

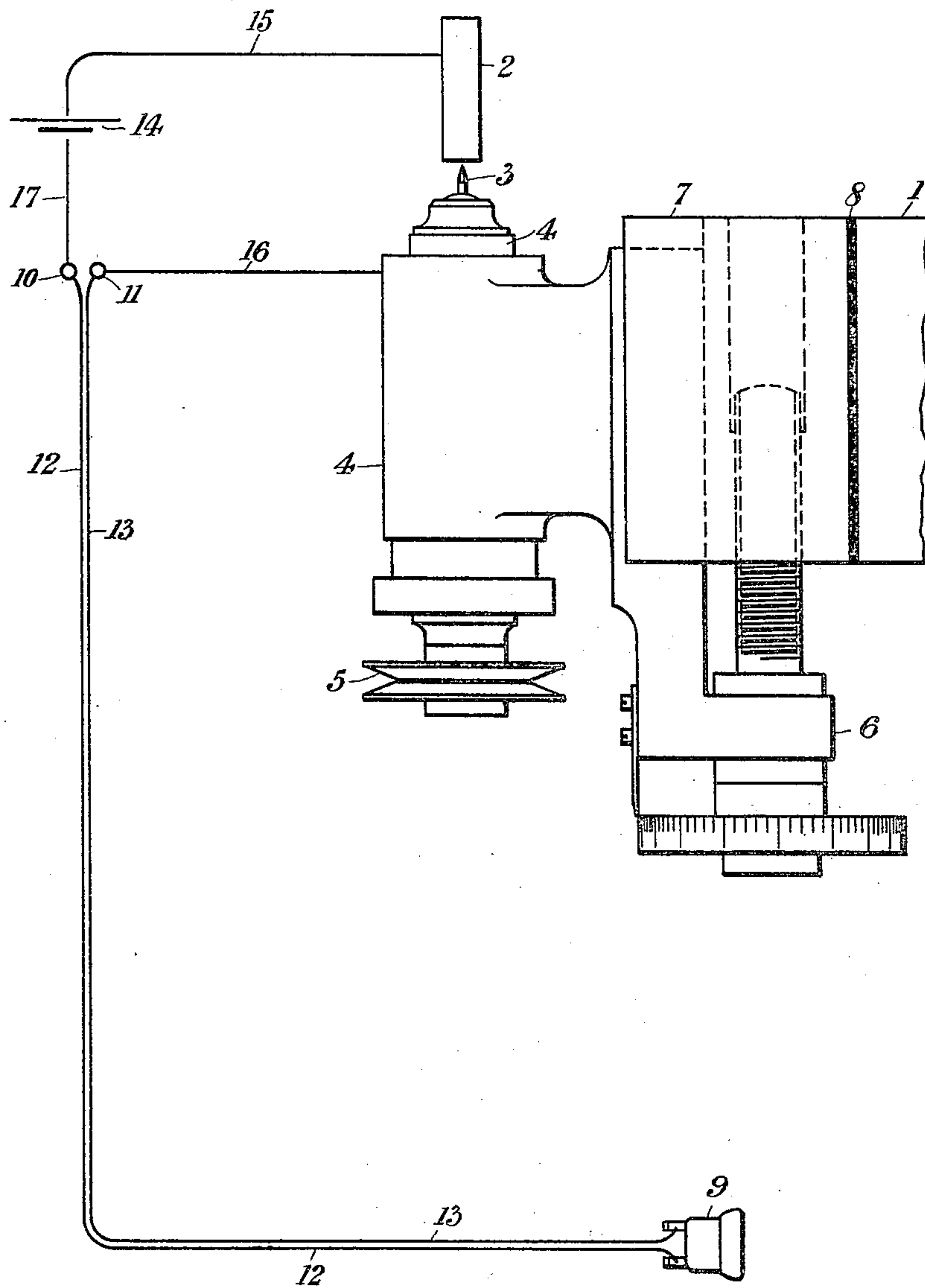
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M. BARR.

ELECTRICAL MEANS FOR DETECTING AND ANNOUNCING CONTACT BETWEEN  
TWO CONDUCTING BODIES.

APPLICATION FILED MAY 31, 1901.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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ELECTRICAL MEANS FOR DETECTING AND ANNOUNCING CONTACT BETWEEN TWO CONDUCTING BODIES.

No. 801,132.

Specification of Letters Patent.

Patented Oct. 3, 1905.

Application filed May 31, 1901. Serial No. 62,615.

*To all whom it may concern:*

Be it known that I, MARK BARR, residing at No. 25 Kensington Court Gardens, Kensington, in the county of Middlesex, England, have invented a certain new and useful Improved Electrical Means for Detecting and Announcing Contact Between Two Conducting Bodies; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention consists in improved electrical means for detecting and announcing contact between two conducting bodies.

It is specially applicable to machine-tools for cutting in which both the cutting-tool and the piece to be cut are of conducting material. In some machine-tools of this class—such, for instance, as are used for engraving—the detection of the fact of mechanical contact between the tool-point and the work is of grave importance. An electric annunciator is the means best suited for attaining this object; but the extreme delicacy of the cutting-tools frequently employed in these machines prohibits the use of any annunciator requiring for its operation a current sufficiently strong to spark across the gap between the cutting-tool and the work either just before contact between them is made or just after the said contact is broken, as any such sparking would instantly fuse the point of the tool. Ordinary annunciators generally necessitate the employment of an electric current which is capable of sparking across a gap of at least a quarter of a thousandth of an inch—that is to say, these annunciators operate when the parts to be put in mechanical contact are short of contact by any distance not exceeding that above mentioned. As the present invention applies to machines involving an exactitude in dimension up to a ten-thousandth of an inch, it cannot admit as a part of it one of the said ordinary annunciators nor, indeed, any annunciator requiring a current capable of giving any spark whatever, for, as above mentioned, the sparks would burn the tool-point. It is well known that the type of minimum-current electrical annunciator that excites any of the human sensory nerves is represented by the telephone. Now the weak current of a telephone will not spark, and, moreover, the graduations of its sounds are readily audible. For instance, if foreign matter, such even as particles of steel, are clinging

to the tool-point these, although sufficing to close the circuit, give, nevertheless, a distinctive sound as of loose moving particles, thus enabling the operator to distinguish perfectly between a spurious and a genuine contact. The spurious contact makes a grating sound, while the genuine contact between the tool-point and the face of the punch-blank is a single sharp sound.

The accompanying diagram illustrates the invention.

1 is a part of the frame of the machine; 2, the work to be cut; 3, the cutting-tool; 4, its holder; 5, its driving-pulley, and 6 the device by which the tool 3 can be moved to and from the work 2 and which slides in 7, an extension of the machine-frame from which it is insulated by the insulation 8.

9 is a telephone, and 10 11 the terminals, to which its conductors 12 13 are respectively connected. The terminals are mounted upon any convenient part of either the machine-frame 1 or the extension 7, being insulated therefrom.

14 is the battery, and the battery-circuit is completed through the conductor 15, the work 2, the tool 3, the holder 4, the wire 16, the terminal 11, the conductor 13, the telephone 9, the conductor 12, the terminal 10, and the conductor 17, the said current being open when there is no electrical contact between the tool 3 and the work 2 and closed when there is such contact. The character of the battery and the resistance of the battery-circuit are such that only a small current can pass.

I claim—

1. The combination with the cutter and the work of a machine-tool, of a battery; a telephone; a battery-circuit including the said cutter, work, and telephone; and a make and break consisting of means by which the tool and the work can be brought into mechanical contact with each other or separated from each other.

2. In an engraving-machine, a contact-detector comprising an electrical circuit including therein an annunciator, a routing-tool and an opposed contact whereby contact of said tool with said opposed contact will actuate said annunciator.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

MARK BARR.

Witnesses:

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