(No Model.) 2 Sheets—Sheet 1.

J. J. GERARD.

DUST COLLECTOR.

No. 456,810. Patented July 28, 1891.

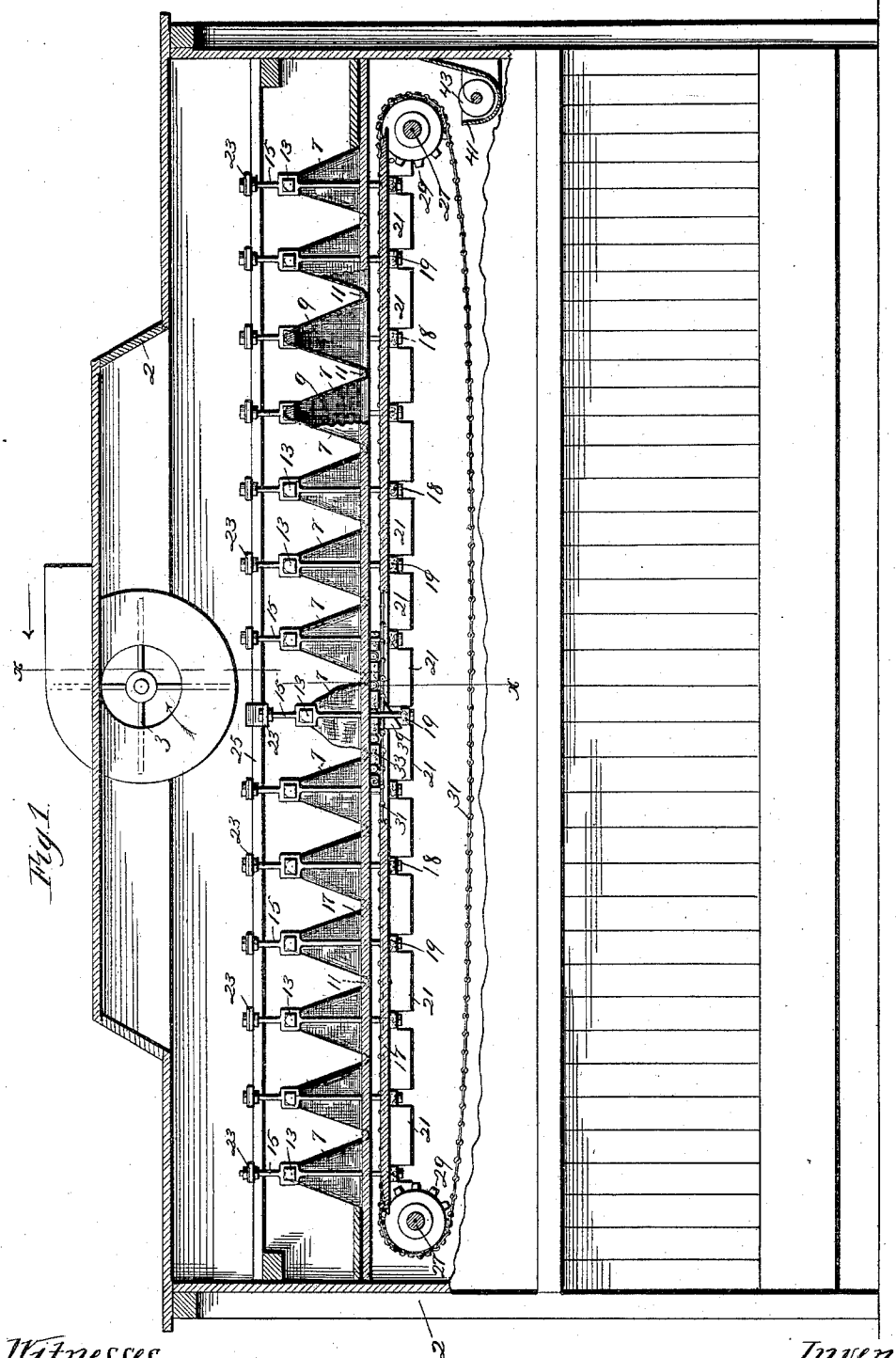

Fig. 1.

Witnesses.
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By Paul Newman Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2

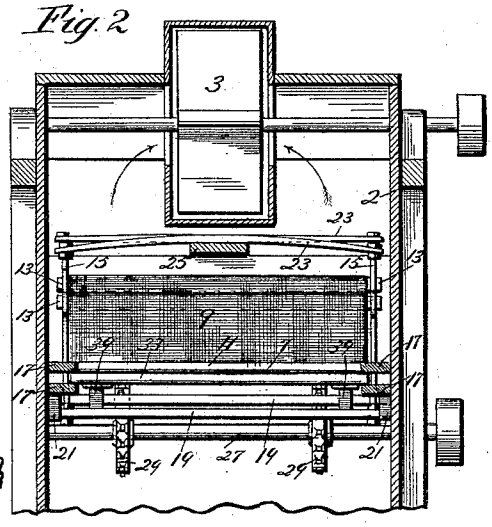


Fig. 4

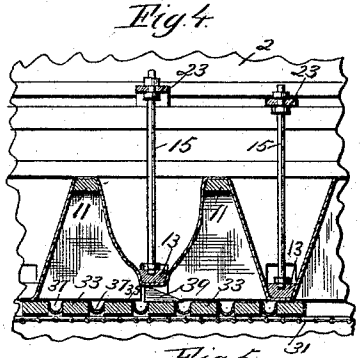


Fig. 5

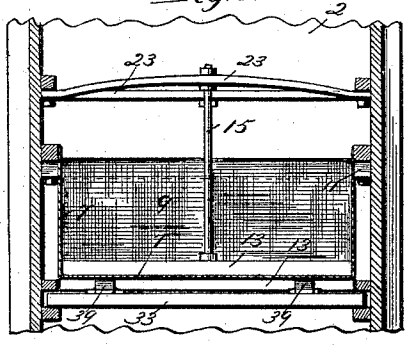
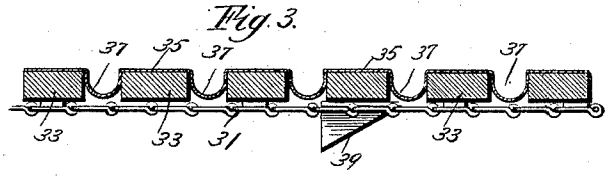


Fig. 3



Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN J. GERARD, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE EDWARD P. ALLIS COMPANY, OF MILWAUKEE, WISCONSIN.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 456,810, dated July 28, 1891.

Application filed January 4, 1890. Serial No. 335,884. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. GERARD, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Dust-Collectors, of which the following is a specification.

The object of this invention is to provide an improved machine designed to be used in flour-mills in connection with middlings-purifiers or other suitable machines for the purpose of separating particles of dust from a current of dust-laden air.

The invention consists, generally, in a machine having a cloth or other flexible separating medium formed into a series of pockets, that are held in a distended position by means of suitable springs, and mechanism for collapsing said pockets against the tension of the springs and then suddenly releasing them and permitting them to move back quickly to their former position, thereby shaking the cloth, so that the adhering dirt will fall from it into a suitable carrier or receptacle.

The invention consists, further, in certain features of construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional side elevation of a machine embodying my invention. Fig. 2 is a transverse vertical section of the same on line $x\,x$ of Fig. 1 and looking in the direction of the arrow in said Fig. 1. Fig. 3 is a detail on a larger scale of the dust-carrier. Fig. 4 is a detail longitudinal section, and Fig. 5 is a detail transverse section showing a modification of the arrangement of the spring.

In the drawings, 2 represents the casing of the machine, and it may be the casing of any ordinary middlings-purifier, having a fan 3 located in the upper portion thereof, by means of which a current of air is drawn through the machine in the usual way. Arranged in this casing is a suitable dust-collecting medium, through which the air is drawn by the fan. As the air passes through this medium the particles of dust carried by it will be removed. The dust-collecting medium consists, preferably, of a suitable cloth 7, formed into a series of pockets 9. The lower ends of the pockets are secured to suitable cross-bars 11, and at the tops of the pockets the cloth preferably passes over suitable standards 13, and these standards pass through openings in the longitudinal bars 17, which are arranged upon opposite sides of the machine. The lower ends of the standards 15 are connected to cross-bars 19, and the ends of these bars are arranged between blocks 21, located upon the opposite sides of the machine. The upper ends of the standards 15 are connected to suitable spring-bars 23, and these bars are preferably supported at their centers upon a longitudinal bar 25. The standards 15 are free to slide longitudinally, and they are held at the upper limit of their movement by the spring-bars 23, and by this means the cloth forming the walls of the pocket is normally kept taut. The lower ends of the standards 15 are screw-threaded, and are provided with nuts 18, which limit the upward movement of the standards and consequently the amount of tension or strain exerted by the springs on the cloth.

Arranged at the opposite ends of the machine are suitable shafts 27, which are provided with sprocket-wheels 29. Chains 31 pass around these sprocket-wheels and beneath the open ends of the pockets 9. Secured upon these chains are a series of slats 33, arranged with spaces between them, the ends of these slats projecting into the spaces between the longitudinal bars 17. A strip of cloth 35 is secured upon the top of the slats 33. This cloth extends across the spaces between said slats, and extending downward into said spaces forms a series of pockets 37 between the slats. These slats and the cloths secured upon them together constitute a dust-carrier, that as the chains are moved by the sprocket-wheels passes beneath and close to the lower edges of the pockets, thereby cutting off the current of air from each pocket as the carrier passes below it. Inclined blocks 39 are secured to the carrier, and as the carrier passes beneath each pocket these blocks engage the top of the cross-bar 19, that is located beneath said pocket, and moving it downward depress the standards 15 against the tension of the spring 23, thereby sagging the walls of the pockets. As soon as the blocks 39 have

passed the bar 19 the spring 23 reacts, drawing up the standards, and thereby suddenly drawing the walls of the pocket taut. By this means all of the cloth forming the pockets will be shaken, and as the air is now cut off from this pocket the dust will drop from the inner wall of the pocket onto the top of the carrier. The cloth forming the pockets will by this means be thoroughly and quickly cleaned, and the adhering dust will be deposited in the pockets of the carrier. As the carrier passes around the sprocket-wheels at the end of the casing the dust will fall out of the pockets into a suitable trough 41, from which it may be removed by a suitable conveyer 43. In some instances I prefer to arrange the bars at the lower ends of the pockets, so that they will move, instead of those at the top of the pocket. I have shown this construction in Figs. 4 and 5. In this instance the bars at the top of the pockets are stationary and correspond to the cross-bars 11 in the other construction. The movable bars 13 are arranged at the bottoms of the pockets, and are engaged directly by the inclined blocks 39, which are upon the top of the carrier. The standards 15 are in this instance connected to the center of the cross-bar 13 and to the center of the spring-bar 23. This construction will be seen to be, however, simply an equivalent of that already described.

I claim as my invention—

1. In combination with a dust-collecting medium formed into pockets, springs adapted to hold the pockets distended, an endless chain located beneath the mouths of the pockets, a cam-piece secured to the chain to engage and move the pocket-frames or a bar thereon against the force of the springs and thereby collapse the pockets, and a series of flexible connected slats also carried by the chain to receive the dust dislodged.

2. In combination with a dust-collecting medium formed into pockets, springs to hold the pockets distended, an endless chain located beneath the pockets, a series of slats secured to the chain, flexible connecting-pieces between the slats arranged to form gutters, and means for collapsing the pockets.

In testimony whereof I have hereunto set my hand this 28th day of December, 1889.

JOHN J. GERARD.

In presence of—
P. C. PAUL,
BESSIE BOOTH.