

Oct. 16, 1923.

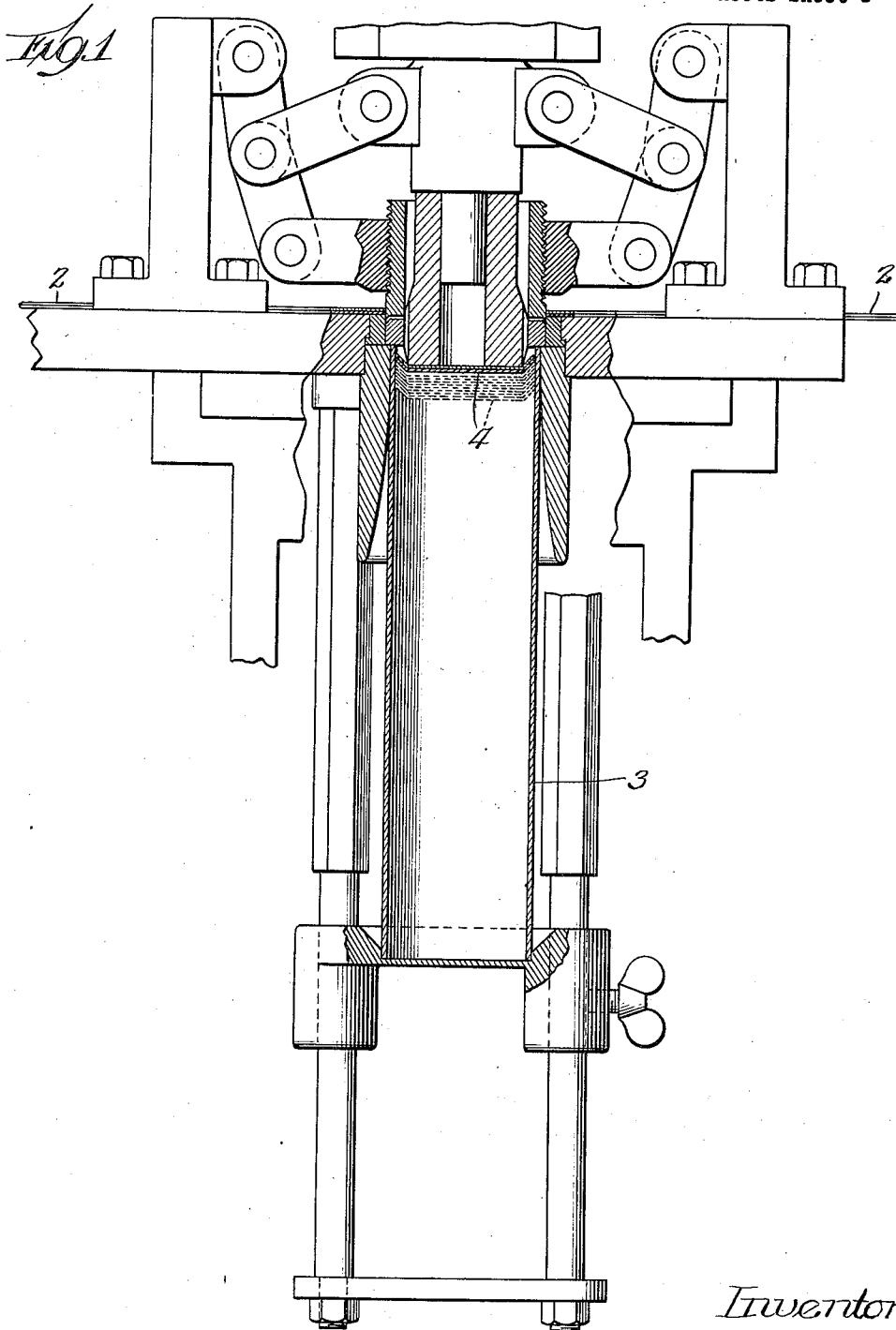
1,471,225

A. L. WEIS

METHOD OF MAKING PAPER OR OTHER ARTICLES

Filed Dec. 12, 1921

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 2

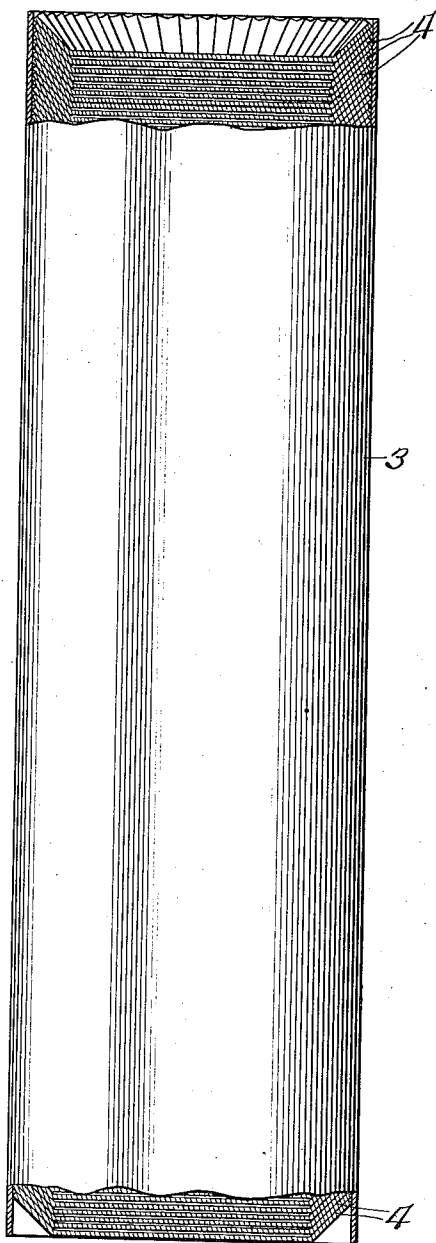


Fig. 3

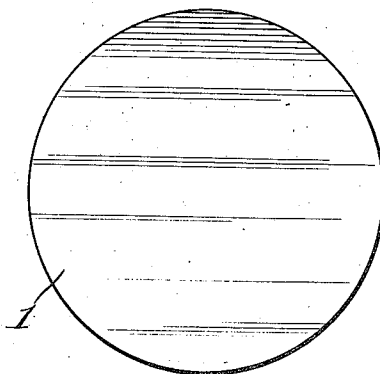


Fig. 4

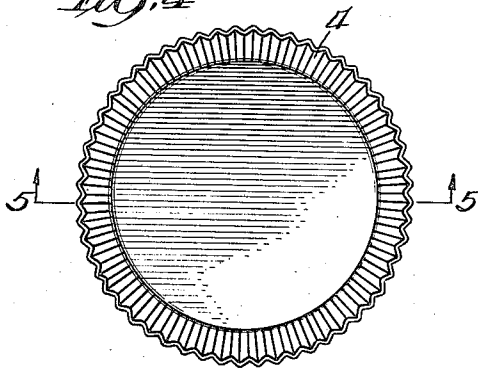
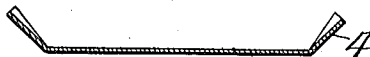


Fig. 5



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UNITED STATES PATENT OFFICE.

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METHOD OF MAKING PAPER OR OTHER ARTICLES.

Application filed December 12, 1921. Serial No. 521,664.

To all whom it may concern:

Be it known that I, ANDREW L. WEIS, a citizen of the United States, and resident of Monroe, in the county of Monroe and State of Michigan, have invented a certain new and useful Improvement in Methods of Making Paper or Other Articles, of which the following is a specification.

This invention relates to the manufacture of paper articles, or other articles made from sheet material, such as paper butter dishes or plates, or other similar articles which can be cut readily from sheet material and which can be packed or nested tightly together for shipping purposes.

Generally stated, the object of the invention is to provide an improved process or method of manufacture whereby paper plates or dishes or other similar articles are economically and conveniently cut and formed and then packed or nested tightly together in tubes or containers, such as ordinary paper tubes, or any similar container of any suitable or desirable character.

It is also an object to provide certain details and features tending to increase the general efficiency and desirability of a process or method of manufacture of this particular character.

To this and other useful ends the invention consists in matters hereinafter set forth and claimed and shown in the accompanying drawings in which—

Fig. 1 is a vertical section of the forming portion of a machine for making small paper butter plates in accordance with the process or method involving the principles of the invention.

Fig. 2 is an enlarged side elevation of a paper tube containing said paper butter plates nested or packed tightly together in the desired manner.

Fig. 3 is a plan of one of the round or disc-like blanks which are cut out of the sheet of paper and from which the said butter plates are formed.

Fig. 4 is a plan or top view of one of said butter plates.

Fig. 5 is a section on line 5—5 in Fig. 4. As thus illustrated the round or disc-like blank 1 is cut from the sheet of paper 2 by any suitable or desired means, apparatus or punching means being shown in Fig. 1 for this purpose. Preferably, as a

matter of further and special improvement, two or more sheets of paper are moved simultaneously one upon the other through the machine for making the plates, whereby a plurality of blanks of the kind shown in Fig. 3 are made simultaneously by each downward stroke of the machine. Immediately after the punching out of the blanks 1 and practically by the same operation, the dies of the machine press the edges of the blanks upward, as shown in Fig. 5, causing these edges to become fluted or corrugated, thus forming a shallow plate, adapted for any suitable or desired purpose, and depending upon the size thereof. As the blanks are thus punched and formed in the desired manner, they are forced downward in the paper tube 3 which is held in the machine by any suitable or desired means. The machine continues in operation, so that the plates 4, such as the one shown in Figs. 4 and 5, are pressed gradually downward until the tube is filled and until the lower end of the stack of plates rests upon the obstruction or support which forms a part of said machine and which is placed in position at the lower end of the tube 3 to close the latter and thereby prevent the plates from dropping out at the lower end thereof. The operation continues, of course, and even after the tube is apparently filled, inasmuch as the plates can be forced downward to compress the stack of plates in the tube. In other words, the tube 3 is not removed from the machine until after the plates are compressed or packed so tightly therein that it becomes practically impossible to force any more of them into the tube. The compression of the plates together in this manner produces practically a solid mass of plates and the tube is then removed and can be sealed at the opposite ends thereof for shipment. The apparatus or machinery for thus making the plates and automatically forcing them into the tubes or other containers may be of any suitable or desired character, of course, and the apparatus shown in Fig. 1 of the drawings is merely illustrative of one form of machine which can be used for this purpose. Preferably, as explained, the dies or cutting or punching or forming means for punching the plates and forming them are adapted for pushing them directly into the opening

in the tube 3, the latter having been placed in the machine by hand or in any suitable or desired manner. The compression is longitudinally of the tube 3, of course, during the operation of filling the tube, and the latter is formed of material capable of withstanding any lateral pressure exerted upon the walls thereof by the compression of the stack of plates therein. The diameter of the tube 3 is preferably such that the plates when punched and formed do not immediately fall to the lower end of the tube but are held back by the side-walls of the tube, whereby the crimped or fluted formation of the edges of the plates is maintained. In other words, the tube not only serves to carry the compact and solid mass of plates but also serves to prevent the plates from flattening out after they are made. In this way, therefore, the plates reach the consumer in good condition and in an economical manner and under circumstances which prevent any distortion of the plates during shipment or when placed on sale in stores or other places. Also by punching and forming a plurality of the plates at one time, from sheets of paper or other material lying flatwise, one upon the other, the plates are formed tightly together and are tightly and compactly compressed practically without any space between them in the tube or other container. However, of course, the plates are not so tightly packed or nested in the tubes in which they are shipped that they are hard or difficult to remove from the tubes after the latter are opened at either one or both ends thereof. This, moreover, insures a clean product, inasmuch as the plates are not at any time handled between the time when they are formed and the time when they finally reach the consumer or user. The plates are produced in groups and the members of the groups are never separated until after the plates are discharged from the tube for use. A plurality of plates, for example, forming a group is pushed into the tube before they are separated, and the members of the group are then held together until after they are discharged from the tube.

By this method it will be seen that the stack of plates moves gradually downward until the lower end thereof reaches its final position. Thereafter, as explained, plates are added at the upper end of the stack or column to increase the capacity and to compress the stack. Therefore, the lower end of the stack first moves downward until it

stops, and thereafter the upper end of the stack moves downward because of the continued addition of plates after the stack has moved downward until it reaches from one end of the tube to the other. This makes a very solid package of maximum capacity, so far as the number of plates which can be packed therein, for any given size of tube.

What I claim as my invention is:

1. In a process or method for the manufacture of articles from sheet material, the forming of said articles from suitable sheet material by a suitable punching operation, and packing such articles tightly together in a container, using said punching operation to force the articles into said container, and to gradually compress and form them into a solid stack therein, which stack increases by successive additions of articles thereto through one end of the container, so that the stack is gradually pushed into the container until the inner end of the stack reaches the other end of the container, with enough friction between the articles and the inner surface of the container to keep the articles compressed tightly together while the inner end of the stack is gradually moving toward the other end of the container, and compressing the stack by the addition of articles at the outer end of the stack after the inner end thereof has reached its final position.

2. The process or method specified in claim 1, said articles being paper plates with fluted edges, so that the plates are compressed and nested one within the other, and said container being a tube of such diameter that the walls thereof frictionally engage said fluted edges of the plates, so that the tube is employed to maintain the shape of the plates during the formation of the stack and during the compression thereof after the tube is apparently filled, as set forth.

3. A process or method as specified in claim 1, in which said punching operation is performed on a plurality of superposed layers of sheet material, so that each punching operation produces as many articles as there are sheets resting one upon another, and whereby the articles are more firmly compressed together and are supplied to said container in groups the members of which are not separated until after the articles are discharged from the container for use.

ANDREW L. WEIS.