

No. 659,919.

Patented Oct. 16, 1900.

R. B. GENTLE.
WHEAT SEPARATOR.

(Application filed Jan. 30, 1900.)

(No Model.)

Fig. 1.

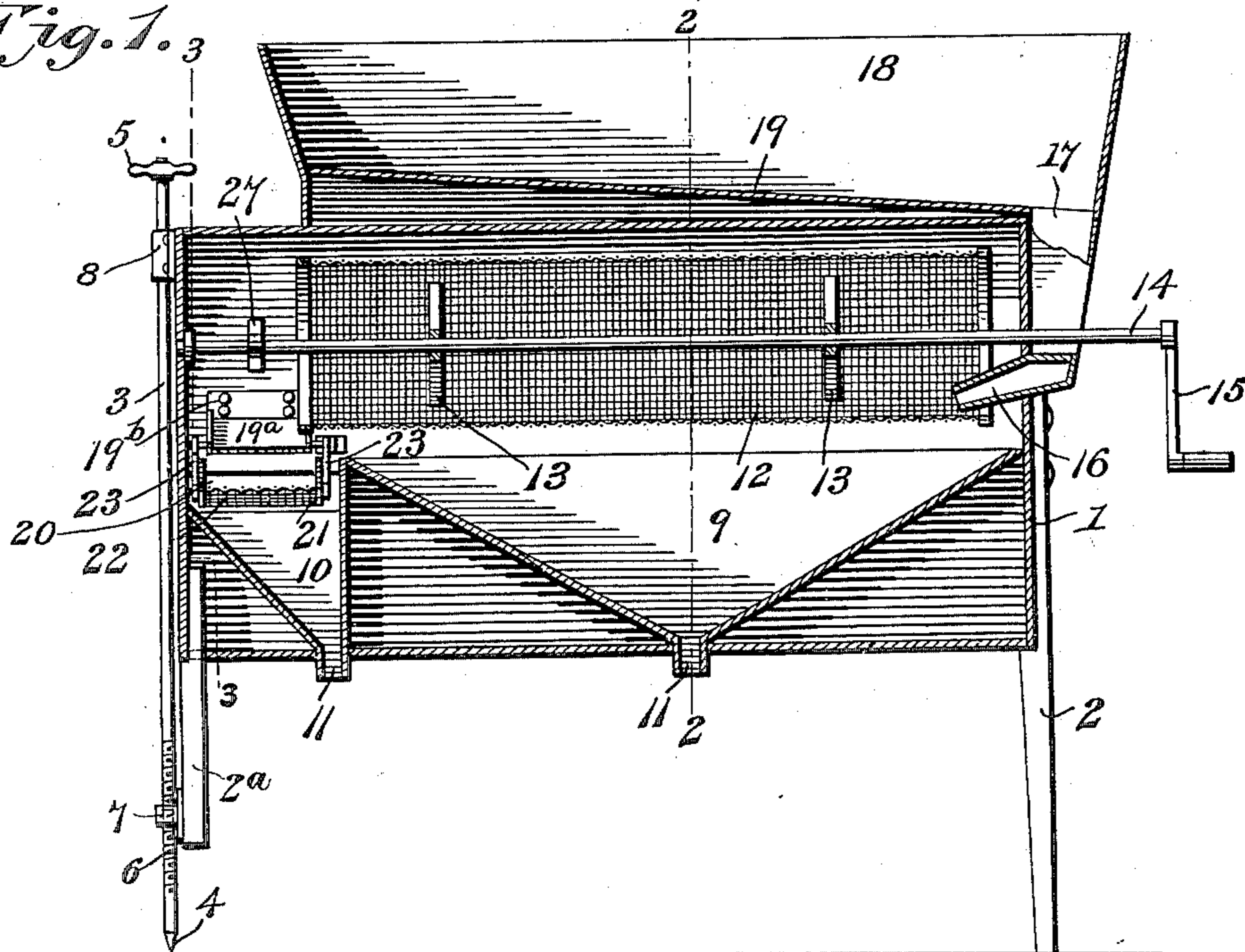


Fig. 2.

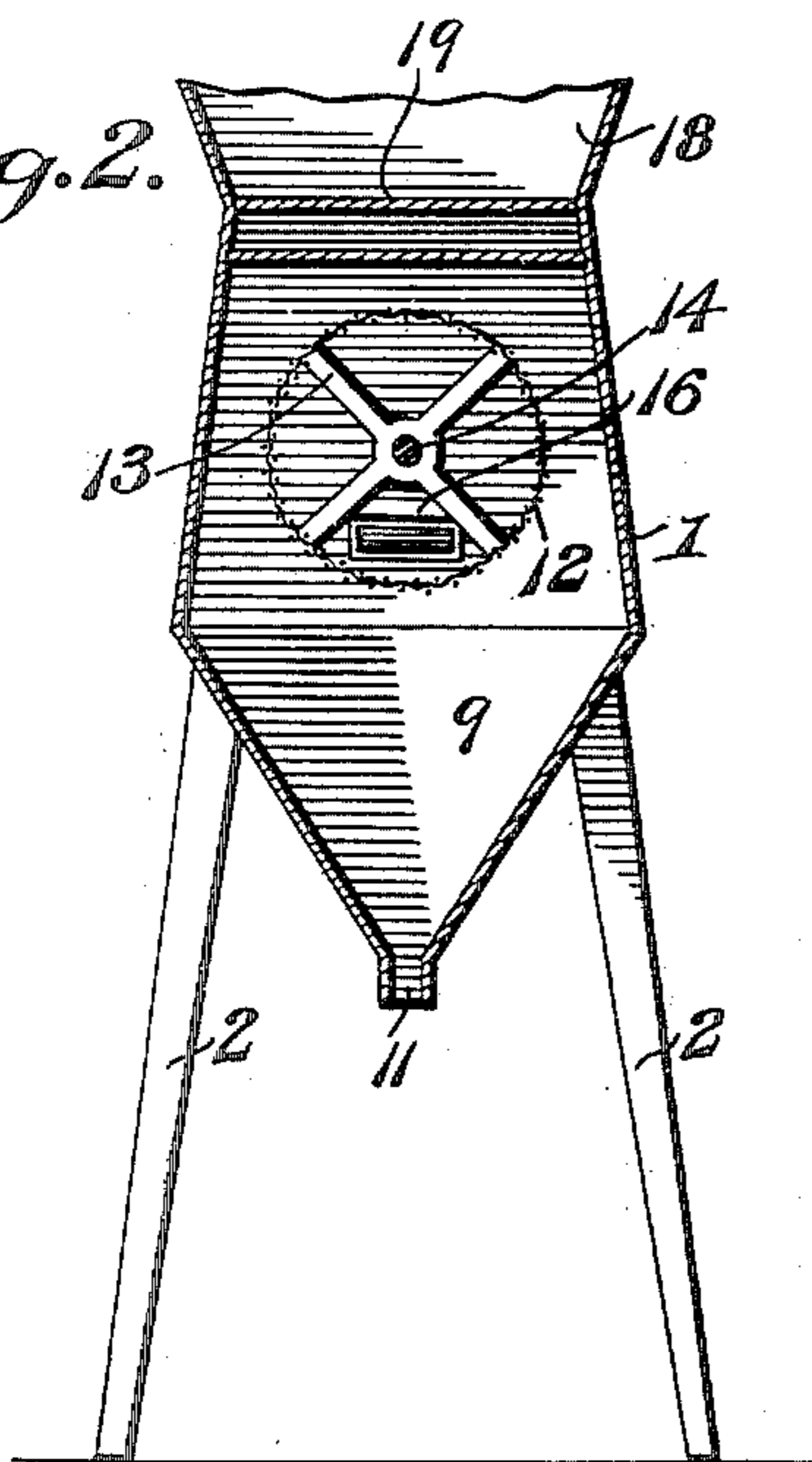
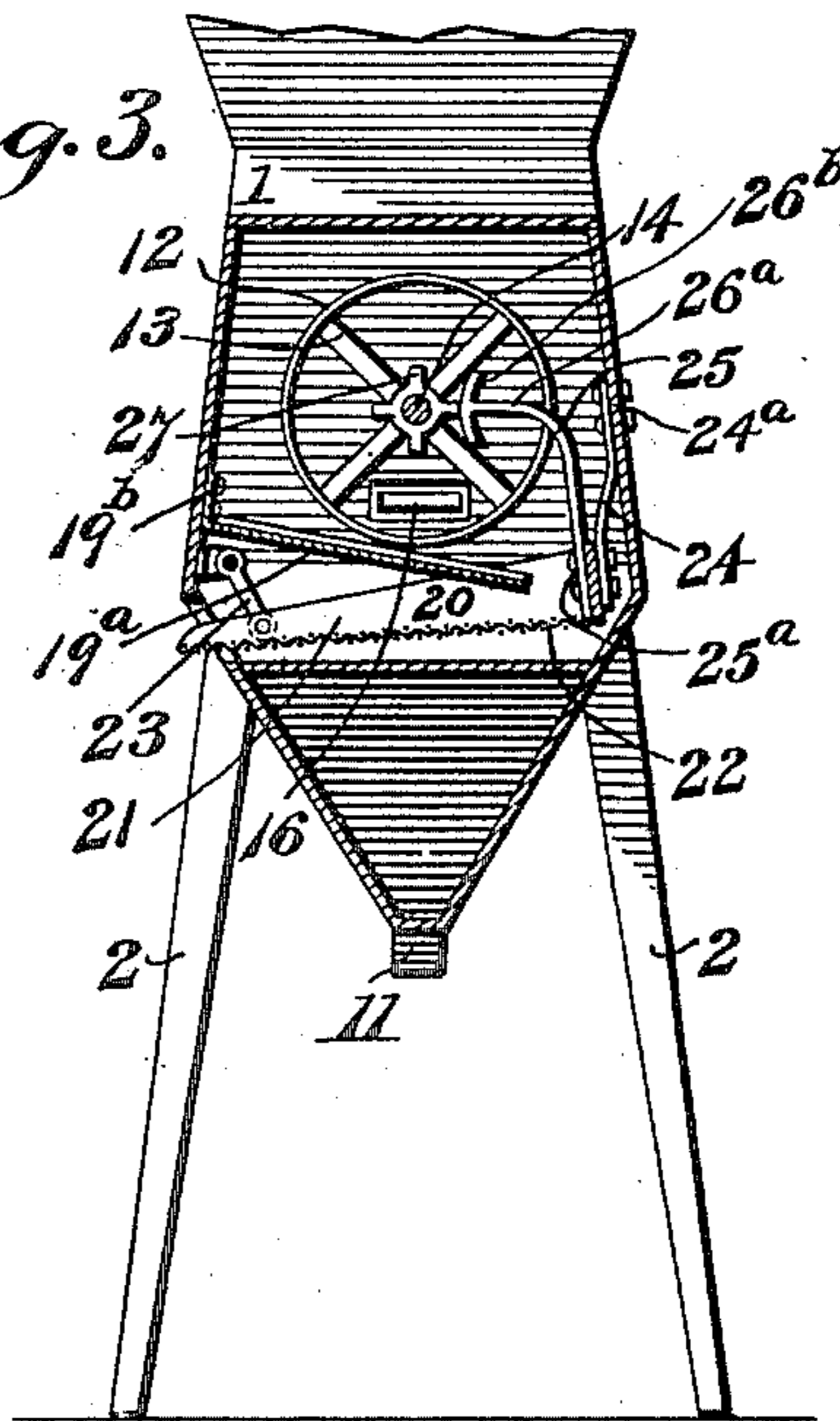


Fig. 3.



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RICHMOND B. GENTLE, OF YADKIN COLLEGE, NORTH CAROLINA.

WHEAT-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 659,919, dated October 16, 1900.

Application filed January 30, 1900. Serial No. 3,347. (No model.)

To all whom it may concern:

Be it known that I, RICHMOND B. GENTLE, a citizen of the United States, residing at Yadkin College, in the county of Davidson and State of North Carolina, have invented a new and useful Wheat-Separator, of which the following is a specification.

This invention relates to grain-separating machines; and it has for one object to provide a new and useful machine of this character constructed with special reference to the treatment of wheat. To this end the invention primarily contemplates a novel form of separating-machine having simple and reliable means for effecting a thorough cleaning of the wheat, while at the same time providing for separating the cockle and other seeds from the wheat and also separating the best grade of the grain from the inferior grade. In carrying out this object the invention therefore provides within a single machine means for cleaning, separating, and grading the grain.

Another object of the invention is to construct the machine of a minimum number of working parts and also providing the same with improved means for adjusting the inclination of the rotary sieve according to the nature of the material being treated; and a still further object of the invention is to combine the elements of the entire device in a novel arrangement permitting of the employment of an exceedingly-narrow casing for the purpose of minimizing the room occupied by the separator and to facilitate the shipment thereof.

With these and other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The essential features of the improvements are necessarily susceptible to some modification without departing from the scope of the invention; but the preferred embodiment of the improvements is shown in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal sectional view of a wheat-separating machine constructed in accordance with the present invention. Fig. 2 is a vertical transverse sectional view thereof on the line 2 2 of Fig. 1.

Fig. 3 is a similar view on the line 3 3 of Fig. 1.

Like numerals of reference designate corresponding parts in the several figures of the drawings.

In carrying out the invention the working parts of the machine are suitably housed within a narrow casing or framework, (designated by the numeral 1.) This casing may be constructed in any suitable manner to provide for properly casing the parts; but the present invention contemplates associating with the casing an adjusting device for varying the inclination thereof with relation to a horizontal plane, according to the nature of the material being treated. To carry out this feature of the invention, the casing 1 is provided at one end with depending supporting-legs 2 and at the opposite end with a single short-leg extension 2^a, with which is associated a single adjustable setting-standard 3, which setting-standard constitutes one of the main supports for the casing. The said adjustable setting-standard 3 is provided with a pointed lower extremity 4, which prevents slipping of the machine during the operation thereof, and at its upper end the said standard is provided with an operating head or handle 5, which is disposed above the top of the casing, so that it may be conveniently grasped by the operator to provide for turning the standard, and thereby effecting a consequent adjustment of the casing 1. A preferable way to secure the adjustment of the standard 3 is to provide the latter with a threaded portion or portions 6, adapted to engage one or more fixed nuts 7, fitted to the said leg extension 2^a. The upper end portion of the standard is preferably arranged to work in a guide-sleeve 8, attached to one end of the casing in vertical alinement with the fixed nut 7 and providing means for steadying and guiding the setting-standard. The construction described provides means whereby upon turning the standard 3 the end of the casing carrying such standard may be raised or lowered at will to give to the casing the necessary inclination, the function of which will be hereinafter referred to.

The machine-casing is constructed with a downwardly convergent or tapered bottom portion having formed therein the screen-

ings-pocket 9 and the grain-pocket 10, both of the pockets conforming to the convergent or tapering shape of the bottom portion of the casing, and thereby providing for directing the material received therein toward the discharge-spouts 11 at the lower ends or apices of the pockets. The downwardly convergent or contracted screenings-pocket 9 flares upwardly from its point of communication with the discharge-spout 11 and extends nearly the full length of the casing, or, in other words, is substantially coextensive in length with the length of the rotary cylindrical sieve 12, arranged to work within the casing above the said pocket 9. The rotary cylindrical sieve is disposed longitudinally within the casing and extends from one end thereof to a point near its opposite end to provide for effecting a thorough separation of the cockle and other seeds from the wheat before the latter is delivered to the device for separating therefrom other seed and trash of a larger size than the wheat. The said cylindrical sieve is constructed of suitable screen material and is open at both ends to provide for receiving at one end the grain to be treated and for discharging at the opposite end the pure wheat to be cleaned, and to provide for the revoluble support of the sieve within the machine-casing the same is provided at suitable points therein with a plurality of interior braces 13, secured fast upon a horizontal operating-shaft 14. The horizontal operating-shaft 14 extends longitudinally of the casing the full length thereof and is journaled in suitable bearings at the ends of the casing, and beyond one end of the latter the operating-shaft is extended and has fitted thereto a hand-crank 15, which is grasped by the operator to provide for imparting rotary motion to the cylindrical sieve during the use of the machine. It will of course be understood that the hand-crank may be substituted by a belt-wheel, so that the machine may be operated by power, if desired.

The uncleaned grain to be treated is delivered into the cylindrical sieve 12, at one end of the latter, through a feed-spout 16. The feed-spout 16 is fitted to one end of the casing and has the lower end thereof extending inwardly within the casing below the plane of the shaft 14, so as to project into the adjacent open end of the sieve 12, and the upper end of the said feed-spout 16 is in communication with a bottom discharge-opening 17, formed in the bottom of a long narrow hopper 18, at one end of the latter. The said hopper 18 is mounted on top of the casing 1 and is provided with an inclined floor 19, extending the full length thereof and declining toward the bottom discharge-opening 17 to permit of the grain being easily worked into the feed-spout 16. The material which passes through the rotary cylindrical sieve 12 without being separated by the meshes thereof is discharged at the open end thereof opposite

the feed-spout 16, at which point it falls upon an inclined delivery-apron 19^a. This delivery-apron is secured at one end, as at 19^b, to one end of the casing 1 and extends transversely of the casing beneath the open discharging end of the rotary sieve 12 to receive all of the wheat, trash, and larger seed discharged therefrom. The transversely-disposed delivery-apron 19^a declines from its point of connection with one side of the machine-casing and extends to a position within the upper end portion of the vibrating or shaking flat riddle 20, thereby providing means for delivering all of the material which passes out of the discharge end of the rotary sieve into the upper end of the riddle, thus causing the same to pass over the full length of the screen of the riddle before the trash and other foreign matter are discharged exterior to the casing. The said vibrating or shaking flat riddle 20 is arranged transversely of the machine-casing within one end thereof below the said delivery-apron 19^a, so as to receive thereon all of the material which passes out of the discharge end of the sieve and subject the same to the separating process. The vibrating or shaking flat riddle 20 essentially consists of a rectangular frame 21, having fitted therein a flat screen 22 of suitable mesh to provide for separating the wheat from the large trash and other seeds, and in order to insure the proper separation of the wheat and the discharge of the other grain and trash at one end of and exterior to the machine the said shaking riddle 20 is disposed at an inclination obliquely to a horizontal plane. The lower outer end of the inclined transversely-arranged shaking riddle 20 is loosely supported by means of swinging links 23. These links are pivoted, respectively, to the sides of the riddle-frame and to the adjacent portion of the machine-casing, thereby permitting of a longitudinally-swinging movement of the riddle, which tends to work the foreign grain and trash over the lower outer end of the riddle. The inner upper end of said riddle has connected thereto one end of a supporting-spring 24, the other end of which spring is fastened, as at 24^a, to the adjacent side of the machine-casing, thereby providing a support for the inner end of the riddle, which permits of the longitudinal vibration thereof. The supporting-spring or reactive link 24 preferably consists of a strip of spring metal, usually termed a "leaf-spring," and is interposed between the inner end of the riddle and the adjacent side of the machine-casing to not only provide for the support of the inner end of the riddle, but also to assist in the reciprocation and vibration thereof. In addition to the said spring the inner upper end of the riddle 20 has rigidly connected thereto, as at 25^a, the lower end of an upstanding vibrating rod 25, having an angled arm 26^a, carrying a curved contact-shoe 26^b, adapted to be held in normal engagement with the cam or tappets

27 by the tension of the supporting-spring 24. The tappets 27 are fitted to and carried by the shaft 14, and a plurality of said tappets or tappet projections 27 are preferably employed in the form of a tappet-wheel, so that as the shaft 14 is rotated the contact-shoe 26^b will be struck a number of times during the revolution of the shaft and will therefore be caused to impart a very rapid vibration to the shaking riddle 20.

The inclined transversely-arranged shaking riddle 20 is supported in a position so as to work directly above the grain-pocket 10, which pocket is located at one end of the casing and is of materially-smaller area than the pocket 9, which receives the cockle and other screenings from the rotary sieve 12. At this point it will be observed that the lower end of the said riddle 20 projects through one side of the casing, so as to discharge the trash and other grain exterior to the casing, where it may be received by a bucket or other suitable receptacle.

In the operation of the machine it is simply necessary to rotate the shaft 14 to provide for imparting the rotation of the cylindrical sieve 12 and a vibrating motion to the shaking riddle 20. As the material enters the sieve 12 at one end thereof the same is immediately agitated and subjected to a separating action, so that as the grain continues to travel toward the open discharging end of the rotary cylindrical sieve the cockle and small wheat, as well as other seeds, will pass through the meshes of the sieve 12 and fall into the screenings-pocket 9, from which said separations may be collected through the discharge-spout 11. The unseparated wheat and other grain which pass out of the discharging end of the rotary sieve 12 are directed by the apron 19^a upon the vibrating riddle 20 and are subjected to a separating action, which causes the pure wheat to separate itself from the other grain and trash and work through the meshes of the riddle-screen into the grain-pocket 10, from which pocket the pure wheat may be collected through the discharge-spout 11. As already explained, the foreign seeds, together with any other trash, are discharged from the outer lower end of the riddle 20 exterior to the machine-casing.

In operating the machine it is of course necessary to give a sufficient inclination to the rotary sieve 12 to provide for the travel of the material from one end thereof to the other, and this inclination may be secured

through the medium of the adjustable setting-standard 3, previously described.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described separating-machine will be readily understood by those familiar with the art without further description, and it will be understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. The combination with a supporting-frame and a rotary screen mounted on a revolving shaft, of a cam on said shaft, a riddle receiving the overtail from the rotary screen, means for movably supporting one end of said riddle, a bent arm rigidly connected to the other end of the riddle and formed with a contact-shoe in operative proximity to the cam, and a reactive spring-link rigidly secured to the riddle by means which serve to secure the bent arm, said spring-link being secured at its upper end to the frame.

2. The combination with a narrow casing, of a screenings-pocket and a smaller grain-pocket located within the casing, a longitudinally-disposed rotary screen extending over the screenings-pocket, a transversely-disposed riddle located beyond and under one end of the rotary screen and over the grain-pocket, a narrow hopper located above the casing and extending nearly its entire length, a feed-spout located beyond one end of the casing and having its upper end in communication with the hopper and its lower end extending into the end of the rotary screen, a reactive spring rigidly connected at its opposite ends to the transverse riddle and to the casing, means for rotating the shaft of the rotary screen, and means carried by said shaft for urging the transverse riddle intermittently against the resistance of its reactive supporting-spring.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

RICHMOND B. GENTLE.

Witnesses:

C. A. PICKENS,
SAM T. RAPER.