

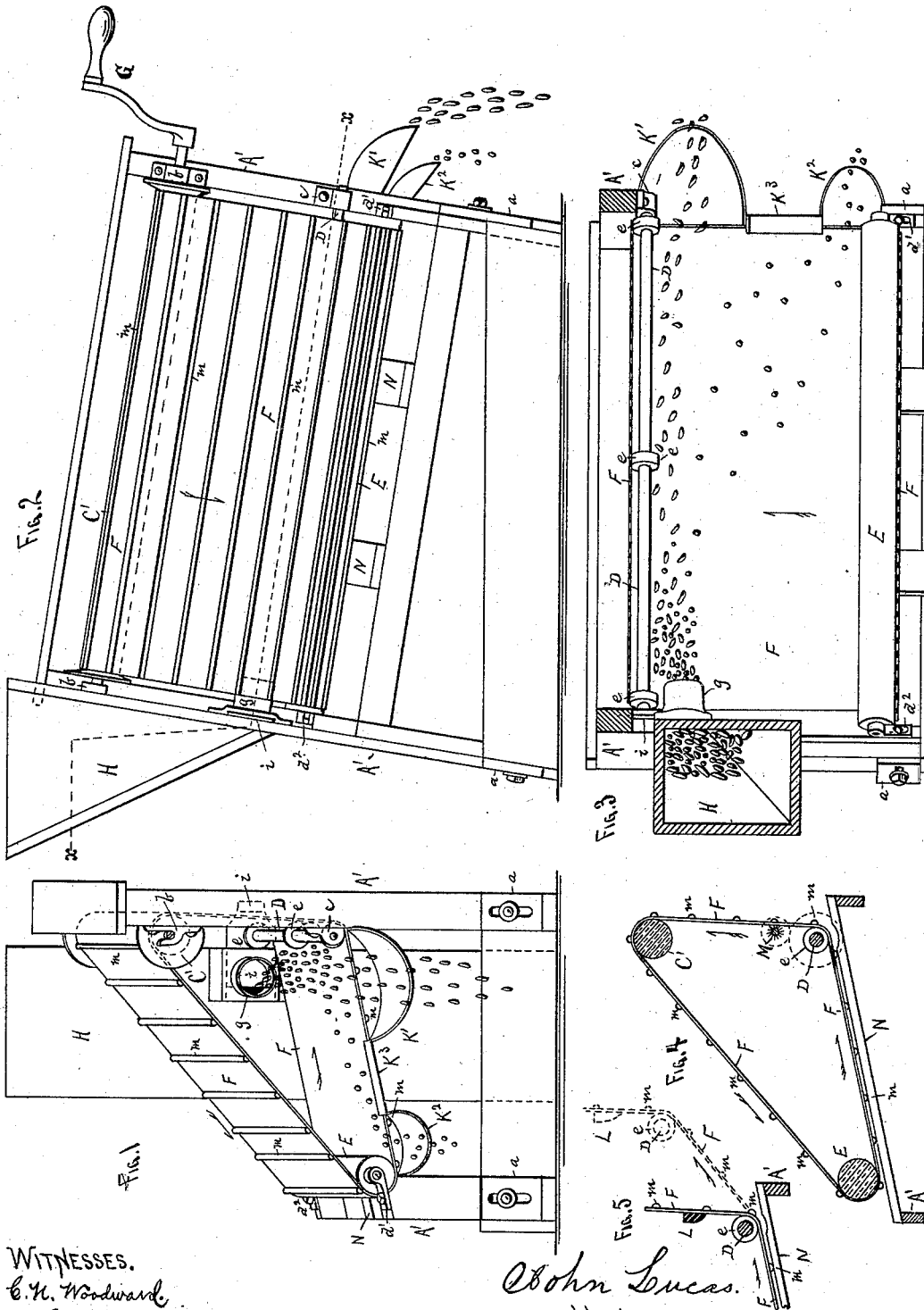
(No Model.)

J. LUCAS.

GRAIN SEPARATING MACHINE.

No. 343,999.

Patented June 22, 1886.



WITNESSES.  
C. H. Woodward.  
W. S. Webster.

John Lucas.  
INVENTOR.

# UNITED STATES PATENT OFFICE.

JOHN LUCAS, OF HASTINGS, MINNESOTA.

## GRAIN-SEPARATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,999, dated June 22, 1886.

Application filed August 31, 1885. Serial No. 175,842. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN LUCAS, a citizen of the United States, and a resident of Hastings, in the county of Dakota and State of Minnesota, have invented certain new and useful Improvements in Grain-Separating Machines, of which the following is a specification.

This invention relates to machines for separating grains and seeds; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described.

In the drawings, Figure 1 is an end elevation, and Fig. 2 a side elevation, of the machine complete. Fig. 3 is a plan view in section on the line *x x* of Fig. 2. Figs. 4 and 5 are sectional details showing the arrangement of the inclined carrying-belt, &c.

A' represents the main frame, adapted to be raised and lowered by adjustable feet *a*, so that the inclination of the frame may be altered to any desired extent. Across the upper part of the frame A', on the rear side, is journaled in bearings *b* a roller, C', and below this roller is journaled in bearings *c* a shaft, D, while across the front of the frame A' is journaled in adjustable bearings *d' d''* a roller, E, similar to the roller C'. Around these two rollers C' and E, and also around the shaft D, an endless belt, F, is placed, as shown. The shaft D is shown provided with three enlargements or drums, *e*, around which the belt F runs, so that the belt is held away from the shaft and runs on the drums *e* only, leaving the space between the belt and shaft unobstructed. As before stated, the bearings *d' d''* of the roller E are adjustable, so that the tension of the belt F may be regulated as required. The shaft of the roller C' is provided with a crank, G, by which roller C', and with it the belt F, may be revolved.

K' K<sup>2</sup> represent two spouts attached to the frame A', with their inner edges beneath the edge of the belt F, into which the material is discharged from the machine, the two spouts being adapted to catch the different grades or qualities of material and discharge them into separate vessels. In the drawings these spouts are shown some distance apart and the intervening space filled by a shield, K<sup>3</sup>, which prevents the grain from running off over the edge of the belt, but will guide it all into the spouts K' K<sup>2</sup>.

H is a feed-hopper on the front end of the machine, having a spout, *g*, leading from its bottom, so as to discharge the contents of the hopper upon the lowermost section of the endless belt F, as shown. This spout *g* will be provided with a slide, *i*, by which the flow of the grain may be regulated or entirely shut off, as required.

The frame A' is adapted to be so adjusted as to cause the belt F to run in an inclined position from the spout *g* toward the roller E, and also toward the front of the machine, as shown. The rollers and the shaft D run parallel with each other and at an incline, as shown in Fig. 2, and the roller E is lower than the shaft D; hence the belt F is inclined away from the spout *g* in all directions, and this inclination may be varied to any desired extent by the adjustable legs *a*. The grain being fed in through the spout *g*, runs down the inclined belt, and the latter, traveling in the direction indicated by the arrows or in an upward direction, retards the grain and causes the heavier or rougher berries or kernels to be conveyed along beneath and alongside the shaft D, and gradually worked out over the belt F into the discharge-spout K', while the smaller and smoother berries or kernels, not being so easily influenced by the friction of the belt F, gradually work down the inclined belt into the discharge-spout K<sup>2</sup>.

This invention will be found especially advantageous in separating wild peas and similar deleterious seeds from wheat, as the roundness of the pea-kernel will cause it to easily and quickly separate itself from the elongated kernels of the wheat.

I have shown in the drawings representations of the long or oval-shaped wheat-kernels, and the spherical and smaller wild-pea kernels, illustrating the manner in which the separation takes place. It is evident, however, that the machine is equally applicable to the separation of nearly all the different kinds of grain—such as oats, rye, barley, and similar seeds, &c.—from wheat by adjusting the inclination of the belt F to suit the different kinds of grain.

One very important advantage gained by passing the grain through the interior of the belt F is, that it is subjected to a much greater degree of agitation than would occur were it

merely passed over the exterior of the belt, as the manner of running the belt around the shaft D causes the grain to be carried upward behind the shaft and then fall down again upon the belt over and over again in its passage over the belt, thus causing a more thorough separation than could otherwise be obtained. By this constant agitation the different kernels of grain are thoroughly separated, and the smaller berries allowed to flow down the inclined belt and be discharged from the spout K<sup>2</sup>, as shown. A large percentage of the grain in running through the machine passes beneath the shaft D, and some of the kernels cling to the belt F, and to remove these adhering kernels I arrange across the frame A', inside the belt F, a stationary scraper, L, adapted to remove the adhering grain and cause it to fall back again upon the belt. The arrangement of this scraper L is clearly shown in Fig. 5, while in Fig. 4 I have shown a circular brush, M, adapted to be revolved by gears or other means against the cloth to accomplish the same result and perform the same function as the scraper L. The belt F is shown provided on the outside with slats, m, which serve to hold it extended and prevent it sagging down, and to still further support the belt I arrange a number of carrying-bars, N, beneath the lower sections of the belt and its slats m, on which the slats run from the roller E to the shaft D. Under some circumstances the roller C' might be dispensed with and the belt run around the shaft D and roller E; but the presence of the roller C' gives more space in which to handle the grain than could be obtained by merely using two rollers. Masses of grain are frequently encountered containing several different varieties, requiring different inclinations of the belt to separate them, in which event I shall use the arrangement shown in the dotted lines in Fig. 5. When a mixture of wild peas, wheat, and oats, rye, or barley is met with, the slight incline shown by the full lines in Fig. 5 will be sufficient to separate the peas from the wheat and other grains, but an increased incline, as shown by the dotted lines, will be required to separate the barley or rye from the wheat, and by using two of the shafts D this second separation can be accomplished in the one machine.

Having thus described my invention, what I claim as new is—

55 1. In a grain and seed separating machine, an endless belt and rollers or drums over which said belt runs, the lower section of said belt being inclined transversely and longi-

tudinally, the motion of said section of the belt being from the lower to the upper part, in combination with a feed-spout which discharges the material to be separated upon the interior surface of the belt and upon the highest portion of said lower section, substantially as set forth. 65

2. In a grain-separating machine, an endless belt and suitable rollers and shafts upon which said belt runs, in combination with a feed-hopper having a feed-spout which discharges its contents upon said belt, said belt being inclined away from said spout, and discharge-spouts at the opposite edge of said belt, substantially as set forth. 70

3. In a grain-separating machine, the combination of frame A', having adjustable legs a, roller C', shaft D, having drums e, adjustable roller E, endless belt F, having slats m, and adapted to be revolved with and around said rollers and said shaft, feed-hopper H, having discharge-spout g, and discharge-spouts K' K<sup>2</sup>, substantially as and for the purpose set forth. 75 80

4. In a grain-separating machine, an endless traveling belt and rollers and shafts over which said belt runs, in combination with a feed-hopper having a feed-spout which conveys material onto said belt, discharge-spouts which receive the separated material from said belt, and a scraping device located within said belt and in contact with the inner surface thereof, substantially as set forth. 85 90

5. In a grain-separating machine, the combination of an endless belt, F, having slats m at suitable intervals, suitable rollers and shafts over which said belt runs, a feed-hopper, H, having feed-spout g, and carriers N, which support said endless belt, substantially as set forth. 95

6. In a grain-separating machine, the combination of an endless traveling belt, and a hopper which conveys material to the same at one edge thereof, said belt being inclined transversely away from said hopper, and the section of said belt upon which the material is separated being inclined longitudinally, and having more than one inclination, substantially as set forth, whereby more than two kinds of material may be separated at the same time. 100 105

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses. 110

JOHN LUCAS.

Witnesses:

C. N. WOODWARD,

H. S. WEBSTER.