May 3, 1932. B. FOERSTER 1,856,951

DEVICE FOR FEEDING THE GUIDE SLEEVES FOR SPRING RINGS TO THE POINTS FOR WORKING

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Fig. 1.

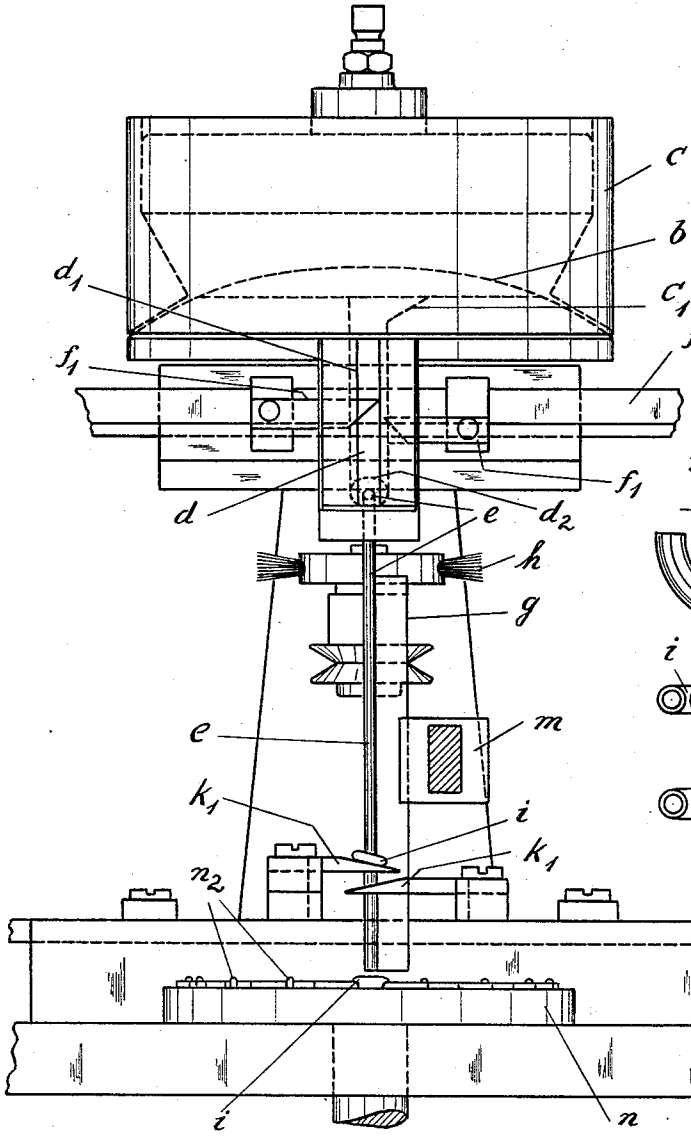


Fig. 7.

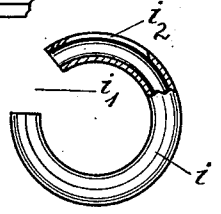
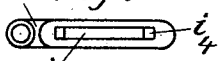
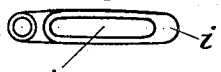


Fig. 8.



i_2

Fig. 9.



i_2 k

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DEVICE FOR FEEDING THE GUIDE SLEEVES FOR SPRING RINGS TO THE POINTS FOR WORKING

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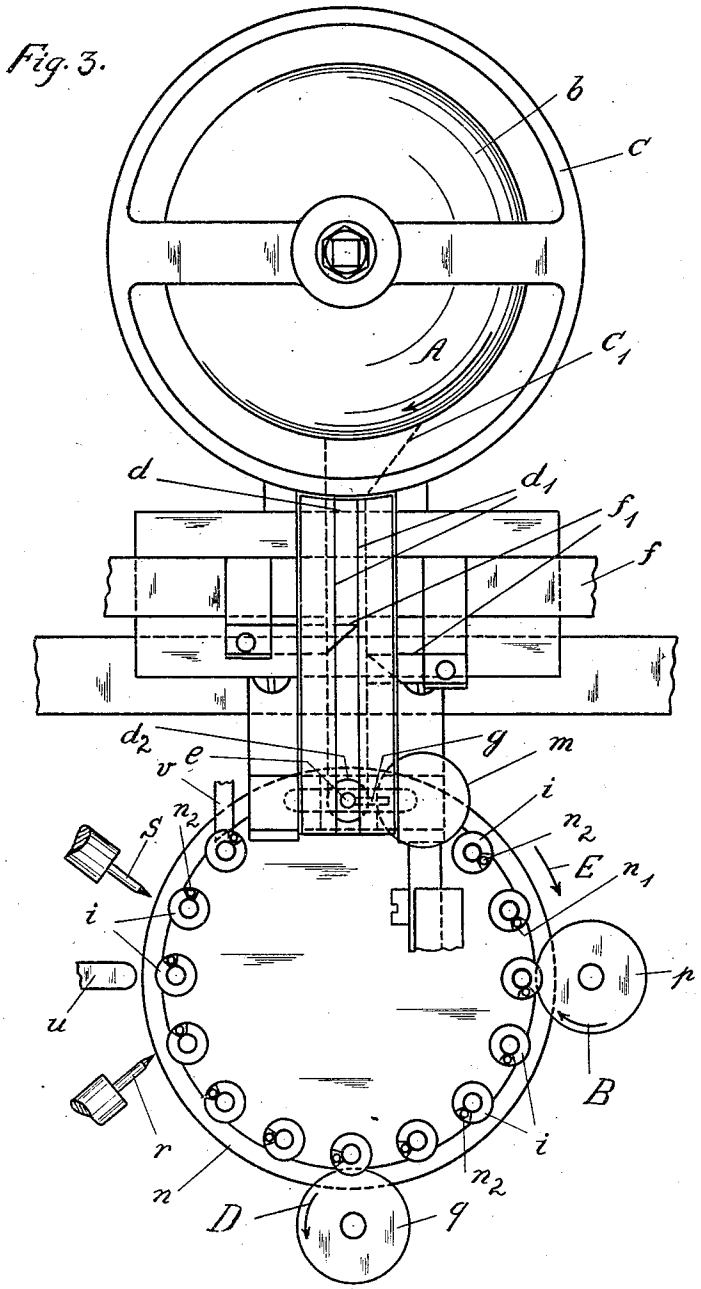
Fig. 3.



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DEVICE FOR FEEDING THE GUIDE SLEEVES FOR SPRING RINGS TO THE POINTS FOR WORKING

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Fig. 2.

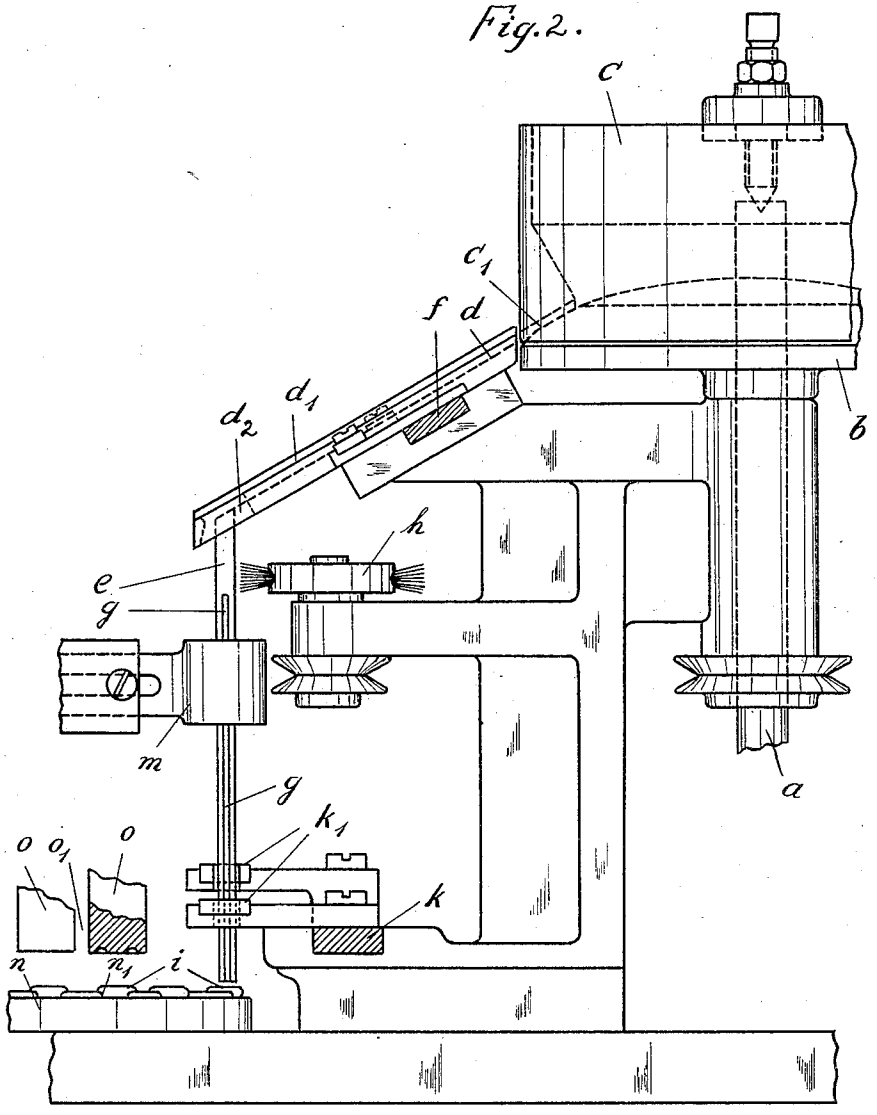

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Fig. 4.

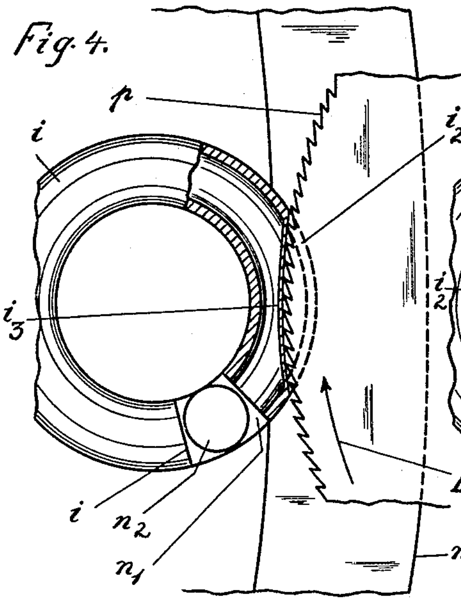


Fig. 5.

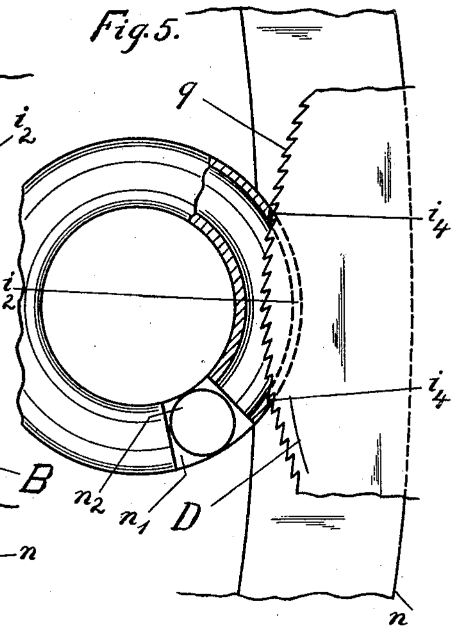
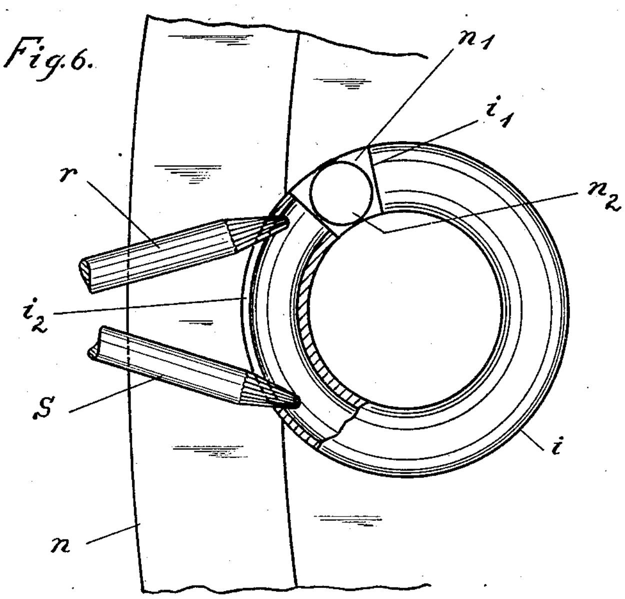


Fig. 6.



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Patented May 3, 1932 1,856,951

UNITED STATES PATENT OFFICE

BERNHARD FOERSTER, OF PFORZHEIM, GERMANY

DEVICE FOR FEEDING THE GUIDE SLEEVES FOR SPRING RINGS TO THE POINTS FOR WORKING

Application filed February 19, 1930, Serial No. 429,760, and in Germany October 14, 1929.

This invention relates to a device for feeding the guide sleeves for spring rings to the points for working.

As is known spring rings are used as fastening means for ornamental chains of all kinds as also as connecting means for watch-key and similar chains. They consist essentially of three parts, namely the sleeve, bent ring-shape, the catch guided in this sleeve, and the catch spring pressing the catch continually into its locking position.

Spring rings are known with slotted or unslotted guide sleeves. The longitudinal slot provided in the slotted guided sleeves serves for guiding the shank of the catch button projecting through the slot on which the catch made of wire can be displaced against the action of the catch spring so that the ring gap in the sleeve bridged by the spring actuated catch opens.

An important and difficult part of the production of split guide sleeves is the forming of the longitudinal slot.

The object of the application, as is shown in the following description, is to feed the guide sleeves automatically to the points of working by means of a special device for the purpose of producing the longitudinal slot in large numbers and more cheaply and to hold these guide sleeves, whilst they are being worked.

One form of construction of the feeding and holding device is illustrated by way of example in the accompanying drawings which, to enable the transporting and holding arrangement to be better understood, show at the same time how the guide sleeves are treated at the different working points.

In the drawings:

Fig. 1 is a front elevation of the machine.

Fig. 2 a side elevation of Fig. 1.

Fig. 3 shows the machine in top plan view.

Figs. 4, 5 and 6 show diagrammatically in top plan view the first, second, third and fifth operations.

Fig. 7 shows in top plan view, partly in section, a guide sleeve ready for inserting the catch spring and the catch.

Fig. 8 shows the slot after the first and second working operations.

Fig. 9 shows the finished widened slot.

On a driving shaft a a dome-shaped bottom plate b of a container c is mounted, into which the guide sleeves for spring rings which are to be worked are introduced. The bottom plate b is rotated in the direction A, when the machine is in use, so that guide sleeves are continually brought into a slot-shaped delivery opening c_1, arranged at the lower edge of the container wall and towards which the bottom b slopes, the blanks leaving the vessel through the opening c_1 arrive in a downwardly inclined chute, partly covered with bars d_1. At the lower end of this chute a delivery opening d_2 is provided into which a catch pin e extends. In order to prevent any interruption being caused at this opening by the following blanks, means are provided for ensuring that these blanks arrive singly above the delivery opening d_2. For this purpose an arrangement is provided consisting of a reciprocating feed rod f and two arms f_1. These arms are mutually displaced in the direction of the falling blanks at a distance apart about equal to the external diameter of the sleeve and engage and disengage alternately from the sides in a slot d. When the upper arm f_1 leaves the slot d, the blanks in this slot move forward, but only until they encounter the lower arm f_1, entering this slot d at the same time. The upper arm f_1 then again enters the slot d and will thus arrive exactly above the foremost blank, whereas this latter is released by the lower arm f_1 leaving the slot, when it slides right through the slot, falls into the delivery opening d_2 and is caught by the pin e. This latter has a longitudinal bar, serving for straightening the blank. It is carried by a holder m, on which the straightening bar g is fastened and which can be so adjusted that the catching pin is situated exactly in the centre of the discharge opening d. The blanks, now guided on the catching pin e, drop up to the upper edge of the straightening bar g, where they are rotated by a rotating brush having a plurality of brushes of bristles around its circumference, until the gap i_1 in the blank i (Fig. 7) exactly registers with the straightening bar g. At this point the blank i can

slide further in downward direction on the catch pin e until it encounters an upper arm k_1 of a reciprocating rod k (Fig. 1). This fulfills the same purpose by its arms k_1 at the catching pin e as the rod f with its arms f_1 at the slot d. On the lower end of the catching pin e a periodically rotated disc n travels in the direction E. This disc has circular depressions n_1 into which the blanks fall successively. The blanks are fed on this disc to the different working points.

In order to prevent them changing their position on the revolving disc n during the treatment, small retaining pins n_2 are provided at that point of the depressions n_1 at which the gap i_1 is situated, when the blank i falls from the catching pin e and the straightening bar g, which pins exactly correspond to said gaps. These pins are therefore situated always under the straightening bar g, when each fresh ring-shaped depression n_1 of the revolving disc, which is to receive a blank i, comes centrally under the catching pin e, so that the blank i reaches the revolving disc in correct position from the catching pin e. Further the blanks i are held in the working position by means of the counter holders o (Fig. 2) which, when the revolving disc n is stationary, bear on the blank i and preferably have a depression o, similar to the depressions n_1, in the revolving disc n and, like the revolving disc n leave exposed a sufficient surface of the blank to enable the unimpeded working thereof.

At the first working point which is shown on an enlarged scale on Fig. 4, the guide slot i_2 (Fig. 7) for the shank of the catch button is rough milled. This is effected by means of a side milling cutter p, which rotates for example in the direction B. It has been found that when milling the slot i_2, a burr i_3 is always left, extending from one end to the other of the slot. This burr was hitherto removed in a tedious manner by hand.

At the second working point, which is shown on enlarged scale in Fig. 5, a second side cutter q enters the slot i_2 which still has the burr i_3. This second cutter p rotates in the direction D, i. e. in opposite direction to the direction B. It has been found that the slot burr i_3, which hitherto avoided the cutter p and held tightly on the edge of the slot, is split up and absolutely removed.

Owing to the milling of the slot i_2 by means of the side cutters p and q inclined cut faces i_4 (Figs. 6 and 8) are produced at the ends of the slot visible from the outer side. These cut faces impede the insertion, both of the catch spring as also of the catch, as their inner edges have a burr-like sharpness. Moreover these inclined faces i_4 do not form a good stop for the shank of the catch button. They are removed at the third and fifth working points which are shown combined and on a larger scale in Fig. 6, by means of the tapered end mills r and s, so that the insertion opening for the catch spring and the catch formed by the slot i is at the same time widened in funnel-shape, according to the shape of the end mills r and s.

Owing to this shaping of the ends of the slot, the finished inserted catch has a smooth unimpeded movement.

The slot i_2 is itself too narrow for the insertion of the spring and catch. It is enlarged in the fourth operation by means of a wedge-shaped ram u (Fig. 3) so that it has the shape shown in Fig. 9.

In the last position the finished blank i is lifted out of the revolving disc n by means of an ejector v.

The finishing of the spring ring is effected on a separate machine or by hand in that after soldering the suspension eye, the catch spring and the catch are inserted and the walls of the slot i_2 are then brought again into parallel position by pressing together of the guide sleeve i.

I claim:—

1. A device for feeding the guide sleeves for spring rings to the points of working, comprising in combination a container, a side wall of said container having a downwardly directed slot leading to a discharge aperture for the blanks, and a revolving bottom plate of said container sloping towards the outside adapted by its rotation to feed the blanks to the discharge aperture in said side wall.

2. A device for feeding the guide sleeves for spring rings to the points of working, comprising in combination a container, a side wall of said container having a discharge aperture, a chute extending from the discharge aperture of said side wall having a delivery opening, a catch pin arranged with its upper end on the centre of the delivery opening in said chute adapted to catch the blanks dropping through the delivery opening in said chute, a periodically revolving disc at the lower end of said catch pin having depressions for accommodating the blanks, a longitudinal bar on said catch pin adapted to bear with its upper edge against the blanks, and a brush adapted to rotate the blanks until their gaps register with said bar, so that the blanks are always uniformly fed by said catch pin into the depressions in said revolving disc in the proper position for working.

3. In a device for feeding the guide sleeves for spring rings to the points of working the combination of a container, a side wall of said container, a chute extending from said side wall, a catch pin at the lower end of said chute, a reciprocating rod arranged transversely to said chute and to said catch pin, and two arms carried by said rod, adapted to alternately lock the passage of the blanks, and mutually displaced so that one blank is liberated at each reciprocation of said rod.

4. In a device for feeding the guide sleeves for spring rings to the points of working the combination of a container, a side wall of said container, a chute extending from said side wall, a catch pin at the lower end of said chute, a longitudinal straightening bar on said catch pin, a periodically revolving disc at the lower end of said catch pin with ring shaped depressions for accommodating the blanks, a retaining pin for each depression in said revolving disc adapted to register with said straightening bar and fit exactly in the gap in the blanks, and counter holders arranged at the different working points adapted to bear on the blanks when said revolving disc is at a standstill.

In testimony whereof I affix my signature.

BERNHARD FOERSTER.