

No. 859,457.

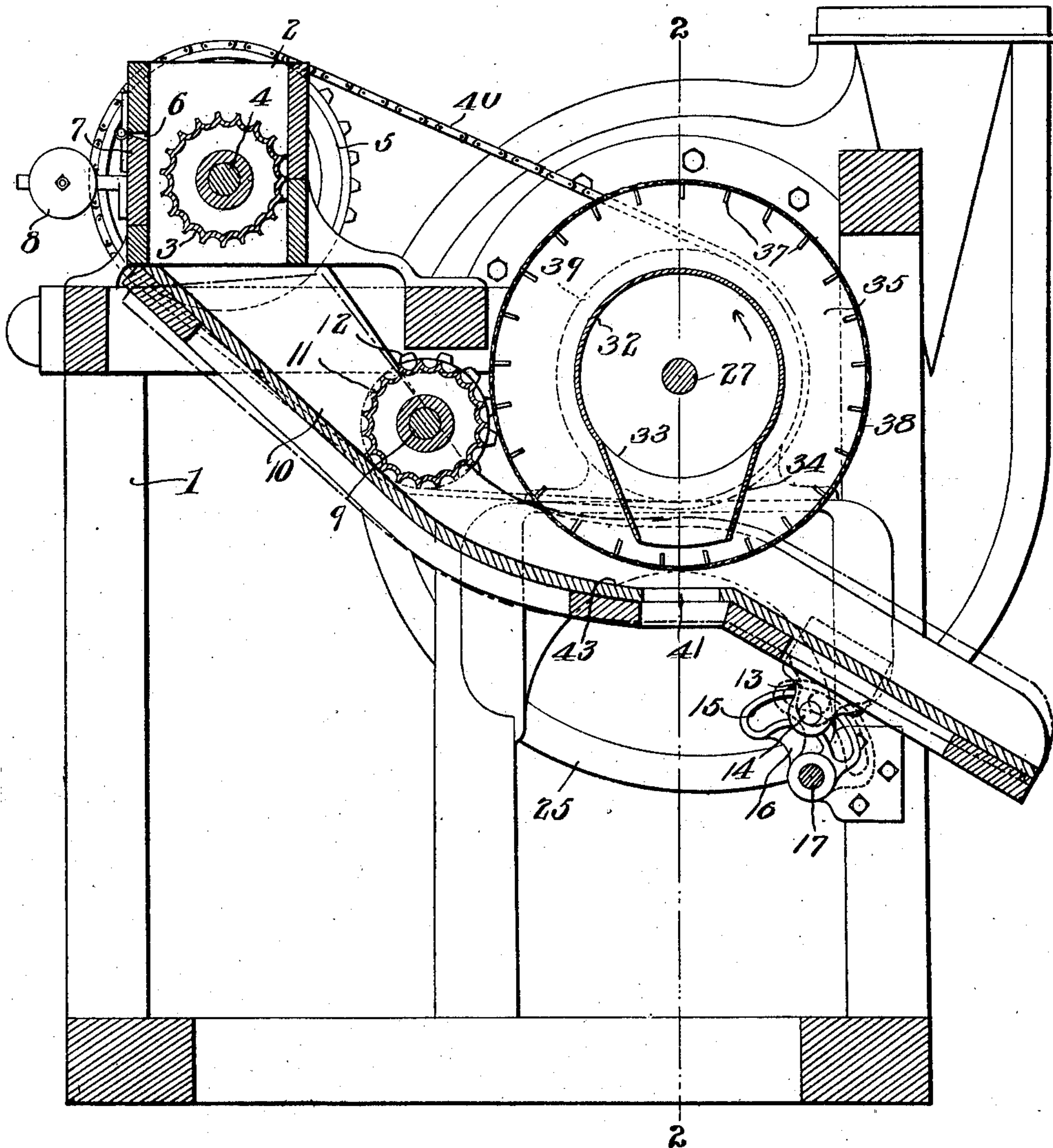
PATENTED JULY 9, 1907.

D. C. LYLE.
SEPARATOR.

APPLICATION FILED DEC. 29, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:
E. J. Stewart
Wm. Baggett

Daniel C. Lyle, INVENTOR
By *C. A. Snow & Co*
ATTORNEYS

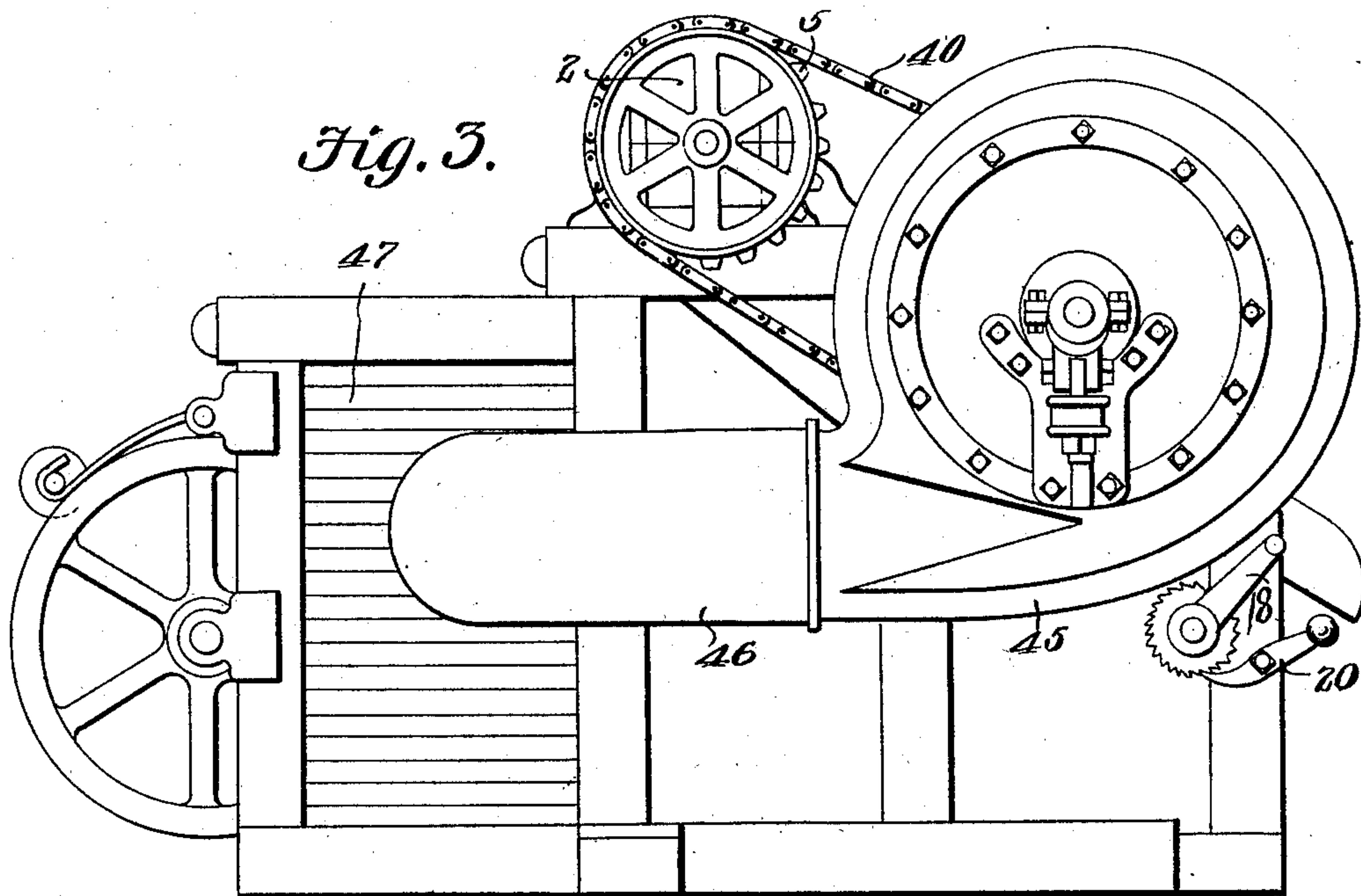
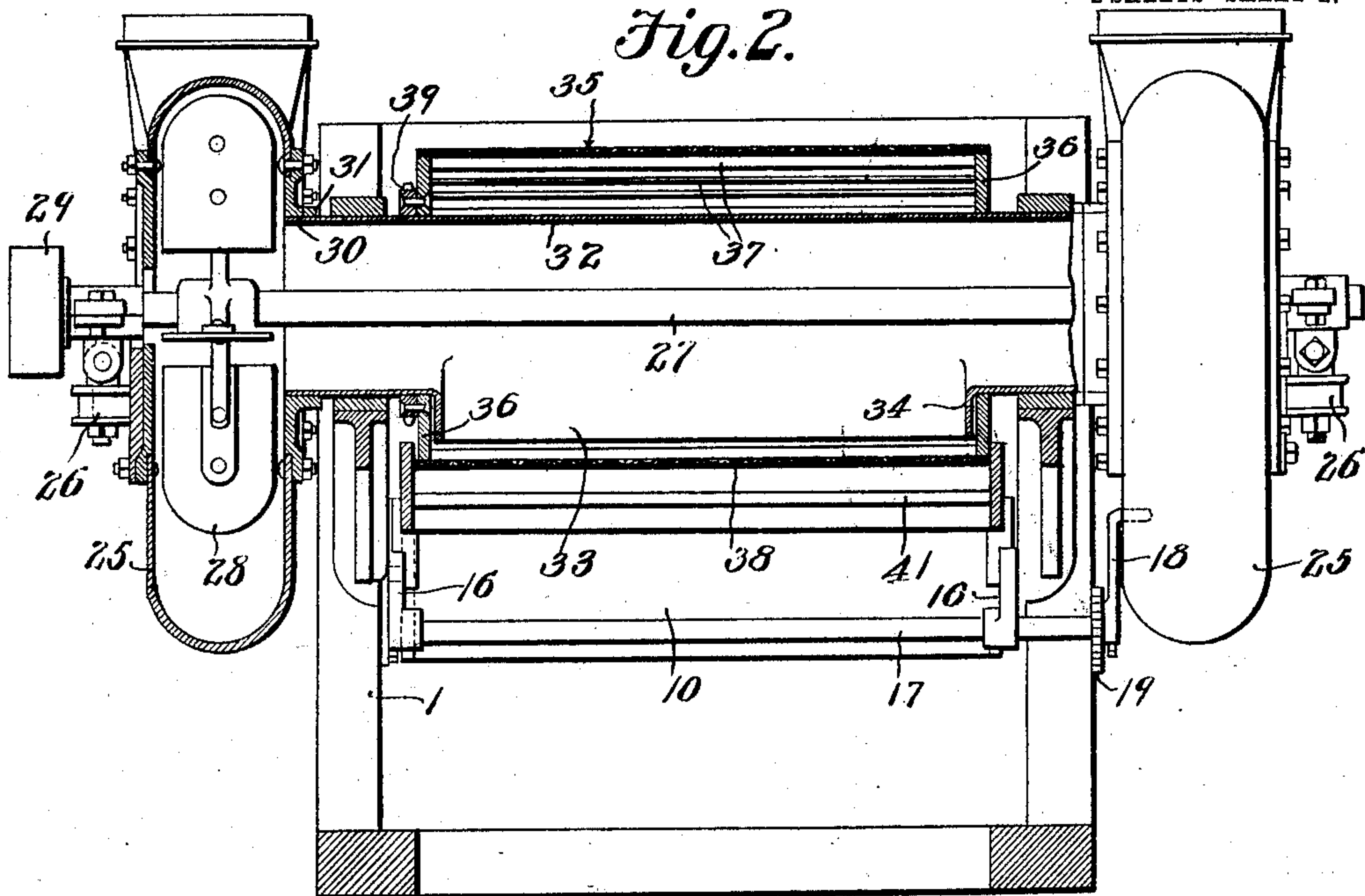
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2 SHEETS—SHEET 2.



WITNESSES:

E. J. Stewart
Wm. Bagger

Daniel C. Lyle, INVENTOR

By *C. A. Snow & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

DANIEL C. LYLE, OF EAST POINT, GEORGIA, ASSIGNOR TO ATLANTA UTILITY WORKS, INC.,
OF EAST POINT, GEORGIA.

SEPARATOR.

No. 859,457.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed December 29, 1905. Serial No. 293,801.

To all whom it may concern:

Be it known that I, DANIEL C. LYLE, a citizen of the United States, residing at East Point, in the county of Fulton and State of Georgia, have invented a new and useful Separator, of which the following is a specification.

This invention relates to separators of the type illustrated in Letters Patent of the United States, #801,195, granted to myself on the third day of October, 1905, and in which the separation of materials is effected by suction induced through the meshes of a mechanically operated screen which is supported for rotation; the material separated through the meshes of the screen being disposed of through the casings of suction fans which are suitably connected with the heads or ends of the screen, while the material not passing through the screen may be automatically subjected to a still further separation, as between the substances of greater and less specific gravity, the former being not attracted by the suction but permitted to gravitate beyond the range of the suction, while the latter, or lighter substances, are caused by the suction to adhere to the screen and are thereby carried beyond the point of separation of the heavier substances.

The objects of the present invention are to simplify and improve the construction and operation of this class of machines; and with these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a longitudinal vertical sectional view of a machine constructed in accordance with the principles of the invention. Fig. 2 is a transverse sectional view taken on the plane indicated by the line 2—2 in Fig. 1. Fig. 3 is a side elevation illustrating a slight modification under which the machine is shown in connection with a condenser.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

The frame 1 of the machine supports near one end thereof a chute or hopper 2 in which a longitudinally grooved feed roller 3 is supported for rotation; the shaft 4 of said roller carrying a sprocket wheel 5 at one end thereof. The front side of the chute or hopper has been shown as provided with a doorway 6 having a closure 7 hinged at the upper edge thereof and kept normally in a closed position by means of a weight 8.

The frame 1 is provided with bearings for a transverse shaft 9 upon which is pivotally supported a downwardly and rearwardly inclined pan or trough 10, the front end of which extends upwardly beneath the chute or hopper to receive the material passing through the latter. The shaft 9 supports a longitudinally

grooved distributing roller 11 the perimeter of which extends to the bottom of the trough or pan 10; the shaft 9 also carries a sprocket wheel 12. The trough or pan 10 is provided near its lower rear end with clips 13 supporting a shaft 14 which extends through eccentric slots 15 in a pair of cam members 16, which latter are secured upon a shaft 17 journaled in suitable bearings in the frame 1, and which is provided with an operating crank or handle 18 and with a ratchet wheel 19, the latter engaged by a pawl 20 which serves to retain the rock shaft 17 in adjusted position; it will be readily seen that by manipulating the rock shaft 17, the pan or trough 10 may be rocked upon its supporting shaft 9, the object being to effect vertical adjustment of the lower end of the pan or trough for reasons which will presently appear.

Supported upon the frame 1, at the end remote from the chute or hopper, and at the sides of said frame, are supported fan casings 25 provided upon their outer sides with brackets 26 affording bearings for a shaft 27 carrying the fans 28 which are located within the casings, the shaft 27 being driven from any suitable source of power by means of a belt or band engaging the pulley 29 upon said shaft. The inner sides of the fan casings are provided with eyes or openings 30 surrounded by flanges 31 in which are fitted the ends of the tubular conductor 32 having at its under side a large slot or opening 33 surrounded by a depending flange 34. The cylindrical tubular conductor supports for rotation a cylindrical screen 35 the heads or ends 36 of which are fitted adjacent to the ends of the flange 34. The screen frame is preferably composed of the wooden heads or ends 36 in connection with longitudinal connecting and spacing bars 37, but said screen frame may be of any suitable and convenient construction, enabling it to support the foraminous covering 38 which may consist of wire gauze, perforated sheet metal, or any other material that may be deemed suitable for the purposes of the invention. The relative dimensions of the parts are such that the edges of the flange 34 will extend nearly to the screen frame without interfering with the rotation of the latter.

One of the screen heads is shown as provided with a sprocket wheel 39 from which a link belt 40 passes over the sprocket wheels 12 and 5 upon the shafts 9 and 4, thus transmitting motion to said shafts and to the rollers supported thereon.

The pan or trough 10 is provided in the bottom thereof with a slot 41 which is disposed beneath the flange 34 of the conductor 32.

The fan casings 25, in Figs. 1 and 2 of the drawings, are made to discharge in an upward direction, and the air current, which is charged with dust and impurities or with separated material, may be disposed of in any suitable manner.

The machine of this invention is specially adapted for the purpose of cleaning cotton seed by separating the seed from dust and fine impurities, as well as from twigs, gravel, bits of rock and metal, and other foreign substances which may have become mixed therewith; but the machine, either in its present form or with slight and obvious modifications, may be usefully employed for the purpose of separating materials of different kinds; for instance, for the purpose of cleaning grain or corn by separating dust and like impurities therefrom, and for separating fine from coarse, and light from heavy, materials or substances of almost any kind. In the operation of the device, the material which is to be operated upon is fed through the chute or hopper 2 by means of the corrugated feed roller 3 to the upper end of the pan or trough 10 upon which the material gravitates in a downward direction, being scattered and distributed into an even layer by the action of the distributing roller 11. When the layer of seed reaches the transverse slot 41 in the trough or pan, it comes within the range of suction in the conducting tube 32 and will thus be caused by the external air pressure to adhere to the outer surface of the screen, which, meanwhile, rotates in the direction indicated by the arrow in Fig. 1 of the drawings. Comparatively heavy substances will gravitate through the slot 41 and will thus be disposed of, while fine dust and similar impurities, or fine material of any kind, will pass through the meshes of the screen and be expelled through the fan casings. Relatively light and coarse material, such as cotton seed, will adhere to the surface of the screen until it passes beyond the range of suction, when it will gravitate onto the lower end of the trough 10 below the slot 41, and be permitted to escape over the lower edge of said trough where it may be gathered in suitable receptacles or otherwise disposed of.

By the means provided for the purpose, the lower end of the trough 10, or that part of the trough which is disposed beneath the rotary screen, is made capable of vertical adjustment towards and from the screen, according to the character and nature of the material that is to be operated upon; said pan or trough is also preferably provided adjacent to the screen with an approximately horizontal portion, as indicated at 43, terminating in the transverse slot 41, in order to prevent material from gravitating through said slot without passing within the range of suction. The slot 41 may be guarded by means of flanges adjacent to its upper and lower edges, substantially as shown in my previous patent hereinbefore referred to, but this construction is entirely optional and it has not been deemed necessary to illustrate the same in detail.

In the slightly modified form of the invention illustrated in Fig. 3 of the drawings, the fan casings, here designated 45, are made to discharge in a rearward instead of in an upward direction, and said fan casings, or

the discharge openings thereof, are connected by means of conductors, one of which appears at 46, with a condenser which has been conventionally illustrated at 47. Indication of the distributing roller has been omitted in Fig. 3 of the drawings, it being understood that said roller may be dispensed with, if preferred. The combination with the separator of the condenser, as illustrated in Fig. 3, will be mainly resorted to when cotton seed is operated upon, to which a considerable portion of lint loosely adheres, it being found that a portion of such lint will pass through the meshes of the rotary screen and through the fan casings to the condenser, where it will be saved for subsequent purification and utilization.

As hereinbefore stated, the improved machine is capable of being usefully employed in the separation and purification of many different materials and substances; it is simple in construction, efficient in operation, and may be manufactured and operated at moderate expense.

Having thus described the invention, what is claimed is:—

1. A cylindrical separator screen supported for rotation, means for establishing suction through a circumscribed area of the screen, a feed hopper spaced from the screen, a conveyer pan extending beneath the screen and the hopper, a corrugated feed roller in the hopper, and a corrugated distributing roller in the conveyer pan.

2. A cylindrical separator screen supported for rotation, means for establishing suction through a circumscribed area of the screen, a feed hopper spaced from the screen, a conveyer pan supported pivotally and adjustably beneath the screen and the hopper, and a distributing roller in said pan concentric with the pivotal supporting means of the latter.

3. A cylindrical separator screen supported for rotation, means for establishing suction through a circumscribed area of the screen, a feed hopper spaced from the screen, a conveyer pan supported pivotally and adjustably beneath the screen and the hopper and having a slot contiguous to the suction area of the screen, a distributing roller in the pan concentric with the pivotal supporting means of the latter and having a corrugated surface extending nearly to the bottom of the pan, and means for adjusting the pan upon its pivotal supporting means and for securing it at various adjustments.

4. A cylindrical separator screen supported for rotation, means for establishing suction through a circumscribed area of the screen, a feed hopper spaced from the screen, a transverse shaft supported for rotation between the screen and the hopper, a conveyer pan supported pivotally upon the shaft, a distributing roller secured upon the shaft and having a corrugated surface extending in the direction of the bottom of the conveyer pan, a feed roller in the hopper, and means for driving the feed roller, the distributing roller, and the rotary screen.

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

DANIEL C. LYLE.

Witnesses:

H. MIMS,

W. A. LANDERS.