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ELECTRICAL APPARATUS FOR PERFORATING DESIGNS.
APPLICATION FILED FEB. 25, 1910.

973,899.

Patented Oct. 25, 1910.

Fig. 1.

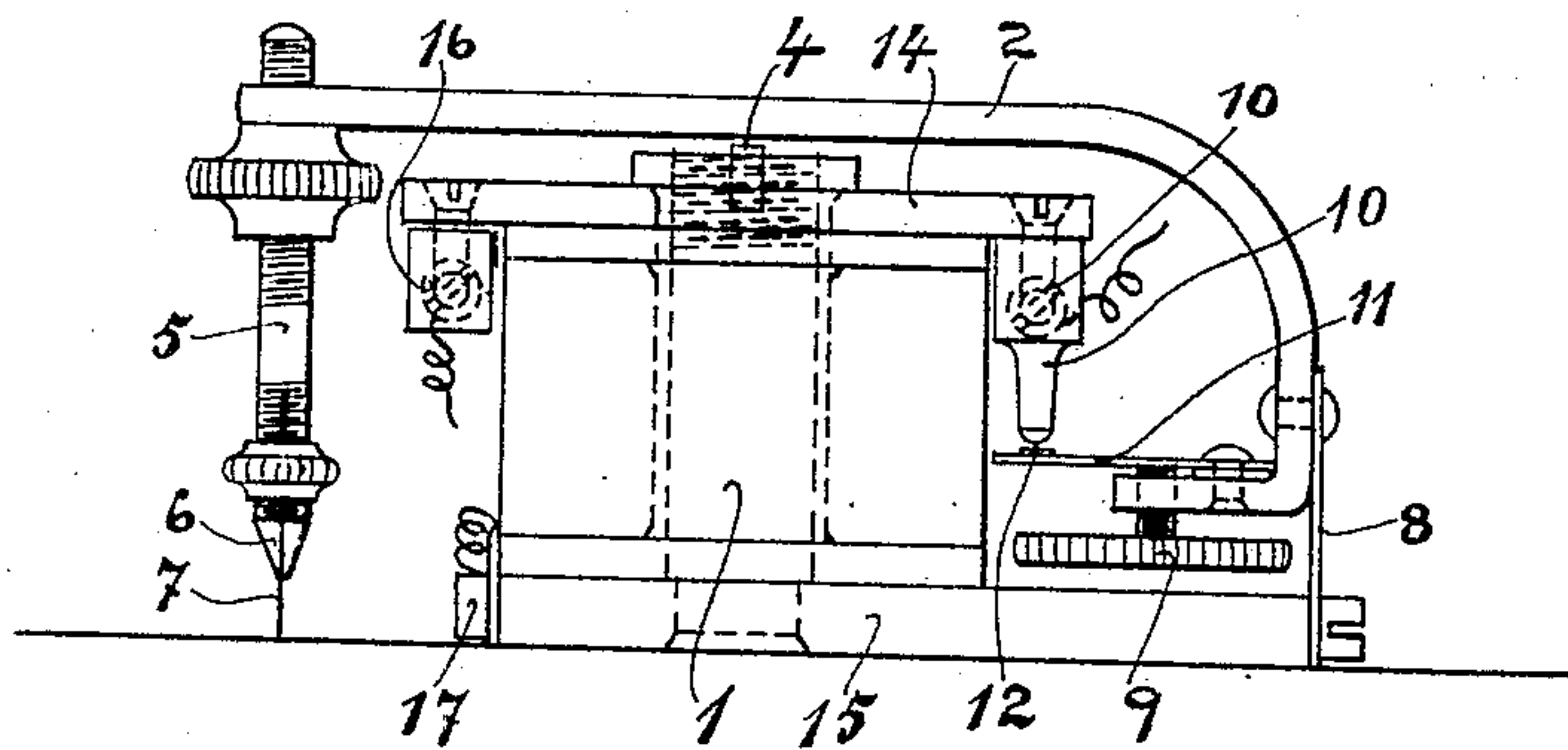
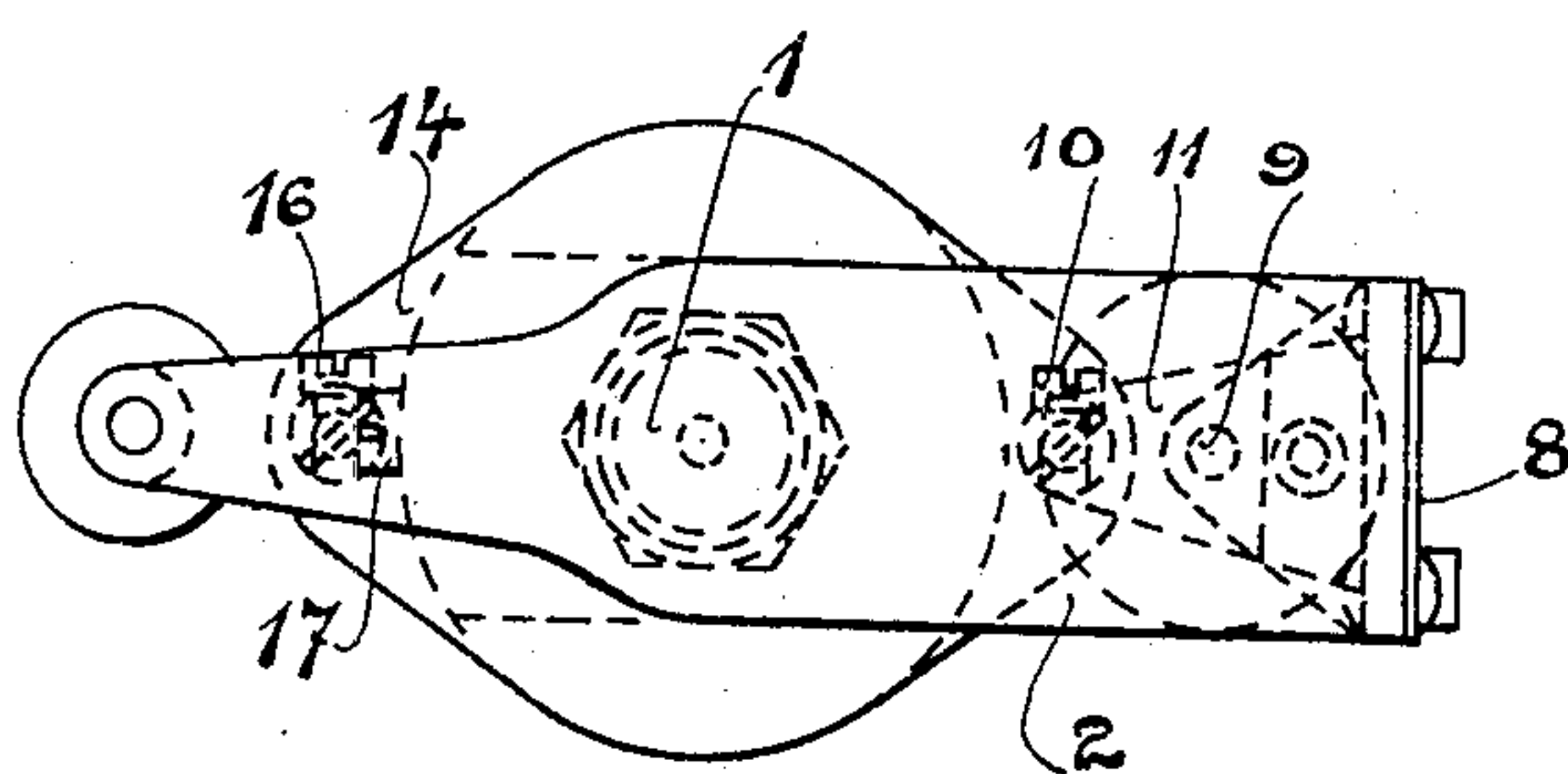


Fig. 2.



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ELECTRICAL APPARATUS FOR PERFORATING DESIGNS.

973,899.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Application filed February 25, 1910. Serial No. 545,861.

To all whom it may concern:

Be it known that I, BOO HENNING WALLIN, citizen of Sweden, residing at Gottenborg, Sweden, have invented new and useful Improvements in Electrical Apparatus for Perforating Designs, of which the following is a specification.

This invention relates to improvements in electrical apparatus for perforating designs on paper or other similar material for producing of stencils for the reproduction of designs on textile fabrics or felt or the like.

The object of the invention is to simplify such apparatus and to make the same suitable to be used without danger of impact from the electric current.

The apparatus is illustrated by the accompanying drawing in which—

Figure 1 is a side elevation and Fig. 2 a plan view of the apparatus.

The apparatus consists of a flat base plate 15 of iron on which is fixed a single electromagnet 1 with the one pole in metallic connection with the baseplate. Above the other pole the one limb of an angle-bent bar-shaped armature 2 passes, the rear end of which armature is in an elastic manner fastened at the baseplate 15 by means of a plate spring 8. The armature 2 is placed so near the magnet-pole that, when the current passes through the coil 3, the armature becomes powerfully attracted whereby a non-conducting pin 4 *e. g.* of brass, on the top of the magnet, prevents the armature from being caught by the magnet. The fixed limb of the armature is given a rather large breadth in order that the spring may get a sufficient stiffness sidewise to keep the armature steady without special guides at the free limb. The free end of the armature 2 is provided with a hole through which a needle carrier 5 is screwed and directed against the base-plate 15 in such a manner that its height above the base plate can be varied as wanted. At its lower end the needle carrier is provided with a holder 6 of a known type for the needle 7. When in rest the point of the needle may stand merely a little above the base-surface of the apparatus.

An angle-bent appendix on the fixed end of the armature carries a contact spring 11 extending inward toward the magnet, which spring rests upon and may be regulated by a set screw 9. Through a pin 10' the spring 11 is in contact with a pole screw

10 of the electromagnet when the armature is resting. At the contact spot 12 the spring 11 is covered with some non-oxidizing material *e. g.* platinum. Above the electromagnet is fixed a non-conducting plate 14, provided at both ends with pole screws 10 and 16 respectively. The pole screw 10 is in metallic contact with the above-named pin 10'. When closed, the current passes from the pole screw 16 through the coil 3, the baseplate 15, the spring 8, armature 2, contact-spring 11, pin 10' and out by the pole-screw 10. The electromagnet thus being magnetic, attracts the armature 2 and presses the needle 7 downward through one or more sheets of paper or similar material, on which the apparatus is placed. As soon as the armature 2 becomes attracted the current will be broken at the contact spot 12, because the spring 11 is moved somewhat away from the pin 10' and then the magnet releases the armature 2, so that the same with the needle 7 rises by the action of the spring 8 until the spring 11 again comes into contact with the pin 10' when the downward movement is repeated. These alternate motions are effected very rapidly and by moving the apparatus over the design the needle produces a series of corresponding perforations in the paper or the like.

The peculiar placing of the connecting screws and all other details beneath the bent armature prevents them all from being injured even without a special casing over the apparatus as in hitherto-known apparatus of the same kind and also the person working the apparatus is safe from shocks by the current. Through this arrangement the armature proper becomes the highest part of the apparatus and the total height of the latter becomes very small, so that the apparatus may conveniently be held by the hand.

Another advantage of the invention is the low position of the joint of the armature with regard to the base-plate, in consequence whereof the needle will swing nearly at right angles against the paper under the apparatus and that without any use of levers, or other device for guiding the needle which by the rapid motion of some 3000 strokes per minute very soon will wear out, rendering the motion of the needle unsteady the reproduction of the design thus becoming imperfect and indistinct.

Having now particularly described and

ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

5 An electrical apparatus for the purpose described, comprising a base plate, a plate spring fixed to and rising from one end thereof, an electromagnet fixed on the base plate, a non-conducting pin on the top of the magnet, a non-conducting plate fixed above
10 the electromagnet and extending beyond the sides of the same, a pole screw carried at one end of said plate, a pole screw carried at the opposite end of the plate, a depending pin connected with the latter pole screw, an ar-
15 mature fixed to the inner side of the upright plate spring and having a short arm disposed slightly above the base plate and also

having a long arm overhanging the electro- magnet and the non-conducting pin and ex- tending beyond the former, a needle carrier 20 carried by said extended portion of the over- hanging arm, a contact spring carried by the short arm of the armature and opposed to the said depending pin, and a screw bear- ing in said short arm and against the under- 25 side of the contact spring.

In testimony whereof I have hereunto set my hand in presence of two subscribing wit- nesses.

BOO HENNING WALLIN.

Witnesses:

GUSTAF SETH,
ERIC MISCHOLM.