

H. P. BECKER.

Machines for Scouring and Polishing Grain.

No. 151,556.

Patented June 2, 1874.

Fig. 1.

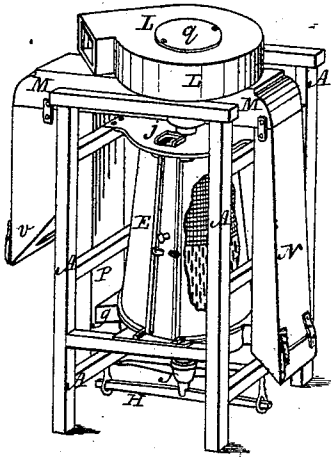


Fig. 2.

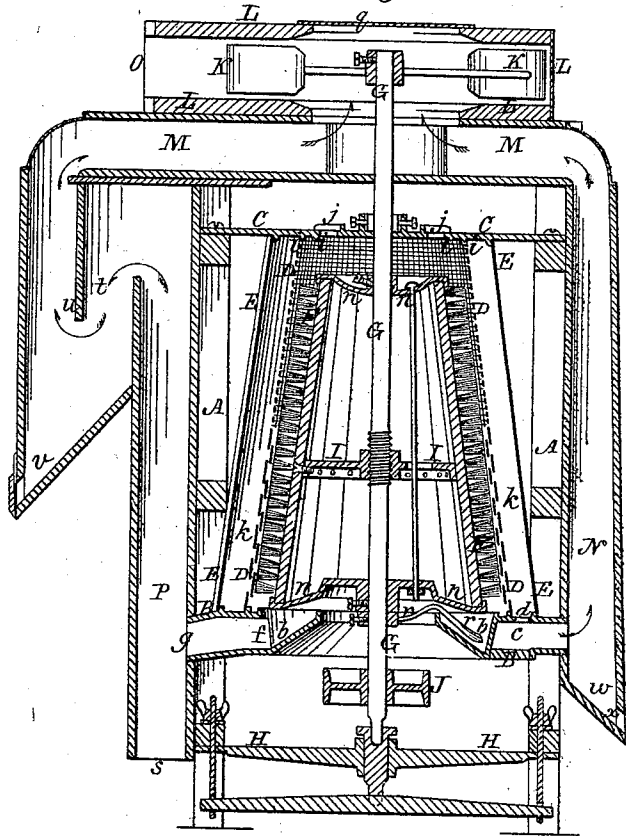


Fig. 3.

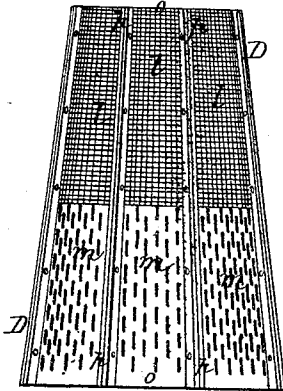


Fig. 4.

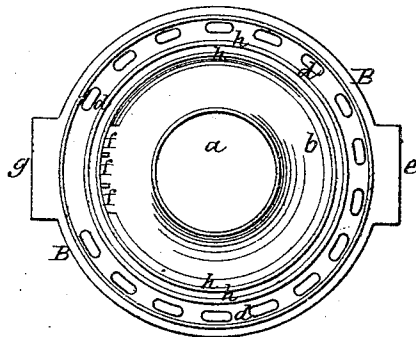
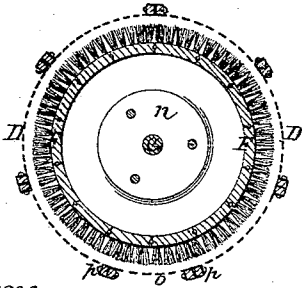


Fig. 5.



Witnesses.

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HENRY P. BECKER, OF DIXON, ILLINOIS.

IMPROVEMENT IN MACHINES FOR SCOURING AND POLISHING GRAIN.

Specification forming part of Letters Patent No. **151,556**, dated June 2, 1874; application filed May 25, 1874.

To all whom it may concern:

Be it known that I, HENRY P. BECKER, of Dixon, in the county of Lee and State of Illinois, have invented certain new and useful Improvements in Machines for Scouring and Polishing Grain; and I do hereby declare the following to be 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 in perspective a view of the machine, with a portion of the outer case shown as broken away to expose the screen within it. Fig. 2 represents, on an enlarged scale, a vertical section through the machine. Fig. 3 represents the conical screen separated from the machine. Fig. 4 represents a top plan of the bottom plate; and Fig. 5 represents a horizontal section through the conical brush, and screen around it.

My invention relates to a machine in which grain, in passing through, is scoured and polished, and separated from the impurities that are rubbed from it; and the invention consists in the construction and arrangement of the several mechanisms, as will be hereinafter particularly specified, by which its objects and purposes are made available.

The frame which supports the operative parts of the machine is shown at A, and upon this frame is placed the base-plate B, separately shown in Fig. 4. This base-plate is cast with an opening, *a*, through its center, beyond which there is a trough, *b*, and outside of the trough an annular passage, *c*, with which a series of air-openings, *d*, communicate, and an exit-passage, *e*. The annular passage *c* does not extend entirely around the base-plate, it being interrupted at *f* by passages leading from the trough *b* through to an exit-passage or discharge-opening, *g*, whence the grain passes from the scourer and polisher into the air-blast; and, finally, this base-plate is furnished with two concentric flanges, *h h*, for a purpose to be hereafter explained. The top plate C is smaller in diameter than the bottom one, and it also is furnished with two concentric flanges, *i i*, which act in connection with those *h h* on the bottom plate, for holding the conical screen D under certain circumstances, which will be explained; and in

this top plate C are the openings *j*, into which the grain is fed to the machine. The outer shell or case E is of conical form, and held between the top and base plates in the usual way. The screen D is made in sections, one of which, at least, is removable, and it is held at first by the outer set of concentric flanges on the top and bottom plates, and so as to leave a space, *k*, between itself and the outer case. This screen D is also conical, and its upper portion *l* is made of woven wire for forming a scouring-surface, and its under portion *m* is made of perforated metal (sheets or plates) for forming a polishing-surface. Inside of the conical screen D is arranged the conical brush F, which is made in sections, by preference; and this brush is hollow, and held to the heads *n*, which have bearings in them, by which they and the brush are secured to, so as to revolve with, the shaft G. The bristles of the brush run in contact with the interior surface of the screen D, and are subject to rapid wear, and must, of necessity, to be efficient, be capable of being brought and kept in contact with the screen. To this end, in addition to the ordinary adjustment through, or by means of, the bridge-tree H, which is limited, I have contrived as follows: At or near the center of the brush there is a disk or ring, I, to which the brush staves or sections are united. In the center or hub of this ring I there is cut a screw-thread, and upon the shaft G there is also cut a screw that will run into that on or in the hub of the disk, so that by first backing or loosening the set-screws that hold the brush to the shaft, and then turning the shaft G, the brush can be moved up until the bristles are again in contact with the screen; and, further, that the brush may be used until the bristles are entirely worn away, another adjustment is necessary after that by the disk or ring I is expended, and this is done as follows: The brush, after it has become too small to fill the conical screen by wearing away, and not capable of doing so by the bridge-tree or disk, then it is run down upon the shaft G. The section *o* of the screen is taken out, and the edges *p p* brought together and united, which makes the screen so much smaller as to then fit against the inner of the concentric flanges *h i*,

and to come against, or nearly so, the surface of the bristles in their worn-away condition. In this contracted condition of the screen and the brush adjustments the brush can be used until the bristles are entirely worn away.

I am aware that a cylindrical brush has been used in connection with a cylindrical screen; but this arrangement, in addition to that of not admitting of the adjustment of the brush, as herein stated, is objectionable, as the grain drops through too fast for a thorough cleaning; whereas by a conical brush the grain is held against the screening and polishing surfaces for a longer period, and cannot drop to any extent between the screen and brush, as the latter catches it and moves it against the screen.

By making the screen D conical, and of two different kinds or qualities of rubbing-surface—namely, woven wire above, and punched plate metal below—the scouring by the upper surface is immediately followed by the polishing of the grain against the smoother sheet or plate metal; and with this additional advantage, too, that the diameter of the brush is greater opposite the sheet or plate part of the screen, and the polishing requires a quicker motion of the brush than the scouring does. Both conditions are found in making the brush conical and the screen of the different material hereinabove mentioned, so as to scour and polish by one passage through of the grain.

The shaft G may be revolved by a belt passing around the pulley J, and upon the top of the shaft is arranged the fan K, which revolves in a fan-case, L. The blades, and sometimes the arms, of the fan are curved, so that they must run in a particular direction; and it often happens, when the machine is to be connected with the driving power, that the latter turns in the wrong direction for the vanes of the fan. To avoid the perplexity of this difficulty, I make my fan-case K with its heads and eyes exactly alike, and separate or separable from the air-trunk M, so that, if the driving power runs in the wrong direction for the curvature of the fan-blades, the fan and case are disconnected, turned upside down, and refastened to the shaft, and both will then correspond. The upper eye is closed by a plate, *q*, which is applicable to either eye when it is uppermost.

To a collar upon the shaft G, below the base of the brush F, there are attached one, two, or more stirrers or movers, *r*, which sweep around through the trough *b*, where the treated grain falls, and moves the grain around to the outlet at *f*, whence it passes

into the fan-blast, to divest it of all impurities. The dust and hulls scoured and rubbed off the grains by the brush rolling them against the screen pass through said screen, and are drawn down through the space *k* and through the openings *d* into the annular chamber *c* by the exhaust-blast created by the fan, and, passing out of the exit at *e*, go directly into the wind-trunk N, and thence up and through M into the fan-case, and out at O. The grain which passes out at *g* drops into a blast which passes up through the trunk P, the light impurities going up with the blast to the fan-case, while the cleaned wheat drops out at *s*. The ascending current through the passage P is deflected at *t*, and passes down under a board, *u*, which so slackens its force as to cause it to drop anything heavier than the light impurities into the eddy-chamber *v*, whence it can be taken out through an opening covered by a valve or a slide. So, too, of the blast through the trunk N: any grain that may have passed out through *e*, or anything heavier than the light impurities, will drop into the eddy-chamber *v*, whence it can be removed through the opening *x*, which is commanded by a door or slide. The fine impurities are all drawn into the fan-case by the exhaust-blast, and thence out of the building, if necessary.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, in a grain scouring and polishing machine, is—

1. In combination with a conical brush, an exterior conical screen, the upper part of which is made of woven wire, and the lower part of perforated sheet or plate metal, as and for the purpose described and represented.

2. In combination with the concentric flanges on the top and bottom plates, the screen provided with the removable section *o*, so that said screen can be enlarged or contracted to fit against either of said flanges, as and for the purpose described and represented.

3. In combination with the base-plate B, the trough *b* and its outlet, and the annular passage *c* and its inlets and outlet, being all in one piece, as and for the purpose described and represented.

4. In combination with the wind trunk M and shaft G, the reversible fan-case, provided with two eyes, the fan, and cap or cover *q*, as and for the purpose described.

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Witnesses:

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