

2 Sheets—Sheet 1.

No. 582,318.

Patented May 11, 1897.

Fig. 1.

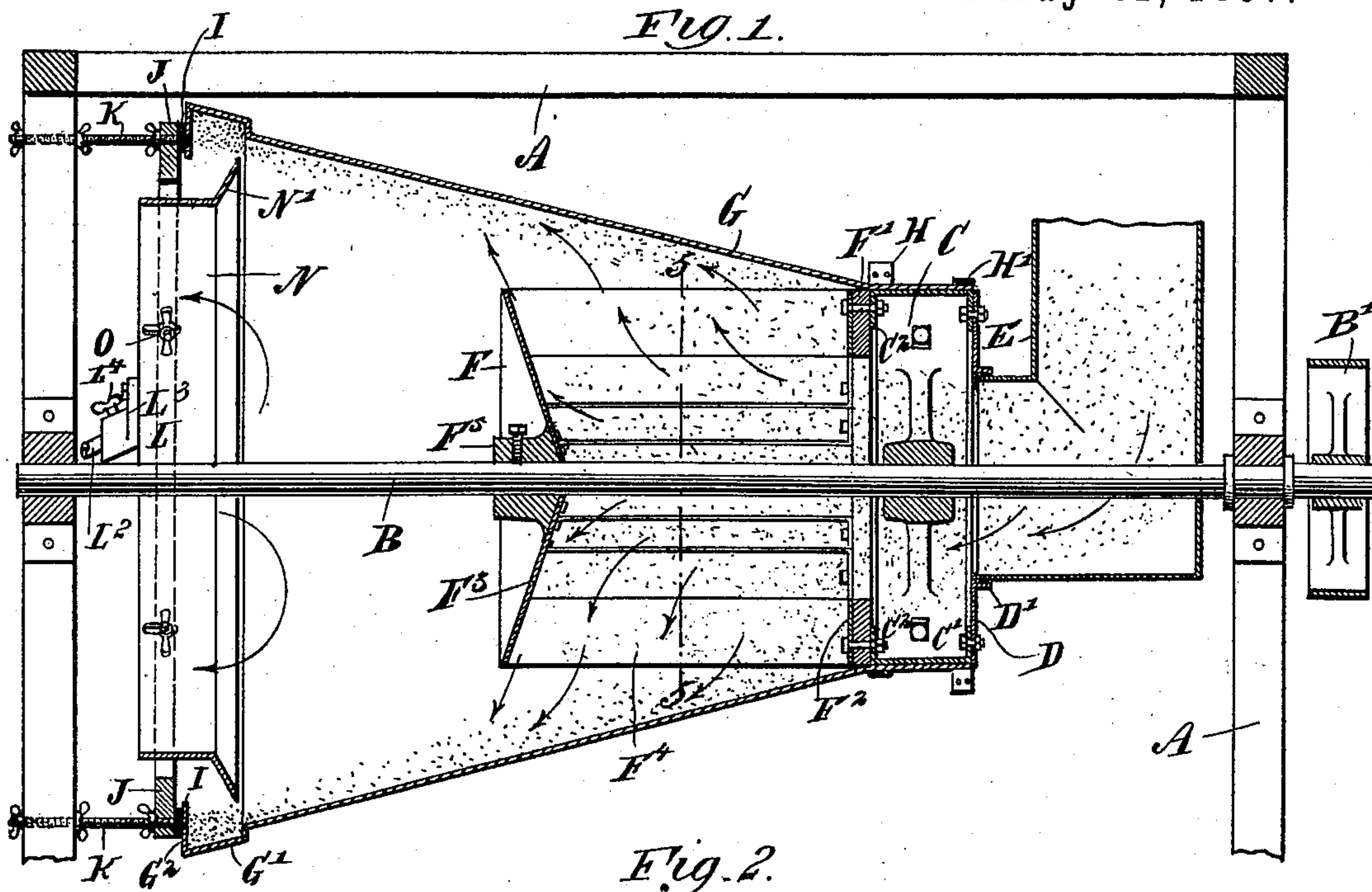
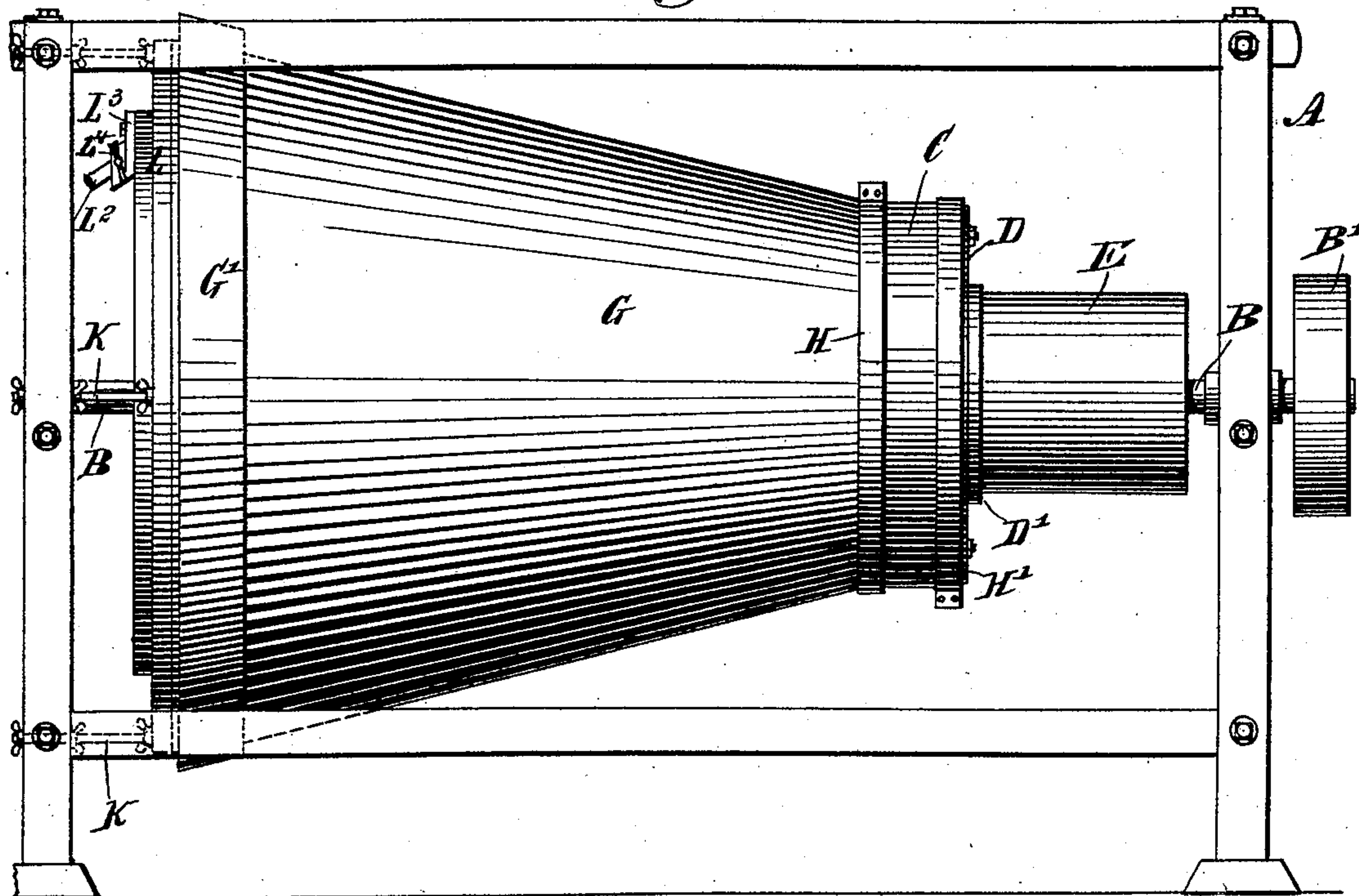


Fig. 2.



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(No Model.)

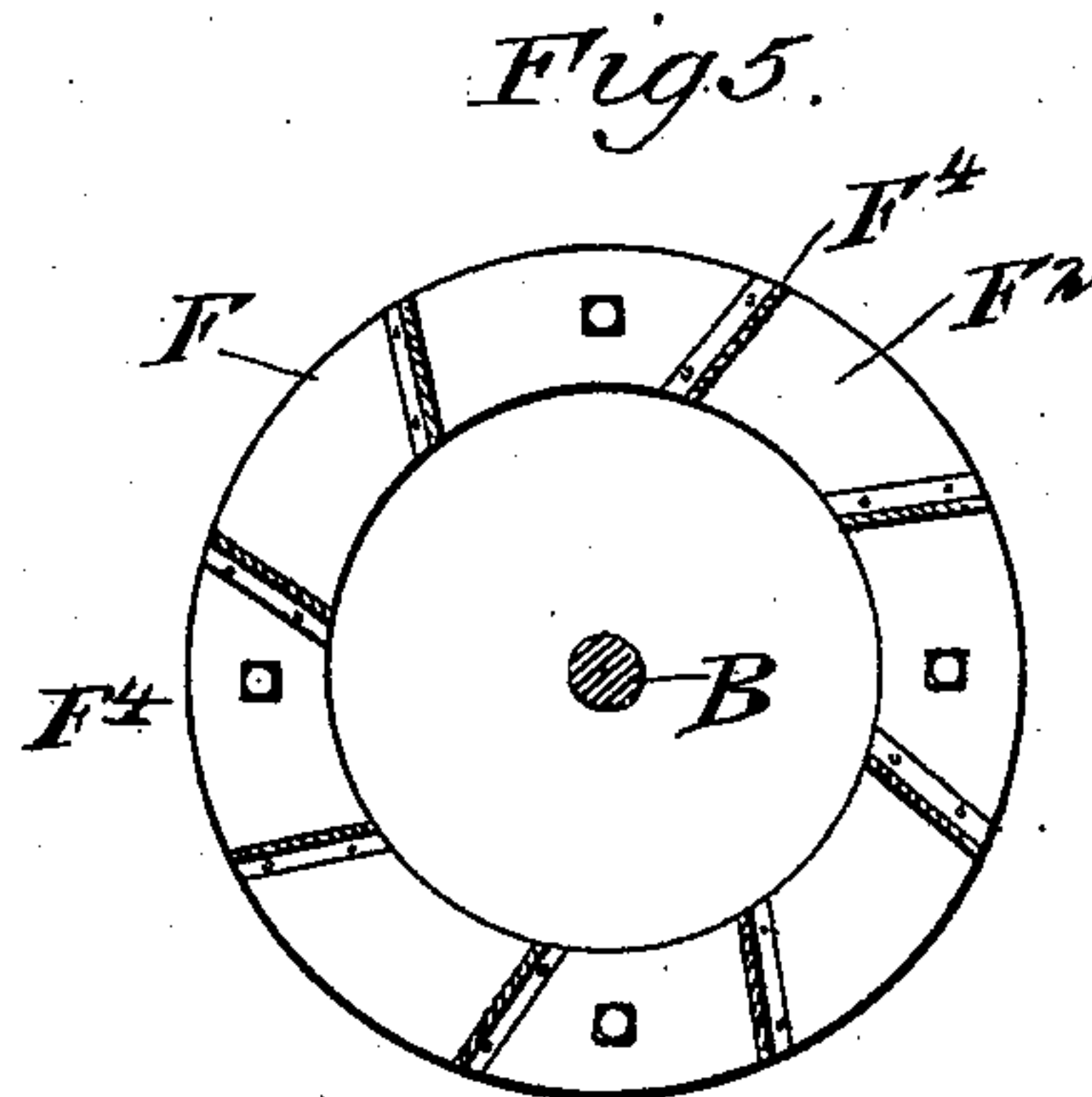
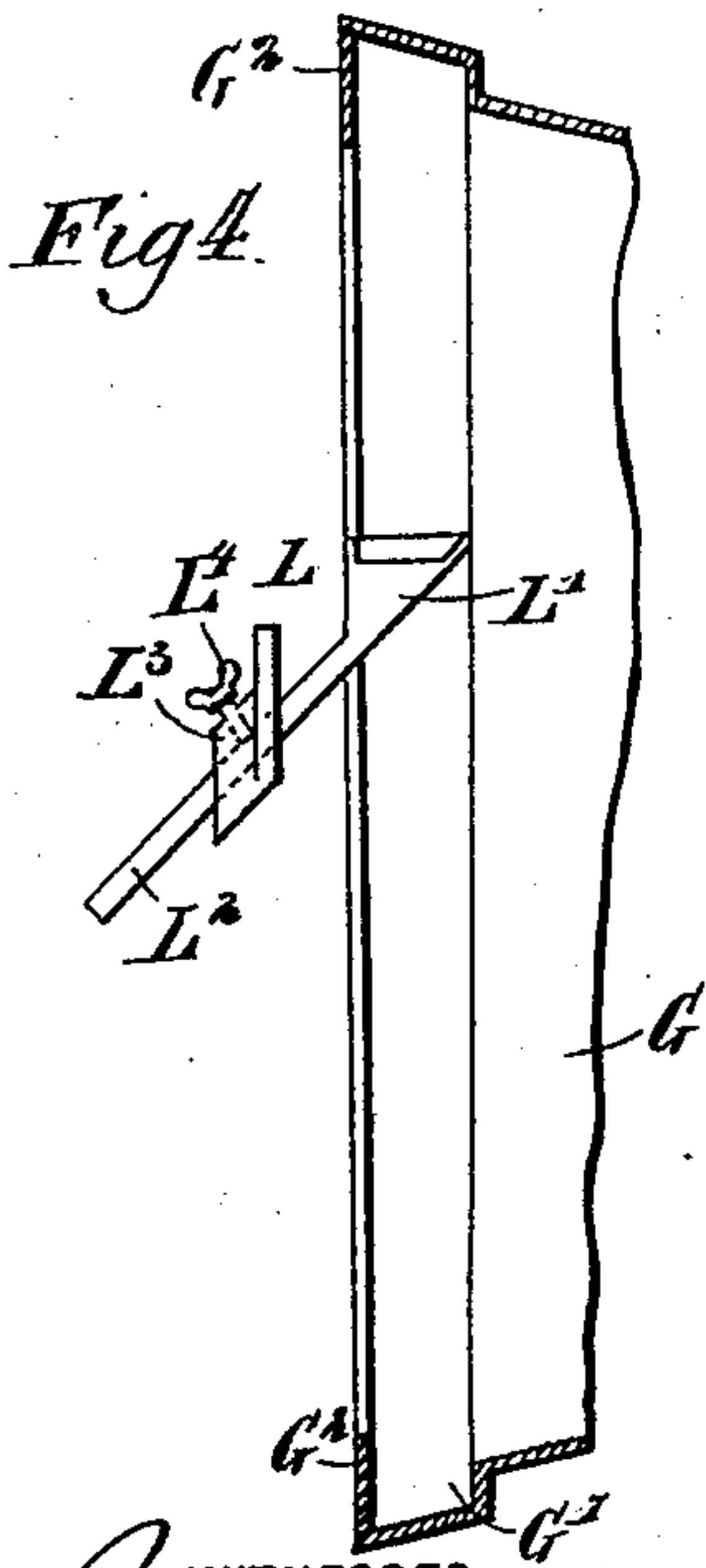
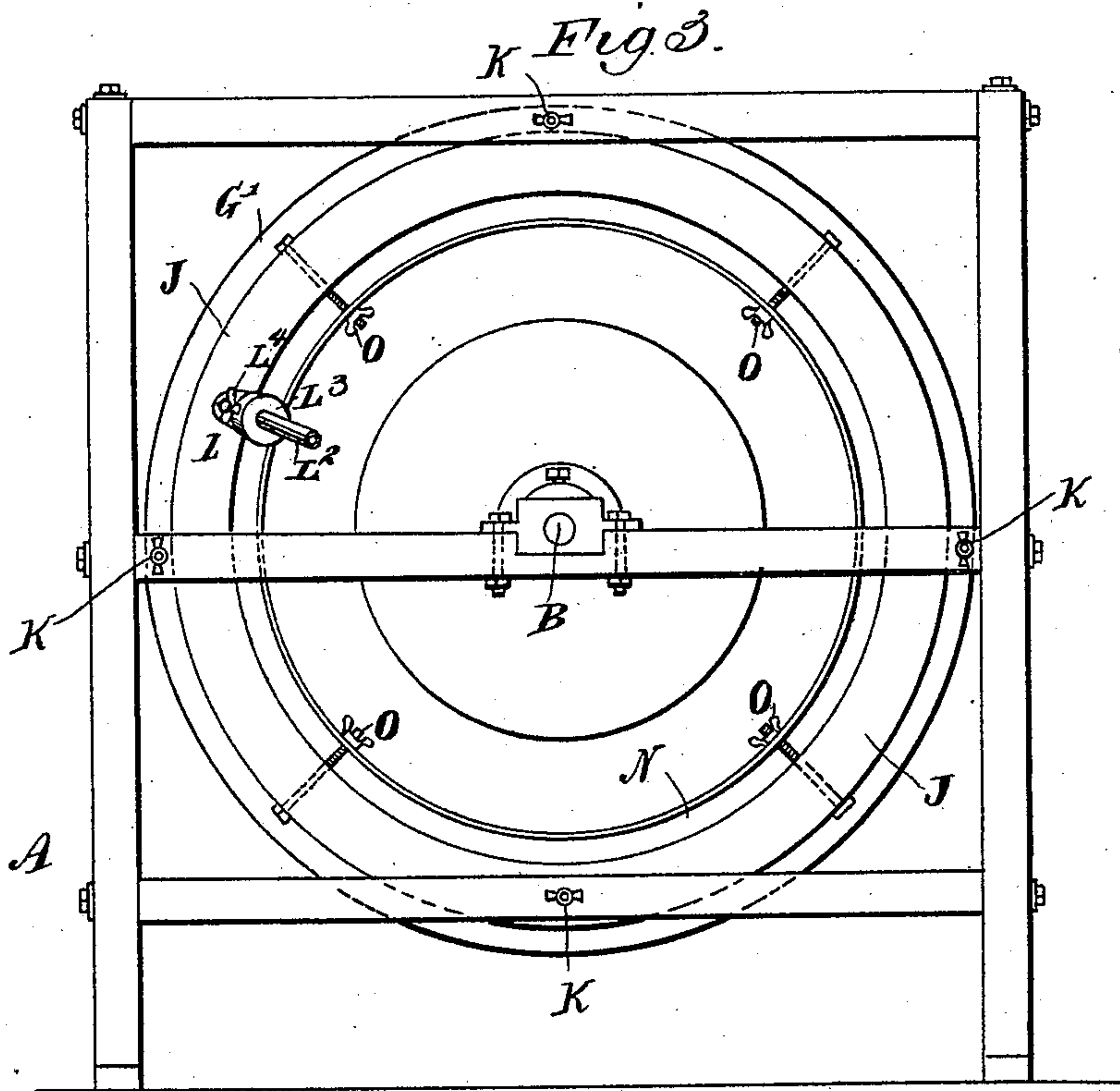
2 Sheets—Sheet 2.

J. SHAW & C. SCOTT.

DUST COLLECTING AND SEPARATING MACHINE.

No. 582,318.

Patented May 11, 1897.



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UNITED STATES PATENT OFFICE.

JOHN SHAW AND CHARLES SCOTT, OF WOODBURN, OREGON.

DUST COLLECTING AND SEPARATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 582,318, dated May 11, 1897.

Application filed July 17, 1896. Serial No. 599,483. (No model.)

To all whom it may concern:

Be it known that we, JOHN SHAW, a subject of the Queen of Great Britain, and CHARLES SCOTT, a citizen of the United States, residing at Woodburn, in the county of Marion and State of Oregon, have invented a new and Improved Dust Collecting and Separating Machine, of which the following is a full, clear, and exact description.

10 The object of the invention is to provide a new and improved dust collecting and separating machine arranged to collect dust from any source and to separate the air from the dust to permit of discharging the latter in a stream from the machine to any desired place.

15 The invention consists principally of a revoluble suction-fan discharging the dust-carrying air into a hood which revolves with the fan, so that the air and dust travel longitudinally in a revolving column, whereby the dust particles are thrown outward toward the inner surface of the hood and beyond the belt of air to separate the dust and the air.

20 The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

25 Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

30 Figure 1 is a sectional plan view of the improvement. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation of the same. Fig. 4 is a side elevation of the dust-spout and part of the hood, the latter being in section; and Fig. 5 is a transverse section of the fan on the line 5 5 of Fig. 1.

35 The improved machine is mounted on a suitably-constructed frame A, in which is journaled the longitudinally-extending shaft B, carrying at one end a pulley B', connected with suitable machinery for imparting a rotary motion to the said shaft B. On the latter is secured a pulley C, formed on its rim with two inwardly-extending flanges C' and C², of which the flange C' carries a ring D, formed with a hub D', adapted to receive the inner end

of the stationary tube E, connected with the source of dust-supply. A suitable tight joint 50 is provided between the two. On the other flange C² is bolted or otherwise secured a ring F', forming one head of a suction-fan F, provided with an outer ring F², fastened to the said ring F'. The other or inner head F of the fan is fixed to the shaft B at a point farther in the machine and is made in the form of a conical plate having the apex outward. These two heads are connected by the wings or blades F⁴, which are inclined to the radius 60 and also slightly inclined to the axis, as shown in Fig. 5. These wings or blades are secured to the heads by flanges F² and bolts passing through the same. The head F³ is fastened on a hub F⁵, secured to the shaft B. 65

On the rim of the pulley C is fitted the apex end of a hood G, made conical and having its axis coinciding with the axis of the shaft B. The hood G is held in place on the rim of the pulley by suitable bolts and clamping-bands 70 H H'. (Shown in Figs. 1 and 2.) The wall of the hood G extends outwardly from the rim of the suction-fan F, so that the dust and air discharge peripherally from the said suction-fan and pass into the hood G to travel 75 longitudinally therein toward the base of the hood.

The dust particles are of a greater specific gravity than the air. The rotary motion given to the body of air and dust increases 80 the relative specific gravity of the dust and causes it to rapidly gather in the outer layer of the revolving air and upon the inner surface of the cone G.

In the base of the hood G is formed an annular recess G', into which passes the separated dust, the outer flange G² of the said recess abutting against a soft backing I, made of sheepskin or other suitable material and secured to a ring J, supported by bolts K from 85 the frame A. Into the recess G' extends a dust-spout L, having a head L', provided with a flaring mouth, one side of which is lower than the other to permit the dust to rotate under the said head and pass down the same 95 into the outlet L², inclined downwardly and

outwardly to discharge the dust to one side of the machine. This dust-spout L is held in place by a suitable keeper L³, fastened to the frame A. A set-screw L⁴ screws in the
 5 said keeper to engage the outlet L², so as to permit of adjusting the head L' of the spout relative to the recess G'.

Within the base of the hood G extends a fixed shield N, held centrally in the said base
 10 by bolts O, carried by the ring J and extending radially inwardly from the same to the said shield, as plainly illustrated in Fig. 3. The bolts O pass through elongated slots in the shield to permit of adjusting the latter
 15 longitudinally in the base of the hood G.

The inner end of the shield N is formed with a flaring mouth N', the outer edge of which extends within a short distance of the inner surface of the hood G at the base there-
 20 of, so that the belt of air passes into the said flaring mouth to be discharged centrally through the shield without coming in contact with the separated dust passing along the inner surface of the hood G to the recess G', as
 25 previously explained.

The operation is as follows: The shaft B, with the fan and cone G, being rotated, a suction is produced in the tube E. The air and dust delivered thereby are given a rapid re-
 30 volving motion in passing through the fan and are then discharged into the cone G. The separating of the dust from the air is due to the centrifugal force generated by the revolution having a greater effect upon the rela-
 35 tively heavier particles of dust than upon the air. This causes the dust to quickly settle upon the inner surface of the cone, leaving the purified air free to pass out at the center. As the motion continues outward in the hood
 40 G the air is finally removed from the hood G by passing through the shield N, and the dust particles are gathered in the recess G' and delivered into the dust-spout L, through which the dust discharges to one side of the machine.

Thus it will be seen that by the arrange-
 45 ment described the dust is removed and is separated from the air carrying the dust in a very simple and effective manner. As soon as the dust passes into the recess G' it is pro-
 50 tected from the current of air by the shield N, so that the dust can adhere to the inner surface of the recess and finally pass into the dust-spout L to be discharged.

It will further be seen that the casing for
 55 the fan F is formed by the hood G, which revolves with the fan instead of being stationary, as is the case with the ordinary fans now in use.

It will further be seen that the wings dis-
 60 charge at all points of the periphery of the fan, so that a large amount of dust and air can pass through the fan into the hood. The wings are inclined, to give the usual drift to the air and dust from the center of the fan to

the periphery thereof, and at the same time 65 a rearward longitudinal drift is given to the said air and dust by inclining the wings relative to the shaft and in a longitudinal direction, as previously explained.

Having thus described our invention, we 70 claim as new and desire to secure by Letters Patent—

1. A dust collecting and separating machine provided with a hood formed at its outer end with a recess, a packing against the outer 75 flange of the recess, a ring engaging the said packing, and means for carrying and adjusting the said ring relative to the said packing, substantially as described.

2. A dust collecting and separating ma- 80 chine, comprising a revoluble suction-fan, a hood forming a casing for the said fan and revolving with the latter, the outer end of the hood being formed with a recess for the recep- 85 tion of the dust, and a dust-discharge spout extending into the said recess, to receive the dust collecting therein, substantially as shown and described.

3. A dust collecting and separating machine, comprising a revoluble suction-fan, a 90 hood forming a casing for the said fan and revolving with the latter, the outer end of the hood being formed with a recess for the reception of the dust, a dust-discharge spout ex- 95 tending into the said recess, to receive the dust collecting therein, and a shield held centrally in the outer end of the said hood and having a flaring mouth reaching within a short distance of the said recess, substantially as shown and described. 100

4. A dust collecting and separating machine comprising a revoluble fan, a conical hood surrounding said fan and revolving therewith, said hood having a dust-retaining 105 trough about its outer or larger end, and opening radially toward the center, substantially as described.

5. A dust collecting and separating machine comprising a revoluble fan, a conical hood surrounding said fan and revolving 110 therewith, said hood having a dust-retaining trough about its outer or larger end, and opening radially toward the center, and a stationary wind-break interposed between said re- 115 cess and the blast-fan, substantially as described.

6. A dust collecting and separating device comprising a revoluble fan, a conical hood surrounding said fan and revolving there- 120 with, said hood having a dust-retaining trough about its outer or larger end, and opening radially toward the center, a stationary wind-break interposed between said recess and the blast-fan, and a stationary spout or conveyer projecting radially from the center into said 125 trough and adapted to convey the dust away from said recess, substantially as described.

7. A dust collecting and separating ma-

chine, comprising a revoluble fan, a hood
forming a casing for the fan and revolving
therewith, the outer end of the hood being
formed with a recess for the reception of the
5 dust, a stationary ring adjacent to the outer
wall of said recess, a packing between the
two, means for adjusting the ring and pack-
ing, a shield having an inwardly-flaring mouth
reaching within a short distance of the recess,
10 and means for supporting and adjusting the

same from the fixed ring, substantially as de-
scribed.

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