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WEAR PLATE FOR SHOT BLAST MACHINES

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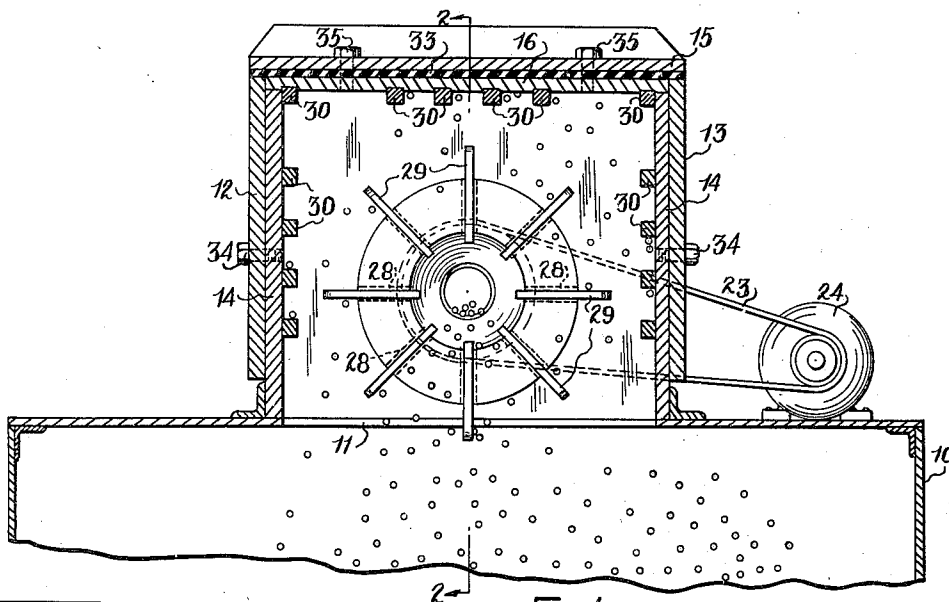


FIG. 1

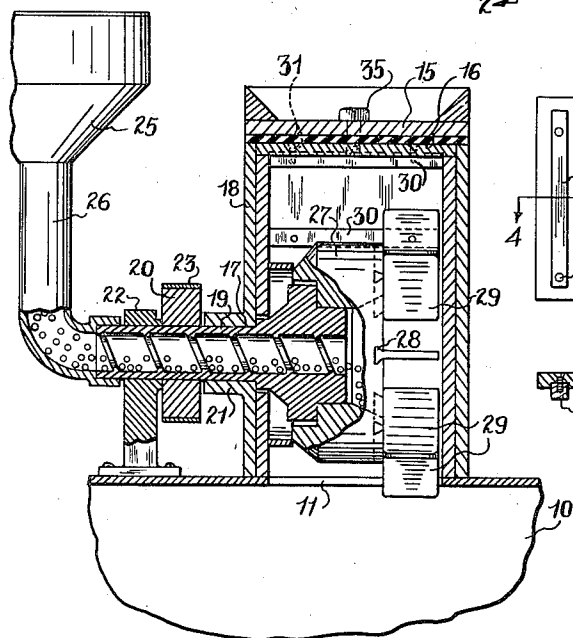


FIG. 2

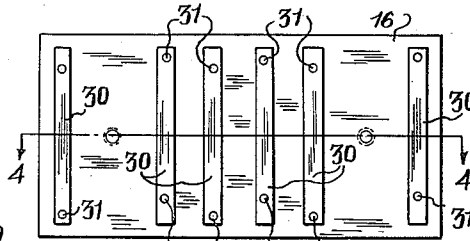


FIG. 3

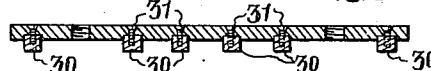


FIG. 4

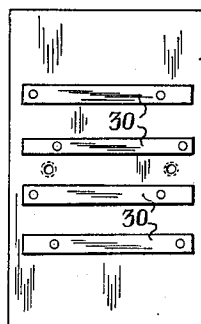


FIG. 5

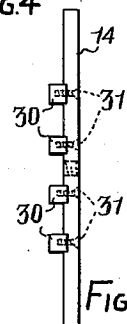


FIG. 6

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WEAR PLATE FOR SHOT BLAST MACHINES

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4 Claims. (Cl. 51—9)

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This invention relates to improvements in wear plates for shot blast machines. In such machines the shot throwing means may consist of a hollow bladed wheel rotating at relatively high speed, shot being fed into the wheel at the center thereof and driven outwardly by a combination of centrifugal and rotational forces. The wheel is enclosed at the top and sides by a housing which is supported at the top of the machine, the bottom of the housing being left open in order that the shot may be driven downward against the work. The top of the housing and those sides which face the periphery of the wheel are necessarily subjected to shot thrown against them by the wheel. They tend to wear rapidly on that account, and must be replaced at frequent intervals.

The primary object of the present invention is the provision of a wear plate which shall have a considerably longer life than that of conventional wear plates, and a subsidiary object is the provision of means for preventing the shot from traveling along the length of the wear plate, thereby reducing to a minimum the amount of surface against which each shot rubs and the wear consequent thereupon.

Other objects and features of novelty will appear as I proceed with the description of that embodiment of the invention which, for the purposes of the present application, I have illustrated in the accompanying drawing, in which

Fig. 1 is a fragmental sectional view of shot throwing means at the top of a shot blast machine, wherein the wheel housing embodies wear plates constructed in accordance with the invention. Fig. 2 is a sectional view taken substantially on the line 2—2 of Fig. 1.

Fig. 3 is a face view of the top wear plate.

Fig. 4 is a sectional view taken substantially on the line 4—4 of Fig. 3.

Fig. 5 is a face view of a side wear plate, and

Fig. 6 is an edge view of the same.

In the drawing the upper part of the casing of a shot blast machine is indicated at 10. Through the ceiling or roof of this casing an opening 11 is provided, and built around this opening there is a housing consisting of four sides and a top. The two sides 12 and 13 of the housing are lined with wear plates 14, which may be identical, and the top 15 of the housing is lined with a wear plate 16.

Through an opening 17 in a side wall 18 of the housing there extends a hollow shaft 19, to which may be keyed a pulley 20, the latter being shown as disposed between journals 21 and 22 outside of the housing. A belt 23 running over pulley 20

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and driven by a motor 24 serves to rotate shaft 19 at a high rate of speed. A hopper shown diagrammatically at 25 is connected by a conductor 26 with the outer end of hollow shaft 19 by means of a suitable revolving joint. The abrasive elements consisting of hard steel balls, known as shot in the trade, travel down through the conductor 26 into the hollow shaft 19 and are fed at a uniform rate of speed through that shaft by internal spiral ribs. In other words the shot are carried along the hollow shaft by a screw feed.

Within the housing hollow shaft 19 carries a cast or forged head 27 having a flared central opening and provided with radial dovetailed grooves 28 in which are fitted metal blades 29 constituting the shot throwing wheel. Any suitable means may be provided for holding these blades against movement outwardly in their grooves, such retaining means being removable in order to permit the installation of new blades when required.

The apparatus described in the foregoing is conventional. The present invention has to do with the wear plates 14 and 16. Heretofore these plates have been hardened steel with flat surfaces. The shot driven against them at an acute angle have traveled along the surfaces for an appreciable distance before dropping off, and wear has been considerable, so heavy in fact it has been necessary to remove and replace the plates after intervals of use of the order of sixteen hours. In accordance with the present invention this travel of shot lengthwise of the wear plate is interrupted and substantially prevented, the result being accomplished by means of transverse ribs. As illustrated herein these ribs take the form of bars 30, preferably of hardened steel, which are attached to the plate by suitable means. As herein illustrated they are set into shallow grooves in the plate and secured by means of screws 31. They could be welded to the plate, or the plate could be forged with integral ribs or corrugations. The transverse sectional form of the bars need not necessarily be rectangular. Bars of round, triangular or other cross-section may be used.

Between the top or cover 15 of the wheel housing and the wear plate 16 there may be interposed a yielding pad 33, formed of material such as soft or sponge rubber. Such a pad not only cushions the blows delivered by the shot, but tends to reduce noise. In assembling the liners or wear plates the side plates 14 may be first put into position and held against the housing side members 13 and 14 by machine screws 34 or the like. The upper plate 16, which is attached to the cover

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15 by two screws or studs 35, may thereafter be dropped into place and fastened down by suitable means. The outermost bars 30 on this plate 16 may be spaced from the ends of the plate a distance corresponding substantially to the thickness of plates 14, and thus the upper ends of those plates will be held in place without special fastenings.

In the operation of the machine, as is well understood in the art, the shot after being driven down into the casing 10 and against castings arranged therein on a moving table, are collected and returned by suitable conveyor means to hopper 25, so that the operation is continuous. In case the wear on the wear plate occurs principally along one side of the latter, as will be the case when the shot wheel is disposed to one side of the median plane of the housing, the cover may be removed and turned end for end so as to present a new wear surface.

Having thus described my invention, I claim:

1. In a shot blast machine, means for feeding shot, means for throwing shot outwardly in direc-

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tions at right angles to the line of feed, and a wear plate disposed to intercept the lines of travel of certain of said shot when thrown, said wear plate being provided on its surface facing said shot throwing means with ribs extending transversely of said lines of travel.

2. In a shot blast machine, a bladed wheel adapted to throw shot outward, and a wear plate disposed to intercept the travel of shot thrown from the wheel in one direction, said wear plate being elongated in the direction of shot travel and having a series of ribs upon its inner surface extending crosswise thereof, whereby travel of shot lengthwise along the surface of the plate is prevented.

3. A shot blast machine according to claim 2, wherein said ribs are steel bars secured to the plate.

4. A shot blast machine according to claim 2, wherein said ribs extend crosswise of said plate and the space between adjacent ribs is uniform throughout their length.

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