(No Model.)

H. W. JOHNS.

ROOFING SHEET.

No. 418,569. Patented Dec. 31, 1889.

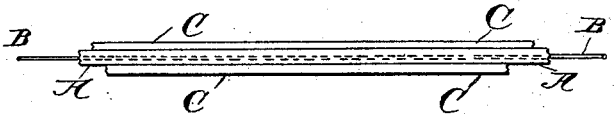

Fig. 1.

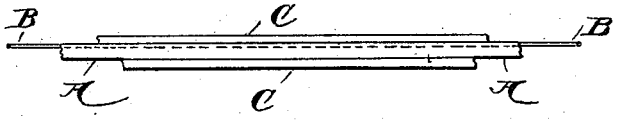

Fig. 2.

WITNESSES:

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HENRY W. JOHNS, OF NEW YORK, N. Y.

ROOFING-SHEET.

SPECIFICATION forming part of Letters Patent No. 418,569, dated December 31, 1889.

Application filed June 1, 1889. Serial No. 312,908. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. JOHNS, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Roofing and like Sheets, of which the following is a specification.

My invention relates to improvements in compound roofing and similar sheets; and it consists in the employment of a pulped or felted sheet having strands, cords, netting, wire, or gauze embedded therein as a central or strengthening sheet, and applying thereto on one or both sides other sheets to form a two or more ply roofing-sheet, one or all of said sheets being waterproofed.

Figure 1 illustrates an edge view of my invention, the strengthening textile or gauze material being located centrally in a pulped or felted sheet, and the sheet so strengthened employed as the central sheet in a compound roofing-sheet having additional sheets on each side thereof. Fig. 2 illustrates a similar view of a modified construction, showing a central sheet having strengthening textile fabric or cords or wire or gauze-like material on one of its surfaces and other sheets on each side thereof.

The object of my invention is to construct a compound roofing-sheet composed of a plurality of sheets or layers, which compound sheet shall possess substantially the characteristics of the well-known roofing and like sheets now manufactured by me, but which shall be of less cost and capable of more easy manufacture, and yet possess the requisite strength for many uses.

Prior to my invention roofing-sheets have been made of two or more layers of paper cemented together. These have been found useless for many uses owing to insufficient strength; also, the roofing-sheets made by me, above referred to, have been heretofore well known. They contained an inner layer of canvas and outer layers of Manila paper and felt. They possess the requisite strength; but the canvas is not only expensive, but, also being elastic and of uneven compactness, it stretches differently in different rolls, and also in different parts of the same roll, which occasions irregular contraction of the canvas widthwise, and the edges thereof also are quite uneven. Thus the edges of the compound sheet are uneven, because the edges of the canvas would not coincide with the edges of the paper or of the felt, and prior to a recent invention of mine the edges of the compound sheet had to be trimmed off in order to straighten them, which not only occasioned considerable loss, but also necessitated an additional step in the process of manufacture.

My recent invention, above alluded to, obviates the above difficulties in the sheets embodying canvas; but the resulting product is more expensive than can be used for many purposes and in many instances to which the product of this present invention is applicable. Under it I use, instead of the canvas heretofore used, a pulped or felted sheet of any suitable fibrous material, strengthened by incorporating with it cords, strands, or netting-like textile material or wire, either in the form of gauze or otherwise, as preferred. The strengthened pulped or felted sheet will not materially stretch under the tension incident to manufacturing my compound roofing-sheets, thus obviating that difficulty in the use of canvas, and, the edges being straight and even, will run through the machine evenly and may be easily guided, so as accurately to coincide with the edges of the other sheets composing the compound sheet. It will thus be seen that by my invention I produce a new article of manufacture, which obviates the defect of lack of strength in the old multiple-layer paper sheet, and also removes the objections of cost and difficulty of manufacture of the sheets containing canvas.

In Fig. 1 I illustrate the compound sheet. The textile material, cords, or wire-gauze netting B, as the case may be, is put in the body of the sheet A, which is made of any suitable fibrous material by the employment of the well-known pulping process and paper-making machine, or by a felting process, as desired. I prefer to employ fibrous asbestus or asbestus and other fibrous material mixed as the stock; but paper, wood, or other stock may be employed for making this sheet, and on the outside thereof I attach, by the employment of any suitable adhesive material, and

on one or both sides, (shown in the drawings on both sides,) supplemental or surfacing sheets of felt, paper, or similar material C C, preferably using an asbestus sheathing. In this figure my compound roofing-sheet is shown in its completed condition, the interior sheet being strengthened and rendered inelastic by the incorporation therewith of the textile or wire fabric, thus rendering it a very good substitute for the canvas heretofore used, and, being a pulped or felted fabric, its edges may be made perfectly straight and even, thus conforming to the edges of the other sheets incorporated with it in the compound sheet. The entire compound sheet is waterproofed at any preferred stage of the manufacture by the employment of suitable materials, such as tar, coal-tar, pitch, gum, asphaltum, &c.

In Fig. 2 I illustrate still another method in which my improved compound sheets may be constructed—*i. e.*, the sheet is made as in the case illustrated in Fig. 1, excepting that the strengthening material B is applied on one side of the interior sheet, instead of in the middle thereof, and then supplemental layers C, of suitable material—such as felt, asbestus sheathing, or paper thoroughly waterproofed by treatment with tar, coal-tar, pitch, or equivalent substances, as before stated—are attached to the side of the central sheet A upon and outside of the textile material or wire netting or gauze or cords B. The attachment of the several layers of material composing the compound sheet to each other in all of the above-mentioned instances may be by the employment of suitable cementing materials in addition to the waterproofing substances; but in most cases the waterproofing substances, being themselves adhesive, will serve this end well. Of course pressure is applied to the compound sheet to firmly compact the several layers thereof upon each other.

My improved sheet may be rolled up for transportation into a small compact shape to be unrolled as an entirety all complete ready for application to the roof when desired for use.

I claim—

As a new article of manufacture, a flexible compound roofing-sheet comprising, essentially, a sheet composed of fibrous material, and having cords or strands integral therewith and a supplemental sheet externally attached thereto, the whole being waterproofed, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 27th day of May, A. D. 1889.

HENRY W. JOHNS.

Witnesses:

PHILLIPS ABBOTT,

EDWIN C. DUSENBURY.