

J. B. DAYTON.
 DEVICE FOR CUTTING INCISIONS IN HOLLOW CYLINDERS.
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1,057,945.

Patented Apr. 1, 1913.

Fig. 1.

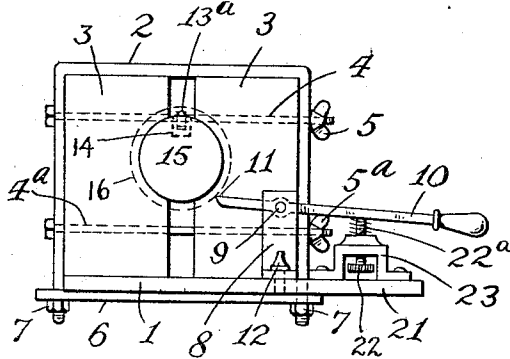


Fig. 2.

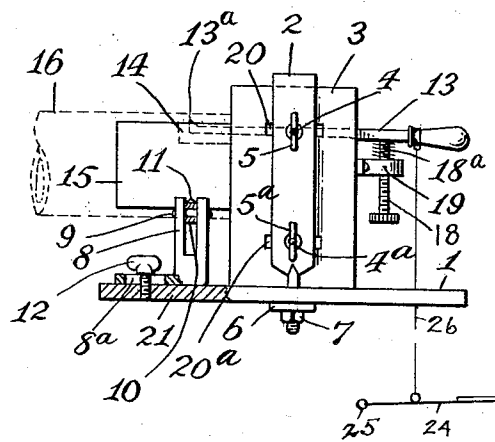


Fig. 3.

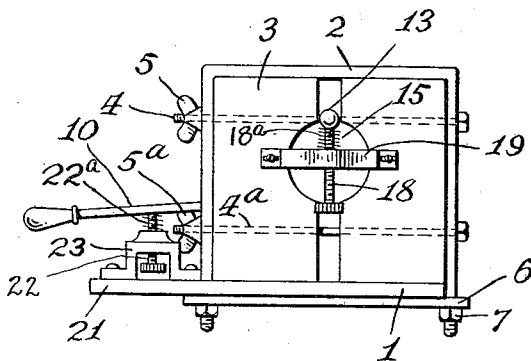
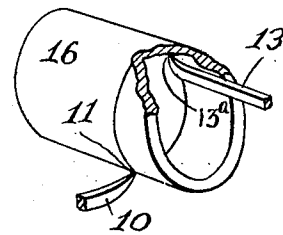


Fig. 4.



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DEVICE FOR CUTTING INCISIONS IN HOLLOW CYLINDERS.

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Specification of Letters Patent.

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Application filed May 4, 1912. Serial No. 695,148.

To all whom it may concern:

Be it known that I, JAMES BARTON DAYTON, a citizen of the United States, and a resident of Corinth, county of Saratoga, and State of New York, have invented a new and Improved Device for Cutting Incisions in Hollow Cylinders, of which the following is a full, clear, and exact description.

My invention relates to devices for cutting incisions or channels in hollow cylinders, and particularly to devices for cutting internal and external circumferential incisions in hollow paper cylinders or cores preparatory to the placing of a metallic bushing on the end.

The objects of my invention are to provide a device which will permit a rapid and accurate cutting of the incision, insure uniformity in the depth of the cut, permit adjustment of the cutters and of the core so as to vary the depth and location of the cut or cuts and provide a simple economical and efficient apparatus for accomplishing these results. I attain these objects by the device illustrated in the accompanying drawings and described and claimed hereinafter.

In the drawings like symbols of reference refer to like parts throughout the respective views.

Figure 1 is a front elevation of the device. Fig. 2 is a side elevation. Fig. 3 is an end elevation. Fig. 4 is a perspective view of the core with the tools in operative position making the exterior and interior incisions.

Manufactured paper is wound in rolls of such size as required, upon hollow cores made of tough paper, wound and cemented upon itself under great pressure to produce a hollow cylinder, the ends, engaging with the driving dogs or keys on the machines on which the rolls are operated, being reinforced by metallic caps or bushings of various constructions to withstand the strain exerted thereon by the driving gear of the machine in the winding of the paper roll and also the rough handling to which they are subjected. The metallic bushings should not vary in external or internal diameter from that of the cores on which they are placed, and it is important that the material of the cores should be cut to a sufficient depth, but not more than sufficient, to provide for the thickness of

the walls of the metallic caps or bushings. In preparing the cores for the bushings I have found that the best way is to cut exterior and interior circumferential incisions in the core at a distance from its end corresponding to the length of the bushing to be thereafter attached. These incisions are made to a depth corresponding to the thickness of the walls of the bushings through one or more layers of the paper of which the core is usually formed, and then the strips between the incisions and the end of the core are peeled off, leaving the walls at the end of the core of the proper thickness to fit the bushing.

Referring to the figures, 1 is a base or bed plate carrying the whole apparatus, 2 a strap or clamp for securing and retaining the main parts of the structure in operative position and securing them to the base. Within, and retained by this strap 2, are jaws 3 which constitute a vise or gripping device, between the interior faces of which is held a mandrel 15 which projects from the front face a sufficient distance to properly support a core 16, a portion of which is indicated in dotted lines in Figs. 1 and 2 and shown in perspective in Fig. 4. Bolts 4 and 4^a are inserted through suitable perforations provided in the strap 2, and through the slots 20 and 20^a, provided in the jaws 3. By these bolts 4 and 4^a and the thumb screw nuts 5 and 5^a, fitted on their ends, the jaws 3 are clamped together to firmly hold and support, between them, the mandrel 15 in such relative position to each other to produce the incisions, in the hollow cylindrical cores, at the required distance from the end thereof. The ends of the strap 2 pass through a plate beneath the base 1 and are held in place by nuts 7 screwing over the threaded ends of the strap 2, thus securing the whole solidly to the bed plate.

The exteriorly cutting tool 10 is fulcrumed on pin 9, set in the bifurcated socket *a*, and is so disposed that its cutting edge may act upon the core 16, when the latter is revolved on mandrel 15. The socket 8 is adjustably secured to the bed-plate 1, to permit its being set nearer to, or farther from, the jaws 3. To this end, a slot 8^a (see Fig. 2) is provided in the base of the socket 8, and a thumb-screw 12 is inserted therethrough and screwed into a correspondingly screw-threaded bore in the

bed-plate 1. By these means, the cutting tool 10 may be set to produce the exterior incision at the required distance from the end of the core 16, and irrespectively of the location of the interior incision. The rear end of this tool 10 terminates into a handle, and by depressing this end of the tool its cutting edge 11 is pressed against the revolving core. In the socket 23, secured to an extension 21 of the bed-plate 1, the set-screw 22 is set in the path of the rear end of the tool 10, and by turning it, the depth of the incision, to be produced by the edge 11, is regulated; the set-screw acting as a stop for the depressing of the rear end of the tool 10. The cutting edge 11 of the tool 10 is held normally retracted from the mandrel 15 by the spring 22^a, to permit free manipulation of the cores 16, setting them on, and removing them from the mandrel.

The interiorly cutting tool 13, having an offset cutting edge 13^a at its forward end, is fulcrumed on the bolt 4, free to swing, in a vertical plane, in the recess 14, made in the upper portion of the mandrel 15. This groove is made sufficiently deep to permit the tool 13 to be receded into it by the spring 18^a, its cutting edge 13^a being projected therefrom and pressed against the interior surface of the core 16, during the cutting operation, by depressing the rear end of the cutting tool 13, formed into a handle, as shown in Fig. 2 of the drawing, for better convenience in manipulating it.

The distance from the end of the core 16, at which the interior incision is to be made, is determined by the position of jaws 3, against which the end of the core 16 abuts during the cutting operation, in the strap 2, the slots 20 and 20^a, provided in the jaws 3, permitting the jaws 3 to be moved farther to the right (see Fig. 2), whereby the distance of the incision from the edge of the core 16 is increased, or to the left, whereby it is reduced. The jaws 3 are secured in their adjusted position by the thumb-screw nuts 5 and 5^a. The depth of the incision to be made is regulated by setting the screw 18, screwed in the bracket 19, in the same manner as explained with reference to the set-screw 22, and the exteriorly cutting tool 10. The rear end of the interiorly cutting tool 13 is shown (see Fig. 2) connected by a link, or wire, 26 to a treadle 24, pivoted at 25, preferably to the floor of the shop. The object of this is to enable the workman to manipulate the interiorly cutting tool with his foot, thus leaving his hands free to operate the exteriorly cutting tool 10, and, if necessary, to steady the core 16 with the other hand. While this affords a convenience, it is not essential to the operation of my device and both cutting tools may be operated by the workman's hands, or by other means. For the purpose of revolving

the core 16 upon the mandrel 15, its other end is slid on, and secured to, a correspondingly centered mandrel, attached to a revoluble chuck. This mechanism is not shown, its construction not being any part of my invention, and is not claimed herein, its use being not essential to the operation of the cutting device shown and described herein, as the core may be revolved by any other means.

The operation of the device is as follows:—When the hollow cylindrical core 16 is slid on the mandrel 15 so that its end abuts against the forward face of the jaws 3, the latter having been set in the clamp 2 so that the cutting edge 13^a of the tool 13 is at the required distance from the end of the core, and the socket 8 having been set upon the bed-plate 1, so that also the cutting edge 11 of the tool 10 is in position to contact with the core at the required distance from its end, and screws 18 and 22 having been set to make the incisions to the requisite depth and not deeper, the core 16 is revolved and the rear ends of the tools 10 and 13 depressed. By the described means for adjusting the parts of the tool the interior and the exterior incisions may be made equidistant from the end of the core, or one farther than the other. After the incisions are thus made, the core is removed, its other end set upon the mandrel 15 and the operation repeated.

I claim as my invention:

1. A tool for making incisions in hollow cylinders, the tool comprising a base, a pair of jaws, a mandrel, clamping means for adjustably securing the mandrel between the jaws and the jaws to the base; a recess in the mandrel; a cutter, movably mounted between the jaws and extending into the recess in the mandrel, and means for projecting the cutter from the recess and for pressing it against the interior of a hollow cylinder revolved upon the mandrel, substantially as shown and described.

2. A tool for making interior and exterior incisions in hollow cylinders, the tool comprising a base, a pair of jaws, a mandrel, and clamping means for adjustably securing the mandrel between the jaws and the jaws to the base; a recess in the mandrel, a cutter, movably mounted between the jaws and extending into the recess in the mandrel; a socket, adjustably mounted adjacent to the jaws, a second cutter, movably mounted in the socket, means for projecting the first cutter against the interior, and the second cutter against the exterior, of a hollow cylinder revolved on the mandrel, substantially as herein shown and described.

3. The combination of a mandrel, a support therefor, a recess in the mandrel, a cutter in the recess; a socket set adjacent to the mandrel; a second cutter movably

mounted thereon, and means for projecting the cutter from the recess against the interior, and the second cutter against the exterior, of a hollow cylinder revolved on the
5 mandrel, substantially as herein shown and described.

4. The combination of a support, a mandrel secured therein; a recess in the mandrel, a cutter fulcrumed in the support and
10 projecting into the recess, means to move

the cutter outwardly and radially therefrom; a second cutter, fulcrumed externally to the support, and means to move the second cutter toward the mandrel, substantially as herein shown and described.

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Witnesses:

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Washington, D. C."