C. MESSICK.

ABRASIVE PLATE.

APPLICATION FILED SEPT. 19, 1912.

1,119,443. Patented Dec. 1, 1914.

Fig. 1

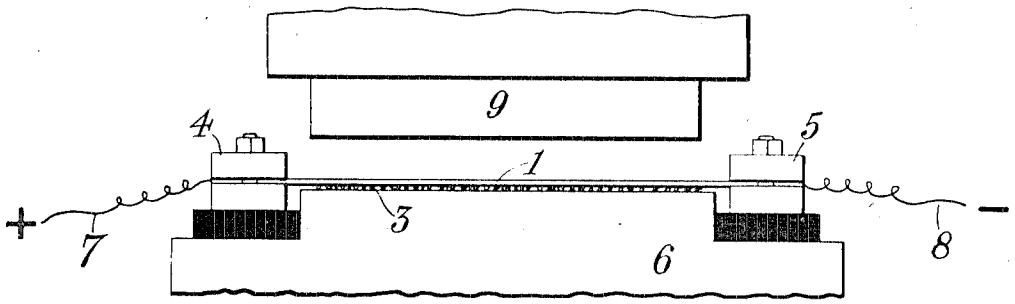


Fig. 2

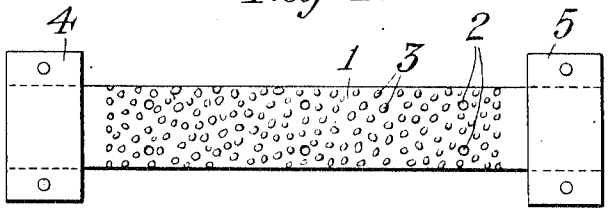


Fig. 3

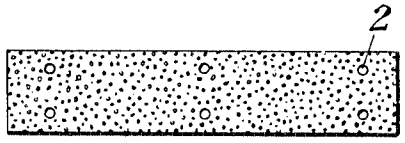
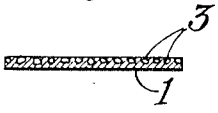


Fig. 4



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ABRASIVE PLATE.

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To all whom it may concern:

Be it known that I, CHARLES MESSICK, a citizen of the United States, residing in Hackensack, county of Bergen, and State of New Jersey, have invented a new and useful Improvements in Abrasive Plates.

The object of my invention is to make a safety plate possessed of efficient non-slipping qualities, and to devise a method for combining the various elements, whereby this safety plate will possess long life and at the same time have a minimum first cost.

Various methods of combining abrasive grits held in lead binders and secured to sheet iron base plates have been experimented with and placed upon the market. Abrasive grits have been cast on the surface of a cast iron member to render the surface of the cast iron member non-slipping, and various other mechanical devices, cements, etc., have been used to hold the abrasive grit up to its work. There is an inherent quality in abrasive grit, whether it be carborundum, alundum, emery, or other grit, which makes it eminently suitable to prevent slipping, but all of the plates at present on the market containing grit, are expensive and some also have other defects.

Among the important characteristics of floor plates are that they be made with a wearing surface which is of even texture throughout, so that the non-slipping quality will remain constant during the life of the plate; that they be unaffected by temperature or water; that they lie flat and do not warp or spring as often occurs with cast iron.

Wrought iron or steel plates, sheets and other structural shapes are used in many places for sustaining foot wear because they are strong and cheap but they become extremely slippery, particularly when damp or oily. Wrought iron is also largely used for many purposes in which the abrasion and wear destroy the iron, and it is desirable to provide a superior refractory and wear resisting material.

Broadly speaking, my invention is an article of manufacture composed of a wrought iron member carrying abrasive grit held upon a surface thereof simply by adhesion between the wrought iron metal and the grit. The distribution of the abrasive grit is such that portions of the finished article are free of grit, and therefore such portions may be readily drilled, sheared, punched, or otherwise treated, without detriment due to the abrasive grit. I make provision for so distributing the abrasive material relatively to the iron that the finished product is of substantially uniform quality wherever the grit is located.

The word "forge" is used in this specification and in the following claims in the sense of a manipulation of a heated metal, whether it be the operation of rolling, pressing, hammering or otherwise, introducing hard particles into the heat softened metal, and the word "particles" is used to convey the ideas of grains of material of an appreciable size, not finely divided matter in the form of a powder, because powdered material is unsuitable for the purposes of this invention.

Referring to the accompanying drawings:—Figure 1. is an elevation of the jaws of a forge press in which the abrasive plate may be made. Fig. 2. is a plan view of the raw materials assembled and ready to be introduced into the forge press also showing terminal contacts through which the electrical heating current may be introduced to heat the plate. Fig. 3, is a plan view of the finished abrasive plate. Fig. 4, is a cross section of Fig. 3 showing the abrasive particles embedded in the plate.

The central portion of the plate, 1, is coated with shellac or other suitable temporary binder, excepting at predetermined portions, 2, which are to be subsequently drilled or punched. The shellacked portion is then sprinkled with the abrasive particles, 3. The particles, 3, adhere to the shellacked portion and after the shellac dries the contact clamps 4 and 5 are attached to the end of the plate, 1, and the plate, 1, placed on the lower jaw, 6, of the forge press as indicated in Fig. 1, with the abrasive hard particles, 3, resting on the lower jaw, 6. The plate is now ready for the forging operation which consists of passing the electric current through the plate, 1, from wires 7 and 8, and thereby heating it until it becomes soft; the particles, 3, act as an insulator for both heat and the electric current to prevent the contact of the plate with the lower jaw, 6, of the forge press. The electric current is turned off after the plate is heated very hot, and the upper jaw, 9, of the forge press is brought down and forges

and causes the abrasive grit to adhere directly to the plate, 1. After the forging operation the plate is removed from the press and allowed to cool and subsequently the contact clamps 4 and 5 and the ends of the plate are removed, producing the finished plate as shown in Figs. 3 and 4, which is ready to be drilled in the blank spaces 2.

It is essential that the plate to be treated shall be heated very hot, as otherwise the application of the pressure would crush the abrasive grit to the form of a powder, and powdered grit would not be suitable for a tread surface. Again, a high degree of heat appears to increase the adhesion between the abrasive grit and the adjacent surface of iron. It is necessary that the heat applied to the iron plate be sufficiently high to render the plate plastic, in order to achieve the best results.

When the iron plate and the abrasive grit are brought together and treated as above described, the abrasive grit adheres with remarkable tenacity to the adjacent iron surface. Particles of grit are partially embedded within the iron, and in many instances particles of the grit are pocketed by the gripping of the iron around them. Aside from this fact, however, the gritty surface seems to cling to the iron plate by direct adhesion in such manner that the gritty surface can not be easily broken from the iron, and the gritty particles will endure considerable strain before being dislodged or separated from the iron plate.

The operation of introducing the abrasive particles into the heated plate frequently does more than merely embed the particles in same, for it frequently tends to pocket the particles, often closing the metal together over the particles.

I claim,

1. A new article of manufacture consisting of a wrought metal member containing hard particles embedded therein.

2. A new article of manufacture which consists of a wrought metal member containing hard particles embedded therein.

3. A new article of manufacture which consists of a wrought metal member containing a plurality of hard particles embedded in the metal at the surface of said wrought metal member.

4. A new article of manufacture consisting of a tread plate of wrought metal with a wearing surface containing hard particles embedded in said wearing surface.

5. A new article of manufacture which consists of a wrought metal plate containing abrasive particles in the surface thereof, whereby the said plate may be rendered nonslippery.

6. A new article of manufacture which consists of a wrought iron member containing a plurality of hard particles embedded in the iron at the surface of said wrought iron member.

7. A new article of manufacture consisting of a tread plate of wrought iron with a wearing surface containing hard particles embedded in said wearing surface.

8. A nonslip material which consists of abrasive particles embedded into a wrought metal member.

9. As an article of manufacture, a wrought iron plate provided with an abrasive material harder than said plate, and adhering directly thereto.

10. An article of manufacture consisting of a body member of wrought iron provided with a layer of abrasive grit adhering directly thereto.

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Witnesses:
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