

PATENT SPECIFICATION

298,300

Application Date: July 25, 1927. No. 19,678/27.

Complete Accepted: Oct. 11, 1928.

COMPLETE SPECIFICATION.

Process and Device for the Preparation of Stamped Sheets or Plates, especially Gramophone Plates.



I, HEINRICH GLAUE, of Siegfriedstrasse 2, Berlin-Lichtenberg, Germany, a German citizen, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to a process and device for the preparation of stamped sheets or plates, especially gramophone plates. In connection with such plates it has already been proposed to arrange upon a band of material a layer of artificial resin adapted to harden, and to feed the band intermittently through a stamping press to form a long roll of impressions which can be stored or cut up as desired.

The essential feature of the invention consists herein, that a base in the form of a band, made of paper or the like non-woven material, is combined with an upper band also of non-woven material which is coated with a mass adapted to harden and is intermittently passed into a press and stamped so as to imprint the records and combine the two bands in a single operation.

The advantage of this procedure consists herein, that in addition to the full favourable action of the most uniform impressing possible, such as is obtainable with a toggle-press, a very rapid working is facilitated, while all adaptations called for by various requirements, such for instance as the exactly measured heating of the impressed articles, are completely feasible, to such an extent that the preparation of such products as gramophone plates is rendered possible approximately with the rapidity of a rotary press.

A valuable constructional detail in the practice of the new process consists in passing through the press, together with the base-band, a separate mass-carrier band made of blotting paper or similar material. In this manner is produced an exceedingly uniform distribution of the mass in favourable thicknesses of layers and suitable for impressing. Also further steps are hereby rendered feasible, such particularly as rolling and storing the band which is saturated with the

mass, before the impressing: herewith is obtained on the one hand a good preliminary drying of the mass-band and to a certain extent an equalising of the entire stratified condition of the band, and, on the other hand, owing to the fact that the mass-bands can be used from stock, the working of the press can be made independent of the chemical preparation and from the disposition of the mass, so that hereby also the work is accelerated and the operation rendered more reliable.

A further detail which has been found valuable in carrying out the process when only one side of the band is to be coated, consists in storing the finished band with the layer of the mass rolled on the inner side, and in some cases with the opposite side moistened. Hereby the natural tendency of the band to be rolled with the layer outwards is counteracted and any supplementary handling which otherwise would be necessary for the smooth laying of the sheets or plates becomes superfluous.

The device for working the new process may be constructed and arranged in various ways, of which one example is particularly described with reference to the accompanying drawing, the single figure of which is a simplified central section of the lay-out:—

Referring to the drawing, a toggle-press is shown comprising two lateral uprights or standards 1, connected by a lower transverse beam 2, and an upper transverse beam 3 connected with the uprights by columns 4 on both sides. On the upper transverse beam 3 is arranged an upper swage adapted to be heated and carrying the matrix, this swage consisting of a ribbed hollow body 5 with cover 6 containing in the hollow spaces an electric heating resistance 7. This is subdivided into several units so that an increased heating action is adjustable for rapid heating, and after reaching, for example, a temperature amounting to 180° a reduced heating temperature serving for maintaining the temperature reached is adjustable by a smaller current consumption, for which additional

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resistance steps may be provided for fine regulation.

In the press an impressing table 8 is guided and vertically movable, and for vertically raising it two toggle levers 9 and 10 are used, which are provided at their common joint with a cam roller 11. For pressing this cam roller in against the toggle levers a cam disc 12 is provided on a main driving shaft 13, which is driven by a geared shaft 14 through a double reduction drive, not shown so as to avoid complicating the drawing. The impressing table 8 can in this manner be moved against the matrix with a very high pressure which is adjustable by inserting suitable additions upon the table 8 or between the upper swage 5, 6 and the upper cross beam 3.

For passing the band through the press the following devices may be employed. First a holding roller 15 loaded with an adjustable spring is arranged on the impressing table at the admission side. This roller holds the paper band firmly in opposition to casual forces which occasionally may be set up by the idle running back of the drawing device, so far as the matrix itself fails to have this holding effect. On the outlet side a guide roller 16 is arranged on an extensible frame 17 of the impressing table, which also acts as a guide for a slide 18. This slide 18 carries upon a transverse rod lower grippers 19 of rubber, and also carries upper rubber grippers 20 arranged in a similar manner upon a transverse rod which is vertically movable in levers 21 adapted to swing on both sides. A pair of levers 22 is provided for displacing the slide 18 upon the guide 17, these levers being pivotally connected to the machine frame at 23 and driven by a pair of push rods 24 which engages a forked lever 25 in such a way that the engaging bolt can be adjusted in different holes 26, for the purpose of adjusting the stroke for different sizes of the surfaces to be impressed. The forked lever 25 is supported pivotally at 27 on the machine frame and is driven by an eccentric 28 (or a curved disc) mounted on the main shaft 13 and acting upon a push rod 29. This rod engages a pin 30 of the forked lever, not directly but with the intermediate connection of an auxiliary device for the fine adjustment of the length of the stroke and for displacement to the exact position.

This auxiliary device contains a main eccentric 31, the eccentricity of which is arranged essentially in the direction of the push rod 29, and thereupon is mounted an outer eccentric 32, the eccentricity of which is arranged essentially at right

angles to the direction of the push rod 29. The main eccentric 31 is provided with a lever 33 and the outer eccentric 32 with a lever 34, and the levers are adjustable, as shown, by connections after the manner of tension locks with knurled heads 35 and 26, relatively to the forked lever 25 and to one another. A displacement of the main eccentric by means of the knurled head 35 gives an alteration of the length of the active lever arm of the push rod 29 relatively to the pivot pin 27 of the forked lever 25, for the most accurate adjustment of the band-drawing arrangement. A displacement of the outer eccentric 32 by means of the knurled head 36 alters on the other side the medium length of the push rod 29 and hereby facilitates a single displacement of the paper band for obtaining the required action accurately when opposite to the matrix; these adjustments can be further regulated at any time in the operation. For the displacing lever 34 the tension lock connection with the knurled head 36 may be provided relatively to the eccentric strap of the push rod 29, in case this permits of better adjustment, instead of relatively to the stroke-varying lever 33 of the main eccentric.

For putting out of action the upper gripper 20 which is pressed downwards by spring pressure a lift-rod 37 is connected to one of the swinging levers 21 of the same, and is linked to a cam lever 38 which carries a roller 39 in contact with a cam disc 40 on the main driving shaft 13. The eccentric 28 (or cam disc when employed instead thereof) and the last mentioned cam disc 40 are so formed that they pass the grippers over the guide 17 in the closed condition, with the necessary advancing movement of the band in the direction of the arrow, while the impressing table 8 descends, and that the opposite movement takes place with open grippers while the impressing table completes the impressing in its highest position. The cam disc 12 of the drive for the press is so formed that it holds the impressing table 8 in the highest position for, say, 2 to 4 seconds, sufficient for the impressing and warming through, then effects the withdrawing movement, in some cases a brief stop, and then the impressing movement.

For supplying the band or bands an upright 41 is used which is arranged in front of the press. In the example illustrated this upright carries upon an unwinding shaft 42 a roll of the base-band which is provided with printing thereon, for example with any usual

inscriptions and pictures, such as are used on gramophone plates. Upon a second unwinding shaft 43, arranged over the shaft 42, is provided a mass-carrying band, which is taken from store and consists of good blotting paper impregnated with an artificial resinous mass adapted to harden, so that the two bands are laid one over the other and pass through the press together. In case it is required to work with a freshly impregnated mass-band, an impregnating trough is then arranged in front of the upright 41, in which trough the mass-carrier band passes over rollers and between wiping rollers through the mass, in order then to pass over the upper unwinding shaft 43, or instead thereof, over a guide roller, to the press.

For the accurate execution of the process an indicating mark 44 is arranged on the impressing table 8, and opposite this corresponding marks of the base-band are temporarily arranged, in order to obtain neat coincidence of the inscribed design with the following impressing. Similar upstanding marks may also be provided as an accurate lateral guide of the band, in order in this direction also to ensure the neat coincidence.

The finished impressed band runs behind the press to a winding-up standard 45. This carries upon a shaft 46 freely rotatable a winding-up roller 47, and this is connected to a pulley 48 by friction surfaces pressed axially with springs, the pulley being connected by a belt 49 to a smaller pulley 50 on the driving shaft 14. Hereby the issuing band is kept always in tension with the small power of the friction coupling and on the advancing movement of the grippers 19, 20 is wound up as shown, the side carrying the layer being represented as directed inwards, while the backing is outside and is easily moistened by a moistening device 51, for example a sponge in a water trough. If the finished wound up band is then placed in store until it is dry the separate plates after being cut off take on an almost completely even form, by reason of which they are fit for use without further work upon them.

In case it is desired to prepare double-sided impressed bodies no fundamental alteration of the procedure is necessary. In the supply standard 41 an additional winding-up shaft is provided under the main winding-up shaft in order to attach a mass-band to the lower side also of the base-band; also upon the impressing table 8 a heatable swage is laid with matrix corresponding to swage 5—7. The nature of the winding upon the winding-up drum 47 is just the same, but the

moistening device 51 is omitted, while the stamping out of the separate plates can proceed in just the same manner. This stamping out, and in some cases the provision of a central hole, as is usual in gramophone plates, can be carried out directly in the press by making the press carry out the cutting action after the manner of a compound swage with insertion. In case the production of a continuous band with coherent impressed plates is also required from the press, instead of completely cutting off a plate only a perforation may be provided, or in every case a few connecting webs may be left between the separate plates cut off and the remaining parts of the band.

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:—

1. Process for the preparation of stamped sheets or plates especially gramophone plates, by arranging a hardening layer upon a base, hereby characterised, that a base in the form of a band, made of paper or the like non-woven material is combined with an upper band also of non-woven material which is coated with a mass adapted to harden and is intermittently passed into a press and stamped, so as to imprint the records and combine the two bands in a single operation.

2. Process according to Claim 1, hereby characterised that a mass-carrier band of blotting paper or similar material is passed through the mass intended to harden and is then passed through the press together with the base-band.

3. Process according to Claim 1 or Claim 2, hereby characterised that the band coated with the mass is rolled and left in store for some time before impressing.

4. Process according to Claim 1, 2 or 3, hereby characterised that the finished band, when only coated on one side, is laid in rolled condition with the layer-carrying side inwards, preferably with the opposite side moistened.

5. Device for carrying out the process according to Claims 1—4, hereby characterised that a press working with a movable upper or lower swage is provided with means for intermittently drawing forward a base-band between the strokes of the press in front of which a band-roll carrier is arranged.

6. Device according to Claim 5, hereby characterised that the press is formed as a toggle-lever press with a cam roller pressing the joint of the toggle-levers towards the extended position, which cam

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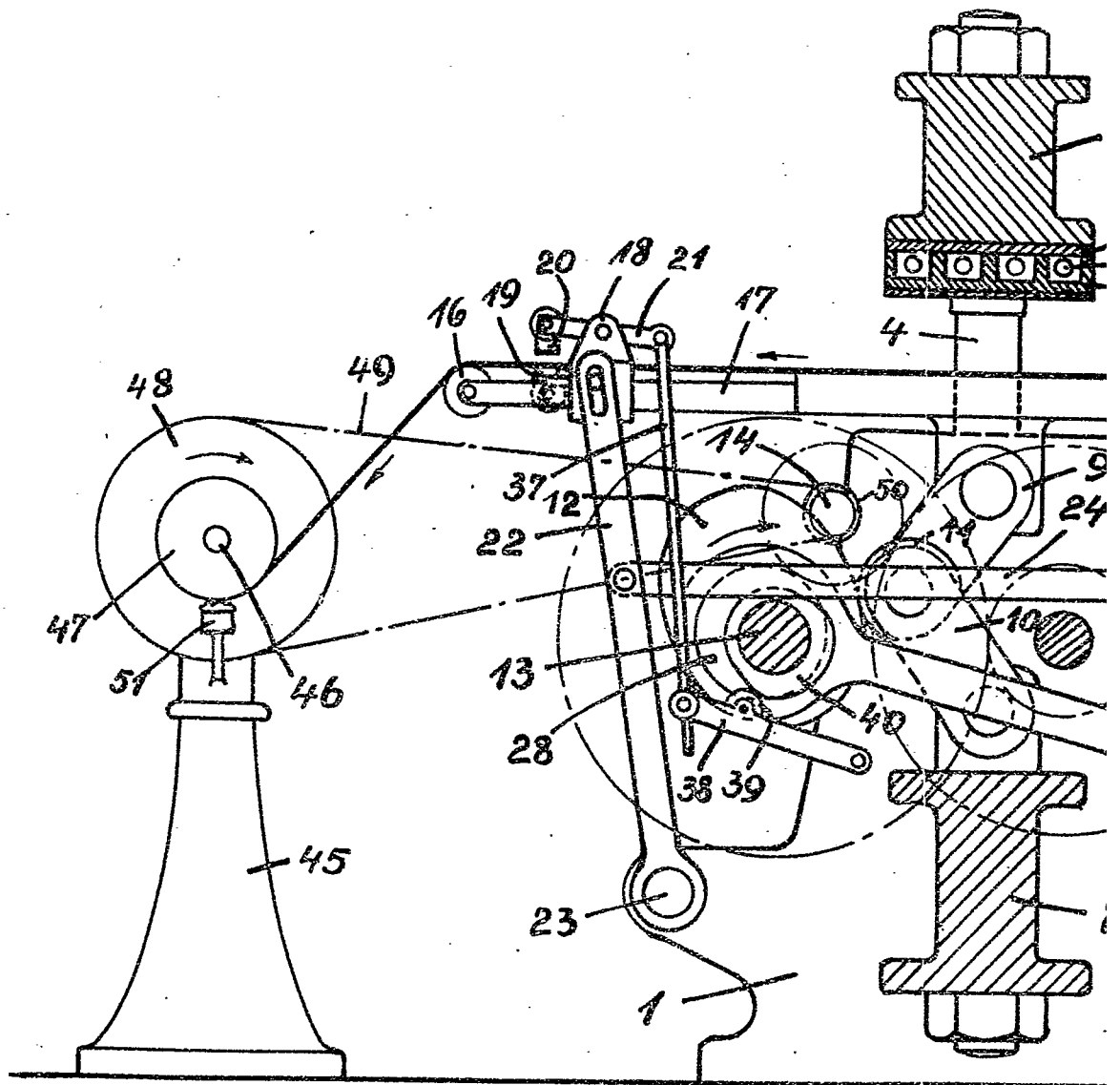
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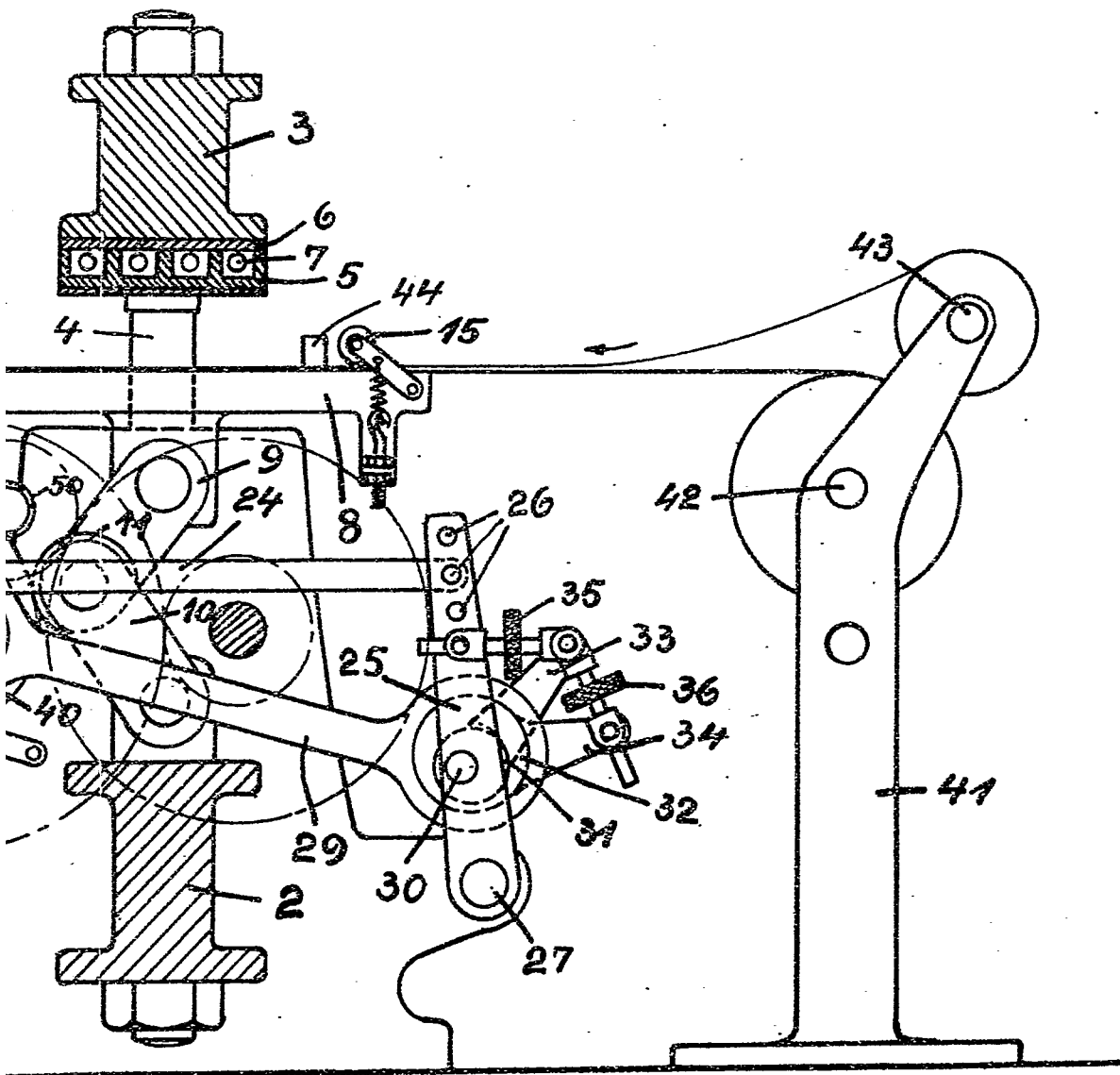
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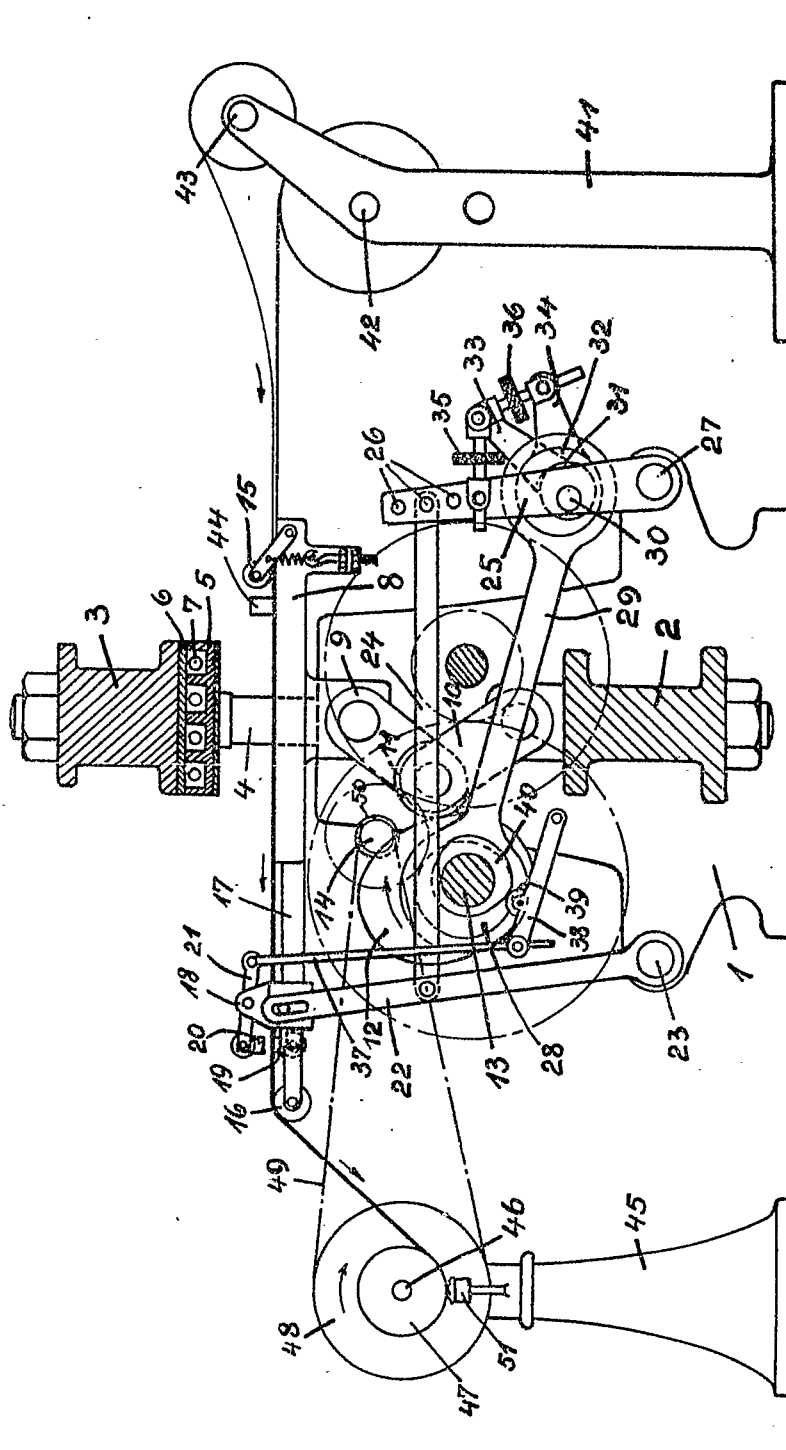
- by a circular portion of the periphery produces the stoppage of the press swage necessary for advancing the band, and in some cases by means of a second circular portion of the periphery produces a stoppage of the press swage in the impressing position necessary for the finished impressing.
7. Device according to Claim 5 or 6, hereby characterised that the swage for acting upon the mass is heated and preferably by forming it hollow and inserting an electric heating body between the ribs or pins of this hollow space which transmit the pressing pressure.
8. Device according to Claim 7, hereby characterised that the heating bodies are adapted to be connected for two steps of heating, namely, powerful heating action for the initial heating and a predetermined weaker heating action adapted for maintaining the necessary temperature.
9. Device according to any of the Claims 5—8, hereby characterised, that the device for the intermittent drawing forward of the band contains a wing or the like driven by means of a curved disc and adapted to seize the band with grippers, to carry out the forward movement during the release of the press, and the backward movement during the impressing.
10. Device according to Claim 9, hereby characterised, that the grippers are mounted on a gripper frame closed by locking springs and a rod engaging thereon provides the release of the grippers, during the back stroke of the same, by means of a cam driven by the press.
11. Device according to any one of the Claims 5—10, hereby characterised, that a winding drum driven by means of a friction coupling serves for the automatic winding-up of the impressed band, the friction coupling being adjusted with so little friction that it does not overcome the action of the grippers or other means in holding the band stationary.
12. Device according to any one of the Claims 5—11, hereby characterised, that for the accurate adjustment of the band-advancing arrangement means are provided for the alteration of the amount of the advancing stroke and means for its displacement in the direction of movement.
13. Device according to Claim 12, hereby characterised, that the means for the alteration of the amount of the displacement of the device are in the form of a double eccentric (or corresponding cranks) inserted in the driving rods of the band-advancing connection, of which the main and outer eccentrics have their eccentricities lying in directions approximately at right angles to one another.
14. Device according to Claim 12 or 13, hereby characterised, that on the impressing table an indicator is provided and upon the band, especially when it has a printed design thereon, marks are provided in such a manner that in the operation the correct coincidence of the design with the impressing action is continuously kept in view, and in case of necessity the forward action can be regulated.
15. Device according to Claim 5, and to any of the Claims 6 to 14, constructed, arranged, and operating, substantially as described with reference to the accompanying drawing.

Dated this 25th day of July, 1927.
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 Chartered Patent Agents.

[This Drawing is a reproduction of the Original on a reduced scale.]







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