Apr. 24, 1923. 1,452,824

W. G. BOSWORTH

ROLLER

Filed Dec. 2, 1919

Fig. 1,

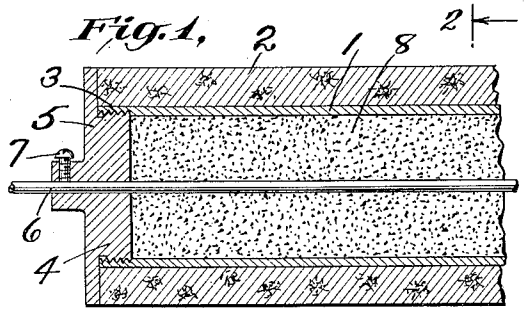


Fig. 6,

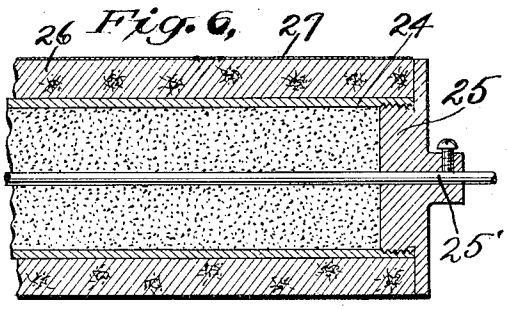


Fig. 3,

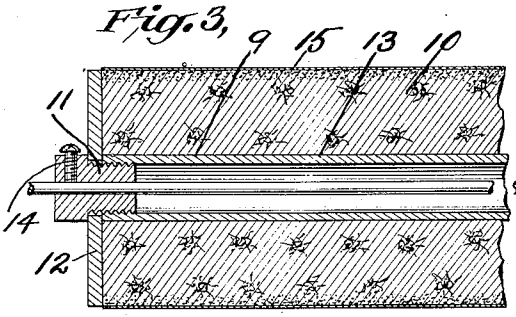


Fig. 8,

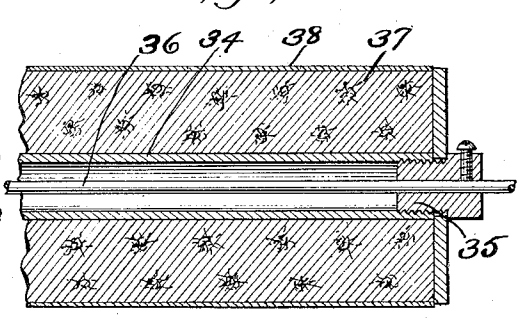


Fig. 4,

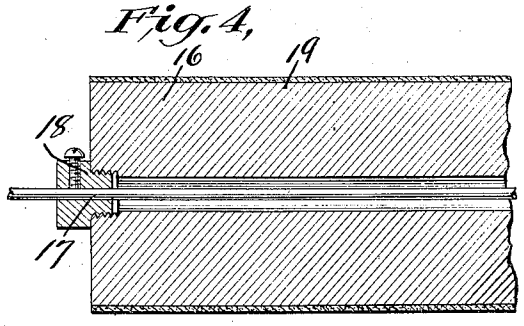


Fig. 7.

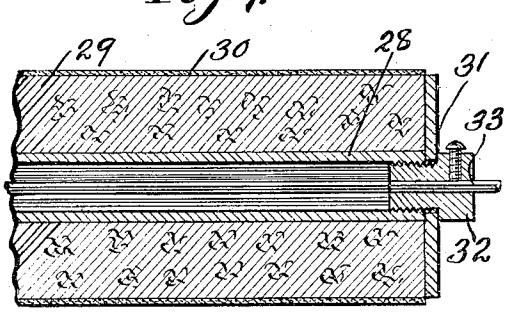
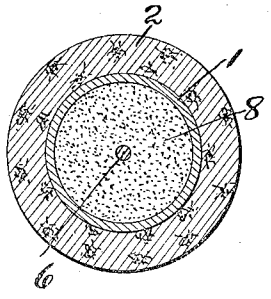


Fig. 2,



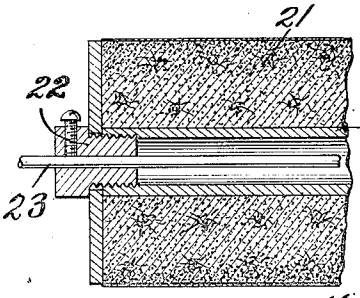


Fig. 5,

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By his Attorneys

Riddle & Margeson.

Patented Apr. 24, 1923. 1,452,824

UNITED STATES PATENT OFFICE.

WILLIAM G. BOSWORTH, OF NEW YORK, N. Y.

ROLLER.

Application filed December 2, 1919. Serial No. 341,872.

To all whom it may concern:

Be it known that I, WILLIAM G. BOSWORTH, a citizen of the United States of America, residing in the borough of Manhattan, city, county, and State of New York, have invented new and useful Improvements in Rollers, of which the following is a specification.

My invention relates primarily to rollers or platens for typewriting machines, but it is to be understood, of course, that my improved roller may be used to advantage in other situations.

An object of the present invention is the provision of a roller which will deteriorate very slightly if at all, as distinguished from the usual rubber covered typewriter rollers which rapidly harden and become increasingly noisy.

A further object of the invention is to provide a roller which will emit only a minimum amount of noise when in use in a typewriting machine as a typewriter roller or platen.

A still further object of the invention is the provision of a roller having an outer cover constituting a wearing or striking surface which may be easily renewed and to provide a roller on which good carbons can be made, should the roller be used as a typewriter roller or platen.

A further object of the invention is to provide a roller having an outer cover of such a nature as to reduce the slipping of the paper on the same.

In the accompanying drawings wherein I have illustrated embodiments of my invention,—

Fig. 1 is a longitudinal, sectional, elevational view of one embodiment of my invention;

Fig. 2 is a section taken on the line 2—2 of Fig. 1;

Fig. 3 is a longitudinal, sectional, elevational view of another embodiment of my invention;

Fig. 4 is a longitudinal, sectional, elevational view of still another embodiment of my invention;

Fig. 5 is a longitudinal, sectional, elevational view of another embodiment of my invention;

Fig. 6 is a longitudinal, sectional, elevational view of another embodiment of my invention;

Fig. 7 is a longitudinal, sectional, elevational view of still another embodiment of my invention; and

Fig. 8 is a longitudinal, sectional, elevational view of still another embodiment of my invention.

Referring now to the drawings in detail, and first of all to Figs. 1 and 2, 1 designates a tube or cylinder of metal or other suitable material, covered with granular or finely divided cork, designated 2, this cork surface constituting the wearing surface for the roller. I have found in practice that an excellent wearing surface is obtained if the finely divided or granular cork be compressed under a pressure approximating, for example, 800 to 1,000 pounds to a square inch, and while under such compression be baked at a temperature of from as low as 350° F. to as high as 800° F.

Each end of the cylinder 1 is screw-threaded at 3 to receive a screw-threaded hub 4 of end plates 5. These plates 5 are screwed into the cylinder 1 to compress the cork covering, the tendency of the cork to expand to its original length holding the plates firmly in position without necessitating the use of set screws or other holding means therefor. As a convenient means for supporting the roller in a typewriting machine I have provided a rod 6 passing through the end plates 5 and cylinder 1 and extending beyond the ends of the roller a short distance, which rod will rest in the usual bearings provided in typewriter machines for that purpose. This rod is held in place by set screws 7.

In making up the covering 2 for the roller I found it convenient to compress and bake the granulated cork in sheets or boards of a thickness to permit a roller of the desired diameter to be made therefrom, the sheets after this treatment being cut up into strips, bored and turned or ground down to the required diameter, this turning or grinding down of the cork making the surface very smooth so that the same is suitable for use as a wearing or striking surface, as the case may be.

The cylinder or tube 1 is shown of com-

paratively large diameter and if desired this cylinder may be filled with granulated cork or other non-resonant, non-sonorous material indicated 8, although I have found by experiment that this is not essential. If desired this tube 1 may be reduced very materially in diameter and in fact may be reduced to a size where it is just sufficiently large enough to receive the rod 6.

Rollers constructed in accordance with the disclosure of Fig. 1 prove to be very satisfactory in use, the cork granules firmly adhering to each other, and do not become dislodged when the roller is used as a typewriter roller or platen.

I have found also that a roller constructed as above described does not seem to be affected by temperature conditions, its degree of hardness remaining substantially constant as distinguished from the rubber covering usually employed on typewriter rollers or platens which very soon hardens and deteriorates.

The construction disclosed in Fig. 3 comprises a cylinder or tube 9 of metal or other suitable material supporting a compressed cork covering 10 similar to the covering 2 of Fig. 1, or a covering of other suitable non-resonant, non-sonorous material. The cylinder 9 is screw-threaded at each end to receive screw-threaded plugs 11 formed with a shoulder bearing against the face of end plates 12. In assembling the roller these plugs are screwed inwardly sufficiently to compress the covering 10, the tendency of the covering to expand to its original length holding the plates and plugs firmly in place without the use of set-screws or other holding means. Passing through the plugs 11 is a rod 13 similar to the rod 6 of Fig. 1 and which rod is adapted to be supported in bearings furnished for that purpose in typewriting machines. This rod is held in place by set screws 14. The covering 10 is coated with an impervious, flexible, resilient covering having as a base phenol and formaldehyde, this covering which is designated 15 constituting a wearing or striking surface or outer cover for the roller. After application of this striking or wearing surface I preferably subject the roller to a baking process maintained at a sufficiently high temperature and for a sufficient length of time to cause the surface to become of the desired hardness. If desired silicon carbide or carborundum, or other hard, finely divided material may be incorporated in the striking or wearing surface 15 before the baking process, this material being added for the purpose of preventing slipping of the paper on the roller when the roller is used in a typewriting machine and also for the purpose of prolonging the life of the wearing or striking surface of the roller. By reason of the striking surface provided on this type of roller the same will be unaffected by changes in temperature and will not deteriorate, as in the case of rubber.

In Fig. 4 I have illustrated a form of roller comprising a metal cylinder 16, bored and screw-threaded at each end to receive plugs 18 through which passes a rod 17 similar to the rod 6 of Fig. 1, this rod being held in place by set screws or other suitable means. This cylinder is provided with an cover constituting a wearing or striking surface 19 composed of material similar to the surface 15 of Fig. 3. This wearing or striking surface preserves the cylinder 16 and imparts more or less resiliency and elasticity to the roller, as a whole. If desired the passageway in the cylinder through which passes the rod 17, may be very much enlarged and filled with granulated cork or other non-resonant, non-sonorous material, as in the case of the roller indicated in Fig. 1, already described.

In Fig. 5 I have illustrated a roller comprising a cylinder 20 of wood, metal or other suitable material, covered with an impregnated cork covering 21, this covering being composed of baked, compressed, granulated cork, impregnated with a mixture, the base of which is phenol and formaldehyde which after impregnation is baked until the roller is of the desired hardness. In this instance I have provided plugs 22 which are screwed into the ends of the cylinder or tube 20 to receive a rod 23 similar to the rod 6 of Fig. 1 and also to force the end plates, similar to the end plates of Fig. 3, into firm engagement with the cork covering 21 to compress the same so that the tendency of the cork to lengthen will hold these end plates firmly in place without the use of other holding means.

In Fig. 6 I have provided a cylinder or tube 24 supporting a covering 26 of cellular material, such as the cork 2 of Fig. 1, for example, this covering being provided with an exterior cover constituting a striking or wearing surface 27 of metal, such as nickel, for example, which is deposited by electrolysis upon the same. This roller is provided with end plates 25 screwed into the ends of the tube or cylinder 24 which plates receive a rod 25' similar to the rod 6 of Fig. 1 and provided for the same purpose.

In Fig. 7 I have provided a roller comprising a tube or cylinder 28 upon which is mounted a covering 29 of baked, compressed, granulated cork or other suitable material, preferably, however, material which is non-resonant and non-sonorous, this covering being provided with an outer cover constituting a striking or wearing surface 30 containing hard, finely divided material, such as silicon carbide or carborundum. In the manufacture of this roller I take a sheet of celluloid and wrap it about

the covering 29 securing the celluloid thereto by the use of a suitable adhesive as cement for example, or I may, if desired, overlap the adjacent edges of the celluloid and cement them to each other with a suitable adhesive or any other well known means. The celluloid is then given a coat of adhesive, such as varnish, and before the adhesive has dried the roller is dusted with carborundum or similar material. Should it be desired to dispense with the celluloid, a coating of glue or other suitable adhesive may be applied to the covering 29, after which the hard, finely divided material, such as carborundum, may be sprinkled on the same. The roller is then preferably given a coat of waterproof varnish and then dusted with very fine carborundum or other hard, finely divided material. Good results are obtained also if carborundum cloth be used, that is to say, a cloth upon which has been deposited a coating of carborundum. In this instance the covering 29 is coated with glue or other adhesive and the carborundum cloth applied directly to the same. I prefer, after the carborundum or carborundum cloth, or other suitable hard, finely divided material is applied, to the covering, that a thin coat of waterproof varnish be applied and then dusted with very finely powdered carborundum.

In the manufacture of this roller I may apply a coat of glue or other suitable adhesive to the cover 29, then apply a cloth to the cover. The cloth will then be given a coat of glue and dusted with carborundum. A coat of waterproof varnish is then applied and finally dusted with finely divided carborundum, or similar material.

I have also provided for this roller, plugs 32 screwed into the end of the tube or cylinder 28, these plugs being provided with shoulders bearing against end plates 31, similar to the end plates 12 of Fig. 3. This roller is also provided with a rod 33, similar to the rod 6 of Fig. 1, and for the same purpose. I have found by experiment that this roller when used as a typewriter roller or platen, gives excellent results, eliminating much of the noise occasioned by the usual typewriter roller or platen and making much better carbons. The very nature of a covering, as 30, insures that the same will not deteriorate or be affected by temperature conditions. This roller, also, while sufficiently rigid to enable good carbons to be made thereon, as just indicated, at the same time is sufficiently resilient and elastic to insure good action of the typewriter machine when the roller is used thereon.

In the roller of Fig. 8 I have provided a tube 34 each end of which is supplied with a plug 35 to receive a rod 36, similar to the rod 6 of Fig. 1. Upon the tube 34 I mount a covering 37 of cork or other suitable material, this covering being enveloped in an outer celluloid cover 38 secured thereto in any suitable manner as by cement or other adhesive, the surface of the celluloid member being sandblasted or otherwise treated to give it a roughened surface.

It is to be understood that I am not to be confined to the use of rollers herein illustrated and described as typewriter rollers or platens as obviously the same may be used in many other situations. For example: these rollers are available for use as friction rollers on typewriting machines.

It is also to be understood that I am not to be confined to the use of the specific materials illustrated and described as obviously other materials of similar nature may be substituted therefor without departing from my invention.

Furthermore, it is to be understood that making the outer cover of a mixture of carborundum and celluloid comes within the purview of this invention.

What I claim as new is:

1. A roller comprising a baked, compressed-cork, cylindrical member having an outer cover of hard, finely divided material.

2. A roller comprising a baked, compressed-cork, cylindrical member having an outer cover of carborundum.

3. An outer cover for typwriter rollers coated with hard, finely divided material.

4. An outer cover for typewriter rollers coated with carborundum.

5. An outer cover for typewriter rollers or platens comprising celluloid coated with hard, finely divided material.

6. An outer cover for typwriter rollers or platens comprising celluloid and carborundum.

7. An outer cover for typwriter rollers or platens comprising celluloid and finely divided material.

This specification signed and witnessed this 1st day of December, 1919.

WILLIAM G. BOSWORTH.

Signed in the presence of—
JAMES G. BETHELL,
JOSEPH MONTGOMERY.