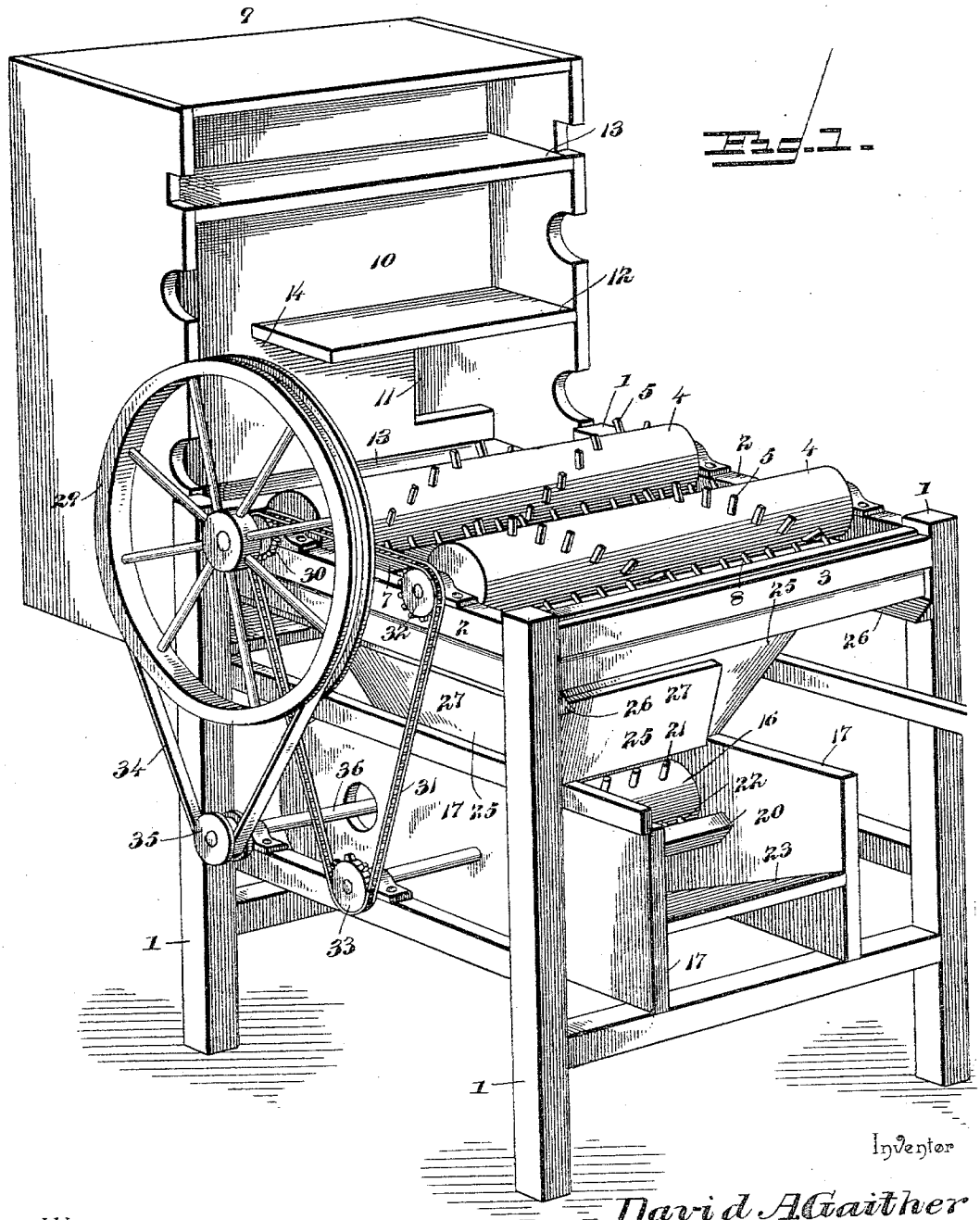
(No Model.) 2 Sheets—Sheet 1.

D. A. GAITHER.

PEA THRESHER AND SEPARATOR.

No. 566,571. Patented Aug. 25, 1896.

Fig. 1.



Inventor

David A. Gaither

Witnesses

E. K. Stewart

U. B. Hillyard

By his Attorneys.

C. A. Snow & Co.

(No Model.) 2 Sheets—Sheet 2.

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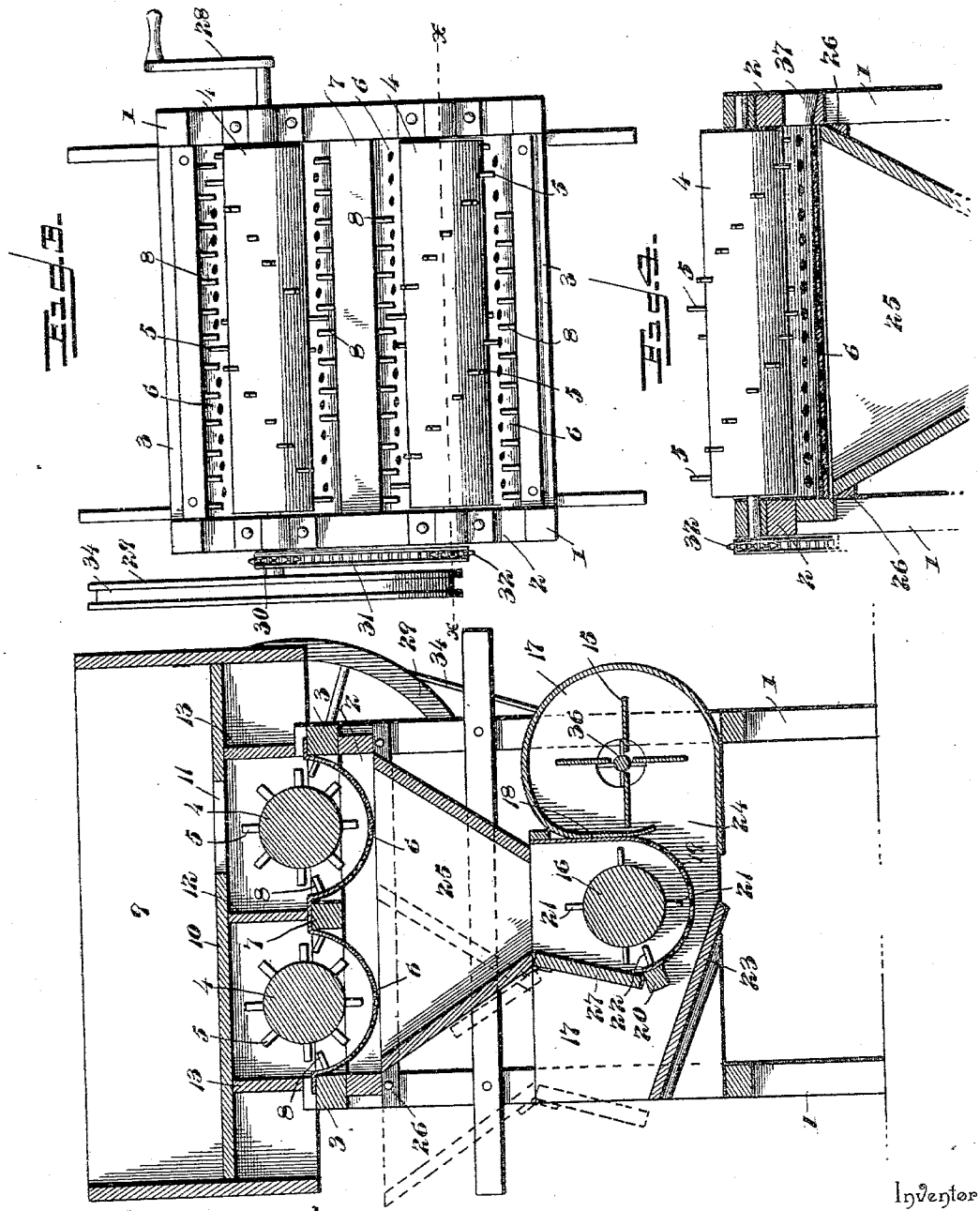

Fig. 2.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DAVID A. GAITHER, OF WILLISTON, TENNESSEE.

PEA THRESHER AND SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 566,571, dated August 25, 1896.

Application filed July 30, 1895. Serial No. 557,603. (No model.)

To all whom it may concern:

Be it known that I, DAVID A. GAITHER, a citizen of the United States, residing at Williston, in the county of Fayette and State of Tennessee, have invented a new and useful Pea Thresher and Separator, of which the following is a specification.

This invention relates to machines for hulling, separating, and purifying peas and beans, and has for its object to provide a mechanism for performing the required work in a thorough and effective manner and with the expenditure of a minimum amount of energy.

Other objects and advantages will be apparent as the nature of the invention is understood, and to this end reference is to be had to the following description and the drawings hereto attached, in which—

Figure 1 is a perspective view of a machine constructed in accordance with the present invention. Fig. 2 is a vertical central section thereof, the dotted lines showing the movable or intermediate hopper partially drawn out. Fig. 3 is a top plan view of the machine with the upper hopper removed. Fig. 4 is a detail section of the upper portion of the machine about on the line X X of Fig. 3.

The framework, which will be a substantial structure, may be of any approved construction for conveniently supporting the operating parts, and is shown as comprising corner-posts 1, upper and lower side beams 2, and upper and lower cross-beams 3. The hulling or threshing cylinders 4 are of similar construction and are arranged in parallel relation and are journaled in bearings on the upper side beams 2. The teeth 5 are arranged spirally upon each cylinder, the spiral arrangement of the two cylinders being in inverse order, whereby in the operation of the machine the peas or beans to be threshed are moved in one direction by one of the threshing-cylinders and in an opposite direction by the other threshing-cylinder.

The two threshing-cylinders are spaced a proper distance apart, and a semicircular riddle 6 is placed beneath each. These semicircular riddles 6 have their edge portions outwardly flanged and overlapping the upper cross-beams 3 and an intermediate cross-beam 7, and by means of which the said riddles are held in proper position. These semicircular riddles are formed of sheet metal, and the series of openings formed therein are of a size to admit of the passage of the peas or beans, and the semicircular form thereof admits of the teeth of the threshing-cylinders sweeping close to the upper sides of the said riddles when the machine is in operation.

Rows of teeth 8 extend inwardly from the opposite edges of the riddles and are supported by the upper and intermediate cross-beams. In order to give strength to the rows of teeth 8, the latter pass through openings near the edges of the riddles and are let into the wooden cross-beams of the framework, and in order to facilitate the threshing process the teeth 8 incline slightly to the horizontal. The teeth of the threshing-cylinders and the rows of teeth 8 are so disposed that the teeth of the said cylinders will operate about midway between the teeth 8, thereby breaking the pods or hulls and liberating the peas and the beans.

The upper hopper 9 is removably fitted upon the framework and has a horizontal partition 10 a short distance above its bottom edge, and which forms a bottom thereof, and a discharge-opening 11 is located in the horizontal partition or bottom 10, so as to come directly over one end of a threshing-cylinder. A series of strips 12 and 13 are secured to the under side of the partition or bottom 10, the middle strip 12 coming directly over the intermediate cross-beam 7 and having a space 14 at the end opposite the opening 11 to admit of the peas and beans passing from one cylinder to the other in the working of the machine. The side strips 13 come directly above the upper cross-beams and serve to retain the peas in engagement with the teeth of the threshing-cylinders.

Immediately below the threshing-cylinders 4 are located a fan 15 and a supplemental threshing-cylinder 16, the fan and the threshing-cylinder being arranged in the same plane and located side by side. Side pieces 17 close the ends of the fan-case and form an inclosure for the threshing-cylinder 16. A vertical wall 18 extends between the fan and the threshing-cylinder 16, and its lower portion curves forwardly and upwardly and is provided with a series of openings, and consti-

tutes a semicircular riddle 19 for the threshing-cylinder 16. A cross-bar 20, made fast at its ends to the side pieces 17 and located to one side of the threshing-cylinder 16, forms a support for one edge of the riddle 19, and is provided with a row of teeth 21, which cooperate with the teeth 22 of the threshing-cylinder 16, so as to break up any pods or hulls which may have escaped to the supplemental threshing mechanism. The teeth 21 operate in the spaces between the teeth 22, and the latter extend in parallel rows on the threshing-cylinder 16. A deflector or returning-board 23 inclines to the horizontal and is supported between the side pieces 17, and its inner end terminates immediately below the threshing-cylinder 16 and approaches close to the discharge-opening 24 of the fan 15. Thus the peas and beans are subjected to a blast of air from the fan 15 when falling from the riddle 19 onto the board 23. A suitable receptacle will be placed below the inner end of the board 23 to receive the peas and beans after the latter have been threshed and freed from all impurities and small particles of pods or hulls.

The intermediate hopper 25 lies between the primary and the supplemental threshing provisions and is removable to admit of access to the upper riddles 6 and the lower threshing-cylinder 16 to facilitate the removal of any matter which may have choked these parts and interfered with the free operation of the machine. This hopper 25 has its sides sloping and serves to direct the peas or beans escaping from the riddles 6 into the supplemental threshing mechanism, and this hopper is supported upon the side pieces 17 and by cleats 26, extending parallel with the side beams and attached to the corner-posts.

When it is required to gain access to the upper riddles or the lower threshing-cylinder, the hopper 25 is drawn out and said parts are exposed and the obstructing matter can be quickly removed. This slidable feature of the hopper 25 upon its supports 26 and 17 also admits of the lower or supplemental threshing-cylinder being thrown out of operation when desired, as will be readily understood on reference to the dotted lines in Fig. 2. A door 27 is hinged to the lower end of the hopper 25 and closes against the cross-bar 20, thereby completely inclosing the threshing-cylinder 16. This door 27 forms, in effect, a movable side to the housing, which closes the upper portion of the riddle 19 and threshing-cylinder 16 and admits of access being readily had to the riddle and threshing-cylinder for removing obstructing matter, for cleaning the riddle and threshing-cylinder, and for making repairs when required.

The thresher may be operated by manual or other power, and for this purpose a journal of one of the threshing-cylinders 4 is supplied with a crank 28, and the opposite journal carries a fly-wheel 29 and a sprocket gear-wheel 30, which transmits motion to a sprocket-chain 31, which passes over corresponding sprocket gear-wheels 32 and 33 on the journals of the other and the lower threshing-cylinder 16. A drive-belt 34 passes around the fly-wheel 29 and a band-pulley 35 on the fan-shaft 36, so as to drive the fan when the machine is in service.

The operation of the invention may be briefly stated as follows: The peas or beans to be threshed or hulled are placed in bulk in the hopper 9 and are caused to pass through the discharge-opening 11 thereof onto one end of a threshing-cylinder 4, when, by reason of the spiral disposition of the teeth thereon, the said peas or beans will be moved the length of the said threshing-cylinder, and when they reach the opposite end thereof the said peas or beans will pass through the space or opening 14 and be received at one end of the second threshing-cylinder, and will be moved by the latter the full length thereof in an opposite direction to the movement imparted thereto by the first threshing-cylinder. By this time the peas or beans will be thoroughly threshed, and the peas escaping through the openings of the riddles 6 will be deflected by the intermediate hopper 25 into the lower or supplemental threshing device, which will break up any large pieces of pods or hulls, so as to insure their removal from the peas by the blast of air from the fan 15. The pods or hulls accumulating on the riddle of the second of the two threshing-cylinders 4 will escape from the said riddle by means of the opening 37, provided at the end of the said riddle and on the same side of the framework with the opening 11. Thus it will be seen that the pods or hulls are compelled to travel the combined length of the two riddles before escaping. The pods or hulls of the first or initial riddle are transferred to the second threshing-cylinder by means of the teeth of the first or initial threshing-cylinder, and in order to make provision for the escape of the said hulls or pods from the first riddle a number of the teeth 8 at the inner end of the inner row are omitted opposite the space or opening 14, as most clearly indicated in Fig. 3. The peas or beans after escaping from the riddles 6 are subjected to a second threshing by means of the cylinder 16, and after leaving the riddle 19 they are subjected to a blast of air which carries off all small particles, thereby permitting the peas or beans to be received into a receptacle thoroughly cleaned and freed from all foreign matter.

A machine of the character herein set forth can with slight modifications be adapted for factory or domestic use, and in constructing the same for the particular requirement it is to be understood that 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 is—

1. In a machine for threshing and separating peas and beans, the combination of an upper threshing mechanism comprising toothed cylinders and riddles, a lower supplemental threshing mechanism, a hopper between the upper and lower threshing mechanisms, and supports for the said hopper to slide upon to admit of access to the threshing mechanisms and for throwing the supplemental threshing mechanism out of operation, substantially as set forth.

2. In a machine of the character set forth, the combination of an upper threshing mechanism, a lower threshing-cylinder, an intermediate movable hopper, a fan adjacent to and in the rear of the lower threshing-cylinder, a vertical wall extending between the fan and the lower threshing-cylinder and having its lower portion curving beneath the threshing-cylinder and perforated so as to provide an approximately semicircular riddle, and a door hinged to the lower edge of the hopper and closing against the adjacent edge of the semicircular riddle, substantially as set forth for the purpose described.

3. The herein shown and described thresher and separator, comprising two cylinders arranged in parallel relation and having spirally-extending teeth running in reverse directions, semicircular riddles beneath the said cylinders, rows of teeth along the edges of the riddles, some of the teeth at the end of the inner row of one of the cylinders being removed, a hopper having an opening in its bottom over the end of one of the cylinders and having strips extending in parallel disposition beneath its bottom, the middle strip having a space or opening at one end, a lower threshing-cylinder, a fan alongside of the lower threshing-cylinder, an intermediate hopper removably inserted between the upper and lower threshing devices, a riddle to coöperate with the lower threshing-cylinder, a return-board, a door hinged to the intermediate hopper, and actuating mechanism, substantially as set forth for the purpose described.

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

DAVID A. GAITHER.

Witnesses:
J. H. WILSON,
R. S. CRAWFORD.