

No. 778,094.

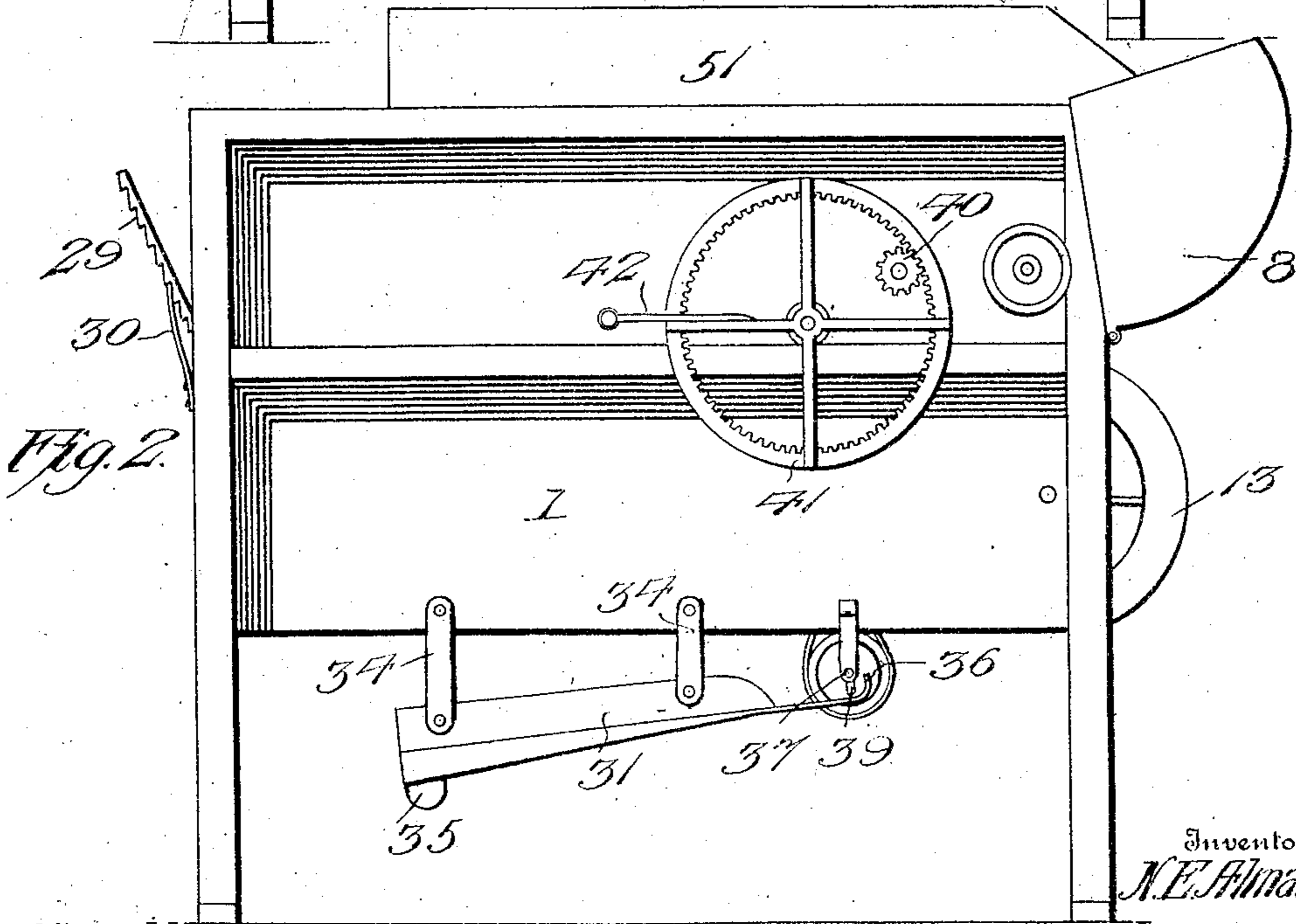
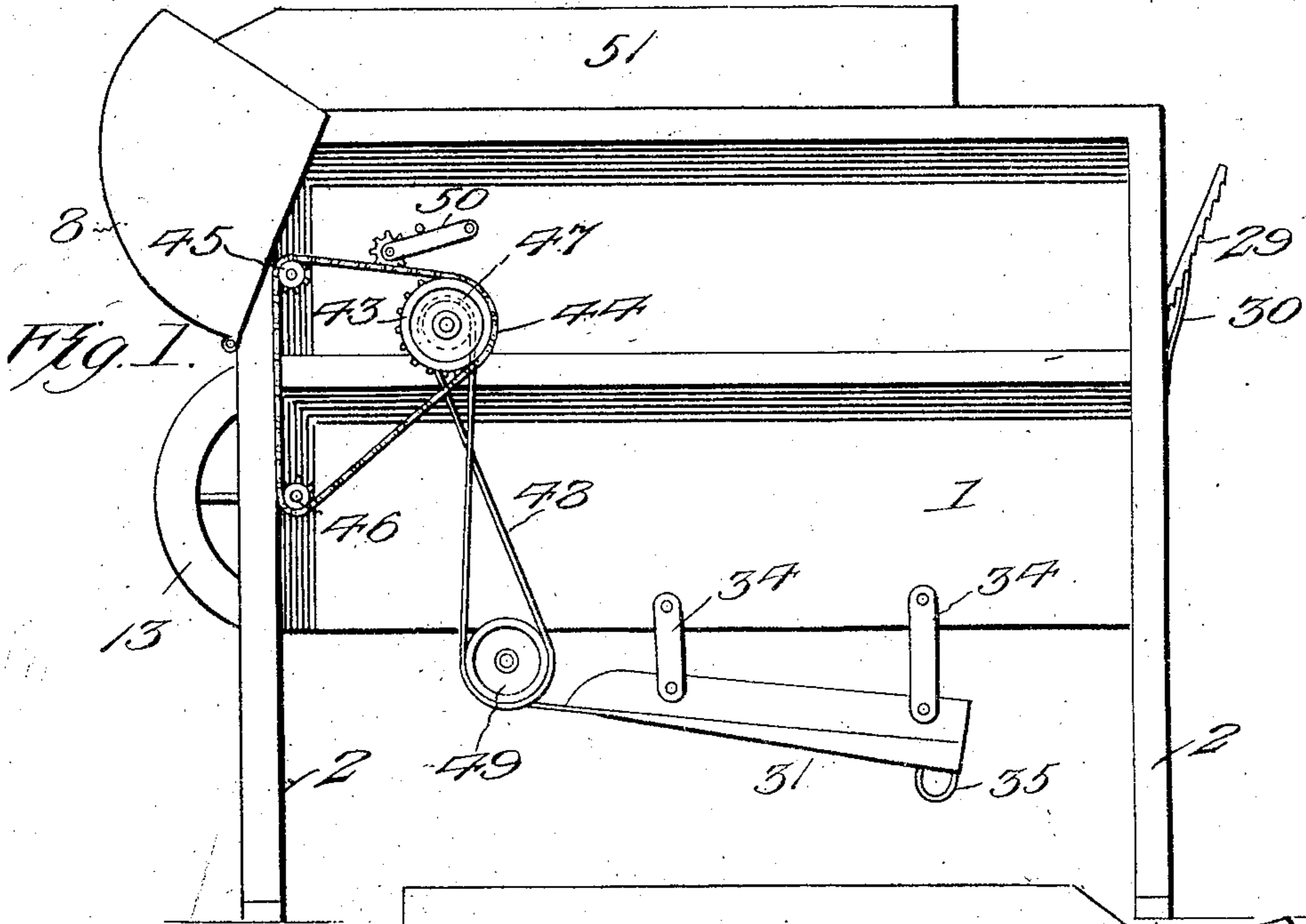
PATENTED DEC. 20, 1904.

N. E. ALMAN.
HULLING MACHINE.

APPLICATION FILED JULY 1, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



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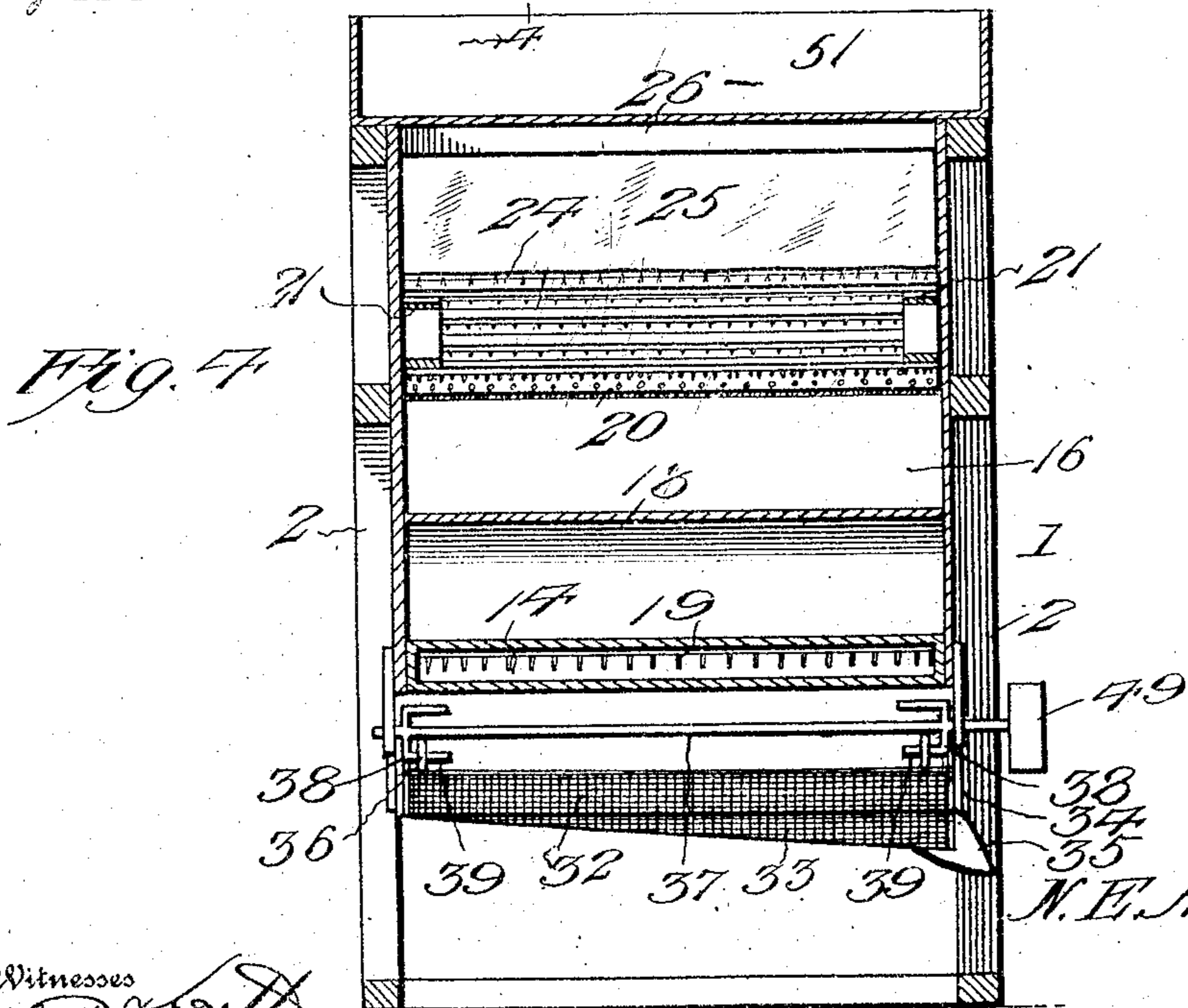
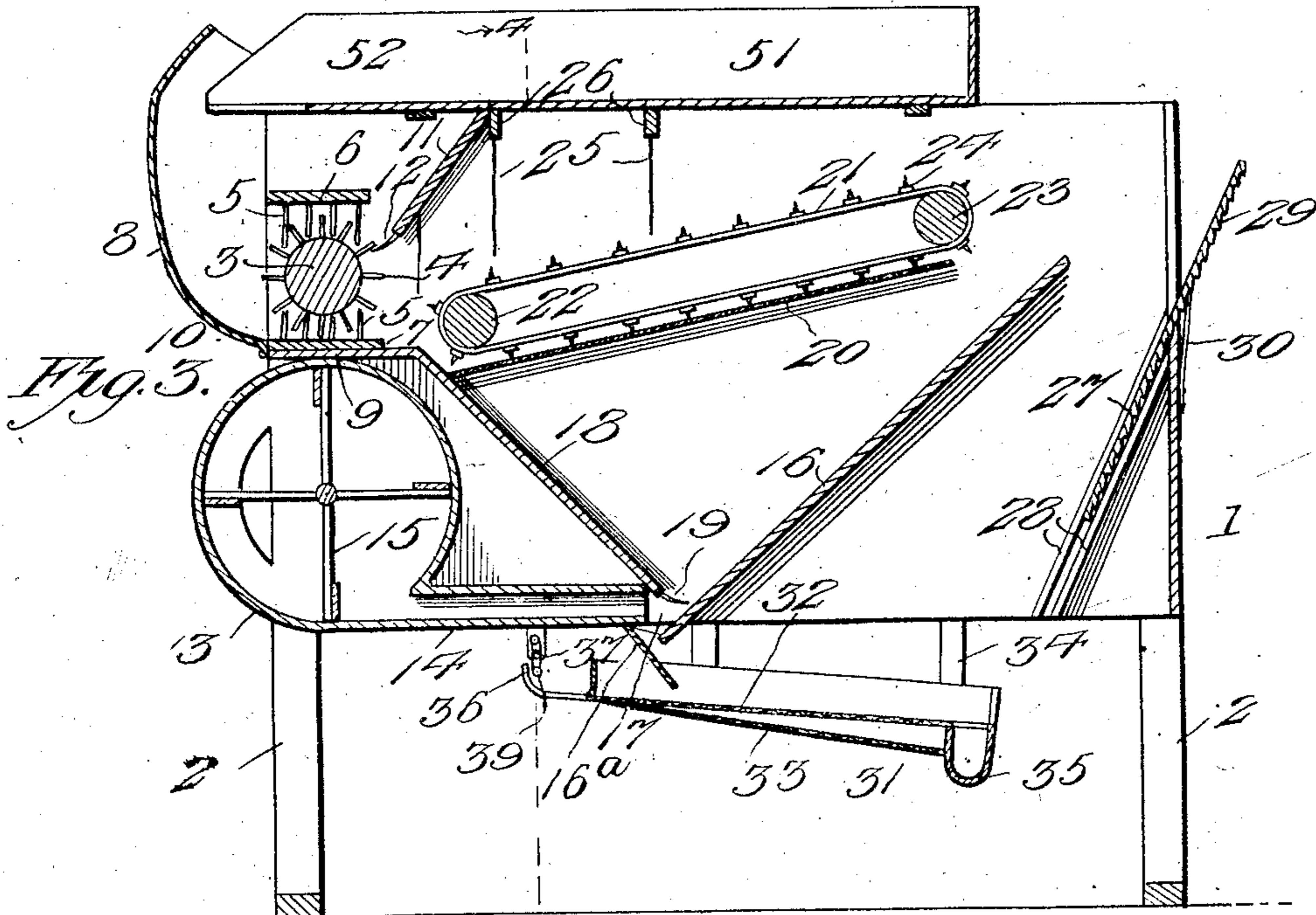
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NESBET E. ALMAN, OF MOORESVILLE, NORTH CAROLINA.

HULLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 778,094, dated December 20, 1904.

Application filed July 1, 1904. Serial No. 214,946.

To all whom it may concern:

Be it known that I, NESBET E. ALMAN, a citizen of the United States, residing at Mooresville, in the county of Iredell and State of North Carolina, have invented new and useful Improvements in Hulling-Machines, of which the following is a specification.

This invention relates to hulling-machines, the object of the invention being to provide a machine for effectively hulling peas, beans, and the like and separating the hulls from the kernels and conveying the same out of the machine at different points.

The construction of the machine is such that the material may be fed to the threshing-cylinder and concave so that a single or double threshing action may be obtained, or, in other words, the peas or beans may be subjected to the action of one concave or two concaves according to the condition of the material.

The invention also embodies a novel arrangement of separating-throat whereby the peas or beans and the pods are more effectively and thoroughly separated and discharged at different points.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination, and arrangement of parts, as hereinafter fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a hulling-machine embodying the present invention. Fig. 2 is a similar view taken from the opposite side. Fig. 3 is a vertical longitudinal section through the machine. Fig. 4 is a vertical cross-section on line 4 4, Fig. 3.

Like reference-numerals designate corresponding parts in the several views.

The machine in its preferred embodiment comprises a suitable casing 1, supported at a suitable height by means of legs 2. Adjacent to the upper forward corner of the casing and within the same is arranged a threshing-cylinder 3, provided with radial teeth 4, which cooperate with and pass between the corresponding teeth 5 of a pair of concaves arranged one above and the other below the cylinder 3, the upper concave being designated

6 and the lower concave 7. While the main body portions of the upper and lower concaves are flat and disposed horizontally, the teeth 5 thereof vary in length, so that their points lie in a plane substantially concentric with the axis of movement of the cylinder 3.

Arranged in front of the cylinder and concaves is a breastplate 8, which inclines downwardly and converges toward the body of the lower concave, and thereby forms a hopper, or rather the front portion of a hopper, down which the material is fed to the threshing mechanism. In this connection it will be noted that the lower edge of the breastplate 8 connects with a floor-plate 9, upon which the lower concave-body 7 rests, and the said breastplate thus connects with the floor 9 below the concave 7, so as to leave a shoulder 10, against which the peas or beans lodge and by means of which their flow is arrested and retarded, this action insuring the threshing and breaking up of the pods, which would be impractical were the breastplate flush with the upper surface of the lower concave-body 7, thus allowing the peas or beans to pass smoothly to the lower concave. In other words, the shoulder 10 by arresting the pods acts to present the same crosswise rather than lengthwise to the teeth of the cylinder and lower concave.

In rear of the upper concave is arranged the rear wall of the hopper, which consists of an inclined board 11, provided at its lower end with tines 12, which closely approach the cylinder 3 and intervene between the cylinder-teeth 4, thus preventing the peas or beans from dropping in rear of the cylinder. Now where the peas or beans are in a dry condition they are fed downward in front of the threshing-cylinder 3 and are subjected only to the action of the cylinder and lower concave. Where, however, the material to be threshed is wet, it is deposited in the rear portion of the hopper and allowed to move downward along the board 11, so that it is first subjected to the action of the upper concave and subsequently subjected to the action of the lower concave, thus giving a double threshing action.

Located beneath the threshing-cylinder is a fan-casing 13, having a horizontally-disposed

spout 14, which terminates at or near the center of the machine, as shown in Fig. 3. Within the casing is mounted a fan 15 of any suitable construction, which creates a blast of air which is delivered from the mouth of the spout 14. Immediately adjacent the rear portion of the spout is what may be termed a "return-board" 16, which inclines toward the front of the machine and is located at a sufficient distance from the discharge-spout 14 to leave a separating-throat 17.

Inclined at a reverse angle to the board 16 is what I term a "chute-board" 18, which extends from the floor 9 downward and terminates adjacent to the discharge end of the spout 14, where it is provided with tines 19, which curve slightly upward as they closely approach the reversely-inclined return-board 16, as clearly shown in Fig. 3. The tines 19 extend across the separating-throat, and while they allow the kernels to drop past the spout 14 the blast of air operates on the hulls and drives the same upward along the return-board, from whence they are blown from the machine.

Located above the boards 16 and 18 is an inclined riddle 20, which consists of a perforated plate 20, the perforations therein being of sufficient size to allow the peas or beans to drop therethrough upon the boards 16 and 18. Above the riddle 20 is arranged an endless conveyer 21, passing around rollers 22 and 23 at opposite ends and provided with transversely-extending rake-bars 24, having suitable teeth which travel in contact with or in close proximity to the riddle 20, the said conveyer serving to carry the hulls or pods toward the rear of the machine and drop them upon the return-board 16, from which they are blown by the air-blast.

Arranged above the endless conveyer 21 are one or more flexible checking-aprons 25, each of which may consist of canvas of suitable width and length suspended at its upper edge from a cross-bar 26 or other convenient part of the machine, such as the rear hopper-wall 11. These aprons catch and check the flying peas or beans and prevent them from being hurled out of the machine. At the rear of the machine is an inclined tail-board 27, adapted to slide up and down between suitable cleats or guides 28 and provided along its rear face with teeth 29, adapted to be engaged by a supporting spring-catch 30, by means of which the upper end of the tail-board may be held at any desired elevation. The tail-board is adapted to catch and check any flying peas or beans which reach the rear end of the machine and return them to a suitable receptacle placed in proper position under the machine.

Located beneath the lower edge of the return-board 16 is a double sieve or grader 31, which is inclined reversely to the return-board 16 and swung at its lower end upon pivotal links 34. Extending in front of the discharge-

throat 17 and at an inclination opposite to that of the board 16 is a check-board 16^a, which arrests the falling peas and directs them onto the sieve 32 without injury to them. This sieve is provided with upper and lower screens 32 and 33 of different mesh and also with a discharge-spout 35, by means of which the graded material from the coarse screen 32 is delivered into a suitable receptacle placed beneath the same. The finer material passes through the screen 31 into any suitable receptacle placed thereunder. At its upper end the sieve 31 is provided with curved extensions or hooks 36, which are acted upon by an agitator-shaft 37, provided at or near its opposite ends with cross-heads 38, having terminal inwardly-projecting pins 39, which cooperate with the hooks 36 and serve to impart a longitudinal thrust to the double sieve as a whole. In the return movement of the sieve the hooks 36 strike against the agitator-shaft and serve to jar or jolt the screen, causing the coarser material to slide along and off the upper screen. This operation acts to thoroughly agitate and toss or shake the sieve, thus keeping the same clean and free from clogging material. On the shaft of the roller 22 there is mounted a pinion 40, which meshes with and is driven by an internal gear 41, mounted at one side of the machine and operated by a suitable hand-crank 42. At the end opposite the pinion 40 the shaft of the roller 22 is provided with a sprocket-wheel 43, around which passes a chain 44. Said chain also passes around pinions 45 and 46 on the threshing-cylinder shaft and fan-shaft, respectively. On the same shaft with the wheel 43 is a pulley 47, from which extends a cross-belt 48, passing around a pulley 49 on the agitator-shaft 37. By the means described motion is imparted to the several shafts of the machines.

50 designates a sprocket-chain tightener which cooperates with the chain 44.

In addition to the stationary hopper above described I also employ an auxiliary hopper, or what may be termed a "shiftable" hopper-section, (shown at 51,) in the form of a shallow box or tray having bottom and side walls and an end wall at one end, the other or delivery end being left open and a portion of the extremity of the floor being cut away at the point 52 to allow the material to drop into the hopper proper. By adjusting the auxiliary hopper to the position indicated in Fig. 3 the material is fed to the outer side of the threshing-cylinder, while by shifting the said hopper-section rearward until its rear end is above the inclined board 11 the material is delivered at the rear of the threshing-cylinder, passing downward along the inclined board or wall 11, whereby it is subjected to a double threshing action, as hereinabove explained.

Having thus described the invention, what is claimed as new is—

1. A hulling-machine comprising a casing, a

threshing-machine mounted therein, a plurality of concaves arranged adjacent to the cylinder and cooperating therewith, and a movable slide adjacent to said cylinder and adapted to close one or the other of the openings on either side of the cylinder so the material may be fed to one or the other of the concaves.

2. A hulling-machine comprising a casing, a threshing-cylinder mounted therein, concaves located one above and another beneath the cylinder, a hopper provided with a double throat, one portion of the throat being arranged to deliver to one concave while the other portion is adapted to deliver to the remaining concave, and a slidable board over the cylinder adapted to cover the openings in

the rear or at the front of the cylinder, substantially as described.

3. A hulling-machine comprising a casing, a threshing-cylinder mounted therein, concaves located one above and another beneath the cylinder, and a hopper consisting of a breast-plate arranged in front of the cylinder, and an inclined board arranged in rear of the cylinder and provided with tines projecting toward the cylinder and located between the cylinder-teeth.

In testimony whereof I affix my signature in presence of two witnesses.

NESBET E. ALMAN.

Witnesses:

G. G. FREEZE,
D. F. MOORE.