

(No Model.)

4 Sheets—Sheet 1.

S. C. DAVIDSON.

PNEUMATIC APPARATUS FOR ELEVATING OR CONVEYING TOBACCO
LEAF, TEA LEAF, WOOD CHIPS, &c.

No. 599,055.

Patented Feb. 15, 1898.

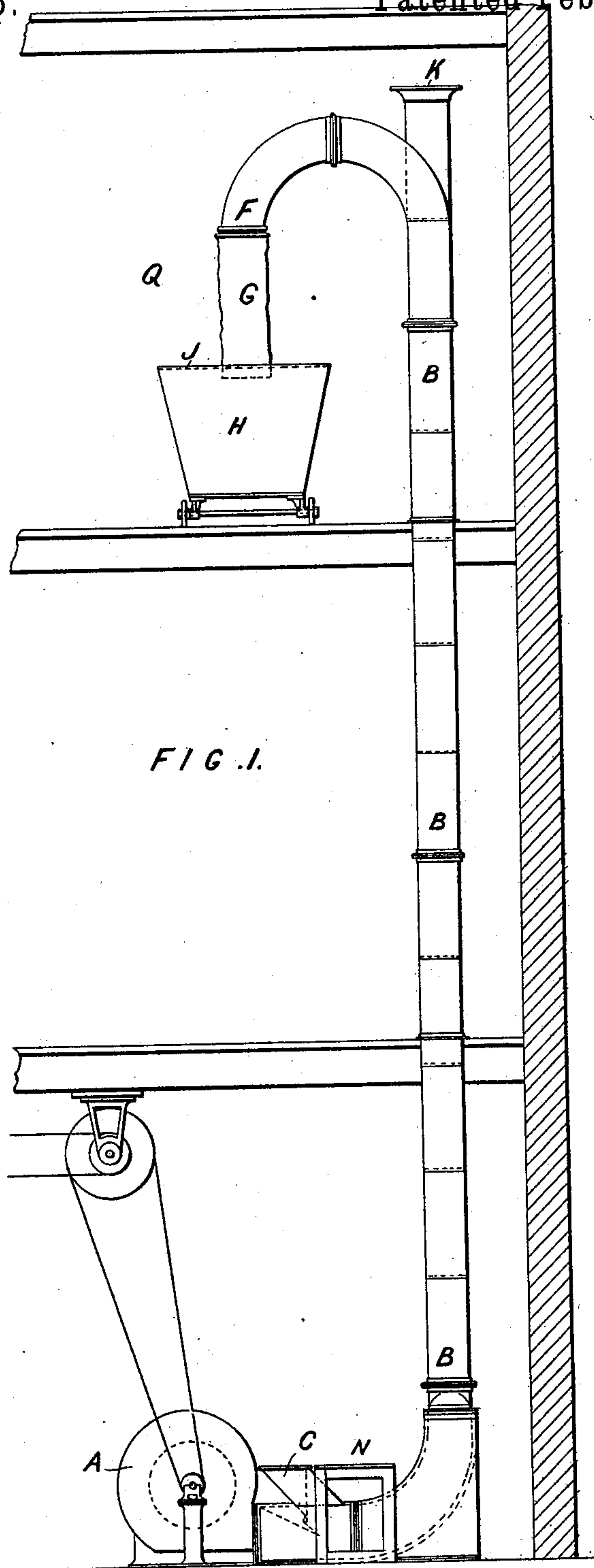


FIG. 1.

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Fred White
Thomas F. Wallace

INVENTOR:

Samuel Cleland Davidson,

By his Attorneys:

Arthur C. Fraser & Co.

(No Model.)

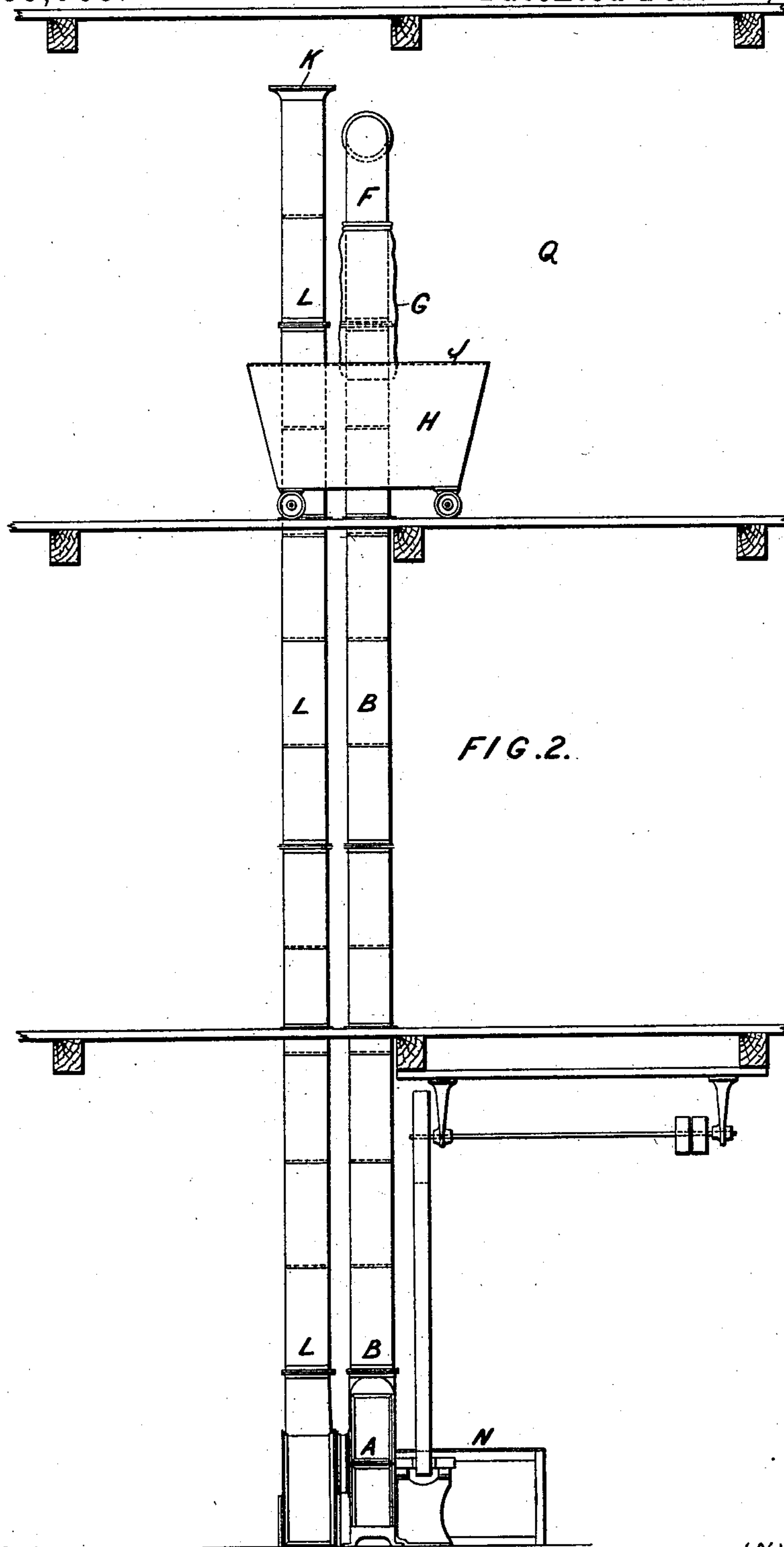
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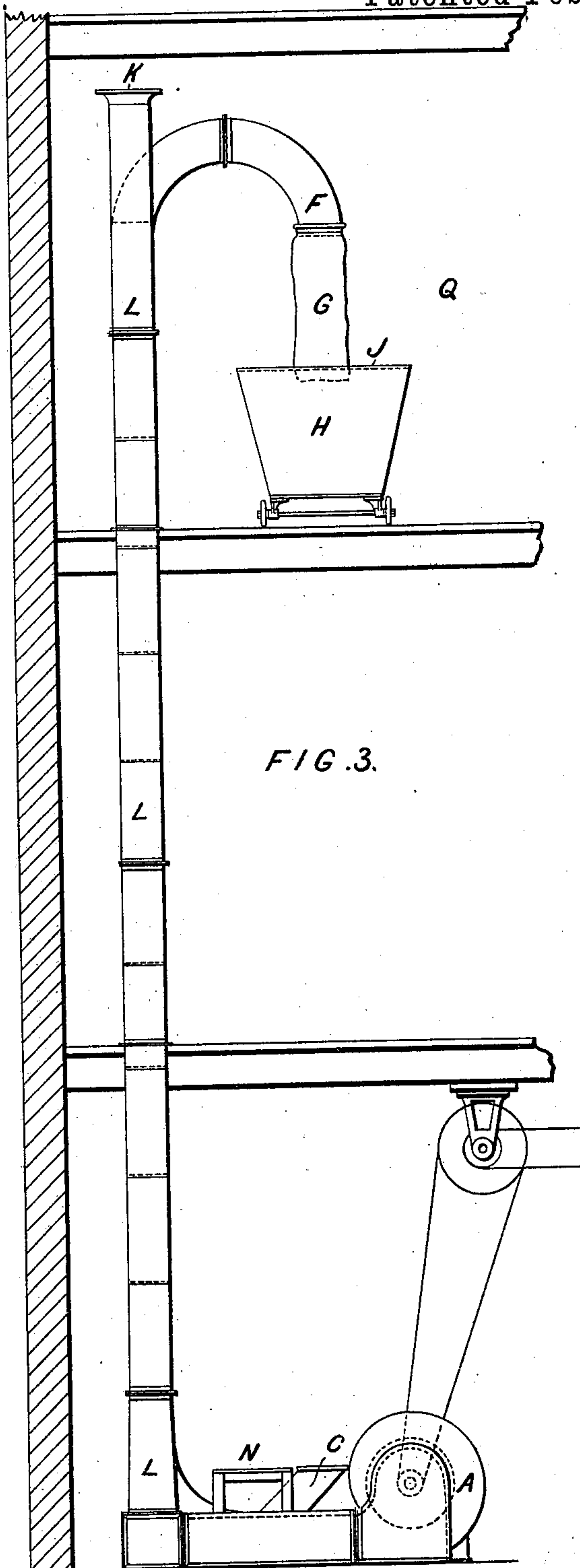
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4 Sheets—Sheet 4.

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PNEUMATIC APPARATUS FOR ELEVATING OR CONVEYING TOBACCO
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FIG. 5.

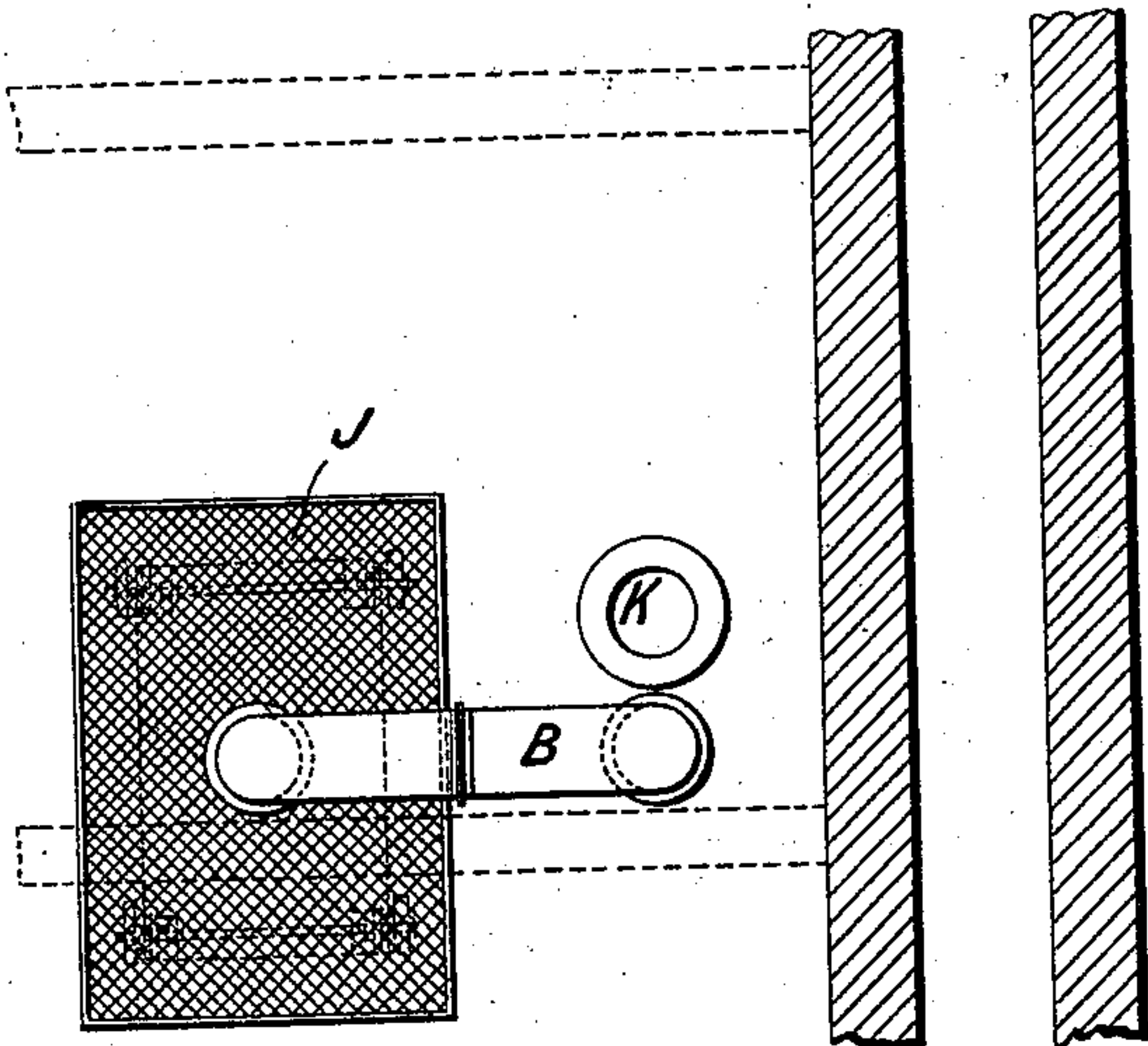


FIG. 4.

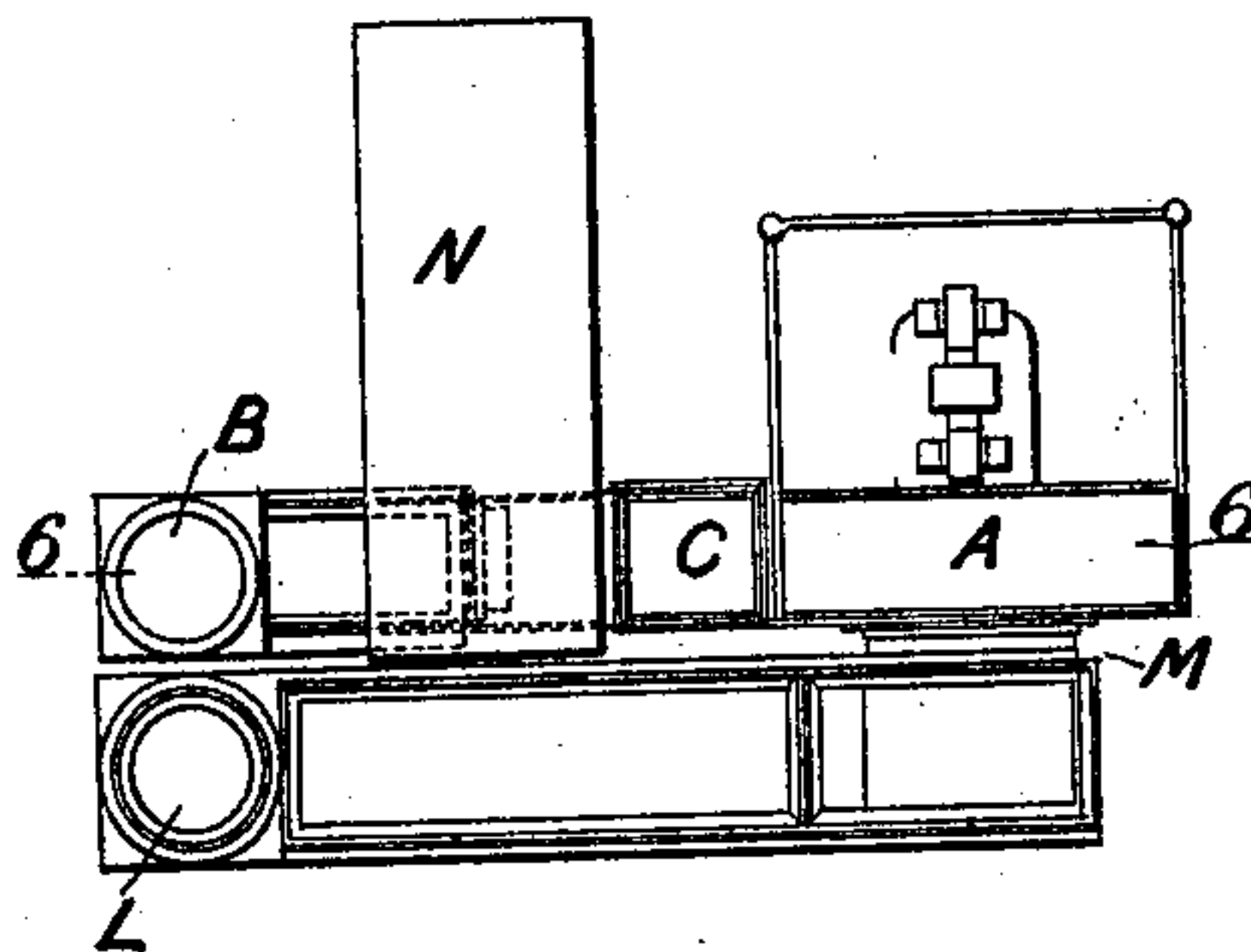
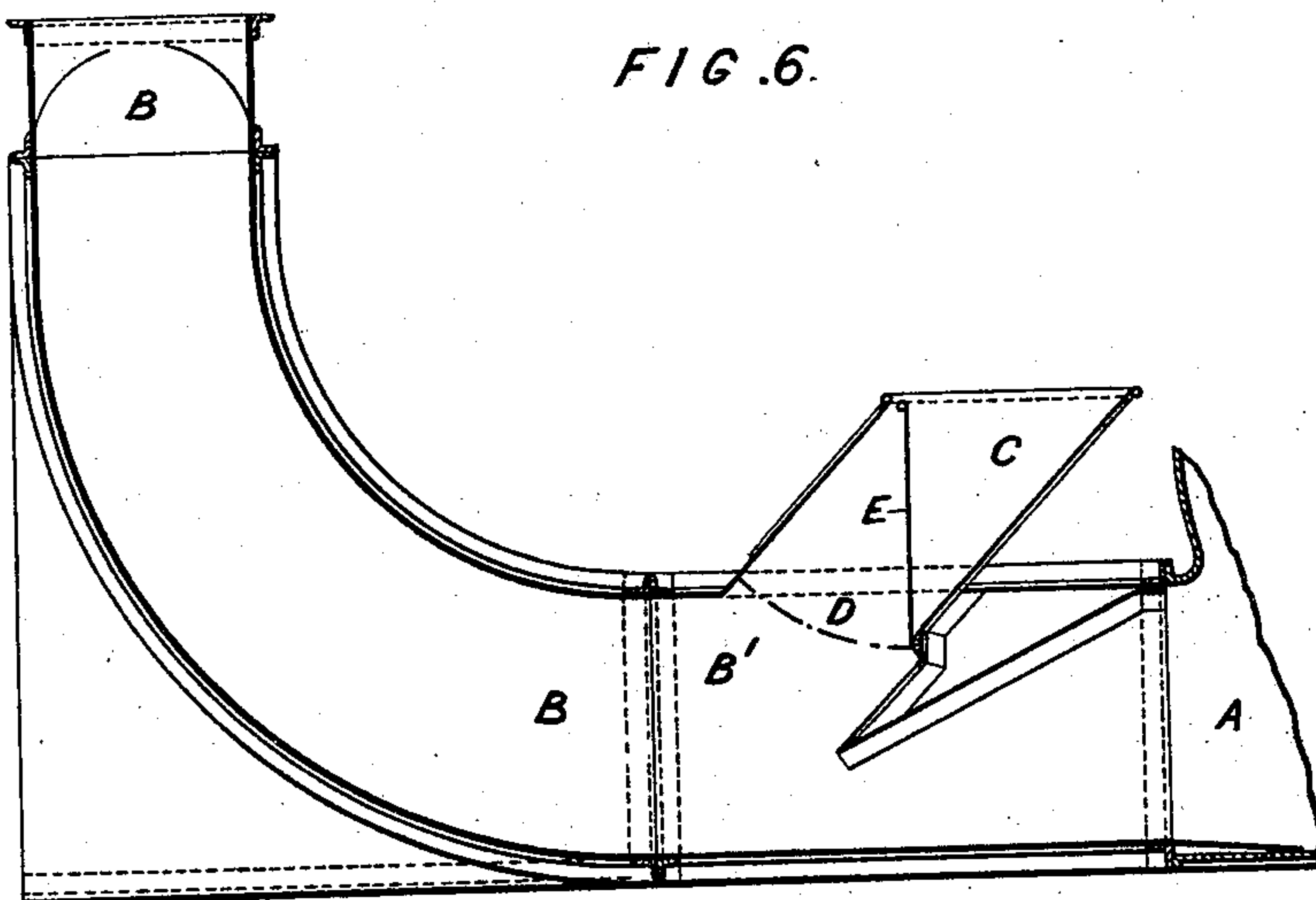


FIG. 6.



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UNITED STATES PATENT OFFICE.

SAMUEL CLELAND DAVIDSON, OF BELFAST, IRELAND.

PNEUMATIC APPARATUS FOR ELEVATING OR CONVEYING TOBACCO-LEAF, TEA-LEAF, WOOD-CHIPS, &c.

SPECIFICATION forming part of Letters Patent No. 599,055, dated February 15, 1898.

Application filed July 24, 1897. Serial No. 645,827. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL CLELAND DAVIDSON, merchant, of Sirocco Engineering Works, Belfast, Ireland, have invented certain new and useful Improvements in Pneumatic Apparatus for Elevating or Conveying Tobacco-Leaf, Tea-Leaf, Wood or other Chips or Cuttings, or other Materials, of which the following is a specification.

My invention has reference to pneumatic apparatus for elevating or conveying tobacco-leaf, tea-leaf, wood or other chips or cuttings, or other materials.

The improved apparatus has been more particularly designed for elevating tobacco-leaf.

The chief features of the invention, apart from the general construction or arrangement of the apparatus, are an automatically opening and closing flap door or valve between a feed-hopper and the blast-pipe for the purpose hereinafter set forth, a special arrangement of truck or receptacle at the delivery end of the blast-pipe, and a return-pipe leading from the receiving-room back to the fan or air-propeller, so that the same air is used over and over again in the elevator and in the delivery-room, which is of importance when dealing with some materials—tobacco-leaf, for example.

Having stated the chief features of the invention, I will describe an apparatus in which the improvements are embodied.

In the accompanying drawings, Figure 1 is a side elevation of a pneumatic elevating apparatus constructed according to this invention. Fig. 2 is a front elevation. Fig. 3 is a side elevation taken from the opposite side to that shown in Fig. 1. Fig. 4 is a plan of the lower or receiving portion, showing the fan and the feed-hopper. Fig. 5 is a plan of the upper or delivering portion, illustrating the delivery into a truck. Fig. 6 is a part vertical section on the line 6 6 of Fig. 4, on a larger scale than the other figures, to show the arrangement of the feed-hopper door.

The apparatus consists of a duct or pipe B, through which a strong blast of air is driven from an air-propeller, preferably in the form of a fan A, as shown, a hopper C being at-

tached to the duct B at the fan end and so constructed that when a basketful of tobacco-leaf or other material to be elevated or conveyed through the duct B is thrown into same the leaf drops into an eddy-space B' in the duct formed by enlarging the upper side of the duct, the enlargement gradually converging again to the normal size of the duct, as seen in Fig. 6, in the direction that the blast is moving. There is an inlet port or opening D from the hopper to the said eddy-space B' fitted with a flap door or valve E, which after a basketful or like quantity of leaf or other material has fallen through the hopper doorway or port D and right into the blast-current is at once automatically blown back, so as to close the inlet-port, as seen in Fig. 6, by the temporary back pressure of the air-blast against the back of the flap-door E, due to partial obstruction momentarily caused by the material falling into the air-blast and until same imparts momentum thereto. This automatic closure of the hopper-door E so confines and prevents the escape of any of the air-blast that its full pressure operates on the material thrown into the duct until it has acquired the same velocity as the blast or been discharged at the delivery end of the duct, when the hopper-door freely opens again, and a further supply of material may be thrown in.

N is a table upon which the material to be elevated may be laid, so as to be more conveniently fed into the hopper C.

In the case of some materials—tobacco-leaf, for example—it is in some instances undesirable to deliver into the leaf-receiving room Q such a large volume of fresh air as would be continuously issuing from the delivery end of the conveyer-duct B while working if such air were drawn from another room or from the open air. In order to obviate this, I lead a return-pipe L, having an open mouth or inlet K, from the said delivery-room back to the eye of the fan A, so that the air used in the conveyer-duct B is practically the same air circulating through it over and over again, owing to this air being withdrawn from the same room or compartment Q as the material is being delivered into. Hence the air in the

receiving-room Q is neither added to nor diminished, nor is the degree of atmospheric moisture in the room altered while the apparatus is working, which in some cases is of much practical importance.

In order to collect the leaf or other material in an open-topped box-shaped truck or receptacle at the delivery end of the conveyer-duct B, I keep the delivery end at a sufficient elevation above the ground or floor that when a downwardly-directed bend F is applied thereon there is room for the truck or wagon H to be placed under it, and I apply on the top of the truck a cover J, of wire-netting or other foraminous material, with a central hole in it of approximately the size of the mouth of the conveyer-duct, and I place the truck so that the mouth of the duct, with or without an elongation G, of flexible material, such as canvas, is fair over and the flexible elongation, when used, hanging into the central hole in the wire-netting cover J. This cover, while allowing the free escape of the air reverberating off the bottom and sides of the truck, catches any of the leaf or material which blows upward along with it, and the same falls back again into the truck.

The employment of this device obviates

any necessity for what is known as a "stive" or collecting-room.

What I claim, and desire to secure by Letters Patent, is—

In pneumatic apparatus for elevating or conveying tobacco-leaf or other material, the combination of a blast-pipe having an enlargement at the upper side where the material is fed to it, a hopper through which the material is fed into said blast-pipe, and a flap door or valve between the feed-hopper and the blast-pipe and normally more or less open toward the blast-pipe, whereby when a charge of the material is fed through the hopper into the blast-pipe through the door temporary back pressure of the air-blast pipe is produced against the back of the door and the door is therefore automatically closed until the said back pressure ceases, substantially as and for the purpose hereinbefore described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

SAMUEL CLELAND DAVIDSON.

Witnesses:

JOHN BROWN SHAW,
ARCHIBALD H. R. CARR.