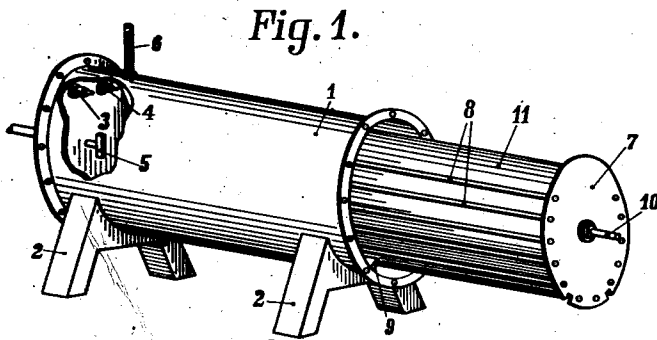
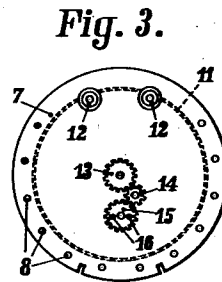
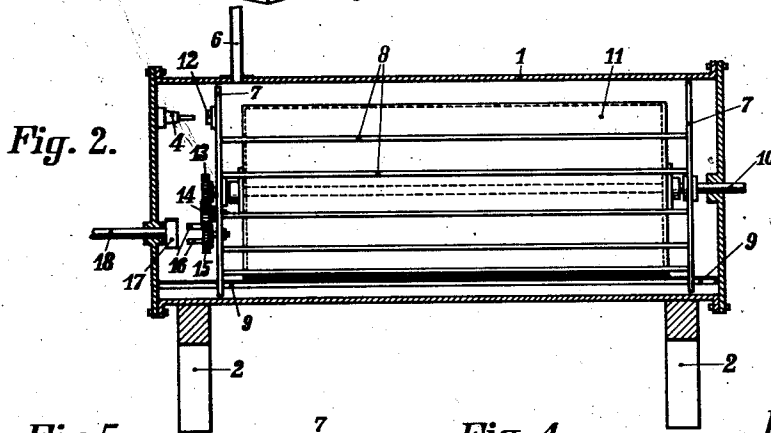
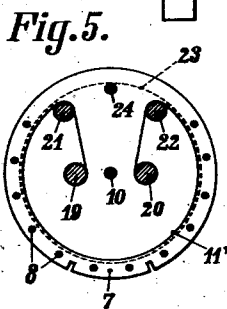
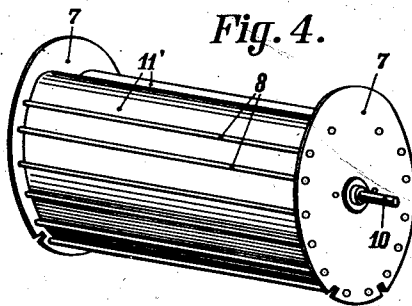
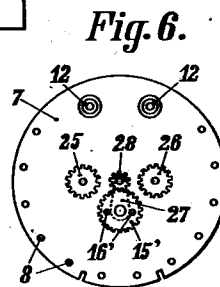


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G. E. SCHMIDMER ET AL
 DEVICE FOR METALLIZING TEXTILE FABRICS AND THE LIKE BY MEANS OF
 DISINTEGRATION OF CATHODES
 Filed Aug. 29, 1924



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UNITED STATES PATENT OFFICE.

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GERMANY.

DEVICE FOR METALLIZING TEXTILE FABRICS AND THE LIKE BY MEANS OF DISINTEGRATION OF CATHODES.

Application filed August 29, 1924. Serial No. 735,037.

To all whom it may concern:

Be it known that we, GEORG E. SCHMIDMER and GUSTAV GLEISSNER, citizens of the German Republic, residing at Nuremberg and Munich, Germany, have invented certain new and useful Improvements in Devices for Metallizing Textile Fabrics and the like by Means of Disintegration of Cathodes (for which patent application has been filed in Germany August 30th, 1923), of which the following is a specification.

In the art of metallizing textile fabrics and similar materials by means of cathodic disintegration great difficulty is experienced in placing the material to be metallized into the usual receptacle.

The object of our invention is to remedy this defect by means adapted to facilitate the handling of the apparatus and with this object in view we shape the material carrying member to form a separate body adapted to be inserted into the said receptacle and which in the following description shall be named the "insert". The electrodes are firmly attached to the insert, while the parts carrying the textile fabric or the like to be metallized are revolvably mounted therein.

The employment of an insert of the kind affords the possibility of arranging the parts in a manner that upon shifting the insert into the receptacle, the required electric connections will be automatically brought about and at the same time the material carrying member or parts will be coupled with the driving member. It is, therefore, only necessary to provide electric terminals passing through the walls of the said receptacle and corresponding to co-operating terminals provided in the insert at a suitable location, and to further provide a driving member adapted to impart motion to the insert and mounted to pass air-tight through the wall of the receptacle. If these requirements are complied with, only the insert is to be introduced and the receptacle to be closed in order to have the apparatus in operative condition.

In order that our invention may be clearly understood a more detailed description will now be given and reference will be made to the accompanying drawings in which:—

Fig. 1 is a perspective view of one type of apparatus constructed according to this invention, the receptacle being partly broken

out and the insert being partly introduced. 55

Fig. 2 is a longitudinal vertical section of a modified type in which the driving member is located eccentrically with respect to the axis of the rotary insert shaped to form a drum or cylinder for the reception of the material to be treated. 60

Fig. 3 is an end view of the insert shown in Fig. 2.

Fig. 4 is a perspective view of the insert modified by the provision of rolls therein for the material to be wound thereon. 65

Fig. 5 is a cross-sectional view of the insert illustrated in Fig. 4 and

Fig. 6 is an end view thereof viewing the end plate supporting the driving member and the electrode connections. 70

Referring to Figure 1 the receptacle 1 is in the shape of a hollow cylinder or drum supported by suitable bottom bearings 2. The one end wall is bored at several places for the reception of the electrode connections or terminals 3 and 4 and the driving member 5 and the said parts 3, 4 and 5 are mounted in the several bores so as to be air-tight enclosed therein. 6 designates a short tube in the top of the drum 1 for the attachment of a conduit in connection with a vacuum-pump. Obviously the insert has two end plates 7 of which only one is shown in Fig. 1. The two end plates 7 are rigidly connected with each other and the electrodes 8 extend therebetween. On the inner face of the drum 1 two longitudinal ribs 9 are provided—only one being shown—and the end plates 7 of the insert are recessed at the bottom conformingly so that when the insert is to be introduced into the drum, the ribs 9 will engage in the recesses of the end plates 7 and the insert will always have the same position with relation to the drum 1 when housed in the latter. 85

A shaft 10 is duly supported in central holes of the two end plates 7 and a hollow cylinder or drum 11 is rigidly connected or keyed to the shaft 10 so as to rotate therewith. The drum 11 receives the material to be treated and is adapted to engage and be coupled with the driver 5, when the insert is fully housed within the drum 1, so as to rotate therewith. On the left hand end plate of the insert contacting means are provided to coact with the elec- 105

trode connections 3 and 4, as will be readily understood by persons versed in the art, the guiding ribs 9 acting to always bring and hold said means in correct co-operating position with regard to the connections or terminals 3 and 4.

The particular construction of the insert is illustrated in Figures 2 and 3 but the driver is shown in Fig. 2 to be displaced with regard to the axis of the insert or the shaft 10 thereof. Inasmuch as the parts in Figs. 2 and 3 are the same as in Fig. 1 the same reference characters are used in the figures.

Figs. 2 and 3 clearly show the electrode connections or contacts 12 on the left-hand end plate 7 of the insert. Keyed to the shaft 10 is a toothed wheel 13 engaging with a gear 14 properly journaled to a pin in the plate 7 and in turn meshing with a toothed wheel 15 having two driving pins 16 adapted to engage a driver 17 provided at the inner end of the driving shaft 18 supported in an air-tight bearing of the end wall or plate of the drum 1. The described gearing thus transmits motion from the shaft 18 to the drum 11 when the insert is sufficiently pushed in so that the parts 16, 17 and 3, 4, 12, respectively, engage each other.

The electrodes 8 are electrically connected with each other in alternation and the two sets of electrodes thus obtained are connected to the two contacts 12, that is to say, the one set to the one and the other set to the other one of the two contacts 12. The corresponding terminals 3 and 4 are in connection with a high tension line.

In operation the drum 1 is evacuated by means of the pump hereinbefore mentioned and then the drum 11 is caused to revolve through the agency of the shaft 18 driven from any suitable source of power. At the same time current is switched on to pass through the terminals 3 and 4. The metallic electrodes are thereby caused to disintegrate more or less and to yield minute particles of metal in the form of dust, as is generally known in the art, and the metallic dust thus produced deposits on the material under treatment. The latter is wound or stretched over the drum 11.

In the modification illustrated in Figs. 4 and 5 the drum 11' carrying the material to be treated is not fully closed at its periphery and winding rolls 19, 20 are provided within the drum for the material to be stretched over the peripheral surface of the drum 11'. 21 and 22 denote two guiding rolls, 23 is a pattern cylinder or sheet arranged to enclose the drum 11', and 24 is a guiding rod to support the portion of the pattern cylinder or sheet which is not in contact with or supported by the periphery of the drum 11'.

Keyed to the outer ends or pins of the winding rolls 19 and 20 are toothed wheels 25 and 26, respectively, and on a pin projecting from the end plate of the drum 11' a gear 15' is mounted. The latter is provided with two coupling pins 16', as will be clearly seen in Fig. 6, adapted to engage a driver projecting into the receptacle or drum 1, in a similar manner as the driver 17 shown in Fig. 2.

On the pin carrying the gear 15' an arm 27 is frictionally mounted and the arm 27 carries a toothed wheel 28 meshing with the gear 15'. When the gear 15' is rotated there will be a tendency for the arm 27 to also rotate whereby the toothed wheel is caused to engage, according to the rotary direction of the gear 15', either the wheel 25 or the wheel 26 and consequently the revolutions of the gear 15' are transmitted to either the winding roll 19 or the winding roll 20. Thus, it will be seen, a means is provided for unwinding the material to be treated from the one roll and winding it at the same time on to the other roll or vice versa.

As the pattern cylinder or sheet 23 is stretched to be in intimate contact with the drum 11', the same partakes in the rotary motion of the latter. In this way any desired patterns may be produced on the material to be treated since the fine metallic particles cannot deposit thereon except at those places which are not covered by the sheet, that is to say, the pattern thereof, whereas all those places which are covered by the body of the sheet remain free from metallic dust.

In the embodiment shown in Figures 1 to 3 the length of the fabric to be treated is limited to the periphery of the drum 11 whilst the embodiment illustrated in Figs. 4 to 6 enables a piece of fabric of greater length to be metallized if desired. By suitably guiding the fabric it will be possible to have all of the disintegrated metal deposit on the fabric.

It is apparent that in carrying out our invention some changes from the constructions herein shown and described may be made. We have not attempted to explain all of the minute details of the construction of the device, for it will be understood by those to whom this specification is addressed that the parts will necessarily be of the proper size and relationship and will be properly mounted and supported according to the tenets of machine construction. Nor does it seem necessary to burden this specification with an exposition of the advantages which the invention possesses for they will be apparent to those skilled in the art to which this invention relates.

In particular we wish it to be understood that the invention is not limited to the pre-

cise construction set forth, but includes within its purview such changes as may be made within the scope of the appended claims.

5 What we claim is:—

1. Device for metallizing a flexible material particularly of textile nature, comprising a receptacle or chamber adapted to be evacuated, electric terminals inside of said vacuum chamber, an insert removably placed into said vacuum chamber, a carrier for the flexible material to be metallized rotatably mounted within said insert, electrodes firmly connected with said insert, electrical contacts electrically connected with the said electrodes and adapted to become electrically connected with said terminals on shifting the insert into the vacuum chamber, means for driving the said carrier and means for actuating the said driving means substantially as and for the purpose set forth.

2. Device for metallizing a flexible material particularly of textile nature, comprising a receptacle or chamber adapted to be evacuated, electric terminals inside of said vacuum chamber, an insert removably placed into said vacuum chamber, a carrier for the flexible material to be metallized rotatably mounted within said insert, electrodes firmly connected with said insert, electrical contacts electrically connected with the said electrodes and adapted to become electrically connected with said terminals on shifting the insert into the vacuum chamber, two rollers rotatably mounted in said carrier for opposite ends of the material to be wound thereon, a guide member provided in said carrier and driving means for actuating the rollers substantially as and for the purpose set forth.

3. Device for metallizing a flexible material particularly of textile nature, comprising a receptacle or chamber adapted to be evacuated, electric terminals inside of said vacuum chamber, an insert removably placed into said vacuum chamber, a drum for carrying the material to be treated, rotarily mounted within said insert, electrical contacts electrically connected with the said electrodes and adapted to be electrically connected with the said terminals, two winding rollers rotatably mounted in said drum, guiding rollers and means for driving the said winding rollers, substantially as and for the purpose set forth.

4. Device for metallizing a flexible material particularly of textile nature, comprising a receptacle or chamber adapted to be evacuated, electric terminals inside of said vacuum chamber, an insert removably placed into said vacuum chamber, a drum for carrying the material to be treated, said drum having an opening along a portion of its periphery and being rotarily mounted within said insert, electrical contacts electrically connected with the said electrodes and adapted to be electrically connected with the said terminals, two winding rollers rotatably mounted in said drum, guiding rollers, a pattern sheet or stencil to cover the material under treatment, means in the said opening for supporting the pattern sheet, and means for driving the said winding rollers, substantially as and for the purpose set forth.

In testimony whereof, we affix our signatures.

GEORG E. SCHMIDMER.
DR. GUSTAV GLEISSNER.