Oct. 30, 1962 C. T. LARSEN ETAL 3,060,994

CORE SHAPING TOOL

Filed May 2, 1960

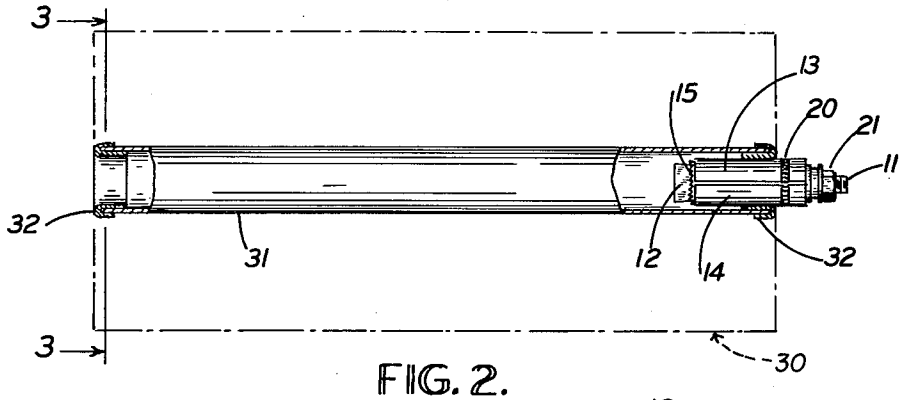


FIG. 2.

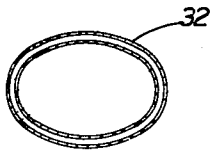


FIG. 3.

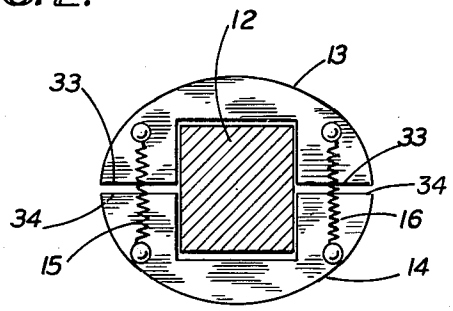


FIG. 4.

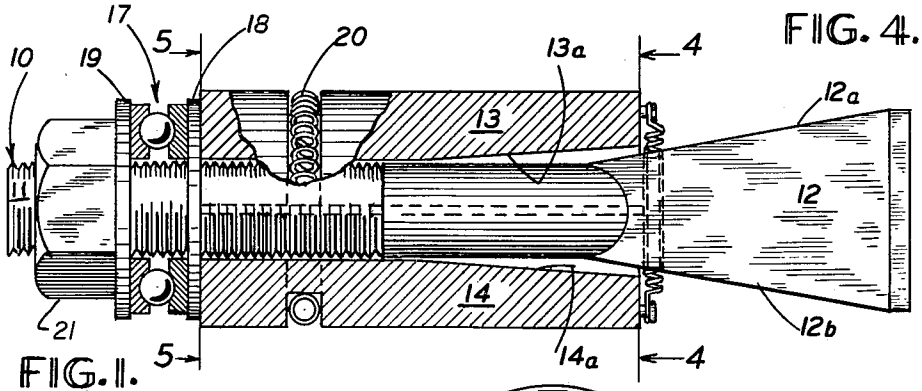


FIG. 1.

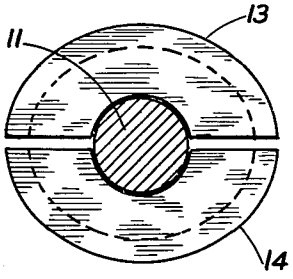


FIG. 5.

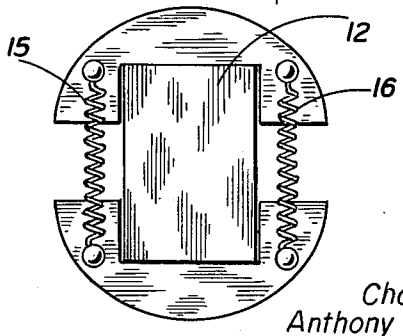


FIG. 6.

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CORE SHAPING TOOL

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1 Claim. (Cl. 153—79)

This invention is directed to a tool for rounding deformed cores in rolls of newsprint.

The cores upon which newsprint is rolled are not sufficiently strong to withstand the hard bumps or drops to which the rolls are subjected in shipment, and the cores become deformed and out-of-round. In this condition, it is virtually impossible to mount the rolls in the presses for printing. The cores are mainly tubular cardboard with short, pressed steel caps or inserts for mating with support mandrels on the presses. The newsprint wound on these cores have a high degree of spongyness which has made rounding of smashed inserts extremely difficult.

However, we have invented a simple, inexpensive, easy to use device which overcomes the spongy characteristics of the newsprint roll and rounds the metal core insert of such newsprint rolls. The device is capable of exerting a great, even pressure around a substantial portion of the internal surface of the metal core inserts to thereby round them for mounting on the printing presses.

Further, our device is of such a construction that it may easily be initially inserted in a squashed and deformed core without difficulty.

It is therefore among the objects and advantages of our invention to provide a simple, easily manufactured and inexpensive tool capable of use by substantially unskilled laborers to round deformed cores in rolls of newsprint.

It is a further object of our invention to provide a device for rounding deformed newsprint cores against the spongy nature of the newsprint.

Further objects and advantages will become obvious to those skilled in the art from a study of the appended exemplary drawings and the description set forth hereafter.

In the drawings:

FIG. 1 is a side view, in partial section, of a core rounding tool according to our invention;

FIG. 2 is a side view, in partial section, of a roll of newsprint with the device of FIG. 1 in initial position;

FIG. 3 is a section through 3—3 of FIG. 2;

FIG. 4 is a section through 4—4 of FIG. 1;

FIG. 5 is a section through 5—5 of FIG. 1; and

FIG. 6 is an end view of the device of FIG. 1 in the expanded position.

Before discussing the invention and drawings in detail, we wish it understood that the design herein shown and described is merely exemplary of one manner of practicing our invention and we do not desire to be limited thereto, but rather by the scope of the appended claim set forth hereafter.

Essentially, our invention consists of a first member **10** which is externally threaded at one end **11** and of an enlarged configuration at its opposite end **12** with diverging planar surfaces **12***a* and **12***b*. A pair of pressure plates **13** and **14** are mounted on the member **10** and encompass a substantial portion of the enlarged end **12**. The members **13** and **14** have a recessed configuration which conforms in taper and shape to the enlarged end **12**, including opposed planar surfaces **13***a* and **14***a*. Referring for the moment to FIG. 4, the internal radial configuration of the members **13** and **14** is more clearly shown encompassing a portion of the enlarged end **12**. Also, FIG. 4 shows a pair of resilient members **15** and

16 which may be springs or the like to maintain the outer ends of the members **13** and **14** in position around the member **10**, while a resilient member or spring **20** maintains the other end of members around member **10**. The outer end **11** of the member **10** is threaded and a thrust bearing **17** is mounted thereon and held between a pair of washers or pressure plates **18** and **19**. There is an arcuate recess or groove around the peripheral surfaces of the members **13** and **14** for holding the retaining spring **20** which extends around both parts. An internally threaded member **21**, which may be a nut or the like, is mounted on the threaded end **11** of the member **10** and arranged to bear against the washer portion **19** of the thrust bearing **17**.

FIG. 2 illustrates a roll of newsprint, generally indicated by reference character **30**, which is wound on a tubular core **31** therein, and has a pressed steel female cap or insert **32** at each end of the core. One end of the core has been broken to show a tool according to our invention inserted in one of the female inserts **32** as the device would be in initial position. Referring now to FIGS. 4 and 6, FIG. 4 shows the outside configuration of the device in closed position. The outside configuration of the closed device is generally of an oval configuration. The enlarged section **12** of the member **10** is positioned such that the members **13** and **14** substantially contact each other along the surfaces **33** and **34**, respectively. After the device is placed in position, the nut **21** is pulled up on the washer **19** of the thrust bearing **17**. This threading action causes the enlarged end **12** to slide through the complementary recesses in the members **13** and **14**, with surfaces **12***a* and **12***b* wedging against surfaces **13***a* and **14***a* respectively, thereby forcing members **13** and **14** to move apart. FIG. 6 shows the device in expanded position after the core and insert **32** have been rounded by the separation of members **13** and **14**. Because of the novel design of the member **10** and the gradual taper through the enlarged end **12**, the surfaces **12***a* and **12***b* are equal and opposed lateral bearing surfaces which contact surfaces **13***a* and **18***a* through a substantial portion of the internally tapered complementary recessed portions of the members **13** and **14**. Because of these large bearing surfaces between the enlarged end **12** of the member **10** and the irregular cylinder portions **13** and **14**, there is a uniform radial movement of the members through a series of substantially horizontal but parallel planes, thereby providing a uniform pressure against a substantial portion of the internal surface of the inserts **32**. The washer **18** of the thrust bearing **17** serves as a bearing means against which the irregular cylinder portions **13** and **14** will radially slide as they move outward against a deformed insert **32**.

FIG. 3 is a section through 3—3 of the device of FIG. 1 illustrating configuration of the insert **32** in deformed condition. It will be seen that the irregular cylindrical shape of the portions **13** and **14** as they are when the device is in its closed position, allows each insertion into such a deformed oval configuration. FIG. 5 is illustrative of the configuration of the other ends of the members **13** and **14** encompassing the cylindrical threaded end of the member **10**.

It is anticipated that other than the generally rectangular shape for the end **12** may be used within the scope of our invention. However, we have found that the rectangular configuration and the internal rectangular configuration of the recessed portions of the members **13** and **14** provides excellent bearing surfaces for the application of uniform pressure against the internal surfaces of the recesses in the members **13** and **14**, thereby causing the desirable even radial movement of those portions. This permits successful operation of the device in successfully overcoming the previously referred to spongy and

elastic character of the newsprint against which the deformed inserts must be moved.

What we desire to be protected by Letters Patent is set forth in the appended claim.

What is claimed is:

A newspaper core rounding tool adapted to be placed in a deformed mandrel insert in a roll of newsprint core comprising:

(1) an inner member having one threaded cylindrical end and the other end tapering along opposed planar surfaces a substantial distance from a point intermediate the ends of the member, said taper progressively increasing in dimension to the taper's largest dimension at the end of the member opposite the said threaded end;

(2) two substantially identical opposed outer members each having a recess characterized by a sloped planar surface complementary to one of the sloped surfaces of the inner member and arranged to seat on the inner member's complementary planar surface;

(3) said outer members being mounted on opposed sides of said inner member and arranged to slide on the opposed planar surfaces of said inner member to move toward and away from each other;

(4) the outside surface of the outer members being smooth and ovid in adjacent relation;

(5) resilient means for holding the outer members in encompassing relation with said inner member;

(6) a thrust bearing assembly mounted on said threaded end inclusive of a first pressure plate bearing against the adjacent ends of said outer members, a thrust bearing mounted on said cylindrical end bearing against said first pressure plate for allowing relative rotation between said first plate and a second pressure plate mounted against said thrust bearing, and;

(7) a nut threadedly mounted on said cylindrical member bearing against said second pressure plate; whereby when the nut is moved against the second pressure plate said nut and second pressure plate rotate against the thrust bearing and the inner member is drawn between the outer members along the planar surfaces of the recess of the outer members moving the outer members laterally outwardly from each other with their outer surfaces substantially parallel to the lengthwise axis of the inner member.

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