July 8, 1952 W. F. HELMOND 2,602,616

MACHINE SUPPORTING FOOT

Filed Dec. 24, 1946

Fig. 1

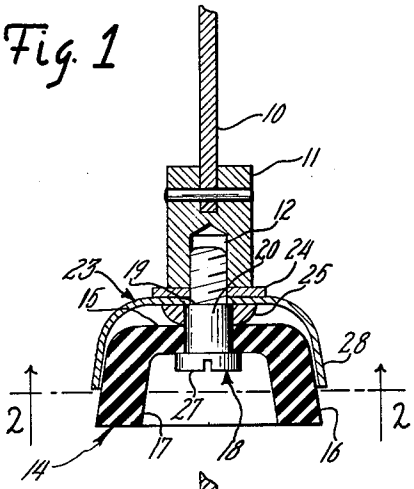


Fig. 2

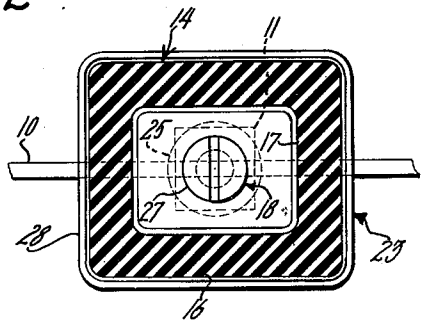


Fig. 3

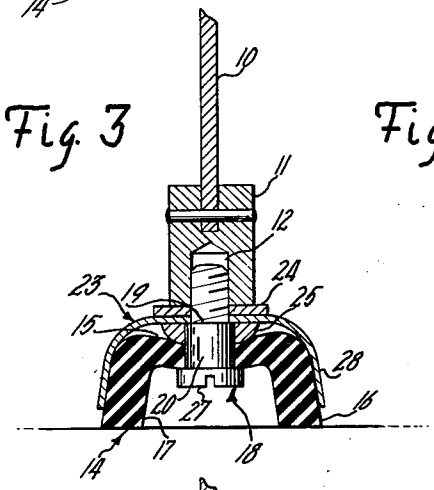


Fig. 4

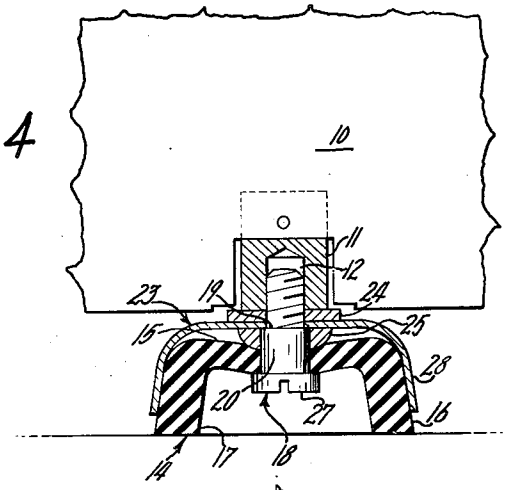


Fig. 5

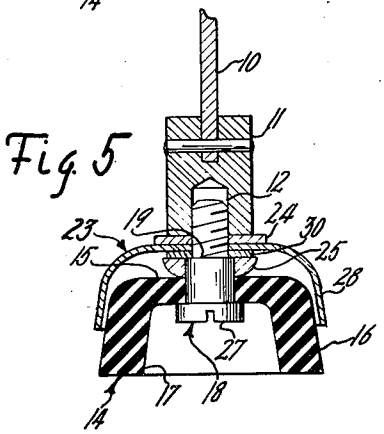
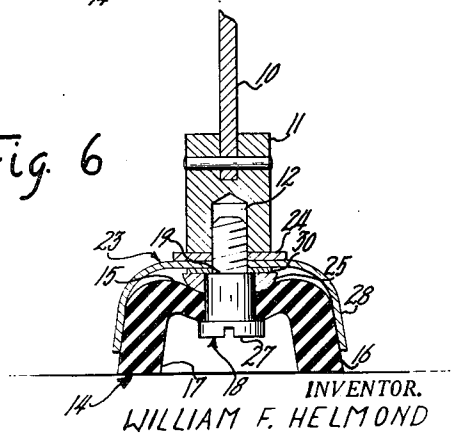


Fig. 6



INVENTOR.
WILLIAM F. HELMOND
BY
Jesse A. Holton
ATTORNEY

Patented July 8, 1952 2,602,616

UNITED STATES PATENT OFFICE

2,602,616

MACHINE SUPPORTING FOOT

William F. Helmond, Clinton, Conn., assignor to Underwood Corporation, New York, N. Y., a corporation of Delaware

Application December 24, 1946, Serial No. 718,175

9 Claims. (Cl. 248—24)

1

This invention relates to resilient, sound deadening foot structures for typewriting and other machines.

It has been found that sound vibrations produced in machines such as typewriters are considerably muted and prevented from being transmitted to the underlying support by the provision of a resilient foot in which the weight of the machine is for the major part sustained upon a central region of a suspended foot-web that has a downwardly extending marginal foot flange, the web being adapted to sag under the weight of the machine. However, such feet have insufficient horizontal stability inasmuch as the resiliency of such foot, and especially the flange results in yield and shimmy thereof as parts of the machine are being operated.

It is an object of the invention to provide a foot structure which has a high sound deadening characteristic, is economical to manufacture, and yet supports the machine with a great stability.

A more specific object of the invention is to produce an improved foot structure in which the machine load is carried upon a central region of a marginally sustained web, such web resiliently supporting the machine at least in part by a sagging action, and constituting an upper part of an inherently resilient and horizontally unstable body; horizontal stability being lent to the said resilient body by a substantially rigid constraining element on the machine, having horizontal constricting contact with the resilient body under the load exerted by the machine.

With these and other objects in view, the invention includes certain novel features of construction and combination of elements, the elements of which are set forth in appended claims, and a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form a part of this specification.

Referring now to the drawings,

Figure 1 is a sectional front elevation of the novel foot structure, showing the same attached to the bottom of a side wall of a typewriting machine. The foot structure is shown without any load being imposed thereon.

Figure 2 is a sectional bottom view taken along line 2—2 of Figure 1.

Figure 3 is a front sectional view similar to Figure 1, but the foot structure is shown under load condition.

Figure 4 shows a side elevation of the foot structure under load as in Figure 3.

Figure 5 is a front sectional view similar to

2

Figure 1, the foot being under no-load condition as the foot in Figure 1, but outfitted with a spacer element modifying the foot to carry a greater machine load with proper sound deadening and machine stabilizing action.

Figure 6 embodies the spacer element of Figure 5 but the foot structure is under load.

The drawings show a side wall 10 of a typewriting machine having fixed to the underside a boss 11, the latter having a threaded hole 12 for affixing the novel foot structure thereto.

The foot structure comprises a body 14 of resilient material, such as rubber, having a horizontal top-web 15 merging into a downwardly reaching peripheral or bordering flange 16, the flange 16 forming a bottom cavity 17. The said flange may be of rectangular outline as seen in Figure 2, or any other desired form. The foot structure is held to the under side of the boss 11 by means of a screw 18 threadedly associated with the hole 12 of the boss 11. The screw extends upwardly through a hole in the web 15 and through a perforation in a strong sheet-metal cap 23, a washer 24 being interposed between the boss 11 and the cap, and the cap and washer being drawn tightly against the underside of the boss 11 by a shoulder 19 of the screw. An annular spacing element 25 is situated upon a shank portion 20 of the screw 18, vertically between the cap 23 and the web 15. Said annular element covers a relatively small central region of the web 15, and its underside is rounded as shown. A head 27 at the lower end of the screw retains the resilient foot body 14. The aforesaid washer 24 is inserted between the boss 24 and the cap on such of the feet as require leveling with respect to other feet, and, the washers, of course, may be of select thicknesses for the purpose.

The cap 23 has a downwardly reaching rim 28 of considerable height, skirting down on the outside of the downreaching flange 16 of the resilient body 14. When the foot is not supporting a machine, as depicted in Figure 1, there is a considerable space vertically between the cap 23 and the top side of the web 15. However, under the load exerted by the machine, as is illustrated in Figures 3 and 4, the web 15 sags down centrally of the bordering flange 16 and the cap descends with respect to the flange 16. From Figures 3 and 4 it will be seen that the rim 28 of the cap has a horizontal constricting action upon the resilient body and particularly the flange 16 thereof. Thus a machine supported by the feet of the invention will have the desired horizontal stability, while at the same time the load of the machine is efficient-

ly sustained by the hammock-like provision of the web 15 which heads the flange 16.

Preferably in accordance with the embodiment of the invention shown, the exterior of the flange 16 is tapering upwardly and the interior of the cap rim 23 is correspondingly tapering, but slightly spaced from the taper of the flange under no-load condition as seen in Figures 1 and 5. When the machine rests by its feet, the internal taper of the rim contacts and preferably presses slightly upon the taper of the flange. The annular spacer 25 is of such select thickness that the rim of the cap 23 will contact the flange, preferably with light pressure, thereby not to destroy the resilient machine supporting action of the web 15. The bottom of the foot body 14 is soft enough to have good traction upon a supporting surface. For substantially maximum horizontal stability the rim of the cap reaches nearly to the bottom of the flange 16 when the foot is under load. See Figures 3 and 4.

In Figures 5 and 6 there is shown a washer or spacer 30 interposed between the screw shoulder 19 and the cap 23, thereby to convert the foot shown in Figures 1 to 4 to sustain a greater machine load without the cap rim 28 bearing too tightly upon the resilient foot body 14 and thereby robbing the web 15 of its intended machine supporting function. In Figure 5 the foot structure is illustrated as not loaded by the weight of the machine, and it will be noted that the resilient foot body 14 protrudes farther below the cap 23 than in Figure 1, and that consequently the space between the tapers of the rim 23 and the flange 16 is greater. It follows therefore that the web 15 of the modified foot structure of Figures 5 and 6 can receive a greater sag before the taper of the cap rim 23 contacts the external taper of the flange 16. In other words the foot of Figures 5 and 6 is capable to support a greater weight without the taper of the rim bearing too firmly on the flange 16 and cancelling the intended function of the web 15.

It is to be understood that the thickness of the washer 30 is selected to give the foot structure the desired properties hereinabove noted. Further, it will be seen that introduction of the washer 30 between the cap 23 and the screw shoulder 19 permits the various remaining parts of the foot structure to be identical in size and proportion as in the preceding parts illustrated in Figures 1 to 4.

While only one embodiment of the invention has been shown and described, it is to be understood that the invention is susceptible of modification and change and comprehends other constructions and details without departing from the spirit of the invention.

What is claimed is:

1. A foot structure for a machine, comprising, a foot body of resilient material having a flexible horizontal top-web bordered by a heavy supporting flange reaching downwardly therefrom for rest on a surface, said flange being so heavy in structure as to virtually retain its normal form under vertical load exerted by the machine, and said top-web being flexible enough to sag under load applied at an inner region of said web, means for associating a machine restingly on said inner region of said flexible web and with capacity for some vertical movement free of an outer web region that merges with said flange, said associating means providing for a free range of sagging action of said web, and wall means rigid on the machine and in horizontal-movement-constricting contact around the perimeter of the flange above the lowermost portion of the latter when under the load of the machine said web sags, whereby the foot structure gives soft vertical support to the machine under condition of relatively great horizontal stability.

2. A foot structure as set forth in claim 1, the flange exterior of the said foot body being tapering upwardly and the rigid means having an internal taper engageable by the taper of said body for horizontal constricting action on the body when said web under the load of the machine is in a sagged condition.

3. A foot structure for a machine, comprising, a foot body of resilient material having a flexible horizontal top-web bordered by a heavy supporting flange reaching downwardly therefrom for rest on a surface, said flange being so heavy in structure as to retain virtually its normal form under vertical load exerted by the machine, and said top-web being flexible enough to sag under load applied at an inner region of said web, means for associating a machine restingly on said inner region of said flexible web and with capacity for some vertical movement free of an outer web region that merges with said flange, said associating means providing for a free range of sagging action of said web, and means for rigid association with the machine and including wall means for horizontal-movement-constricting contact around the flange above its lowermost portion when said web sags at the inner region under the load of the machine.

4. A foot structure for a machine, comprising, a foot body of resilient material having a flexible horizontal top-web bordered by a heavy supporting flange reaching downwardly therefrom for rest on a surface, said flange being so heavy in structure as to retain its normal form under vertical load exerted by the machine, and said top-web being flexible enough to sag under load applied at an inner region of said web, means for associating a machine restingly on an inner region of said flexible web and with capacity for some vertical movement free of an outer web region merging with said flange, said associating means providing for a free range of sagging action of said web, and a rim rigidly associable with the machine and in a relation to said body to constrict the latter by contacting it horizontally around an upper outside portion of the flange in the sagged condition of the web prevalent under the load of the machine.

5. A foot structure for a machine, comprising, a foot body of resilient material having a flexible horizontal top-web bordered by a heavy supporting flange reaching downwardly therefrom for rest on a supporting surface, said flange being so heavy in structure as to retain virtually its normal form under vertical load exerted by the machine and said top-web being flexible enough to sag under load applied at an inner region of said web, a cap of relatively rigid material associable with the machine and having a down-reaching rim for belting an appreciable upper portion of said flange, spacing means introduceable vertically between said cap and an inner region of said web and leaving under no-load condition of the foot structure a clearance outside of the spacing means vertically between said cap and an outer region of said web, for the cap to descend freely under the load of the machine, said rim dimensionally proportioned with respect to the outside of the flange to permit it to move down under the load of the machine, and hav-

ing in the sagged condition of the web horizontal-movement-constricting contact around the flange and thus horizontal stabilizing action on the foot body and, therefore, on the machine.

6. A foot structure for a machine, comprising, a body of resilient material having a horizontal top-web which has a central perforation, the said top-web being bordered by a supporting flange reaching downwardly therefrom for rest on a surface, at least an upper portion of the exterior of said flange being tapering upwardly, a cap of relatively rigid material for said body, having a central perforation and including a downreaching rim bordering the tapered upper portion of said flange and having an internal taper substantially corresponding to the flange, annular spacing means vertically between said cap and the central region of said web, leaving a clearance vertically above the outer top portion of said body, for the cap to descend under load, a shouldered screw for reaching upwardly through said perforations and said annular member, said screw having a threaded end for association with the machine and having a shoulder for engagement against the underside of said cap to clamp said cap to the machine, the flange and the rim, where tapered, being slightly separated under no-load condition, but the rim being settling on said tapering portion of the flange under load, thereby to restrict and stabilize the resilient body horizontally.

7. A foot structure as set forth in claim 6, and washer means introduceable underneath the cap and above the screw shoulder to regulate the no-load separation between the taper of the flange and the rim so that for a given weight of a machine the taper of the rim settles upon the taper of the flange only firmly enough to give the latter the proper horizontal stability.

8. A foot structure for a machine, comprising, a resilient body having a horizontal top-web which has a central perforation, the said top-web being bordered by a supporting flange reaching downwardly therefrom for rest on a surface, a cap of relatively rigid material for said body, having a central perforation and including a down-reaching rim surrounding an upper portion of said flange, and annular spacing means vertically between said cap and the central region of said web, leaving a clearance vertically above the outer top portion of said body for the cap to descend under load, a shouldered screw for reaching upwardly through said perforations and said annular spacing means, said screw having a threaded end for association with the machine and having a shoulder for engagement against the underside of said cap to clamp said cap to the machine.

9. A foot structure as set forth in claim 8, said screw having an enlargement below said shoulder to retain said body.

WILLIAM F. HELMOND.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,830,058	Helmond	Nov. 3, 1931
1,911,010	Brawley	May 23, 1933
2,128,216	Armington	Aug. 30, 1938
2,172,004	Anderson	Sept. 5, 1939