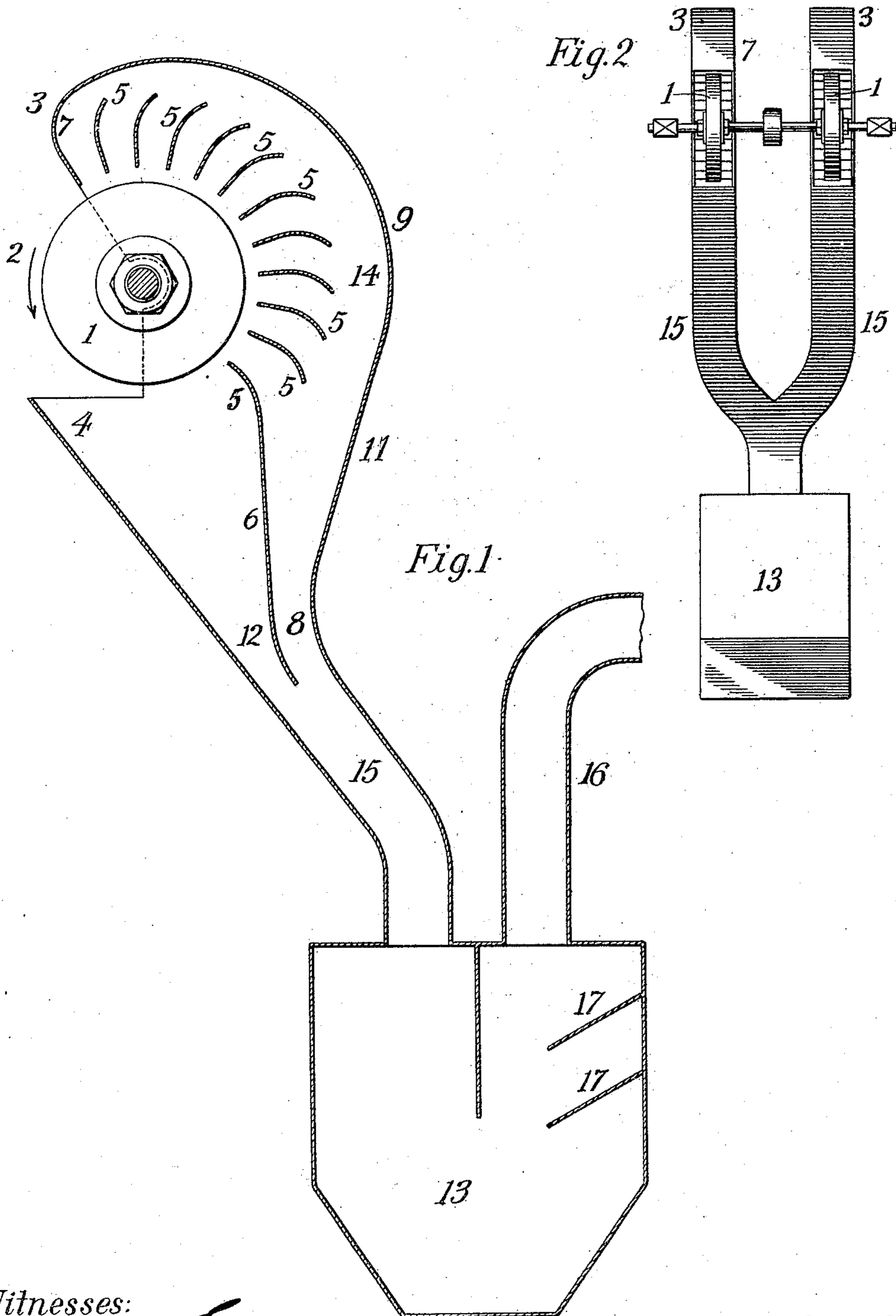


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H. A. WEBER.
GRINDING OR POLISHING APPARATUS.
APPLICATION FILED DEC. 31, 1903.



Witnesses:

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GRINDING OR POLISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 790,943, dated May 30, 1905.

Application filed December 31, 1903. Serial No. 187,280.

To all whom it may concern:

Be it known that I, HENRY ADAM WEBER, a citizen of the United States, residing in the borough of Manhattan, city of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Grinding or Polishing Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings, forming a part thereof.

My invention relates to grinding or polishing apparatus, and more particularly to means for receiving and drawing off the flying particles liberated during the grinding and polishing operations.

In the operations of grinding and polishing grit or fiber or other particles in considerable quantities will be abraded from the surface of the wheels and to some extent particles will fly from the article ground or polished and particles of rouge or polishing-powder will be thrown off in considerable quantities, and frequently these particles will be in such fine condition and under such frictional heat as to ignite inflammable substances in their path and will be otherwise troublesome and dangerous, and it is therefore highly desirable and usually necessary that grinding or polishing wheels should be housed or hooded so far as possible and that exhaust devices should be provided for receiving and drawing off the particles hurled from the grinding or polishing wheels.

According to my invention I provide means for diverting the substantially tangential path of the fiber or grit or other particles thrown off during the grinding or polishing operation and the currents of air generated by the rapid rotation of the grinding or polishing wheels and for utilizing the motion or momentum of these currents of air and of the flying particles to develop a force for the purpose of continually blowing out and clearing the hood. Thus by the operation which causes these flying particles to be liberated I develop a substantial force which will draw these particles into the hood and carry them in a closed conduit to a substantial distance from the place of grinding or polishing.

I will now describe the construction shown

in the accompanying drawings and embodying my invention and will thereafter point out my invention in claims.

Figure 1 is a longitudinal vertical section of my complete device as used in connection with a single grinding or polishing wheel. Fig. 2 is a front view of two grinding or polishing wheels, showing the joining of the outlets into a common conduit.

In the embodiment of my invention illustrated in the drawings the hood 3 is shown as somewhat in the shape of a helmet, tapering at its lower end to a restricted lower outlet-conduit 15. The grinding or polishing wheel 1 is properly exposed through a portion of its periphery to permit the articles which are to be ground or polished to be held in contact therewith. The direction of rotation of the grinding or polishing wheel 1 is such that its exposed portion moves downward, as indicated by the arrow 2. The hood 3 has a lower forwardly-extending portion 4, which projects forward beneath the wheel sufficiently to receive the particles directly thrown off at the place of grinding or polishing, and the hood is provided interiorly with a plurality of transverse deflecting vanes or partitions 5, which extend outward from points in proximity to the periphery of the wheel to points at a suitable distance from the outer peripheral wall 9 of the hood, these partitions 5 being arranged so that the particles and air-currents which impinge upon them will be deflected outward toward the outer peripheral wall 9 of the hood, each vane being substantially clear of the path of deflected flying particles and air-currents from its next adjacent vane. The partitions 5 extend outward in proper directions to perform their deflecting functions and in the embodiment of my invention shown in the drawings are arranged on radial lines, merging into backward curvature in proximity to their outer ends, so that they will receive the particles thrown off from the wheel and the air-currents generated by the rapid rotation of the wheel and deflect them outward and backward toward the outer peripheral wall 9 of the hood and into the space or conductive channel 14 between the outer ends of the partitions and the outer peripheral wall of the hood, in which conduct-

ive channel the particles and air-currents diverted by the several partitions will meet or commingle and move together toward the lower portion of the hood. The upper front wall 7 of the hood has a shape corresponding to that of the partitions, being shown as partly radial, with its radial line merging into an outward and backward curvature which merges into the outer peripheral wall 9 of the hood. The partition 5 next to this front wall approaches at its outer end more closely to the outer peripheral wall 9 than succeeding partitions, except the first or lower partition, and the distances between the outer ends of the partitions 5 and the outer peripheral wall 9 increase up to the first or lower partition, so as to provide a space or conductive channel 14 between the partitions and outer wall, which is of increasing area in the direction of motion of the moving medium therein to a point in proximity to the lower outlet 8 thereof, and this is shown as accomplished by making all of the partitions except the first or lower partition of the same shape and of equal length and terminating in a circumference concentric with the axis of the wheel and by shaping the outer peripheral wall in a curve gradually departing outwardly from such concentric circumference and merging into the downwardly and forwardly inclined rear wall 11 of the hood. The air-currents and moving particles deflected by the front of the hood will be directed rearwardly in this conductive channel 14, and the air-currents and moving particles deflected by the next partition will be commingled therewith or added thereto, and each succeeding partition will add its quota of air-currents and moving particles, and the accumulated force of the moving medium will be such that the particles will be carried or blown with great vehemence through the conductive channel 14. The lower partition 5 is shown as considerably longer than the outer partitions, terminating outwardly in a downwardly-extending portion 6, which converges toward the outer rear wall 11 of the hood, so that the conductive channel diminishes in area in the direction of motion of the moving medium therein in proximity to its outlet 8, thereby tending to increase the velocity of the particles and moving currents therein at the outlet 8. The lower or first partition 5 will deflect its quota of air-currents and moving particles and in addition thereto direct tangential currents, and moving masses of particles will also be projected downward from the wheel into the lower portion of the hood and toward the lower outlet 12 thereof, from which they will enter the common outlet-conduit 15, and this lower portion is of diminishing area in the direction of motion of the moving medium therein and will tend to maintain or increase the velocity of the air-currents and particles moving there- through, and the projected air-currents and

moving particles from the conductive channel 14 and the lower portion 4 escaping at the outlets 8 and 12 thereof, respectively, will enter the common outlet-conduit 15 in substantially the same direction and will move together through the conduit 15, so that the particles will be carried to the point of deposit, which in the construction shown is within the particle receiver or separator 13, connected by the conduit 15 to the lower portion of the hood. The separator has an outlet-conduit 16 for the air and a plurality of downwardly-inclined partitions 17, and the particles will gravitate to the bottom of the separator, while the air will escape through the air-outlet 16.

In the construction shown in Fig. 2 two wheels are separately provided with hoods 3 of the construction above described, and the outlet-conduits 15 of the hoods are merged and connected to a common separator 13.

Should it be desired to carry the particles to a greater distance than can be reliably done by the automatic action above described, a fan or other exhausting device may be provided, located at the air-outlet of a common separator; but in this event the work required of the exhausting device will only be such as is necessary to sufficiently supplement the automatic blowing action to effect the carriage of the particles the additional distance.

It will be noted that the front wall 7 of the hood and the several directing-partitions 5 within the hood form a plurality of coacting deflecting and directing vanes and that these vanes and the lower portion of the hood will receive and deflect all air-currents and particles moving outwardly from the wheel over the greater portion of the periphery thereof from the point of grinding or polishing approximately to the point of the necessary exposure of the wheel.

It is obvious that various modifications may be made in the construction shown and above particularly described within the spirit and scope of my invention.

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

1. A hood for a grinding or polishing wheel containing a plurality of vanes successively arranged with each vane extending from a point in proximity to the grinding or polishing wheel to a point at a distance from the outer periphery of the hood so as to provide, in proximity to the grinding or polishing wheel, a plurality of openings between the vanes extending from each vane to the next adjacent vane, and so as to provide, beyond the outer ends of the vanes, a conductive channel for flying particles deflected by the vanes.

2. A hood for a grinding or polishing wheel provided with a plurality of deflecting-vanes and with a conductive channel beyond the outer ends of the vanes, such conductive channel having an outlet therefrom and increasing

in area in the direction of the motion of the moving medium therein through a portion of its length and diminishing in area in the direction of the motion of the moving medium therein in proximity to its outlet.

3. A hood for a grinding or polishing wheel containing a plurality of vanes arranged with each vane extending from a point in proximity to the grinding or polishing wheel to a point at a distance from the outer periphery of the hood so as to provide, in proximity to the grinding or polishing wheel, a plurality of openings between the vanes extending from each vane to the next adjacent vane, and so as to provide, beyond the outer ends of the vanes, a conductive channel for flying particles deflected by the vanes, the first deflecting-vane being located above the axis of the grinding or polishing wheel and in advance thereof and the vanes being successively arranged about the grinding or polishing wheel and the last vane being located in rear and below the axis of the grinding and polishing wheel, and the lower portion of the hood being open in the direct path of the flying particles from the point of grinding or polishing, and a common outlet for such conductive channel and lower portion.

4. A hood for a grinding or polishing wheel provided with a plurality of deflecting-vanes and with a conductive channel beyond the outer ends of the vanes, and provided with a lower portion open in the direct path of the flying particles from the point of grinding or polishing, the conductive channel and lower portion having a common outlet and the lower portion diminishing in area in the direction of motion of the moving medium therein in proximity to the outlet.

5. A hood for a grinding or polishing wheel provided with a plurality of deflecting-vanes and a conductive channel beyond the outer ends of the vanes, such conductive channel increasing in area in the direction of motion of the moving medium therein through a portion of its length, the hood being also provided with a lower portion open in the direct path of the flying particles from the point of grinding or polishing, the conductive channel and lower portion having a common outlet and diminishing in area in the direction of motion of the moving medium therein in proximity to such outlet.

6. A hood for a grinding or polishing wheel provided with a plurality of deflecting-vanes relatively arranged with each vane substantially clear of the path of deflected air-currents and flying particles from its next adjacent vane, and a conductive channel beyond

such vanes having an outlet therefrom and increasing in area in the direction of the motion of the moving medium therein through a portion of its length and diminishing in area in the direction of motion of the moving medium therein in proximity to its outlet.

7. A hood for a grinding or polishing wheel provided with a plurality of deflecting-vanes relatively arranged with each vane substantially clear of the path of deflected air-currents and flying particles from its next adjacent vane, and with a conductive channel beyond the outer ends of the vanes and also provided with a lower portion open in the direct path of the flying particles from the point of grinding or polishing, and with a common outlet for such conductive channel and lower portion, substantially as set forth.

8. A hood having a grinding or polishing wheel containing a plurality of vanes successively arranged with each vane extending from a point in proximity to the grinding or polishing wheel to a point at a distance from the outer periphery of the hood and with successive vanes terminating at their outer ends at increasing distances from the outer periphery of the hood, so as to provide, in proximity to the grinding or polishing wheel, a plurality of openings between the vanes extending from each vane to the next adjacent vane, and so as to provide, beyond the outer ends of the vanes, a conductive channel for flying particles deflected by the vanes, such conductive channel increasing in area in the direction of the moving medium therein.

9. A hood for a grinding or polishing wheel provided with a plurality of deflecting-vanes extending outward in substantially radial lines merging into backward curvature in proximity to their outer ends and relatively arranged with each vane substantially clear of the path of deflected air-currents and flying particles from its next adjacent vane, and also provided with a conductive channel beyond the outer ends of the vanes, the hood being also provided with a lower portion open in the direct path of the flying particles from the point of grinding or polishing and with a common outlet for the conductive channel and lower portion, the conductive channel and lower portion diminishing in area in the direction of the motion of the moving medium therein in proximity to such outlet, substantially as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

HENRY ADAM WEBER.

Witnesses:

C. C. HOTTENROTH,
HENRY BARNES.