

B. E. SAWYER.
TUMBLING DEVICE.
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947,855.

Patented Feb. 1, 1910.

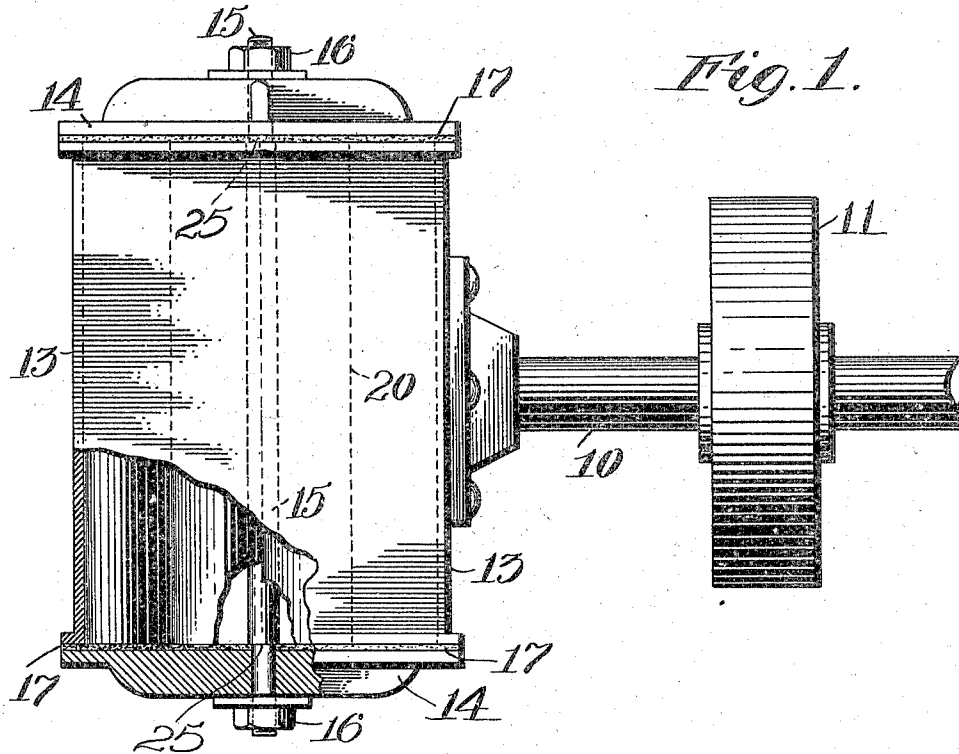


Fig. 1.

Fig. 2.

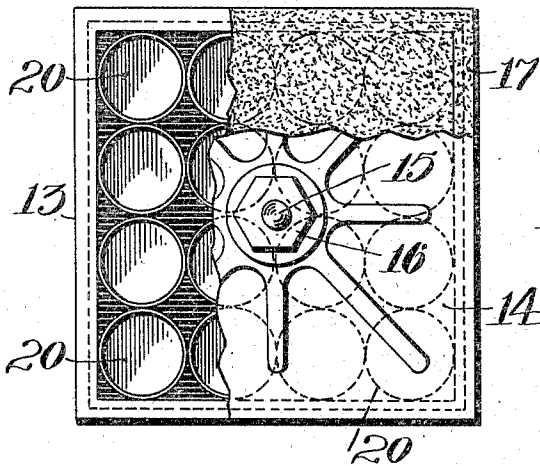
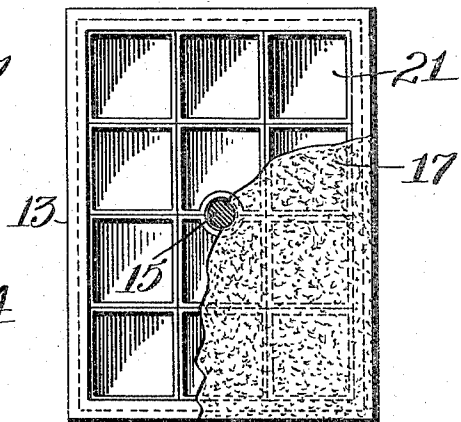


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

BURNSIDE E. SAWYER, OF FITCHBURG, MASSACHUSETTS.

TUMBLING DEVICE.

947,855.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, BURNSIDE E. SAWYER, a citizen of the United States, residing at Fitchburg, in the county of Worcester and State of Massachusetts, have invented a new and useful Tumbling Device, of which the following is a specification.

This invention relates to a tumbling device adapted to polish long and thin articles, as for example, hair-pin blanks when they are in a straight condition before they have been bent up into their final U-shape form, and to a method of polishing such articles.

The principal objects of the invention are to provide a new method and means whereby such articles will be uniformly polished on their side surfaces without blunting their ends, bending or snarling them up, or abandoning the very simple principle of tumbling them in a tumbler which turns on an axis; also to provide a simple and efficient tumbler for this purpose, which will take an increased load in a given space and which will deliver the pins in a straight and orderly condition suitable for the subsequent processes, and to provide improved features therefor.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a plan of a tumbling device constructed according to this invention partly broken away to show interior construction; Fig. 2 is an end elevation of the same also partly broken away; and Fig. 3 is an end view showing another way in which the invention can be carried out.

In the operation of tumbling devices and rumbles, so far as I am aware, it has been customary heretofore to place a quantity of the articles to be treated in a casing or barrel and rotate it so that the articles could tumble end over end. It is apparent that this is where the device got its name, and it seems to be inherent in all tumbling devices so far as known. This action is comparatively satisfactory when applied to small castings and other articles of compact form, but when long thin articles, particularly those which are flexible, like celluloid, or horn blanks from which hair-pins are made, are placed in a tumbling device of this description it is almost always the result that they will become tangled up in a ball, and that the ball as a whole will roll and tumble about the casing during a portion at least of the duration of its operation.

It is obvious that this results in preventing all action on the portions of the articles which are confined near the center of the ball and that the parts which are at the surfaces thereof receive an undue proportion of the action. This is not the worst result, however, because the ends which stick out from the mass at irregular intervals and distances are necessarily polished or ground off most rapidly and frequently at an angle. In addition to this the masses of pins or blanks have to be untangled or separated when taken from the tumbler which consumes considerable time as it must be done by hand, and moreover, many of the pins are invariably found to be crooked or bent so that they have to be thrown away or have to be straightened out, which is done by heating them when they are made from celluloid or the like. With certain kinds of pins which are of expensive and brittle material, the loss from bending, breaking, or irregular grinding amounts to a very large percentage.

This invention is designed to entirely overcome or at least very largely reduce all of the above mentioned difficulties which are met with in the process of tumbling long thin articles. This is accomplished by placing the pin blanks or the like in parallel position in an inclosure in the presence of abrasive or polishing materials, and so moving the inclosure that they will slide back and forth therein longitudinally, and preventing them from tumbling over each other end over end independently of the end over end motion of the inclosure itself.

The tumbling device is shown as mounted on a shaft 10 which can rotate or oscillate as desired, and in the former case is provided with a pulley 11 for operating it. The shaft is shown as having a head on the end thereof to which is fixed a casing 13 extending at right angles to the shaft.

The casing is provided with two heads 14 covering the ends. One of these heads is screwed or bolted in position. A bolt 15 passes longitudinally through the casing and has a shoulder 25 engaging the head inside and a nut 16 securing the bolt firmly to the fixed head. The other head is fixed by the bolt 15 in the same way, and the bolt may constitute its only fastening means. The inside surfaces of the head preferably are flat and in order to seal them against leakage of the contents of the tumbler and

to prevent the blanks or other articles which are to be operated upon from coming against these heads with such force as to blunt them, a packing 17 is employed consisting of a sheet held between flanges on the ends of the casing and the outer ends of the heads and covering the heads. Located in the casing also are shown one or more pipes or tubes 20, each having its axis perpendicular to the axis of the shaft on which the casing turns. These pipes or tubes constitute cells or compartments of the tumbler and they are arranged in the casing in contact at their ends with the packing sheets so as to be firmly held therein when the heads are tightened up. In construction these tubes are made of such size that the pin blanks or other articles to be tumbled cannot turn end over end in them independently of the rotation of the casing. The walls being so near together, constitute means for preventing the articles from being turned over. On account of the rotation or turning of the casing the articles will slide along the several compartments or cells in which they are located, together with the abrasive material which is used, and consequently, their sides are polished in a substantially uniform degree, but their ends are not blunted off as they come to the ends of the casing, because they engage the packing which is soft and has no abrasive effect. It has been found in practice that with an operation of this kind in which the pin blanks move back and forth in a small compartment without turning over in the compartment and without coming at their ends into contact with any rigid and unyielding wall, the blanks are polished in a superior manner from end to end clear to the tip, and that the appearance of the same is greatly improved, but in order to get this result it is essential that the blanks be given a longitudinal sliding action throughout the tumbling operation, and that they never be allowed to have any material transverse movement in their compartments.

In Fig. 3 is shown a form of the invention in which the compartments 21 are square, being bounded by rectangular walls which may be removable or fixed in position. In loading the tumbling device it is set up on one end and the tubes or compartments exposed at the opposite end by taking off the top cover. The abrasive material is introduced into the tubes or compartments and the blanks are put in lengthwise in each compartment, the packing is then put in position, and the head screwed down, and all is ready for the tumbling operation.

While I have illustrated and described two

embodiments of the invention, I am aware that many modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to all the details of construction shown and described, but

What I do claim is:—

1. A tumbling device for long thin articles comprising a cell of a width less than the length of said articles in which the articles can slide longitudinally, said cell having smooth uniform walls for holding the articles substantially in parallel positions at all times and preventing the articles from turning end over end in the tumbling device.

2. In a tumbling device, the combination of a shaft, a casing fixed to the end thereof, a pair of heads for covering said ends, and a plurality of removable cells located in the casing perpendicular to the shaft and held at their ends between said heads.

3. In a tumbling device, the combination of a shaft, a casing thereon, a pair of heads for covering the ends of the casing, and a plurality of removable open-ended cells in contact with each other located in the casing perpendicular to the shaft and abutting at their ends against said heads.

4. In a tumbling device, the combination of a shaft, a casing on the shaft, a plurality of parallel cells in the casing each located perpendicular to the shaft, heads at the ends of the casing, and a sheet packing covering up the entire inside of each head.

5. In a tumbling device, the combination of a shaft, a casing fixed to the end thereof and having ends, a pair of heads for covering said ends, a fastening device extending through the casing perpendicular to the shaft for securing one of the heads in position, and a sheet of soft material held between the edge of each head and the end of the casing and covering the entire inner surface thereof.

6. In a tumbling device, the combination of a shaft, a casing fixed to the end thereof, a pair of heads for covering said ends, a sheet of soft material held between the edge of each head and the end of the casing, and a plurality of removable tubular cells located in the casing perpendicular to the shaft and held at their ends between said sheets of soft material.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

BURNSIDE E. SAWYER.

Witnesses:

BERTHA E. WELLINGTON,
CHARLES F. BAKER.