

A. McKAIN.
Device for Removing Metallic Substances from Grain.
No. 213,519. Patented Mar. 25, 1879.

Fig. 1.

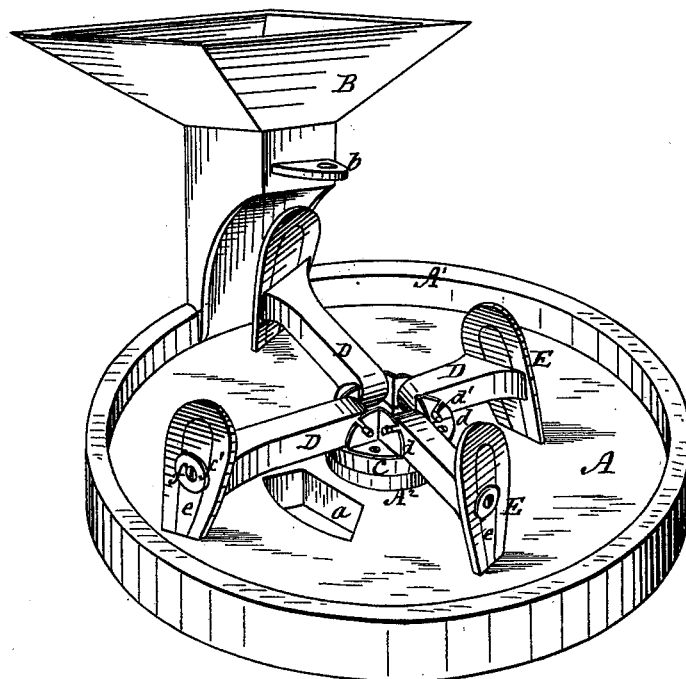
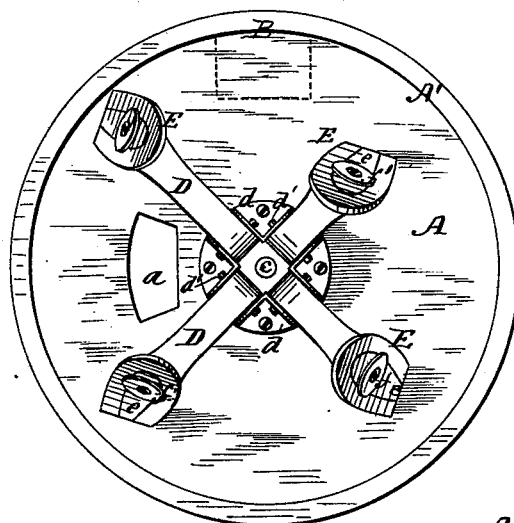


Fig. 2.



Witnesses:
W.B. Masson
W.E. Bowen

Inventor
Allen McKain
by E.E. Masson
atty

UNITED STATES PATENT OFFICE.

ALLEN McKAIN, OF AUBURN, NEW YORK.

IMPROVEMENT IN DEVICES FOR REMOVING METALLIC SUBSTANCES FROM GRAIN.

Specification forming part of Letters Patent No. **213,519**, dated March 25, 1879; application filed February 12, 1879.

To all whom it may concern:

Be it known that I, ALLEN McKAIN, of Auburn, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Devices for Removing Metallic Substances from Grain; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a perspective view of the device. Fig. 2 represents a top view of the same.

During harvest a large proportion of the wheat-crop is cut by reaping-machines and bound automatically with wire, that class of binders using wire for the band being the most effective. When this wheat is thrashed, short pieces of wire readily pass through the sieves and become mixed with the grain, and when the latter is ground particles of iron are found in the flour. Serious accidents may be caused by sparks of incandescent iron leaving the millstones; and, moreover, when these particles of wire reach and are projected against the fine silk sieves, perforations or other injury is the result; and for that reason millers generally discriminate against grain which has been bound with wire.

The object of my invention is to remove these objections, and to render that class of grain as highly prized as if it had been bound with straw or twine, by mechanically separating and taking out all the iron particles from the grain before it reaches the millstones, or before being fed to animals.

My invention consists in combining with a platform a series of magnets attached to the extremity of pivoted arms revolving over said platform.

It consists, also, in making each arm of a different length, so that each magnet will follow a special track; also, in filling the space between the branches of the magnets, so that each magnet will form a scraper; in beveling said magnets tangentially to their circular course, to stir and bring the grain to the spout of escape, and in inclining them at an angle to the perpendicular to facilitate the advance of

the grain and the removal of metal particles adhering to the magnets.

In the drawings, A represents a circular platform, upon which the grain is to be received from the hopper B, its flow being regulated by the gate *b*. The platform is surrounded by a projecting rim, A¹, to retain the grain on its surface, and provided with an opening, *a*, for its escape. In the center of the platform is placed the boss A², upon which is mounted the hub C. This hub can be revolved by a shaft, *c*, either from above or from under the platform, through gearing or by pulleys and belt. To this hub are attached the bearings *d* for the axis *d'* of a series of pivoted arms, D, carrying at their outer extremity the magnets E. Each arm is of a different length from its fellows, so that each magnet will follow a special track—as, for example, one of the magnets will describe a circle adjoining the rim, the next one (following) a circle within the first, the third within the second, &c.

To properly retain the magnets at the beveled end of the arms, so that each will form a scraper, there is inserted in the space between the branches of the magnet a small board, *e*, through which is passed a screw, *f*, inserted in the end of each arm, and upon this screw is placed a washer, *f'*, overlapping the inner edges of the magnet.

A series of magnets may in the same manner be attached parallel, or nearly so, to each other on the same arm by making the screw *f* a long bolt, on which the magnets could be strung with a thick washer between them. Each magnet is inclined tangentially to its circular course, to present a broad surface to the grain, and at the same time direct it toward the opening *a*, made in the platform for its escape.

It is thus clear that while the magnets will travel through and stir the grain, any particle of iron mixed with it will adhere to the magnet; and while mechanical means could be used for its removal, I prefer to have this last operation done by hand, between the fingers and thumb of the attendant. For this purpose the arms D are pivoted to the hub at *d'*, so that their outer end can be raised easily; and to

facilitate the operation of clearing the magnets of adhering iron particles while in motion, and to direct the moving grain, I have the magnets inclined, as shown, at an angle to the perpendicular.

This device is to be applied to thrashing-machines or to flour-mills, where a small boy can attend to ten or more separators without difficulty, while taking care of the opening controlled by the gate *b* in the spout or hopper.

It is evident that a nearly similar result in cleaning grain could be obtained by rendering the arms and magnets incapable of rotating and revolving the platform under them.

As in ordinary thrashing-machines the spout carrying the grain to the box or bag is placed too low for running the grain through the separator, and from it into the delivery-box, and from it into a bag, I obviate this difficulty by attaching an elevator to the thrashing-machine to carry the grain high enough to run through the separator, and thence to the receiving-box and to a bag; or the lower end of the elevator may simply be placed under the separator to elevate and deliver the grain at any desired point.

Having thus fully described my invention, I claim—

1. The combination of a platform, a series of arms pivoted to a central hub over said plat-

form, and magnets attached to said pivoted arms, substantially as and for the purpose described.

2. In combination with a platform and a series of arms of different lengths, the magnets attached to the outer extremity of said arms, substantially as and for the purpose described.

3. In combination with a platform, a series of arms, and magnets attached to said arms, the filling *c*, between the branches of the magnet, to form with them a continuous scraper, substantially as and for the purpose set forth.

4. In combination with a series of revolving arms of a grain-cleaner, the magnets attached to the outer end of each arm, with their branches set tangentially to their circular course, substantially as and for the purpose described.

5. In combination with a series of pivoted arms, and a platform over which they revolve, the magnets attached to said arms at an angle to the perpendicular, to facilitate the advance of the grain and the removal of metal particles adhering to the magnets, substantially as described.

ALLEN MCKAIN.

Witnesses:

D. M. KIRBY,

J. FRANK DAVIS.