

A. F. RIETZEL & G. E. BARSTOW.
ELECTRIC METAL WORKING-APPARATUS.
APPLICATION FILED DEC. 26, 1908.

1,041,673.

Patented Oct. 15, 1912.

2 SHEETS—SHEET 1.

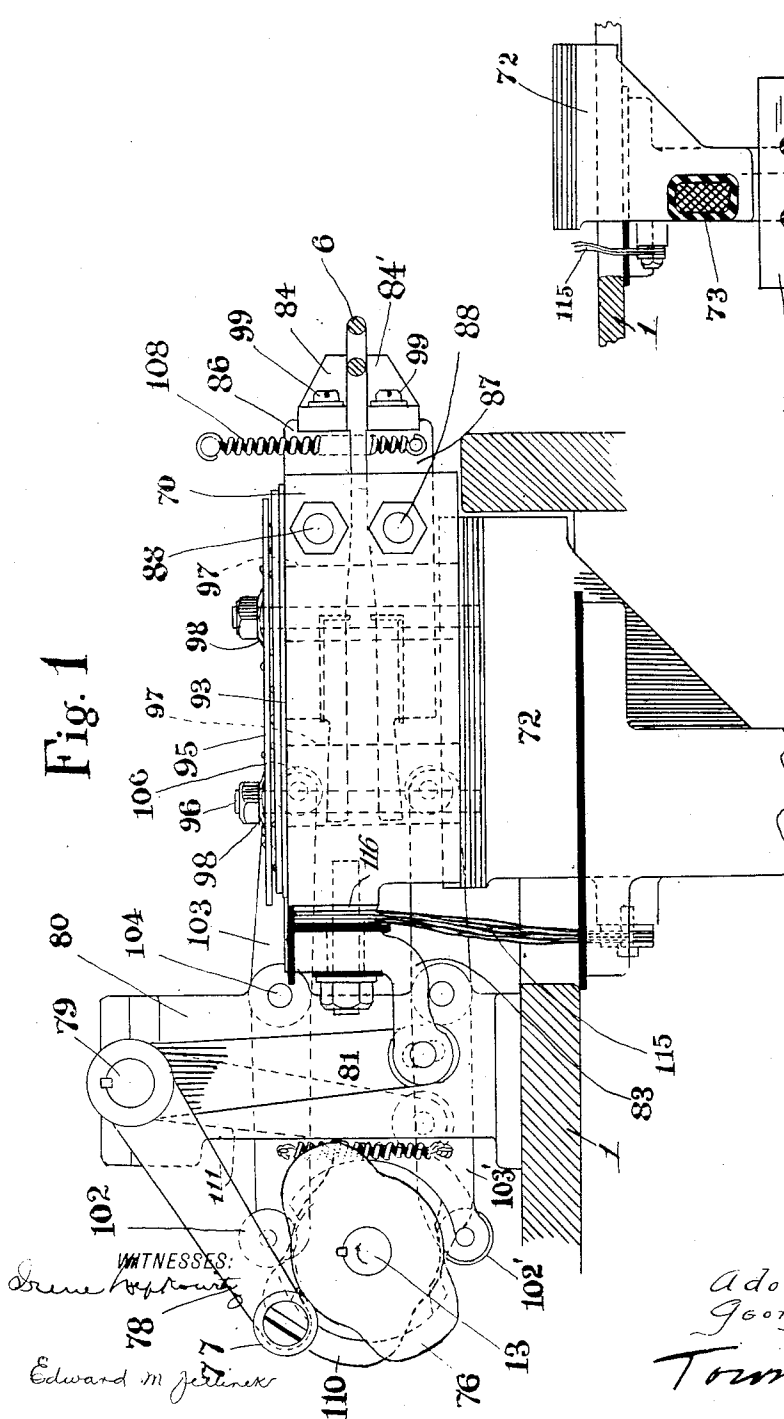


Fig. 1

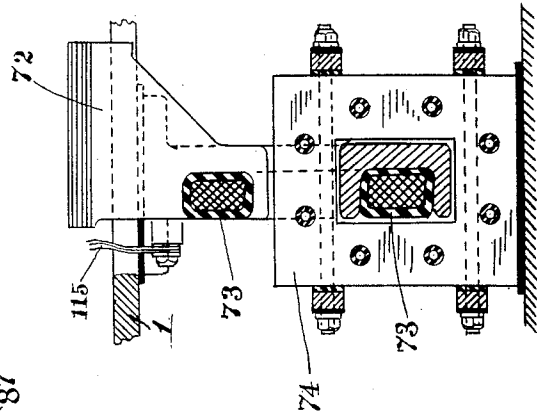


Fig. 4

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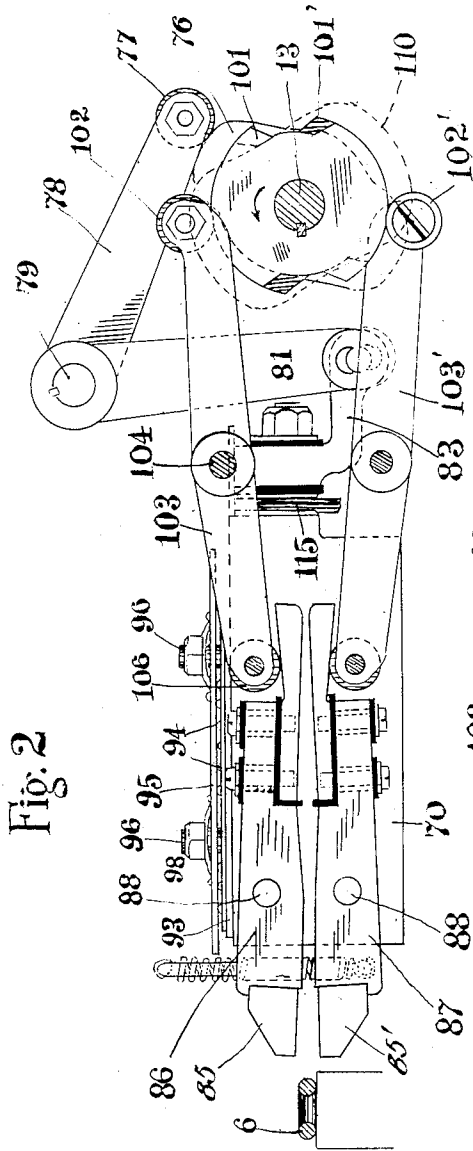


Fig. 2

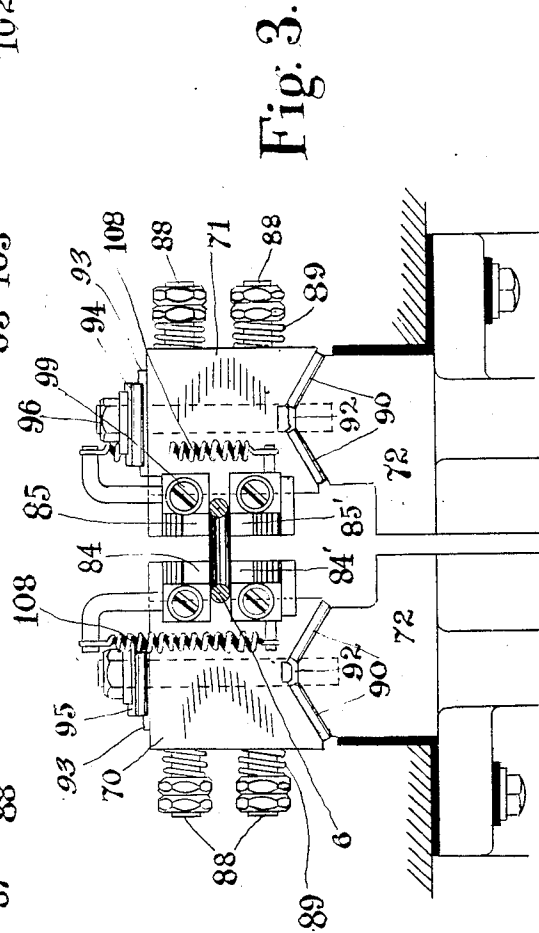


Fig. 3.

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UNITED STATES PATENT OFFICE.

ADOLPH F. RIETZEL, OF CHARLESTOWN, RHODE ISLAND, AND GEORGE E. BARSTOW, OF LYNN, MASSACHUSETTS, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THOMSON ELECTRIC WELDING COMPANY, OF LYNN, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ELECTRIC METAL-WORKING APPARATUS.

1,041,673.

Specification of Letters Patent.

Patented Oct. 15, 1912.

Original application filed May 11, 1907, Serial No. 373,081. Divided and this application filed December 26, 1908. Serial No. 469,189.

To all whom it may concern:

Be it known that we, ADOLPH F. RIETZEL, a citizen of the United States, and resident of Charlestown, in the State of Rhode Island, (post-office address, Westerly, Rhode Island,) and GEORGE E. BARSTOW, a citizen of the United States, and resident of Lynn, Massachusetts, (post-office address, Lynn, Massachusetts,) have invented certain new and useful Improvements in Electric Metal-Working Apparatus, of which the following is a specification.

Our present invention relates more particularly to means for avoiding arcing or sparking between the moving block or carrier and the block forming a terminal of the source of heating current and which movable block carries a work-engaging block or contact which feeds the heating current into the work.

Our invention is herein described and shown in the accompanying drawings as applied in a form of electric metal working apparatus for which we made application for Patent on the 11th day of May, 1907, application Serial Number, 373,081, and our present application is a division of that application.

While we have hereinafter described our invention as carried out for a work-engaging contact, slide movable to and from the work to bring the contact into and out of engagement therewith, we do not limit ourselves to any special construction or manner of mounting of sliding or movable contact.

Briefly stated, our invention consists in providing double connection to the work-engaging contact from the source of current, one being through the bearing of the movable contact carrying block and guided on, and in electrical connection with, a block forming a terminal of said source, and the other being a shunt connection, preferably of flexible form, around the first direct connection from the terminal of the source to the movable contact carrying block or carrier.

Our invention consists further in the special combinations of devices more particularly hereinafter described and claimed.

In the accompanying drawings Figure 1 is an enlarged side elevation of portion of

an electric metal working apparatus, embodying our invention. Fig. 2 is an elevation of the apparatus looking from the opposite side. Fig. 3 is a front elevation. Fig. 4 is a vertical central section of a transformer serving as the source of heating current which is supplied to the work-engaging contacts.

Two slides or carriers for work-engaging contacts are indicated at 70, 71 respectively. These carriers consist of blocks of metal moving and guided upon metal blocks 72 and electrically connected with said blocks through their sliding bearings. The blocks 72 are terminals or electrodes of a suitable source of heating electric current shown herein as consisting of the secondary of a transformer whose primary is indicated at 73. The usual laminated core for the transformer is indicated at 74. The table to which the transformer and other parts of the apparatus may be secured or upon which they may be mounted is indicated at 1.

Work-engaging contacts borne by the movable carriers or slides 70 are indicated at 84, 84'. A similar pair of contacts, 85, 85' is shown as mounted upon a slide or carrier 71. These contacts are further shown as pivotally mounted at 88, for a purpose to be presently described and to enable them to be operated in a manner which is more particularly set forth and claimed in our prior application before referred to. The number of contacts and the mounting of the same together with the adjuncts for moving the carrier and for moving the contacts themselves on the carrier form no part of our present invention, the said invention relating more particularly to the manner of connecting the work-engaging contacts themselves with the sources of the heating current.

The contact carriers constructed as usual of heavy blocks of copper have a sliding or other moving guided bearing of any desired character upon the terminals 72 and are in electrical connection with said electric terminals through such bearing. The carriers may for this purpose be suitably grooved on their under surface as shown in Fig. 3 and to reduce the friction rollers 90, carried in frames 92, may be interposed. To assist in guiding the contact carriers

they may also be provided with channeled plates 93 as shown in Fig. 3 forming the guide bearings for an upper set of rollers 94 superposed on which are bearing plates 95. Passing through the latter are stud-bolts 96 which pass through longitudinal slots 97 in the carriers and are firmly fastened in the terminals 72. Plate springs 98 fastened by suitable nuts hold the parts down upon the terminals 72.

A connection independent of the moving connection from the terminal 72 to the carrier 70 or 71 is formed by a flexible lead 115 of any suitable character firmly secured at one end as at 116 to the carrier itself and its opposite or lower end secured at some convenient point on the terminal of the secondary as clearly shown in Fig. 1. This lead forms a shunt around the moving connection between the terminals 72 and carrier 70 or 71 and prevents sparking and oxidation so that the bearing for the contact carrying block or slide will remain unimpaired in use and will not tend to stick through oxidation or damage to its bearing surfaces.

The work 6 here shown as in the form of a chain link, is supported in the machine in suitable work holders which may be of the form described in prior patent of A. F. Rietzel, dated February 28th, 1905, No. 783,543. The movement of the contacts themselves when pivotally mounted on the carriers or slides may be produced by the special mechanisms shown on the drawings and now to be described, it being premized that these devices are claimed in our prior application and that any other means might be used for moving the slides and that they might be otherwise mounted without departing from our invention. The contacts themselves may be mounted upon levers 86, 87 and be secured thereto at their forward ends by screws 99. Springs 89 held by nuts on the studs 88 may serve to press the levers against the sides of the carriers.

103 is a lever fulcrumed at 104 on the carrier 70 and provided with rollers 106 which engage recessed projections at the rear ends of the upper contact carrying levers. At its rear end lever 103 carries a cam roll 102 engaging cam 101 on operating shaft 13. A similar lever 103' having cam roll 102' is operated by cam 101' to swing the two lower contacts. As will be seen, when the cams engage the rollers the contacts will be open as shown in Fig. 2. When the cam rolls drop into the recesses of the cams the contacts are drawn together as shown in Fig. 1 by the action of a suitably connected spring 108.

A cam 110 on the shaft 13 serves to move the contact carrying slides toward and away from the work.

79 is a rock shaft mounted in bearings

on a bracket 80 and provided with an arm 111 terminating in a cam roll adapted to engage the cam 110. Extending from the rock shaft is a pair of links 81 connected with arms 83 extending from the rear of the contact carriers 70, 71, and preferably insulated therefrom. Cam 110 advances the contact carriers while the contacts are open as shown in Fig. 2 and the contacts are closed upon the work by the action of the cams previously described. Another cam 76 upon the shaft 13 withdraws the carriers by acting upon the cam roll 77 mounted on an arm 78 extending from rock shaft 79. Obviously so far as concerns the invention herein claimed the pivoting of the contacts on the carriers and the special movements given thereto in order that they may be brought into position over the work and then moved laterally to engagement therewith are not necessary.

Our invention likewise is not confined to any particular manner of mounting the contact carriers in or on the blocks on which they have their bearing and with which they are in electrical connection, nor to any particular means, whether mechanically or manually operated, for moving the contact carriers in or on their bearings or guides.

What we claim as our invention is:

1. In an electric metal working apparatus, the combination of a source of heating current a work-engaging contact supplying current to the work and having a moving connection with the source of heating current, and a flexible shunt connection around the moving connection and forming an unbroken path for supplying current from the source to the contact as and for the purpose described.

2. In an electric metal working apparatus, the combination of a transformer secondary, a block of metal forming a terminal of said secondary, a current supplying contact connected with the said secondary by a moving connection with said block and a direct connection forming an unbroken path from the source to the contact between the secondary and contact, said direct connection constituting a shunt around the moving connection for supplying current from the source to the contact as and for the purpose described.

3. In an electric metal working apparatus, a guide block or bearing forming a terminal of a source of energy, a carrier movable thereon and having electrical connection therewith through the bearing, a work engaging contact borne by the carrier, and a flexible connection from the carrier to the source forming a direct unbroken path between the contact and source and a shunt path around the moving connection between the carrier and its bearing for supplying current from the source to the contact.

4. In an electric metal working apparatus,

a source of heating current, a current supplying contact movable into and out of connection with the work while the latter is properly supported within the machine.
5 said contact having a moving connection and also a direct unbroken connection with said source, the latter connection forming a shunt around the moving connection for supplying current from the source to the contact.
10 5. In an electric metal working apparatus, the combination of a transformer secondary, a block forming a terminal of said secondary, a contact carrier guided on and in electrical connection with said block, whereby it may
15 be moved toward and away from the work, a work-engaging contact on said carrier and a flexible lead between the secondary and car-

rier, said lead forming an unbroken direct shunt connection around the moving connection between the carrier and the secondary 20 for supplying current from the source to the contact.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ADOLPH F. RIETZEL.

GEORGE E. BARSTOW.

Witnesses to the signature of A. F. Rietzel:

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JOHN A. LENIHAN.

Witnesses to signature of George E. Barstow:

W. H. HODGES,

F. S. STEARNS.