

(No Model.)

R. A. SWOBODA.
MACHINE FOR ATTACHING FRINGE-BALLS TO THE BORDER OF
TEXTILE FABRICS.

No. 508,645.

Patented Nov. 14, 1893.

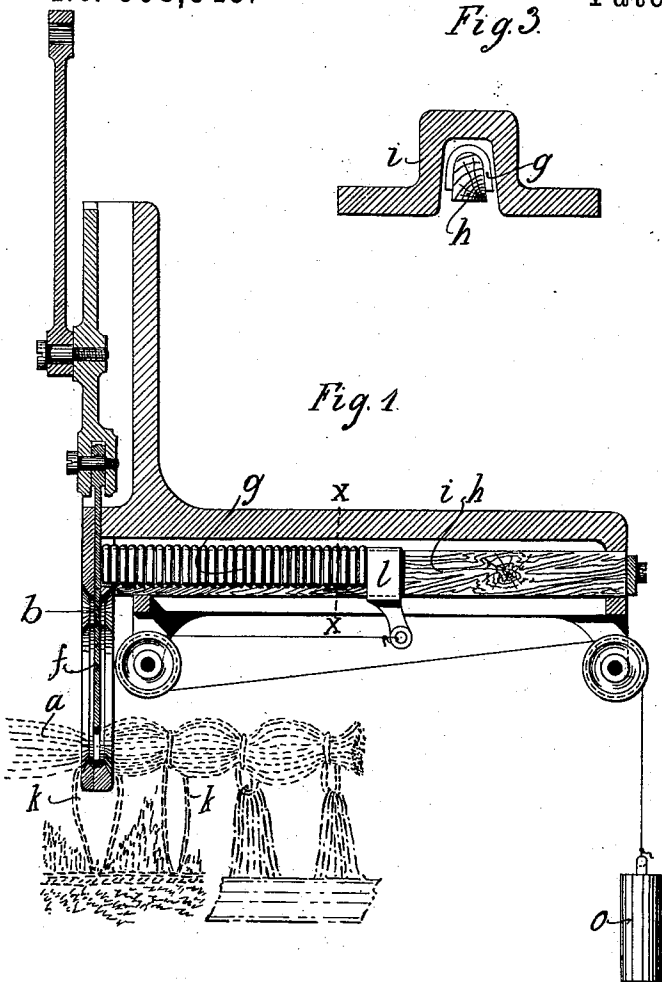


Fig. 1.

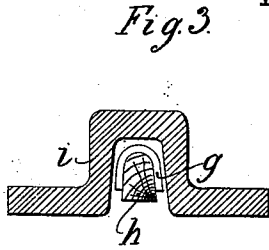


Fig. 3.

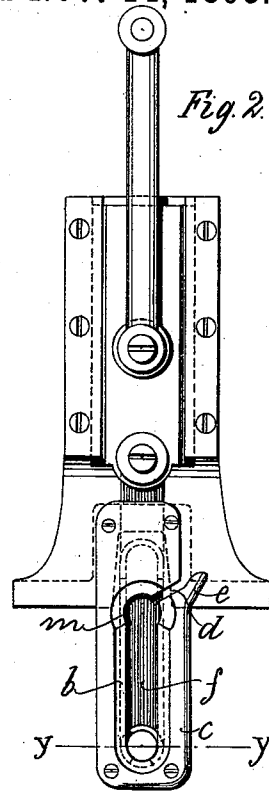


Fig. 2.

Fig. 5.



Fig. 6.

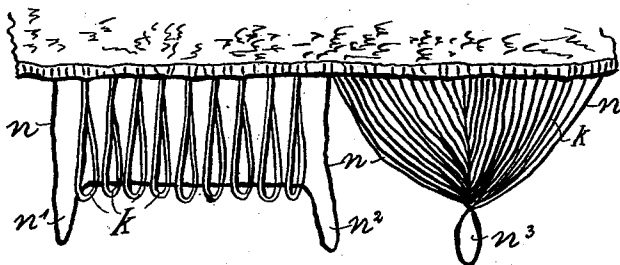
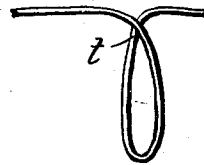
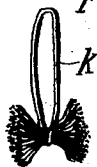


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

RICHARD AUGUST SWOBODA, OF ANNABERG, GERMANY.

MACHINE FOR ATTACHING FRINGE-BALLS TO THE BORDER OF TEXTILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 508,645, dated November 14, 1893.

Application filed November 2, 1891. Serial No. 410,661, (No model.) Patented in Germany October 10, 1891, No. 63,337; in England October 20, 1891, No. 17,998; in France October 23, 1891, No. 216,935; in Belgium October 24, 1891, No. 96,931, and in Austria-Hungary February 27, 1892, No. 49,749 and No. 83,496.

To all whom it may concern:

Be it known that I, RICHARD AUGUST SWOBODA, a subject of the King of Saxony, and a resident of Annaberg, in the Kingdom of Saxony, German Empire, have invented some new and useful Improvements in Machines for Attaching Fringe-Balls to the Border of Textile Fabrics, (for which patents have been granted in Germany, No. 63,337, dated October 10, 1891; in Great Britain, No. 17,998, dated October 20, 1891; in Austria-Hungary, No. 49,749 and No. 83,496, dated February 27, 1892; in France, No. 216,935, dated October 23, 1891, and in Belgium, No. 96,931, dated October 24, 1891,) of which the following is an exact specification.

My invention relates to an improved apparatus for effecting the attachment of balls of silk or similar material to the border of textile fabrics to form a fringe and the object of the same is to effect this attachment in a perfectly firm and reliable manner, and without impairing the mobility of the balls.

The methods hitherto employed had the defect either of allowing the balls gradually to get loose, so that the border or fringe became of bad appearance, or, if this defect was prevented by attaching the balls to the border by means of hooked pins, which fastened the ball to loops coming from the border, these pins impaired the appearance of the border by being visible, and also the mobility of the balls.

My improvement combines the advantages of those used hitherto, avoiding the defects they presented, and consists in securing the balls to the thread connecting the same with the border by means of a U-shaped hook of wire, which at the same time is used to form the balls out of a bundle of threads, as hereinafter more clearly shown.

I will now proceed to describe the construction and operation of my improved apparatus by the aid of the accompanying drawings, of which—

Figure 1 is a partly sectional side elevation of the machine embodying my invention. Fig. 2 is an end-view of the same. Fig. 3 is a cross-sectional elevation, taken on line $x-x$ of Fig. 1. Fig. 4 shows a single ball with a

loop of thread attached thereto. Fig. 5 is a sectional plan, taken on the line $y-y$ of Fig. 2. Fig. 6 illustrates a modification by which single balls are obtained. Fig. 7 shows a modification of the manner in which the balls are attached to the border.

Similar letters refer to similar parts throughout the several views.

The machine consists of a frame having an arm of U-shaped cross-section extending at right angles to the plane of the reciprocating needle or plunger f , which moves in a frame c , having a guide-way b . This frame is formed with a slot d and a hook e . At the place where the slot d connects with the guide-way b , the latter is somewhat widened, as shown at m . The guide-way b is a groove in the frame c , and the lower end of the groove is widened in such a manner that the groove is double at the bottom of the frame c . Within the arm i is a lath h adapted to receive the wire hooks or staples g , which are brought one after another in the path of the plunger f by the sliding carriage l , pressed toward the front end of the lath h by a weight o . The movement of the plunger f may be obtained in any convenient manner, for instance by means of a connecting-rod and a crank on a rotating shaft.

The bundle of threads a (Fig. 1) is inserted from the left into the oblong guide-way b (Figs. 1 and 2); a hook g is brought into the part c by the constant pressure exerted by the sliding carriage l . The lower portion of the groove provided in the same being somewhat widened as shown at Fig. 5, both ends of the hook, after having seized the bundle of threads a , are laid parallel one to another, thus forming a ring the extremities of the hook overlapping each other, as shown.

The loops k of the border are inserted through the slot d into the guide b , passing over the hook e , so as to be laid upon the bundle of threads a , every time the needle f is in its upper position. The U-shaped hook g , being then pressed down by the needle f , seizes the loop k , draws the same downward and secures it to the bundle of threads a , the latter being pressed together or narrowed at the same time, as will be seen in Fig. 1. At

every upward movement of the needle *f* the bundle of threads *a* is raised by hand and thus is carried to the somewhat widened opening *m* (Fig. 2). At this moment the bundle
 5 of threads *a* is moved to the right through the distance of two adjoining balls. At the same time the loop *k* is drawn out through the slot *d* and immediately afterward the next loop of the border is inserted, whereupon
 10 the operation begins again as described.

When the operation has been conducted from one end of the border to the other the bundle of threads *a* is cut into single balls by means of a knife, and the balls are finished in the usual manner by steaming. By
 15 the same method it is also possible to manufacture single balls with loops. Fig. 4 shows such a single ball before the same is steamed. The loops herein employed are, however, not
 20 attached one by one, but a suitable thread is made to form a loop in the manner shown in Fig. 6. The place *t* where the thread is lying cross-wise is passed over the hook *e*, and thus inserted into the guide-way *b* by one end of
 25 a U-shaped hook *g* seizing the loop and firmly securing the same to the bundle of threads *a*. In cutting hereafter the latter into single balls the thread between two loops is cut at the same time, and the operation is at an end.

30 There are two sorts of borders fitted with balls; in the first the loops or fringes to which the balls are secured, are provided only from space to space on the border, as shown in Fig. 1, while in the second they are distributed
 35 over the whole length of the same and converge toward the ball, so that the fringes have the form of a triangle fixed by one side to the border, as shown in Fig. 7.

In the first case the loops are directly secured to the balls, as described, whereas in
 40 the second this may also be effected by the interposition of a cord passing through the loops and fixed to the border at points at an equal distance from each other.

45 My improved method is accordingly applicable in two modifications, one of which has been described, and the other is performed as follows:

The loops *k*, as mentioned, are distributed over the whole length of the border and divided into equal portions by means of a
 50 special cord, which is interwoven with the border at the dividing points. The cord *n*, Fig. 7, forms at both ends of each of the portions of loops two small eyes *n'* *n''*; before inserting the same through the slot *d* into the
 55 guide-way *b*, the eyes *n'* *n''* are superposed so as to form a double eye *n'''*, see the right half of Fig. 7, and thereby the triangular shape of the loops *k* is also obtained. The eye *n'''* is inserted in the above described manner, and
 60 then the same method as in the first case is applied.

From the above description it will be apparent that in fact the connection of the balls with the border is incapable of getting loose
 65 and that the free mobility of the balls is preserved. But besides these important advantages my method presents that of being considerably cheaper than those hitherto employed, as it is neither necessary to knit knots,
 70 nor to insert pins and to bend the same so as to form hooks; thus by my improved method goods can be manufactured which at the same time are of greater cheapness and of far better quality. It is of course not necessary to
 75 employ loops for fastening the balls to the border, and single threads may be used as well to the same object.

Having thus fully described the nature of my invention, what I desire to secure by Letters Patent of the United States is—

In a machine for attaching fringe balls to the border of textile fabrics: the combination, with the reciprocating plunger *f*, of the guide-frame *c*, having the guide-way *b*, provided with
 85 a vertical groove, and a lateral slot *d*, substantially as and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

RICHARD AUGUST SWOBODA.

Witnesses:

R. HERPICH,
 E. SCHULTZE.