Nov. 3, 1931. W. F. HELMOND 1,830,058

TYPEWRITING MACHINE

Filed April 4, 1929

Fig. 1.

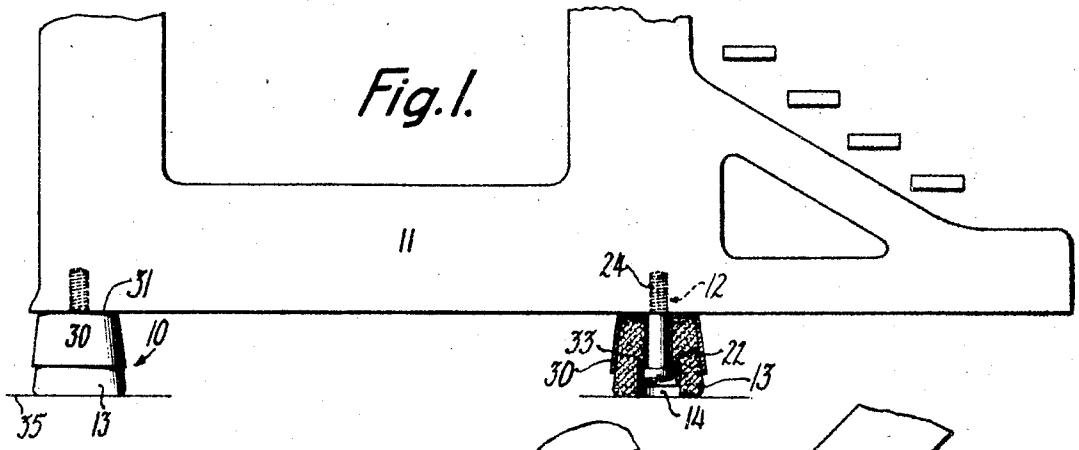


Fig. 2

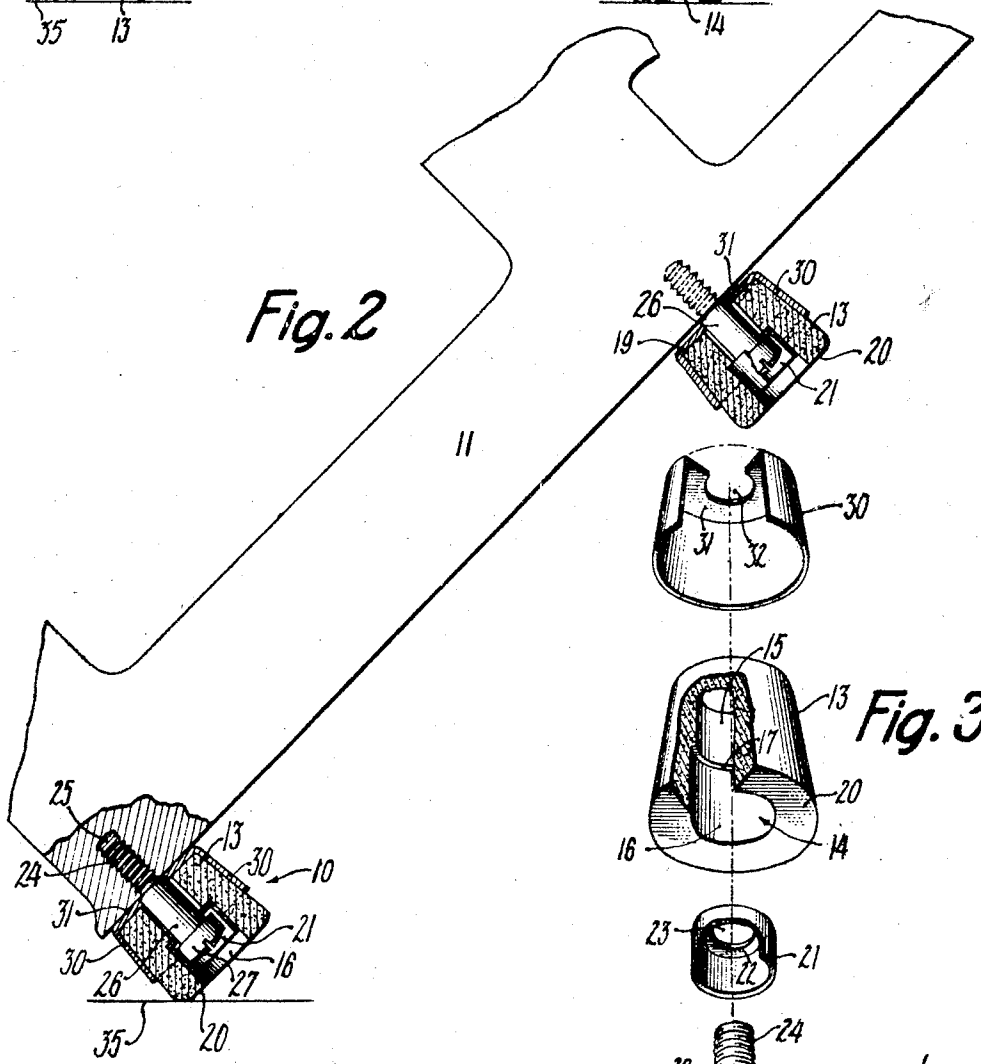


Fig. 3.

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TYPEWRITING MACHINE

Application filed April 4, 1929. Serial No. 352,345.

This invention relates to the mushy or compactible rubber feet provided for typewriting machines resting upon a desk. This application in part is a continuation of my pending application No. 239,669, filed December 13, 1927.

The operation of the typewriting machine has an injurious effect upon the feet, because they are being constantly subjected to vibrations. If the feet are made sufficiently rigid to withstand the vibration, they will prove to be noisy. They are therefore made somewhat mushy, and unstable, rubber being used in their composition, and they slowly collapse under the vibration, weight and harsh usage, and eventually become squat and misshappen. In order to serve its purpose, the foot has to be incapable of sustaining its burden and preserving its own shape. The principal trouble is found to be with the feet at the rear of the typewriting machine, which have to support the machine under the impacts of the heavy typewriter-carriage, which has to be arrested at the printing of every letter. The left-hand rear foot gets the harshest usage, and is the first to collapse. It often happens that a foot will yield and set or pack more on one side than upon the other, becoming greatly misshapen.

One of the objects of the invention is to overcome the aforesaid difficulties, and to this end, provision is made whereby the soft foot is swiveled upon studs pendent from the typewriting machine, in place of being bolted fast up against the machine as heretofore. The swivel is in the nature of a wrist. The wrists project from the four holes in the bottom of the machine, which have heretofore been threaded for the reception of foot-bolts. Hence, the invention can be applied to existing typewriting machines without making changes in the machines.

One of the objects in swiveling the rubber foot is to enable it to turn somewhat from time to time, and thereby expose new portions thereof to the severe punishment, whereby the foot will preserve a symmetrical form or evenness during the wear. This rotative readjustment of the foot or roll is effected without attention on the part of the operator, since at every shift of the typewriter along the desk the foot is bound to rotate at least to some extent. Moreover, the rolling of the feet gives them the advantage of casters, so that the typewriting machine, which is usually heavy, may be transferred from place to place upon the desk with very little effort. This is done simply by tipping the machine up on its side, so that it can roll along on the two side feet.

By the use of an additional simple device, a two-fold effect is gained in that the rolling of the rubber feet is greatly facilitated, and undue vibration or "shimmying" of the typewriting machine when in use is avoided, and a somewhat more mushy grade of rubber can be used, thereby reducing the noise of operation of the machine. This feature is in the nature of a metal washer or bearing, which is placed between the foot and the metal base of the typewriting machine. Owing to its hardness, this metal washer or disk does not rub much on the metal base, so that there is but little friction, and the roll turns easily when shifting the machine about the desk. This washer or disk is drawn down to form an inverted cup, into which the body of the mushy rubber foot is packed, being preferably under considerable normal pressure. The metal cup therefore affords an unyielding bandage or support for the rubber, so that the machine maintains a steady position when in use, whereby all the sound-absorbing advantages of the mushy or dead rubber are gained.

The washer may fit upon the pendent stud, so as to give the foot a pivotal bearing on the upper end of the stud. An additional bearing is also provided upon the lower end of the stud, consisting of the washer-portion which forms part of an internal thimble or cup provided within the rubber foot. The foot is thereby supported in two places upon the stud, and very free rotative movement is secured.

Owing to the lateral bending of the rubber foot, there was a constant tendency of the typewriting machine to creep along the desk when in use, and this had a further tendency to effect a misshaping of the rubber foot and often to injure the same, es-

pecially as the result of the old practice of dragging the typewriter about the desk while it is resting thereon with all four feet. It has also happened that if the machine, by resting on all four feet, should be swung about one of the feet, the latter may remain stationary during such rough usage of the machine, and it has resulted that the foot-screw would become loosened in the frame, and sometimes a foot has become detached from the machine, and other damage has been caused.

The present improvements convert the rubber feet into casters, and distribute the wear evenly thereon, and facilitate the movement of the machine along the desk at will, while maintaining the machine more firmly in writing position, and also gain the other advantages mentioned. The mushiness of the caster-feet is somewhat increased, and there is more effective absorption of the vibrations of the machine, while lateral flexing and distortion of the feet are prevented. There will be no tendency to loosen the threaded studs in their mountings in the typewriter-frame. The typewriter may be slightly tilted on any one or two of its feet, and then swept along or swung around, and the feet will function as casters, turning about their pivotal supporting studs or axes. There is distribution of frictional wear around the edges of the feet, so that the symmetry thereof is always preserved.

The aforesaid internal thimble or cup gives the mushy rubber body a firm lateral support upon the stud, this support extending down to the bottom of the foot, thus permitting the use of a very mushy grade of rubber, since the lateral thrust upon the foot is resisted more by the internal metal cup than by the rubber, and distortion of the feet is prevented. This internal bottom support also prevents the feet from bending laterally during the operation of the machine, to which bending the creeping of the machine upon the desk during operation has been partly due. Stability is therefore imparted to the machine during use. Sound vibrations are not transmitted from the typewriter-frame to the wooden desk, since nothing but mushy rubber is in contact with the desk.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a diagrammatic elevation of the frame of a well-known typewriting machine provided with feet made according to the present invention and embodying the same.

Figure 2 is a similar view to Figure 1, showing the machine-frame in a tilted position.

Figure 3 is a perspective view of one of the feet or novel casters and assembling members in accordance with the present invention.

In carrying out the present invention, feet generally designated as 10 are swiveled to the corners of a main frame 11, of a well-known typewriting machine, by means of devices, such as shoulder-screws 12, in a way hereinafter explained, so that the feet may serve also as casters. The feet or casters 10 each may have a body 13 of rubber substance of sufficient softness to serve as a cushion for counteracting the vibrations and deadening the noises produced by the moving parts of the typewriting machine. Each of these bodies 13 is shown in the form of a truncated cone having an axial countersunk hole 14 with the upper portion 15 of a smaller diameter than the lower portion 16, thereby forming a shoulder 17 approximately midway between an upper face 19 and a bottom face 20 of the bodies 13.

In the large portion 16 of the hole 14 in each body 13 is mounted a bushing or thimble-like member 21 having an upper end 22 arranged with a round axial aperture 23 for a purpose to presently appear. The thimble 21 is arranged to fit snugly in the hole-portion 16, and the end 22 will abut against the shoulder 17. The engagement of the end 22 against the shoulder 17 fixes the position of the thimble in the hole 14, so that the lower end of the thimble terminates a short distance above the bottom face 20 of the body 13. The thimble-member 21 will preferably fit tight enough in the body 13 so that it will not turn with respect thereto.

Each of the shoulder-screws 12 includes a threaded portion 24 at its upper end, which engages in usual threaded sockets 25 in the frame 11, and an enlarged shank 26 disposed between the threaded portion 24 and a slotted cylindrical head 27 on the other end of the shank. The diameter of the shank 26 is such that it will engage with a running fit in the aperture 23. The diameter of the head 27 will preferably be slightly smaller than the inside diameter of the thimble 21.

An outer thimble 30 having an upper end 31 provided with an axial aperture 32 for receiving the shank 26 with a running fit, is arranged to engage over the upper end of the body 13. The inside diameter of the thimble 30 is preferably such that the mushy rubber body 13 fits tightly in the thimble 30 and will not turn relatively thereto. When the thimbles 21 and 30 are assembled on a body 13, as indicated in Figure 1, the lower end of the thimble 30 will preferably extend a short distance past the upper end of the thimble 21. Then when a screw 12 is passed through the apertures 23, 32 in the thimbles 21 and 30 and is screwed up tightly in one of the sockets 25, an inner shoulder 33 of the screw-head 27 will be disposed slightly below the bottom face of the end 22, as indicated in Figure 1. By this construction, vibrations caused by the operation of the machine

cannot pass through the screws 12 and the casters 10 to a surface 35 of a supporting member, such as a table, except by going through the bodies 13, which have the characteristic of being effective to deaden such vibrations. This construction is also effective to deaden any sound-vibrations passing from the machine into a screw 12.

The co-operation of the thimbles 21 and 30, arranged for internally and externally bracing the somewhat mushy rubber body 13, is effective to prevent "shimmying", i. e., lateral vibration, and uneven compression, and lateral bulging of the body, while not appreciably detracting from its vibration-deadening quality.

In carrying out the important feature of the present invention, which resides in the provision of means for using a soft, noise-reducing, creep-preventing foot also as a caster for moving the machine about on a desk or table, the thimbles 21 and 30 function in an entirely different way from their above-described manner of co-operating to prevent the feet from becoming misshapen. The apertured ends 22 and 31 of the thimbles 21 and 30 serve effectively as two spaced-apart journals for the swivel-screw 12, and makes it possible for the rubber body 13 to be revolved around the screw when the machine is rolled in a tilted position, as illustrated in Figure 2, and the thimbles do this with far less friction than would be present if the rubber material of the body 13 formed the journal for the screw. The friction resulting from rolling the machine about on its casters 10 is further reduced by making the upper face of the end 31 smooth and having it engage against a finished metal surface around each socket 25.

It will also be noted that when the machine is tilted, as shown in Figure 2, the above-disclosed construction provides that most of the weight of the machine will pass from the lower circular rims or edges of the affected rubber bodies 13 to the inner thimbles 21 through a relatively thin wall of rubber. This is advantageous because the thin wall cannot flatten out enough to be a considerable detriment to the rolling action of the caster as a thick, unbraced wall would do, if used.

The tapering thimble 30 may skirt the yielding foot and brace the same laterally for more than half its depth. The cone-shaped foot is packed tightly in said thimble 30, and the weight of the machine has the effect of plugging the foot more forcibly into the tapering thimble or shell 30, increasing the resistance of the foot against becoming deformed, and permitting the use of a low-grade inexpensive rubber having low resistance to deformation, but having higher sound-proof quality as compared with a self-sustaining more expensive foot. The combination of the requisite form-support and the requisite sound-deadening quality is secured by extending the supporting band or skirt 30 down around the foot for nearly the entire depth of the latter, whereby the sound-insulating advantage of a large body of soft or somewhat mushy foot-rubber is obtained, without sacrificing stability of the machine or of the foot itself.

The entire reinforcement or lining 21 extends up within the lower margin of the outer skirt or shell 30, thus supporting the soft foot against being deformed under side stresses, due to the operation of the machine.

The screw 12 is secured rigidly to the machine without the necessity of putting the rubber under compression at any point, thereby avoiding the objection of deadening the rubber and reducing its sound-insulating and vibration-dampening qualities.

The foot may be of soft and cheap material of such poor quality as to be somewhat mushy. The weight of the machine has the effect of making the rubbery substance more compact, especially since the foot has a cone shape which fits closely in the conoidal thimble 30, and tends to pack therein, owing to the weight of the machine on the foot. The mushy foot is compacted or plugged by the weight of the machine up into the thimble, giving a very satisfactory and lasting result.

Internal collapse of the soft foot is avoided by the internal bushing 21, which extends down to a point close to the floor of the foot, and up to a point above the lower edge of the conoidal thimble 30.

This foot gives more satisfactory service and keeps the machine steadier and quieter than a better quality of more elastic rubber foot. However, a somewhat mushy foot made of this cheap material would be impracticable and too short-lived without the aid of the cover-thimble 30, as described.

Moreover, the shell 30 and the lining shell 21 are used as journal bearings to enable the foot to rotate upon the shoulder 26 of the screw, and freedom of rotation is secured by allowing for vertical play of the foot between the head of the screw and the bottom of the typewriting machine frame.

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. For use in a typewriting machine having a supporting frame-structure and a pin projecting downwardly from the frame-structure, said pin having an enlarged head on its lower end, a resilient caster journaled to rotate upon said pin and extending downwardly beyond the end thereof, whereby the lower end of the pin will be spaced above the surface of a supporting member, and an inwardly-flanged tube mounted in said caster so that

the tube and flange envelop said head and the tube extends downwardly therefrom to a position adjacent to the bottom face of the caster to provide a journal bearing surface between said head and the rotatable caster, and prevent undue lateral flexing of the lower portion of the caster, said caster being made of soft material compressible by the weight of the typewriting machine.

2. For use in cushioning a typewriting machine having a frame and a downwardly-projecting pin rigidly secured beneath said frame and terminating in a head, a unitary, hollow, resilient sound-subduing caster relatively greater in length than the total projection of said pin, and bodily yieldable to the weight of the machine and rotatably journaled thereon, an internal shoulder in said caster intermediate said frame and said head, serving to retain said caster on the pin, and a shell forming auxiliary means lining said caster and said shoulder to reinforce the same against lateral distortion when raising said frame on said caster, and also to journal the caster for rotation on the pin.

3. A shock-absorbing combined foot and caster device for a typewriting machine, including a soft rubber cushion-member having an axial hole, a round metallic member engaging in said hole, for swiveling said cushion-member to said machine, and instrumentalities effective for distributing the strain from the weight of said machine throughout said cushion-member in a way to cause the latter to readily rotate about said metallic member when said machine is tilted on said cushion-member.

4. A shock-absorbing caster-device for each corner of a typewriting machine frame, including a round, soft rubber cushion-member having an axial hole through it, a round metallic member engaging in said hole, for swiveling said cushion-member to said machine, and instrumentalities for distributing the strain caused by the weight of said machine throughout said soft cushion-member, whereby the latter may be readily rotated about said metallic member when said machine is tilted to bring its weight upon two of the cushion-members, said instrumentalities including a lower internal thimble countersunk in the bottom of said soft cushion-member and an outer upper thimble enclosing the body of said cushion-member, said thimbles being apertured for receiving said metallic member, said internal thimble within said upper thimble.

5. A sound-insulating and vibration-preventing foot-device for a typewriting machine, including a cone-shaped body of soft sound-insulating material of such texture as to be subject to deformation by the weight and vibration of the typewriting machine, and a tapering shell forming a thimble into which said soft body is tightly packed, said thimble forming a skirt around said body for nearly its full depth, to sustain it against deformation, while leaving the foot free of compression vertically except from the weight of the machine, to afford a maximum sound-insulating capacity to the foot-device, and means for attaching the foot-device loosely to the machine, said fastening means passing up through the center of the body, and said foot-device having a lining shell within said thimble and supporting the soft body of the foot against lateral thrusts due to the operation of the machine, said thimble and said lining shell serving as means for journaling the foot for rotation upon said fastening means, the latter being in the form of a shoulder-screw, the shells being journaled upon the shoulder and the foot-device having play longitudinally of the shoulder.

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