

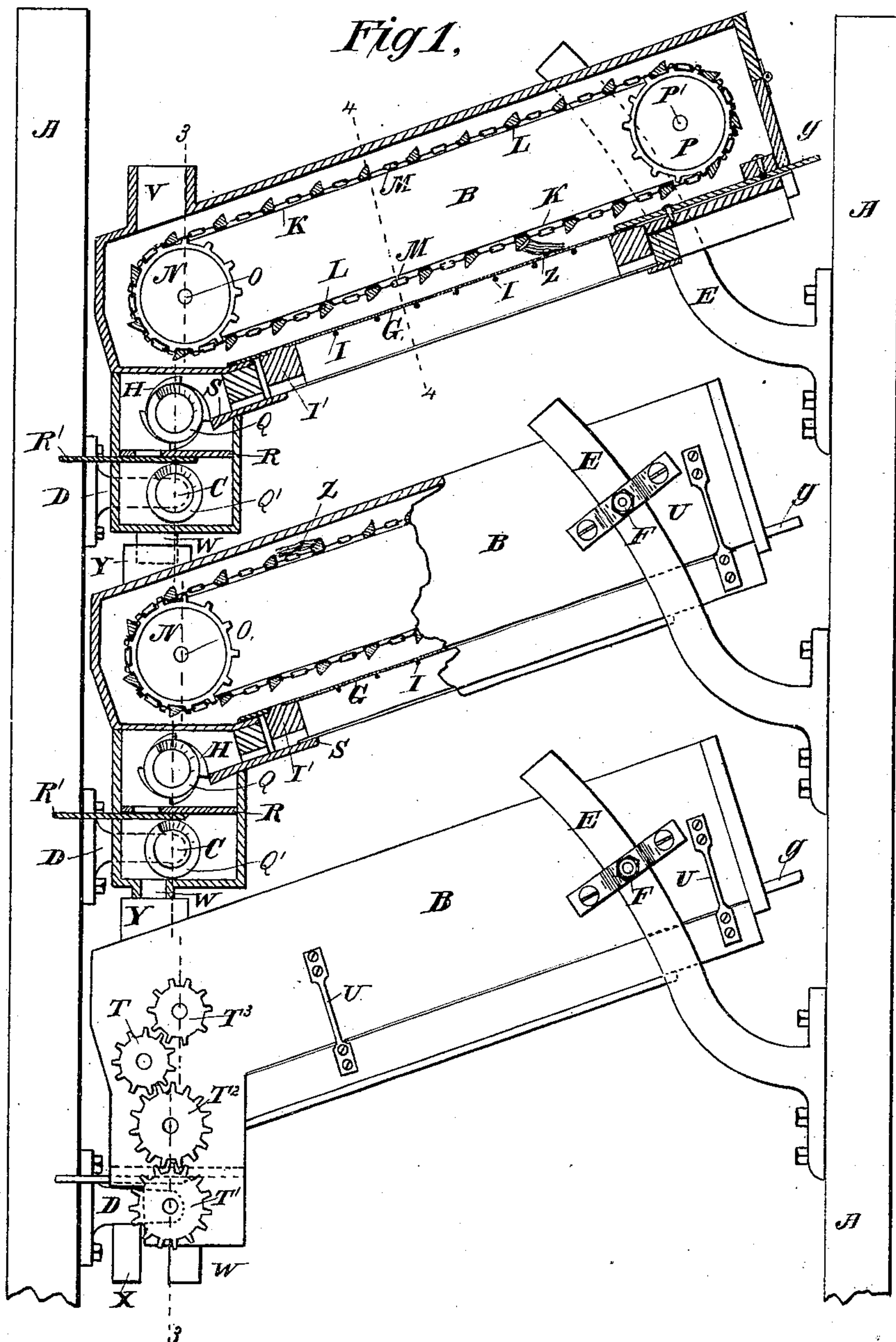
(Model.)

3 Sheets—Sheet 1.

J. M. CASE.  
Flour Bolt.

**No. 240,964.**

**Patented May 3, 1881.**



Attest:  
Geo. T. Smallwood Jr.  
Harry E. Knight

Inventor:  
John M. Case.  
BY Knight Bros.  
attys.

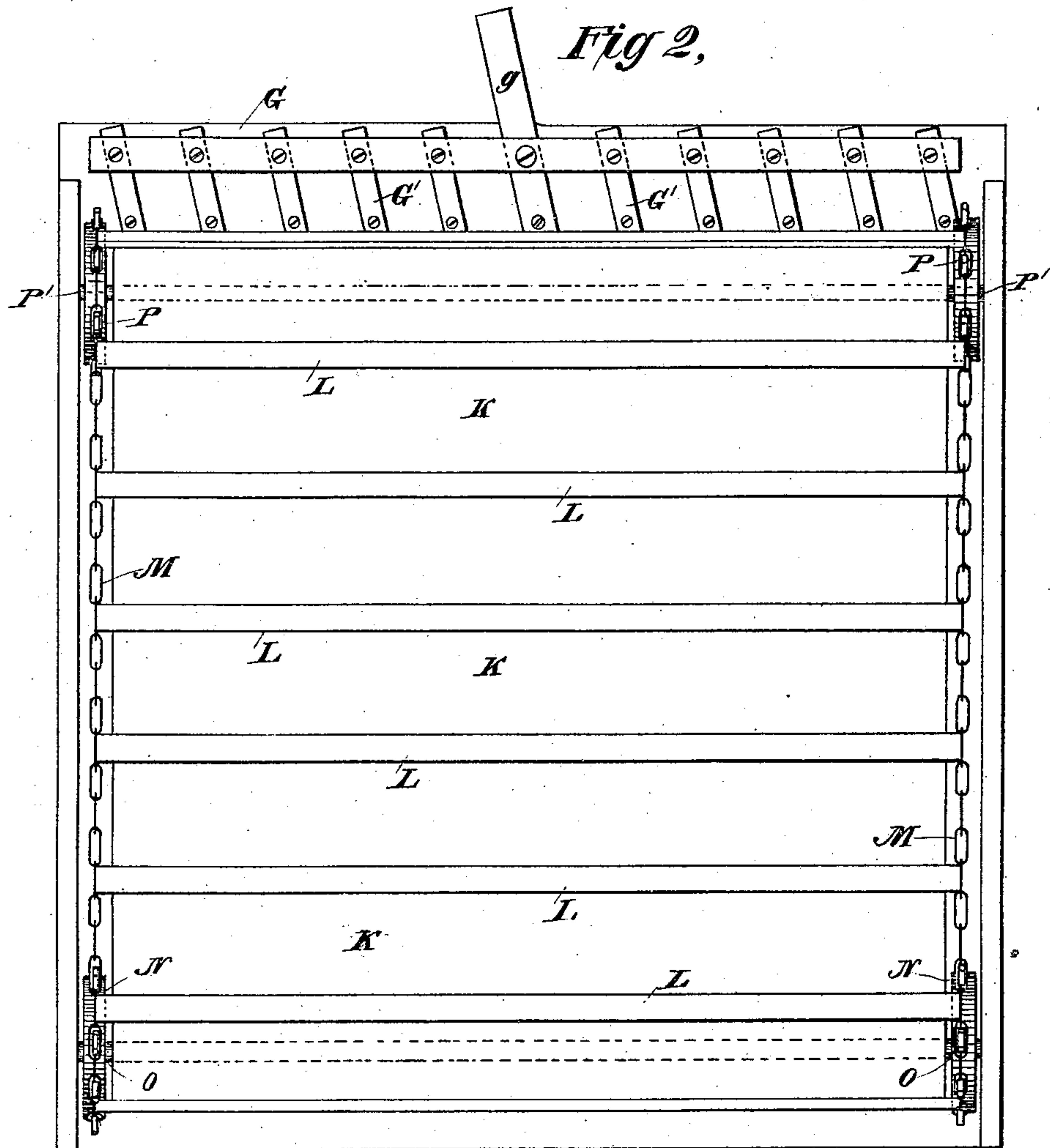
(Model.)

3 Sheets—Sheet 2.

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*Attest:*  
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*Harry E. Knight*

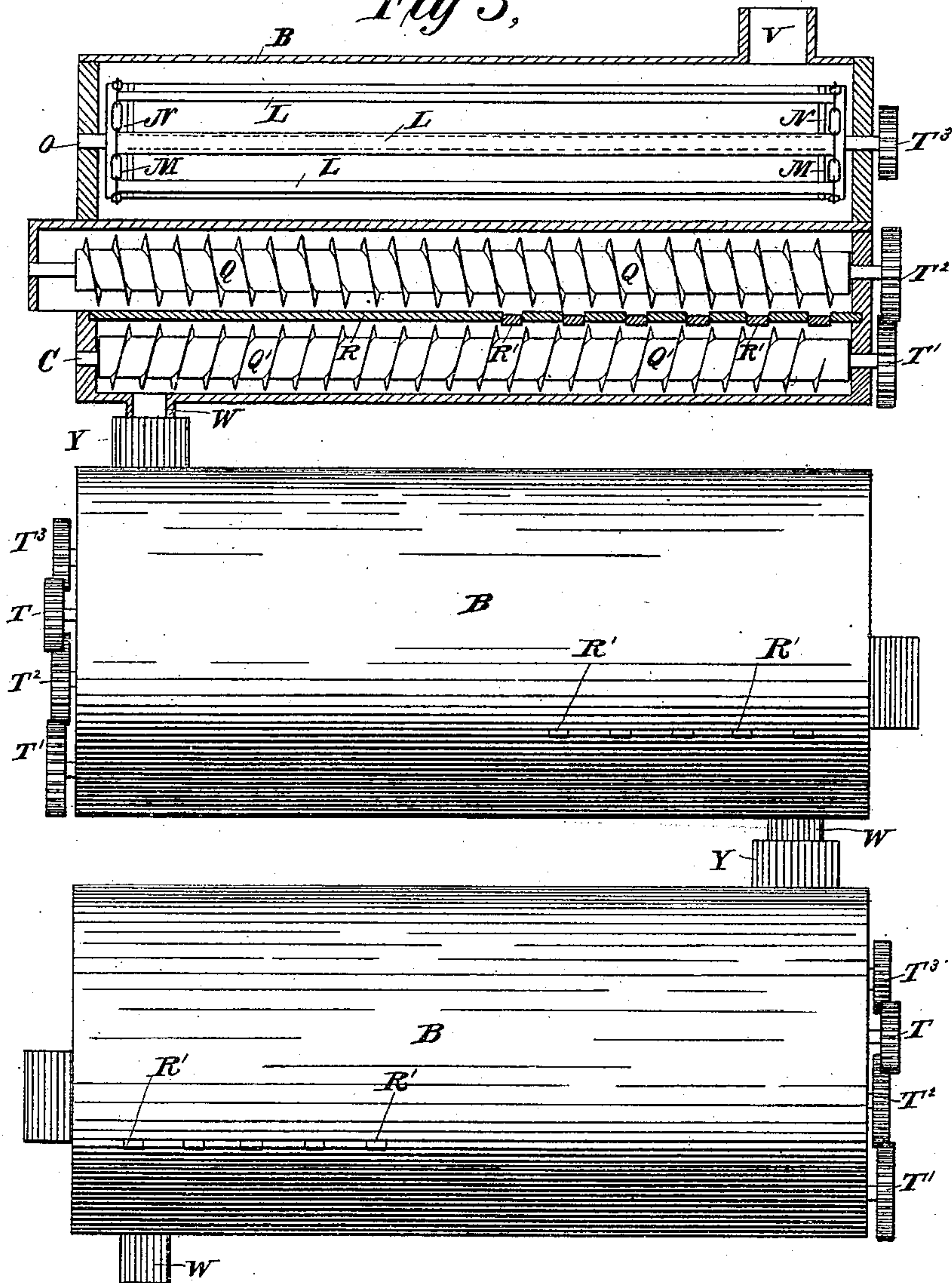
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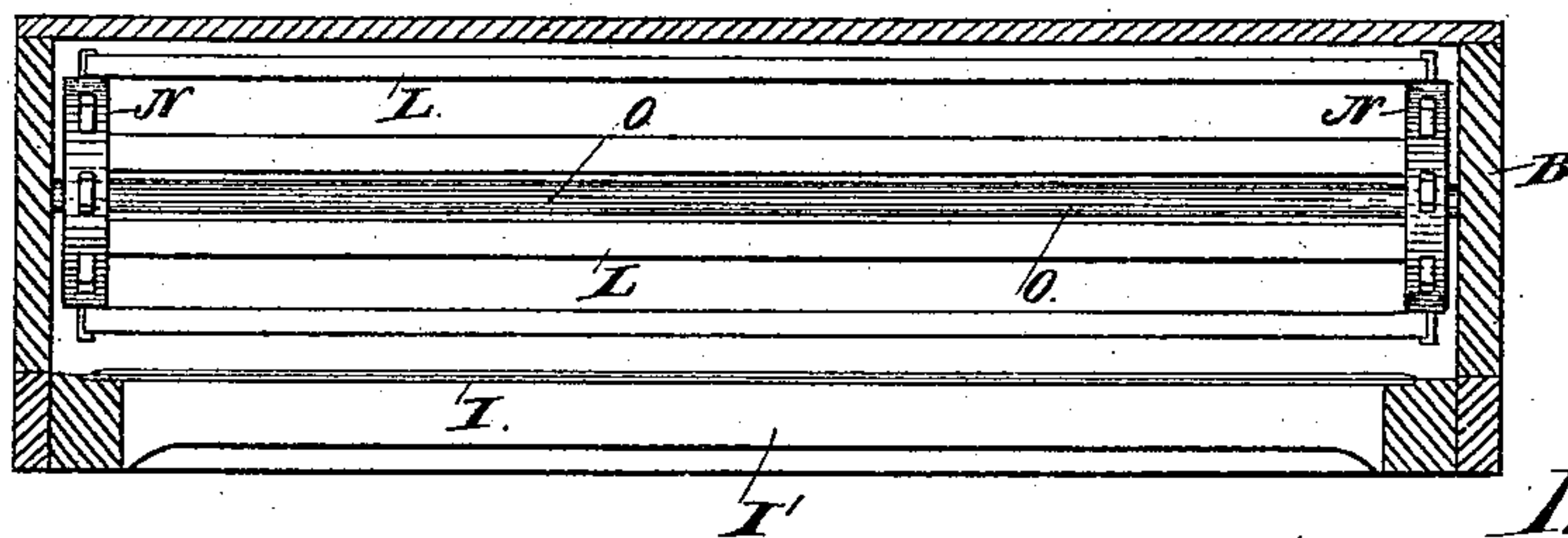
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*Fig 3,*



*Fig 4,*



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# UNITED STATES PATENT OFFICE.

JOHN M. CASE, OF COLUMBUS, OHIO, ASSIGNOR TO CASE MANUFACTURING COMPANY, OF SAME PLACE.

## FLOUR-BOLT.

SPECIFICATION forming part of Letters Patent No. 240,964, dated May 3, 1881.

Application filed October 20, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, JOHN M. CASE, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented Improvements in Flour-Bolts, of which the following is a specification.

The subject of my invention is an apparatus consisting of an inclined box, or a number of such boxes in a vertical series, one over another, each being preferably mounted at its delivery end on a driving-shaft, and supported adjustably at the other end so as to be variable in its angle of inclination. Each box contains a screen and an endless elevator driven by a positive movement, by which the material passing through the screen is repeatedly raised and dropped upon its upper end for rescreening, a series of guides being arranged at the upper end of the screen, adjustable at any angle, in such a manner as to deflect the material as it is dropped on the upper end of the screen, more or less, from the receiving toward the discharging side of the screen, so as to accelerate or retard its passage through the machine, as hereinafter described. The endless elevator carries a brush for sweeping the upper surface of the screen. The screen has a slight vibratory motion, and has beneath it a series of parallel wires carried by the screen in its vibrations, and serving to impart an additional vertical vibration to the cloth by their own tremulous motion, the said wires being mounted in a frame which has a very slow reciprocating movement parallel with and independently of the screen, said movement extending as far as the distance between the wires, so that all parts of the surface of the screen will be subjected to the vibrating action of the wires. The material passing through the screen is delivered into a trough provided with an adjustable cut-off, with conveyers above and below, so that any desired proportion of the product may be discharged for use, and the remainder carried back as returns for retreatment.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, illustrating the invention embodied in a verti-

cal series of three boxes, the upper box and its accessories being shown entirely in section, the middle box one-half in section, and the lower box in elevation. Fig. 2 is a plan view with the cover of the box omitted. Fig. 3 is an end view, the top of the box being sectional vertically on the line 3 3, Fig. 1. Fig. 4 is a transverse section of one of the boxes on the line 4 4, Fig. 1.

A A A represent different parts of the stationary frame.

B B B are inclined boxes, supported at one end on driving-shafts C, having their bearings in brackets D, and supported adjustably at the other end by brackets E, projecting rigidly from the frame A, and screw-clamps F, fixed to the side of the box and sliding on the said brackets E, as illustrated in Fig. 1. Within each box is a screen, G, fitted to slide, and having a slight vibratory motion imparted to it by means of a cam or tappet-wheel, H, or any other customary means.

I I represent a series of wires mounted in a frame, I', which is carried by the screen, and receiving a gradual reciprocating movement by means of a screw, the said movement extending to about the distance between the wires I so that they will be brought under all parts of the screen in succession, as described in my pending application for improvement in middlings-purifiers. The motion of the screen upon these wires keeps the material on the screen constantly in motion, and prevents the clogging of the same on either the upper or lower side of the screen.

The endless elevator consists of an apron, K, attached to bars L, which are carried by endless chains M, driven by sprocket-wheels N on a shaft, O, at the lower end of the box, the said chains being stretched around similar sprocket-wheels, P, on an idle-shaft, P', at the upper end. One or more brushes, Z, are attached to the outer side of the elevator for the purpose of sweeping the screen. These brushes may be made of leather thongs, rope, bristles, or any material preferred. My preference is to make them of small cords adapted to fall freely upon and be drawn over the surface of the screen.

Q Q' represent conveyers, placed respective-



ly above and below a cut-off chute, R, upon which the screened material is delivered from the screen-board S.

R' represents a cut-off valve adjustable longitudinally of the conveyers, so as to cause a greater or less quantity of the screened material at the tail end of the box to be dropped into the lower conveyer, Q', in order to be carried back with the returns.

The conveyer Q and the driving-shaft O of the sprocket-wheels N are driven, respectively, by pinions T<sup>2</sup> T<sup>3</sup>, connected by means of an idle-wheel, T, and pinion T<sup>2</sup>, meshing with a pinion, T', on the driving-shaft C. The tappet or cam wheel H, as shown, is carried by the shaft of the upper conveyer, Q; but these details are not important to the invention.

U U represent customary spring-hangers, by which the screen G is supported and permitted to vibrate.

V represents the feeding-hopper; W, the tailings-spout; X, the delivery-spout for the finished material, and Y the returns-spout, which is shown in the present illustration conducting the material, which, passing through the side of the screen most remote from the feeding-hopper V, is delivered to the lower conductor, Q', into the next box below for rebolting. If preferred, these returns may be carried back again to the first hopper for rescreening or to the stones for regrinding, and the fine product passing through the first side of the screen may be taken into the feeding-hopper of the next bolt, if it be desired to rebolt the flour. My invention is applicable under either mode of treatment.

G' G' are guides or deflectors pivoted at the upper end of the screen G, and adjustable at any angle by means of a connecting-rod, g, so that the said guides may be turned at any angle desired, in order to deflect the material toward the discharging side of the box, to a greater or less extent.

In operation the material received through the feeding-hopper V is carried up by the elevator K L and dropped on the upper end of the inclined screen G. It descends over the surface of the said screen in customary manner, the finished portions passing through the meshes, and that which reaches the bottom without passing through is taken by the elevator and carried successively to the upper end. The deflecting-guides G' serve to gradually convey the material at each successive elevation to a greater or less distance from the receiving toward the delivery side of the screen, so that by the adjustment of the said deflecting-guides it may be caused to be elevated and passed over the screen any desirable number of times before it will reach the side of the

screen most remote from the feed, and such as cannot pass through will be discharged as tailings through the spout W.

By making a small modification of my bolt as herein described, it may be used as a purifier for cleaning middlings, or as a combined bolt and purifier. This modification consists in forming an angular space between the screen G and elevator K L, by widening out the elevated end of the machine and throwing the elevator upon a greater angle than the screen. Into this angular cavity there may be a suction of air applied by the construction of suitable fans having connection with the air-chambers above the screens. The object in pivoting the bolts so as to permit a greater or less angle of inclination is to increase or retard the motion of the material upon the screen; but I do not confine myself to pivoting the successive bolts and building each independent, as herein described, as they may be made permanent and the series of bolts all combined in one vertical bolting-chest.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination of trunk or box B, the sprocket-wheels N P, endless apron K, provided with bars L, chains M, and a screen, G, as set forth.

2. The combination, with the elevator-trunk, screen, and sprocket-wheels, of the endless apron K, provided with bars L and cleaning-brush Z, as set forth.

3. A bolting apparatus consisting of a vertical series of inclined boxes containing elevators and screens, and provided with conducting spouts or hoppers, to pass the material from one to another of the successive boxes of the series, as explained.

4. The box or trunk B, containing the elevator and screen, said box being hinged at its lower end and adjustable at its upper end, as set forth.

5. The combination of the box or trunk B, hinged at its lower end, and containing elevator and screen, brackets E, supporting its upper end, and screw-clamps F, for adjusting the said trunk, as set forth.

6. In combination with the apron K and screen G, the pivoted deflectors or guides G' G', arranged at head of the said screen, as set forth.

7. The tappet or notched push-wheel H, adapted to slide the screen endwise, as herein described, for the purpose set forth.

JOHN M. CASE.

Witnesses:

OTWAY WATSON,  
HARRY E. KNIGHT.