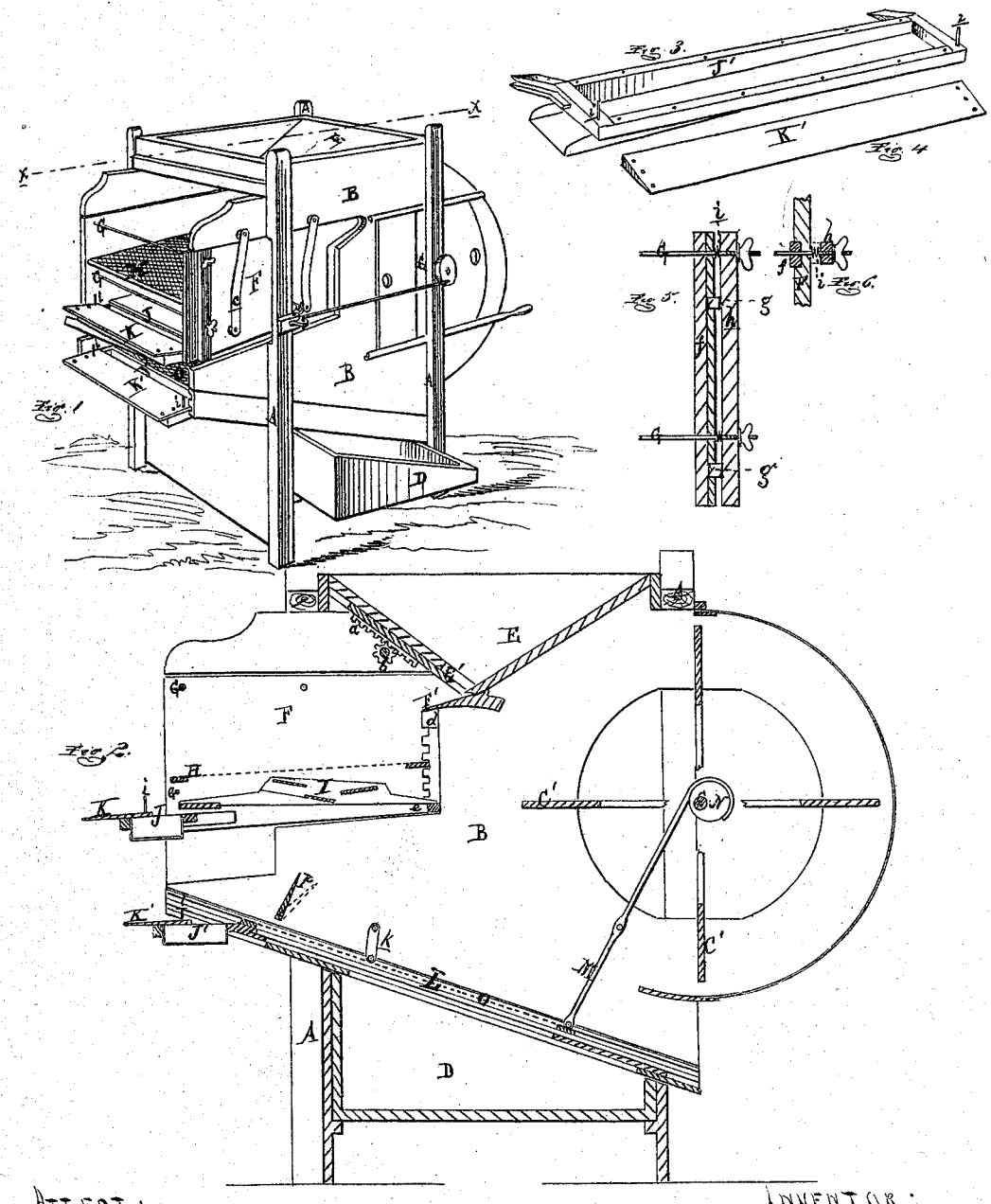
D. C. HILL.

Improvement in Fanning-Mills and Separators.

No. 131,953. Patented Oct. 8, 1872.



WITNESSES:

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AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

DANIEL C. HILL, OF RED WING, MINNESOTA.

IMPROVEMENT IN FANNING-MILLS AND SEPARATORS.

Specification forming part of Letters Patent No. **131,953**, dated October 8, 1872.

To all whom it may concern:

Be it known that I, DANIEL C. HILL, of Red Wing, in the county of Goodhue and State of Minnesota, have invented a new and useful Improvement in Fanning-Mill and Separator; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon and being a part of this specification, in which—

Figure 1 is a perspective view of my mill and separator; Fig. 2 is an enlarged vertical section on the line *x x* in Fig. 1; Fig. 3 is a perspective view of one of the adjustable side discharge-spouts; Fig. 4 shows its covering-board; Fig. 5 is a cross-section of one side of the shoe at the outer end; and Fig. 6 is a detail view of one of its clamp-screws and springs.

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

This invention relates to a machine for cleaning, separating, and riddling all kinds of grain, its combination of parts being such that it may be adapted to the kind of work to be done and accurately adjusted to such work. The invention consists in the peculiar construction of an upper vibrating shoe, so arranged that a screen or several screens may be adjusted therein at the required position; and, in connection therewith, a gathering-riddle and a grading-spout with an adjustable grain board or cover, either of the two or both being used in the shoe, as the nature of the work may require; a divider adjustably pivoted across the space below the shoe; and, in connection with a lower shoe, an adjustable spout and cover like those of the upper shoe, the whole being arranged to operate as more fully hereinafter set forth.

In the drawing, A represents the frame of my machine; B, the casing; C, the fan-shaft carrying the fan C′; D, a drawer in the lower part of the frame; and E, a hopper at the upper part thereof, in the under side of which is a slide, E′, to regulate the opening at the throat, having a toothed rack, *a*, on its under side, with which a pinion, *b*, meshes, the rotation of whose shaft by a hand-wheel at the further side of the casing, as seen from Fig. 1, moves the hopper-slide, and thus regulates the flow of the grain from the hopper. F is the principal shoe hung in an opening at the rear upper end of the casing by metallic straps *c*. At its top inner end there is a grain-board, F′, over which the grain falls from the hopper and passes thence to the first screen. A notched post, *d*, connects the outer ends of the grain-board to the lower frame-bar *e* below, and to these the inner ends of the sides of the shoe are secured, their outer ends being held together by two rods, G, passing through them and provided with wing-nuts on their threaded ends to hold the sides from spreading. On the right side of the shoe facing the rear end of the mill a strip, *f*, is partially embedded in a vertical groove in the inner face of the shoe side, with two studs, *g*, projecting through and abutting against the washer-bar *h*, against which the wing-nuts are screwed, so that the latter may force the strip *f* bodily inward. A spring, *i*, spirally coiled about the rods G between the outer side of the shoe-wall and the washer-strip, thrusts the latter outward when the nuts are slackened. This arrangement enables me to clamp one or more screens, H, in the shoe, the inner corners of their frames being inserted in the notched posts and inclined at any desired angle therefrom; also, the adjustable gathering-riddle I and adjustable spout J, the former being inserted in the body of the shoe and the latter at the lower outer end, its spout proper projecting at the further side of the casing. Its ends are provided with dowel-pins to more securely hold it in the shoe when clamped therein. It is also provided with a cover, K, which may disclose more or less of an opening parallel with its inner edge, as will be seen on reference to a similar one, J′, Fig. 3, in which will be seen a vertical pin, *i*, at each end, and the cover K′ is provided with three pin-holes at each end to receive the pin. The shoe F is vibrated laterally in a horizontal plane by the well-known "shake" mechanism of a bell-crank vibrated by a wrist on the end of the fan-shaft. Besides the shoe F there is an inclined shoe, L, at the bottom of the casing, which is cut away to make room for it above the drawer D, with two grooves on its inner faces. The back part is suspended by two links, *k*, one at each side, pivoted to the inner side of the casing of the machine. Its inner end is suspended at each side by pivoting to the lower ends of

-rods M, whose upper ends are
r eccentrics N on the fan-shaft, and
these rods near their middle to
they become levers, which, in the
the fan-shaft, give the shoe a lon-
ibration. In the upper groove of
screen, O, is slipped, and at the
the spout J′, Fig. 3, is inserted,
ded with ribs *l* at the ends to enter
rooves of the shoe. A divider, P,
at its lower corners transversely
asing, its upper or thin edge being
any angle, and its position may
y loosening and replacing the bolts
it in the casing. The gathering-
will be noticed, is composed of a
ted in the shoe, with three grain-
sversely disposed therein, as shown
n Fig. 3, and the riddle may be so
to deflect the grain to or from the

wheat for market, the gathering-
the spout to the lower shoe are
nd the divider inclined back far
atch the heavy grain which falls
he spout (toward the fan) and car-
in front of the mill, passing off the
n under the fan-case. For one
st the spout to the upper shoe so
throw out at the side enough of
grain to have the remainder pass
red grade, and if too much of the
n is so taken out it can be run
e separator again.
is desired to make two grades for
just the spout as before, and also
cover thereto, so that anything
n the second grade will be carried
ack end of the mill, while the No.
l be discharged at the spout.
wheat for seed, take out the spout
r shoe and put in the gathering-
adjust its location so that the grain
brought to a line in such a way that
parated by the divider below; ex-
tract its grain-boards so as to take
h of the falling grain as is desired; then adjust the divider to make the separation required; put in the spout to the lower shoe so that it will catch what grain falls next beyond the divider; and adjust its cover so that it will carry off all light grain and foul seed at the end of the mill.

To clean oats for seed, adjust the gathering-riddle and divider to their proper positions, as before, so that grain or anything heavier than oats will be carried out in front, and the seed-oats will fall on the slide and go under the mill, while the still lighter oats will be caught in the spout and carried out at the side of the mill, and the lighter grains, seeds, &c., will be blown over the cover and out at the end of the mill.

The same principles, as explained in cleaning wheat or oats for market, will apply in cleaning all other kinds of grain for market or for seed, as this mill will not only divide grain by screening or riddling out the different sizes, the same as any other of its kind, but, from the arrangement of spouts, gatherer, and divider, will grade it according to its weight without reference to its size.

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

1. In grain-separators, a shoe, consisting of the walls F, grain-board F′, notched post *d*, frame-bar *e*, champing-rods G G provided with suitable screw-nuts, the strip *f* provided with studs *g*, and the washer-bar *h*, substantially as described, and for the purpose set forth.

2. The adjustable gathering-riddle I, constructed as shown and set forth, clamped in the shoe F, as and for the purpose specified.

3. The adjustable spout J and adjustable cover K in combination with the shoe F, as and for the purpose set forth.

4. In connection with the shoe L, the adjustable spout J′, and adjustable cover K′, as and for the purpose set forth.

DANIEL C. HILL.

Witnesses:
J. F. PERRY,
CHRIS. GRAHAM.