

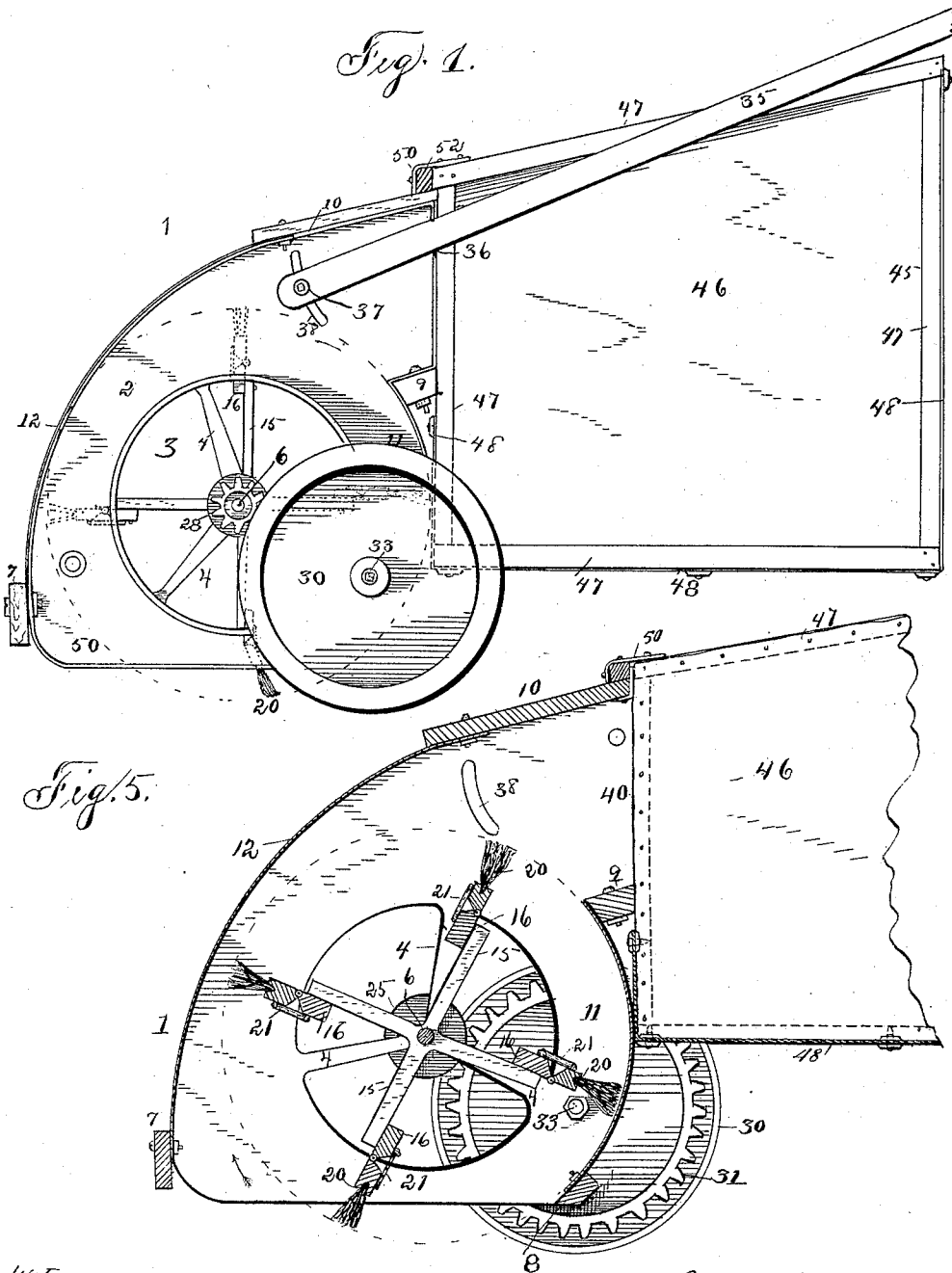
(No Model.)

3 Sheets—Sheet 1.

L. A. SCHAEFFER.  
LAWN SWEEPER.

No. 463,236.

Patented Nov. 17, 1891.



Witnesses  
W. Johnson,  
J. R. Nottingham

L. A. Schaeffer  
Inventor  
By W. A. Bartlett  
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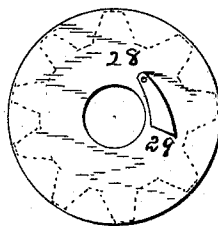
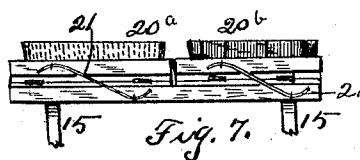
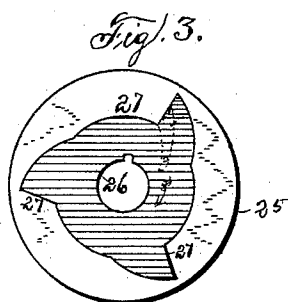
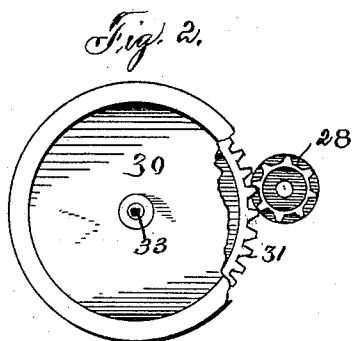
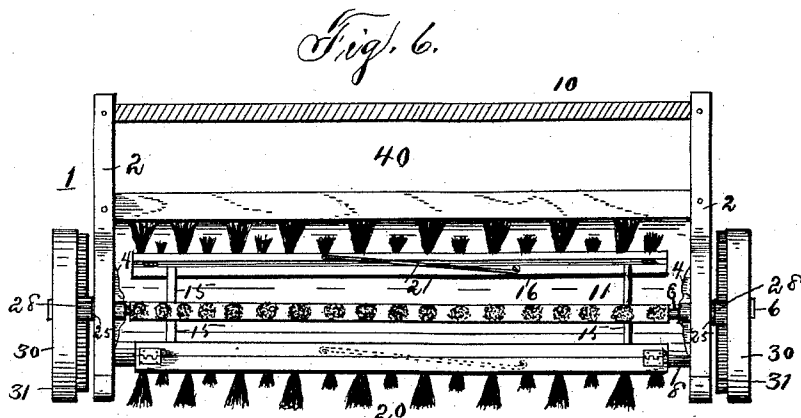
(No Model.)

3 Sheets—Sheet 2.

L. A. SCHAEFFER.  
LAWN SWEEPER.

No. 463,236.

Patented Nov. 17, 1891.



Witnesses  
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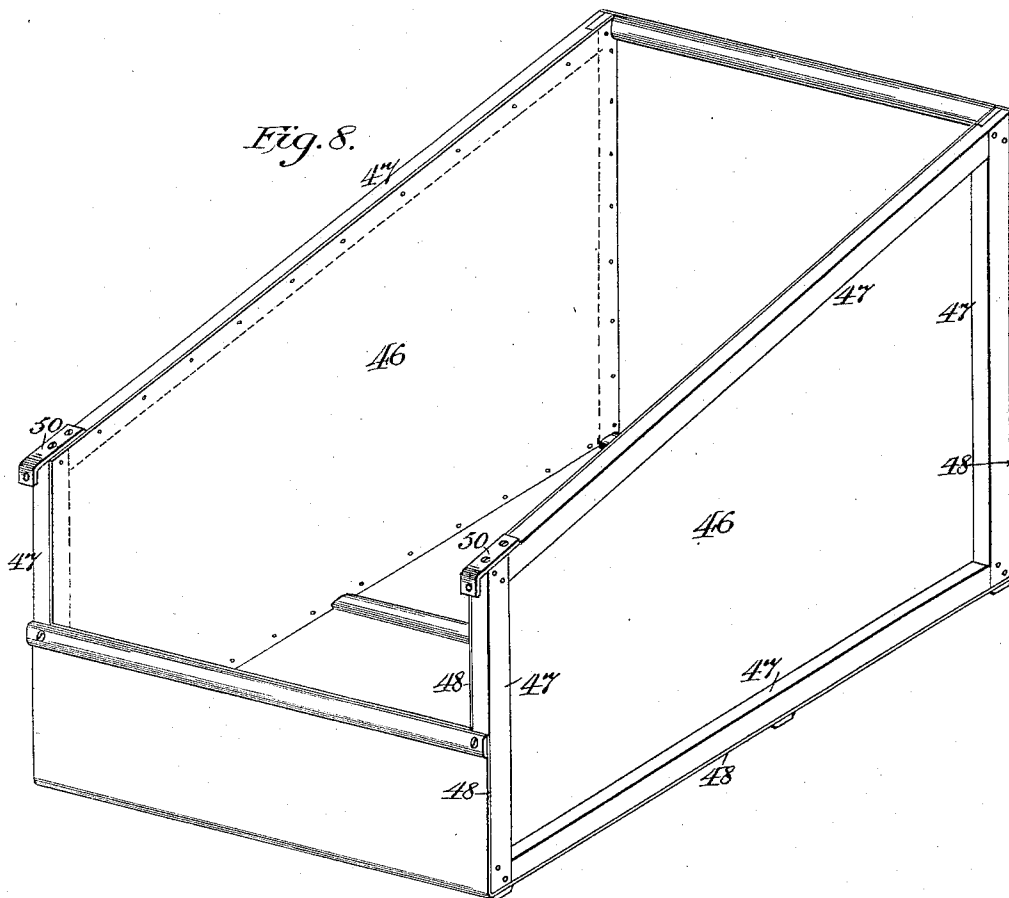
(No Model.)

3 Sheets—Sheet 3.

L. A. SCHAEFFER.  
LAWN SWEEPER.

No. 463,236.

Patented Nov. 17, 1891.



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*W. J. Thomsen.*  
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# UNITED STATES PATENT OFFICE.

LESTER A. SCHAEFFER, OF DAYTON, OHIO.

## LAWN-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 463,236, dated November 17, 1891.

Application filed October 3, 1890. Renewed October 5, 1891. Serial No. 407,689. (No model.)

### *To all whom it may concern:*

Be it known that I, LESTER A. SCHAEFFER, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Lawn-Sweepers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to sweeping-machines especially designed for lawns.

The object of the invention is to produce a sweeping-machine in which the clippings from a lawn-mower and other waste and debris may be lifted and carried to a receptacle largely by the air-current produced by a combined rotary brush and fan; also, to produce a sweeper in which the brush portion of the combined brush and fan shall have a yielding movement, independent of its elasticity, to avoid uneven movement and breakage by obstructions; also, to produce a convenient "knock-down" receptacle, attached to the machine, to receive the waste and litter; also, to improve the machine in various parts.

Figure 1 is an end elevation of the machine, showing the refuse-receptacle attached. Fig. 2 is a detail of the gears, partly broken. Figs. 3 and 4 are details of the driving-clutch pinion enlarged. Fig. 5 is a central cross-section of the machine with refuse-receptacle partly broken away. Fig. 6 is a front elevation of the machine with front casing removed. Fig. 7 is a view of the knockdown receptacle for debris. Fig. 8 is a detail elevation of one of the wings of the rotary fan, showing the brush proper in sections, as hereinafter referred to.

The numeral 1 indicates the inclosing casing of the machine. This casing has, by preference, end castings 2 2, which have openings 3, each provided with a spider 4. The spiders 4 have bearings for the shaft 6 of the rotary brush and fan. The end plates or castings are connected by bars 7, 8, 9, and 10, forming a strong frame-work, approximately rectangular, but with the plane faces of the bars standing tangential to the curves of the end plates, as shown. Back plate 11 and front plate 12, usually of thin metal, are curved around the end plates and connected to the bars, as shown, thus forming an inclosed casing with a long opening at the bottom and at

the upper part of the rear side. The shaft 6, having bearings in the spiders of the end plates of the casing, carries arms 15, which are rigid with the shaft. These arms are connected by bars 16, which are parallel with the shaft 6. The shaft 6, with its arms and bars, makes a kind of rotary fan. The bars 16 carry brushes 20, preferably pivoted to said bars. These brushes 20 may consist of base-pieces having bristles therein, or the brushes may be of leather, thin metal, or fibrous material, which should be sufficiently elastic to yield slightly. The brushes 20 are pivoted to bars 16, and are held in radial position on the fan by springs 21, which press on the bars 16 and on the bases of the brushes. The joint between bars 16 and brushes 20 is thus made yielding, so that the brushes may swing back out of radial position if they encounter an obstacle.

The rotary brush and fan is driven by a clutch-plate 25 on the shaft 6, which plate is rigid with the shaft. Plate 25 has a recess 26, provided with bearing-faces 27. A pinion 28, mounted loosely on shaft 6, carries a pawl 29, which pawl lies in the recess 26 of plate 25. When the pinion 28 is driven in one direction, the pawl engages one or the other of the faces 27 and carries the plate 25 round with the pinion, thus driving the fan and brush. In reverse direction the pawl passes round loosely without engaging the clutch-plate. The pawl is thrown into locking engagement with the clutch-plate, when moving in the proper direction, by any suitable force. The driving-wheels 30 are mounted on short axles 33, projecting from the end plates 2 of the casing, the wheels 30 having pinions or driving-gears 31, which engage the driving-pinions 28, so that the brush and fan are rotated when the machine is drawn or pushed in one direction on the wheels, but do not rotate when the machine is run in the opposite direction. The axles 33, on which the wheels 30 are mounted, are near the rear sides of end plates 2. Push bars or handles 35 are attached near the upper rear corner of these plates 2. The handle-bars 35 pass through notches 36 in the flange of the end plates and are held to the plates by bolts 37, adjustable in slots 38. The handle-bars are thus made adjustable as to height, and when properly

adjusted the elevation or depression of the handles 35 will raise or lower the brush by rocking the brush and casing on the axles of wheels 30.

5 The sweeper is generally used as a fan to clean a smooth lawn. The machine is pushed along the ground, and the fan and brush drives a strong current of air in the direction of the arrows, Figs. 1 and 5, and mown grass, 10 leaves, dust, twigs, &c., with it. If the débris is ground into the turf, it will be necessary to depress the brush by lifting the handles; but with light substances the wind-current is sufficient to do the sweeping. If the ends of the 15 bristles, or whatever may be used in the brush, are brought against an obstruction, as a stone or rough place in the ground, the springs 21 will yield, allowing the brushes 20 to swing back, thus avoiding injury to the machine. 20 In long machines the brushes 20 may be made in sections, so that one part will yield while the remainder is held in radial position by its spring. The open bottom of the casing and the openings at the ends should be of such 25 size as to admit an air-supply to keep up a strong air-current. The dust and débris are carried from the front of the brush or fan over the same and thrown backward through the opening 40 at the upper rear part of the 30 casing.

A box or receptacle 45 behind the machine receives the short grass, leaves, &c., swept up or fanned up by the machine. This receptacle consists, preferably, of two polygonal 35 end pieces 46, composed of a wooden frame and cloth or canvas sides. These box ends have a bottom and side covering 48, of some suitable fabric, strengthened, if needful, by braces, and the fabric covering is readily detachable from the ends. The box or dirt- 40 receptacle is thus made knockdown, and is very light and strong. The ends of receptacle 45 have hooks 50, which are near the positions of hooks 51 on the machine-casing. When 45 the box 45 is applied to the machine, a bar 52 is applied between the hooks, holding the dirt-receptacle firmly to the machine. The end plates 2 are preferably cast with flanges 50 along the edges. These flanges strengthen 50 the end plates and form a convenient place for attachment of the frame-pieces 7 8 9, as the frame may be bolted to the flange. The opening through the ends permit the entrance of air to operate the fans. The canvas bottom 48 of the dirt-receptacle is attached to the 55 frames 47, just under the mouth 40 of the casing. The back plate 11 is on a curve about concentric with the fan and close to the ends of the brushes. The bar 9 inclines so that any

60 débris which fails to pass into the box or dirt-receptacle will fall back and be carried round again by the fan. The front plate 12 is bent on a larger curve than plate 11 and is close to the brush only at its central part. This form of casing tends to give good results in directing the air-current. The casing approximates the form of a scroll, as will be seen in 65 Figs. 1 and 5.

The machine may also be used as a road-sweeper. 70

It is apparent that modifications may be made within reasonable limits without departing from the spirit of the invention.

What I claim is—

1. In a lawn-sweeper, an inclosing casing, a 75 combined rotary brush and fan within the casing, said brush having springs which retain it in extended position, but which yield independently of the elasticity of the brush when an obstruction is encountered, and 80 means for rotating said brush and fan, in combination.

2. In a sweeper of the character described, the casing, a rotary shaft within the casing, 85 arms on the shaft carrying bars to which brushes are hinged, and springs bearing on the arms and on the brushes to hold them in radial position, but to yield when an obstacle is encountered, all substantially as described.

3. The combination of the end plates having 90 flanges for attachment of the casing, and a spider supporting the shaft of the combined fan and brush, bars forming the frame of the casing attached to said flanges, and curved front and rear plates secured to said bars to 95 complete the casing, substantially as described.

4. The combination of the casing and rotary brush therein, the detachable box ends connected thereto, and the box sides and bottom 100 consisting of flexible material readily detachable from the box ends, substantially as described.

5. The combination of the casing having inclosed brush, as described, said casing provided with projecting hooks, the dust-receptacle having hooks in proximity to the hooks 105 of the casing, and a bar extending through and interlocking with all the hooks to connect the casing and dust-receptacle, all substantially as described. 110

In testimony whereof I affix my signature in presence of two witnesses.

LESTER A. SCHAEFFER.

Witnesses:

CLARA P. COTTOM,  
WILLIAM B. SULLIVAN.