

D. MURPHY.
GRAIN AND STRAW SEPARATOR.

No. 264,190.

Patented Sept. 12, 1882.

Fig. 1.

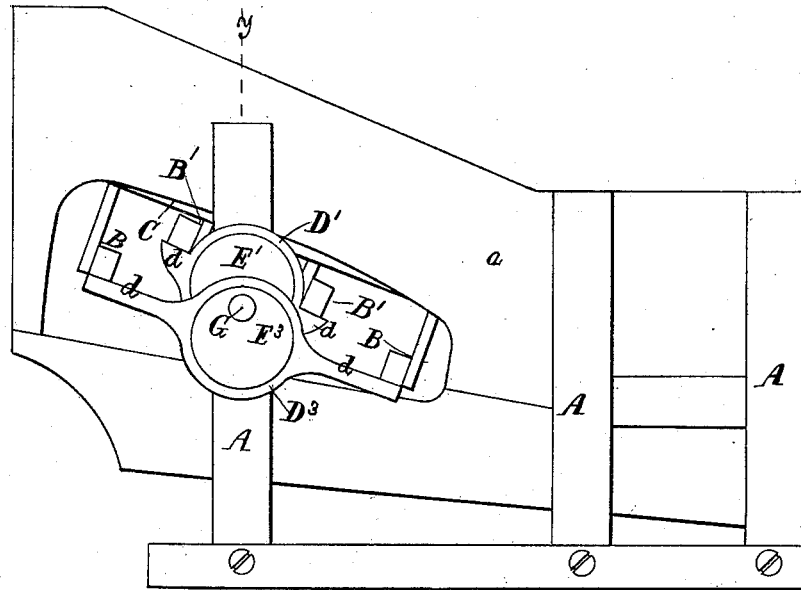
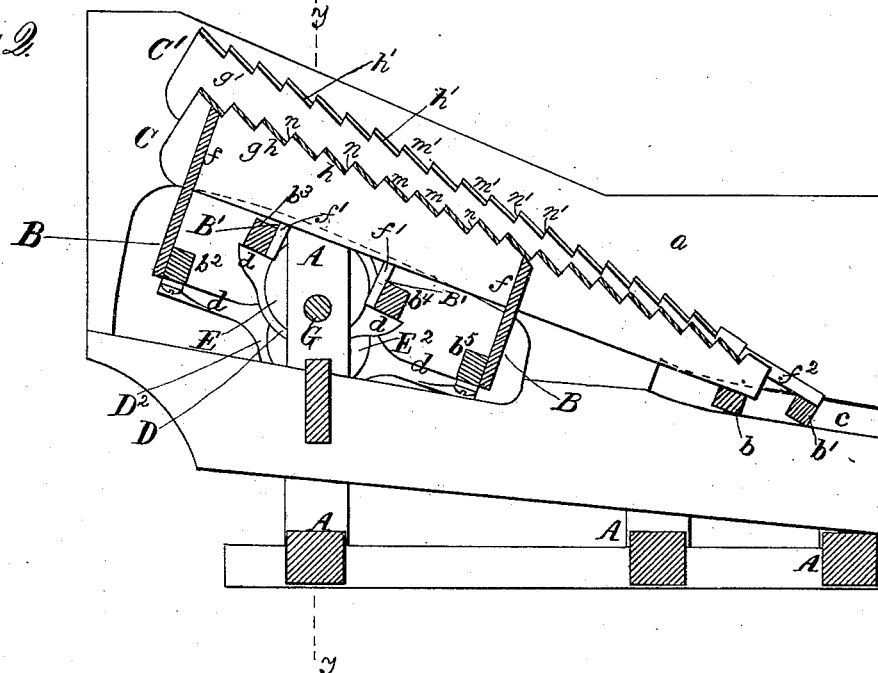


Fig. 2.



Witnesses
B. E. Fenwick.
Robt. L. Fenwick.

Inventor
Daniel Murphy
By his atty
Fenwick & Lawrence

(No Model.)

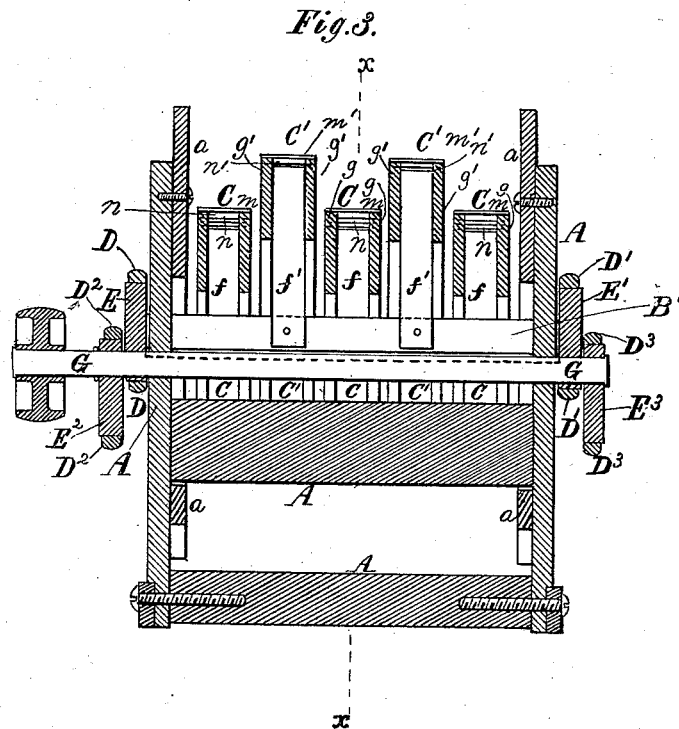
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

DANIEL MURPHY, OF DUBUQUE COUNTY, IOWA.

GRAIN AND STRAW SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 264,190, dated September 12, 1882.

Application filed June 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, DANIEL MURPHY, a citizen of the United States, residing in the county of Dubuque and State of Iowa, have invented a new and Improved Grain and Straw Separator, of which the following is a specification.

My invention will be clearly understood from the following description and claims and annexed drawings.

In the accompanying drawings, Figure 1 is a side elevation of my improved grain and straw separator; Fig. 2, a vertical longitudinal section of the same in the line *x x* of Fig. 3; and Fig. 3 is a vertical transverse section in the line *y y* of Figs. 1 and 2, looking toward the front or lower end of the machine.

Similar letters of reference in the several figures indicate corresponding parts.

A in the drawings represents the frame, suitably boarded up on its sides, as at *a*, so as to prevent the straw and grain from falling off the shaker-bars.

B B' are two shaker-frames, upon which shaker-bars C C' are rigidly applied. The lower cross-bars, *b b'*, of the frames B B' are fitted to reciprocate in slightly-inclined side grooves, *c*, of the boarding *a*, while the upper cross-bars, *b² b³*, and the intermediate cross-bars, *b⁴ b⁵*, are respectively connected to laterally-extended arms *d* of straps D D' and D² D³ of eccentrics E E' and E² E³, which eccentrics and straps are supported upon a transverse driving-shaft, G, as shown. The respective pairs of eccentrics are rigidly fastened upon the shaft G, so as to vibrate the respective frames B B', the eccentrics E E' moving the frame B' upward, while the eccentrics E² E³ move the frame B downward, and vice versa, as the shaft continues its revolution, and during these upward and downward movements the frames are also moved longitudinally back and forth.

The shaker-bars C C' are connected to the bars *b² b³ b⁴ b⁵* by inclined standards *f f'*. In making the shaker-bars, boards *g g'* may be employed, and these boards may be fastened to the standards *f f'* by nailing the boards to the sides of the standards, and in connecting the shaker-bars C' to the cross-bar *b'* a solid end piece, *f²*, may be nailed to said bar *b'*, and

its upper end placed between the boards *g g'*, and said boards may then be nailed to the same, while with the bars C they can be nailed directly to the cross-bar *b*.

The upper edges of the respective pairs of boards *g g'* may be formed with inclined steps *h h'*, and upon these inclined steps may be applied plates *m m'*, so as to connect the two side boards of each shaker-bar, and so as to form a stepped surface similar to that of a straight-edged saw, as shown. The plates are very thin, being only about half as thick as the depth of the steps *h h'*, and consequently passages *n n'* for grain to pass through are formed between the respective pairs of plates *m m'*. The passages *n n'* lead into and through the hollow shaker-bars C C'. The several shaker-bars, of which there may be, say, twenty, are placed close to each other and form a closed shaker-bed between the boarding *a*, of, say, forty-two or forty-eight inches in width by ten or twelve feet in length, except that the passages *n n'* are provided for the escape of grain as it is shaken from the straw. Any other suitable construction of shaker-bar than the one described may be adopted.

The straw is lifted and violently agitated up and down, and also moved along by the serrated or stepped surfaces of the bars as said bars are vibrated up and down and reciprocated longitudinally, and it finally passes over the highest end of the machine, while the grain passes through the passages *n n'* into proper receivers.

The eccentric-straps, by having lateral extensions, afford a very substantial support for the frames of the shaker-bars at each side of the machine, and the driving-shaft, by having the eccentrics on its ends at each side of the machine, produces a very regular and effective alternate up and down and back and forward movement of the shaker-bars, and thus liability of bind, as well as much unnecessary jarring and wear of the machine, will be avoided; the eccentrics and their straps, being outside the boarding of the machine, will be out of the way of the falling grain as well as the straw, which latter would be liable to wrap around crank-bends of shafts if inside the machine, and thereby clog it.

The grain and straw shakers heretofore de-

vised have been provided with cranked shafts, which are inside the machine and directly under the shaker-bars, and when such cranked shafts are employed it is hardly possible to use more than four shaker-bars, which are not sufficient, from the fact that in a machine of, say, forty-two or forty-eight inches in width, (the usual size,) the bars will have to be from ten to twelve inches in width, and with bars of such width in thrashing brittle straw, which will cut up short, the straw will lie on a portion of the bars and not be caught by adjoining ones and carried back, thus causing the machine to "choke up," whereas with my machine, having the eccentrics and straps outside, it is possible to use as many as twenty narrow carrying-bars in a machine of ordinary size, and thus a most perfect means for effecting a separation of the grain and carrying back of the straw is provided. Further, in my machine there are no shaft bearings or boxes on the inside to catch and wind up the straw, which is certain to work down between the shaker-bars. Where cranks have been used they have proved objectionable on account of the straw either winding upon and breaking them or getting on fire from friction and causing serious damage. Besides this, the bearings of my machine being outside, they are

easy of access and can be oiled while the machine is in motion—a thing impossible with bearings inside of the machine.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with the driving-shaft, outside eccentrics, and shaker-bars of a grain and straw separator, the outside eccentric-straps provided with laterally-extending arms and the frame-pieces, by which said bars are connected to said arms and supported while they are being vibrated up and down and moved back and forth by the eccentrics and the driving-shaft, substantially as described.

2. The combination of the machine-frame, two pairs of eccentric-straps on the outside of the machine-frame and provided with laterally-extending arms, two pairs of eccentrics also placed outside the machine-frame and one pair having their throw opposed to the other, a revolving driving-shaft, transverse connecting-bars, standards, and longitudinal shaking-bars, substantially as and for the purpose described.

DANIEL MURPHY.

Witnesses:

TIMOTHY C. MURPHY,

LAWRENCE M. MOLONEY.