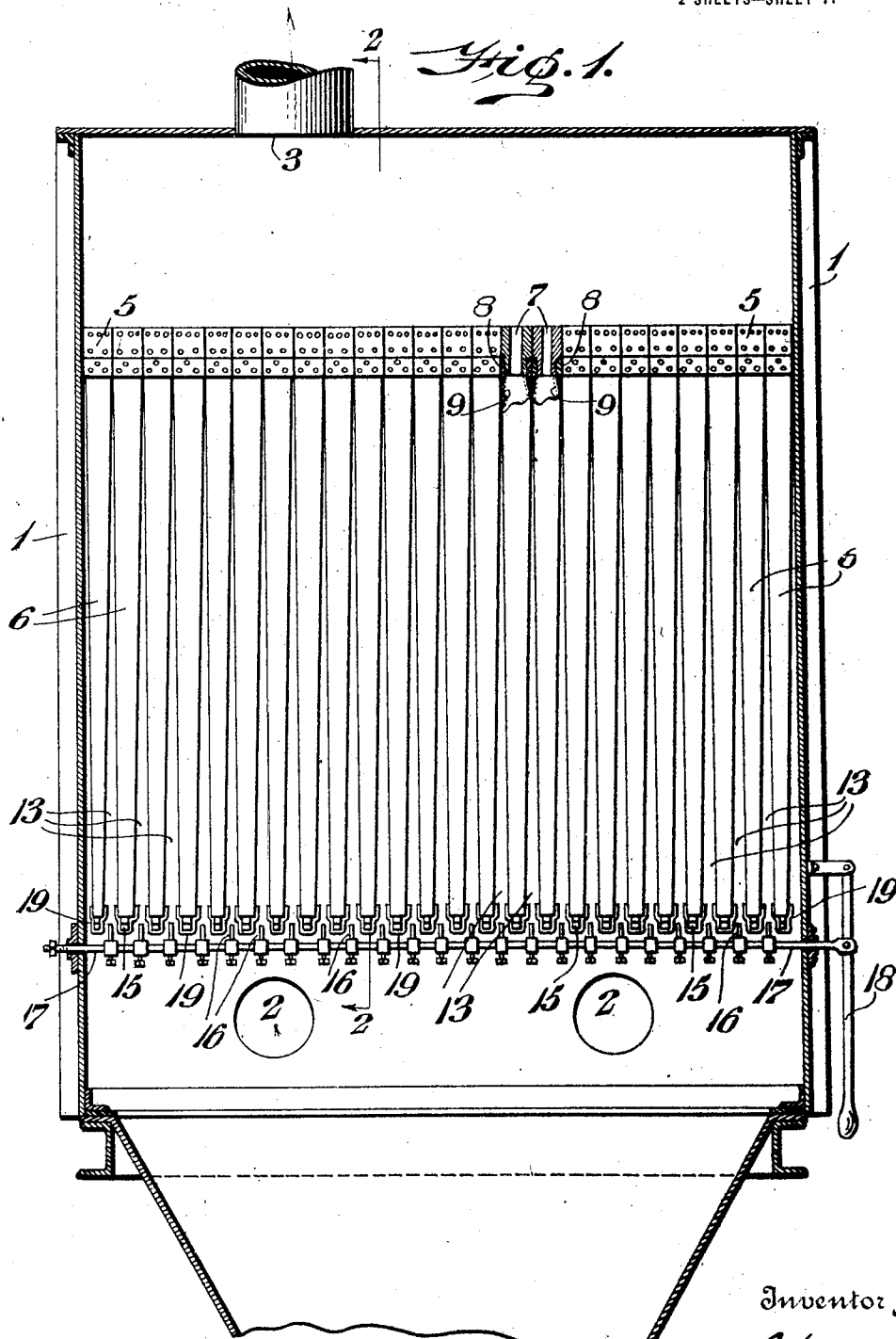


A. G. WARREN.
VIBRATORY MECHANISM FOR DUST COLLECTORS.
APPLICATION FILED DEC. 22, 1917.

1,286,458.

Patented Dec. 3, 1918.
2 SHEETS—SHEET 1.



Inventor:
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 2 SHEETS—SHEET 2.

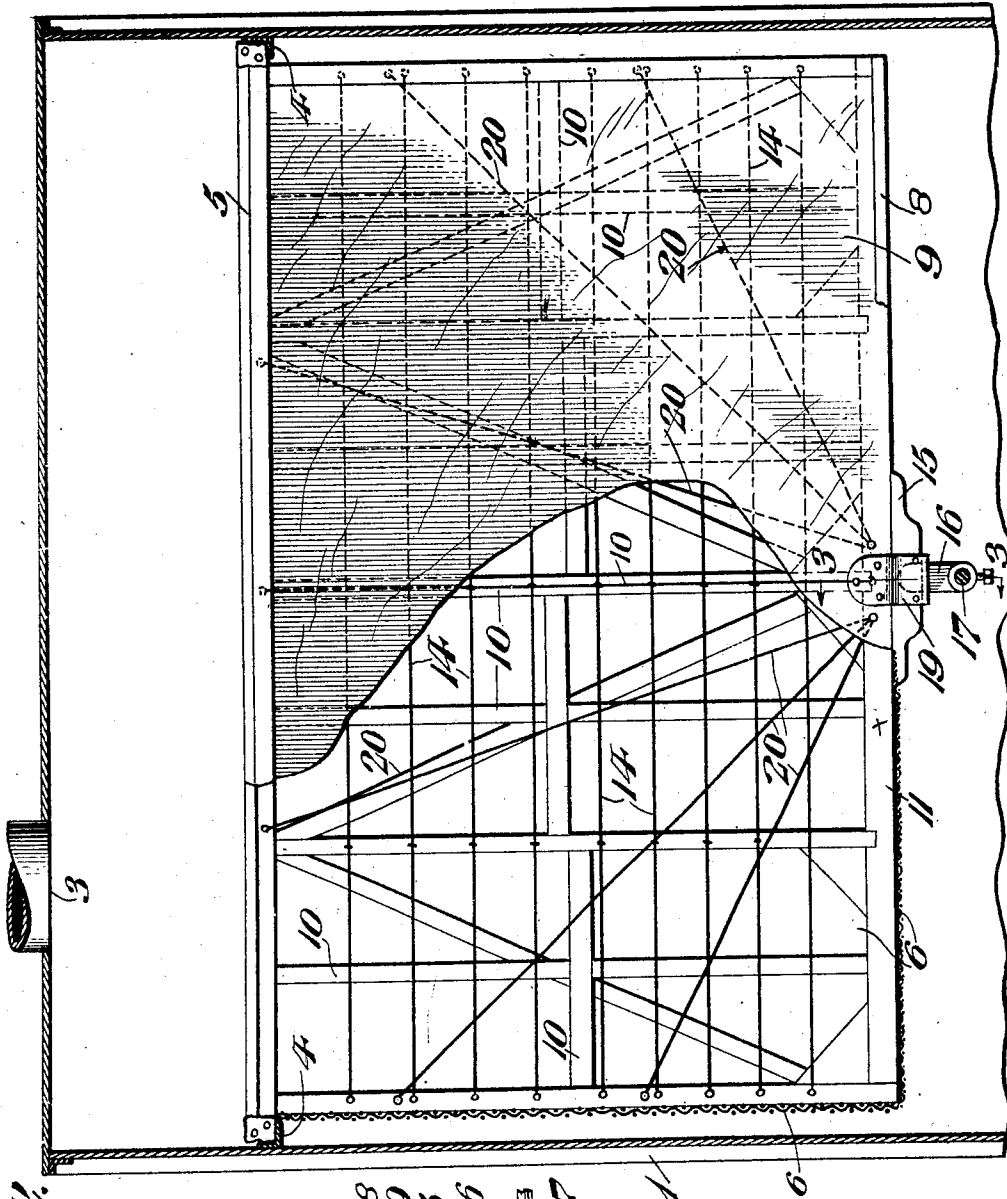


Fig. 2.
 ONLINE 2-2.
 FIG. 1.

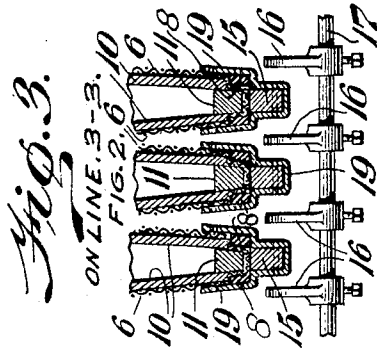


Fig. 3.
 ONLINE 3-3.
 FIG. 2.

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VIBRATORY MECHANISM FOR DUST-COLLECTORS.

1,283,462.

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To all whom it may concern:

Be it known that I, AMMONS G. WARREN, a citizen of the United States, and a resident of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Vibratory Mechanism for Dust-Collectors, of which the following is a specification.

The present invention relates to dust collecting apparatus and more particularly to means for removing collected dust from the screens or separating medium and maintaining such devices relatively clean and effective for the purpose intended.

In devices of this character as heretofore constructed, it has been customary to provide hammers or rigid means for jarring the screens in order to dislodge dust and prevent its collection in such quantities as to impair the proper operation of the screens. Such devices, however, have been found to operate imperfectly due in a large measure to the fact that the screen parts are of relatively heavy material and consequently not adapted to transmit vibrations of sufficient strength for the purpose of removing collected dust from the screens.

It is the object of the present invention to overcome the defects of such apparatus by utilizing a device which operates directly upon the screens instead of upon the heavy frame work and thereby set up a series of vibration waves of relatively short length in the screens themselves, whereby all portions of the screens are placed under the influence of the vibrations and all the dust dislodged and removed from the screens. By this means, pockets of collected dust are prevented in a positive manner and the screens maintained clean and effective throughout the screen area.

For the purpose of illustrating my invention, I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement

and organization of the instrumentalities as herein shown and described.

Referring to the drawing—

Figure 1 represents a sectional elevation of a dust collector apparatus embodying my invention.

Fig. 2 represents a section on line 2—2 of Fig. 1.

Fig. 3 is a section on line 3—3 of Fig. 2.

1 designates the main casing of the dust collecting device which is provided with the customary air inlet 2 and suction outlet 3 having between them the screens or dust separating mechanism as will be understood. In the preferred construction, angle iron supports 4 are secured to two opposite side walls of the casing and support between them the top bars 5 of the respective screens 6 which are thus suspended vertically in the intervening space. The length of the screen is generally such as to leave a sufficient space at the lower portion of the casing to form a suitable air chamber with which the air inlet 2 communicates.

Each screen, as here shown, consists of a top bar 5 formed with a longitudinally disposed opening 7 of suitable length to take care of the free discharge of air passing through the screen and are also grooved at the sides to receive the battens 8 or like members which attach the screen fabric 9 to the bars 5. This construction allows adjacent bars to lie in close abutting relation and form a leak proof joint. The screen fabric is stretched over a suitable frame 10, the bottom bar 11 of which is of less width than the top bar 5 in order to give a suitable inclination to the screen fabric so that it intercepts the path of the moving body of air. Therefore it will be evident that the two screen surfaces of each screen converge downward giving a substantially V-shaped cross-section to the screen whereby in assembled condition, air inlet passages 12 are provided as will be understood. The path of the dust laden air leads by way of the inlets 2 into the passages 12, thence through the fabric of each screen to the interior of the respective screens and is drawn out through the several openings 7 to the exhaust outlet 3. The screen fabric is of course fastened

to the respective frames 10 in taut condition and maintained against sagging or improper stretching by transverse cords 14 or equivalent means connected to the frame and bridging the space between the frame parts.

15 designates lugs preferably secured to the respective screens at substantially the central portion of the bottom bars 11 and normally in the path of movement of striker fingers 16 fixedly carried by a shaker bar 17. By reference to Fig. 1, it will be seen that the bar 17 is journaled for reciprocating movement on the casing 1 and passes transversely of the air inlet chamber below the bottom of the screen structure. The fingers 16 are sufficient in number to insure each screen being tapped or struck by one of the fingers as the bar 17 is moved back and forth and a handle 18 is provided for manually operating the bar at will. It will be understood, however, that the shaking of the bar is not limited to manual operation as obviously this may be accomplished by any equivalent means.

19 designates straps, preferably of metal, for the respective screens, each strap passing around the lugs 15 and being secured to the frame of the screen in any well known manner. These straps are located to receive the impact of the fingers 16 and thus prevent damage to the wooden frame. Obviously, this construction is but one manner of protecting the frame from the action of the reciprocable member and the invention is therefore not restricted to this exact construction.

It should be noted that the impact device is entirely independent of the screen structure and is so arranged as to strike the frames at a point removed from the place of support and where the maximum vibration may be given to the screen frames. In order to further increase the effective vibration, each screen is provided with a number of wires 20 substantially radiating from the section of the screen immediately adjacent the place where the fingers 16 strike the frame. These wires 20 are stretched relatively tight and are connected to comparatively widely separated parts of the screen, so that practically all portions of the screen area are subject to the action of these wires. This action is a vibratory one since the impact of the finger with the protected lug 15 is transmitted to the wires 20 and thence over the screen, whereby all collected dust is dislodged and the fabric maintained clean and operative.

In the ordinary apparatus embodying hammers or rigid mechanism for jarring the screens, it has been found that the screen frame, owing to its substantial construction absorbs the vibrations to a material extent and consequently while the blow or blows may be sufficient to jar some of the collected

dust from the screen, there still remains an appreciable quantity clinging to the screen fabric. This residue gradually accumulates until the dust separating area becomes considerably restricted and in many instances necessitates the entire machine being shut down to clean the screens. In the device of the present invention, the freely suspended ends of the screens respond readily to the impact of the reciprocable fingers and give a true vibratory action which is transmitted directly by way of the wires 20 to the surface of the screens. Pockets and areas of segregated dust are thus entirely eliminated and the screens maintained in efficient operative condition at all times.

The operation of the device is obvious by reference to Fig. 1, in that all that is necessary is to grasp the handle 18 and reciprocate the bar 17 whereupon the fingers 16 strike adjacent lugs 15 of the respective screens and produce the required vibration. The wires 20, as will be understood, are important adjuncts of the apparatus in that they direct the vibrations to all parts of the screen surface and uniformly distribute the effects of the impact.

It will now be apparent that I have devised a novel and useful construction which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while I have in the present instance shown and described the preferred embodiment thereof, which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

What I claim is:

1. In a dust collecting apparatus, a casing, a plurality of screens suspended therein, a bar mounted transversely below said screens and adapted to be reciprocated and means carried by said bar and located respectively between the free ends of each pair of screens for striking said screens to produce vibrations to remove collected dust.

2. In a dust collecting apparatus, a casing; a plurality of screens suspended therein, a bar mounted transversely below said screens and adapted to be reciprocated, means carried by said bar and located respectively between the free ends of each pair of screens for striking said screens to produce vibrations to remove collected dust and means for transmitting said vibrations to the surface of each screen.

3. In a dust collecting apparatus, a casing a plurality of screens suspended therein, a bar mounted transversely below said screens and adapted to be reciprocated, means carried by said bar and located respectively between the free ends of each pair of screens

for striking said screens to produce vibrations to remove collected dust and a plurality of vibration transmitting wires secured to each screen, said wires extending
5 from a substantially common center on each screen to different parts of the screen surface, whereby all portions of the screen surfaces are subjected to vibratory action.
4. In a dust collecting apparatus, a casing,
10 a screen therein, means arranged to strike

said screen and a plurality of taut wires or cords extending to different parts of said screen and in contact with the screen surface, whereby vibrations produced in said wires or cords are transmitted directly to 15 said screen.

In testimony whereof, I have hereunto signed my name.

AMBROSE G. WARREN.