A method and special tool system for cleaning around the damaged areas of a rubber roof of a building structure. The method utilizes an elongated tool of about four feet in length and having a rotating output shaft positioned at a lower end thereof. A brush structure is attached to the elongated tool by means of a specially designed adapter element. The method and system greatly reduces the time needed to repair a roof which has been damaged, for example, by a lightning strike or other destructive force. The roof patching job is thus much easier and more efficient for the repairing personnel.
FIG. 3.

FIG. 4.
SYSTEM AND METHOD FOR ROOF REPAIR

BACKGROUND AND OBJECTS OF THE INVENTION

[0001] The present invention is generally related to the building repair and tool arts and, in particular, to a system and method for repairing a damaged roof of a building.

[0002] As rubber has become more common as a roofing material, the need to be able to repair a damaged rubber roof has become apparent to those of skill in the roofing and tool arts.

[0003] Serious damage requiring immediate repair can be caused, for example, by a lightning strike upon the roof of a building.

[0004] Accordingly, it is an object of the present invention to demonstrate a novel method for repairing the damaged roof of a building.

[0005] It is a further object to set forth a special tool design which enables a surface such as a rubber roof of a building to be efficiently and quickly repaired even under bad weather conditions.

[0006] It is also an object of the invention to show a modified tool design which can be economically mass produced for widespread commercial appeal in the tool production arts.

[0007] It is a further object to render a repair job easier to perform by repairing personnel which is of great advantage especially in cold and windy conditions.

[0008] These and other objects and advantages of the invention will be apparent to those of skill in the roofing repair and tool design arts.

PRIOR ART PATENTS AND DESIGNS

[0009] The invention method is related to the building roof arts found in U.S. Patent and Trademark Office Class 52.

[0010] Other related Patents found in a full search of the prior art are as follows:

[0011] U.S. Pat. No. 5,522,162 issued to Allison in 1996 for a snow blower design having a special structure to take in and discharge snow.


[0013] The present invention is believed to be clearly patentable over the above and all other systems and methods in the prior art.

SUMMARY OF THE INVENTION

[0014] Roofing repair and treatment is effected using a specially designed cleaning tool.

[0015] The tool is elongated so that workmen repairing a damaged roof need not do the required cleaning on hands and knees.

[0016] The method and system are especially effective for rubber roofs which may have been damaged, for example, by a lightning strike.

[0017] The tool structure includes a motorized drive means of about four feet in length and a specially designed adapter and brush element.

[0018] Since the rubber roof must be thoroughly cleaned before patching a damaged area, the total repair time is greatly reduced. The safety of working repair personnel is increased since the damaged area need not be approached so closely. The time required for repair workmen to be out in cold weather is also greatly reduced.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

[0019] FIG. 1 is a side schematic view of a typical building for which the invention is designed.

[0020] FIG. 2 is a close-up view of a portion of a damaged rubber roof which is to be repaired.

[0021] FIGS. 3 and 4 show side and top views respectively of the damaged area and the areas around it which must be cleaned in accord with the invention method.

[0022] FIG. 5 is a schematic view of a top portion of the tool used in the method described.

[0023] FIG. 6 is a side schematic view of the adapter used in combination with an upper output drive shaft and a lower brush structure.

[0024] FIGS. 7 and 8 are sectional and partial bottom views respectively of the brush structure utilized in practice of the invention.

FULL DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0025] Referring to the drawing figures, FIG. 1 shows a side view of a building 10 having a roofing area 12.

[0026] Roof 12 in this example includes an upper gravel layer 14 and a rubber layer 15. Rubber layer 15 is made of reinforced rubber or rubber-plastic compounds of use in the construction arts.

[0027] As further shown in FIG. 1, additional layers may include insulation 16 and a lower deck fabricated, for example, of wood or metal at numeral 17.

[0028] FIG. 2 shows a portion of the roof 12 which has been damaged and which is in need of immediate repair. The damaged area is indicated at numeral 19 and may be caused, for example, by a lightning strike.

[0029] Layers 14, 15, 16 and 17 are again shown with damage indicated to each layer.

[0030] The method of effecting repair of the damaged roof is indicated in FIG. 3.

[0031] Referring to FIGS. 3 and 4, the damaged area is shown in side and top views respectively.

[0032] In order to add a rubber patch layer 15a, the areas around the damaged portion 19 must be thoroughly scrubbed and cleaned. Such areas are indicated at numerals 19a, 19b, 19c and 19d. Such cleaning is typically done manually by repairmen and is a very time-consuming process.

[0033] After a thorough cleaning of areas 19a, 19b, 19c and 19d is performed, two-sided adhesive tape is applied to
the rubber layer 15 as indicated at numerals 20, 21, 22 and 23. Subsequently, patching section 15a is applied as indicated by the arrows in FIG. 3.

[0034] The previously shown gravel layer 14 is then repositioned over the patch section 15a.

[0035] In order to more efficiently clean the areas 19a through 19f, a specialized tool has been devised by applicant. The upper portion of such tool is shown in FIG. 5.

[0036] Referring to FIG. 5, a elongated tool 30 is shown as having an upper section 30a, a middle curved section 30c and a lower section 30b. The overall length of tool 30 is on the order of about four feet.

[0037] The tool 30 includes an upper drive motor 31 having an ignition 31a. A gasoline supply tank is indicated at numeral 32.

[0038] A connecting shaft 33 is shown as within the outer housing and as extending to a lower bearing element 34. It is to be understood that shaft 33 drives the lower metal output shaft 35.

[0039] Other elements of the tool 30 are handle elements 36 and 36a, throttle 37 and a throttle cable 37a. A guard 38 is indicated schematically at numeral 38.

[0040] As will be further described, the elongated nature of tool 30 allows a working repairman to reach the sections around a damaged area for clean-up purposes without having to get too close to the area.

[0041] Referring to FIG. 6, further aspects of the invention are shown. The lower end 30b and the metal output shaft 35 are again indicated. Output shaft 35 has external threads as shown at 35a.

[0042] A specially designed adapter unit is indicated at numeral 40.

[0043] Adapter 40 has an upper section 41 and a lower section 43.

[0044] Upper section 41 has internal threads as shown at 42. Such are sized and shaped so as to be attachable to the threads 35a of the output shaft 35.

[0045] The adapter lower section 43 has external threads indicated at numeral 44.

[0046] The external threads 44 are sized and shaped so as to fit with the thread elements of a brush unit 50 to be further described. FIG. 7 is a sectional schematic view along lines 7-7 of FIG. 6.

[0047] Referring to FIG. 7, the brush structure 50 is shown as having an upper layer 51 with a central flange portion 52.

[0048] An opening 53 is formed in the upper brush layer and such is internally threaded as indicated at the drawing numeral 55.

[0049] The lower brush layer is shown at numeral 57 as having bristles 58 extending therefrom.

[0050] The brush structure 50 includes an open area as shown at numeral 59.

[0051] It is to be understood that the internal thread elements 55 are sized and shaped so as to mate with the external threads 44 of the adapter 40 which was previously described.

[0052] The overall brush structure is of a very light-weight and durable plastics material as utilized in the manufacturing arts. Further details of the brush structure are indicated in FIG. 8.

[0053] Referring to FIG. 8, a lower view of the brush structure is shown.

[0054] The bristles 58 are arranged in a spiral pattern as indicated at 61. Such is useful when the brush is used to clean and scrub a damaged area.

[0055] The use of a wetting agent such as water as a part of the treatment method is indicated by the letter W in block 62 of FIG. 8.

[0056] In the example shown, the diameter of the brush structure is about four inches. The diameter of the open area 59 is approximately 2.4 inches. Such dimensions have been found to be critical for the particular roof cleaning and repair method described herein.

[0057] While a particular method and structure have been shown and described, it is intended in this specification to cover all equivalent structures and methods which would reasonably occur to those of skill in the art. The invention is further defined by the claims included.

I claim:

1. A method of cleaning the areas around a damaged portion of a roof or other structure which includes a rubber layer, a gravel layer and other lower layers comprising the steps of:

a) providing an elongated tool having an upper end(30a) and a lower end(30b) wherein the tool includes a motor drive means at the upper end thereof, said tool including a connecting shaft(33) between said motor drive and the lower end of said tool, said tool including a threaded metal output shaft,

b) attaching an adapter unit(40) to said output shaft,

c) attaching a brush structure to said adapter,

d) cleaning and scrubbing the areas around the damaged portion of said roof by utilizing said elongated tool to provide means whereby a patch section(15a) may be applied to said roof by adhesive elements.

2. The method of claim 1 wherein said adapter includes an upper section with internal threads formed therein and a lower section with external threads formed thereon.

3. The method of claim 2 wherein said brush structure is fabricated of plastic material and has thread means formed therein for attachment to a lower section of the adapter.

4. The method of claim 3 wherein said brush structure is approximately four inches in diameter and has an open section being devoid of bristles formed in the middle thereof, said brush having bristles which are arranged in a generally spiral pattern,

wherein water or another wetting agent is utilized in combination with said brush structure as a part of the cleaning and scrubbing process.
5. A special tool for use in cleaning around the damaged area of a rubber roof, said tool comprising an elongated portion having a metal output shaft attached to a lower end, an adapter means for attaching to said metal output shaft, a brush structure means for attachment to said adapter.

6. The special tool of claim 5 wherein said adapter has an upper section with internal threads and a lower section with external threads.

7. The special tool of claim 6 wherein said brush structure is formed of plastic and has thread means formed therein for attachment to said adapter.

8. The special tool of claim 7 wherein said brush structure is approximately four inches in diameter and has an open section formed in the middle thereof.

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