

UNITED STATES PATENT OFFICE.

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COMBINED GUARD AND BLOWER.

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To all whom it may concern:

Be it known that I, ENOS E. THOMSON, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Combined Guards and Blowers, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

This invention relates to a combined guard and blower for a band-saw. More particularly, the construction relates to enclosing means for the lower wheel of a band-saw and its adaptation for serving the additional function of removing the saw-dust from the teeth of the band-saw and from the face of the sawing table adjacent the point of operation of said saw and ejecting the same at a suitable point of discharge.

Heretofore independent blowers and suction devices have been utilized to remove the saw-dust from the table of a band-saw and in some instances this function has been combined with a casing and a fan-wheel. It is the object of the present invention to provide an improved construction which will serve the various functions stated, and, to supply a simple and efficient means for protecting the driving mechanism for the saw and also the saw itself in its travel beneath the sawing table, to utilize the power or driving wheel of the saw as a support for the fan blades wherewith to create the suction necessary to remove the saw-dust, and to dispose more effectively the air conduits about the mechanism. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Fig. 1 is a side elevation showing my invention as applied to the power wheel of a band-saw and indicating the relation of

the sawing table and idler wheel with respect thereto;

Fig. 2 is a sectional view of the construction illustrated in the lower part of Fig. 1 and taken along a plane indicated by the line 2—2 in Fig. 3 looking in the direction of the arrows; and

Fig. 3 is a transverse vertical section taken along the line 3—3 of Fig. 2 looking in the direction of the arrows.

As is clearly shown in the drawing, the apparatus comprises a band-saw apparatus 1 of the usual type having an idler wheel 2 and a power wheel 3 for supporting said saw, and a sawing table 4 positioned intermediate said wheels and provided with a passageway 5, for the cutting or downward travel of said saw, and as a means for the entrance of air to the fan, presently to be described. The lower wheel is preferably the power wheel and is fixed on a shaft 7 supported on a suitable bracket 8, secured to the underside of the sawing table, said shaft having a pulley 11 secured to the outer end thereof for connection by means of a belt with a suitable source of power. The power wheel is an open wheel of conventional design and upon the alternate spokes 12 thereof there are provided a series of fan blades for a purpose to be hereinafter indicated. About the power wheel a circular casing 15 is provided, said casing being provided with a pair of tubular members 16, 17, attached respectively to opposite sides of the circumferential portion thereof, the forward tubular member 17 being secured to the underside of the sawing table and, said tubular members providing with said casing a continuous enclosed passageway for the band-saw in its course of travel beneath the sawing table. The rearward tubular member 16, terminates below and rearwardly of the sawing-table and has a terminal cap or plug 6, in which is provided a passage way 6^a for the return travel of the saw and through which air is drawn by the fan, as will hereinafter appear.

As shown in Fig. 2, the tubular supports are so positioned as to have the band-saw travel adjacent their inner sides, leaving a large clearance area adjacent the outer portions thereof which are positioned in alignment with a like clearance area between the

band-saw supporting rim 18 of the power wheel and the enclosing casing. At the lower side of the enclosing casing an exit tube 21 for the saw-dust is attached, by means of an apertured fastening element, such tube being connected to said casing tangentially and extending in a horizontal direction to one side thereof and to a suitable place for the discharge of the accumulated saw-dust. A flange 30 extends inwardly from the exit tube 21 to guide the exhaust air and sawdust into said tube.

Adjacent the center of the casing upon the side thereof opposite to the power pulley is provided a hollow cylindrical extension 22 surrounding said shaft with which are connected two conduits 23, 24, for supplying air to the casing so that it with the fan blades 25 upon the power wheel may serve as a blower and suction device. The outer ends of said conduits are connected respectively with the tubular members enclosing the saw blade, the conduit extending to the tubular member 17, through which the saw moves downwardly from the sawing-table, being connected at a point immediately adjacent the point of entrance of said saw into said member, and the other conduit being connected with the opposite tubular member 16, closely adjacent its terminal plug 6.

As is well known, a rapidly revolving fan wheel operating in a casing will draw air inwardly adjacent its hub and distribute it from its periphery. Accordingly through the positioning of the outer ends of the suction or air intake conduits at the points indicated, and the inner ends in communication with the hub portion of the casing, air will be drawn downwardly through each of the conduits 23 and 24 and through the restricted openings 6^a and 5 at the ends of the respective tubular members 16 and 17. (See arrows shown in Figs. 1, 2 and 3 of the drawing.)

In this way a most effective means is provided for removing the sawdust from the teeth of the saw, as well as from the adjacent portion of the sawing-table. The location of one of the air suction connections adjacent the point of return travel of the saw, serves to prevent adhering particles of sawdust being carried back through said passage way on the teeth of the saw blade.

The fan blades 25 are shown as mounted on alternate spokes 12 of the power wheel and set at right angles thereto but obviously any desired angular position of the blades may be used or spacing of greater or less degree about said wheel.

A flange 31 is provided on the inner faces of the cover plates over the casing 15 to prevent the saw from rolling up over the shaft if it should become broken, or binding in the mechanism.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. A combined wheel guard and saw-dust removing device for a band-saw comprising in combination a sawing table, a supporting wheel for said band-saw mounted beneath said table, an enclosing casing for said wheel, a series of fan blades secured to said wheel within said casing, air inlet and outlet conduits associated with said casing, and means for permitting air to be drawn through said inlet conduit across the teeth of the band-saw.

2. A combined wheel guard and saw-dust removing device for a band-saw comprising in combination a sawing table having an opening for the downward travel of said saw, a supporting wheel for said band-saw mounted beneath said table, fan elements associated with said wheel, and air inlet and discharge conduits associated with said fan, said air inlet conduit being positioned adjacent the point of entrance of said saw through said sawing table, to draw air from said opening in said table across the teeth of the band-saw.

3. A combined wheel guard and saw-dust removing device for a band-saw comprising in combination a sawing table, a supporting wheel for said band-saw mounted beneath said table, an enclosing casing for said wheel, a supporting extension upon said casing providing a passageway for said saw between said table and said casing, a series of fan blades secured to said wheel within said casing, and air inlet and outlet conduits associated with said casing, the point of entrance of the air being located adjacent the path of the saw blade.

4. A combined wheel guard and saw-dust removing device for a band-saw comprising in combination a sawing table, a supporting wheel for the band-saw mounted beneath said table, an enclosing casing for said wheel, extensions upon said casing providing passageways for said saw to enter and emerge from said casing, a series of fan blades secured to said wheel within said casing, and air inlet and outlet conduits associated with said casing, said air inlet conduits being connected with the respective casing extensions.

5. A combined wheel guard and saw-dust removing device for a band-saw comprising in combination a sawing table, a supporting wheel for the band-saw mounted beneath said table, an enclosing casing for said wheel, extensions upon said casing provid-

ing passageways for said saw to enter and emerge from said casing and air intake passageways adjacent the band-saw-teeth, a series of fan blades secured to said wheel within said casing, a pair of air inlet conduits connected respectively to said extensions and to said casing at a central point thereof.

6. A combined wheel guard and saw-dust removing device for a band-saw comprising in combination a sawing table, a supporting wheel for the band-saw mounted beneath said table, an enclosing casing for said wheel, extensions upon said casing providing entrance and exit passageways for said saw to and from said casing respectively, a series of fan blades secured to said wheel within said casing, a pair of air inlet passageways connected at a central point to said casing and also connected to the extensions thereof, one of said passageways being connected to said extension adjacent the point of entrance of said band-saw and the other of said passageways being connected to the other extension adjacent its point of connection with said casing.

7. In an apparatus of the character described, the combination of a band-saw, an idler and a power wheel therefor, a sawing table positioned intermediately of said wheels and provided with a passageway for the cutting travel of said saw, a bracket mounted beneath said sawing table, a shaft journaled in said bracket, a power pulley and said power wheel mounted on said shaft, fan blades mounted on said power wheel, a casing positioned over said wheel and closely fitting said power shaft, tubular extensions connected with said casing and providing passageways for said band-saw, a lateral extension centrally of one side of said casing, air intake conduits connected with the respective tubular extensions adjacent the entrance passageway for said saw from said table and the exit passageway for said saw from said casing and also connected with said lateral extension on said casing, and a horizontal tubular discharge conduit connected with said casing adjacent the base thereof.

8. In an apparatus of the class described, the combination of a band saw, a sawing table, a guide wheel for said saw beneath said table, a series of fan blades on said wheel, an enclosing casing for said wheel, a pair of conduits providing passageways for said band-saw blade the inner sides of said conduits being substantially in alignment with the supporting rim of said wheel, an exit conduit extending tangentially from the base of said casing, and a pair of intake conduits connected with said casing adjacent the hub of said wheel and respectively with each of said saw enclosing conduits, one of said points of connection being adjacent the point

of entrance of the band-saw through said sawing table and the other adjacent the point of exit of said saw from said wheel casing.

9. An attachment for a band-saw apparatus comprising an enclosing casing for the driving band-saw wheel, air inlet and outlet conduits associated with said casing and surrounding said band-saw at its points of entrance to and exit from said wheel casing and a pair of inwardly directed flanges upon the inner faces of said casing adjacent the rim of said driving wheel to prevent the band-saw when broken from entering the central portion of said casing.

10. In a saw-dust removing device for band-saws, a band-saw wheel, means cooperating therewith and forming a casing, there being an inlet for the band-saw projecting at an angle to said casing, means associated with said band-saw wheel for producing a blast of air across the teeth of the band-saw substantially at said inlet, and means for conducting said blast from said inlet to a point substantially centrally of the band-saw wheel, said casing having an air outlet.

11. In a saw-dust removing device for band-saws, a band-saw wheel, means cooperating therewith and forming a casing, there being an inlet for the band-saw projecting at an angle to said casing, means associated with said band-saw wheel for producing a blast of air across the teeth of the band-saw substantially at said inlet, and means for conducting said blast from said inlet to a point substantially centrally of the band-saw wheel, said casing having a peripherally located air outlet.

12. In a saw-dust removing device for band-saws, a band-saw wheel, means cooperating therewith and forming a casing, there being an inlet for the band-saw projecting at an angle to said casing, means associated with said band-saw wheel for producing a blast of air across the teeth of the band-saw substantially at said inlet, means for conducting said blast from said inlet to a point substantially centrally of the band-saw wheel, said casing having an air outlet, a second outlet for the band-saw, and means for conducting a blast of air across the teeth of the band-saw at said second outlet and thence to a point substantially centrally of the band-saw wheel.

13. In a saw-dust removing device for band-saws, a band-saw wheel, means cooperating therewith and forming a casing, substantially tangentially extending inlet and outlet means for the band-saw, means associated with said band-saw wheel for producing a blast of air across the teeth of the band-saw both at said inlet and said outlet means, and means for conducting said blasts from said means to a point substantially centrally of the band-saw wheel, said casing having an outlet opening for said blasts.

14. In a saw-dust removing device for band-saws, a band-saw wheel, means cooperating therewith and forming a casing, a band-saw receiving and enclosing means projecting substantially tangentially to said band-saw wheel, means associated with said band-saw wheel for producing a blast of air across the teeth of the band-saw through said means, and means for conducting said blast from said inlet to a point substantially centrally of the band-saw wheel, said casing having an air outlet. 10

Signed by me this 2nd day of November, 1921.

ENOS E. THOMSON.