2 Sheets--Sheet 1.

J. H. SHIREMAN.

Improvement in Grain-Thrashers and Separators.

No. 128,666. Patented July 2, 1872.

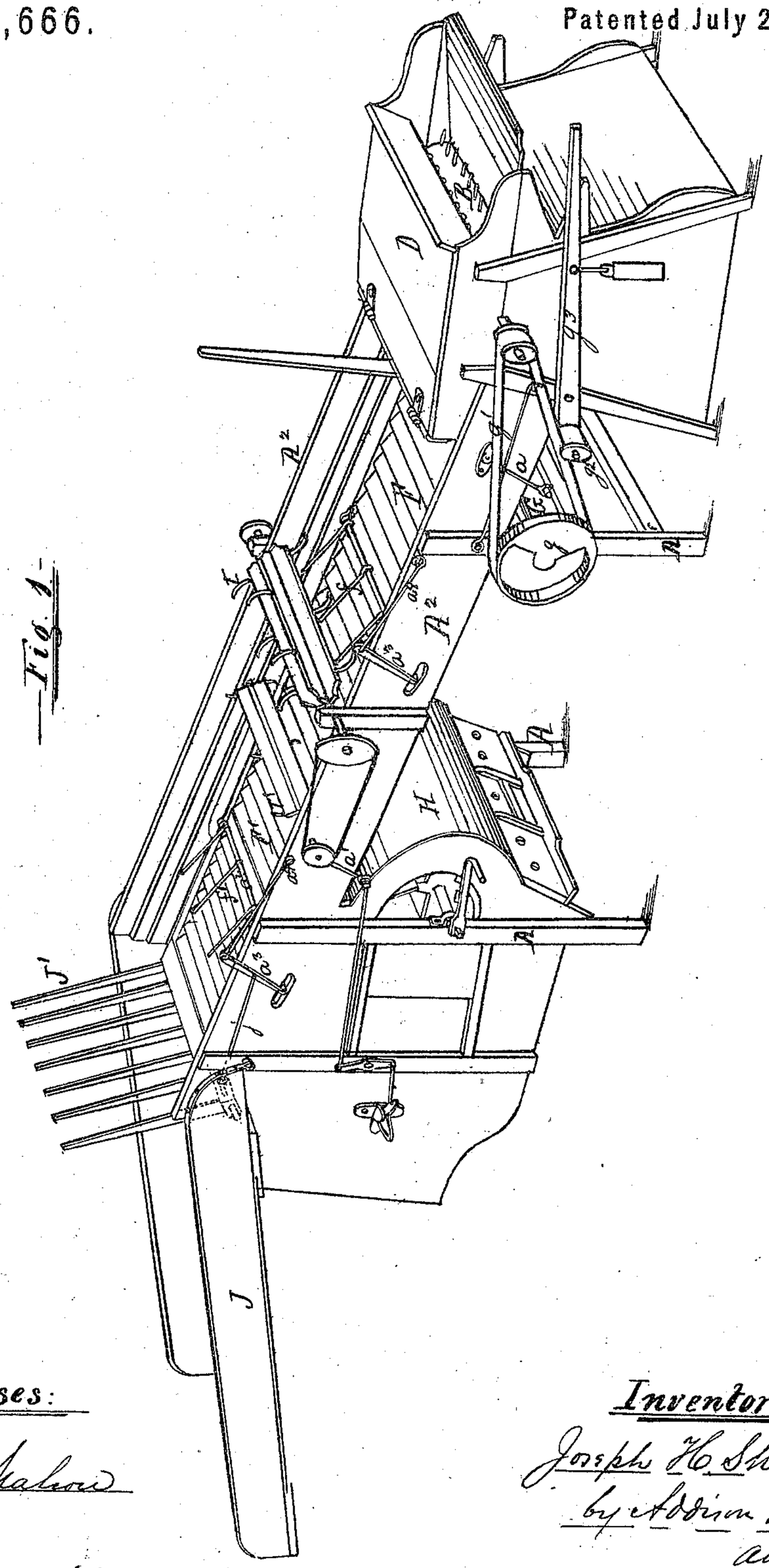

Fig. 1.

Witnesses:

Alex. Mahon

H. H. Doubleday

Inventor:

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UNITED STATES PATENT OFFICE.

JOSEPH H. SHIREMAN, OF YORK, PENNSYLVANIA.

IMPROVEMENT IN GRAIN THRASHERS AND SEPARATORS.

Specification forming part of Letters Patent No. 128,666, dated July 2, 1872.

To all whom it may concern:

Be it known that I, JOSEPH H. SHIREMAN, of York, county of York, State of Pennsylvania, have invented a new and useful Improvement in Grain Thrashers and Separators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a perspective view of a machine embodying my improvements. Fig. 2 is a vertical longitudinal section, and Fig. 3 is a transverse section through line *y y*, Fig. 2.

Similar letters of reference denote corresponding parts in all the figures.

The first part of the invention relates to the construction of the separating table or shaker, which is composed of a slatted or reticulated upper portion, and a lower elevating part which receives the grain as it is separated from the straw and delivers it to the winnower, this part of the invention consisting in making the lower portion of corrugated metal, whereby certain advantages are derived, as will be explained. The second part of the invention consists in combining, with a removable straw-chute having its upper end slotted, a series of vibrating shaking fingers operated by a rock-shaft mounted upon the chute, the rock-shaft being connected with and operated from the separating-table by means of a detachable link. The third part of the invention consists in arranging the revolving picker or rotating fingers in the rear of the shaking-fingers, in that class of separators which have inclined shakers or vibrating separators, for a purpose which will be hereinafter fully set forth.

In the drawing, A A^1 are the posts and A^2 the side pieces upon which the various working parts of the machine are supported. B is the thrashing-cylinder; C, the concave; D, the upper inclosing-shell; E, the hinged guard or fender to prevent scattering of the grain. F F^1 F^2 is the separating-table suspended from side pieces A^2 by means of links *a* a^1, and operated from crank-shaft G by pitman G^1. *f* f^1 are the shaking-fingers operated by means of shafts a^2, crank-arm a^3, and links a^4. H represents the winnower, and as these parts, except the separating-table and the method of hanging it, may be of any usual or desired construction they need not be particularly described. The shaker is composed of three parts—namely, a front part, F, which receives the mixed mass of grain and straw from the thrasher; the rear upper part F^1, which receives the grain when fully separated, this portion being intended to carry the straw only; and the rear lower part, which is intended to receive the grain and unthrashed heads only and deliver them to the fan or winnower. The part F is formed of a series of steps adapted to move the grain and straw forward by succession of impulses received from the crank-shaft and pitman, as will be readily understood without further explanation. The part F^1 is made slatted or reticulated so that the grain may easily fall through, while the straw shall be carried forward and delivered at the tail of the machine. The part F^2 is located below the part F^1, and by preference laps a little under the part F and extends rearward to a point just over the chute-board of the winnower. This part F^2, and generally the part F, is made of corrugated sheet metal, which I find to be a very great improvement upon wood, as I have found that in practice the strips of which the wooden elevating-table are made will invariably warp, check ,and otherwise open at the joints, when the beards of the grain will enter and catch in the cracks and soon clog and choke up to such an extent as to sometimes fill the space between the upper and lower tables, thus rendering the lower one entirely inoperative. As there is little else delivered to table F^2 but grain and heads their accumulation progresses rapidly and soon renders the machine useless.

I I^1 are revolving-fingers projecting radially from shafts mounted in side pieces A^2 transversely of the separating-table and driven in the direction indicated by the arrow by a belt from the shaft G.

In this class of machines there has been a good deal of difficulty experienced in moving the straw past the first set of shaking-fingers, from the fact that it is not advisable to give the front end of the table much lift, they being made to fit as closely as possible the under side of the floor of the thrasher in order to prevent waste of grain at this point, the links *a* being hung so that their vibration shall be about the same each side of a line drawn at right angles to the point occupied

by their lower ends when the table is midway of its throw. This difficulty does not exist at the rear end of the table, because the links there are arranged so as to give all the lift that is practical.

As will be readily understood the fingers I take hold of the tangled and interlaced mass of straw, and not only pull it over the shaking-fingers *f*, but deliver it to the second set I^1, over which it is carried, thus agitating it thoroughly and effecting an almost perfect separation of the grain from the straw.

J is the straw-chute. Its front or upper end is composed of transverse slats forming spaces through which grain and unthrashed heads may fall, the tail-board H^1 being made to project far enough to catch such grain and conduct it to a proper receptacle at the foot of the winnower, from whence it should be returned to the cylinder. J^1 are shaking-fingers mounted upon a rock-shaft and operated from one of the crank-arms a^3 by means of link *j*.

For convenience and economy in manufacturing and in transporting this machine, I have made the chute J removable, connecting it with the main frame-work by means of hangers or hooks J^2, and have also so constructed the links *j* that they may be readily detached from the rock-shaft upon which the finger J^1 is mounted. In the construction shown in the drawing the front end of the straw-chute rests directly upon the main frame, and the hooks or hangers engage with pins in the frame; but I do not wish to be confined to this arrangement of parts, as various detachable fastenings may be employed without departing from the spirit of my invention.

g is a counterbalanced band-wheel keyed to crank-shaft G. g^1 is a belt connecting band-wheel *g* with a driving-pulley on the cylinder-shaft. g^2 is a tightening-pulley mounted on the weighted-lever g^3 for maintaining a uniform tension of the driving-belt.

I am aware that the revolving fingers or pickers have been employed in combination with a vibrating separating table or shaker and lifting fingers or beaters, but the arrangement heretofore employed would be impracticable when used with an inclined table like mine, because when the rake (as the fingers are sometimes called) is located in front of the lifting and shaking fingers there is a constant tendency to accumulate and bank up the straw between the rakes and fingers, thus clogging the machine and seriously interfering with its operation. This objection is not found to exist in the machines with horizontal tables where this combination has heretofore been used, but with inclined tables the old arrangement is practically inoperative, whereas, under my arrangement, the picker is made to assist materially in passing the straw over the first set of fingers and thus prevent any accumulation at this point.

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

1. In combination with the separating portion of the table F F^1, the grain carrying and elevating portion F^2, when constructed of corrugated metal, substantially as and for the purpose set forth.

2. In the herein-described separator, the combination with the slotted removable straw-chute J of the shaking-fingers J^1, supported upon a rock-shaft mounted on the removable chute, the detachable link *j*, and crank-arm a^3 on the main frame of the separator, substantially as set forth.

3. In the herein-described separating-machine having an inclined separating-table, F F^1, I claim the arrangement of revolving-fingers or rake I in rear of the shaking-fingers *f*, these parts being constructed and operating substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 5th day of January, A. D. 1872.

JOSEPH H. SHIREMAN.

Witnesses:
JOHN A. WILSON,
JOHN W. STEWART.