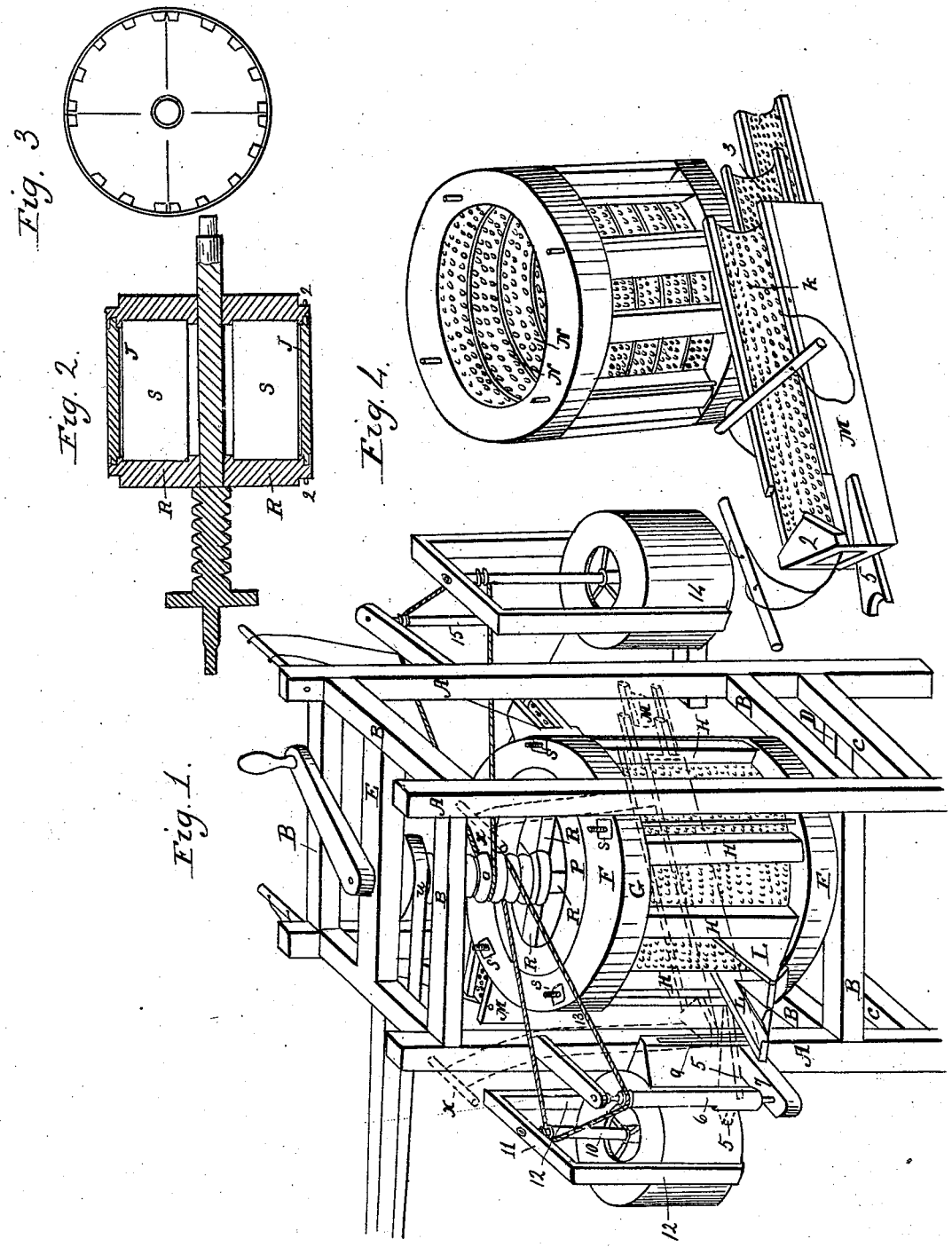
M. THOMAS.

Grain Winnower.

No. 213. Patented May 30, 1837.



UNITED STATES PATENT OFFICE.

MARKWELL THOMAS, OF ALFRED, MAINE.

IMPROVEMENT IN MACHINES FOR WINNOWING, CLEANING, AND SEPARATING GRAIN.

Specification forming part of Letters Patent No. **213**, dated May 30, 1837.

To all whom it may concern:

Be it known that I, MARKWELL THOMAS, of Alfred, in the county of York and State of Maine, have invented a new and useful Machine for Winnowing, Cleaning, and Separating Grain, and which I call "Thomas' Grain-Cleanser and Grain-Separator;" and I do hereby declare that the following is a full and exact description thereof.

A frame made of four posts six inches square and six feet high, (marked A,) fastened together eighteen inches from the bottom by four girths, six inches square and three feet long, exclusive of the tenons, (marked B,) and four like girths at the top of said posts, (marked B,) with two cross-girths (marked C,) one foot from the bottom, into which cross-girths is framed a bridge-piece (marked D) for a spindle to rest upon, and another bridge-piece (marked E) is framed into two of the top girths, through which the upper end of said spindle runs. On the four first-named girths is firmly fastened a perpendicular cylindrical frame, of wood, covered at each end, top, and bottom with circular iron plates or iron flanges, (marked F,) which cylindrical frame consists of two circles or wheels, of hard wood, (marked G,) three inches wide by two and a half inches thick, and four feet in diameter from outside to outside, connected by twelve studs, two by three inches, and eighteen inches high, (marked H,) the whole firmly fastened together by six iron rods of one-half inch diameter passing through the rim of said circles or wheels and through the said circular iron plates or iron flanges, and fastened by nuts at the upper surface, (marked I.) The said circular plates or flanges are of cast-iron, one-fourth of an inch thick, four feet diameter from outside to outside, five and a half inches wide, with lips or projections or rabbets one inch long upon their inner circle, and turned toward each other. Within this cylindrical frame, and firmly fastened to the inner surface of said wooden circles or wheels, (marked G,) and upon the inside of said studs, (marked H,) is a cylinder, of sheet-iron, perforated from its outer surface inward with very small holes, within one fourth of an inch of each other, which cylinder is marked K. On this cylinder, near its bottom, is an aperture of three inches by two inches in size to admit the grain, to which aperture is attached a double receiving-spout, (marked L,) with movable doors, by which either spout may be closed at pleasure. Upon the opposite side of said cylinder, and near its top, is another aperture of same size as the first aperture, to which is attached a spout, through which the grain is discharged from the cylinder into a box, (marked M,) which box contains three sieves, and is shaken by an iron beater, (marked 15.) Upon the inside of this cylinder is firmly fastened an iron spiral plate projecting five-eighths of an inch from said inner surface, (marked N,) running spirally six times around said inner surface, the threads being two inches apart from the left side of the first or lower aperture, and terminating at the left top of the second aperture. This spiral plate of iron is fastened by iron hooks let into said plate and driven through said cylinder into said stud, which hooks are driven upon the under side of said spiral plate. Within this cylinder runs a spindle, (marked O,) resting on a box, movable up or down by a screw in said lower bridge-piece, D, and through said upper bridge-piece, E, to which spindle is attached cylindrical frame-work, covered at its ends with circular iron plates or iron flanges, (marked P,) like and corresponding to the cylindrical frame-work first described, with the exception that it has sixteen studs, and that the lips or projections or rabbets of the circular iron or flanges are on their outer circumference, and forming a joint over the inner cylinder with the lips or projections or rabbets on the inner circumferences of the first described circular iron plates or flanges, (marked F.) Upon the shoulders of the inner cylinder, and outside of the lips or projections or rabbets of the said circular plate or flanges, four iron sweeps are placed at equal distances, are fastened by riveting through said shoulders or wheels, which sweeps project three-fourths of an inch from said shoulders or wheels, and are one inch wide, and are marked 2 on the sectional drawing of said inner cylinder, which iron sweeps the grain from the space under the flanges and between said lips and the outer cylinder and prevents the grain from entering the joints and clogging the machine. This inner cylindrical frame-work is attached to said spindle O by four arms at top and bottom, (marked R,) into which arms are inserted four fans, made of thin wood, (marked S,) on said section of said inner cylinder; and upon the outer surface or circumference of this inner

cylindrical frame-work is fastened a sheet-iron cylinder perforated with larger holes than cylinder K, having an opening (marked F) from top to bottom of three-eighths of an inch opposite to each fan, which inner cylinder is to run as close to the iron spiral plate of cylinder K as it can without friction on said spiral plate.

Upon the top of spindle O, and close under bridge-piece E, is a pulley, (marked U,) over which a band runs to attach the same to water or steam power, by which the machine is set in motion.

Over the double spout L a sieve-box, M, four feet long, one foot wide, and six inches deep, containing three sieves, is suspended by lines fastened to two pins (marked X) inserted into and projecting from the tops of posts A. The first or upper sieve (marked 1) extends three feet down said box to a triangular cap of wood, (marked 2,) at which piece of wood and one foot above the same the sieve is flush with the top of said box, and materials not passing through said sieve nor blown away are thrown off by said triangular wood before they reach said receiving-spout L L. This sieve 1 is sufficiently coarse to let the grain pass easily through it, throwing off all matter larger than the grain. Under this sieve is a second sieve, (marked 3,) which terminates over the left or farther half of this double spout L L, and is so fine as not to admit full and perfect grain passing through it; but withered and smaller grain will pass through it into the third sieve, (marked 4,) which last sieve terminates over the right hand or first half of the double spout, carrying the smaller or withered grain into that spout when required. These sieves are all in frames running in grooves in said box, and can be removed at pleasure. To the outside of this sieve-box is fastened a piece of wood with a shoulder, (marked 5,) against which a beater (marked 6) moved by a band running round spindle O strikes said sieve. This beater is of iron, two feet long, and oval where it strikes said wooden shoulder 5, with a pulley of different-sized gains to increase its speed. It runs in two arms (marked 7) inserted into and extending fifteen inches from the left post A. Upon said left post A, and opposite to the lower end of the sieve-box M, is attached a bellows-box, (marked 8,) twenty inches diameter, eighteen inches high, contracted to a nose (marked 9) of one inch wide and the height of said box, in which bellows-box runs a spindle (marked 10) carrying these fans, made of thin wood, which spindle runs at its bottom on an arm extending twenty inches from said left post, on which arm said bellows-box (marked 8) also rests, and at top it runs in bridge-piece, (marked 11,) which bridge-piece is supported by two studs (marked 12) attached to the sides of said bellows-box. This spindle, like the beater, has pulleys of different gains to increase or diminish its speed, and is carried by the same band, 13, that carries said beater. Upon the diagonal corner of the frame A is attached another bellows-box, (marked 14,) with nose, spindle, fans, pulleys, and bands, in all respects like the bellows-box last described.

Process of cleansing and separating.—The grain may be placed in the sieve over the receiving-spout by a hopper or by elevators. The chaff is thrown off by the wind from the bellows-box. The grain passes through the first sieve, and by the wind striking it while falling is thereby thrown to the upper end of the second sieve. On passing down the second sieve to the spout all small or imperfect grains fall through to the lower sieve and are prevented from entering the cylinder by closing the door of the receiving-spout nearest to the lower sieve. When the grain passes into the cylinder it is carried up on the spiral plate by force of the wind raised by the powerful motion of the inner cylinder, and is discharged from the upper aperture and spout on the second sieve-box, where it is further cleansed of all dirt, and the grain broken in passing the machine is separated from the whole grain. The inner cylinder revolves five hundred times per minute, and, raising a strong wind with its rotary motion, carries the grain six times round the perforated outer cylinder with such velocity that all impure grain or extraneous matter is broken to dust and thrown out through the holes of the said outer perforated cylinder. By this machine all smut, dust, and impurities—such as rat and mice dirt, smut, garlic, and other seeds—are expelled from the grain, and it is prepared for grinding in a perfectly pure state, which cannot nor has not yet been accomplished by any other process ever yet known.

What I claim as my invention and not previously known in the above machine is—

1. The employment of the iron circular plates or flanges, which are bound in place by the iron rods, by which the cylinders are made strong.

2. The leaving a space between the upper and lower ends of said cylinders and inserting in the shoulders of the inner cylinder the iron sweeps, (marked 2,) by which the grain is prevented from entering the joints and the machine kept free.

3. The employment of the spiral plate (marked N) and the mode of arranging the same by which its upper surface is left smooth and uninterrupted by fastenings.

4. The adding the middle sieve, (marked 3,) by which the withered, defective, or imperfect grain is separated from the full and perfect grain.

5. The double spout with doors, (marked L L,) by which the smaller or larger grain, the perfect or imperfect of any one kind of grain, may be let into or kept out of the cylinder at pleasure.

MARKWELL THOMAS.

Witnesses:

THOMAS K. DODGE,

JOHN ANDERSON.