(No Model.) 3 Sheets—Sheet 1.

L. S. WELKER & H. KIFFE.

FLAXSEED SEPARATOR.

No. 359,044. Patented Mar. 8, 1887.

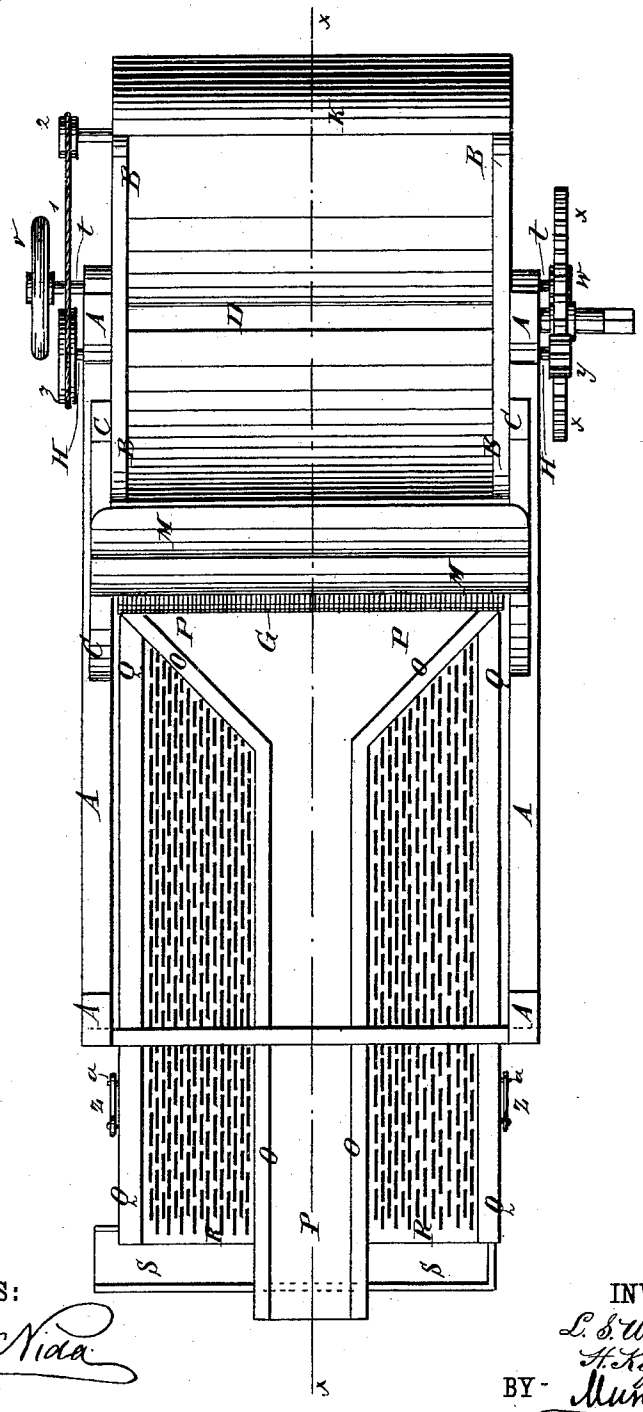


Fig. 1.

WITNESSES:

Chas. Nida

C. Sedgwick

INVENTOR:

L. S. Welker

H. Kiffe

BY Munn & Co

ATTORNEYS.

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 2.

L. S. WELKER & H. KIFFE.

FLAXSEED SEPARATOR.

No. 359,044. Patented Mar. 8, 1887.

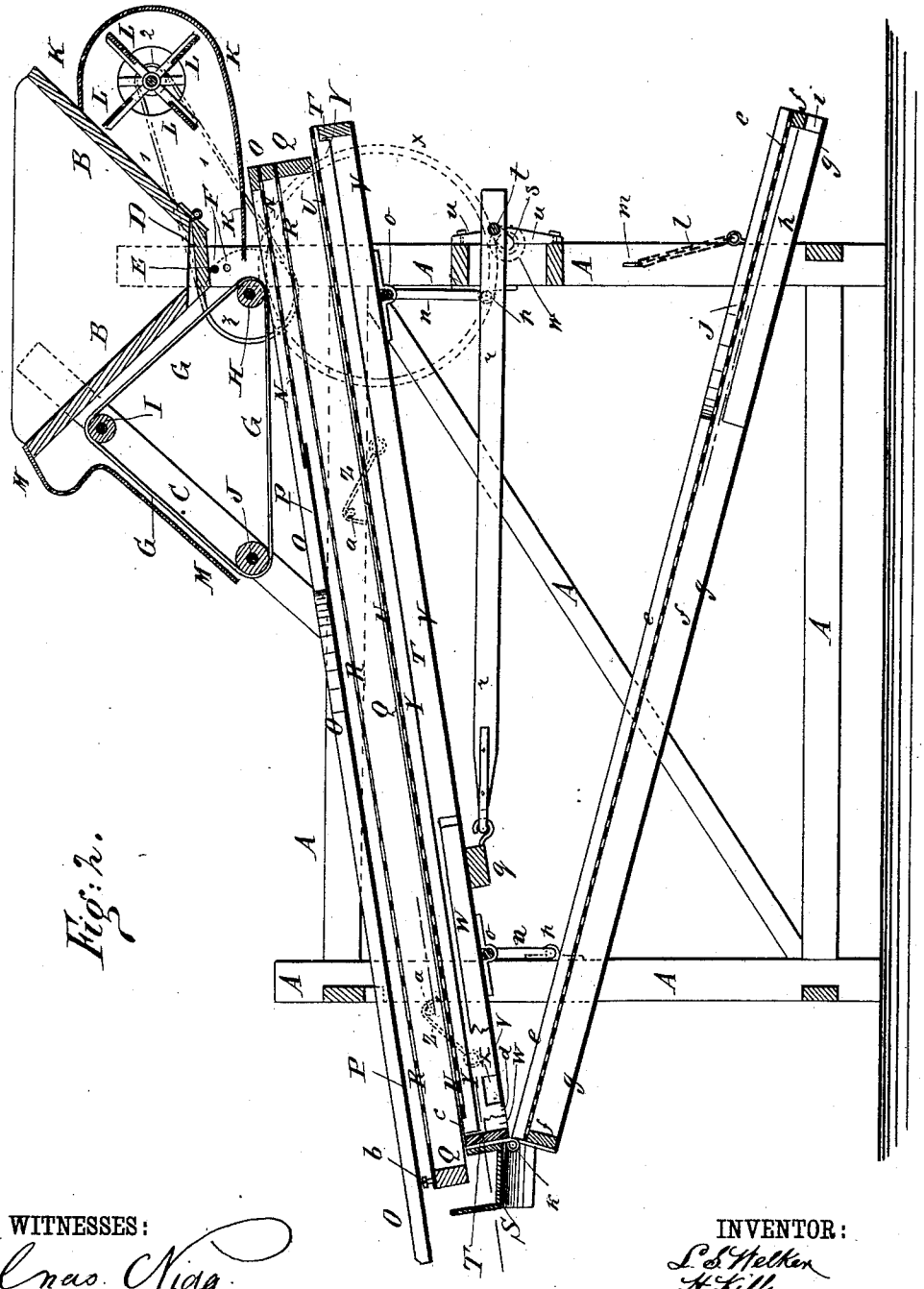


Fig: 2.

WITNESSES:

Chas. Nida

C. Sedgwick

INVENTOR:

L. S. Welker

H. Kiffe

BY Munn & Co

ATTORNEYS.

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 3 Sheets—Sheet 3.

L. S. WELKER & H. KIFFE.

FLAXSEED SEPARATOR.

No. 359,044. Patented Mar. 8, 1887.

Fig. 5.

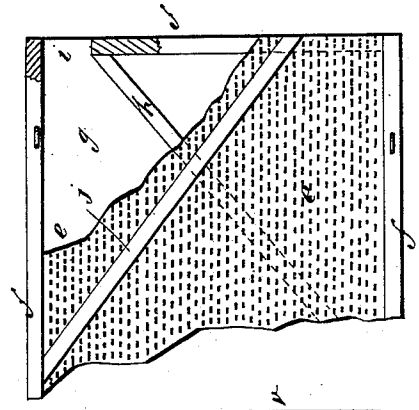


Fig. 3.

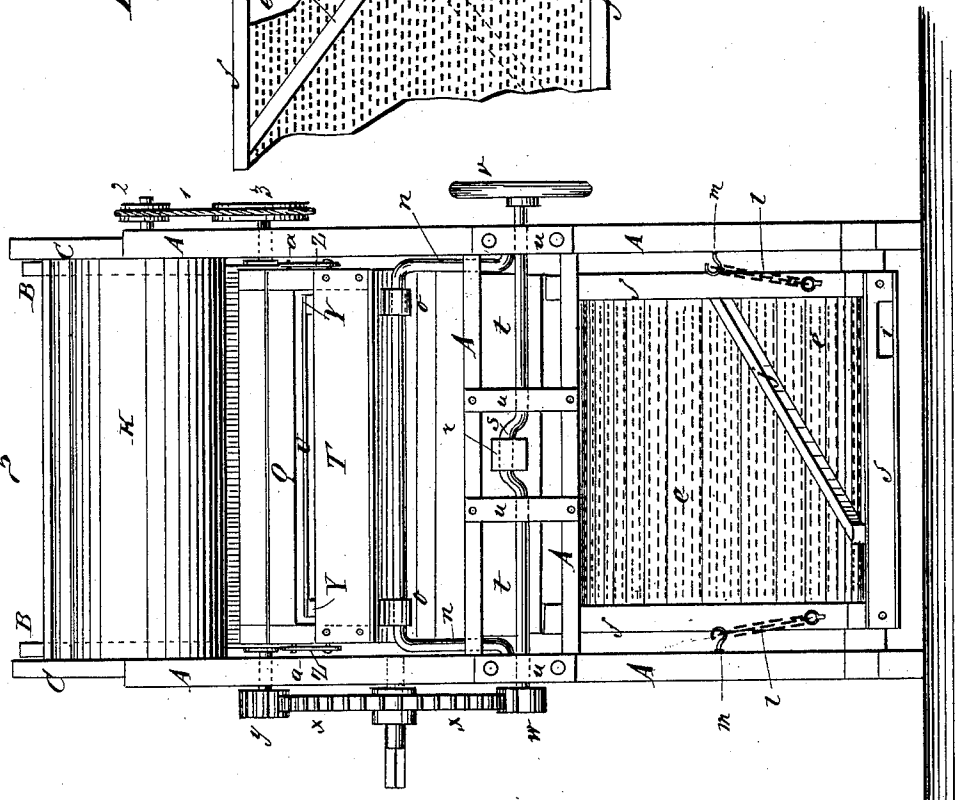
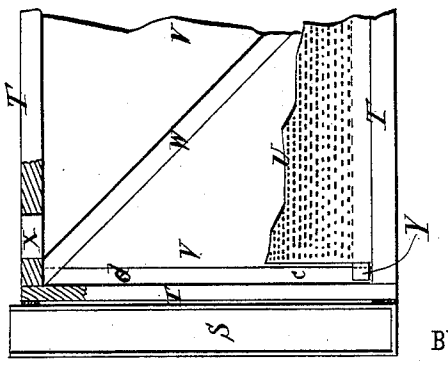


Fig. 4.



WITNESSES:

Chas. Nida.

C. Sedgwick

BY

INVENTOR:

L. S. Welker

H. Kiffe

Munn & Co

ATTORNEYS.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

LORENZO STULL WELKER AND HARRY KIFFE, OF BEAVER CREEK, MINN.

FLAXSEED-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 359,044, dated March 8, 1887.

Application filed July 2, 1886. Serial No. 206,940. (No model.)

To all whom it may concern:

Be it known that we, LORENZO STULL WELKER and HARRY KIFFE, of Beaver Creek, in the county of Rock and State of Minnesota, have invented a new and useful Improvement in Flaxseed-Separators, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of our improved flaxseed-separator. Fig. 2 is a sectional side elevation of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a front end elevation of the same. Fig. 4 is a plan view of the lower part of the third screen, parts being broken away. Fig. 5 is a plan view of the lower part of the fourth screen, parts being broken away.

The object of this invention is to provide flaxseed-separators constructed in such a manner as to remove straws, stems, and other light impurities, grain, heavy impurities, and small seeds from flaxseed, and which shall be simple in construction, convenient in use, and effective in operation.

The invention consists in the construction and combination of the various parts of the flaxseed-separator, as will be hereinafter fully described and then claimed.

A is the frame of the machine, the forward parts of which are extended upward, and to and between their upper ends is secured the hopper B. The hopper B is strengthened in position by inclined braces C, the upper ends of which are secured to the upper parts of the ends of the said hopper, and their lower ends are secured to the top side bars of the frame A.

The bottom D of the hopper is made narrow, and is hinged at its outer edge to the lower edge of the outer side of the said hopper. The hopper-bottom D is supported adjustably by pins E passing in through holes F in the posts that support the said hopper, and upon which pins or other suitable means of support the ends of the said bottom rest. Several holes, F, are formed in the posts to receive the pins E, so that the inner edge of the bottom D can be adjusted higher or lower to regulate the size of the space between the inner edge of the said bottom and the lower edge of the inner side of the hopper, and thus cause the flaxseed to be fed to the screens in larger or smaller quantities, as may be desired.

G is an endless apron which passes around three rollers, H I J, arranged in triangular form, as shown in Fig. 2. The roller H is journaled in bearings attached to the inner sides of the posts that support the hopper B in such positions that the said roller will be at a little distance below the hopper-bottom D. The roller I is journaled to the upper parts of the braces C in such a position that the part of the endless apron G between the rollers H I will be nearly parallel with and at a little distance from the inner side of the hopper B, so that the flaxseed from the hopper will fall upon the said part of the endless apron at a point a little above the roller H. The third roller, J, is journaled to the lower parts of the braces C.

To the outer side of the hopper B is attached the casing K, the discharge-spout of which terminates beneath the hopper-bottom D in such a position that the air-blast produced by the revolution of the fan L will be discharged against the part of the endless apron below the point where the flaxseed from the hopper B falls upon the said endless apron. With this construction, the air-blast strikes the sheet of flaxseed as it falls from the hopper-bottom D, and carries the straws, stems, and other light impurities up through the space between the inner side of the hopper B and the adjacent part of the endless apron G, after which the said impurities pass down the inclined outer part of the said endless apron and fall into a spout, hereinafter described.

The inclined outer part of the endless apron G is covered by a casing, M, the side edges of which are attached to the braces C. The upper part of the casing M is curved outward and upward, and its upper edge is attached to the upper edge of the inner side of the hopper B, so as to form a chamber to receive the light impurities as they are carried up by the air-blast, and from which the said impurities pass down to the conducting-spout, hereinafter described.

The flaxseed passes down the endless apron G and falls upon the upper part of the screen N, attached to the upper part of the frame O,

to the middle and lower parts of which is attached a sheet-metal plate, P. The middle parts of the side bars of the frame O are inclined inward, and their lower parts are parallel with and at a little distance from each other, the sheet-metal plate P being similarly shaped. The middle and lower parts of the frame O and plate P thus form a spout to receive the light impurities from the outer part of the endless apron G and conduct them out of the machine.

The apertures of the screen N are made of such a size as to allow the flaxseed to pass through them, while the kernels of grain, large seed, and other coarse impurities will slide down the said screen and pass out with the light impurities through the conducting-spout O P.

The upper end and the side bars of the frame O are attached to the upper end and side bars of the frame Q, which is provided with a screen, R, having narrow slot-apertures, as shown in Fig. 1, and upon which the flaxseed and other seeds that pass through the first screen, N, fall. The flaxseed passes through the slot-apertures of the second screen, R, but other seeds larger than flaxseed roll down the said screen and fall from its lower end into the inclined spout S, through which they are conducted to the side of the machine. The spout S is attached to the lower end of the frame T, that carries the third screen, U. The third screen, U, is provided with round apertures of such a size that seeds smaller than flaxseed can pass through them and fall upon the sheet-metal bottom V, attached to the lower edge of the frame T. To the frame T is secured an inclined bar, W, the lower end of which is placed in the angle at a lower corner of the said frame T, and its upper end is secured to a side bar of the said frame.

In the lower end of the side bar of the frame T, adjacent to the lower end of the inclined bar W, is formed an aperture, X, so that the small seeds that fall upon the bottom V will be guided by the inclined bar W to the aperture X, through which they will pass out of the machine.

The third screen, U, is attached at its side edges to the upper sides of two side bars, Y, the lower ends of which abut against the lower end bar of the frame T. The lower parts of the side bars, Y, rest upon the inclined bar W, and their upper ends are rabbeted and rest upon the upper end bar of the frame T, as shown in Fig. 2, so that the third screen, U, will be held securely in place and can be readily drawn out when required.

The frame Q of the second screen, R, is held in place upon the frame T of the third screen, U, by hooks Z, hinged to the said frame T and engaging with screws or staples *a*, attached to the said frame Q, so that said frame Q and its attachments can be readily taken out when required.

The lower part of the spout O P is supported out of contact with the screen R by a screw, *b*, or other support attached to the lower end bar of the frame Q, and upon which the lower end of the said spout rests, as shown in Fig. 2.

The lower ends of the third screen, U, and bottom plate, V, do not extend quite to the lower end bar of the frame T, spaces *c d* being left for the flaxseed that slides down the screen U to fall through to the upper part of the fourth screen, *e*, which is attached to the frame *f*, and is inclined in the opposite direction from the other screens.

The screen *e* is made with apertures of such a size that the flaxseed cannot pass through them; but any smaller seed that may remain with the flaxseed will fall through the said apertures to the sheet-metal bottom plate, *g*, attached to the lower side of the frame *f*. The smaller seeds roll down the bottom *g* and are guided by the inclined bar *h* to the aperture *i* in the end of the lower end bar of the frame *f*, through which they escape from the machine. The upper end of the inclined bar *h* is attached to the side bar of the frame *f*, and its lower end is attached to the end bar of the said frame at the inner end of the aperture *i*.

The flaxseed that passes down the fourth screen, *e*, is guided by an inclined bar, *j*, to the corner of the lower end of the said screen opposite the aperture *i*, where the said flaxseed passes out of the machine. The bar *j* is inclined in the opposite direction from the bar *h*, and is attached at its upper end to the side bar of the frame *f* and at its lower end to the screen *e* and the lower end bar of the frame *f*.

The upper end of the frame *f* is connected with and supported from the lower end of the frame T by hinges *k*, so that the lower end of the said frame *f* can be raised or lowered to regulate the inclination of the screen *e*. To the upper sides of the lower parts of the side bars of the frame *f* are secured, by staples, eyebolts, or other suitable means, the lower ends of short chains *l*, the upper parts of which are hooked upon screw-hooks *m*, attached to posts of the frame A, so that the lower ends of the frame *f* and screen *e* can be readily raised or lowered.

The frame T and its attachments are supported by cranks *n*, the middle parts of which rock in bearings *o*, attached to the side bars of the said frame T. The ends of the cranks *n* rock in bearings *p*, attached to the posts of the frame A. To the lower sides of the lower parts of the side bars of the frame T are attached the ends of a cross-bar, *q*, to the center of which is hinged, by eyebolts or other suitable means, the end of a connecting-bar, *r*. The other end of the connecting-bar *r* is pivoted to a crank, *s*, formed upon the middle part of the shaft *t*, which revolves in bearings *u*, attached to the end of the frame A.

To one end of the crank-shaft *t* is attached a balance-wheel, *v*, to give steadiness of motion to the mechanism. To the other end of the crank-shaft *t* is attached a pinion-wheel, *w*, the teeth of which engage with the teeth of the gear-wheel *x*, journaled to the frame A, and to

which motion can be given by a crank, a pulley and belt, or some other suitable means applied to the outer journal of the said gear-wheel. With this construction the revolution of the crank-shaft *t* will give a longitudinal vibration to all the screens. The teeth of the gear-wheel *x* also engage with the teeth of the pinion-wheel *y*, attached to a journal of the roller H, to give motion to the endless apron G. To the other journal of the roller H is attached a grooved pulley, *z*, around which passes a round belt, 1. The belt 1 also passes around a smaller grooved pulley, 2, attached to the shaft of the fan L, so that the said fan will be driven from the said roller H.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. A flaxseed-separator comprising the frame A, the hopper B, the fan-blower K L, a driving mechanism, the rollers H I J, the endless apron G, passing around the said rollers, the casing M, covering the outer part of the said endless apron, and the conducting-spout O P, substantially as herein shown and described, whereby light impurities will be separated from the flaxseed before it reaches the screens, as set forth.

2. A flaxseed-separator comprising the hopper, the triangularly-arranged endless apron, the blower delivering its blast upon the lower end of one side of the belt below where the seed is delivered, a screen below the hopper, and the angle of the apron adjacent thereto, the plate at the delivery end of the screen extending below the angle of the apron opposite the hopper to receive falling impurities, and other screens below the said screen, substantially as set forth.

3. A flaxseed-separator comprising the hopper B, the frame O, and the plate P, the frame Q, having the screen R, and a screw, *b*, supporting the plate P at its outer end, the frame T, connected with the frame Q and having the screen U and the bottom V below the same, the crank-shaft and connections for operating frame T, and the screen *e* and plate *g* below the frame T, substantially as set forth.

4. A flaxseed-separator comprising the frame A, the hopper B, the screen N, and conducting-spout O P, the frame Q, screen R, and conducting-spout S, a driving mechanism, the frame T, having aperture X, inclined guide-bar W, the screen U, and side bars, Y, both shorter than the said frame, and the frame *f*, inclined in the reverse direction, hinges *k*, and adjustable chains *l*, said frame *f* having guide-bar *j* and bottom plate, *g*, substantially as herein shown and described.

LORENZO STULL WELKER.
HARRY KIFFE.

Witnesses:
S. P. HENDERSON,
O. D. BRICTSON.