J. W. McINDOE & A. E. WHITNEY.

IMPRESSION ROLL.

APPLICATION FILED MAY 3, 1916.

1,230,190. Patented June 19, 1917.

Fig. 1.

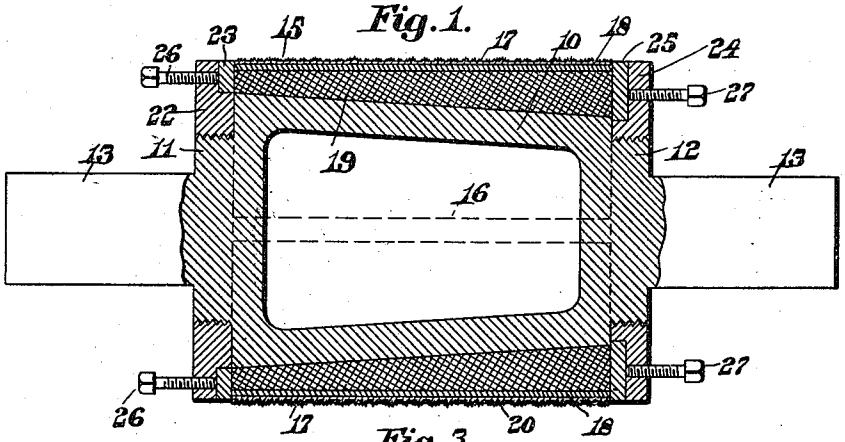


Fig. 3.

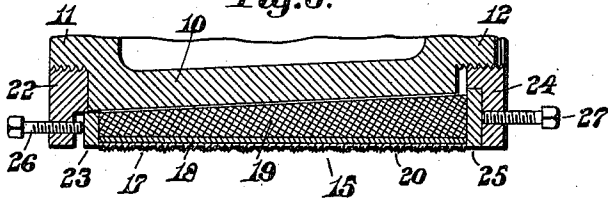


Fig. 2.

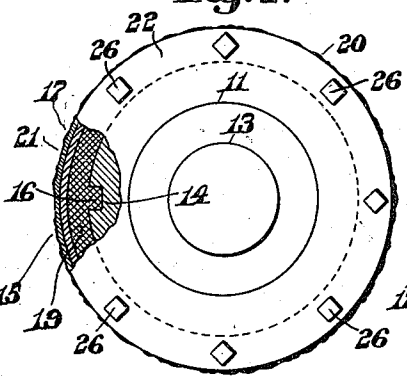


Fig. 4.



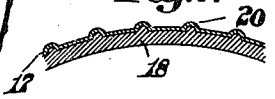
Fig. 5.



Fig. 6.



Fig. 7.



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UNITED STATES PATENT OFFICE.

JAMES W. McINDOE AND ARTHUR E. WHITNEY, OF WINCHESTER, MASSACHUSETTS.

IMPRESSION-ROLL.

1,230,190. Specification of Letters Patent. Patented June 19, 1917.

Application filed May 3, 1916. Serial No. 96,952.

To all whom it may concern:

Be it known that we, JAMES W. McINDOE and ARTHUR E. WHITNEY, citizens of the United States of America, and residents of Winchester, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Impression-Rolls, of which the following is a specification.

This invention relates to impression rolls and mounting therefor and particularly to rolls of this character adapted to impress into the surface of a sheet of soft material a plurality of indentations which may be of various depths and thicknesses, and which may be either regular or irregular in formation.

The object of the invention is the production of an impression roll which may be constructed in an inexpensive manner, and which when finished will be perfectly cylindrical with a plurality of projections extending outwardly from its periphery.

The invention consists in an impression roll having a thin pliable metallic sheet formed into a cylinder with a plurality of projections on its periphery and provided with a continuous cylindrical backing of the same metal deposited thereon by electrolysis.

The invention further consists of new and improved means for mounting said cylinders upon an arbor and removing the same therefrom.

The invention consists further of certain novel features of construction and arrangement of parts which will be fully understood by reference to the description of the drawings and to the claims hereinafter given.

For the purpose of illustrating the invention, one preferred form thereof is illustrated in the drawings, this form having been found to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized and that the invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Of the drawings:

Figure 1 represents a longitudinal section of an impression roll and arbor embodying the principles of the present invention.

Fig. 2 represents an end elevation of the same.

Fig. 3 represents a partial longitudinal section of the same, showing the means for removing the impression roll from the arbor.

Figs. 4 and 5 represent enlarged sectional details of a portion of the outer cylinder with its cylindrical backing, and

Figs. 6 and 7 represent similar sections having a modified form of projections on the periphery thereof.

Similar characters designate like parts throughout the several figures of the drawings.

In the drawings, 10 is an arbor provided with threaded hubs 11 and 12 in axial alinement, these hubs 11 and 12 being provided with alined trunnions 13 adapted to be mounted in any suitable bearings in which it is desired to rotate said arbor 10.

The arbor 10 is cone-shaped and provided with a key-way 14 extending longitudinally thereof. Mounted upon the arbor 10 is an impression cylinder 15 provided with a key 16 formed integral therewith extending into the key-way 14 of the arbor.

The impression cylinder consists of an electroplate 17 of thin pliable metal reinforced by a cylindrical backing 18 of the same metal, while within this cylindrical backing 18 is another tubular supporting member 19, preferably formed of type metal or some other similar soft metal with its bore cone-shaped to fit the periphery of the arbor 10.

The electroplate 17 is provided with a plurality of projections 20 of different heights and widths, as indicated in Fig. 4 of the drawings. These projections may be of various lengths, as indicated in Fig. 5 of the drawings.

It is obvious that the projections on the periphery of the electroplate cylinder 17 may be irregular in formation, or have a regular formation, as indicated in Figs. 6 and 7 of the drawings.

The electroplate 17 is first made in a flat plate and then formed into a cylinder with its opposing ends abutting as at 21. This cylinder 17 is then reinforced with a backing of the same metal deposited thereon by electrolysis, the backing thus deposited forming a continuous cylinder 18 which unites with the rear face of the electroplate

17 and extends into the depression on said inner face locking the two cylinders 17—18 firmly together and giving the united cylinders rigidity so that it may be readily handled.

After this shell 17—18 has been formed the support 19 is cast therein with the key 16 formed on its inner wall. Threaded to the hub 11 is an annular plate 22 having a ring 23 mounted in a depression on its inner face. A similar collar 24 is threaded to the hub 12 and this collar 24 has a ring 25 mounted in a depression on its inner face. The collar 24 has a plurality of threaded members 26 mounted therein bearing against the outer face of the ring 23 and similar adjusting members 27 are threaded to the collar 24 and bear against the outer face of the ring 25.

In assembling the impression roll the collar 22 with its ring 23 and adjusting members 26 is first mounted upon the hub 11 in the position shown in Fig. 1 of the drawings. The cylinders 17, 18, and 19 are then placed upon the arbor 10 with the key 16 in the key-way 14. The collar 24 is then threaded to the hub 12 and the members 27 adjusted to force the ring 25 against the adjacent end of the cylinders 17, 18, and 19 to force said cylinders firmly against the inner face of the ring 23.

The collar 24 is then rotated about the hub 12 until it assumes a position indicated in Fig. 1 of the drawings.

When it is desired to remove the cylinders 17, 18, and 19 from the arbor 10, the collar 24 with the parts mounted thereon is rotated about the hub 12 until in the position shown in Fig. 3 of the drawings. The adjusting members 26 are then rotated to move the ring 23 away from the flanged portion of the collar 22, thus forcing the cylinders 17, 18, and 19 into the position indicated in Fig. 3 of the drawings. If then the collar 24 and the parts mounted thereon are removed from the threaded hub 12, the cylinders 17, 18, and 19 may be quickly removed from the arbor.

By having the electroplate 17 provided with a plurality of projections extending from the periphery thereof, any desired impressions may be indented into the face of any flat material. These impressions in the flat material may be of regular or irregular formation, as desired.

It is believed that the operation and many advantages of this invention will be fully understood from the foregoing description.

We claim:

1. An impression roll having a plurality of peripheral projections of different heights and lengths and of varying thickness.

2. An impression roll consisting of a cylinder having peripheral projections, a tubular support therefor having a tapered bore, a coneshaped arbor on which said tubular support is mounted, flange threaded to and movable lengthwise of said arbor for positioning said support thereon, an annular plate on the inner face of said flange, and members threaded to said flange and bearing against said annular plate.

3. An impression roll consisting of a cylinder having peripheral projections, a tubular support therefor having a tapered bore, a coneshaped arbor on which said tubular support is mounted, a flange on said arbor, a plate movable on said flange, and members threaded to said flange and bearing against said annular plate.

4. An impression roll having a plurality of peripheral projections of different heights, lengths and thicknesses separated by portions in the same cylindrical plane and alined lengthwise of said roll.

Signed by us at Winchester, Mass., this 22d day of April, 1916.

JAMES W. McINDOE.
ARTHUR E. WHITNEY.

Witnesses:
THEO. P. WILSON,
GEORGE F. McINDOE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."