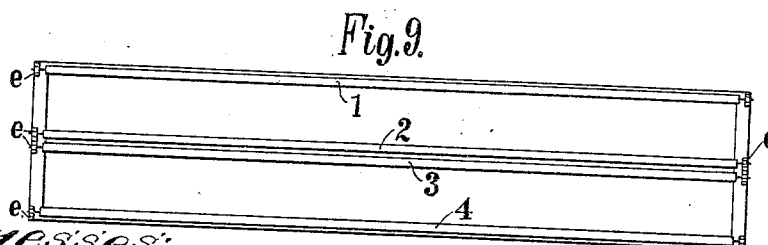
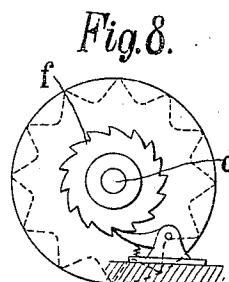
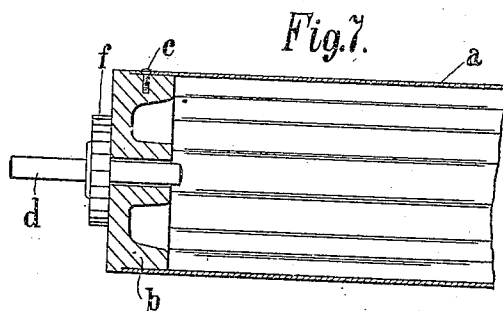
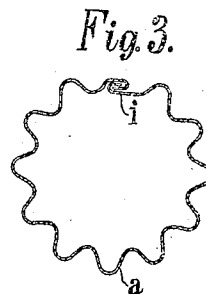


R. ZAHN.  
EMBROIDERING MACHINE.  
APPLICATION FILED MAR. 15, 1906.

941,123.

Patented Nov. 23, 1909.



*Witnesses:*

*Carl M. Crawford*  
*L. Waldman*

*Inventor:*

*Robert Zahn*  
*by B. Singer*  
*Attorney*

# UNITED STATES PATENT OFFICE.

ROBERT ZAHN, OF PLAUEN, GERMANY.

## EMBROIDERING-MACHINE.

941,123.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed March 15, 1906. Serial No. 306,246.

*To all whom it may concern:*

Be it known that I, ROBERT ZAHN, subject of the German Emperor, residing at Plauen, in the Kingdom of Saxony and Empire of Germany, have invented certain new and useful Improvements in Embroidering-Machines, of which the following is a specification.

This invention relates to embroidering machines, and more especially to the cloth-roller thereof, which latter serves for the purpose of stretching or tightening the material to be embroidered over all the breadth of the machine and keeping it smooth. Formerly these cloth-rollers were made of wood or smooth steel; however both constructions have the drawback of great weight and expensive manufacture, which drawbacks increase with the length of the roller, especially wooden rollers being apt to break and grow crooked.

Embroidery machines of former construction, as is well known, are about 5 yards in breadth, while the present machines, on the contrary, seldom are of less breadth than 10 yards. The weight of the embroidery-frame in the latter construction amounts to about 1400 pounds, including the wooden cloth-rollers and the fabric spread out on the latter. Of this weight about 350 pounds falls to the four rollers, the weight of smooth steel rollers being about the same as the latter are about two inches in thickness.

A great advantage of the present invention consists in the fact that in consequence of the small weight and great resistance thereof against bending and twisting, the embroidery-frame serving as support for the cloth-rollers also may be constructed much lighter, while it in the case of heavier rollers, or such of less resistance must be made somewhat stronger, to wit, heavier, so as to be able to suffice for the heavier mass to be supported, or to make up for the missing stability of the rollers.

Now the larger the total weight of the frame is the larger the counter-weight must be, the latter, as is well known serving for the purpose of balancing the embroidery-frame. Both weight-masses must be moved to and fro during the changing of the frame, and this is the reason why a lighter frame is preferred over a heavier one, no matter if the embroidery-frame is actuated by an embroiderer through the medium of a pantograph or in a self-acting manner. As it

is impossible to move a frame of greater weight than such required for the present 11 yards machine without spoiling the embroidery the breadth of the latter cannot be increased any more with the means hitherto known, and here the present invention comes in, enabling the construction of machines of over 11 yards in breadth by means of the ribbed sheet-iron roller.

The present cloth-roller is composed of very thin sheet-iron, for instance white iron-plate, on the outside of which longitudinal ribs are applied for providing it with sufficient stability; this is attained in a well known manner by drawing, stamping or rolling operation. In consequence thereof the cross-section of such a roller is not a complete circle.

In the annexed drawing the invention is illustrated.

Figures 1 to 6 represent several forms of construction of the roller in cross-section. Fig. 7 is a longitudinal section of one end of the roller and Fig. 8 an end-view thereof. Fig. 9 shows the general construction of an embroidery-frame with four rollers 1 2 3 4.

As to be seen from the drawing, especially Fig. 7, *a* is the roller of sheet-iron rigidly connected to a disk *b* at its end, for instance by means of screws *c* or soldering. The pin *d* keyed to said disk *b* serves for the purpose of supporting the roller in the bearings *e* of the embroidery-frame shown in Fig. 9. For the purpose of fixing the roller in a certain position when the embroidery is to be stretched a ratchet-wheel *f* is provided fixed to *b* and *d*, the latter being engaged in a well known manner by a pawl arranged on the frame, viz. Fig. 8.

For constructing the part *a* of the roller a piece of sheet-iron provided with longitudinal ribs may be used and the two longitudinal borders of the latter placed upon each other at *i* and folded or soldered together; however it will be preferable to make it without a seam by drawing as shown in Fig. 5. The broad longitudinal cavity *i*, Figs. 3 and 4, may be used for supporting the cloth-beam.

Having now fully described my invention I declare that what I claim is:—

1. An embroidering machine roller formed of a sheet of metal bent upon itself to form a cylinder, said sheet being provided with a plurality of alternately disposed cloth receiving portions and reinforcing portions,

said reinforcing portions being recessed with respect to said receiving portions, the free margins of said sheet being joined to make the roller uniform in cross section.

- 5 2. A cloth roller for embroidering machines consisting of a sheet of metal bent upon itself to form a cylinder, the metal being provided with a plurality of longitudinally disposed V-shaped stiffening ribs projecting inwardly from the periphery of the cylinder, said ribs being spaced apart from each other to form intervening cloth receiving surfaces of relatively increased width with respect to said ribs.
- 10 3. A cloth roller for embroidering machines consisting of a sheet of metal bent upon itself to form a cylinder, the metal being provided with a plurality of longitudinally disposed V-shaped stiffening ribs projecting inwardly from the periphery of the cylinder, said ribs being spaced apart from each other to form intervening peripheral cloth supporting surfaces of relatively greater width than the ribs, the meeting margins of said sheet of metal being joined in overlapping relation and together forming one of the cloth supporting surfaces.
- 15 20 25

4. A cloth roller for embroidering machines consisting of a sheet of metal bent upon itself to form a cylinder, the metal being provided with a plurality of longitudinally disposed V-shaped stiffening ribs projecting inwardly from the periphery of the cylinder, said ribs being spaced apart from each other to form intervening peripheral cloth supporting surfaces of relatively greater width than said ribs, the meeting margins of said sheet of metal being joined in overlapping relation and together forming one of said cloth supporting surfaces, one of said meeting margins being reduced in width with respect to the other surfaces and recessed with respect to the greatest diameter of the cylinder, the other margin being of less width than the other surfaces, said margins when joined forming a cloth supporting surface equal in width to the remaining cloth supporting surfaces thereby providing a uniform periphery.

30 35 40 45 50

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT ZAHN.

Witnesses:

ALBERT HANS,  
WM. H. H. SPIELMEYER.