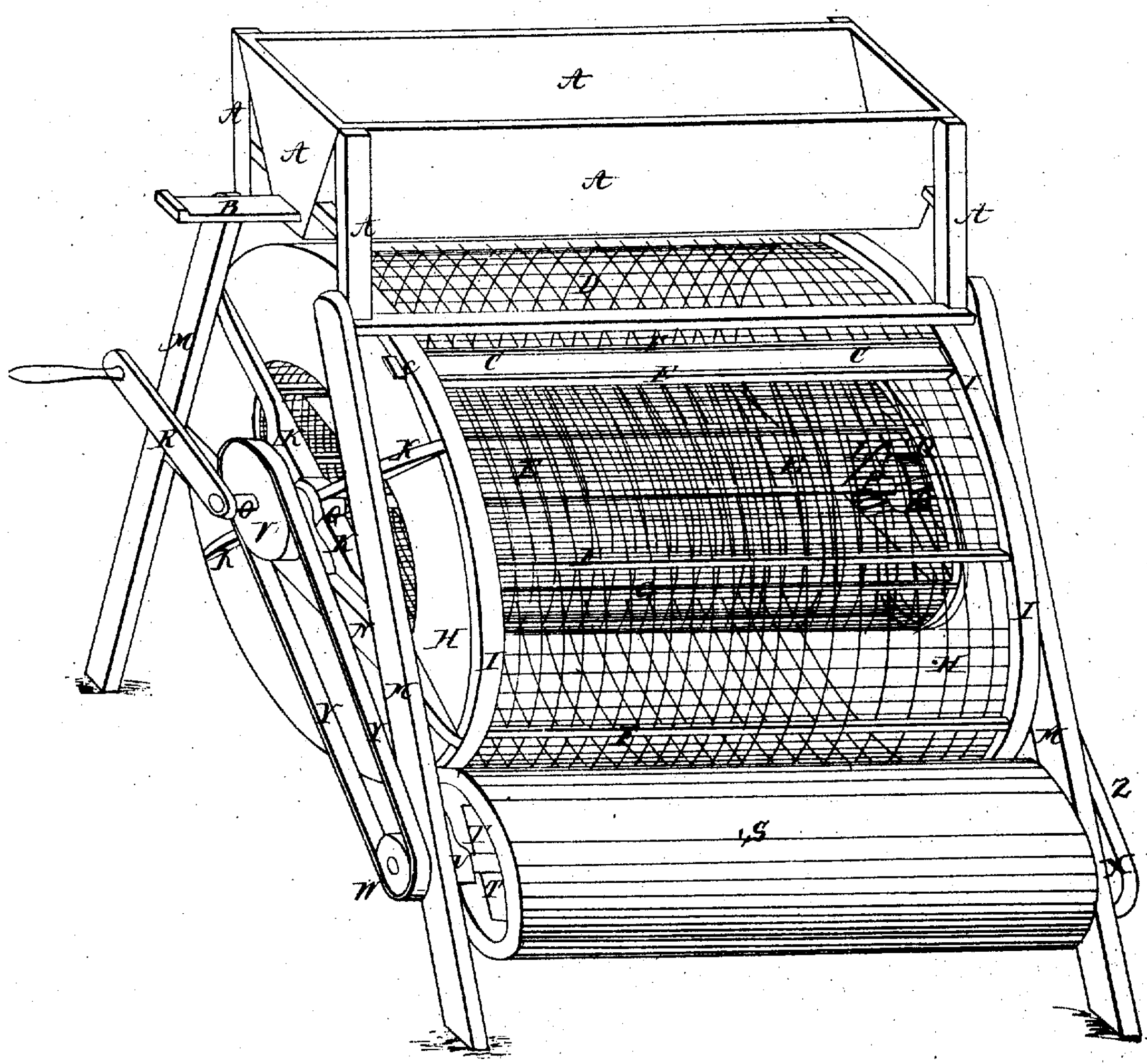
Armstrong & King,

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Grain Sifter.

Patented May 9. 1835.



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Martin A. Armstrong and William H. Ring
Letters Patent

The schedule referred to in these Letters Patent and making part of the same containing a description in the words of the said Martin A. Armstrong and William H. Ring themselves of their improvements in Machinery for sifting and cooling grain and berries of all kinds.

——— To all to Whom these presents Shall come. ———

Be it known that we Martin A. Armstrong and William H. Ring both of the City and County of New York and State of New York have jointly invented a new and useful improvement in machinery for sifting and cooling grain and berries of all kinds and descriptions whatsoever and that the following is a full and exact description of the said Machinery as invented and improved by us. The invention and improvement aforesaid for the purposes aforesaid, embraces and consists of a cylinder sifter and cooler formed and constructed in the manner following. that is to say. a cylinder is formed covered and bounded on its circular surface or boundary by wire or other network or netting of such strength, constructions and proportions as may be required by the particular kind or description of grain or berries to be sifted or cooled. the said cylinder is divided into two apartments by similar net work of like strength, construction and proportions, placed and being in a cylindrical form or shape within and parallel to the said outer covering or boundary and forming a smaller cylindrical apartment within the larger and outer apartment. the said net-work is in both instances secured guarded and strengthened by bars of wood or metal placed and being lengthways with the said cylinder and at both ends thereof affixed and secured to rims or hoops of wood

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or metal which protect the end edges of the said net-work respectively and to which bars the said net work is secured.

The extremities or ends of the said outer apartment of the said cylinder are closed or bounded by circular end plates or pieces of wood or metal of the same diameter as the said cylinder from the middle of which end end plates respectively a circular piece is cut out of sufficient size and dimensions to leave entirely open the ends or extremities of the said inner apartment of the said cylinder. The said end plates are strengthend guarded and secured respectively by arms of wood or metal, crossing each other at the centre of each of the said end plates respectively where they are secured in journals or bearings of wood or metal, and which arms respectively run and extend at the ends thereof to the circumference of the said end plates. On the outer circular surface or boundary of the said outer apartment of the said cylinder an open space is left being the entire space between two of the bars which secure the said outer net-work as aforesaid. the sides of which last mentioned two bars next to and bounding the said open space are so grooved that a cover made of wood or metal or of net work cased in wood or metal may slide freely and securely in and between the said grooved sides of the said bars thus forming an opening to the said outer apartment of the said cylinder which may be closed or opened at pleasure. The said inner apartment of the said cylinder is occupied by a fan called or distinguished as the upper fan, composed of a shaft to which are affixed and secured at alternate right angles to each other, four thin plates of wood or metal of such length and depth as will permit them to revolve upon the said shaft freely and with as much effect as may be within the said inner apartments of the said cylinder. The said cylin-

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ders is attached to and supported by an oblong frame of wood or metal consisting of four legs sufficiently secured together by cross bars on each of the sides and ends thereof respectively. With and to this frame the said cylinder is joined connected and attached on one extremity thereof by a short solid round shaft which passes through and revolves freely within a sufficient bearing and journal in a cross bar on the corresponding end of the said frame, and which is firmly secured to the said journal or bearing of the said arms of the last named extremity of the said cylinder and on the other extremity of the said cylinder by a short round shaft which is firmly affixed and secured to the said journal or bearing of the said arms of the last named extremity of the said cylinder and which last named shaft passes through and revolves freely within a sufficient journal in a cross bar of the corresponding end of the said frame. Through the middle of the last named shaft is a round hole or bore, parallel to its surface and of sufficient diameter to allow the said shaft of the said upper fan to work or revolve freely within it. On one side of the said frame and near the feet thereof is affixed an oblong cylindric case of wood or metal placed and being parallel to the said cylindric sifter and cooler and of sufficient dimensions to contain within it a fan called or distinguished as the lower fan of similar size construction and dimensions as the said upper fan herein before described. The said case is of the same length as the said cylinder and is closed in by a close covering a boundary on all directions except that portion of its circular surface opposite and immediately next to the said cylindric sifter and cooler. Which last named portion of its oblong surface is open and through which the current of air caused by the revolving of the said lower fan passes directly against the said outer network of the said cylinder.

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The said lower fan revolves upon a shaft passing through the centre of the end plates of the said case respectively, when the said shaft revolves it works freely within sufficient journals or bearings. To the ends of the said shaft out side the said case are two round pullies of wood or metal and of unequal diameters. the smaller of the said pullies being on the end of the said frame where is the short round solid shaft of the said cylinder aforesaid, and the larger thereof at the opposite end of the said frame where is the said short round shaft of the said cylinder bored in the middle thereof, as before mentioned.

The said cylinder is moved or set in motion by a crank (or other power which may be applied) attached to the said short solid shaft of the said cylinder. To the said last named shaft between the said crank and the said cross bar in which it has its bearing, a round pully of wood or metal is affixed and secured on a line with the said smaller pully of the said lower fan and which is as much larger than the said smaller pully of the said lower fan as the ~~as the~~ increase of velocity desired to be given to the said lower fan over the said cylinder may require; The said pully of the said short solid shaft is connected with and acts upon the said smaller pully of the said lower fan, which when the crank or other power as may be, turns the said short solid shaft and its pully, acts upon and turns the said smaller pully of the said lower fan in the same direction and with as much greater velocity, as the difference between the diameters of the said pullies will cause. On the other end of the said shaft of the said lower fan, the said larger pully necessarily revolves with the same velocity as the said smaller pully thereof just described; and by means of a connecting shaft is connected with and acts upon a smaller round pully affixed and secured to the said shaft of the said upper fan on a line with the said larger pully

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of the said lower fan. The difference in diameter between the said pullies of the said lower fan and also between the larges thereof and the said pully affixed to the shaft of the upper fan must be regulated by the increase of velocity desired to be given to the said upper fan over the said lower fan. The said shaft of the said fan is set in motion by and revolves with the said pully thereunto affixed and passes out through and revolves freely within the aforementioned bore in the said short round shaft of the said cylinder placed and being at that end thereof and has its own journal and bearing in an outer cast bar at that end of the said frame, and at its opposite end or extremity rests upon and revolves freely within a bearing in the inner end of the said short solid shaft which there supports the said cylinder and connects it with the said frame as aforementioned. The said connecting straps last aforesaid is crossed between the said pullies which it connects as aforesaid so that thereby the motion given to the said upper fan as aforesaid is opposite to the motion given to the said cylinder and the said lower fan as aforesaid the revolutions of the said upper fan being directly reverse to the revolutions of the said cylinder and the said lower fan. The said upper fan moves or revolves with as much greater velocity than the said lower fan as the difference in diameter of the said pullies will cause as aforesaid The motions aforesaid may also be obtained by connected rods or cogwheels used in the place of the aforesaid connecting straps and pullies. The crank or other power aforementioned may also be applied to the said short bored shaft of the said cylinder, or to the said shaft of the said lower fan, or to the said shaft of the said upper fan. A moveable hopper with a sliding bottom or opening corresponding to the said opening in the said outer network of the said cylinder fits and slides with wheels or

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or castors upon the upper part or top of the said frame directly over the said cylinder this hopper being filled with grain or berries is easily filled to its place over the said cylinder as aforesaid. the open space aforesaid in the outer network of the said cylinder closed by a sliding cover as aforesaid is turned up and directly under the said hopper. The said sliding cover thereof is drawn out. the sliding bottom of the said hopper is also drawn out and the grain or berries in the said hopper fall into the outer apartment of the said cylinder, the sliding cover of the said cylinder is driven home and the crank or other power, as may be putting the said cylinder in rapid motion, the said grain or berries are necessarily kept in rapid and continual motion upon and against the inner surface of the said outer net work of the said cylinder, and at the same time the said lower fan forces a current of air directly up against and through the said outer net work and the said upper fan, revolving in the opposite direction and with much greater velocity, forces a stronger current of air upon and against the said grain or berries, and continually in a manner opposes and resists the motion given to them by the said cylinder as aforesaid. By these means the said grain or berries are speedily sifted and cleaned and if hot or heated are also speedily cooled. When sifted and cooled the said grain or berries pass out of and from the said cylinder sifter and cooler by withdrawing the said sliding cover of the said cylinder.

And we the said Martin V. Shuesling and William H. Skeing have hereunto annexed a drawing of the machinery herein before described as and for part and parcel of this our specification and description of the said machinery invention and improvement and have to the several parts thereof respectively annexed certain letters as and for letters and marks of reference to represent or indicate the several and respective parts

parts of the said Machinery as represented in the said drawings in the following explanation or description of the said drawing to wit A. represents or indicates the said moveable upper. B. represents or indicates the sliding bottom thereof. C. represents or indicates the said sliding cover of the said open place in the said outer net work. D. represents or indicates the said outer net work. E represents or indicates the said inner net work. F represents or indicates the said bars which are affixed to the said outer net work as aforesaid. G. represents or indicates the said bars which affixed to the said inner net work as aforesaid. H represents or indicates the said end plates of the said outer apartment of the said cylinder. I represents or indicates the said rims or fellies which protect the end edges of the said net works respectively as aforesaid. K represents or indicates the said arms which strengthen and are affixed to the said end plates as aforesaid. L represents the said plates of the said upper fan. M represents or indicates the said legs of the said frame. N represents or indicates the said cross bars of the said frame. O. represents or indicates the said short solid shaft of the said cylinder. P represents or indicates the said shaft of the said upper fan. Q represents or indicates the said journals or bearings of the said arms of the said end plates. R. represents or indicates the said crank affixed to the said short shaft as aforesaid. S. represents or indicates the said case of the said lower fan T represents or indicates the plates of the said lower fan. U represents or indicates the said shaft of the said lower fan V represents or indicates the said pully of the said short solid shaft of the said cylinder. W represents or indicates the said smaller pully of the said lower fan. X represents or indicates the said larger pully of the said lower fan. Y represents or indicates the said connecting strap which connects the said pully of the said short solid shaft with the

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the said smaller pully of the said lower fan aforesaid.

B represents or indicates the said connecting strap which connects the said larger pully of the said lower fan with the said pully of the said shaft of the said upper fan as aforesaid.

A represents or indicates the said pully of the said shaft of the said upper fan. The said short round shaft of the said cylinder bored in the middle thereof as aforesaid does not appear on the said drawing but would if appearing thereon be seen between the said journal or bearing on the right hand side of said drawing marked R. and the said pully of the said shaft of the said upper fan marked A. and we the said Martin A. Armstrong and William H. King do say and claim that we are the joint and original inventors of the machinery herein before described and set forth for the purposes herein before set forth except only that the said cylinder herein before described hath been heretofore known and patented without the opening or sliding cover herein before mentioned and described but with openings in the ends or extremities thereof and except also that fans, frames, cases, pullies, shafts, cranks, bearings, connecting straps or other component parts of the said machinery herein before described and set forth, may have heretofore been used separately: but we say and claim that we are the joint and original inventors of the combination and use of the said component parts for the purposes aforesaid as herein before described and set forth

Witness
A Hooker
Elisha Morrill

Martin A. Armstrong
Wm H. King

Examined

Byd.
Atty.

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