G. SEYBOLD.

STAMPING PRESS.

APPLICATION FILED JAN. 31, 1912.

1,132,689.

Patented Mar. 23, 1915.

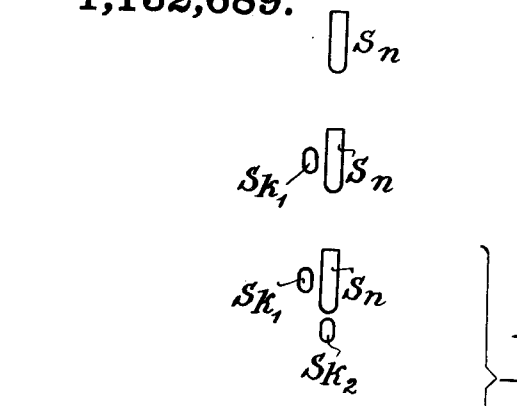


Fig. 2

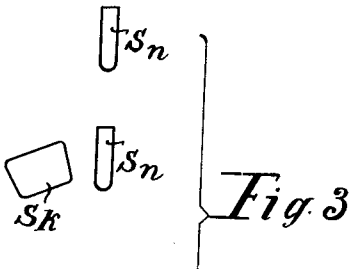
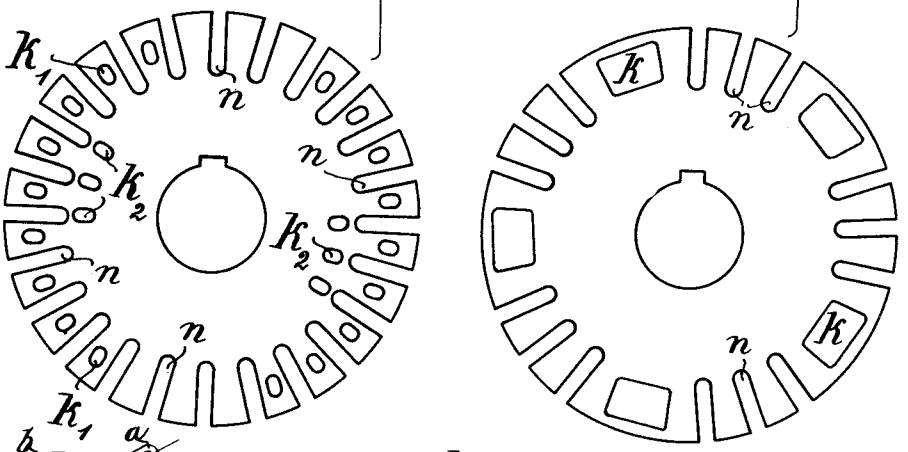


Fig. 3



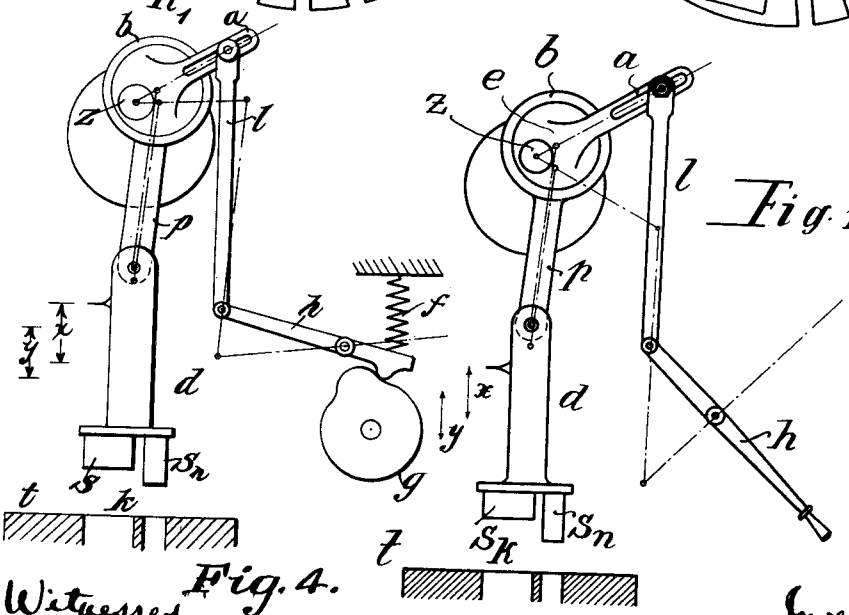


Fig. 1

Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

GEORG SEYBOLD, OF CHARLOTTENBURG, GERMANY, ASSIGNOR TO SIEMENS-SCHUCKERT WERKE, G. M. B. H., OF BERLIN, GERMANY, A CORPORATION OF GERMANY.

STAMPING-PRESS.

1,132,689. Specification of Letters Patent. Patented Mar. 23, 1915.

Application filed January 31, 1912. Serial No. 674,507.

To all whom it may concern:

Be it known that I, GEORG SEYBOLD, a subject of the German Emperor, and residing at Charlottenburg, near Berlin, Germany, have invented certain new and useful Improvements in Stamping-Presses, of which the following is a specification.

My invention relates to presses for cutting holes and incisions in sheet-metal, particularly in sheet-iron for electrical machines, in which a number of incisions or holes of various shape and in various positions is required. This is the case, for example, in disks which, in addition to the incisions constituting the winding grooves after the disks have been assembled, are provided with holes or incisions for forming the ventilating ducts or grooves for the compensation winding or the like. Such disks have heretofore been made by inserting various punches in succession into the press and making therewith the various incisions, it being left to the attention of the workman operating the press to place the disks in the correct position each time so that the prescribed distribution of the incisions is obtained.

A primary object of my invention is to provide a stamping-press which enables the required incisions to be cut in their required relative positions in one operation in sheet-metal which is fed intermittently. To this end, I provide the follower or plunger of the press with several punches which correspond in shape and reciprocal position to the various incisions required to be cut in the sheet-metal. The individual punches, however, project different distances from the plunger, and consequently enter various depths into the sheet-metal which is being worked. The remaining mechanism of the stamping-press is so arranged that the movement of the punches can be varied relatively to the sheet-metal or table either by making the average distance of the punches from the table variable, in which case the stroke of the press will remain constant, or by varying the stroke of the punches. By causing one or more of the punches to operate all the incisions which can be cut by the press can be made in any desired order.

One illustrative embodiment of my invention is diagrammatically represented by way of example in the accompanying drawing, wherein:—

Figure 1 is a vertical elevation showing a machine according to my invention; Figs. 2 and 3 show dynamo disks punched by the press, and corresponding detail views showing the various combinations of punches used for stamping each disk. Fig. 4 shows the automatic adjustment.

Referring firstly to Fig. 1, s_k and s_n designate two punches attached to the common follower or plunger d which is driven up and down in known manner by the pitman p of crank gear comprising the crank-pin z. The stroke is here constant, for example, but the average distance between the plunger and the table t can be varied. This is done in the illustrative embodiment by rotating the eccentric e surrounded by the strap b of the pitman p. By adjusting the eccentric e and the strap b relatively to one another the operative length of the pitman p can be varied so that, as indicated by the double arrows x and y, when the stroke remains constant the average distance of the plunger d from the table t is varied. Now in order certainly and rapidly to be able to adjust the eccentric e relatively to the strap b without stopping the machine the eccentric e is provided with a slotted arm a to which a link l is adjustably and pivotally attached. The position of this link is determined by the operating lever h which can be fixed in various positions. The connection of the lever h with the eccentric e in the illustrative embodiment causes small deviations from the above described mode of operation which however are not important. Instead of the described device a modified device may be employed which enables the movement of the punches relatively to the work-piece to be varied while the press is working.

Fig. 2 shows a rotor disk which can be made with the improved press. In the first place the disk has uniformly distributed slots or grooves n. In addition, at some parts of the disks holes k_1 for constituting cooling ducts are provided in the teeth, while at other parts additional holes k_2 for forming other cooling ducts are punched. Consequently, when cutting this disk by means of my improved press three different sets of incisions have to be made to which three different punches belong whose sections and relative positions are shown in the upper part of Fig. 2 and designated s_n,

s_{k1} and s_{k2}. Of these punches united in the stamping-press s_n is the longest, s_{k1} the middle and s_{k2} the shortest. By causing the longest punch to enter into the disk various depths the desired incisions can be produced at any place.

Another example is shown in Fig. 3 which shows the grooves or slots n not uniformly distributed, but arranged in groups, the greater parts of the periphery not being incised, while large perforations k are cut for the cooling ducts. In this case only two different punches are required which are shown above in Fig. 3 similarly to the punches s_n and s_{k1} in Fig. 2.

In the above it has been assumed that the operator always brings about the adjustment at the correct moment by means of the manual lever h. But as the strokes of the stamping-press generally follow one another rapidly, under certain circumstances it may be preferable to change the position automatically. To this end as shown in Fig. 4 it is only necessary to form a rotating part of the machine as a cam and to cause the same to place the operating lever h or an equivalent member in the correct position for the time being.

As will be readily understood very various figures can be stamped out by the described machine, and when sheet-metal for other purposes than for electrical machines is to be stamped some or all of the punches may be used as dies for producing impressions only instead of actually incising the sheet-metal. It is to be understood therefore that the terms stamping and punching include the ideas of impressing and embossing.

I claim:—

1. In a stamping press the combination with a supporting table adapted for the forward feed of a work piece an actuating means, a plunger reciprocated thereby toward and away from said table, and a set of punches carried by said plunger and projecting toward the table with their operating faces at respectively different distances from said table; of means for varying the operative connection between said plunger and its actuating means during the continued operation of the press to bring a variable predetermined number of said punches into operative engagement with the work piece supported by said table.

2. In a stamping press the combination with a supporting table for the forward feed of a work piece, an actuating means, a plunger reciprocated thereby toward and away from said table and a set of punches carried by said plunger having their operating faces at respectively different distances from said table; of automatic means for causing the reciprocation of said plunger to bring a variable predetermined number of said punches into periodical operative engagement with the work piece supported by said table.

3. In a stamping device the combination with a supporting table for the forward feed of a work piece, an actuating means, a plunger reciprocated thereby toward and away from said table, and a set of punches carried thereby having their operating faces at respectively different distances from said table; of means for periodically varying the normal position of said plunger to bring a variable predetermined number of said punches into operative engagement with the work piece supported by said table.

4. In a stamping press the combination with a supporting table for the forward feed of a work piece, an actuating means, a plunger reciprocated thereby toward and away from said table, and a set of punches carried thereby with their operating faces at respectively different distances from said table; of automatic means for periodically adjusting the stroke of said plunger to bring a variable predetermined number of said punches alternately and in a predetermined succession into operative engagement with the work piece supported by said table.

In testimony whereof, I have signed my name to this specification in the presence of two witnesses.

GEORG SEYBOLD.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.