April 29, 1930. W. F. HELMOND 1,756,513

TYPEWRITING MACHINE

Filed April 13, 1928

Fig. 1.

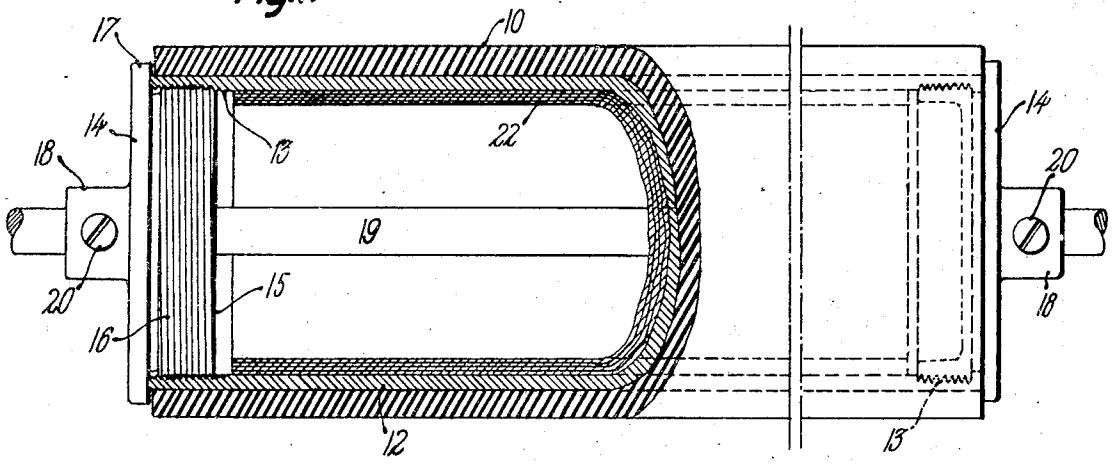


Fig. 3.

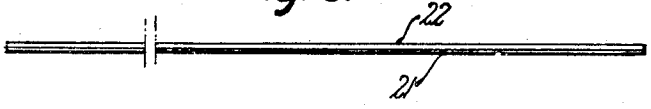


Fig. 4.

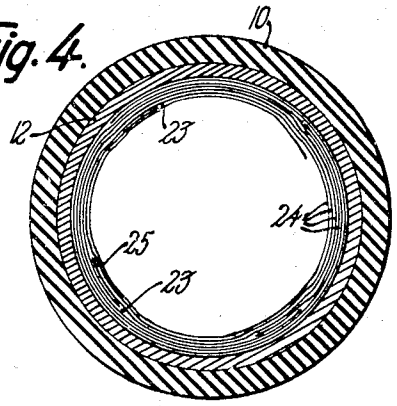
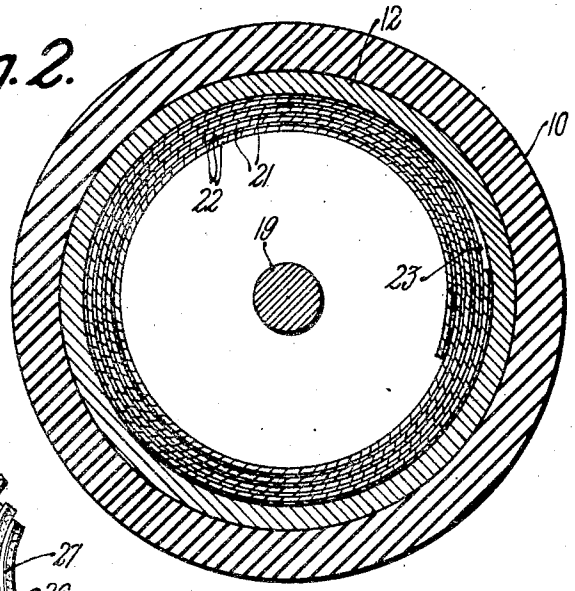
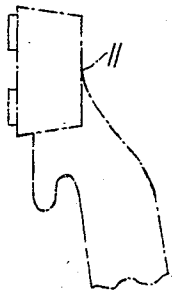


Fig. 2.





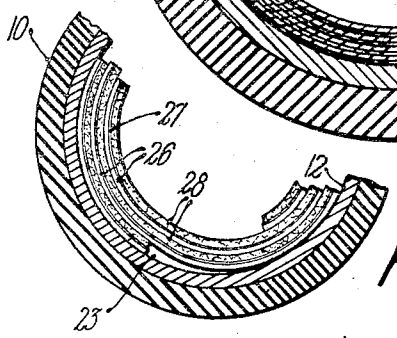


Fig. 5.

Inventor:
William F. Helmond
by B. C. Stickney
Attorney.

Patented Apr. 29, 1930 1,756,513

UNITED STATES PATENT OFFICE

WILLIAM F. HELMOND, OF HARTFORD, CONNECTICUT, ASSIGNOR TO UNDERWOOD ELLIOTT FISHER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE

TYPEWRITING MACHINE

Application filed April 13, 1928. Serial No. 269,628.

This invention relates to revoluble platens for typewriting machines of the sound-deadening class.

One of the objects of the invention is to provide an all metal core for the platen that is durable, cheap, and noise absorbing, without undue weight.

To accomplish the above objects a hollow aluminum tube with aluminum heads is preferably employed, as it is light and not sonorous.

In the preferred form of construction, the outer surface of said tube or core is covered with the usual rubber sheath.

To absorb or reduce noise, a thin paper flap is coiled into a plurality of layers, and inserted into the metal core and closely underlies the inner surface thereof. For this purpose, one or more sheets of paper may be employed, and of such width as to extend very nearly from end to end of the core. Before insertion, the paper receives on one side a thin coat of shellac, or other moisture-proof material which will insure a hard, smooth, and unstretchable surface, to minimize the tendency of the coil to set or collapse. Such coat must be thoroughly dry before the paper is used, to avoid the adhesion of one ply to another or of the outer ply to the inner surface of the core. Were adhesion permitted, the noise-deadening qualities of interlying dead air spaces would be lost.

When the platen is struck by a type, the resultant noise is in large part transmitted to the aforementioned rubber sheath. This absorbs part of the vibrations, but, due to its semi-hardness, a large portion is transmitted to the metal core. By the use of aluminum, the sounding-box effect is somewhat reduced. This sound-absorbing quality dampens the few vibrations that start lengthwise of the core. The major number of vibrations is transmitted through the walls of the core, and reaches the aforementioned paper coil or flap. The latter through its fibrous or cellular structure absorbs and deadens these vibrations, as they decreasingly are transmitted through successive plies. This sound deadening is also helped by the dead air in and between the plies, and in the body of the core.

With the above described construction, many advantages are gained.

In the use of paper as a sound deadener, it has been found that a plurality of closely coiled and separate plies is more effective than is a single or laminated sheet having an equal total thickness. The efficacy of the plies as a sound-absorbing medium increases in direct ratio with the number of plies employed. As lightness of the platen is desirable, the number of plies has been limited. For practical purposes, the weight of the paper coil may be set at approximately one ounce, for a ten-inch platen of about one and three-quarters inches external diameter, using paper having a thickness of three-thousandths of an inch. A paper coil so made embodies lightness, cheapness and effectiveness. These factors may also be attained in varying degree, by the use of other materials;—such for instance as ground cork attached by shellac to thin cardboard.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 shows a part longitudinal section through the platen.

Figure 2 is an enlarged transverse section through the platen, showing a one piece coil of paper.

Figure 3 is an enlarged side view of a sheet of paper, showing a moisture-proof coating applied to one side.

Figure 4 is a transverse section through the platen, showing a multiplicity of paper-sheets formed into a coil.

Figure 5 is a partial transverse section through the platen, showing a sound-deadening coil made of ground cork shellacked to thin cardboard.

Referring to the drawings, 10 is an outer jacket or sheath of rubber composition, affording a sheet-backing surface for the types 11. Said jacket 10 is a tube tightly superimposed or molded upon a metal tube or core 12, which may be interiorly threaded at each end, as at 13, for the reception of caps or platen-heads 14. Said caps are hollowed out at 15, and exteriorly threaded as at 16, to register with the interior threads of the core.

Each of said caps has a circular flange 17, larger in diameter than the external diameter of the core 12, and a hub 18, drilled to receive its supporting or platen shaft 19, to which it is attached by set-screws 20. Said heads 14 are preferably of aluminum, and the hubs 18 may have a plurality of flat faces, for the application of a wrench, in assembling the heads to each end of the core.

In Figure 2 is shown a one-piece coil or scroll of paper, nested within core 12, with a thin shellac, varnish or other moisture-proof coating 21, which has been previously applied to one side of said paper 22 next to the core. Between the several plies of said coil, and between the latter and the surface of said core, there will remain in places a thin dead air space 23, for the purpose hereinbefore explained, and showing one method of utilizing paper as a sound-deadener.

In Figure 4 is shown a second method, wherein a multiplicity of paper-sheets 24, having a coated surface, have been overlapped as at 25, and rolled into a coil which has then been inserted in the core and allowed to expand. This coil also retains thin dead air spaces, and in greater amount than in the first-mentioned one-piece coil. This increased number of dead air spaces is due to the several overlaps, which thus give an added effectiveness as a sound-absorbing medium. This building up of a coil from separate sheets has other advantages. The fibers in different sheets may slope at different angles, and thus zigzag, break up, and the better absorb, any sound vibrations passing through the wall of the built-up coil. Furthermore, the separate sheets can each be of a different structure, or varying structures can be alternated.

Figure 5 shows a third method of building up a sound-deadening coil, for use inside a platen-core. In the drawing, 26 represents a thin sheet of cardboard, to which has been applied a shellac or other mosture proof coat 27, on which while still wet has been sprinkled a layer of ground cork 28. The whole is allowed to become thoroughly dry, before it is coiled and inserted into the core. In forming the coil, the cardboard may be so rolled as to become the exterior surface, which when inserted will easily slide to the limit of its expansion against the wall of the core. Such outward expansion is due to the resiliency of the cork, which strives to return to normal after having been compressed by the rolling of the cardboard into a coil. It is obvious, that instead of cardboard a heavy paper could be used, and that instead of cork other resilient material might be employed.

With one platen head removed, the dry coated paper is formed into a coil, which may include one long or several short overlapped sheets of paper, sufficient to insure an assembled roll of a plurality of plies. When this built-up roll is inserted into the platen, its natural wiry characteristics cause it to expand and tightly hug the inside surface of the core, and each ply closely hugs the adjacent outer ply. Such a close hugging of one surface to another is furthered by the smooth hard surface of the coating, which permits each ply to readily slide to the limit of its outward expansion. Said expansion is a result of the resiliency of the fibrous or cellular structure of the paper, which tends to restore itself to a flat state after having been compressed by the coiling operation. This restoration to a flat state is aided by the coating, which prevents expansion or compression on the surface to which the coating has been applied, so that cells adjacent thereto are not changed, and retain their initial resiliency. The paper therefore does not lose all of its life or springiness, and retains its outward expanding or uncoiling quality. This uncoiling quality is further retained in the paper, because its structure is protected against the softening effects of moisture, by its own coating on one surface, and the coating of an adjacent ply on the other. Such moisture can only be present in small amounts, because when re-assembled with both heads threaded tightly against the edges of the tube, the platen-chamber is practically hermetically sealed.

From the above description it will be understood that the vibration-absorbing coils of paper are not a part of the metal core, but maintain a lasting contact with the inner face of the tube with just enough tension to insure a firm contact.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriter-platen, a core of rubber-coated metal tubing, and means to deaden sound vibrations transmitted within the metal tube, said means including a single-coated varnished paper-sheeting to be loosely rolled up to form a plurality of layers and to be inserted into the tube so as to hug the inner surface thereof due to the tendency of the coated side of the paper to expand with sufficient tension to insure a firm contact against the tube.

2. In a typewriter-platen, a core of rubber-coated metal tubing, and means to deaden sound vibrations transmitted within the metal tube, said means including a single-coated varnished paper-sheeting to be loosely rolled up to form a plurality of layers and to be inserted into the tube in such a way that the outer coated face of the roll tends to expand and hug the inner surface of the tube and maintain a lasting contact against the tube, the inner layers of the roll forming

spiral air spaces to break up the sound vibrations.

3. In a typewriter-platen, a core of metal tubing, and means to deaden sound vibrations of said metal tubing, said means including paper-sheeting to be loosely rolled up to form a plurality of layers for insertion into the tube, one side of the paper being finished with a stiff elastic coating to increase the tendency of the paper to unroll so as to closely hug the inner surface of the tube.

4. In a typewriter-platen, a core of metal tubing, and means to deaden sound vibratitons of said metal tubing, said means including paper-sheeting to be loosely rolled up to form a plurality of layers and to be inserted into the tube, one side of the paper being of the character of shellac to increase the tendency of the paper to unroll so as to closely hug the inner surface of the tube.

5. In a type writer-platen, the combination of a core of metal tubing, and a sound-deadening sheet of paper loosely rolled up to form a plurality of layers and inserted into the tube, the outer side of the paper having a coating of shellac, tending to cause the paper to unroll so as to closely hug the inner surface of the core.

6. In a typewriter-platen, a core of metal tubing covered with a hard rubber shell, which forms the backing face for the types, and means to deaden sound vibrations of said metal tubing, said means including a sheet of paper to be loosely rolled up to form a plurality of layers and to be inserted into the tube so as to hug the inner surface thereof due to the tendency of the paper to unroll, this tendency being increased by a stiff elastic coating applied to one side of the paper.

7. A typewriter-platen including the combination of a tubular metal core covered with suitable softer material to furnish the working face for the types, detachable ends for said tubular core to serve as mountings for a platen-shaft, and a sheet of paper, for sound-deadening purposes, to be loosely rolled up to form a plurality of layers and to be inserted into the tube so as to hug the inner surface thereof due to the tendency of the paper to unroll, this tendency being increased by a stiff elastic coating applied to one side of the paper.

8. A typewriter-platen including the combination of a rubber-coated tubular metal core, platen-heads secured to the ends of the core to provide a sound-enclosing chamber, and a plurality of rolled-up overlapping sheets of single-coated varnished paper inserted within the chamber of the tube to uncoil and establish a lasting contact with the tube.

9. A typewriter-platen including the combination of a tubular metal core covered with suitable softer material to furnish the working face for the type-bars, detachable end caps for said tubular core, said end caps to be threaded into the ends of the tubular core to serve as mountings for a platen-shaft, and a sheet of paper for sound-deadening purposes, to be loosely rolled up to form a plurality of layers and to be inserted into the tube, a coating of shellac being applied to the outer side of the paper, to cause the paper to unroll and to closely hug the inner surface of the platen-core.

WILLIAM F. HELMOND.