3 Sheets. Sheet. 1.

A. H. Wagner.

Impt. in Harvesters.

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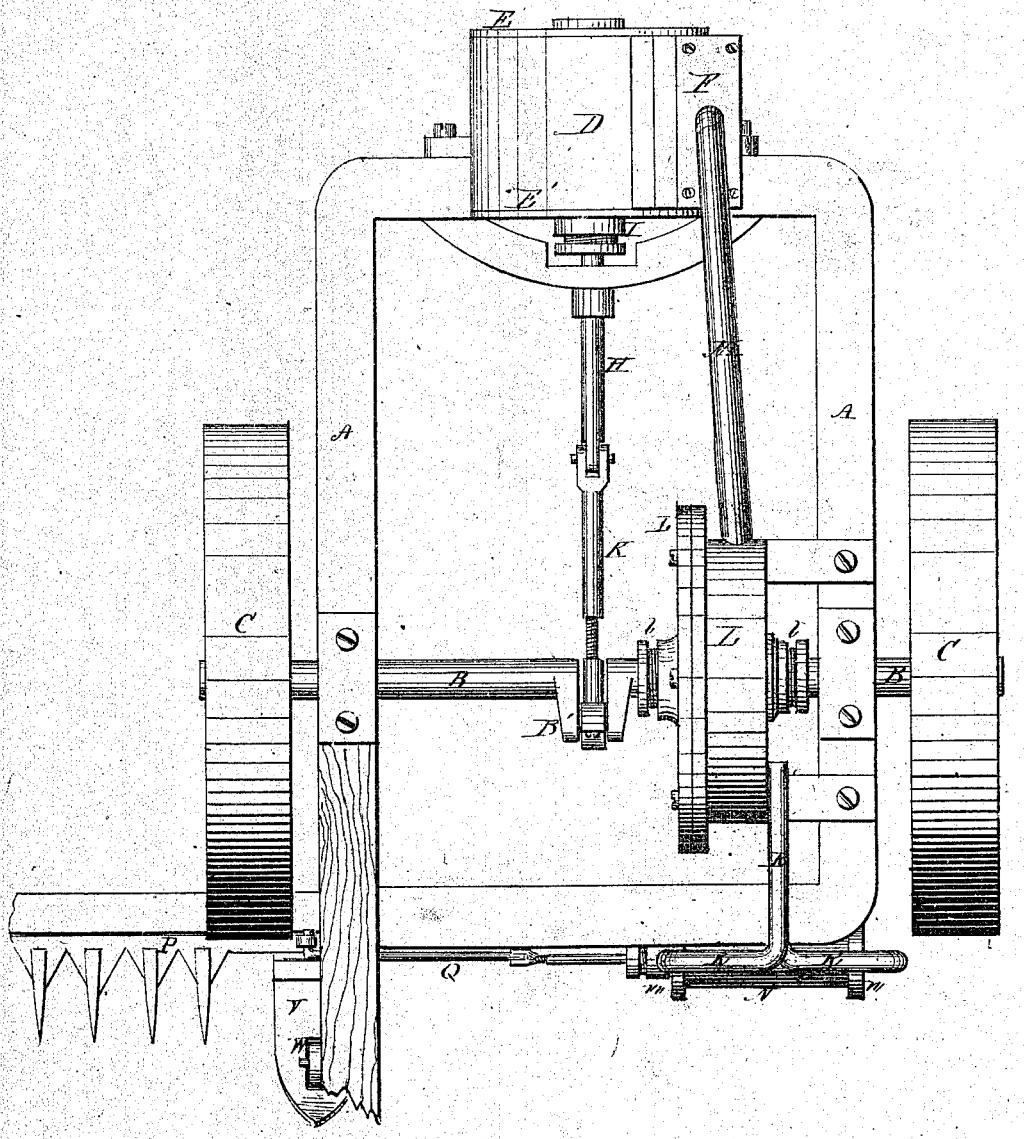
Fig. 1.



Witnesses.

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3 Sheets Sheet 2.

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Fig. 2.

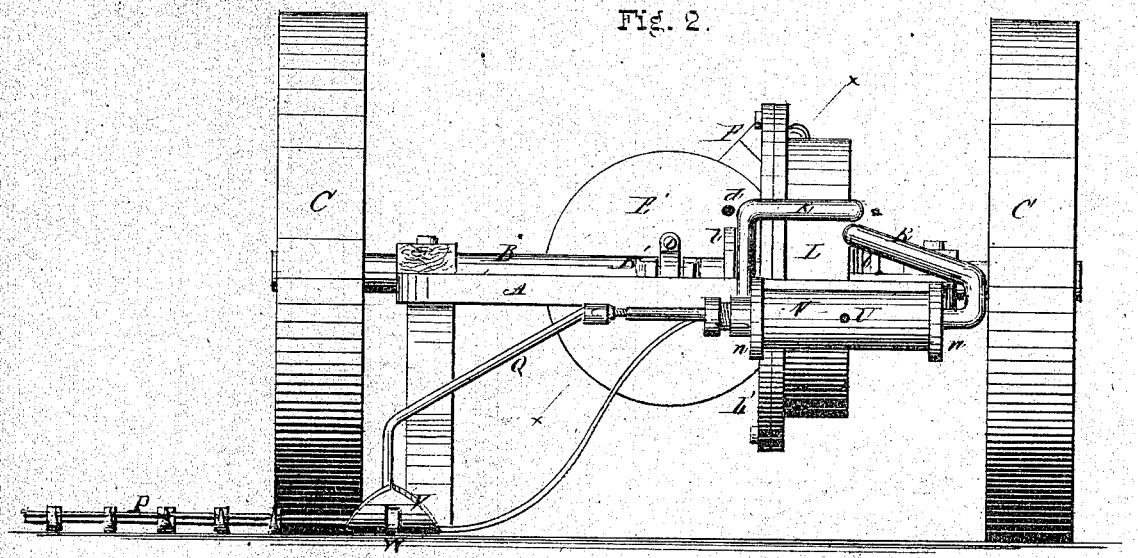
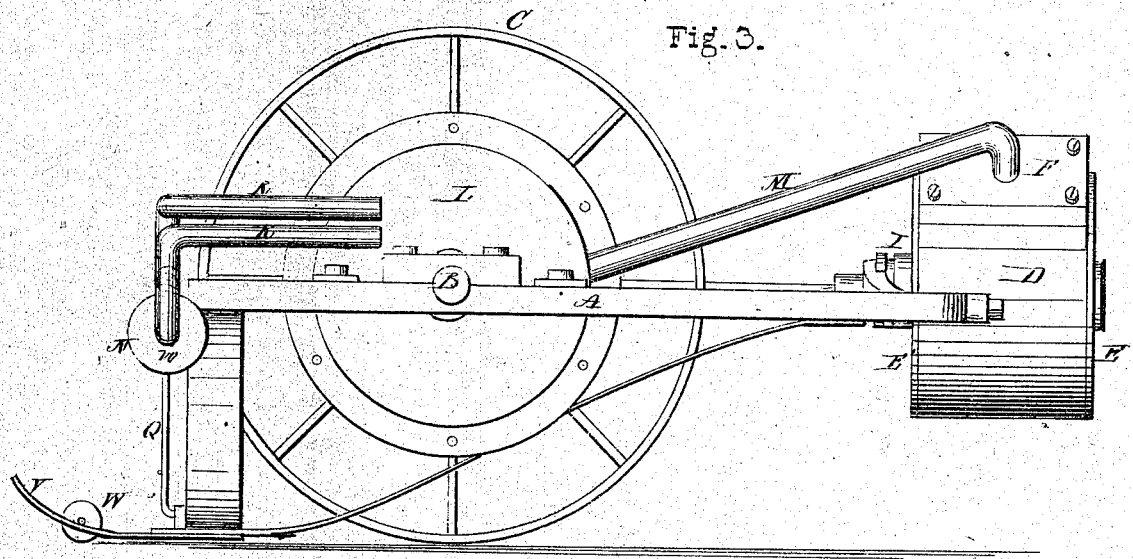


Fig. 3.



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3 heels Sheet 3.

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Fig 4.

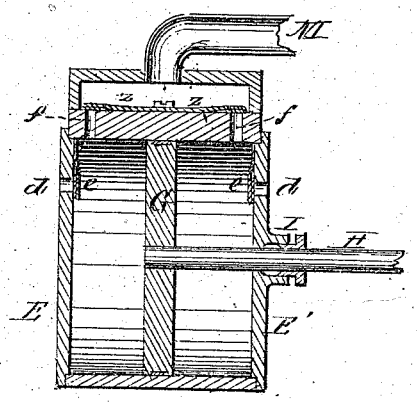


Fig. 5.

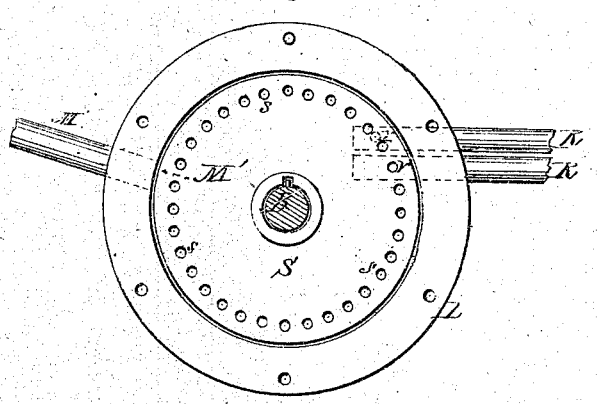


Fig. 6.

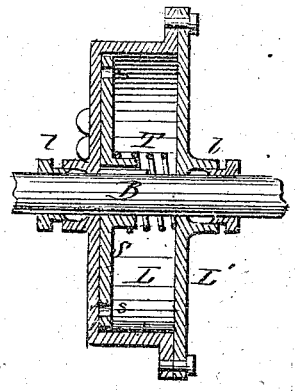
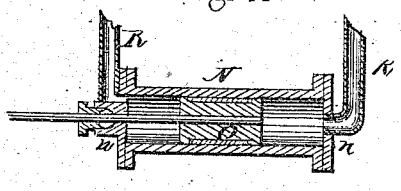


Fig. 7.



Witnesses.

A. Edelmeier

Paul J. Mann

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United States Patent Office.

AUSBERT H. WAGNER, OF CHICAGO, ILLINOIS.

Letters Patent No. 108,069, dated October 4, 1870.

IMPROVEMENT IN HARVESTERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, AUSBERT H. WAGNER, of Chicago, in the county of Cook and in the State of Illinois, have invented certain new and useful Improvements in Harvesters; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a plan view of the upper side of my improved harvester;

Figures 2 and 3 are a front and an end elevation, respectively, of the same;

Figure 4 is a central longitudinal section of the air-pump, on the line *x x* of fig. 2;

Figure 5 is an elevation of the inner side of the valve-box with the cover removed, so as to show the valve;

Figure 6 is a vertical central section of the same, with the cover in place; and

Figure 7 is a vertical longitudinal section of the operating cylinder and piston.

Letters of like name and kind refer to like parts in each of the figures.

My invention has for its object the employment of compressed air, or its equivalent, for the purpose of driving the operating mechanism of harvesters or mowers; and, to this end,

It consists in combining, with the driving-axle and cutter-bar of a harvester or mower, air-compressing and air-actuating devices, substantially as and for the purpose hereinafter shown and set forth.

It further consists in the construction of the valve-chamber and valve for controlling the admission of air to the working cylinder, substantially as is hereinafter specified.

It finally consists in the general construction and arrangement of the air-compressing and operating mechanism, substantially as is hereinafter set forth.

In the annexed drawing—

A represents a rectangular metal frame, having journaled upon its upper side an axle, B, upon each end of which is a traction-wheel, C, of usual form.

Secured to or upon the rear end of the frame A is an air-pump, consisting of a short cylinder, D, inclosed at either end by means of a head, E, and having upon one side a valve-box, F, which communicates with the interior of said cylinder through two openings, *f*, situated near the ends of said box, and each closed by means of a spring, *z*, opening outward from the cylinder.

An opening, *d*, passing through each head E, and closed upon the inner side, by means of a spring valve, *e*, serves to admit air to the cylinder upon either side of the piston or plunger G, which plunger is of usual construction, and is operated by means of a rod, H, secured to its center, and passing outward through a stuffing-box, I, within the head E′, its outer end being connected to or within a crank, B′, upon the axle B, by means of a connection, K, pivoted upon both rod and crank.

As thus constructed the motion of the axle, caused by the revolution of the traction-wheels, will produce a reciprocating motion of the pump-plunger, by which means air will be alternately drawn into the cylinder, through the openings in the heads, and then expelled therefrom into the valve-box.

Secured to or upon the side of the frame A is a cylindrical chamber or valve-box, L, inclosed upon its inner end by means of a head, L′, and connected with the valve-box F by means of a pipe, M. The axle B passes through the center of the valve-box L, suitable stuffing-boxes *l* being provided for its reception within both the closed end of said box and the head L′.

N represents a cylinder, secured horizontally and at a right angle to the line of draft upon the front end of the frame A, and containing a piston, O, of usual form, which is connected with the inner end of the cutter-bar P, by means of a connection, Q, pivoted to both bar and rod, so that a reciprocating movement of said piston within said cylinder will be communicated to said cutter-bar.

The ends of the cylinder N are closed by means of heads *n*, of usual form, to each of which is attached an induction-pipe, R, that from thence extends upward and rearward, and communicates with the interior of the valve-box L through suitable openings *r*, passing inward through the outer end of said box, so as to admit air from the latter into said cylinder, for the purpose of actuating the piston.

In order to control the admission of air to the cylinder, and cause it to enter each end thereof alternately, a circular disk, S, corresponding in size to the inside of the valve-box L, is fitted upon the axle B, with its outer plane face bearing upon the corresponding surface of the closed head of said valve-box, against which it is held by means of a spiral spring, T, coiled around said axle, with its end bearing against said disk and the head L′.

A series of openings, *s*, corresponding in size and in radial position with the openings *r* within the valve-box L, are provided in and through the disk or valve S, and so arranged with relation to said openings *r* as to afford communication through the same and the pipes R, with but one end of the cylinder at the same time.

A suitable key, fitted within the surface of the axle, and loosely within the seat of the valve S, secures said axle and valve in position radially, so as to cause them to revolve together, while allowing the latter

to move freely in a longitudinal direction upon the former.

As seen in fig. 2, the exhaust-port U of the cylinder N is situated upon its front side, midway between its ends, and is opened and closed by means of the piston O, the length of which is just one-half the length of its stroke less one-half the width of said port.

As thus constructed the operation of this device is as follows:

Upon driving forward the machine the motion of the traction-wheels is communicated through the crank B′ and connection K to the pump-plunger G, causing the same to force the air into the valve-box L, from which it is admitted alternately into opposite ends of the cylinder N, forcing the piston O forward until it has passed the exhaust-port U, when the air escapes, a fresh supply enters at the opposite end of the cylinder, and returns the piston to its first position.

By means of the connection Q, the reciprocating motion of the piston is communicated to the cutter-bar, the force and velocity of which will be governed entirely by the relative diameters of the air-pump and piston, and consequently the pressure of the air employed as a motive-power.

V represents the shoe extending forward and upward in a curve from the heel of the finger-bar, and having pivoted within a suitable slot, passing vertically and longitudinally through the same, a roller, W, as seen in figs. 1 and 2.

The especial advantage obtained by the employment of the roller and its arrangement within or upon the shoe is that, while much lessening the draft of the machine, it is thoroughly protected from injury, and is consequently more durable.

It is believed that the employment of air, compressed by the motion of the machine, for imparting motion to the operating parts of a harvester or mower, will cause a saving in the power heretofore required, and materially increase its uniformity of motion and efficiency.

Having thus fully set forth the nature and merits of my invention,

What I claim as new is—

1. In combination with the driving-axle and cutter-bar of a harvester or mower, air-compressing and air-actuating devices, substantially as and for the purpose specified.

2. The valve-box L, provided with the induction-port M′ and eduction-ports *r r*, in combination with the rotary valve S and the axle B, substantially as and for the purpose shown and described.

3. The combination of the axle B, provided with the crank B′, the cylinders D and N, the valve-boxes F and L′, the valves *z* and S, the plunger G, the rods H and *o*, the connections K and Q, and the piston O, substantially as and for the purpose shown.

In testimony that I claim the foregoing, I have hereunto set my hand this 9th day of July, 1870.

AUSBERT H. WAGNER

Witnesses:

CHAS. KAESTNER,

CHAS. D. FLANDERS.