

Aug. 15, 1933.

R. A. ROBINETT

1,922,716

METHOD OF EXPANDING A FLATTENED PAPER ROLL

Filed Aug. 31, 1932

2 Sheets-Sheet 1

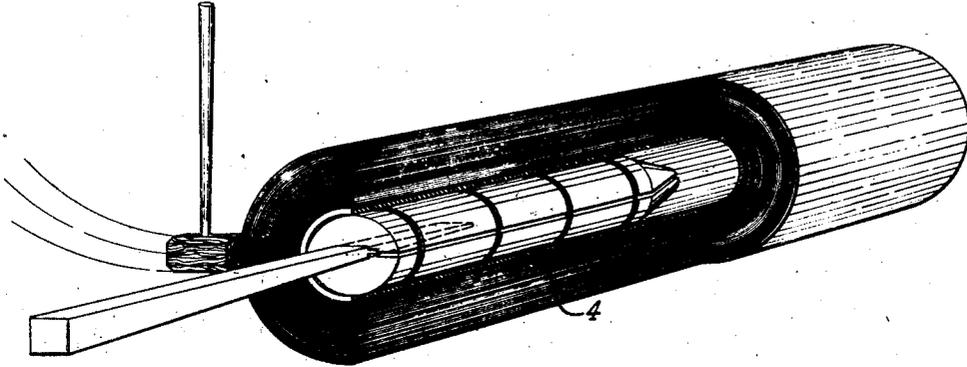


Fig. 1

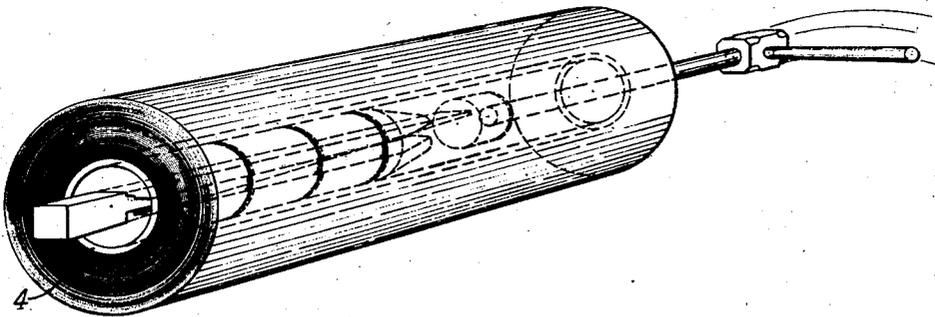


Fig. 2

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2 Sheets-Sheet 2

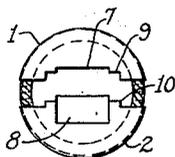


Fig. 4

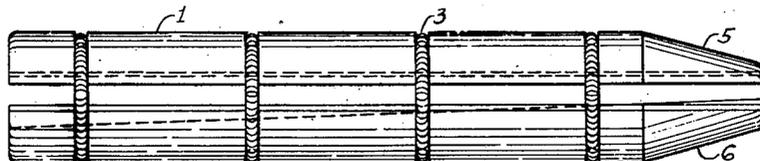


Fig. 3

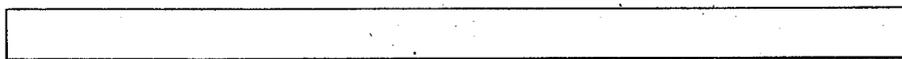


Fig. 5

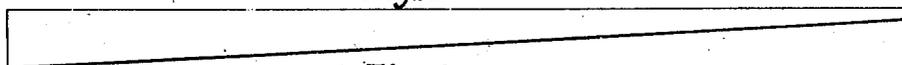


Fig. 6

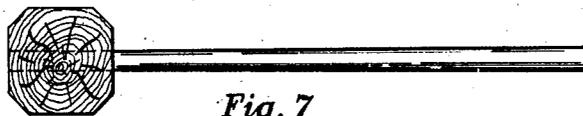


Fig. 7

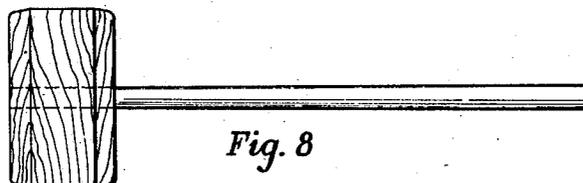


Fig. 8



Fig. 9

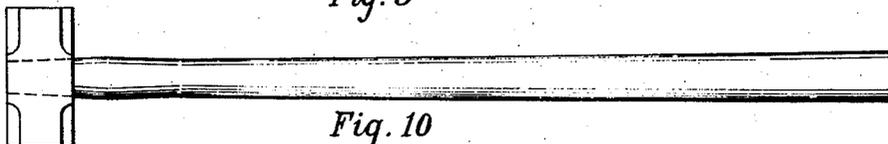


Fig. 10



Fig. 12

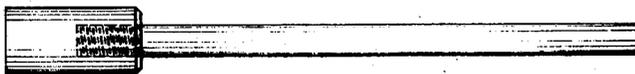


Fig. 11

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UNITED STATES PATENT OFFICE

1,922,716

METHOD OF EXPANDING A FLATTENED PAPER ROLL

Richard Andrew Robinett, Norfolk, Va.

Application August 31, 1932. Serial No. 631,260

1 Claim. (Cl. 242—1)

My invention relates to the reconditioning of rolls of paper which, in the process of handling, shipping and storing, have been flattened out of their normal shape. The invention has principally to do with the bringing of these rolls back into shape so that they may be used in the printing machines the same as if they had never been flattened.

Printing paper rolls comprise tightly wound paper wound around a hollow pasteboard core. When this paper is put in the printing machine, a rod is passed through this core and the paper as used is unwound from the roll. The core and the rod being practically concentric with the roll of paper, the paper pulls evenly from the roll while being removed very rapidly. Whenever through any reason the rolls become flattened and the hollow core is also flattened, it is difficult to get the paper in the machine, and when the rolls are put in the machines and the paper is removed rapidly, it gives a great deal of trouble because they do not unwind smoothly. Paper in this condition is, therefore, useless to be used in the normal way in the regular printing machines.

The paper is wound very tightly around hollow pasteboard cores, and with ordinary handling in shipping and storing it remains round, as there is great friction between the layers of paper. Under certain circumstances, however, where pressure is brought to bear upon the roll, at the same time there being a certain amount of vibration or jarring of the roll, the pressure is applied intermittently and these rolls become flattened. It is, therefore, necessary that they be brought back to true cylindrical form in order that they may be used as normally intended. My invention relates, therefore, to tools and method of using the same in order to bring the rolls back to proper form.

Figure 1 represents a paper roll in perspective, one part of it being in section in which the expanding device has been placed, the wedge is being inserted and the maul is against the roll as if it were being hammered.

Figure 2 represents a paper roll in perspective after the wedge has been driven home and the roll properly expanded, and shows the wedge being driven out.

Figure 3 shows an elevation of two parts of an expanding mandrel.

Figure 4 shows an end view of same.

Figures 5 and 6 show two views of the expanding wedge.

Figures 7 and 8 show two views of the maul.

Figures 9 and 10 show two views of the sledge hammer used for driving out the wedge.

Figures 11 and 12 show two views of the driving-out bar.

Referring to the drawings, Figure 1, represents a roll of paper in perspective, partly in section, which shows the roll with its enclosed hollow pasteboard core slightly flattened. In connection with this roll there is shown the expanding mandrel (shown in detail in Figures 3 and 4) just entering the flattened core, the wedge (shown in detail in Figures 5 and 6) just entering the expanding mandrel, and the wooden maul against the edge of the paper, which wooden maul is shown in detail in Figures 7 and 8.

Figure 2 shows a roll of paper in perspective, and in connection with this is shown the mandrel after having been expanded with the wedge. This also shows the driving out bar which is shown in Figures 11 and 12, and the hammer, shown in Figures 9 and 10, for striking against the driving out bar.

While in Figures 1 and 2, the expanding mandrel is shown reaching only partially through the paper roll, in actual use the mandrel will be long enough to reach all the way through the roll and can be used to expand the roll, if flattened, throughout its whole length.

In the matter of the expanding mandrel, shown in elevation, Figure 3, and end view, Figure 4, the two parts of the mandrel, 1 and 2, are held together by garter springs 3. These garter springs are let into grooves so that the outside surface of the springs would be even with or below the rounded surface of the expanding mandrel. These expanding mandrels are to be made in several sizes as to exterior diameter, so that when the roll is very much flattened the small size can be inserted and expanded to its limit and driven out. This should be followed by the next larger size to be expanded to its limit and driven out, and so on, until the original size and diameter of the interior of the hollow core 4, Figures 1 and 2, of the roll of paper have been brought to cylindrical form.

One end of each of the two halves of the expanding mandrel, 1 and 2, are tapered, as shown at 5 and 6, for ready entrance into the flattened hollow core. These mandrels are made in circular form when fully expanded, and when they are collapsed without the wedge, they are themselves very much in the form of flattened circles. On the inside surfaces they have grooves 7 and 8, made to receive the wedge, shown in Figures 5 and 6, and when the wedge is entered in

these grooves it holds the two parts of the expanding mandrel in proper alignment. These two halves of the mandrel are also fitted,—one side, part 1, with a groove 9, and the lower side, part 2, with a tongue 10, which coincide with each other. This tongue and groove hold the mandrel in line when, without the wedge, it is collapsed, and while it is being handled and entered in the hollow core.

The fact that this expanding mandrel is made from a round bar which is split in two parts and these two parts cut away in the central portion to prepare the grooves and recesses, 7, 8, 9 and 10, just mentioned, leaves them so that when they are brought together they will not form a true circle, but at the same time the outside surfaces will be segments of circles. This will enable the parts to function as is intended so they will readily enter the flattened form of the original circular core, and as this core is expanded through the various steps will bring it back to a true circle.

Figures 7 and 8 represent two views of a maul with handle. This maul can be either wood or rubber or similar substance, so that the face will not cut into the paper roll while it is being struck with this maul. This mauling or jarring is necessary while the wedge is being forced into the expanding mandrel in order to make the layers of paper slip one upon another; otherwise there would be so much friction between the large multiplicity of layers that it would make very difficult the driving in of the wedge into the expanding mandrel and the final bringing to circular form of the paper roll.

Figures 11 and 12 show the side and end view, respectively, of the tool used for driving out or loosening the wedge and for following up and driving out the expanding mandrel after the wedge is released.

Figures 9 and 10 represent two views of an ordinary sledge hammer to be used for striking

against the end of the driving out tool and forcing out the wedge. This operation is illustrated in Figure 2.

After describing these various tools I will now describe consecutively the use of same.

When the paper roll is found very flat, only a small-sized expanding mandrel can be entered. This is entered and the wedge used in connection with same is driven in with the sledge hammer, Figures 9 and 10, and at the same time it is being driven in, the roll is hammered on the outside with a rubber or wooden maul, or a maul of similar material that will not cut the paper, so as to make the layers of paper slip one upon another. After this wedge has been driven up its maximum distance and the roll expanded toward the circular form as far as this small-sized expanding mandrel can take it, the wedge and mandrel are knocked out, using the tool shown in Figures 11 and 12, and the sledge shown in Figures 9 and 10, by the method illustrated in Figure 2.

After this, the next largest mandrel that can be inserted is placed inside of the roll and the process repeated and so on until the mandrel has been expanded into the roll that has its circular face of the same radius as the interior of the circular core. In each case the mauling is to be continued while the wedge is being driven in, so as to make the paper layers slip one upon another. When this full-sized mandrel has been expanded in place it is found that the roll of paper is again circular in form and can be used just as if it had never been flattened.

Having described the tools and processes, I claim:

The process of expanding flattened rolls of paper, made of multiple layers, by the use of a series of expanding mandrels, while at the same time the outside of the roll is hammered to make the layers slip one upon another.

RICHARD ANDREW ROBINETT.

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55	130
60	135
65	140
70	145
75	150