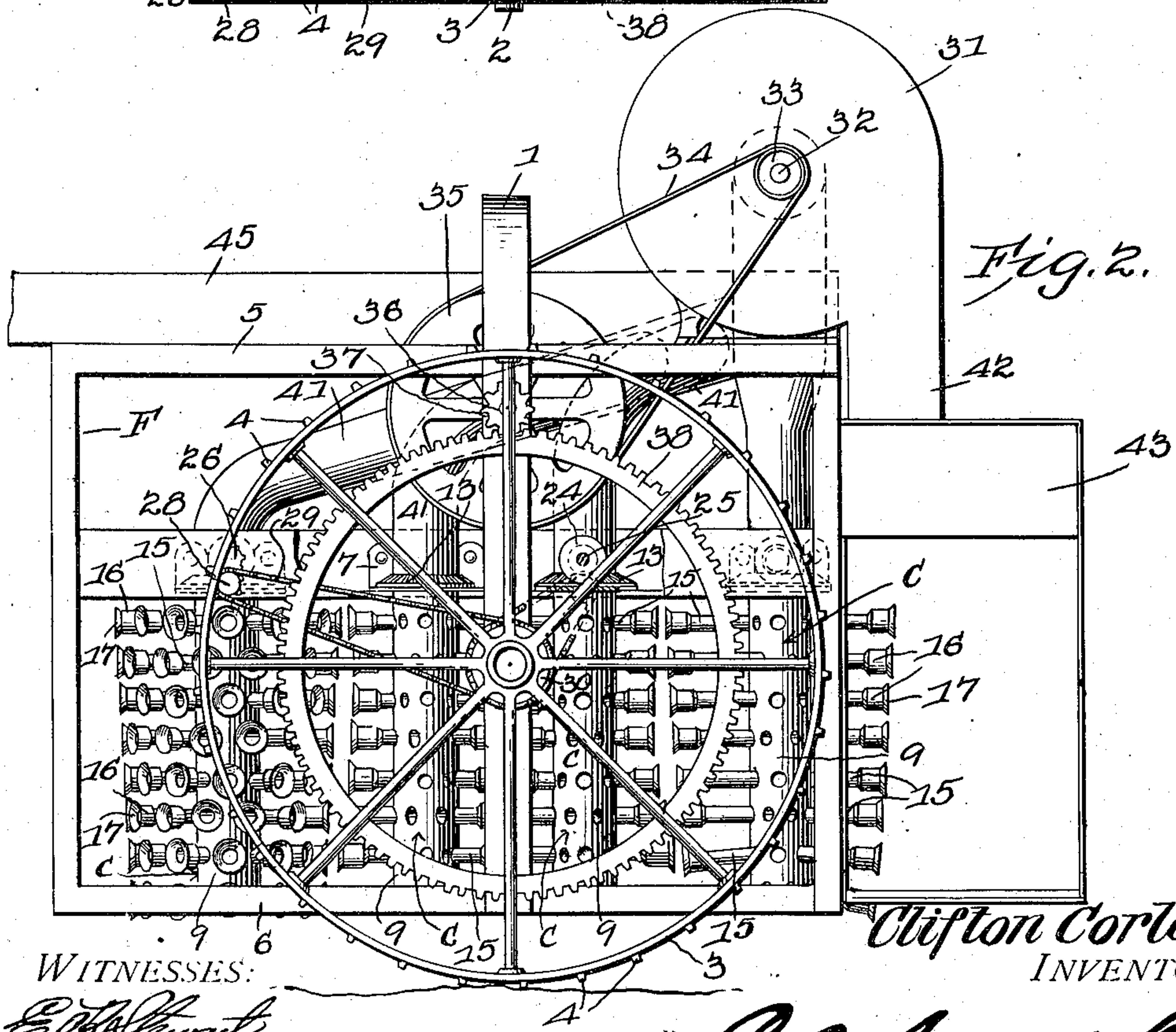
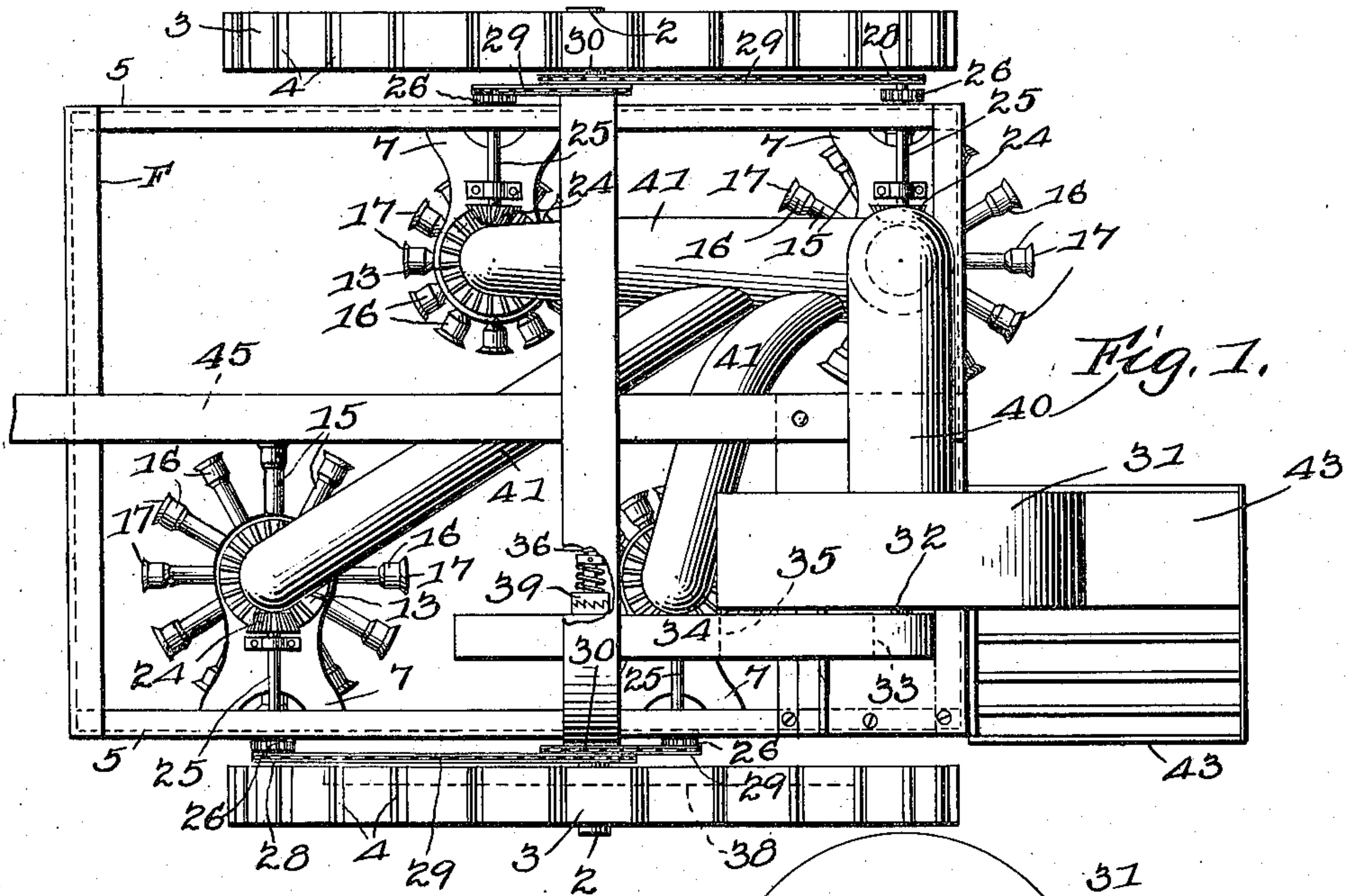


No. 858,371.

PATENTED JULY 2, 1907.

C. CORLEY.
COTTON HARVESTER.
APPLICATION FILED DEC. 20, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

E. H. Hunt
Wm. Bagger

By

Clifton Corley
Attorneys

Clifton Corley,
INVENTOR.

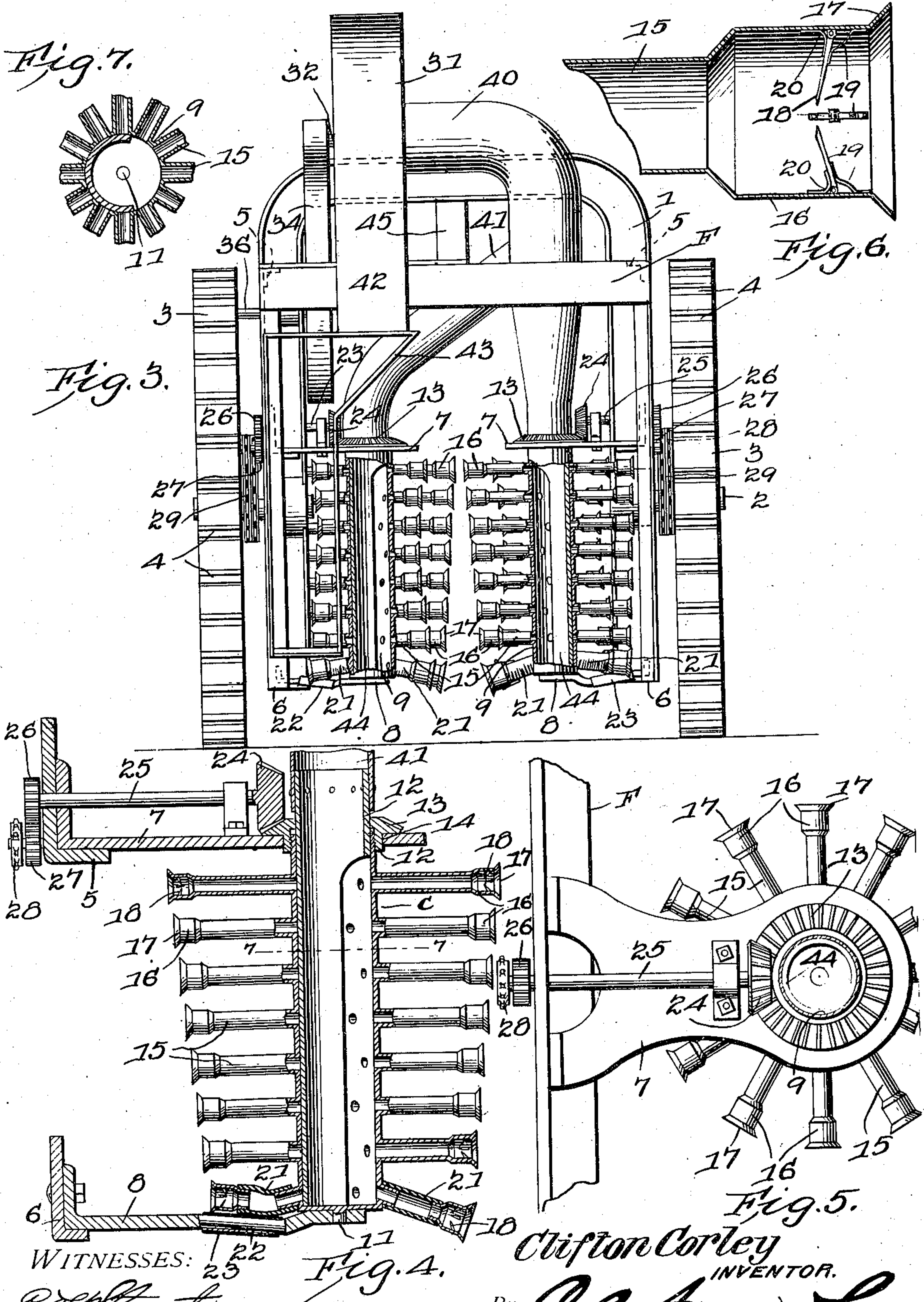
ATTORNEYS

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WITNESSES:
E. J. Stewart
Wm. Ragner

Clifton Corley
INVENTOR.
By *C. A. Snow & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

CLIFTON CORLEY, OF ATLANTA, GEORGIA.

COTTON-HARVESTER.

No. 858,371.

Specification of Letters Patent.

Patented July 2, 1907.

Application filed December 20, 1905. Serial No. 292,602.

To all whom it may concern:

Be it known that I, CLIFTON CORLEY, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented a new and useful Cotton-Harvester, of which the following is a specification.

This invention relates to cotton harvesting machines; and it has particular reference to that class of cotton harvesters in which suction is employed to loosen and detach the cotton bolls from the open pods and to convey the same to a receptacle carried upon the frame of the machine; the objects of the present invention being to simplify and improve the construction and operation of this class of devices.

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 accompanying drawings has been illustrated a simple and preferred form of the invention; and in said drawings, Figure 1 is a top plan view of a cotton harvester constructed in accordance with the principles of the invention. Fig. 2 is a side elevation of the same. Fig. 3 is a rear elevation. Fig. 4 is a vertical sectional view, enlarged, taken through one of the picking cylinders and related parts. Fig. 5 is a top plan view of one of the picking cylinders showing the bearing for the same. Fig. 6 is a sectional view, enlarged, of the outer end of one of the picking tubes. Fig. 7 is a sectional detail view taken on the plane indicated by the line 7—7 in Fig. 4. Fig. 8 is a sectional detail view taken on the plane indicated by the line 8—8 in Fig. 4.

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

The frame of the machine, generally designated F, includes an arch 1 provided with spindles or stub axles 2, upon which the carrying wheels 3, 3 are mounted for rotation, the rims of said wheels being provided with ground engaging cleats 4, so that they will take a firm hold upon the ground. The axle arch is preferably a substantial and massive casting, I-shaped in cross section, so that, while not excessively heavy, it will be strong enough to resist any strain to which it will be subjected.

The frame of the machine includes upper side members 5, 5 and lower side members 6, 6, and to said upper and lower side members are secured pairs of brackets 7, 8, the upper brackets being designated 7 and the lower ones 8. These brackets are disposed in staggering relation at the two sides of the machine. These pairs of brackets afford bearings for the rotary picking cylinders C, C; and as these picking cylinders are identical so far as their mechanical construction is concerned, the construction of a single one will apply to all. Each of the

picking cylinders, then, is composed of a cylindrical body 9, which may be constructed of sheet metal or other suitable material, and the lower end of which is provided with a closure 10 having a gudgeon 11 for which a bearing is formed in one of the brackets 8. The upper end of the cylinder 9 is screw threaded for the reception of a flange 12 formed upon a bevel gear 13 which is thus connected with the cylinder; a bearing, 14, for the flange of the bevel gear, being formed in the outer end of one of the brackets 7. Each of the cylinders 9 is provided with a plurality of series of spirally arranged radially extending tubular arms 15, the inner ends of which communicate with the interior of the cylinder, and the outer ends of which are provided with enlargements or heads 16 having beveled flanges 17 at their outer extremities. Interiorly upon the heads or enlargements of the picking tubes are pivoted fingers 18, 18, said fingers being annularly disposed with their free ends pointing in the direction of the axis of the picking tube; the outer and inner sides of the fingers 18 are pressed in opposite directions by means of springs 19 and 20, the former of which exert greater tension than the latter, so that the free ends of the fingers 18 will be normally tilted in the direction of the inner ends of the picking tubes, as will be best seen by reference to Fig. 6 of the drawings. The picking tubes are preferably constructed of sheet metal and may be soldered upon or otherwise connected with the cylinders; the lowermost tier of picking tubes connected with each cylinder are, however, provided with flexible portions 21 of rubber hose or other suitable flexible tubing, and the picking tubes of said lowermost tiers are preferably tilted downwardly in the direction of the ground, so that they will operate to pick such cotton bolls as are close to the ground and which otherwise might escape without being picked. For the purpose of enabling the flexible picking tubes to traverse the lowermost brackets 8, when the machine is in operation, said brackets are provided, each, with a pair of rollers 22 over which is stretched a flexible apron 23 which, being engaged by the outer ends of the lowermost picking tubes, will elevate the latter and permit them to ride over the brackets 8 without injury or excessive wear to any of the parts.

It will be understood from the foregoing description, that the row of cotton plants that is to be operated upon, will, in practice, be straddled by the machine, so that the picking cylinders supported by the two sides of the frame will operate upon opposite sides of the growing plants. It is well known that it is usually necessary to pick over the plants a number of times, as the bolls do not all open at the same time; it is therefore of great importance that the plants be not injured by the operation of the machine, inasmuch as, if injured, a considerable portion of the later crop will be destroyed and lost. At the same time, it is very necessary in a machine of this kind that the plants should be closely engaged by the

picking apparatus, in order that no portion of the cotton may be missed thereby. It is for this reason that the picking cylinders at the two sides of the machine are disposed staggering with relation to each other, as, by this arrangement, they may be extended much nearer to the center line than would be possible by arranging them in pairs opposite to each other. By the staggering arrangement of the picking cylinders, the cotton plants will be swayed or moved gently from one side to another between the picking cylinders, with a zig-zag motion, as the machine progresses, and the entire surface of each plant will be fully exposed to the action of the picking mechanism. In order to further increase the efficiency of the picking mechanism, the picking tubes are made of unequal lengths; the mouths of the picking tubes upon some of the cylinders combining to present an hour-glass-shaped appearance, while others present an inverted coniform appearance, as will be readily seen by reference to the drawings; it will, moreover, be seen that the picking cylinders having the tubes extended to form the hour-glass-shaped appearance are disposed at the middle of the frame, while the cylinders having the tubes extended to present an inverted coniform appearance are disposed at the front and rear ends. This arrangement has been found in every respect desirable and advantageous for producing the most satisfactory results in reaching all parts of the plants; but I desire it to be understood that this precise arrangement may be departed from if it should be found desirable for any reason to do so.

The bevel gears 13 of the several cylinders are placed in mesh with bevel pinions 24 upon suitably supported shafts 25, the outer ends of which are provided with pinions 26 meshing with suitably supported idlers 27 with which are connected sprocket wheels 28, the latter being driven by means of chains 29 from sprocket wheels 30 that are connected for rotation with the carrying wheels 3 of the machine. In the preferred form of machine, two cylinders are supported at each side of the frame, and two sprocket wheels 30 will be connected with each of the carrying wheels for the purpose of driving said cylinders. The idlers 27 are employed simply to cause the cylinders to be rotated in the proper direction.

Supported upon the frame of the machine is the casing 31 of a suction or exhaust fan, the shaft of which, 32, has a pulley 33 driven by means of a belt or band 34 from a pulley 35 upon a shaft 36 which carries a pinion 37 meshing with a large spur wheel 38 connected with one of the carrying wheels, the proportions of the driving elements being such as to enable the parts to be properly speeded. The band wheel 35 is preferably made of suitable weight and dimensions to constitute a balance wheel, and it is mounted loosely upon the shaft 36 with which it is connected for rotation in the proper direction by means of a spring actuated clutch member 39, whereby, if the progress of the machine should be suddenly arrested, the balance wheel and the fan driven thereby may continue to rotate until the momentum is exhausted. The eye of the fan casing is connected by means of a winged trunk 40 having branches 41 with the upper ends of the several picking cylinders; the several branches being made of such proportions, or cross sectional area, as may be found necessary for the successful operation of the device. The fan casing dis-

charges in a downward direction through a spout 42 into a receptacle, such as a bag which may be temporarily supported by means of a cage or carrying device 43 suitably supported upon the frame of the machine in a position where it will not interfere with the progress of the machine or operate to injure the cotton plants.

In order to prevent air from being drawn through other picking tubes than those which are in active engagement with the cotton plants, there is arranged in each of the cylinders a shield or valve 44 extending preferably around somewhat more than one half of the circumference, so as to cover the inner ends of such of the picking tubes as extend outwardly from the plants. The upper ends of the shields 44 are extended into the wind trunks or conducting pipes connected with the cylinders and are bolted or riveted upon, or otherwise suitably connected with, said pipes.

Draft may be applied to the machine by means of a tongue 45 suitably connected with the axle arch and with the frame. Ordinarily a single team of horses or mules will be sufficient for the propulsion and operation of the machine. A seat for the driver or operator may be supported in any suitable position upon the frame.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood. When the machine progresses over the ground, the fan is operated to establish suction in the several picking cylinders, causing the air to rush in through such of the picking tubes as are not covered by the shields or valves 44, the cylinders being at the same time rotated in the proper direction by the means provided for the purpose. It may be here stated, that it is preferred to drive the cylinders at a speed which will cause the peripheries of said cylinders, that is to say, the extremities of the picking tubes connected with said cylinders, to travel at a speed as nearly as possible equal to the speed at which the machine progresses; the machine will thereby be prevented from dragging and thus injuring the plants. It is, of course, understood that owing to the difference in the length of the picking tubes, there will be a difference between the linear movements of the outer extremities of said tubes, and that, consequently, some of said tubes will drag while others will lag over the plants; but by proper gearing, such dragging and lagging movement may be reduced to a minimum. Owing to the staggering disposition of the picking cylinders, the plants will be swayed gently to and fro, as the machine advances, and every part of each plant will be subjected to the action of the picking tubes, the inrushing air serving to detach the cotton locks and to carry the same through the tubes, cylinders, conductors and fan casing and into the receptacle provided beneath the discharge spout of the fan casing. Leaves, immature bolls or pods, and the like, which may be caused by the inrushing air to enter into the mouths or expanded ends of the picking tubes, will not become detached from the plants, to which, as is well known, they adhere with far greater tenacity than the locks of cotton; but even if they should enter beyond the confines of the spring actuated fingers 18, the latter will yield in an outward direction against the tension of the springs 19 and will permit such leaves, bolls, and the like, to be withdrawn; said fingers 18 at the same time serve to prevent the possibility of loss of any portion of the matured cotton.

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

1. A cotton picker comprising an arm supported for rotation about a vertical axis and constituting a passage through which the cotton passes, means for continuously rotating said arm about said axis and means for creating suction through said arm.

2. A cotton picker consisting of arms radially disposed about a vertical axis at different elevations and supported for rotation about said axis, the upper arms being longer than the lower arms and means for creating suction through said arms.

3. A cotton picker consisting of arms radially disposed at different levels and supported for rotation about a vertical axis, the upper arms being longest, the lower arms being shortest, the ends of the intervening arms lying in lines drawn between the ends of the upper and lower arms and means for creating suction through said arms.

4. In a cotton picking machine, a hollow cylindrical member mounted for rotation and having outward extending picking arms, said rotary member and said picking arms being open for the passage of cotton bolls there-through, and means connected with said rotary member for setting up suction therethrough and through the picking arms.

5. In a cotton harvester a pair of supporting brackets, a picking cylinder supported for rotation by said brackets, tubular suction arms extending from the cylinder and having flexible portions, guide rollers connected with one of the brackets and an apron supported by said rollers.

6. In a cotton harvester, a picking cylinder supported for rotation, means for establishing suction within the

cylinder, picking tubes radiating from the cylinder and having enlarged outer ends, fingers pivoted upon the picking tubes near their outer extremities and pointed toward the axes of the tubes and springs pressing against opposite sides of said fingers.

7. In a cotton harvester, a frame, pairs of brackets supported in staggering relation upon opposite sides of the frame, vertical cylindrical cotton ducts supported for rotation in said brackets and having beveled gears at their upper end, picking tubes extending from and connected with said rotary cotton ducts, driven pinions meshing with the bevel gears at the upper ends of the rotary cotton ducts, a suction fan casing having a discharge spout, a wind trunk having branches connecting the fan casing with the rotary cotton ducts, valve shields connected with the branches of the wind trunk and extending into the rotary cotton ducts and a bag supporting cage supported by the frame beneath the discharge spout of the fan casing.

8. In a cotton picking machine a cotton duct supported for rotation and having tubular arms, means including a wind trunk connected with one end of the rotary duct for setting up suction therethrough and the tubular arms, and a valve shield connected with the wind trunk and extending within the rotary duct to obstruct the inner ends of some of the tubular arms.

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

CLIFTON CORLEY.

Witnesses:

G. S. PRIOR,

J. FRANK FAIR.