.

The invention consists in the devices hereinafter set forth and their combination with a straw-carrier, as described in the specification and pointed out in the claims.

In the accompanying drawings, Figure 1 is a top view of a straw-carrier provided with a chaff-separating device, which forms one part of my invention; Fig. 2, a longitudinal vertical section of the straw-carrier provided with both the chaff-separating and straw-separating devices, which constitute my invention, in connection with the straw-carrier; Fig. 3, a top view of the straw-separating device separate.

Like letters designate corresponding parts in all of the figures.

In the drawings, A represents the straw-carrier or stacker frame, having a close table or top *a*, except where the chaff-separator is applied. Longitudinally over this frame and upon its table travels the straw-rake B, which ordinarily consists of two endless belts *b b*, with cross-slats *c c* thereon at proper intervals. The endless belts travel backward over the frame, and return under the same and downward around the rounded rear end *d* of the frame. It is driven by a roller near the front end (not shown) and passes around a roller-shaft *g* at its rear end.

The chaffing device applied to this grain-carrier is substantially as follows: The chaff, with grain mixed therein, first falls on the top or table *a* of the frame and is continuously moved back over the table by the cross-slats *c c* of the rake till it reaches an opening *i* in the top or table, as shown. Over this opening, which extends the whole width of the top or table inside of the sides of the frame, is secured a set of separating-wires C, arranged in parallel positions lengthwise of the frame and in a plane flush with the top or table or slightly below it, as shown in Fig. 2. As the chaff and grain are moved along by the rake-slats the chaff passes over these wires, while the grain falls through between the wires or in most of them into a grain-chute D in the frame below. Near the lower part of this chute is located a fan E, mounted on a shaft *j*, having a pulley *k*, Fig. 1, thereon to receive a belt coming from a driving-shaft. (Not shown.) The blast from this fan is directed upward and preferably somewhat forward through the grain-chute and up between the wires of the chaff-separator, thereby gently lifting the chaff and preventing any of it from falling into the chute, while it does not interfere with the descent of the grain into the chute. The chaff is further carried onward by the slats of the rakes upon and over the solid part of the top or table back of the wires of the chaff-separator, till it is discharged at the rear end of the straw-carrier *d*.

The straw-separator G consists of an endless chain of cross-slats *l l*, secured upon endless belts *m m*, which pass around two rollers *n o* at the two ends of the endless chain, the shaft *p* of one of the rollers projecting out and having a pulley *q*, Fig. 3, thereon to receive a driving-belt (not shown) coming from a driving-shaft. This straw-separator is placed directly over the chaff-separator above specified and reaches somewhat beyond the same, both forward and backward, as shown in Fig. 2. It is situated a little above the straw-rake, giving sufficient room underneath it to allow the chaff to freely pass beneath it. It is made adjustable up and down, so as to increase or diminish the depth of the space between it and the chaff-separator, as may be desired. The means shown for raising and lowering it, as seen in Figs. 2 and 3, consists of parallel bars *r r*, pivoted at their upper ends to the frame of the straw-separator and

at their lower ends to the sides of the frame A of the grain-separator. By swinging these bars on their pivots and securing them in any position desired the height of the grain-separator may be adjusted at will. The straw falls or is brought upon this straw-separator, which prevents its falling upon the chaff-separator below, while it allows the grain, if any, in the straw to drop through into the grain-chute below. Thus it does not interfere with the action of the chaff-separator and keeps the straw from interfering therewith. When any straw is carried back from the front part of the straw-carrier by the rake to the straw-separator, it passes upon the same and then off therefrom, being assisted by the blast of the fan H, which blast is directed (as above set forth and as indicated in Fig. 2) somewhat backward and partly to the rear of the straw-separator, thereby gently lifting the straw and assisting it to rise upon the endless chain of the said straw-separator, which immediately carries the straw back and discharges it upon the straw-rake back of the straw-separator, and the straw and chaff are then carried along together and discharged upon the stack, or otherwise. The grain as it falls into the chute D descends upon the inclined bottom *s* of the same and is discharged therefrom upon a table or bottom H below the frame A. Over the surface of this table or bottom the cross-slats *c c* of the rake B pass closely in the return movement of the rake, and thereby scrape off the grain to be discharged into a suitable receptacle or spout of an elevator, or otherwise to be disposed of in any known or suitable way.

This invention, with the chaff and straw separating devices above set forth, is very effectual for its purpose, separating and saving all the grain, and this, whatever may be the speed of the straw-carrier and of the thrashing-machine which supplies the grain, chaff, and straw thereto, so that the thrashing-machine may be run at its highest practicable speed, and about twice as much grain may be thrashed with it as with the ordinary straw carriers and stackers.

I claim as my invention—

1. In combination with a straw-carrier, a chaffer consisting, essentially, of a series of longitudinal wires, a grain-chute under the same, a fan adapted to force an air-blast upward through the grain-chute and between the wires, and a straw-separator consisting of an endless chain of slats located over the chaffer and the straw-carrier, substantially as set forth.

2. A straw-carrier, a chaffer consisting, essentially, of a series of longitudinal wires, a grain-chute under the same, and a fan adapted to force an air-blast upward through the grain-chute and between the wires, in combination with a vertically-adjustable straw-separator located over the chaffer and straw-carrier, said straw-separator consisting of a frame connected by pivoted links to the main frame, and an endless chain of slats mounted in said straw-separator frame, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JACOB PAYER.

Witnesses:

LOUIS FEESER, Jr.,

WARREN H. MEAD.