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Johns-Manville
Research and Development Center

Report No. E411-1063
Date November 9, 1978

Title: CIRCULAR SAW FOR DRY-CUTTING CORRUGATED A/C SHEET

SUMMARY

A shield has been developed for a standard portable circular saw (Rockwell Model 368-1), which allows corrugated asbestos-cement sheet to be cut dry in an acceptably dust free manner. The shield, illustrated in the Appendix, consists of upper and lower cases which enclose the blade and cutting zone. Each case is connected to a vacuum source (Nilfisk GA73 vacuum cleaner) by 1-inch hoses. The shield works on the principle of near-total enclosure of the cutting zone, to maximize the use of the available vacuum to retain dust within the enclosure and thus allow its removal.

The difficulty in enclosing the cutting zone when cutting corrugated, compared to flat sheet, is that the undulating surface presented to the blade is constantly changing. To achieve enclosure of the cutting zone, the "valleys" between corrugation crests must be blocked off to minimize air ingress, both above and below the sheet. However, the structure which blocks the "valleys" must be able to rise out of the depressions and over the crests. Additionally, the saw must be easy to use, i.e., the shield cannot "drag" on the sheet and require excessive force to operate. To solve these problems, overlapping rubber strips were placed on each side of the upper and lower cases. As the saw moves across the sheet, the strips extend into the "valleys" and effectively fill them to exclude air from the shield. They fold outward when a crest is encountered.

Tests using a common masonry blade (Table 1) in the "dust chamber" show that with no shield or dust collection, the dust count was 60.4 f/cc. With the shield, but with no rubber skirt, the count was 2.0 f/cc. There were substantial visible emmissions of dust during this test, and this fiber count is questionnably low. With the skirt, counts of 0.0 to 0.6 f/cc were attained, illustrating the effect of the device. Tested in an open room, the maximum fiber count was <0.1 f/cc.

It is concluded that this shield allows the cutting of corrugated asbestos-cement sheet with a circular saw, equipped with a common masonry blade, with fiber counts well under the 2.0 f/cc TLV. Cutting may be done across, with, or diagonal to the corrugations. It is believed that this device will be particularly useful to the medium and large contractor, on jobs where a substantial amount of cutting or trimming is required.

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Contents: Summary, Appendix

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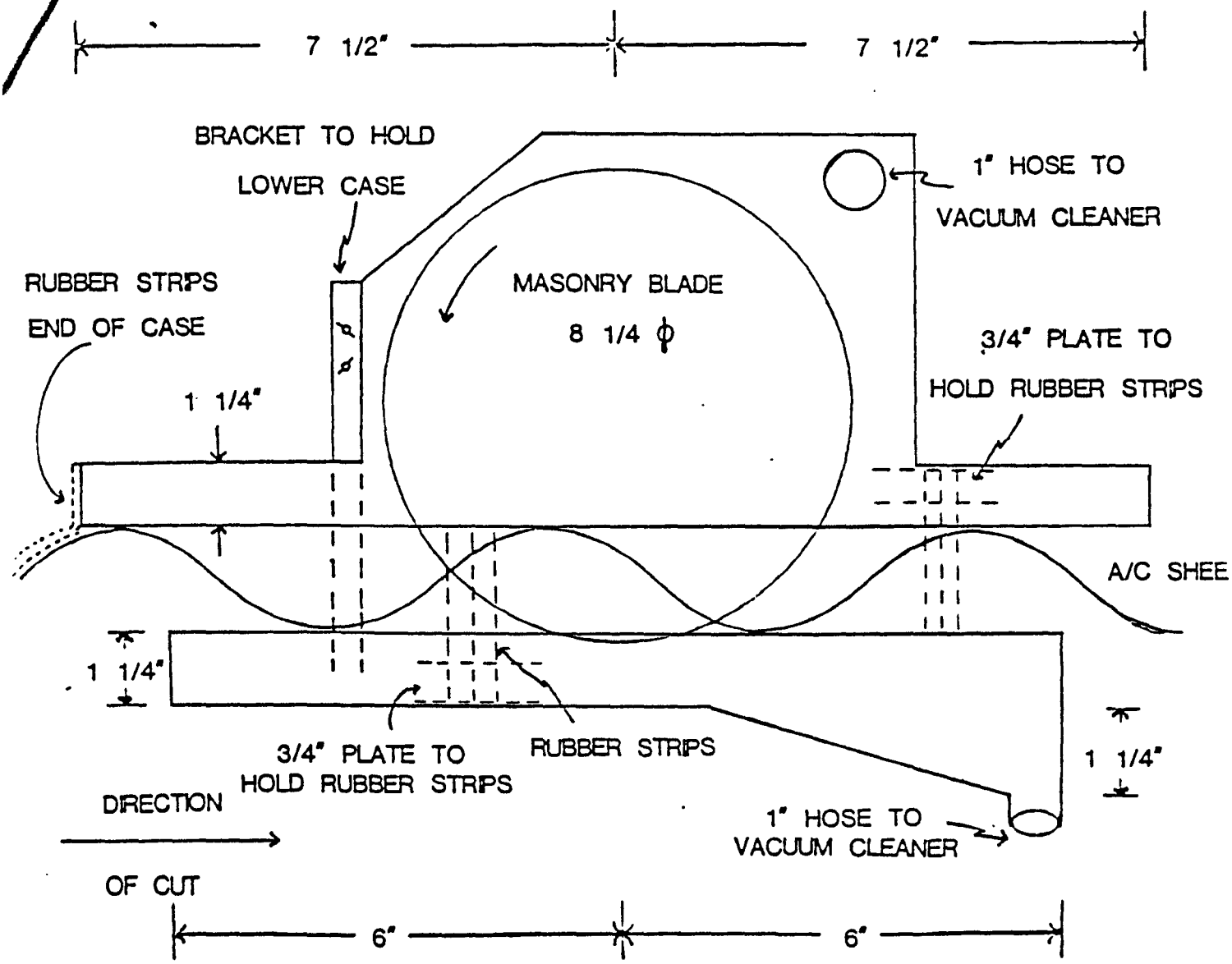
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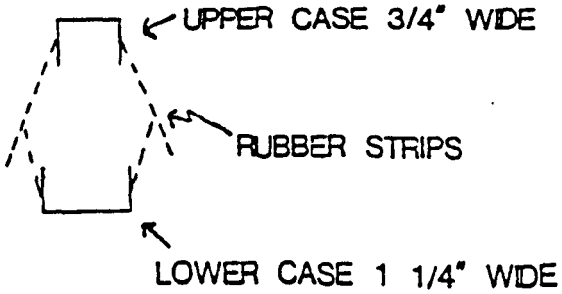
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H. B. Moreno - 3-14 (S)
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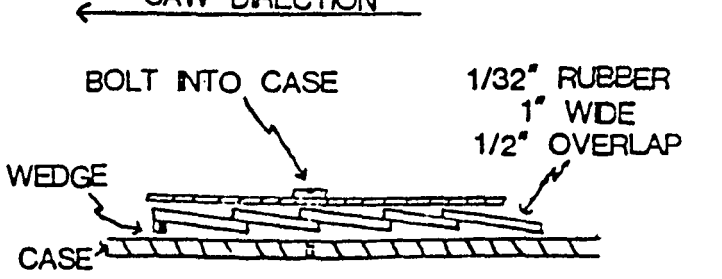
KEYWORDS
Asbestos
Asbestos-Cement
Fabrication
Dust
Dust Collection
Environmental Health

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END VIEW

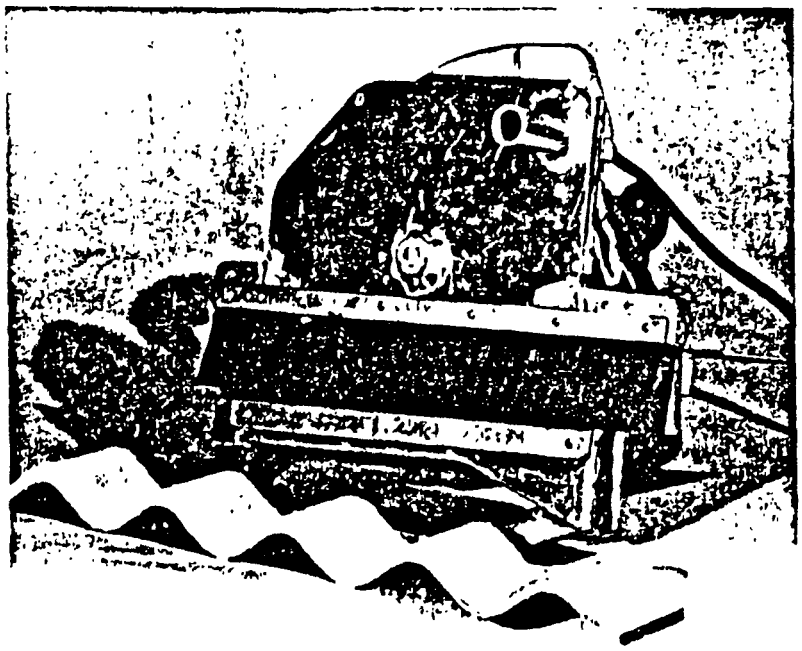


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DETAIL: RUBBER STRIPS

SCALE: SCHEMATIC

APPENDIX
FIGURE 1
CIRCULAR SAW FOR CUTTING CORRUGATED A/C SHEET



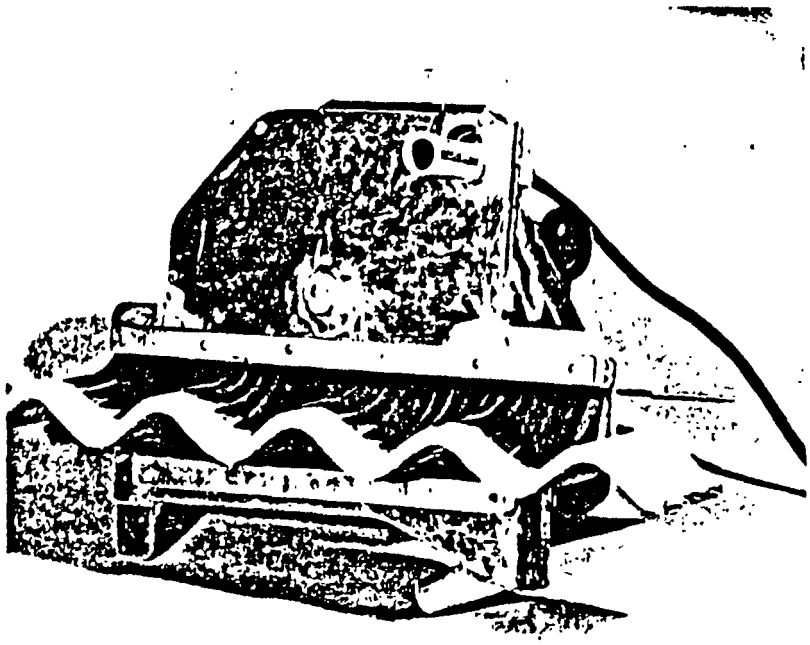
Vacuum Source - Nilfisk GA 73

Vacuum: 60" w.G.
Airflow: 180 CFM
Filtration: 3 stage

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APPENDIX
FIGURE 2

CIRCULAR SAW FOR CUTTING CORRUGATED A/C SHEET





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