

(No Model.)

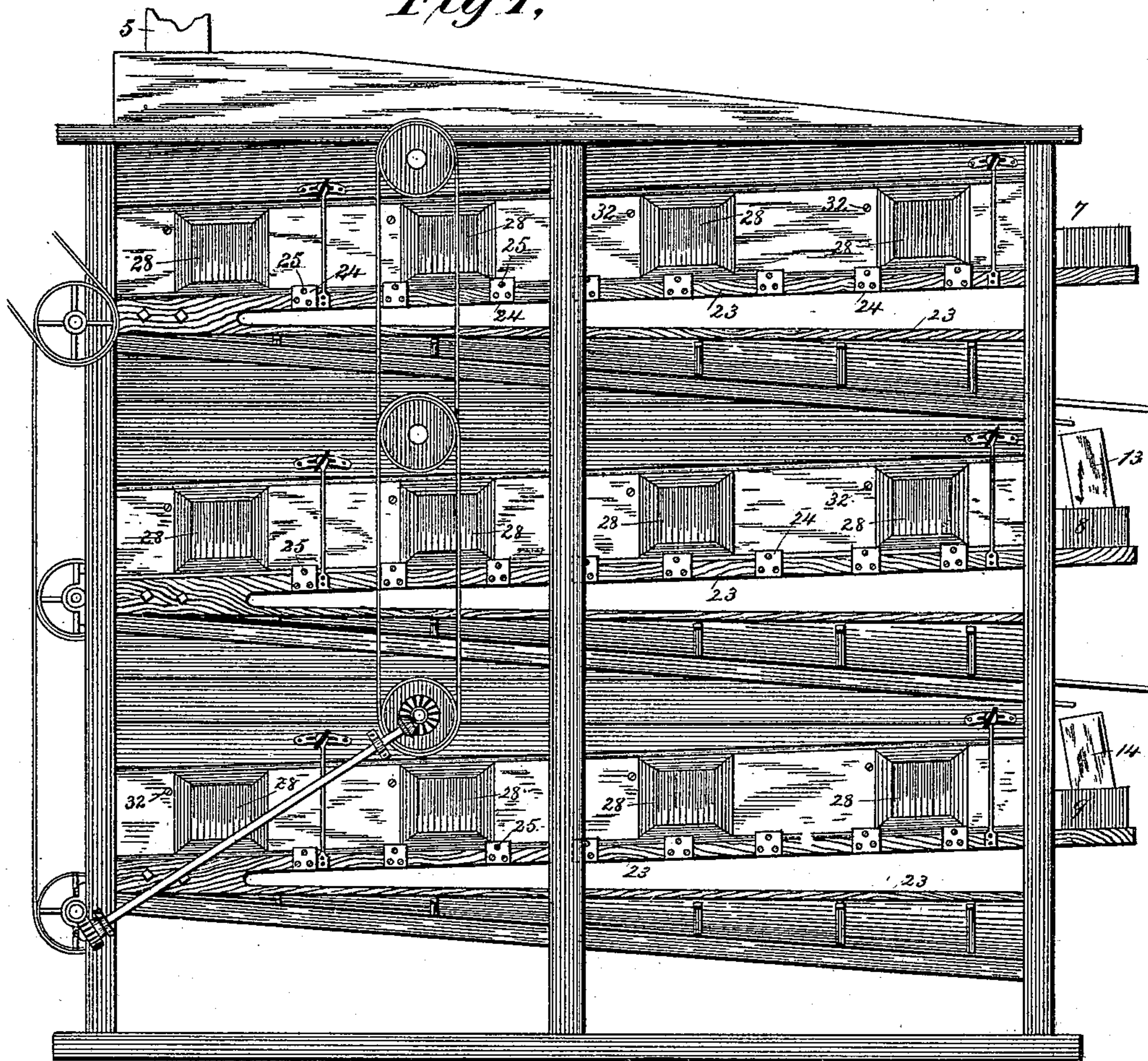
4 Sheets—Sheet 1.

J. M. CASE.  
MIDLINGS PURIFIER.

No. 250,783.

Patented Dec. 13, 1881.

*Fig 1.*



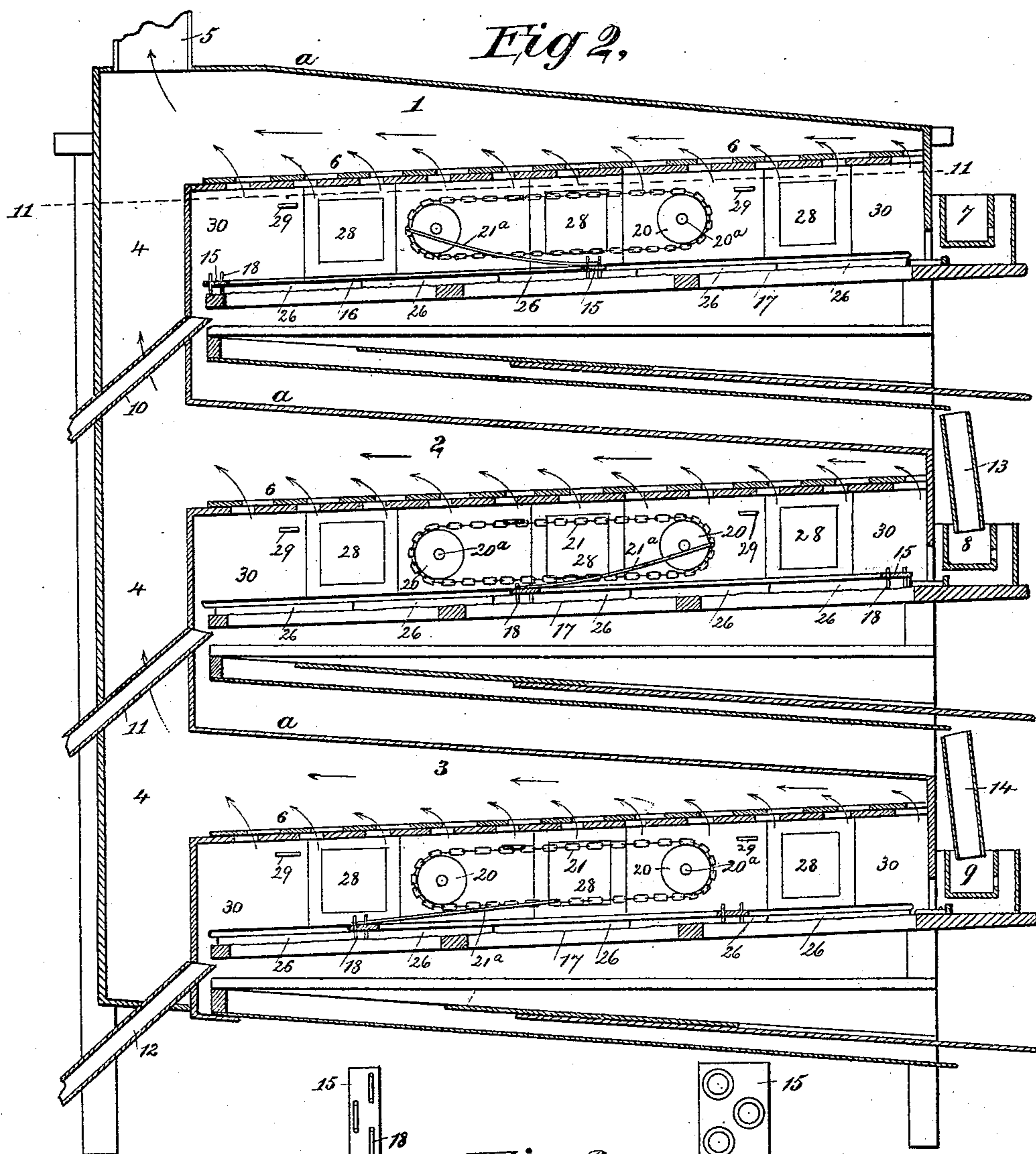
*Attest:*  
*Geo. T. Smallwood Jr.*  
*Harry E. Knight*

*Inventor:*  
*John M. Case.*  
*BY* *Knights Bros*  
*attys.*

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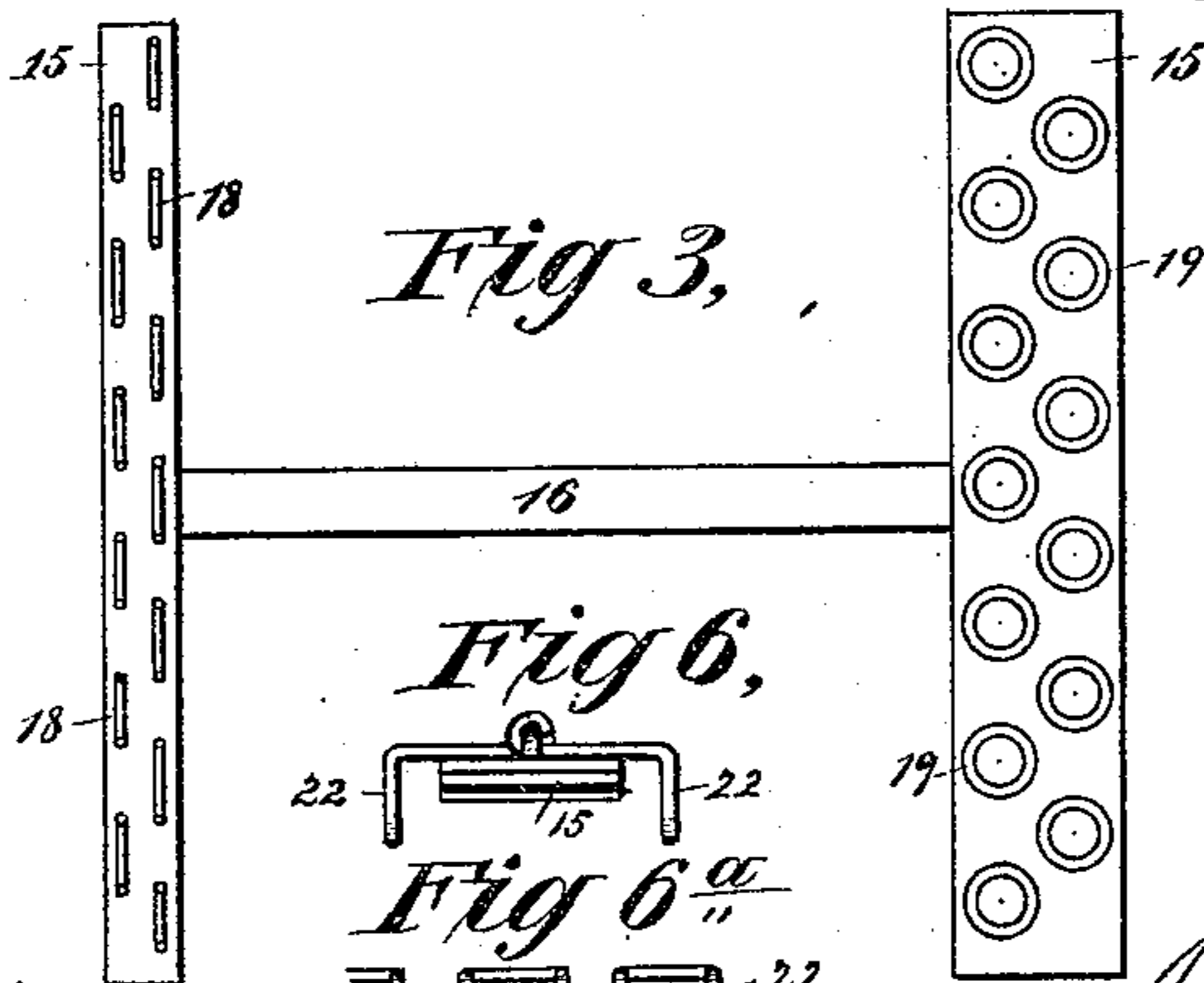
Patented Dec. 13, 1881.



*Fig 4,*



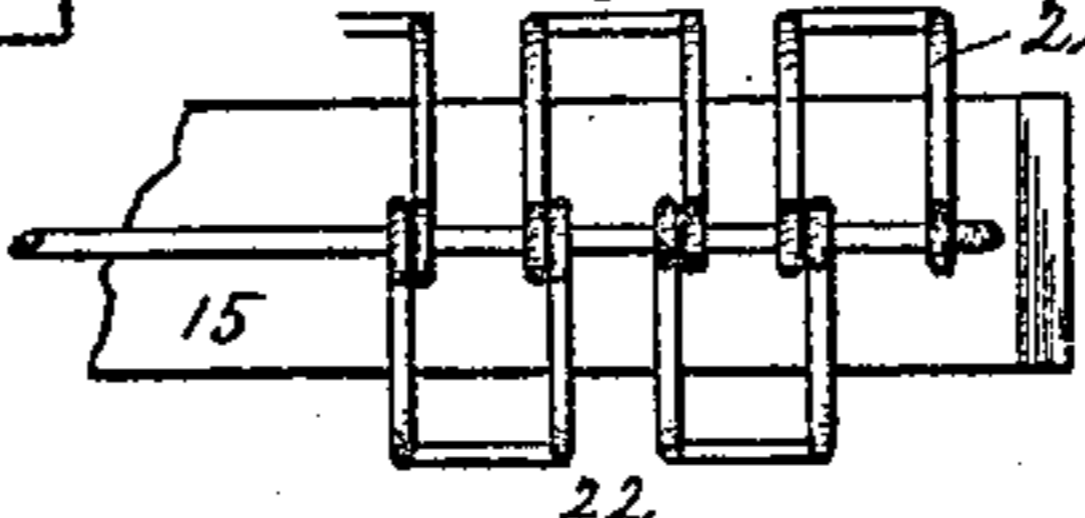
*Fig 3,*



*Fig 6,*



*Fig 6a,*



*Fig 5,*



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

Inventor  
John M. Case.  
By *Knight & Co.*

(No Model.)

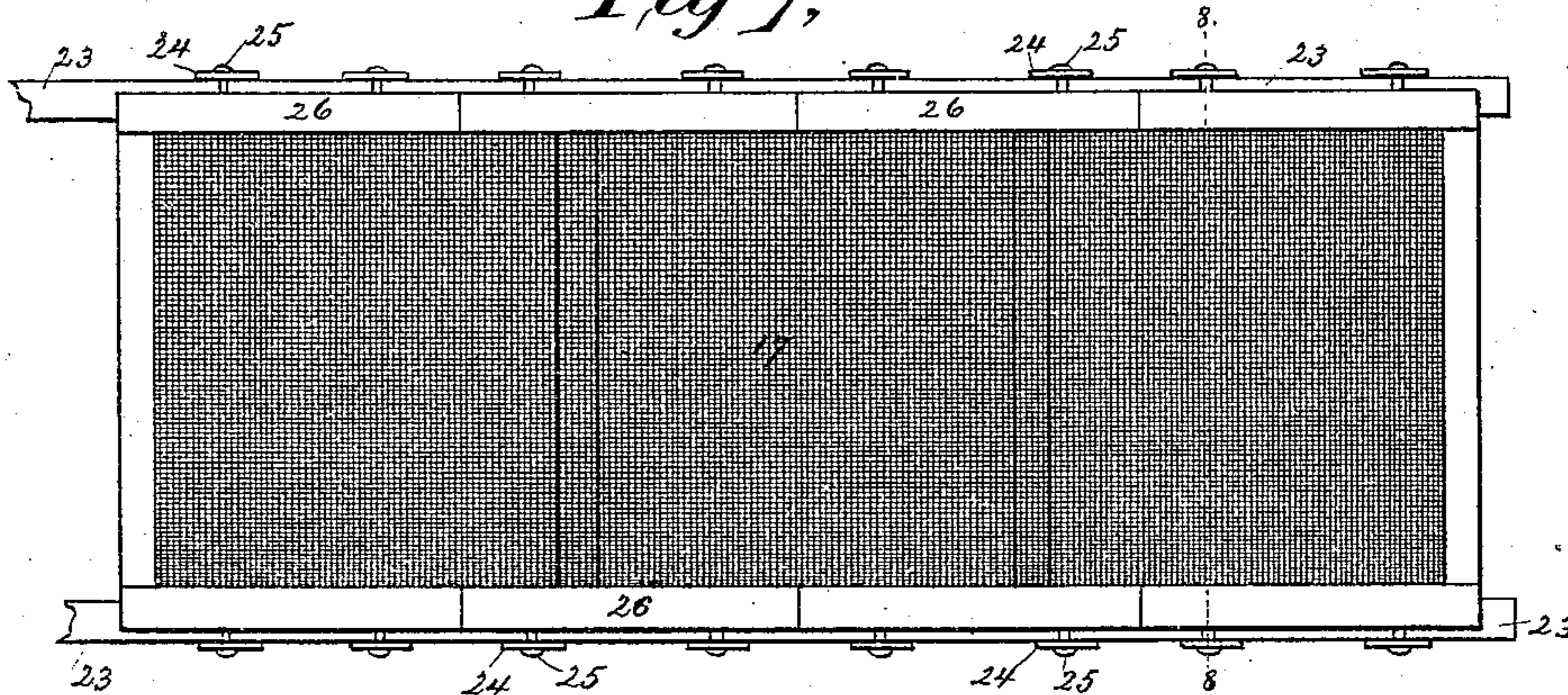
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J. M. CASE.  
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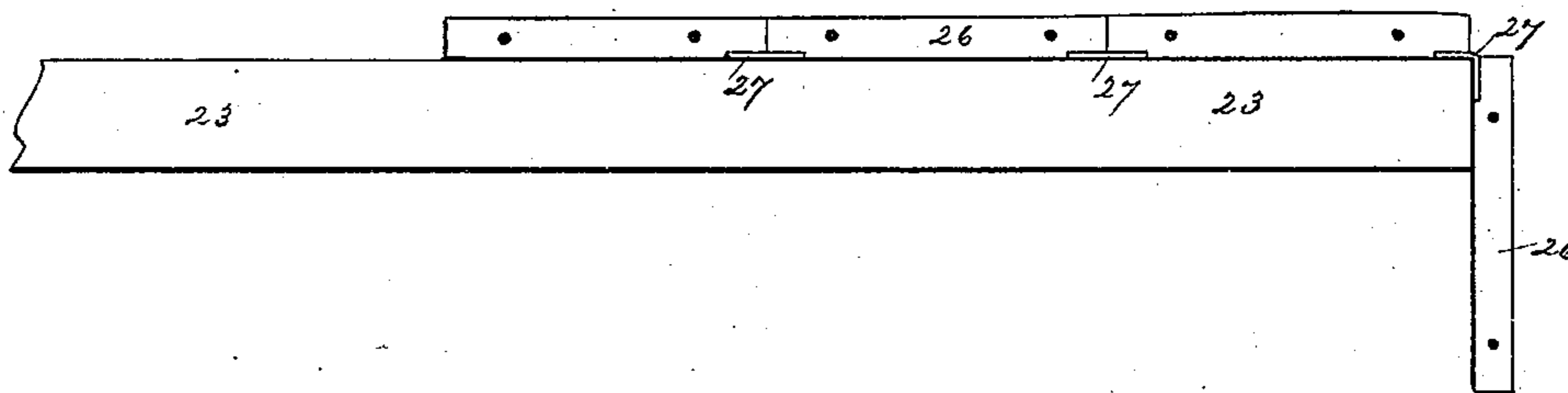
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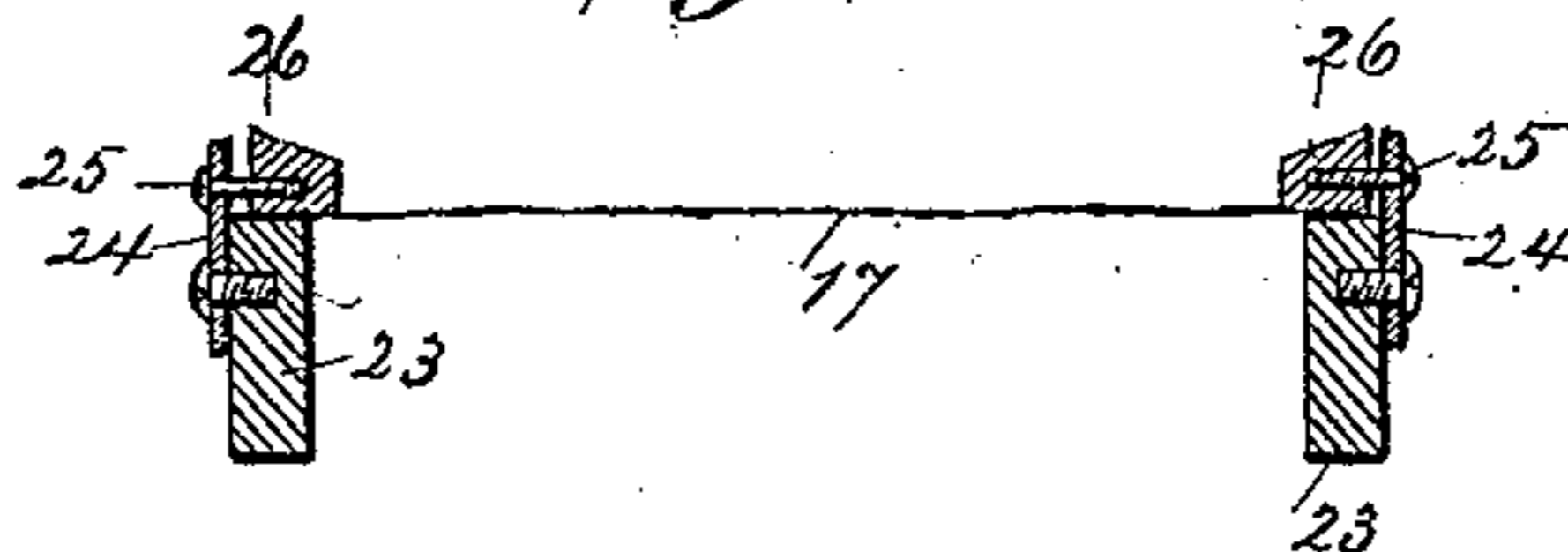
*Fig 7,*



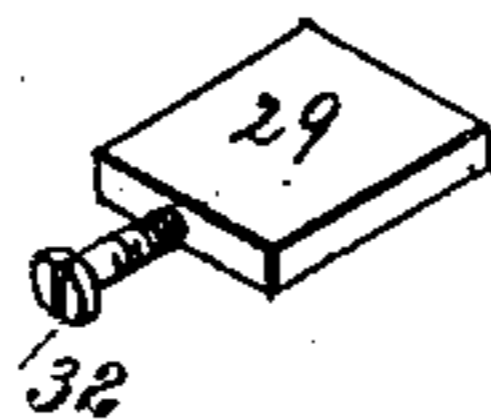
*Fig 9,*



*Fig 8,*



*Fig 10,*



Attest

Geo. T. Smallwood Jr.  
Harry Knight

Inventor.

John M. Case.  
BY Knight & Co.  
attys

(No Model.)

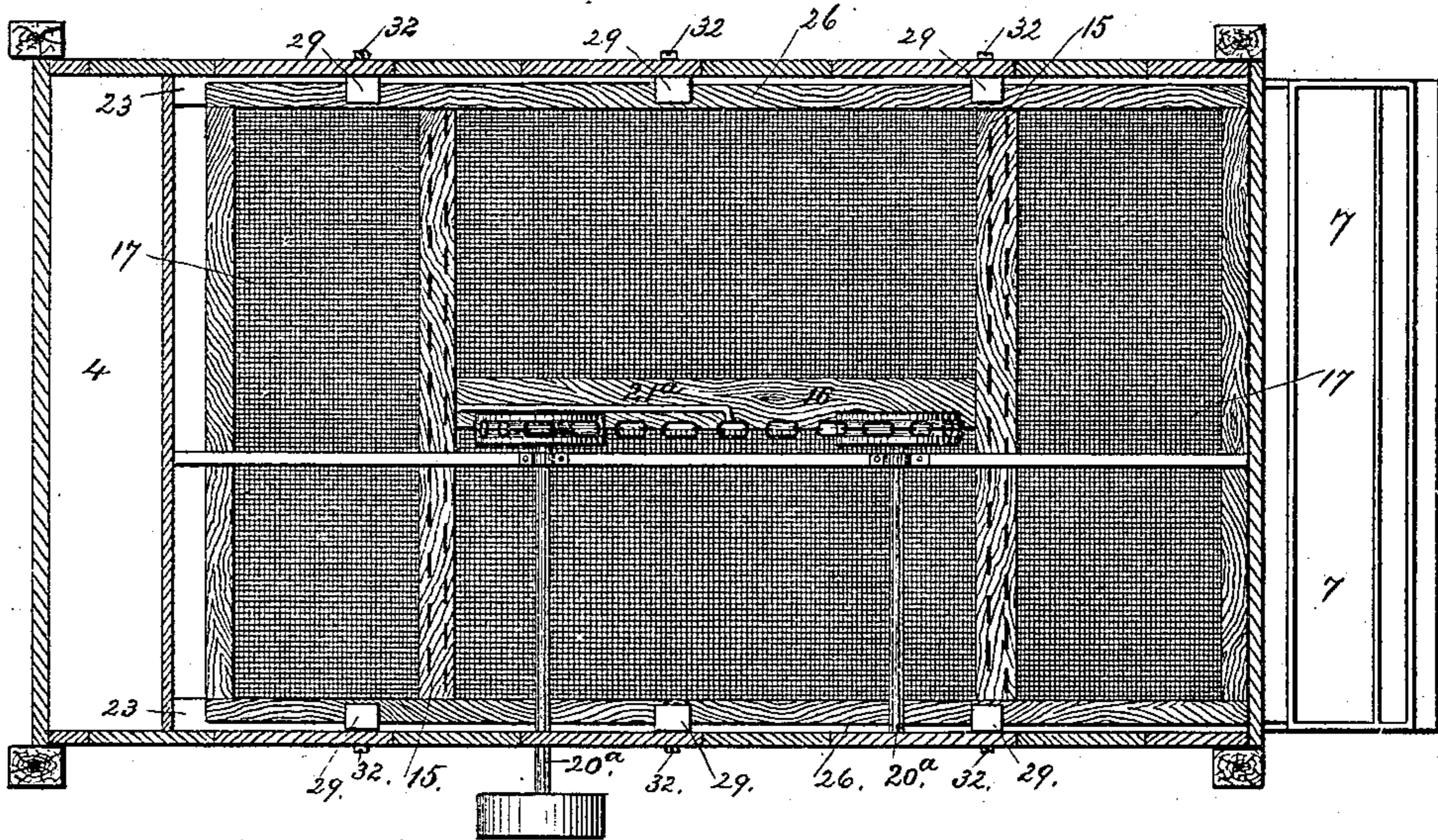
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*Fig 11,*



*Attest:*

*Geo. T. Smallwood Jr.*  
*Harry E. Knight*

*Inventor:*

*John M. Case.*  
*BY Knight Bros*  
*Attys?*

# UNITED STATES PATENT OFFICE.

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

## MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 250,783, dated December 13, 1881.

Application filed March 29, 1881. (No 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 Middlings-Purifiers, of which the following is a specification.

The main object of my invention is to bring within the reach of small mills the advantages possessed by larger mills in the use of high milling apparatus.

By my improvement small mills are provided with a series of independently-operating riddles of greatly improved construction, arranged in compact form, so as to occupy only a small area, and through each of which riddles a different grade of material can be run without one grade of material coming in contact with another. Means are nevertheless provided for connecting the riddles when required. In small mills it is desirable to run different grades of middlings on different riddles. The material is generally put through three, four, or more machines in succession, but I have found it is highly important to have every riddle tail off independently. The art of purifying consists not so much in blowing deleterious matter into the dust-room as in floating fibrous matter over the tail of the machine; hence the importance of independent tailing-spouts for the respective riddles.

In order that the 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 of the apparatus. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a plan of the cloth-cleaning device. Figs. 4, 5, 6, and 6<sup>a</sup> are detailed views, showing different modifications of the cleaners. Fig. 7 is a plan view of the screen, illustrating my improved mode of stretching the cloth. Fig. 8 is a transverse section on the line 8 8, Fig. 7. Fig. 9 is a side elevation of the screen, illustrating the mode of removing it from the machine. Fig. 10 is a perspective view of the dust bracket or shelf. Fig. 11 is a horizontal section on the line 11 11, Fig. 2.

In the present illustration I have represented

the machine divided into three compartments, 1 2 3. There may be more or less. Each of these compartments is a separate and distinct machine or riddle within itself, excepting only that all connect with one vertical air-trunk, 4. Each compartment is closed or covered by a deck, *a*.

Each riddle may be supplied with an independent fan; but I consider it less expensive to have but one large fan, which may be placed anywhere in the mill, and a suction air-trunk connected with the machine at 5, Figs. 1 and 2.

By regulating the quantity of air drawn from each machine by air-valves 6 in each compartment the same effect is produced as by the use of independent fans.

The respective riddles in the series have each an independent feed-box, 7 8 9, so that if at any time the miller wishes to run the machine with different kinds of material he can do so, or if it is desired the "cut-off" or material not sufficiently cleaned in the top riddle may be delivered through the spout 13, Fig. 2, to the feed-box 8 of the next riddle below, and the cut-off from this through the spout 14 to the third riddle, and so on. In either case each riddle tails off independently, as at 10 11 12. By these means a most perfect separation is effected, and the expense of elevators necessary to conduct the cut-off to another machine is saved, and a further advantage results from the fact that the combined apparatus occupies on the floor only the space of one single machine.

The general construction of these several machines is similar to that specified in my former Patents No. 225,564, dated 16th March, 1880, and No. 239,029, dated 22d March, 1881, with the exception of the improvements herein specified, and as far as may be compatible with said improvements. In the machine as now constructed each compartment is a perfect and complete machine within itself, and any one may be used or operated while the others are at rest, or they may all be used in combination.

My improved cloth cleaner consists of a light traveling frame, Figs. 2, 3, and 11, which is perfectly well adapted for the purpose, and which is preferably made of two bars, 15, con-

nected by a longitudinal bar, 16, and provided with suitable openings to receive gravitating cleaners, various forms of which are shown in Fig. 3, and in detail in Figs. 4, 5, 6, and 6<sup>a</sup>.  
 5 These cleaners play freely through apertures prepared for them in the bars 15 15, so as to rest on the cloth of the screens 17 and be carried over said screens.

The cleaners may consist of a light wire loop, 10 18, Figs. 3 and 4, a rubber tube, 19, Figs. 3 and 5, or may be constructed of any other suitable material, in any manner that will permit them to vibrate loosely upon the cloth as they are caused to traverse the same by the movement  
 15 of the frame 15 16. This movement is imparted by the action of the sprocket-wheels 20 carried by short shafts 20<sup>a</sup>, and employed to drive the endless chain 21, which is connected by a rod, 21<sup>a</sup>, as shown in Fig. 2. The short shafts 20<sup>a</sup>  
 20 allow the connecting-rod 21 to pass in the continuous movement of the chain, as illustrated in Fig. 11, and thus to impart a reciprocating movement to the frame.

Figs. 6 and 6<sup>a</sup> show a modification of this  
 25 cleaner, consisting of hinged loops 22, which are permitted to rest and slide loosely upon the cloth. These cleaners are made light, and each independent of the others, in order that they may not rest heavily upon the cloth, and that  
 30 they may vibrate with the greatest ease.

The cleaner-frame may be made to traverse the entire length and only one be used, or there may be a series of them, in which case the movement would only be sufficient to cover the entire  
 35 cloth. I prefer to make two, as represented, and cause each of them to traverse one-half the length of screen with sufficient overlap to insure the covering of the entire cloth in their successive movements. When rubber tubes  
 40 are used as cleaners, the material readily passes between them, and when wire is used it offers no obstruction to the flow of the material on the screen.

My improved mode of stretching the cloth  
 45 consists in fastening to each of the shaking-frames 23 of the respective screens a series of small iron plates, 24, through each of which a screw, 25, is inserted, so as to engage with a loose wooden strip, 26, on which the cloth 17  
 50 is fastened. By turning these screws the cloth 17 may at any time be stretched while the machine is in motion. This method of stretching the cloth is fully illustrated in Figs. 1, 7, 8, and 9.

55 My improved means of removing the cloth consists in making the strips 26, to which the edges of the cloth 17 are attached, in a number of sections, and fastening the same together by suitable hinges, 27, preferably made of leather, as shown in Fig. 9.

To remove the cloth the stretching-screws 25 are taken out, after which the cloth may be drawn out at the end or side of the machine through one of the windows 28, the absence  
 65 of any rigid transverse bars between the stretching-strips 26 permitting them to be brought

freely together when released by the screws 25. This is a very important feature of my invention, as there are many places in crowded mills where it is impossible to remove the cloth on  
 70 long rigid riddles without taking down the machine.

In order to enable the miller to tell at all times what is being carried to the dust-room I employ a small bracket, 29, which I suspend  
 75 on the inside of the air-chambers 30, or attached to the sides of the machine in said chambers, which forms a dead-air chamber above it, and the material suspended in the air readily collects on the same. At any time the miller can  
 80 open one of the windows 28, opposite each of which a bracket is suspended, ordinarily by a screw, 32, as shown, and take from the bracket a handful of dust-room material, which is as  
 85 much as the bracket will hold. He can then change his blast, if necessary, and in a few moments examine again, thus enabling him at all times to regulate the blast to suit the material being operated upon.

I am aware that there are machines made  
 90 with large pockets in the discharge air-ports, but they are practically useless, as they hold such a large amount of material that it requires often several days to fill them. I do not use a  
 95 pocket, but simply a small piece of board or a bracket of any material, about three inches square, which, when once emptied, readily fills up again with sufficient quantity to determine the nature of the material blown to the dust-  
 100 room.

As before stated, this machine possesses advantages over previous machines in that it is so constructed that any one of the series of  
 105 riddles arranged in one common vertical frame may be run independently of the others, as each riddle has a separate feed-box, a separate tailings-spout, and a deck separating the series of riddles. By this arrangement any one of the  
 110 separate riddles may be run independent of the others, and, if desired, different classes of material supplied to the different riddles. This is an important and valuable feature of my invention.

No previous devices that I am aware of cover  
 115 this important feature, as none of them are perfect or complete devices within themselves, as the different riddles have to be run in conjunction with each other, and different classes of material cannot be fed independently to the  
 120 different riddles. Neither can one screen be run without operating the whole. It is thus evident that I produce a new and valuable function.

I am aware that rollers have been employed in connection with movable screens for the  
 125 purpose of facilitating the bolting of the material acted upon. These rollers do not travel, but are made to revolve under the movable screens. Neither are these rollers in sections, so as to adjust themselves to the unevenness of the  
 130 cloth.

I am also aware that rubbing devices have

been employed for the purpose of cleaning bran or grain, but impracticable for my use. Such, therefore, I do not claim as my invention.

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

1. In a middlings-purifier, the combination of a series of riddles, feed attachments, tailings-spouts, stationary decks, and an air-trunk, the riddles being mounted in a vertical column, and each riddle provided with its own feed attachment, tailings-spout, and stationary deck, and the series of riddles connected to one common air-trunk, as and for the purpose set forth.

2. In a middlings-purifier, the combination of a series of independent riddles, a common vertical frame receiving said riddles one above another, and an air-trunk common to all said riddles, each being adapted to operate, when desired, as a complete machine within itself, as herein described.

3. The combination, with the bolting-screen, of a cloth cleaning device consisting of a series of gravitating cleaners connected with movable cross-bars, as set forth.

4. The combination of the cleaner-bars 15, (one or more,) connecting-rod 21<sup>a</sup>, endless chain 21, and shafts 20<sup>a</sup> for operating the cleaners, substantially as herein described.

5. In a middlings-purifier, the combination, with suitable means of support, of shelves or

brackets 29 arranged, substantially as herein described, to produce dead-air spaces and receive deposits of dust for inspection.

6. In a middlings-purifier, the combination, with the screen 17 and air-outlet 5, connecting with a suction device, of the dust-bracket 29 applied within the air-chamber 30 directly above the said screen, as described.

7. The combination of the screen 25, dust-bracket 29, and window or shutter 31 for giving access to said bracket, as described.

8. The combination, with a suitable frame and adjusting devices, of a screen whose longitudinal side bars are each made up of sections of wood or other material hinged together end to end, the said adjusting devices being adapted to stretch the cloth and keep it taut, as set forth.

9. The combination, in a screen, of a cloth, stretching-bars, frame receiving said bars, and screws, the cloth being connected at its respective sides or edges to the independent stretching-bars and drawn apart and held taut by the screws, as set forth.

10. The combination of the cloth 17, movable side bars, 26, plates or lugs 24, and stretching-screws 25, substantially as herein described.

JOHN M. CASE.

Witnesses:

OCTAVIUS KNIGHT,  
HARRY E. KNIGHT.