

M. H. FLETCHER.

CORE.

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1,038,550.

Patented Sept. 17, 1912.

Fig. 1.

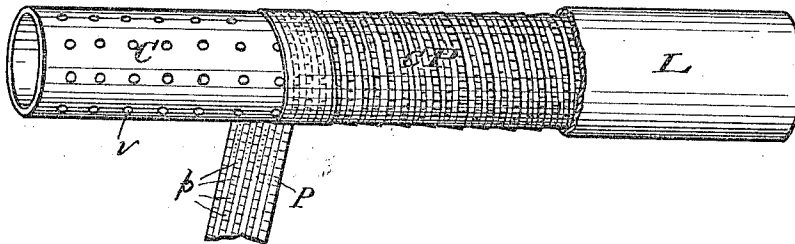


Fig. 2.

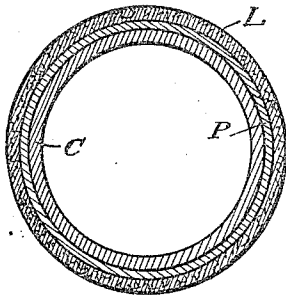


Fig. 3.

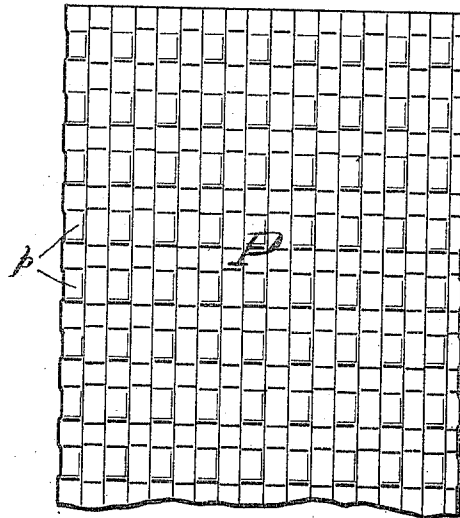
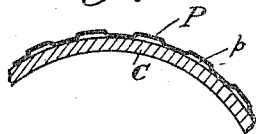


Fig. 4.



WITNESSES:

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CORE.

1,038,550.

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Application filed May 21, 1912. Serial No. 693,697.

To all whom it may concern:

Be it known that I, MORDECAI H. FLETCHER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Cores, of which the following is a specification.

My invention relates to cores used in foundries in casting hollow metal articles, particularly hollow cylindrical pipe. Such cores are formed by superimposing upon the metal core barrel, one or more concentric layers of combustible material, and upon this one or more concentric layers of non-combustible material of mud and loam or the like.

My present invention constitutes an improvement in the cores described by me in Letters Patent #820858, issued to me May 15, 1906.

In my present invention, instead of ordinary paper of one or more layers, with or without perforations, and with or without a water-proof outer layer or coating, I use embossed paper of any of the cheap qualities readily procurable in the market. It will be understood that there must be a sufficient thickness of the combustible paper to enable the core bar to be withdrawn after the pipe has been cast and the paper burned by the heat of the metal. The required thickness in the smaller pipe is usually about $\frac{1}{8}$ of an inch, and embossed paper, when wrapped upon the core bar, facilitates ventilation in carrying off gases from the burning paper, and at the same time accomplishes a great economy in the saving of the amount of paper used, to the extent of the voids provided by the embossing. Ordinarily, the paper is wrapped spirally upon the bar, each layer lapping over the preceding layer $\frac{1}{2}$ its width, $\frac{2}{3}$ its width, or $\frac{3}{4}$ its width, according to the number of thicknesses required to provide the requisite thickness of the combustible layer, for the particular pipe to be cast. The embossed paper is better than flat paper as it lies on the core barrel smoother and adapts itself better to the uneven surface formed by the edge of the preceding layer or layers and the core barrel.

By embossed paper, as the term is here used, is meant a paper or sheet of combustible material, pressed in parts out of a continuous plane surface, forming preferably a more or less regular pattern so that fre-

quent air spaces are left adjacent to the core surface.

The drawings attached hereto show how the core is built up for use in casting cylindrical pipes, and

Figure 1 is an exterior view of a vented metal core barrel, wound spirally with a strip of combustible material in sheet form, with part of the wound portion partially coated with a finishing layer of loam and mud. Fig. 2 is a transverse cross section of a completed core. Fig. 3 is a plan view of a piece of the embossed paper used for the combustible layer; and Fig. 4 is a spiral section of the core and longitudinal section of the paper showing the air spaces.

Referring now to the drawings, C designates a metal core barrel vented by suitable drilled or other holes, *v* to permit the escape of gases formed by heating the earthy layer and the burning of the layer of combustible material, etc.

C. P. designates the core barrel when wound with the embossed paper strip, P, in Fig. 1, shown as applied spirally, each succeeding layer overlapping the one preceding it. The combustible layer so built up of the paper P gives a sufficient thickness to permit the core bar C to be withdrawn after the pipe has been cast. The paper P is embossed, portions of its surfaces, *p*, being pressed outward from the plane of the main surface so as to form a secondary plane. This embossing may be of any style or pattern desired. Upon the combustible layer is formed a non-combustible layer L of mud and loam, or any other suitable material. This is ordinarily coated with blackening, and when the core is dried, it is inserted in the flask and the molten metal poured around the core in the flask. The embossed paper may be made of any materials or composition of matter found convenient, or that will produce a paper at an acceptable price. The ordinary "carpet paper" so embossed has been found to give satisfactory results. A combustible paper strip may be wound on by hand or in any other convenient way, and may be held in place by adhesive material, or, preferably, by tying with thin cord or soft wire. All superfluous or overhanging portions may be trimmed away at each end of the core bar. The loam and mud, or finishing layer, may be turned upon the bar in the usual way after it is wrapped with the combustible

layer. After the metal has been poured, the combustion of the layer of paper, while complete because of the intense heat of the molten metal surrounding the core, is slow enough to allow the loam or finishing layer to retain its proper form until the metal "sets." The venting will be complete and perfect through the agency of the embossed paper and the vents *v* of the core barrel.

10 This invention secures smooth and uniform castings at a less cost than with other methods, and further reduces the percentage of failures or castings which must be rejected because of imperfections.

15 While I have referred in the foregoing description to paper as the material used as the wrapping for the core barrel, I intend that this term shall include any embossed combustible material in sheet form and, therefore, I do not limit the material used to paper alone.

I claim as my invention and desire to secure by Letters Patent of the United States:—

25 1. A core for casting hollow pipes and the like, consisting of the metal core barrel wrapped with embossed combustible material in sheet form, and one or more non-combustible outer layers.

30 2. A core for casting hollow pipes and the like, consisting of a metal core barrel, having one or more layers of embossed com-

bustible material superimposed thereon, and one or more non-combustible outer layers.

3. An improved core for casting pipes, 35 consisting of a metal core barrel wrapped in a spiral direction with a relatively wide and thin strip of embossed combustible material; and one or more non-combustible outer layers.

4. An improved core for casting pipes, 40 consisting of a metal core barrel wrapped in a spiral direction with a relatively wide and thin strip of embossed combustible material, said layers so applied as to overlap 45 one or more preceding layers; and one or more non-combustible outer layers.

5. A core for casting hollow pipes and the like, consisting of a metal core barrel wrapped with embossed paper in sheet form, 50 and one or more non-combustible outer layers.

6. A core for casting hollow pipes and the like, consisting of a metal core barrel provided with vents and wrapped with em- 55 bossed paper in sheet form, and one or more non-combustible outer layers.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MORDECAI H. FLETCHER.

Witnesses:

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ALICE L. TILDESLEY.