A. BERAN.

ROLLER MECHANISM FOR PRODUCING CORRUGATED PAPER, METAL, AND THE LIKE.

APPLICATION FILED OCT. 23, 1912.

1,150,805. Patented Aug. 17, 1915.

Fig. 1

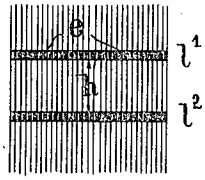


Fig. 2

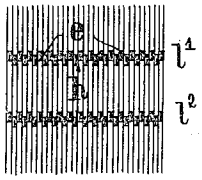


Fig. 3

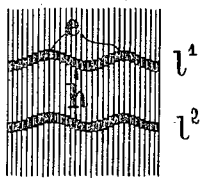


Fig. 4

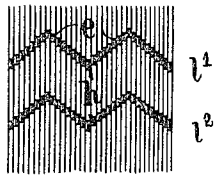


Fig. 5

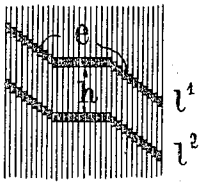


Fig. 7

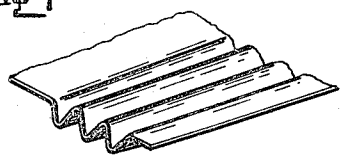


Fig. 6

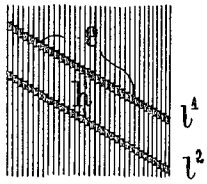


Fig. 8

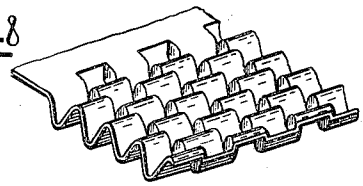


Fig. 13

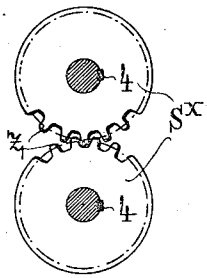


Fig. 9

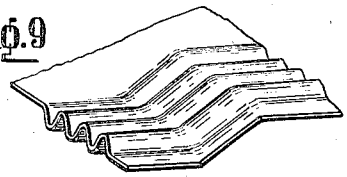


Fig. 14

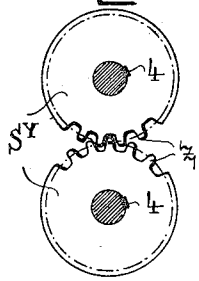


Fig. 10

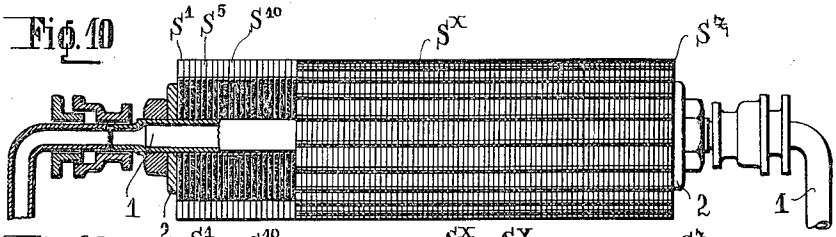


Fig. 11

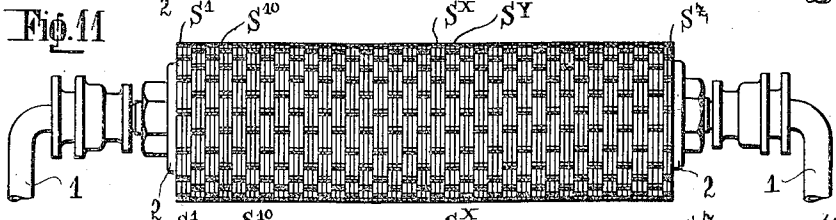
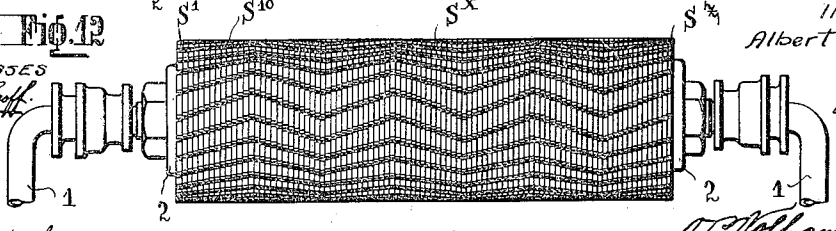


Fig. 12



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UNITED STATES PATENT OFFICE.

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ROLLER MECHANISM FOR PRODUCING CORRUGATED PAPER, METAL, AND THE LIKE.

1,150,805. Specification of Letters Patent. Patented Aug. 17, 1915.

Application filed October 23, 1912. Serial No. 727,438.

To all whom it may concern:

Be it known that I, ALBERT BERAN, subject of the Emperor of Austria-Hungary, residing at Hirschwang, Austria-Hungary, have invented certain new and useful Improvements in Roller Mechanism for Producing Corrugated Paper, Metal, and the like, of which the following is a specification.

This invention relates to improvements in roller-mechanisms for producing corrugated fabrics with either continuous or interrupted corrugations, in which pairs of corrugated rollers are used. Hitherto for producing different patterns of corrugation special rollers have for the most part been employed, in which the particular pattern to be produced at the time, is worked upon the top roller and the corresponding bottom roller. Accordingly it has been necessary hitherto to mount in the rolling machine special pairs of rollers to suit the required pattern. Moreover the working of the pattern upon rollers was a costly operation. Goffering or corrugating machines wherein one or both of the rollers are made up of a plurality sections of corrugating elements spaced from one another and displaceable longitudinally only on the roller shaft, permit only of varying the distance between the columns or strips of corrugated or goffered surface and plain surface, but permit of no variation of the actual lines of corrugation or goffering, for instance from straight to wavy or zigzag. These objections are overcome according to the present invention by building up the top and bottom rollers of the machine of a number of disks lying side by side and adjustable circumferentially relatively to each other, *i. e.* capable of being rotated about their centers and set in any desired relative position. Upon the circumferences of these disks are grooves, the composite profile of which produce the corrugations of the desired pattern. This construction of rollers presents the advantage that it is possible to produce with the same set of disks the greatest variety of patterns with continuous or interrupted corrugations.

One form of construction of the rollers according to the present invention is illustrated in the accompanying drawing, as also the process for building up the rollers.

In Figures 1 to 6 are shown diagrammatically six different patterns of corrugation produced with one and the same pair of rollers. Figs. 7, 8 and 9 illustrate in perspective three known patterns of continuous and interrupted corrugations made with the same pair of rollers. In Fig. 10 is illustrated the top roller of a pair constructed according to the present invention; the cooperating bottom roller is formed in the same manner. Fig. 11 shows the top or bottom roller for producing a pattern as illustrated in Fig. 8. Fig. 12 shows the construction of a top or bottom roller for producing the pattern shown in Fig. 9 and the remaining figures show details of the construction of the rollers.

The rollers are made as follows:—The pattern to be followed is not divided up according to the figural lines l^1, l^2 of the pattern, but each line of corrugations is divided up into differential elements e by sections running across the lines of corrugations. These differential elements e of the pattern are then transferred to the circumferences of the thin disks s to form male and female dies and the disks assembled form the new roller. Owing to the formation of the rollers of a number of differential disks with differential corrugating elements it is made possible to produce the greatest variety of patterns with a certain number of disks, since by moving the disks s about their centers relatively to one another the male and female surfaces of the roller can be altered at will. The great variety of patterns which may be obtained with a number of disks is illustrated in Figs. 1 to 6. The pattern shown in Fig. 1 consists of rows of corrugations arranged in straight lines, each of which is composed of a number of differential elements e side by side. To make a roller corresponding to this pattern the several disks s are provided with teeth z corresponding to the several elements e. The distance of the teeth from one another upon the circumference of the disks corresponds to the distance h between the rows of corrugations. By alternately changing the position of groups of the differential disks s the same disks may be used for producing the pattern shown in Fig. 2 with a staggered row of corrugations. The patterns shown in Figs. 3 to 6 can be obtained in the same way by suitably disposing the disks with regard to one another.

The roller illustrated in Fig. 10 consists

of a set of disks disposed upon the heating pipe 1 and held together by suitable clamping means 2 operating upon the two outer disks. It has been found that, for making most corrugated articles it is sufficient merely to tighten the disks one against the other, as the frictional grip of the disks upon one other and the constant engagement of the upper with the lower roller prevents any relative displacement of the disks. In exceptional cases however securing devices may be employed for securing the disks to one another and upon the shaft. These are illustrated, for example in Figs. 13 to 14 and consist of a key-piece 4 let into the shaft l upon which are engaged the disks s^1 to s^2 the disks being provided with grooves, which grooves may occupy different positions in the several disks. The teeth or grooves upon the circumference of the disks, as also the grooves for the key are stamped out of thin sheet metal. If necessary the disks may be held together by suitable keys and grooves upon the sides of adjoining disks.

Having thus described my invention and explained the mode of operation thereof, I claim and desire to secure by Letters Patent:

1. An adjustable corrugating device including a hollow axle member rotatably mounted in suitable journals, and a cylindrical corrugating member including a plurality of thin duplicate corrugating disks mounted on said axle and each having peripheral projections, each of said disks being relatively adjustable with respect to all of the disks on the axle member to form corrugating projections of selected design, and means for clamping said disks in position on the axle member.

2. An adjustable corrugating roll including a plurality of duplicate thin metallic disks arranged side by side and flushly contacting from axis to periphery, said disks being capable of rotary adjustment independently or in groups, a plurality of spaced apart peripheral projections formed on each disk providing therebetween intervening corrugating spaces, said disks being adapted to be shifted into any selected longitudinal arrangement of alinement to produce projecting corrugating elements on the face of said roller and corresponding intervening corrugating cavities, and means for clamping the disks together.

3. An adjustable corrugating roller including a plurality of thin duplicate disk elements, said disk elements being arranged side by side and adjustable independently or in groups about their centers, said disk elements being also provided at their peripheries with projections and intervening spaces to produce varied corrugating designs on the surface of said roller, and means for clamping said disk elements tightly together side by side in their adjusted relation.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT BERAN.

Witnesses:
JOSEF HESS,
AUGUST FUGGER.