

T. NELSON.
Buckwheat Huller.

No. 100,790.

Patented March 15, 1870.

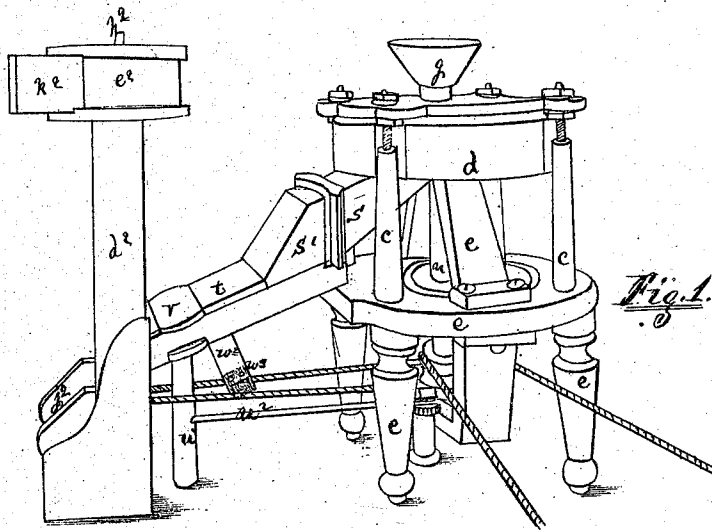


Fig. 1.

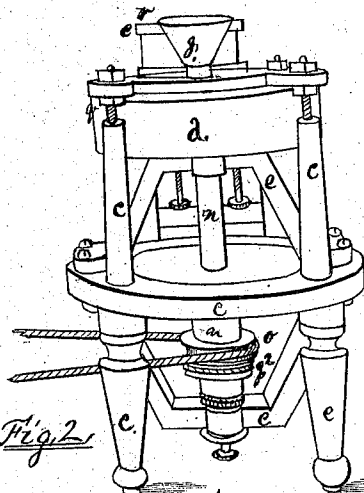


Fig. 2.

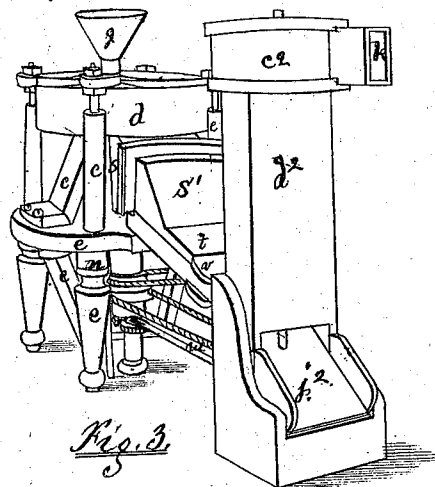


Fig. 3.

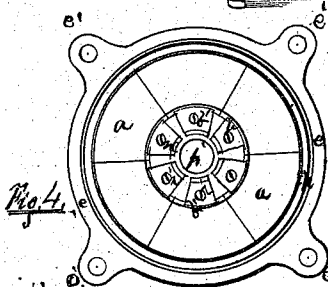


Fig. 4.

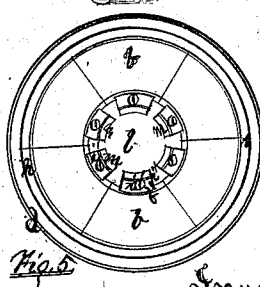


Fig. 5.

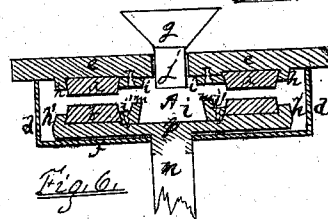


Fig. 6.

Witnesses.

Austin F. Park
Leslie Smyth

Inventor.

Thomas Nelson

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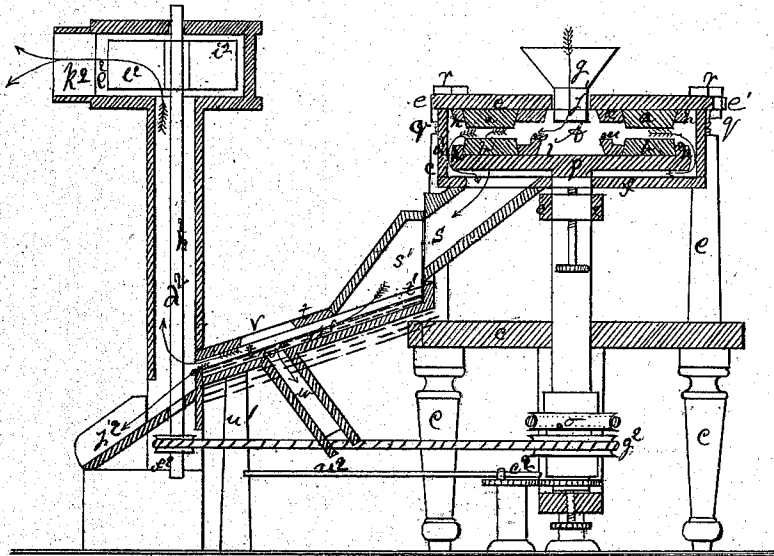


Fig. 7.

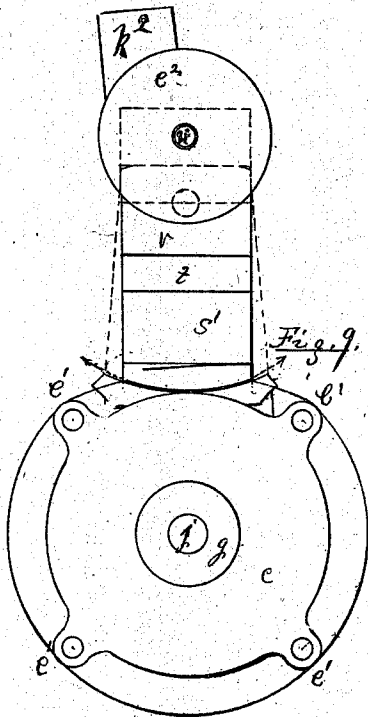


Fig. 9.

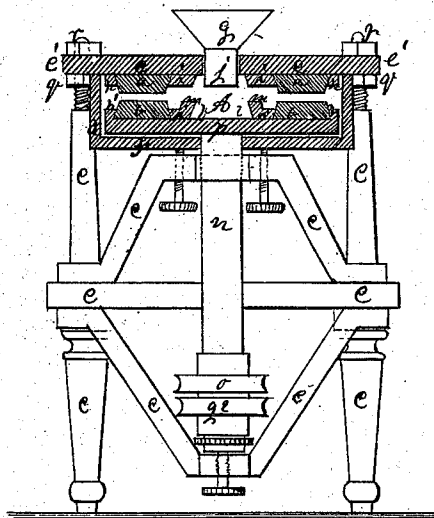


Fig. 8.

Witnesses.

Austin F. Park.
Leslie Smyth

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Thomas Nelson

United States Patent Office.

THOMAS NELSON, OF TROY, NEW YORK, ASSIGNOR TO NEWTON REYNOLDS
AND HORACE G. NELSON, OF SAME PLACE.

Letters Patent No. 100,790, dated March 15, 1870; antedated March 3, 1870.

IMPROVEMENT IN BUCKWHEAT-HULLING 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, THOMAS NELSON, of the city of Troy, county of Rensselaer, and State of New York, have invented a new and useful "Machine for Hulling Buckwheat;" and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, in which—

Figure 1 represents a perspective view from the driving side of the machine.

Figure 2 represents a perspective view from the receiving end.

Figure 3 represents a perspective view from the opposite or discharging end.

Figure 4 represents a horizontal view of the upper stone.

Figure 5 represents a horizontal view of the under stone.

Figure 6 represents a vertical section of the stones and their connection with the machine-frame, &c.

Figure 7 represents a vertical longitudinal section.

Figure 8 represents a vertical transverse section.

Figure 9 represents a horizontal view of the machine.

There are two sheets of drawings accompanying this specification, entitled respectively Sheet I and Sheet II.

On the drawings, like letters refer to corresponding parts.

Arrows show the direction of the buckwheat passing through.

The nature of my said invention consists in the peculiar manner or combined means whereby the buckwheat-hulling stones are secured to metallic bed-plates therefor, substantially as hereinafter fully described.

It also consists in the construction of certain devices whereby large stones and similar substances are prevented from passing between the hulling-stones to injure them, should any accidentally get mixed with the buckwheat, substantially as hereinafter fully described.

It also consists in such a construction and arrangement of the discharging-spouts of the hulling-stones, that while one spout is stationary, the other spout has given to its end adjoining the stationary spout free oscillating motion, substantially as and for the purpose hereinafter fully described and shown.

It also consists in the combination and arrangement of certain devices, in manner substantially as hereinafter fully described, whereby the hulling-stones are kept cool, and the hulls, dust, and light foreign substances are separated and drawn off from the hulled buckwheat kernels and discharged.

To enable others skilled in the art to which my invention refers, to make and use the same, I will proceed to describe the construction and operation thereof, which are as follows:

a represents the upper hulling-stone.

b represents the under stone.

c represents the frame-work, supporting the plates, stones, &c.

This frame-work may be made of wood or iron, and constructed in any suitable manner for the purpose, which is to support and sustain the driving and principal working parts of the machine.

d represents the curb or casing surrounding and inclosing the stones *a* and *b*, thus forming a chamber, within which the operation of hulling is performed.

e represents the covering-plate over this chamber, and

f represents the bottom of this said chamber.

The upper stone *a* is securely fastened to the plate *e*, and remains stationary.

In the center of the plate *e* there is an eye or aperture, through which I pass the spout of the hopper downward in the usual way. The hopper is shown at *g*.

The stone *a* is constructed as shown in fig. 4, and so arranged that a section may be easily removed, and another set in its place. Stones sometimes become glazed, cracked, or otherwise imperfect. It may be convenient to replace them.

Another advantage to be derived from this mode of construction is, that all liability of a stone bursting is done away with, and any kind of stone or composition may be used, which may be suited to the purpose.

These sections are secured to the plate *e*, as shown in fig. 5, on the outer edge by the flange *h*, which covers the edge of the stone sufficiently to hold it there, and on the inner edge by the circular segmental plates marked *i*, which also cover the edge of the stones sufficiently to hold them in place.

These plates *i* I usually construct of cast-iron, but any suitable material will answer.

The eye or aperture mentioned above is in the center of the plate *e*, as shown in figs. 6 and 8, and marked *j*.

The operation of placing the sections of stones is as follows:

The outer edge is slid under the flange *h*, and the stone is placed flat to the plate *e*, imbedded in the cement, and after the sections are all thus placed, the set-plates *i* are placed in position as shown in figs. 7 and 8, and bolted, screwed, or otherwise secured to the plate *e*.

The under stone *b* is constructed in sections pre-

cisely similar, and secured to a circular plate, shown at *p*, figs. 6, 7, and 8, the outer edge of the same having a flange, *h'*, covering the lower edge of the stone, and also I have set-plates, in shape corresponding with the stone, as shown at *i'*, figs. 4 and 5, which also overlap the inner lower edge or corner of the stone.

Underneath the hopper *g* I have a depression formed between the inner circle of the set-plates *i'*, and shown at *l*, figs. 4, 5, 6, 7, and 8, and the inner edge of the set-plates forms a flange surrounding this depression, as shown at *m*, constructed so that the upper and inner edge forms an acute angle, slightly overlapping this depression, for the purpose of catching, holding, and otherwise preventing large stones and other hard substances from passing between the stones *a* and *b*.

The working-faces of the stones are raised beyond the surface of the flanges *h* and *h'*, also the set-plates *i* and *i'*, as shown in figs. 6, 7, and 8, so that they may wear away considerably before it becomes necessary to remove them, the iron plates outlasting a great number of stones.

It will be obvious that by constructing and securing the stones in the manner above described, they may be made very thin.

The circular plate *p*, which holds the stone *b*, is secured to the end of the shaft *n*, and to this shaft I apply motion at the pulley *o*, which causes the stone *b* to revolve.

The upper plate *e* is attached to the corner *e'*, as shown, a screw passing upward through the plate, a nut underneath, marked *q*, and another above, marked *r*, each corner the same, and by means of this arrangement is held in place.

At a suitable place I have a discharging-spout leading from the chamber containing the stones, as shown at *s*, and having a proper descent to the receiving-spout, marked *t*, which leads therefrom downward, at a proper angle from the discharging-spout *s*, and contains a sieve, (or it may be a series of sieves,) constructed of wire, or they may be made of thin metal, perforated in any suitable manner. The sieve is shown at *u*. The red lines dotted show a series of sieves.

The spout *t* is completely inclosed, except at the ends and at the place marked *v*.

At the place marked *w* I have another spout leading downward at a proper angle, as an outlet for the finer portions and broken kernels of the buckwheat.

To the receiving end of the spout *t* containing the sieve *u*, (or series of sieves,) I apply motion by means of the standard *u'* and the rod *u''*. The motion is shown by the dotted lines and arrows in fig. 9, and is of an oscillating nature.

The rod *u''* is attached to an eccentric, or its equivalent, at *c'*, geared to the shaft *n*, as shown.

By placing the standard *u'* at the position and point shown, it will be seen that the motion of the spout is considerable at its receiving end, and but slight at its discharging end.

The object of having a series of sieves would be principally to separate the different degrees of fineness.

At the receiving end of the spout *t* there is an inclosure, reaching up and covering the opening on the top and sides.

This inclosure is marked *s'*, and is intended to be of size sufficient to cover the outlet of the spout *s*, when the oscillating motion of the spout *t* is in progress, the faces where they join having sufficient curve to admit of the motion as mentioned.

The oscillating spout *t* is placed so there is a considerable descent from its receiving end toward its

discharging end, which will facilitate the downward tendency of the buckwheat.

Next at the discharging end of the spout *t*, and joining the same, I have a vertical spout of proper length, and having a rotary exhaust-bellows at a suitable height. The spout is marked *d'*, and the bellows *e'*.

Inside a circular chamber I have a fan-wheel attached to a shaft, which runs down vertically from the top of the chamber *c'* to the bottom of the spout *d'*, and on this shaft is a pulley, shown at *f'*, to which I apply motion by means of an endless belt, connecting the pulley *f'* to the pulley *g'*, on the shaft *n*, which causes the shaft *h'* and fan-wheel *i'* to revolve within the chamber *c'*, thus forming a rotary exhaust-bellows.

There is an outlet through this spout, *d'*, from the spout *t*, as shown at *j'*, through which the whole kernels of buckwheat pass and are discharged.

The rotary motion of the fan *i'* within the chamber *c'* causes a current of air to rise within the spout *d'*, and also to draw thereto from the spout *t* all the lighter matter, such as hulls, dust, &c., which are drawn out and upward through the spout *d'*, into the chamber *c'*, and from thence blown out by the action of the revolving or rotary fan *i'*, through the aperture leading from the chamber *c'* at *k'*, and discharged.

At the spout *w* I have leather flaps or gills on each side, shown at *u''*, fig. 1, which close when the draught is too much from the fan.

The operation of the machine is as follows:

Buckwheat being admitted through the hopper *g*, passes downward, and by centrifugal force is distributed between the stones *a* and *b*, and then falls over the outer edge of the same into the chamber *A*, and then through the spout *s* to the oscillating spout over the sieves *u*, to the discharging-spout *j'*. The stones *a* and *b* remove the hulls, &c., from the kernel.

The sieve *u* separates the finer from the coarser particles and kernels, which finer particles fall downward through the spout *w*, and are discharged, the fan *i'*, by its draught, withdrawing the light particles, hulls, dust, &c., as mentioned.

The object of the sieve *u* is to remove the lighter and cracked parts of kernels from the action or draught of the fan, which might be strong enough to carry them off, were they permitted to pass far enough within its reach.

Having thus described the construction and operation of my said invention,

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

1. Securing and holding together the several parts composing the respective hulling-stones *a* and *b*, by the combined means of the metallic plates *e* and *p*, the flanges *h* and *h'*, and the set-plates *i* and *i'*, either with or without the use of cement, substantially as hereinbefore described.

2. The projecting flanges *m* on the set-plates *i'*, of stone *b*, substantially as and for the purpose described.

3. The arrangement and combination of the hulling-stones *a* and *b*, and the stationary discharging-spout *s* therefrom, with the spout *s'* *t*, constructed and provided with the vibrating standard or shaft *u'*, its operating-rod *u''*, and operating-wheel *c'*, receiving motion from the shaft *n*, or their equivalent operating parts, so as to oscillate the receiving end of said spout *s'* *t*, substantially as hereinbefore described.

4. The combination and arrangement with each other of the hulling-stones *a* and *b*, the stationary discharging-spout *s*, the spout *s'* *t*, oscillating at its

end next the spout s , as described, its sieves u , the vertical spout d^2 , and the air-exhausting fan-wheel f^2 , all substantially as and for the purpose described.

5. The combination and arrangement of the concave end, stationary discharge-spout s , and the oscillating convex end receiving-spout s^1 t , with each other, when applied to buckwheat-hulling stones, substantially as and for the purpose described.

In testimony whereof I have on this 17th day of June, 1869, hereunto affixed my name in the presence of two witnesses.

THOMAS NELSON.

Witnesses:

AUSTIN F. PARK,
LESLIE SMYTH.