

L. L. RYAN.
SEMIMETALLIC FIBER SHEET.
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1,215,064.

Patented Feb. 6, 1917.

Fig. 1

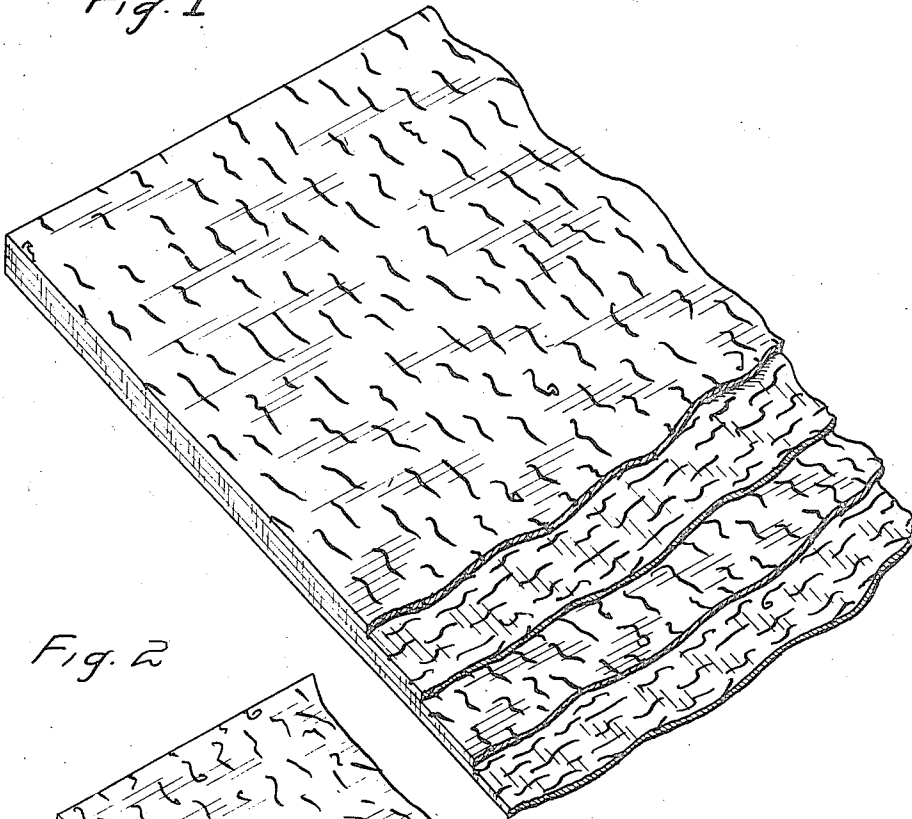
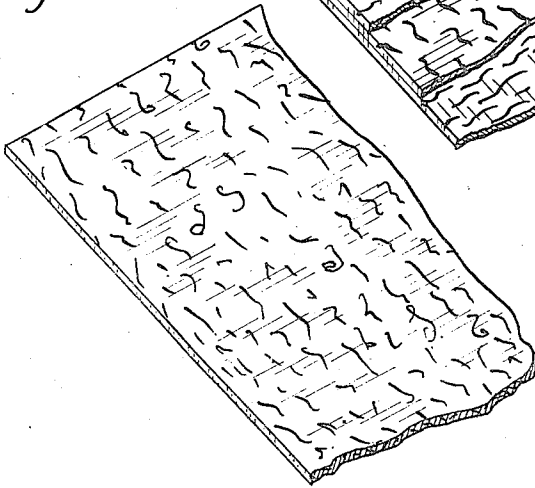


Fig. 2



WITNESS

Chester F. Hayden.

INVENTOR

Louis L. Ryan

BY

A. M. Wooster
ATTORNEY

UNITED STATES PATENT OFFICE.

LOUIS L. RYAN, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE ROYAL EQUIPMENT COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

SEMIMETALLIC FIBER SHEET.

1,215,064.

Specification of Letters Patent.

Patented Feb. 6, 1917.

Application filed July 29, 1916. Serial No. 111,966.

To all whom it may concern:

Be it known that I, LOUIS L. RYAN, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Semi-metallic Fiber Sheets, of which the following is a specification.

This invention relates generally to packing, and has for its principal object the provision of a semi-metallic or partly metallic fibrous sheet adapted for various uses, more particularly that of use between the flanges in so-called flange connections in all kinds of engines and pipings, such as locomotives, automobile and aeroplane engines, and between the various sections in piping for water, gas, steam and ammonia and other alkaline liquids. The more important features of a metallic fibrous packing embodying my invention, are its toughness, which enables it to resist a tendency to blow out and to withstand compressive and tensile strains generally; its resilient consistency in spite of the large proportion of metal in its composition, which especially adapts it for use between unpolished or uneven surfaces, such as between roughly finished flange connections, and its property or characteristic of being unaffected by the action of alkalis. In brief, my present invention provides a semi-metallic material, in sheet form, adapted to be cut to smaller sizes in any required form, which shall possess the several advantages without the disadvantages of both wholly metallic and wholly non-metallic material in the uses indicated and in various analogous uses.

With these and other objects in view, I have devised the novel semi-metallic fiber sheet which I will now describe, referring to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a perspective view of a sheet of my novel material formed by securing a plurality of relatively thin sheets together, and

Fig. 2 is a perspective view of a single sheet of my novel semi-metallic material.

The word "semi-metallic" as used in this specification implies that the sheet is partly metallic and partly non-metallic, it being understood of course that the metallic and the non-metallic ingredients may be used in varying proportions.

My novel fiber sheet consists of a mixture

of fiber, a gum, shredded metal, and a filler. In the best grades, clear asbestos fiber is used. In the lower grades, cotton and other fiber may be mixed in varying proportions with the asbestos fiber. The gum may be rubber or any of its equivalents, as balata, gutta-percha, etc. The shredded metal must be a soft metal or alloy, as lead or various alloys into which copper, tin and lead may enter. This metal may be shredded in any suitable manner, as by chopping up wire of any suitable metal or alloy or by shredding sheets or strips of any suitable metal or alloy. For the filler any suitable inert material may be used, as barytes or kieselguhr. Any suitable coloring matter may of course be added to impart to the mixture and to the completed sheets any required color.

The above ingredients I use in the following proportions, varying the quantity of each ingredient to suit special requirements of use, viz:—Fifty to seventy-five parts, by weight, of fiber, ten to thirty parts of rubber or other gum, ten to thirty parts of shredded metal, and five to fifteen parts of filler. These ingredients are thoroughly mingled together in a suitable mixer and at the required temperature, and the mass is rolled into sheets of the desired thickness. When relatively thick sheets are required, I preferably build them up from a plurality of relatively thin sheets secured together by a rubber or other suitable cement, the sheets being laid, in building up, with the shreds of metal, *i. e.* the grain of the sheets, lying in different directions, as clearly shown in Fig. 1, the grain of the sheets and the general longitudinal direction of the shreds of metal resulting from the rolling of the mass into sheet form. I find in practice that the strength of a compound sheet will be increased by laying the individual sheets with the grain of the sheets crossing each other.

My novel sheets are sufficiently flexible and yielding for general use for packing purposes and are moreover alkali proof as well as waterproof.

Having thus described my invention, I claim:—

1. A sheet of the character described comprising fiber, a gum, shredded metal and a filler, mixed together and rolled into sheet form.

2. A semi-metallic sheet of the character

described comprising asbestos fiber, rubber, shredded metal and a filler, mixed together and rolled into sheet form.

3. A sheet of the character described comprising asbestos and cotton fiber, a gum, shredded metal and a filler, mixed together and rolled into sheet form.

4. A sheet of the character described comprising a plurality of individual sheets, each consisting of fiber, a gum, shredded metal and a filler, mixed together and rolled into sheet form, said individual sheets being cemented together.

5. A sheet of the character described comprising a plurality of individual sheets, each consisting of fiber, a gum, shredded metal and a filler, mixed together and rolled into sheet form, said individual sheets being laid with the grain in different directions and cemented together.

6. A sheet of the character described adapted for use in making packings comprising fiber, a gum, shredded metal and a filler.

7. A sheet of the character described adapted for use in making packings comprising asbestos fiber, rubber, shredded metal and a filler.

8. A sheet of the character described comprising a plurality of relatively thin sheets superposed and bound together by a suitable cement, each of said thin sheets being composed of fiber, a gum, shredded metal and a filler, mixed together and rolled into sheet form.

9. A sheet of the character described comprising a plurality of relatively thin sheets superposed and bound together by a suitable cement, each of said thinner sheets being composed of fiber, a gum, shredded metal and a filler, the metal shreds in each sheet being disposed in the same general direction and each of the superposed sheets being laid with the grain thereof transverse of the grain of the sheet or sheets adjacent thereto.

In testimony whereof I affix my signature.

LOUIS L. RYAN.