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MEANS FOR PREPARING CORE BARS FOR THE CASTING OPERATIONS.

APPLICATION FILED JULY 19, 1909.

943,303.

Patented Dec. 14, 1909.

Fig. 1.

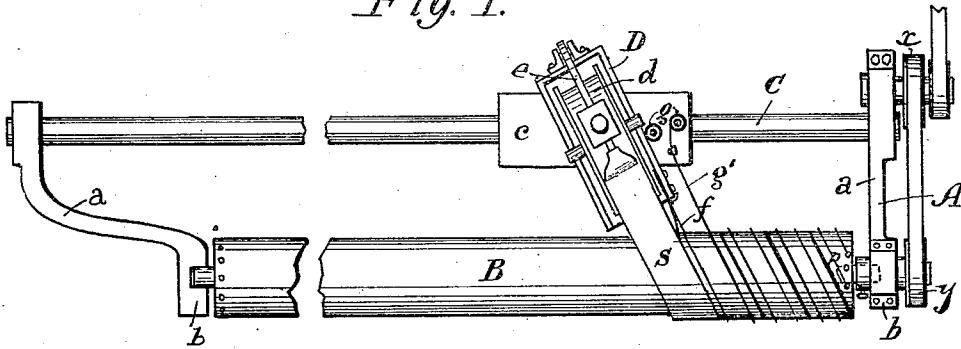


Fig. 2.

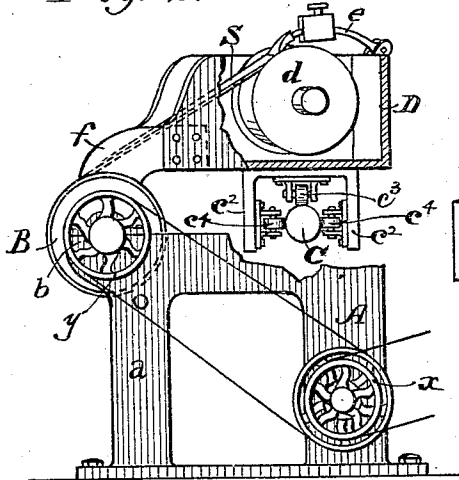


Fig. 3.

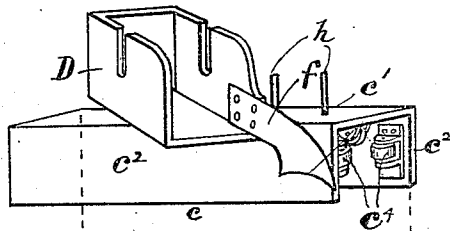
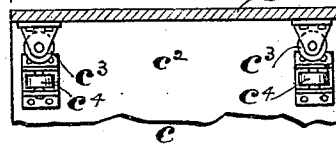


Fig. 4.



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MEANS FOR PREPARING CORE-BARS FOR THE CASTING OPERATIONS.

943,303.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed July 19, 1909. Serial No. 508,520.

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 Means for Preparing Core-Bars for the Casting Operations, of which the following is a specification.

My invention has relation generally to core bars used in the casting of tubular structures of metal, and to the preparation of the same for the casting operations. The disadvantages of the old methods, such as winding the core bar with a hay rope as a combustible foundation for a refractory outer layer of loam, led me to devise, as an improvement in the art, a layer of paper or other combustible material, in sheet form, to be wound upon the core bar as a foundation layer for the loam, which said invention is covered by Letters Patent of the United States, No. 820858, issued to me May 15, 1906.

My present invention relates particularly to a phase of this general improvement, namely, the means of applying the combustible foundation to the core bar, and contemplates the doing of this in the least expensive and most expeditious manner; to which end it consists in the automatic winding of a strip of combustible material spirally upon the bar and securing the same thereto as an incident and function of its rotation; and in the means hereinafter described by which this result is accomplished.

Drawings illustrating my invention are filed herewith and form part of this specification, in which—

Figure 1, is a plan view of the mechanism employed, with a core bar in place, undergoing treatment; Fig. 2, an end elevation of the structure complete; Fig. 3, a perspective view of the sliding carrier, reel-box and guide, detached; and Fig. 4, a sectional view of the carriage detached, with one side removed to show the arrangement of the rollers.

Referring now to the drawings. A designates a stand or frame consisting of two end walls *a*, *a*, suitably spaced apart and braced, and provided with journal bearings *b*, *b*, for the core bar *B* which is held in and rotated between them. At the rear of and parallel to the core bar, is a permanent brace rod *C*, fastened in and between the walls *a*

as a trackway support for a carriage *c*, consisting substantially of a horizontal platform *c*¹ with two depending sides *c*² *c*². Rollers *c*³ *c*³ at the under face of the horizontal platform *c*¹ support the platform upon the brace rod *C* while similar rollers *c*⁴ *c*⁴ at the inner faces of the depending sides *c*² *c*² bear against opposite sides of the brace rod *C*, and these enable the carriage *c* to be moved back and forth upon the brace rod *C*, as a supporting track, at the rear of and always parallel with the core bar *B*, with a slight expenditure of energy.

Upon the platform *c*¹ and at a suitable angle depending on the width of the strip to be manipulated and the distance between the core bar and trackway, is adjustably secured a box frame *D* open at the top and front, and carrying between and journaled in its side walls a reel *d* containing the strip *S* rolled thereon. A weighted brake arm *e* pivoted at the rear of the box frame *D* bears upon the paper roll and regulates the tension of its feed by friction.

As indicated in Figs. 1 and 2, the strip feeds direct from the reel *d* to and upon the core bar, which is a function incidental to the rotation of the core bar—said rotation being effected by belting connection over pulleys *x*, *y*, from a source of driving power (not shown). The winding once started, is continued by the rotation of the core bar, but the necessary and gradual advance of the paper carrier device to preserve always the proper feeding relation of the strip to the core bar is effected by a further instrumentality called the "feed arm" *f*,—a piece of thin sheet steel or other stiff metal attached to the side wall of the box frame *D* and projecting forward to a rest contact with the top of the core bar. The under edge at the forward end of the feed arm *f* is formed to the contour of a spiral arc of the core bar coinciding with the forward edge of the strip already wound thereon, with which edge said feed arm contacts and by means of which the carrier *c* is moved gradually forward automatically as the strip advances upon the core bar in winding thereon; while at the same time, the strip is wound abutting edge-to-edge with that already on the bar in a practically continuous cylindrical plane of perfect smoothness.

It may now be explained that the roller devices for supporting and guiding the car-

rier *c* upon its trackway *C* are arranged, first to minimize frictional resistance in travel forward, and, second, to allow the carrier perfect freedom of movement otherwise, so that the feed arm, resting upon the core bar, acts as a supporting prop for the carrier, and bears upon the core bar with only a slight overbalancing weight of the carrier which may be increased or diminished as found necessary.

In beginning the operation, and before starting the core bar in rotation, the end of the strip *S* is passed once around the core bar by hand, and held by wooden plugs *p*, *p*, driven through the strip into one or more of a series of radial apertures provided at the end of the bar, and by the cord or cords hereinafter described. The excess of the strip is then cut away circumferentially at the end of the core bar, and the feed arm *f* being properly adjusted and the strip roll pivotally tensioned, the rotation of the core bar is started and continued until it is completely wound with the material. The strip is also secured by wooden plugs driven into radial apertures at the finishing end of the bar or tied with strings, and the excess of material cut away as before. By careful manipulation, the angular point left at the cutting-off end makes an exact fit at beginning the winding of another bar; so that no material is wasted. The wooden plugs, being of proper size are driven in to form a flush surface with the material, and are burned out during the casting operation, subsequently, leaving the holes free. The strip thus applied to the plug being necessarily combustible is usually porous and absorbent of moisture; and, especially when a cheap quality of paper is used, the absorption of moisture from the plastic clay or loam coating which is applied upon the combustible foundation, causes the paper to swell and sag from the bar under the weight of the coating. In such case it is desirable to secure the strip to the bar by one or more cords—common hemp twine being suitable. This is supplied by and wound upon the bar in connection with the strip from a ball or balls of cord, *g*, placed upon fixed stems *h* suitably spaced apart upon the carrier *c*, and fed out through ordinary tensionary devices (not shown). These are attached as follows: In attaching the strip *S* to the bar *B* as already described, a hole is first punched through the strip registering with one of the holes *p*, and the end of the cord *g*¹ is inserted through the strip into the aperture and both are secured by the plug driven into said aperture. The same mode of fastening is applied at the finishing end of the bar. While with some material no cord will be necessary, but with others one or two may be required according to the nature of the material. The winding of the cord or cords

upon the strip is coincident with the winding of the strip upon the bar.

It will be manifest that various mechanical changes may be made in the mechanism here shown without departing from the spirit of my invention.

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

1. In a machine for winding a strip of combustible material upon core bars, means actuated by the portion of the strip already wound for automatically advancing the feed along the core bar.

2. The improved means for applying and retaining a strip of combustible material embodies a storage reel for the material to be wound; a traveling reel-carriage; a spool, carried therein; and a projecting arm of the carriage adapted to rest upon the core bar in contact with the advancing edge of the material to be wound, and advance the carriage coincidently with the winding of the material, and at the same time feed a string from the spool upon the strip being wound to retain the same upon the bar.

3. In combination with a supporting frame adapted to carry a core bar in rotation; a fixed trackway, parallel to the axis of the core bar; a traveling carriage free to move thereon; a storage reel mounted on said carriage and adapted to carry and feed a strip of combustible material; and a guide projection of the carriage adapted to rest upon the core bar in sliding contact with the free advanced edge of the strip already wound thereon.

4. In combination with a stand, a supporting frame adapted to carry a core bar in rotation; a fixed trackway, parallel to the axis of the core bar; a traveling carriage free to move thereon; a storage reel mounted on said carriage and adapted to carry and feed a strip of combustible material; a guide projection of the carriage adapted to rest upon the core bar in sliding contact with the free advanced edge of the strip already wound thereon; and an adjustable tension brake bearing upon the reel.

5. In combination with a supporting frame adapted to carry a core bar in rotation; a fixed bar contiguous to and parallel with the core bar when in position; a reel carriage having a traveling support upon the fixed bar; and a projecting arm of the carriage having a sliding rest upon the core bar as one of the supports of the carriage.

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

MORDECAI H. FLETCHER.

Witnesses:

WALTER A. KNIGHT,
A. L. TILDESLEY.