Nov. 20, 1945. R. A. GORDON 2,389,499

ROLL FOR TYPEWRITERS

Filed Feb. 8, 1943

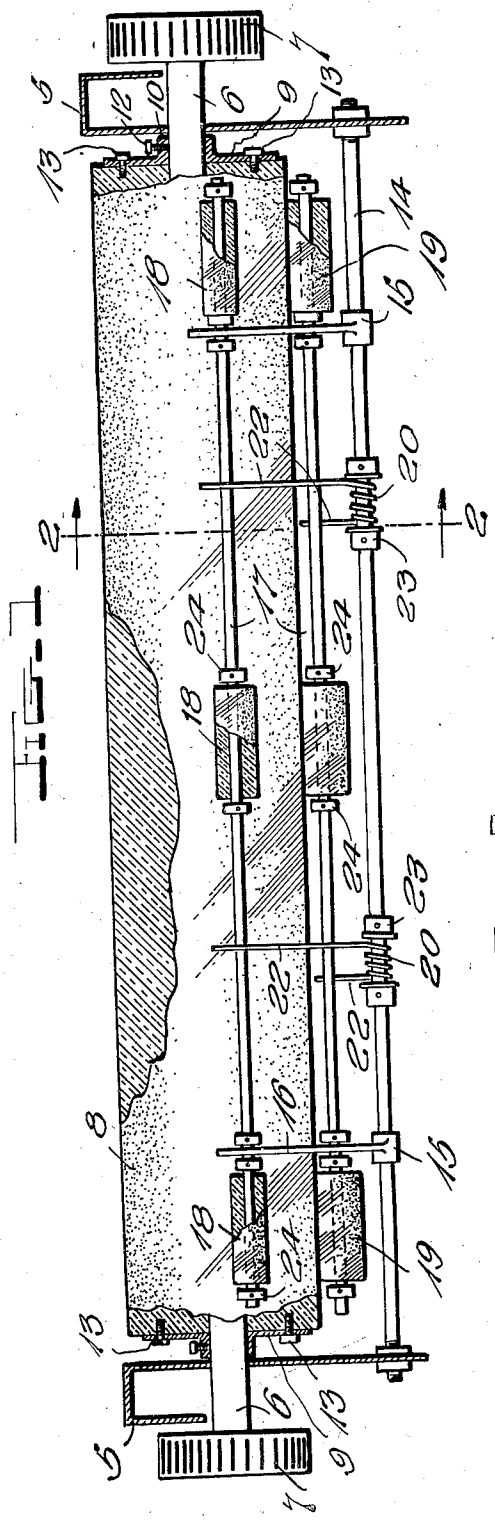


FIG. 1

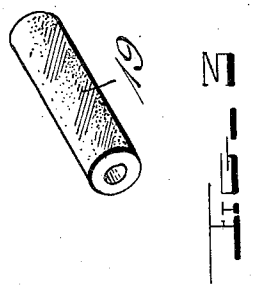


FIG. 3

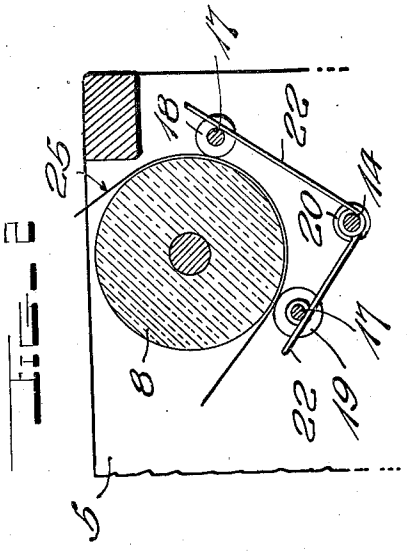


FIG. 2

INVENTOR.
Ronald A. Gordon,
BY
Ralph L. Stevens
ATTORNEY

Patented Nov. 20, 1945

2,389,499

UNITED STATES PATENT OFFICE

2,389,499

ROLL FOR TYPEWRITERS

Ronald A. Gordon, New York, N. Y.

Application February 8, 1943, Serial No. 475,156

2 Claims. (Cl. 197—144)

This application is a continuation-in-part of my patent application, Serial Number 369,792, filed December 12, 1940, for "Typewriter platens and means for illuminating same," wherein I disclosed a platen roller formed of translucent plastic material in association with a source of illumination disposed above and slightly to the rear of the platen.

The platen roll of my pending application is satisfactory for the most part, particularly for stenciling operations, but occasionally possesses slight dimensional inaccuracies from the molding process and frequently must be adjusted to extremely fine accuracy relative to other parts of the carriage to prevent slipping between the platen and the paper passing through the machine.

It is the primary object of the present invention to carry forward my original idea of utilizing "Lucite" or its equivalent as a material for typewriter platens and, further, to suggest the use of such material for typewriter feed rolls.

Rubber, cork and like materials employed in platens and feed rolls must be replaced a number of times at considerable expense during the life of a typing machine. Moreover, feed rolls of such material require separate internal bearings of harder material to mount them upon their shafts. The material of my invention will easily outlast the machine. It does not wear away or chip, and it is not subject to deterioration by chemical action of inks and cleansing materials.

It has been proposed to substitute glass and metal for conventional platens. Both are too hard, and the glass is frangible. My platen is harder than rubber, but it possesses sufficient resilience to absorb impact of the keys, without damage and with a minimum of noise. In addition, its greater hardness permits many more legible carbon copies to be made from each original sheet.

It is another major object of this invention to treat the surfaces of typewriter rolls formed of "Lucite" or equivalent material to impart to them a slight roughness for paper-feeding purposes. This preferably is done while machining them to accurate diameter, and it applies to both the platen roll and the smaller feed rolls.

Another important object of my invention is to eliminate the usual internal bearings with which feed rolls have been equipped in the past. My plastic feed rolls have internal bores within which their supporting shafts are slidably fitted for direct contact, this being true regardless of whether the rolls rotate with or independently of their shafts during operation of the particular typewriter in which they are mounted.

The foregoing and further objects of the present invention will become apparent from a study of the following detailed description when taken in conjunction with the accompanying drawing and the appended claims.

In the drawing:

Fig. 1 represents, partially sectioned and otherwise in front elevation, a typewriter carriage embodying the platen roll and associated feed rolls of the present invention.

Fig. 2 is a cross-sectional view, taken substantially upon the plane of line 2—2, Fig. 1.

Fig. 3 is a perspective view of one of the feed rollers seen in Figs. 1 and 2.

With continued reference to the drawing, wherein like characters are employed to designate like parts, the numeral 5 represents a portion of the framework of any conventional typewriter carriage, which carriage includes the usual platen shaft 6 having manually operable knobs 7 attached to its ends.

Upon the shaft 6 is mounted a platen or roll 8 in the form of a solid cylinder having a bore within which the shaft fits rather closely and non-rotatably. This union preferably is made permanent by a pair of end plates 9 which have hubs 10 secured to the shaft by set-screws 12, there being further screws 13 provided to fasten the plates to the ends of the roll. It should be understood that there may be a substantial annular clearance between the shaft and the platen if desired, and that any equivalent means may be substituted for the parts 9 to 13.

The roll 8 is formed of "Lucite," consisting of a methyl methacrylate composition which is rather hard, very durable, highly tenacious, non-frangible and substantially resilient. Thus, it has advantages over rubber, metal and glass platens, none of which possesses all of the desirable qualities enumerated. In addition, it has chemical resistance to all inks and cleaning solutions, and may be cleansed simply by wiping it with a cloth dampened in alcohol. In particular, as compared with the rubber covered rolls of marketed machines, my improved platen is everlasting, it is substantially noiseless when struck by the keys, and it will produce many more and finer legible carbon copies. It has a combined hardness and resilience that obviate puncturing of the paper.

There are some equivalents or near equivalents in the field of chemo-plastics which may be regarded as falling within the scope of the present

invention as substitutes for "Lucite," but none of them is quite as satisfactory.

The above described plastic roll is molded substantially to the cross-sectional shape desired in the form of an elongated solid cylinder, which thereafter is cut into suitable lengths. Each cylindrical section is then bored and placed in a lathe, the cutting tool of which is set to bring the diameter to exact dimension. Of course, either the tool or the work must move slowly in the axial direction of the cylinder. This machining operation is very, very important as it imparts a slight roughness or "frostiness" to the cylindrical surface to just the extent necessary to make the roll "grip" and prevent slipping of the papers that pass through the typewriter. If examined closely or under magnification, these machining marks appear as a series of very closely spaced spiraling circumferential lines somewhat fragmented, but to the naked eye at a distance, they have the appearance of a continuous frosted surface. Without them the roll would have a smooth or polished surface and be impractical for use as a platen in a conventional typewriting machine.

Below the platen of the machine the carriage supports, fixedly, a conventional rod 14 that has mounted thereon a pair or more of hubs 15, each having integral therewith some V-shaped devices 16 in the form of supporting cradles for a pair of axles 17, one of which carries a plurality of feed rolls 18 and the other of which carries a plurality of similar rolls 19. These rolls may or may not differ in size, depending upon the machine set-up to which they are adapted, but both sets preferably are formed of "Lucite." Regardless of size, each roll comprises a cylindrical element that has been molded, bored and then surface-machined to impart to it a paper-gripping function.

The feed rolls 18 and 19 are pressed towards the platen roll 8 by two or more coil springs 20 which surround the rod 14 and each of which has a V-shaped pair of legs 22 that engage the outer sides of the axles 17 in such manner as to urge the latter towards the platen roll 8. Except for the feed rolls, per se, all of this is conventional. Both sets of rolls may be otherwise mounted, of the same diameter and actuated by different types of spring mechanisms. However, it should be noted that heretofore the rolls have been made of rubber or cork, and equipped with internal bearings of metal or its equivalent and therefore expensive in construction and subject to costly replacement. The "Lucite" feed rolls of this invention have the axles 17 directly journaled therein, and the material is such as to out-last the machine upon which it is mounted. As previously stated, their outer cylindrical surfaces are machined in such manner that they perfectly accomplish their paper-feeding function.

There is nothing novel in the sets of spacing collars 23 and 24, utilized to maintain the feed rolls in position axially of their supporting axles. The numeral 25 is applied in Fig. 2 to designate a sheet of paper being fed through my combination of novel rolls, comprising a platen and two sets of feeders, all formed of "Lucite" or its equivalent.

It may be added here that the "Lucite" material of the platen roll may be substantially transparent or colored, but that it preferably is translucent so that it can be used for stenciling, in combination with a lamp disposed just above and behind the platen. In such an arrangement, the light rays enter the platen material and are diffused to make the platen "glow" so that the operator of the machine can readily detect any errors as the typing operation proceeds. This is a distinct and obvious advantage over prior machines.

The machining of the platen and feed rolls, as previously stated, is highly important. However, such rolls are quite adaptable for use as idling ink-transmitting rolls in press-inking operations, and they serve nicely as impression rolls for mimeograph machines, even without the final machining operation.

Numerous obvious changes may be made within the spirit of my invention to cause a departure from the specific disclosure, and therefore, I wish to be limited, as is customary, only by a proper interpretation of the scope of the appended claims.

What is claimed is:

1. The method of producing a roll designed to frictionally engage the paper passing through a typewriter, comprising the steps of molding a chemo-plastic substance such as methyl methacrylate to substantially accurate diameter in the form of a cylinder, and subsequently forming the outer surface of said cylinder to exact diameter and roughening its said outer surface by machining it with circumscribed circumvolutions so closely spaced as to produce a fragmented and frosty appearance.

2. The method of producing a typewriter platen, comprising the steps of forming a relatively hard cylinder from translucent synthetic plastic material, and then imparting to it a frosty surface appearance by machining it circumferentially from end to end with spiraling circumvolutions so closely spaced as to appear fragmented.

RONALD A. GORDON.