

A. McNAUGHT.
THRESHING MACHINE.

No. 115,081.

Patented May 23, 1871.

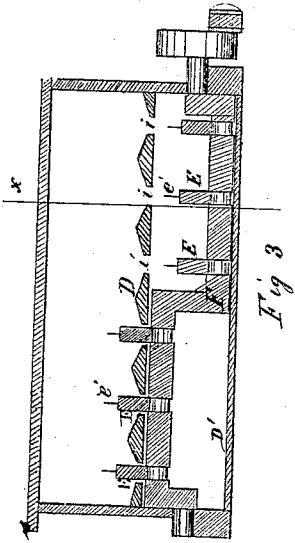


Fig 3

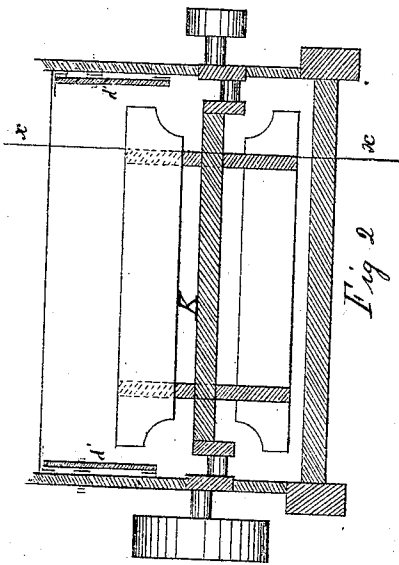


Fig 2

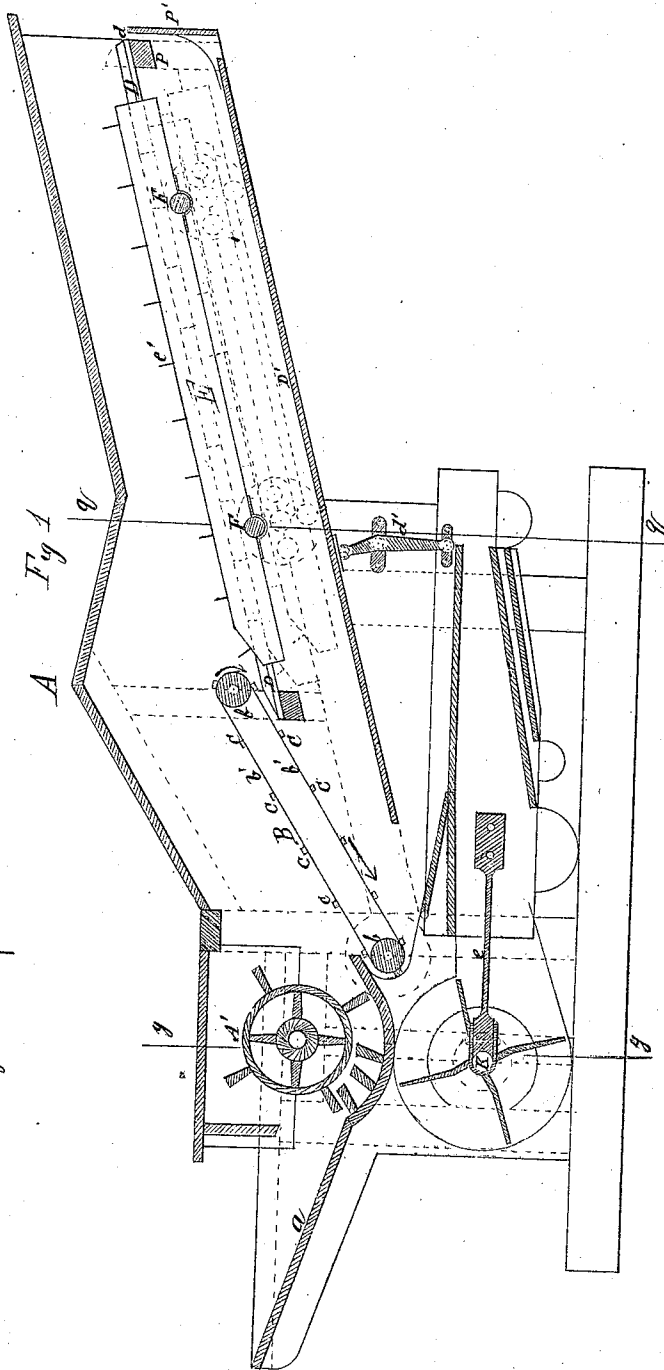


Fig 1

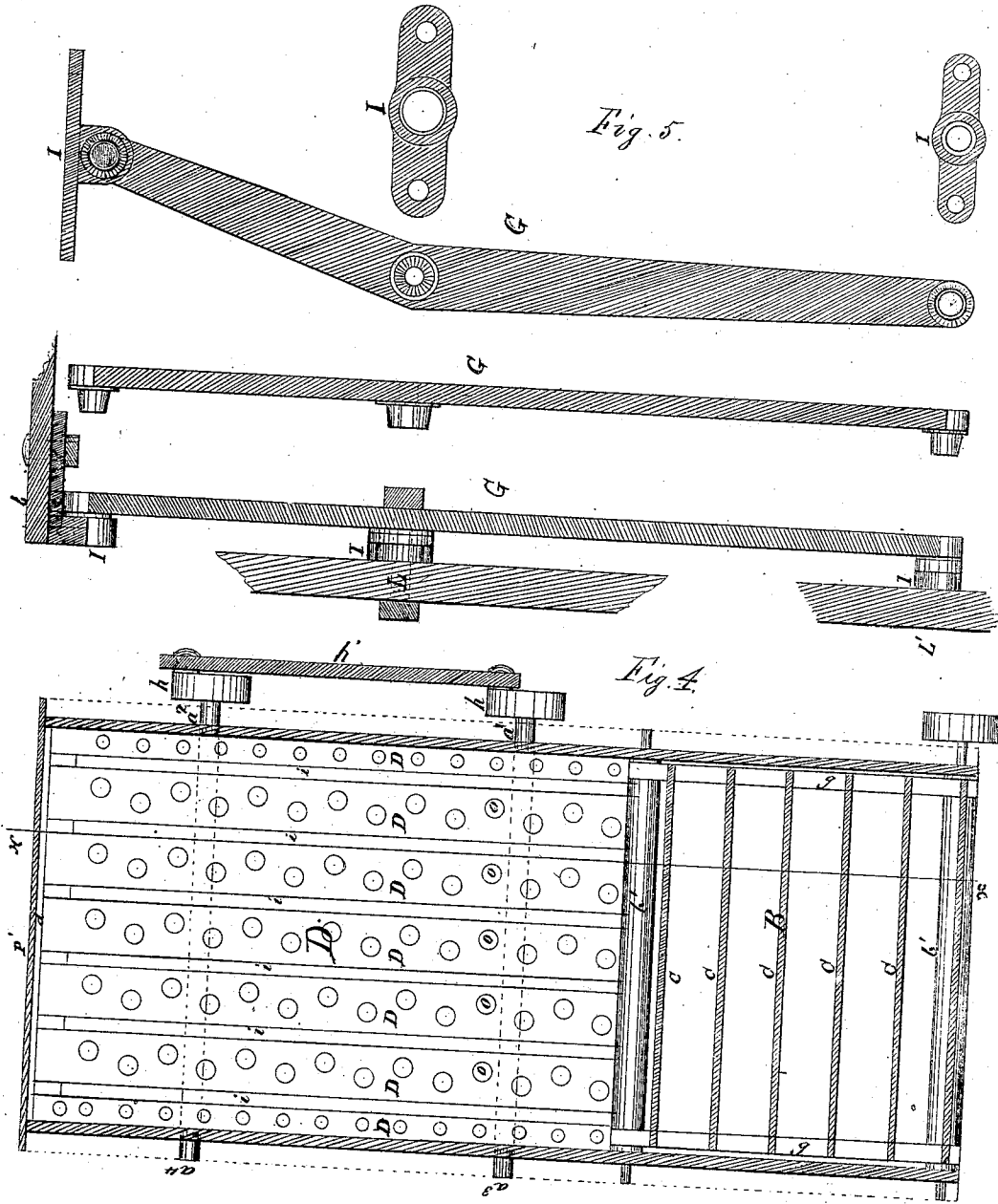
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Inventor
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ARCHIBALD McNAUGHT, OF ALLIANCE, OHIO.

Letters Patent No. 115,081, dated May 23, 1871; antedated May 16, 1871.

IMPROVEMENT IN THRASHING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ARCHIBALD McNAUGHT, of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Combined Grain-Thrashers and Cleaners; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a vertical longitudinal section of a machine embracing my improvements taken through the lines *x x*, figs. 2, 3, 4.

Figure 2 represents a vertical cross-section taken at the line *y y*, fig. 1.

Figure 3 represents a vertical cross-section taken at the line *q q*, fig. 1.

Figure 4 represents a plan or top view of the straw-carrier and separator.

Figure 5 represents in detail one of the vibrating arms, to which the back end of the fanning-mill shoe is hung and the inclined bottom or grain-board is attached.

My invention consists in the arrangement of an inclined reciprocally-moving bottom or grain-board along which the grain and chaff are carried to the fanning-mill, in connection with a stationary longitudinally-slotted platform, vertically-reciprocating longitudinally-moving beating-bars, and an open grain-receiving space.

My invention also consists in the arrangement of vibrating arms, which are pivoted to the frame of the machine at their centers, (or at any other intermediate point that shall produce the same results,) to the lower end of which the back end of the fanning-mill shoe is hung, and to the upper end of which the inclined bottom or grain-board is attached, said arms being, from the point of their attachment to the frame, at right angles with the inclined bottom or grain-board and the fanning-mill shoe, to produce the proper movements of these parts in different planes of motion.

In the accompanying drawing—

A, fig. 1, is the frame of a thrashing-machine, provided at one end with a feed-board, *a*, over which the grain is passed to the thrashing-cylinder *A*'.

From the thrashing-cylinder it passes to an endless rotating web, B, or apron, running in the direction indicated by the arrows around the drums or pulleys *b*. These pulleys should be from four to six inches in diameter, and should make from two to three hundred revolutions per minute, which would give the web a rate of travel of about three hundred feet per minute.

At the rear of the web, figs. 1, 3, and 4, the stationary longitudinally-slotted separating-platform D is

arranged, upon which the separation of the grain from the straw is effected, while the inclined bottom or grain-board D', beneath it, receives the grain and chaff and carries it to the cleaning-mill.

The platform D should stand at an elevation of about one inch in three, for the purpose of preventing the too rapid passage of the straw over it, and at the same time securing the descent of the grain and chaff to the cleaning-mill along the inclined bottom or grain-board.

This platform is composed of strips or pieces D, which are beveled on the top each way from the center for the purpose of securing the passage of the grain and chaff through the spaces *i* between them.

These spaces should be of a width sufficient to admit of the free working of the toothed beating-bars E between the strips composing the platform.

The drawing represents these strips D as being perforated with one or more rows of holes, *o*, but it is preferable to make them of the form described and shown.

Between the timber P that supports the strips composing this platform at the outer end and the plank P' that closes up the space between it and the inclined bottom or grain-board D', is a space, *d*, figs. 1 and 4, from one to two inches wide, extending across the machine and forming a receiving-passage to the inclined bottom or grain-board D' for any loose grain that fails to pass through the platform, and which would be pushed over with the straw and lost.

The space between the decking of the machine on the top and the separating-platform forms the passage for the straw from the thrashing-cylinder, and the space between the separating-platform and the inclined bottom or grain-board D' forms the receptacle of and passage for the grain and chaff to the cleaning-mill.

The depth of this lower chamber should be about nine inches, or such as to admit of the free action of the toothed beating-bars E in their vertically-reciprocating motion beneath the platform, while the depth of the upper chamber should be about eighteen inches, or sufficient to allow said beaters to act upon the straw without compressing it against the decking.

The inclined bottom or grain-board D' has a longitudinally-reciprocating motion imparted to it corresponding to that of the fanning-mill shoe, with which it is connected by the vibrating-arms *d'*, figs. 1 and 2, motion being imparted to the shoe by the cranked fanning-mill shaft K, figs. 1 and 2, through the connecting-rods *e*, fig. 1.

In fig. 5 these vibrating arms and their attachments are shown on a larger scale, G G G representing different views of one of them, and also showing it pivoted to the machine at L, and connected to the

shoe at *L'*, and to the inclined bottom or grain-board at *I*, while *III* show the sockets in which these vibrating arms work.

The separating-platform *D* is provided longitudinally with a number of slots, *i*, corresponding to the number of toothed bars *E* that work through them, said number being governed by the width of the machine.

Beneath the stationary slotted platform *D* is arranged a series of longitudinal beating-bars, *E*, having their upper sides provided with a series of teeth, *e'*, of proper length.

These toothed beating-bars should be of a length less than that of the slots of the platform, to admit of the longitudinally-reciprocating motion of the beaters therein. They are mounted upon two double-cranked shafts, *F*, having their bearings fixed in the sides of the machine, as at *a'*, *a''*, *a'''*, and *a''''*, fig. 4.

The length of the cranks should be from two to three inches.

The cranks and beaters are so arranged as to produce a reciprocating motion of the beaters in every position in which they are placed, whether rising or falling parallel to the platform, or nearly so.

The bearings of the shafts *F* and the upward stroke of the cranks must be such that each revolution of said cranks will thrust the beating-bars *E* above the platform with a sudden sharp blow, while the downward stroke of the cranks will be such as to bring the toothed beating-bars beneath the platform a distance sufficient to allow them to move through considerable space before again striking the straw, thereby obtaining a sharp decided blow.

The upper edges of the toothed beating-bars *E* are projected a considerable distance above the platform, and the entire lifting action upon the straw is performed by the bars, while the teeth perform the function of holding the straw and carrying it forward with the longitudinal movement of the beaters.

It will thus be seen that at every advance movement of the body of the straw over the platform it is raised entirely above it, and is subjected to two severe shocks at each throw of the cranks—that is to say, an upward stroke from beneath while the straw is at rest throughout the length of the platform, and a sudden throwing of the straw forward in a body against and upon the platform by the sudden advance and descent of the toothed bars entirely beneath it.

By this construction and arrangement it will be observed that the action upon the straw is intermittent, and that the platform constitutes a rest for the body of the straw while the cranks are passing through the lowest part of their stroke, thereby causing it to be struck a succession of sharp distinct blows that will effectually jar and beat out the loose grain. This result could not be obtained were the straw not thus left at rest between each blow. To obtain this result the shafts *F* are caused to make from one hundred and fifty to two hundred revolutions per minute, and each

revolution causes the straw to advance along the platform about the length of a stroke.

The drawing represents the beating-bars *E* as being boxed to the shafts *F*; but I prefer to box the two outside ones to the shafts and so connect the others to them as to cause the two thus boxed to carry them.

To the ends of the shafts *F*, projecting through one of the sides of the machine, as at *a'* and *a''*, fig. 4, are attached driving-wheels or pulleys, *h*, which are connected to each other eccentrically by the pitman *k'* by wrist-pins fixed to the outer faces of said wheels or pulleys, so as to effect the simultaneous rotation of the shafts *F*.

The separator and straw-carrier are driven by the same power that drives the thrashing-cylinder and fanning-mill in any suitable manner.

By this construction of a combined grain-thresher and cleaner the following important advantages are secured, viz.:

A very material reduction in the first cost of the machine; great simplicity of construction; a large reduction in the amount of power required to operate it; more efficient and thorough work; greater durability; a great saving in cost of repairs; and also a more compact and portable machine.

Having thus described my invention,

I claim—

1. The inclined longitudinal and reciprocally-moving bottom or grain-board *D'*, in combination with a stationary longitudinally-slotted platform, *D*, and vertically-reciprocating and longitudinally-moving beating-bars, *E*, in the manner and for the purpose described.

2. The pivoted vibrating arms *d'*, in combination with a fanning-mill shoe of a thrashing-machine and the inclined longitudinally and reciprocally-moving bottom or grain-board *D'*, when said arms are connected to those parts so as to move them in different planes of motion, as described.

3. The combination of the grain-receiving space or slot *d*, arranged as described, with the stationary longitudinally-slotted platform and vertically-reciprocating and longitudinally-moving beating-bars, in the manner and for the purpose described.

4. The combination of a thrashing-cylinder, *A'*, with an endless rotating web or apron, *B*, a stationary and longitudinally-slotted platform, *D*, a series of vertically-reciprocating and longitudinally-moving toothed beating-bars, *E*, an open grain-receiving space or slot, *d*, an inclined longitudinally and reciprocally-moving bottom or grain-board, *D'*, and the vibrating arms *d'*, when all are arranged and operating as herein shown and described.

In testimony whereof I have hereunto signed my name.

ARCHIBALD McNAUGHT.

Witnesses:

JESSE DAY,

DAVID FORDING.