

(No Model.)

J. GRIDER.
GRAIN SEPARATOR.

No. 375,486.

Patented Dec. 27, 1887.

Fig. 1.

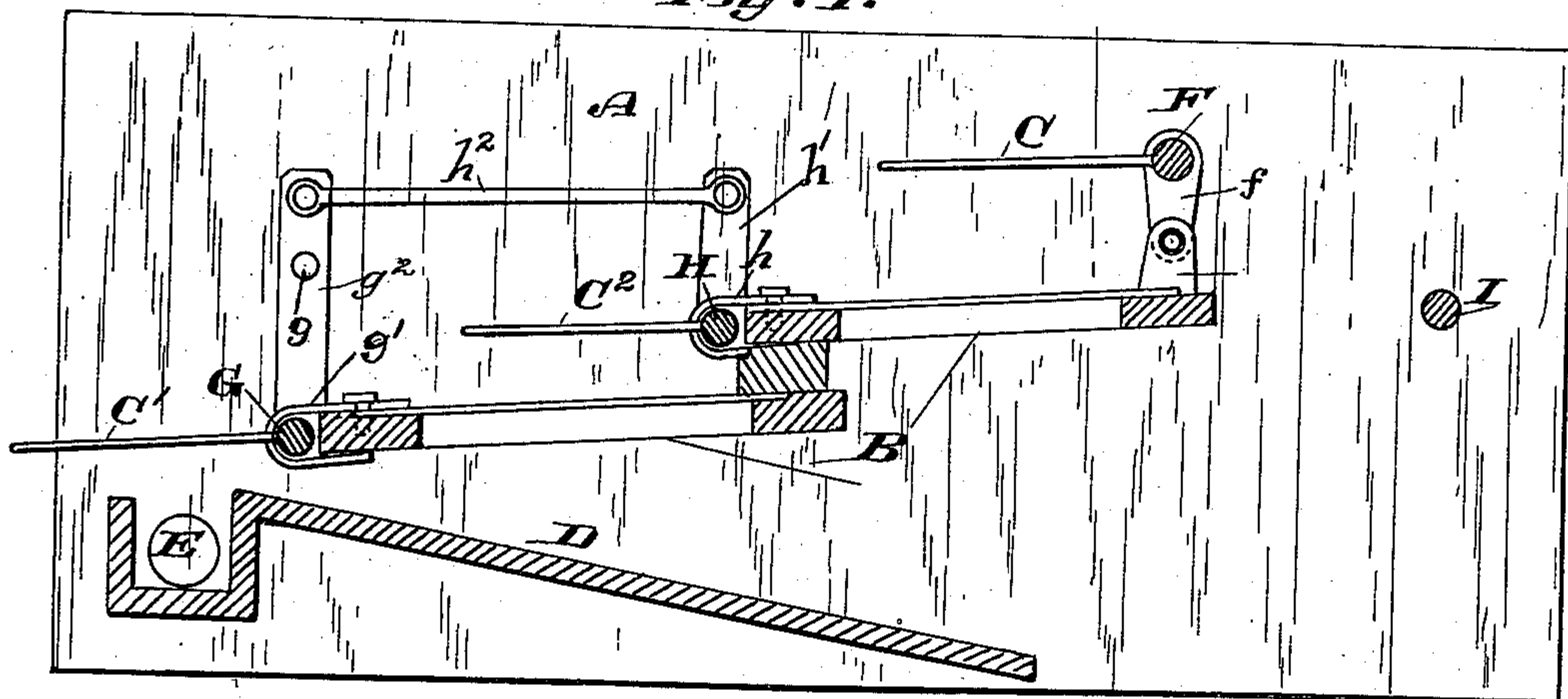
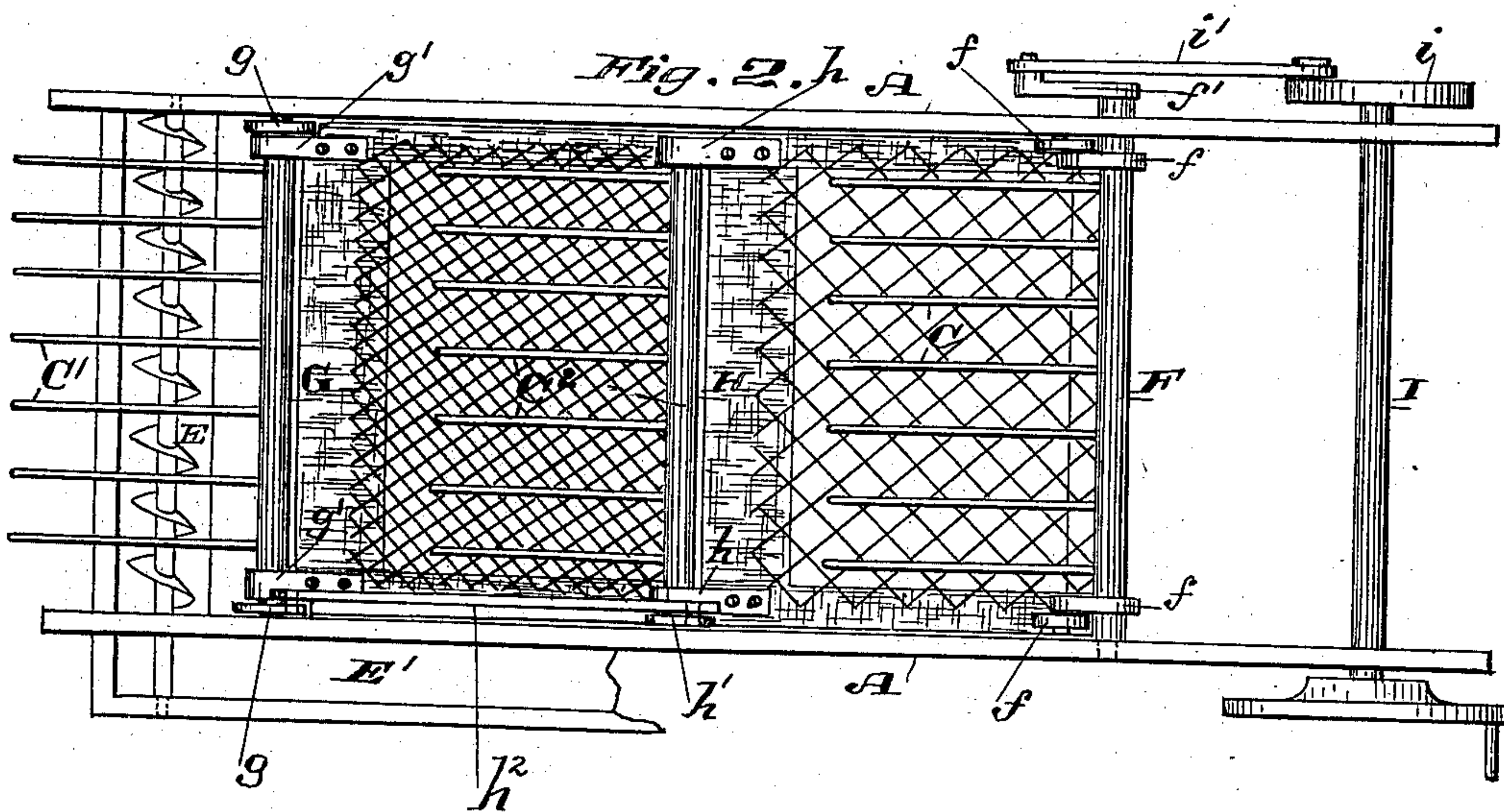


Fig. 2.



Witnesses,
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UNITED STATES PATENT OFFICE.

JOHN GRIDER, OF STOCKTON, CALIFORNIA, ASSIGNOR OF ONE-HALF TO
GEORGE CHESNUTWOOD AND THOMAS N. MOORE, OF SAME PLACE.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 375,486, dated December 27, 1887.

Application filed April 1, 1887. Serial No. 233,333. (No model.)

To all whom it may concern:

Be it known that I, JOHN GRIDER, of Stockton, in the county of San Joaquin and State of California, have invented an Improvement in Grain-Separators; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to grain-separators, and particularly to a new and useful improvement therein, the object of which is to prevent the riddle or shoe from becoming clogged with the weeds and short straw discharged upon it by the grain-belt, and at the same time to more effectually clean the grain, so that but a small proportion is returned to the cylinder, whereby the conveyer and elevator are never choked; and my invention consists in the peculiar constructions and combinations of devices, which I shall hereinafter fully describe and claim.

Referring to the accompanying drawings, Figure 1 is a vertical longitudinal section of a separator-shoe embodying my invention. Fig. 2 is a plan of the same.

A is the side of the thrasher.

B is the shoe or riddle, which may be in one or two parts, the latter construction being here shown.

C is the forward rack, C' is the rear rack, and C² is the central or middle rack.

D is the grain-chute.

E is the spiral conveyer, and E' a portion of the return-elevator.

Across the thrasher and in the sides thereof is mounted the shaft F, above the forward end of the riddle. The rack C is carried by this shaft, and consists of spaced rods, bars, or fingers secured thereto. The forward end of the riddle is suspended from the shaft F by the cranks *f*, firmly secured to or forming part of the shaft and pivoted to the riddle.

G is a shaft at the rear end of the riddle. It is pivoted by its end arms or cranks in the sides of the thrasher at *g*, and the rear end of the riddle is connected with it by straps or links *g'*, in which the shaft plays. This crank-shaft carries the rack C', which, like the rack C, consists of spaced rods, bars, or fingers secured in the shaft.

H is a crank-shaft, pivoted to the center of the riddle by means of links *h*, connecting it

with the end of the first division of said riddle.

The crank *h'* of this shaft is connected with the crank *g'* of shaft G, above the pivot-point *g*, by means of a rod or link, *h'*. The shaft H carries the rack C², which, like the racks C and C', consists of spaced rods, bars, or fingers extending over the second division of the riddle.

I is a counter-shaft, from which the power is transmitted. It carries the crank *i*, from which a connecting-rod, *i'*, extends to a crank, *f'*, on the end of shaft F. This shaft is thus given an oscillatory movement, so that the rack-fingers C vibrate above the forward portion of the riddle through an arc in a vertical plane, and this movement of the shaft, through its cranks *f*, imparts a forward and backward swinging movement to the shoe or riddle. This motion of the riddle vibrates the crank-shaft G on its pivotal centers *g*, so that the rack-fingers C', which it carries, have a double or combined movement—the result of a reciprocatory motion in straight lines and in curves. The rack C² has a corresponding movement through the connecting-rod *h'* and crank-shaft H.

The operation is as follows: The grain-carrier (not shown) discharges the grain upon the forward rack, C, and with it the weeds and short straw. These latter are held up from the riddle, and by the action of the rapidly-oscillating rack are thrown up and down and worked forward, so that the grain drops out and passes through the riddle, while the blast from the fan passes through the weeds and straw with good effect, blowing them back over the riddle to the middle rack and from it to the rear rack, and separating the grain from them. On the middle and rear racks they are again worked up and down and back, while most of the small amount of grain there is left drops through the rear division of the riddle, the remaining portion or tailings falling into the conveyer-trough. In this way the riddle and the return-elevator are prevented from clogging, and the grain is separated so effectively that but a small quantity of the tailings is left to find its way into the conveyer. The rear rack, C', it will be seen, projects fully over the conveyer, and thus carries the weeds and short straw over and clear of it.

Most of the grain is saved at the forward end of the riddle, and the small remainder, free of weeds, &c., cannot clog the elevator.

It will be understood that I do not confine my invention to the use of the three racks in all cases. I may use but two, one at each end of the riddle; but in a divided or two-part riddle—such as here shown—I prefer to add the middle rack and give to it a corresponding movement to the rear rack.

I am aware that sifting-fingers in connection with thrashers are not new, and I also know that there have been attached to the riddle fingers which form a rack; but to many of these fingers there is imparted only the regular reciprocating motion of the riddle itself, so that said fingers merely move back and forth with the load of material upon them, and have no tendency to lift and separate it out, as my racks do. The consequence is, that the fan-blast has less effect upon the material, the separation of the grain is less effective, and a great portion is not separated at all until it reaches the spiral conveyer, where, being even then but imperfectly separated, it clogs the elevator; but my racks have not only a forward-and-back movement, but a lifting movement as well, which tosses up the material and thus gives the fan-blast such power and direction that the separation is more complete and most of the grain is saved at the forward end.

Of the remaining portion the greater part is saved lower down, while a small portion, clear of weeds and short straw, is saved in the conveyer and passed into the elevator.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a grain-separator, the combination, with the riddle and the power-shaft, of an oscillating shaft mounted above the forward end

of the riddle and provided with downwardly-extending cranks connected with and suspending the forward part of said riddle, and a rack composed of spaced rods, bars, or fingers secured to said shaft extending over the riddle and receiving and supporting the grain, substantially as described.

2. In a grain-separator, and in combination with the thrasher-frame and the two-part riddle, a shaft pivoted to the rear end of the rear portion of the riddle and having end arms or cranks pivoted to the sides of the thrasher-frame, spaced rods, bars, or fingers secured to said shaft and forming a rack, a second shaft pivoted to the rear end of the forward portion of said riddle and having an end crank, a rod connecting said crank with the end arm or crank of the rear shaft, and spaced rods projecting from said second shaft and forming a rack for the rear portion of the riddle, substantially as described.

3. In a grain-separator, the thrasher-frame and a two-part reciprocating riddle, in combination with a shaft at the rear, front, and middle portions of said riddles, said shafts having racks composed of spaced rods extending over the riddle, the cranks *f*, secured to or forming a part of the forward shaft, whereby said riddle is reciprocated and its forward end suspended, cranks *g*², connected with the rear shaft and pivoted to the sides of the thrasher, an arm, *h*¹, projecting from the middle shaft, a rod connecting the upper end of said arm with one of the arms *g*², and means for imparting motion to the forward shaft, substantially as described.

In witness whereof I have hereunto set my hand.

JOHN GRIDER.

Witnesses:

E. F. MOLLOY,
F. C. GIFFORD.