G. BOENIG.

ELECTROMAGNETIC DRILL SUPPORT.

APPLICATION FILED JULY 14, 1908.

935,291. **Patented Sept. 28, 1909.**

Fig. 1.

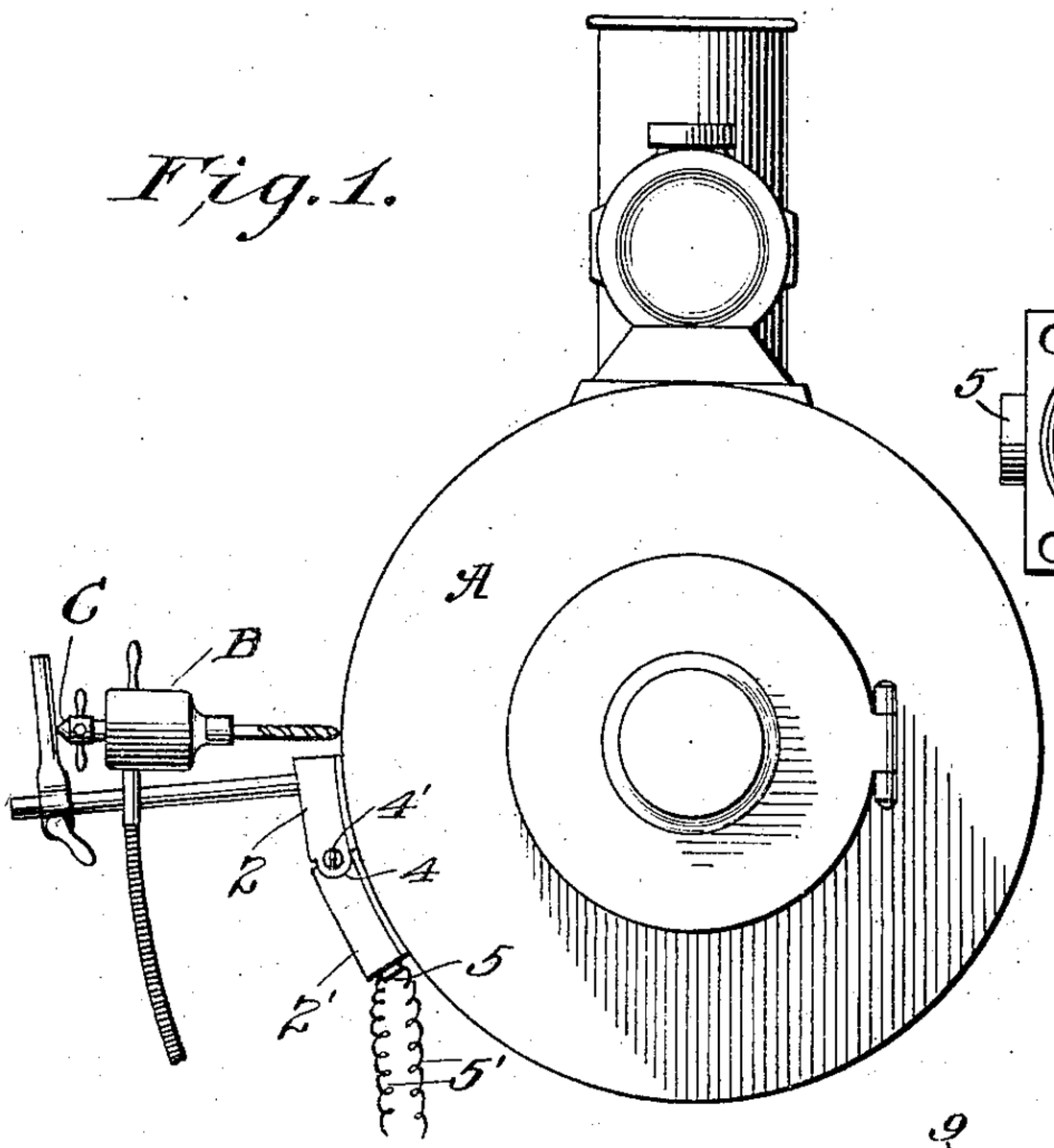


Fig. 6.

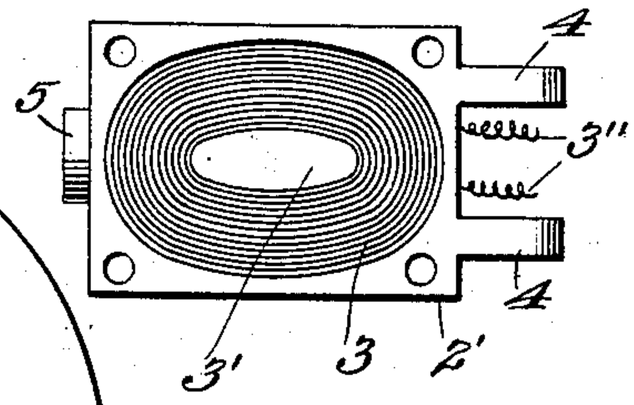


Fig. 5.

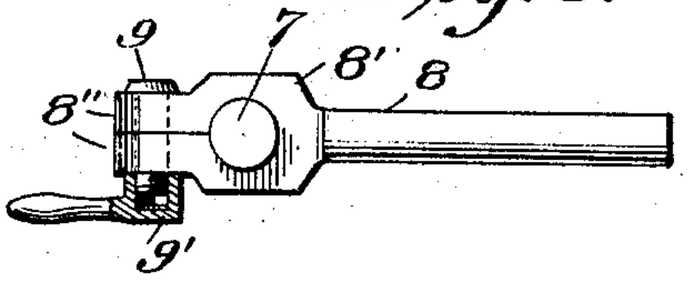


Fig. 2.

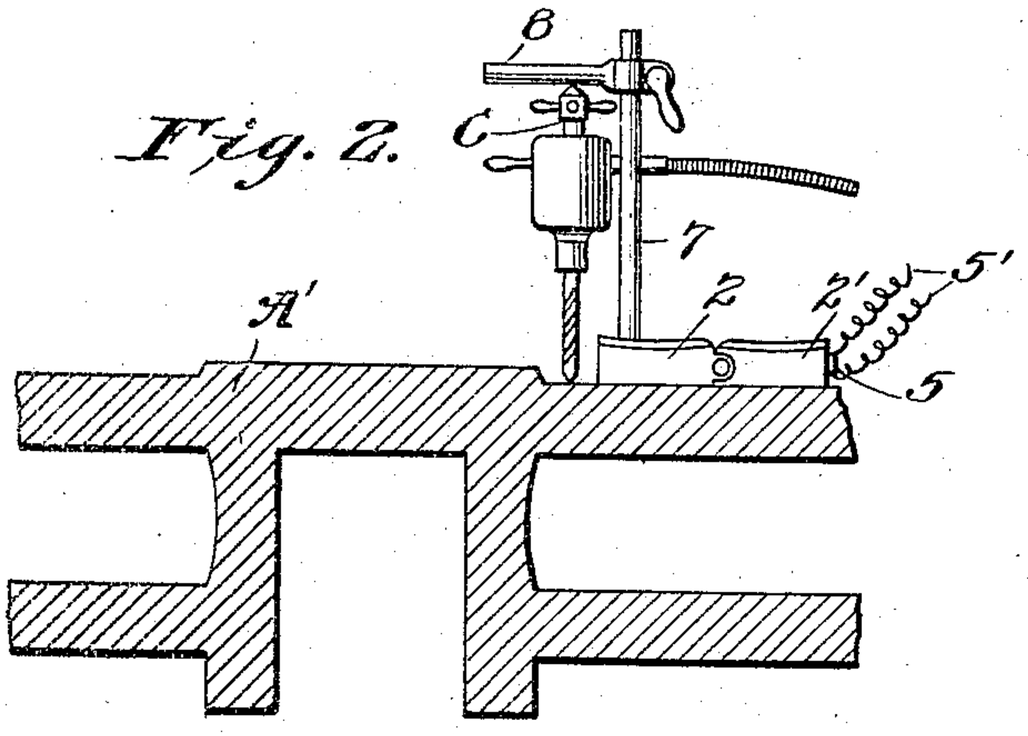


Fig. 4.

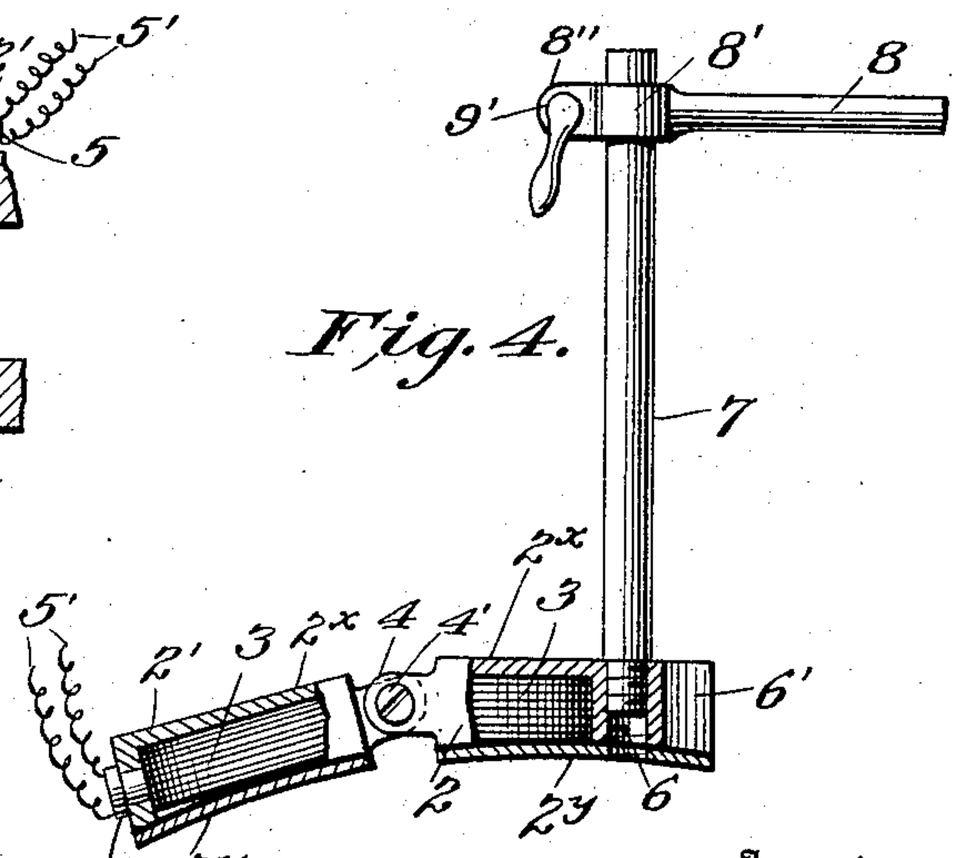
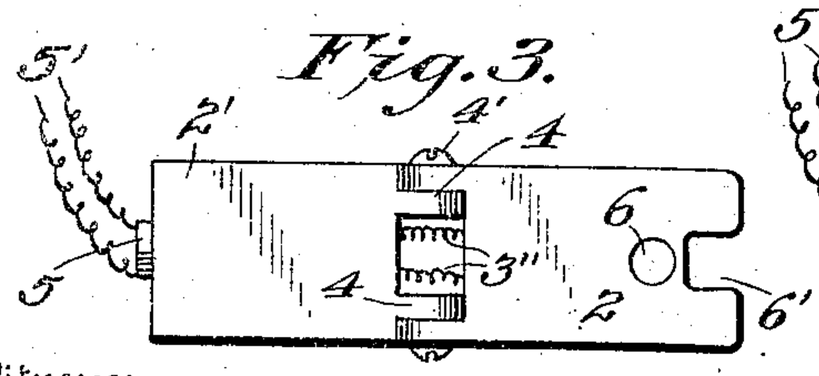


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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ELECTROMAGNETIC DRILL-SUPPORT.

935,291. Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed July 14, 1908. Serial No. 443,461.

To all whom it may concern:

Be it known that I, GEORGE BOENIG, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Electromagnetic Drill-Supports, of which the following is a specification.

My invention relates to means for supporting and holding in position a portable drill, such as is used for drilling holes through locomotive boilers and in other like work, and my invention particularly relates to means for attaching the drill-support base to the work upon which the drill is operating.

One of the chief difficulties in using a portable drill is the difficulty of clamping and properly adjusting the drill in position upon the work. Where the work is large as for instance, in the case of a locomotive boiler, it requires considerable trouble to attach the ordinary supporting base to the boiler. It is necessary to pass chains about the boiler, to clamp the chains tightly and to shift the base of the drill-support about until the proper location is found. Inasmuch as the drill is held to the boiler by chains or like devices it is extremely difficult to accurately adjust the drill base, and the attachment of the drill-support upon the work often takes considerable more time than doing the work itself.

The object of my invention is to overcome these difficulties by providing a drill-support base which is electro-magnetic and adapted to contact with the boiler shell or with any metallic work upon which the drill is to be used, and which will electro-magnetically hold thereon.

A further object of the invention is to provide a base of this character which will fit either upon a flat piece of work or upon a curved piece of work, or to a considerable extent upon an irregular figure, said base being so made that it will not be inclined, or tip laterally, but will at all times have a solid bearing upon the work being drilled.

My invention consists in the arrangement of parts and details of construction set forth in the accompanying specification and more particularly stated in the claims.

In the drawings, Figure 1, is a front view of a locomotive boiler, the drill being shown in elevation as applied thereto. Fig. 2, is an elevation of my invention as applied to a flat piece of work, the work being shown in section. Fig. 3, is a top view of the base, the drill-support being removed. Fig. 4, is an enlarged side view of the drill-support and base, the base being partly in section. Fig. 5, is a top view of the drill supporting arm. Fig. 6, is an under side view of one of the base sections, the bottom being removed.

In the drawings A designates a locomotive boiler, B a pneumatic drill of the ordinary construction, C the feed screw thereon and A′ any piece of flat work through which it is desired to drill a hole.

My invention resides in a frame for holding a drill into engagement with a piece of work, which consists of a base provided with electro-magnets from which base projects a standard carrying an arm acting as an abutment against which the drill clamp C bears. The base preferably consists of two sections 2—2′ in the form of metallic blocks of any desired form, but which I have shown as rectangular in plan. Each of these blocks is hollow, and is provided on its interior with the coil 3 coiled around a core 3′, this coil acting in the ordinary manner to energize the core and base when a current is passed through the coil so that it will be magnetically attracted and held upon any metallic surface with which it is brought in contact.

The electro-magnet may be of any desired character which will act to hold the base sections against the work to be drilled. Preferably however, the base itself is made as a portion of the electro-magnet, and is thus more solidly held against the work operated upon than if the magnets were merely contained within the base. I do not wish however to be limited to any particular construction in this regard.

As before stated, the base is made up of two base sections. The section 2 is hinged to the section 2′ by ears 4 and pintle screws 4′. A space is left between the ears through which pass the wires 3″ connecting one magnet to the other. The section 2′ is adapted to receive a contact plug 5 whose wires 5′ lead to any convenient source of electricity. The section 2 has at one end the screw threaded passage 6 open at both ends into which the standard 7 screws. It is obvious that the standard 7 may be screwed into either end of the passage 6 for a purpose to be hereafter stated. The base 2 is extended beyond the walls of the passage 6 so as to

form a bifurcated end as at 6′ which acts to give a more stable bearing to the base of the support.

The brace arm 8 is adjustably mounted on the standard and projects out therefrom. Preferably this arm has a head 8′ surrounding the standard which is cleft and provided with the flanges 8″ through which the bolt 9 passes. On the end of the bolt is a nut 9′ provided with a handle. By means of this nut the cleft head may be loosened or tightened as the arm is adjusted up or down upon the standard to any desired position.

In order that the base may be applied to and have a good contact with the surface of the work whether that surface be flat or curved, I make one face of the base sections flat as at 2^x, and the other slightly concave as at 2^y. When working upon a curved surface the concave face contacts with the work as shown in Fig. 1, while when working on a flat surface as in Fig. 2, the flat side is used. It will be obvious also that the base is adapted to engage with an angular piece of work by reason of its being made of hinged sections.

In operation the base sections are placed in the desired position against the work and the current turned on. The base sections immediately become magnetic and by their attraction are held firmly to the boiler wheel or other metallic part being drilled. The standard is then screwed in place and the arm 8 turned to its proper angular position down against the end of the feed screw after which the work proceeds in the ordinary manner. It will be seen that by reason of the adjustability of the arm 8, both lengthwise upon the standard and angularly, the drill may be easily set in any position desired and that the base needs to be only approximately correct in position.

My device is simple and extremely useful, particularly in round-houses and repair shops where electric lamp connections for portable lamps are conveniently located.

While I have shown what I believe to be the best form of my invention, I do not wish to be limited thereto as it might be modified in many respects without in any way departing from the spirit thereof.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A support for portable drills having a base comprising two sections hinged together, an electro-magnet in each section, and electric circuit wires connected to one end of one section.

2. A support for portable drills comprising a plurality of sections hinged together, a drill brace supported on one of said sections, electro-magnets in said sections and electric circuit wires connected to one end of one section.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE BOENIG.

Witnesses:

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