

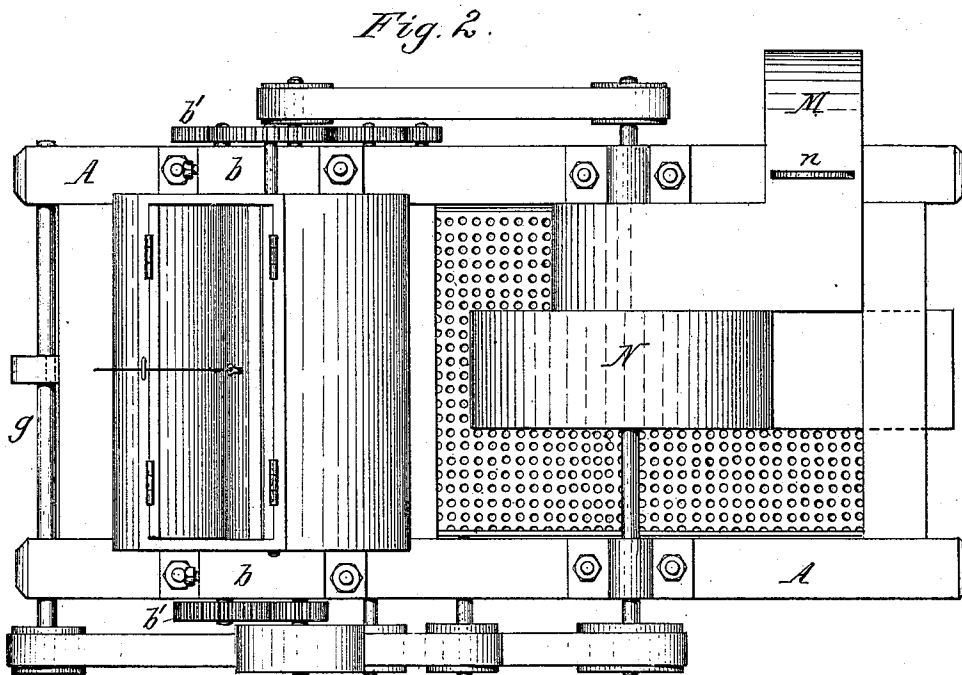
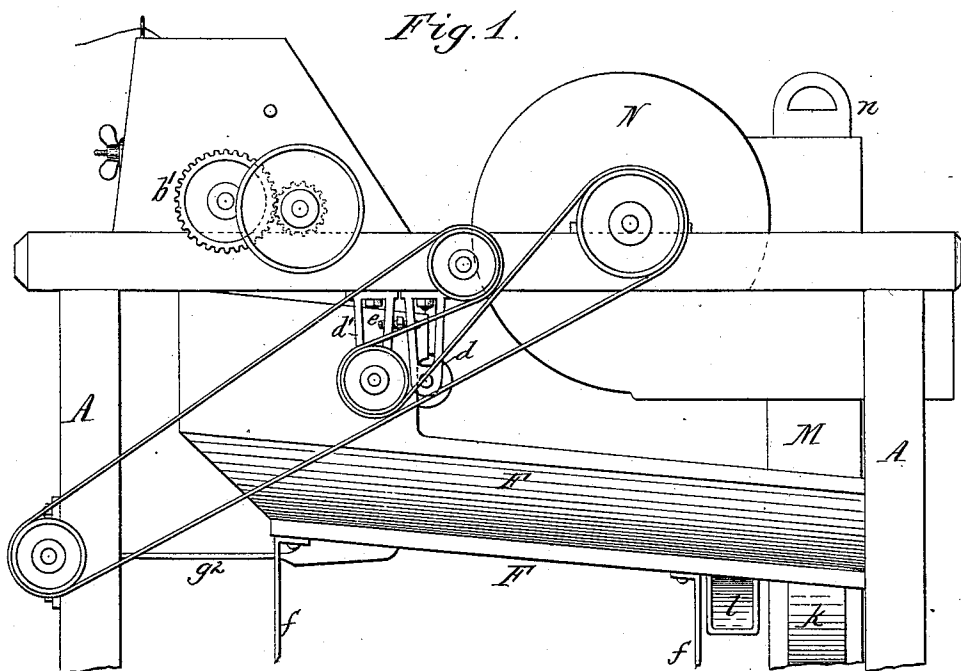
(No Model.)

2 Sheets—Sheet 1.

G. S. CRANSON.
BUCKWHEAT HULLER.

No. 251,192.

Patented Dec. 20, 1881.



Chas. J. Buchheit.
Edw. J. Brady. } Witnesses.

Giles S. Cranson Inventor.
By *Michael H. H. H.*
Attorneys.

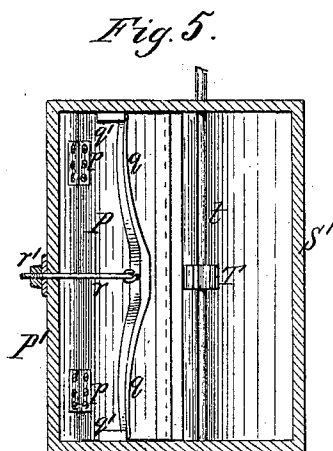
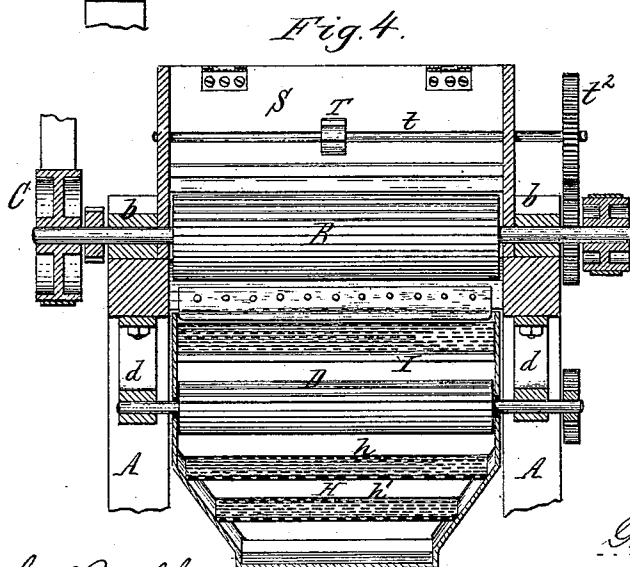
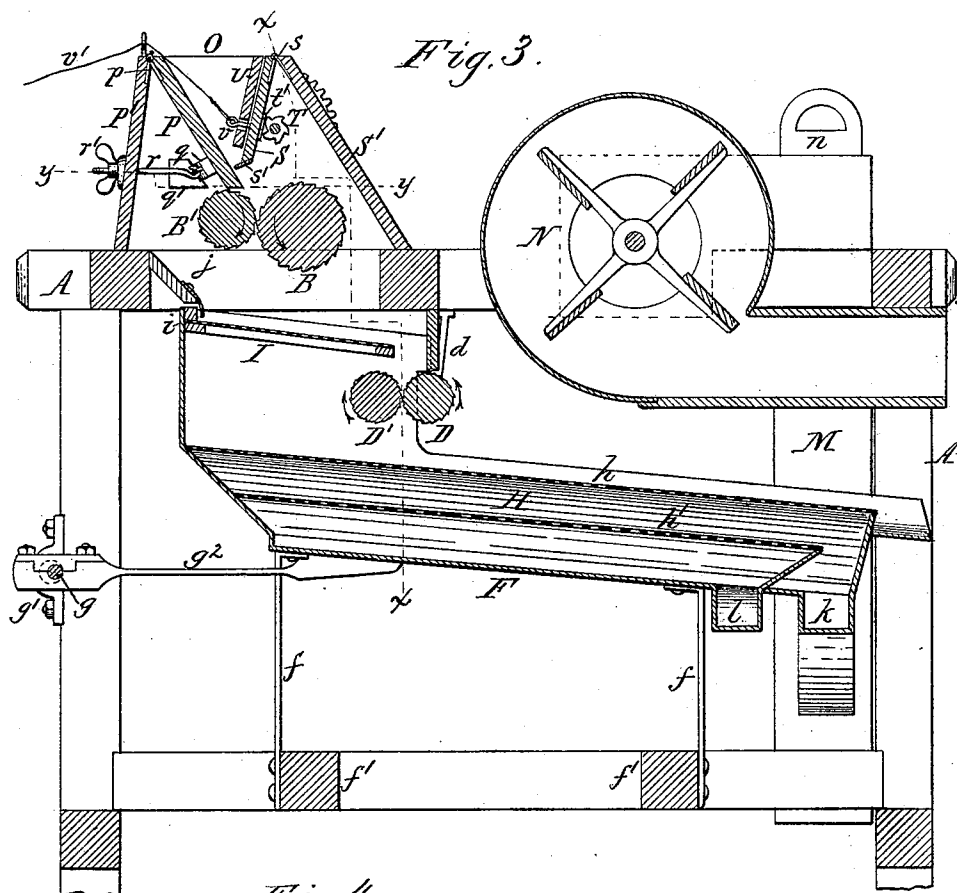
(No Model.)

2 Sheets—Sheet 2.

G. S. CRANSON.
BUCKWHEAT HULLER.

No. 251,192.

Patented Dec. 20, 1881.



Chas. Buchheit.
Edw. J. Brady. } Witnesses

Giles S. Crane, Inventor.
By Wilhelm H. Benner
Attorneys.

UNITED STATES PATENT OFFICE.

GILES S. CRANSON, OF SILVER CREEK, NEW YORK, ASSIGNOR OF ONE-
THIRD TO FREDERICK L. CRANSON, OF SAME PLACE.

BUCKWHEAT-HULLER.

SPECIFICATION forming part of Letters Patent No. 251,192, dated December 20, 1881.

Application filed April 8, 1881. (No model.)

To all whom it may concern:

Be it known that I, GILES S. CRANSON, of Silver Creek, in the county of Chautauqua and State of New York, have invented new and useful Improvements in Buckwheat-Hullers, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to a machine whereby the hulls or shucks are removed from the meats or flour-producing parts of the kernels of buckwheat and the shucks and other offal and impurities are separated from the fragments of meats, whereby the latter are prepared for grinding.

The object of my invention is to adapt the machine to effect a complete separation of the flour-producing parts from the shucks, skins, and other offal and impurities, thereby enabling the miller to produce a clear white flour, free from impurities.

My invention consists in combining with the hulling mechanism a sieve or sieves, whereby the hulled material is divided into three separate products—viz., flour, large fragments of meats, and shucks—and a suction air-trunk which is arranged to receive the large fragments of meats, and which effects a separation of the light fragments of skins and hulls from the meats; also, in combining in the machine a pair of preliminary-hulling rollers, whereby the large kernels are hulled, a pair of subsequent-hulling rollers, whereby the unhulled kernels which escape the action of the preliminary rollers are hulled, and a sieve or sieves, whereby the unhulled kernels of the first separation are separated from the hulled material and delivered to the subsequent-hulling rollers; also, in combining with these parts of the machine a sieve or sieves, whereby the shucks, meats, and flour are separated each from the other; also, in the special arrangement of these parts of the machine; also, in combining with the above-mentioned parts of the machine an air-trunk in which the fragments of shucks are separated from the meats; and, finally, of a feed mechanism of peculiar construction, whereby a uniform feed is secured over the entire length of the hulling-rollers.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of

my improved machine. Fig. 2 is a top plan view of the same. Fig. 3 is a longitudinal section of my improved machine. Fig. 4 is a cross-section in line *x x*, Fig. 3. Fig. 5 is a horizontal section in line *y y*, Fig. 3, looking upward.

Like letters of reference refer to like parts in the several figures.

A represents the frame-work of the machine, consisting of upright posts and horizontal girds, as clearly shown.

B B' represent the pair of preliminary-crushing rolls arranged transversely upon the upper part of the frame-work, where they revolve in bearings *b*, which are provided with suitable set-screws, whereby the rollers can be adjusted toward or from each other. These rollers are made of different diameters, one being about twice as large as the other, and they are geared together by spur-wheels *b'*, preferably in such manner that the small roller revolves about twice as fast as the large roller.

C represents the main driving-pulley mounted on the shaft of the large roller B.

D D' represent the pair of subsequent-hulling rollers, arranged in rear of the preliminary-hulling rollers B B', and below the upper horizontal pieces of the frame-work A, in which position the rollers D D' are supported by hangers *d d'*, secured to the under side of the upper girds.

e is a right-and-left-hand set-screw connecting each pair of hangers *d d'* on the same side of the machine, so that by turning the set-screw the hangers are sprung apart or drawn together, thereby imparting to the rollers D D' the necessary adjustability, which is comparatively small.

F represents the shaking-shoe arranged in an inclined position below the rollers D D' and supported by elastic bars *f*, secured with their lower ends to the lower cross-pieces, *f'*, of the frame. Motion is imparted to the shoe F by a rotating shaft, *g*, arranged transversely at the feed end of the machine in bearings *g'*, and provided with an eccentric, which is connected with the shoe F by a rod, *g*².

H represents the principal sieve arranged in the shoe F and composed of two perforated plates, *h h'*, placed one above the other.

I represents the preliminary sieve, arranged over the head portion of the principal sieve H, with its front portion below the preliminary-hulling rollers B B' and with its tail above the subsequent rollers D D'. The sieve I is supported upon the shoe F by side and end plates, *i*, so as to take part in its vibratory movement. *j* represents a hopper, which receives the material discharged from the rollers B B' and delivers the same upon the head of the preliminary sieve I. The perforations in the sieve I are made of such size that all the material except the unhulled kernels will pass through the perforations and upon the head of the plate *h*, while the unhulled kernels pass over the tail of the sieve I and between the rollers D D'. The perforations in the upper plate, *h*, of the main sieve are made so large that all the material except the shucks or hulls will pass through the same upon the lower plate, *h'*, which latter is provided with finer perforations of the proper size to permit the flour and fine fragments of meats to pass through, while the coarse fragments of meats pass over the tail of the plate *h'* into the spout *k*. The hulls or shucks escape over the tail of the upper plate, *h*, and the flour and fine fragments of meats fall on the bottom of the shoe and are discharged through a spout, *l*.

M is a suction air-trunk arranged on one side of the machine, and having its upper end connected with the eye of a fan, N. The spout *k*, through which the coarser fragments of meats are discharged, opens into the lower portion of the air-trunk M, as clearly shown. *n* is a slide arranged in the air-trunk M, for regulating the strength of the air-current.

O represents the feed-hopper arranged over the preliminary-hulling rollers B B', so as to deliver the grain between the same.

P is the adjustable front board of the feed-hopper, hinged at its upper end to the stationary front board, P', as shown at *p*, and having its lower end provided on its lower side with a spring, *q*, which is secured at its center to the board P, and which bears with its free end against the shoulders or stops *q'*, secured to the side pieces of the feed-hopper.

r is a screw-bolt attached with its inner end to the board P, and having its threaded outer end provided with a thumb-nut, *r'*, which bears against the outer side of the stationary front board, P', of the feed hopper.

S is the movable rear board of the feed-hopper, hinged with its upper end to the stationary rear board, S', at *s*, and preferably provided at its lower end with a metallic strip, *s'*, which projects beyond the face of the board S, and fits against the face of the board P.

T is a cam-wheel mounted on a shaft, *t*, and arranged in the rear of the board S, so as to support and jar the latter. The rear side of the board S is provided with a metallic protecting-plate, *t'*, where the wheel T bears against the board.

U represents a stationary plate or board arranged above or in front of the movable board

S, to relieve the latter from the pressure of the grain and enable the board S to be easily moved.

u is an eyebolt secured to the movable plate S, and projecting forward through an opening in the stationary plate U, and *u'* is a wire, cord, or rope running from the eyebolt *u* to the grinding-floor or any other place where it can be easily reached by the miller when it is desired to stop the escape of grain from the feed-hopper.

The amount of grain which is fed to the rollers is regulated by adjusting the front board, P, toward or from the movable rear board, S, which latter rests on the cam-wheel T, and is stationary under ordinary circumstances, with the exception of the vibratory movement which is imparted to it.

The front board, P, is adjusted by means of the thumb-nut *r'*, which, when tightened, draws the lower end of the board P forward against the spring *q* and away from the board S, and when being released permits the board P to move toward the board S under the pressure of the spring *q*.

The shaft of the cam-wheel T is rotated by gear-wheels *t²*, and the rear board, S, is kept by the wheel T in a jarring motion, whereby the grain is prevented from clogging in the hopper and a full and free discharge of the grain is caused over the whole length of the narrow opening between the lower ends of the boards P and S. By pulling and securing the cord *u'* the lower end of the board S is brought tightly against the front board, P, when the flow of grain from the hopper is stopped. The preliminary rollers B B' are set at such a distance apart that the larger grains are hulled in passing between these rollers, and the secondary rollers D D' are set more closely together, so as to hull the smaller grains. The flour and fragments of meats made in the first hulling operation pass through the perforations of the sieve I upon the sieve *h*, which receives farther down also the products of the second hulling operation. The plate *h* separates the hulls or shucks from the meats and flour, which latter pass through the perforations of the plate *h* and are divided by the lower plate, *h'*, the flour escaping through the spout *l*. The meats pass through the spout *k* into the air-trunk M, in which the lighter impurities mixed therewith—such as fragments of skins and hulls—are lifted and carried off by the air-current and discharged through the blast-spout of the fan, while the purified meats escape at the bottom of the air-trunk M. In this manner the grain is evenly fed to the rollers and completely hulled, and the different products of the operation are completely separated and each product discharged separately.

The rollers are preferably provided with the dress described and shown in Letters Patent of the United States No. 217,513, granted to me July 15, 1879.

I claim as my invention—

1. In a buckwheat-hulling machine, the combination, with the hulling mechanism, of a

sieve or sieves constructed to separate the hulled material into three products—viz., flour and large fragments of meats, which pass separately through the screen, and hulls or shucks which pass over the tail of the screen—and a suction air-trunk constructed and arranged as described, into which only the large fragments of meats are delivered from the screen, and in which these meats fall through an ascending air-current, whereby the light impurities—such as fragments of skins and hulls—are separated from the heavier fragments of meats, substantially as set forth.

2. In a hulling-machine, the combination, with a pair of preliminary-hulling rollers adapted to hull the large kernels and a pair of subsequent-hulling rollers adapted to hull the remaining unhulled kernels, of a sieve arranged below the preliminary rollers and adapted to effect a separation of the hulled material from the unhulled kernels, and having its tail arranged above the subsequent-hulling rollers, so as to deliver the unhulled kernels between the same.

3. In a hulling-machine, the combination of a pair of preliminary-hulling rollers adapted to hull the large kernels, a sieve whereby the unhulled kernels are separated from the hulled material, a pair of secondary-hulling rollers adapted to hull the unhulled kernels of the first hulling operation, and a sieve whereby the hulls are finally separated from the meats and flour.

4. In a hulling-machine, the combination of a pair of preliminary-hulling rollers adapted to hull the large kernels, a sieve whereby the unhulled kernels are separated from the hulled material, a pair of subsequent-hulling rollers adapted to hull the remaining unhulled kernels, a sieve whereby the shucks, meats, and flour are separated from each other, and an air-trunk in which the meats are subjected to an ascending air-current and deprived of the light impurities.

5. The combination, with the preliminary-hulling rollers B B' and the subsequent-hulling rollers D D', of the preliminary sieve I, interposed between the preliminary and subsequent hulling rollers, and the principal sieve H, arranged below the sieve I and receiving all of the hulled material from the sieve I and the rollers D D', substantially as set forth.

6. The combination, with the preliminary-hulling rollers B B' and the subsequent-hulling rollers D D', of the shaking shoe F and the preliminary sieve I, supported thereon, the shoe F being provided with two perforated plates, *h h'*, whereby the shucks, meats, and flour are separated each from the other, substantially as set forth.

7. The combination, with the feed-hopper, of the adjustable front board, P, provided with spring *q*, bearing against stops *q'*, and screw-bolt *r*, substantially as set forth.

8. The combination, with the feed-hopper, of the adjustable front board, P, and the hinged rear board, S, resting against the cam-wheel T, and mechanism whereby the hinged board S is closed against the front board, P, when it is desired to shut off the feed, substantially as set forth.

9. The combination, with the feed-hopper, of the hinged rear board, S, resting against the cam-wheel T, and the stationary board U, whereby the board S is relieved from the weight of the grain, substantially as set forth.

10. The combination, with the feed-hopper, of the adjustable front board, P, hinged rear board, S, resting against the cam-wheel T, and the stationary board U, substantially as set forth.

GILES S. CRANSON.

Witnesses:

JNO. J. BONNER,
EDW. J. BRADY.