June 29, 1943. A. LIABASTRE 2,322,946

SEWING MACHINE SUPPORT

Filed May 2, 1942

Fig. 1.

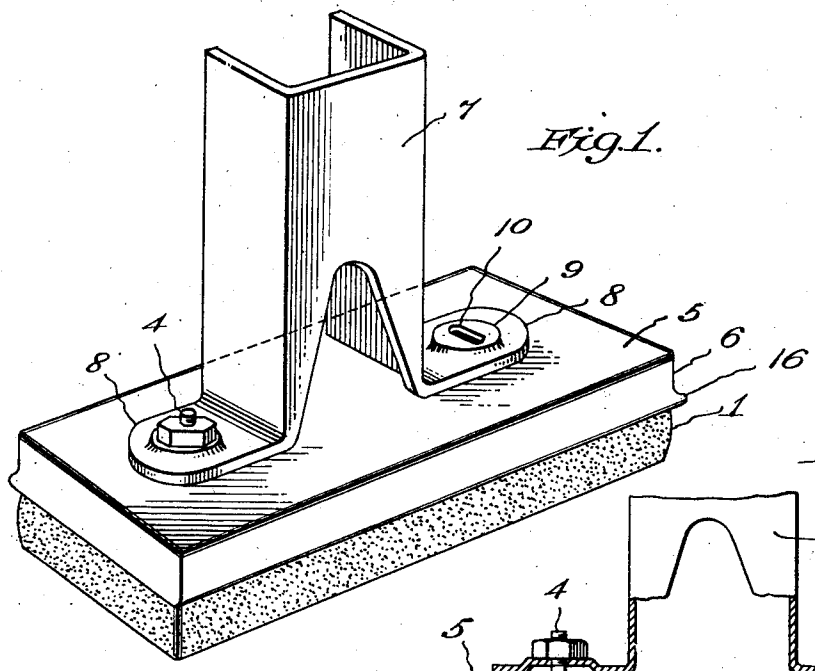


Fig. 2.

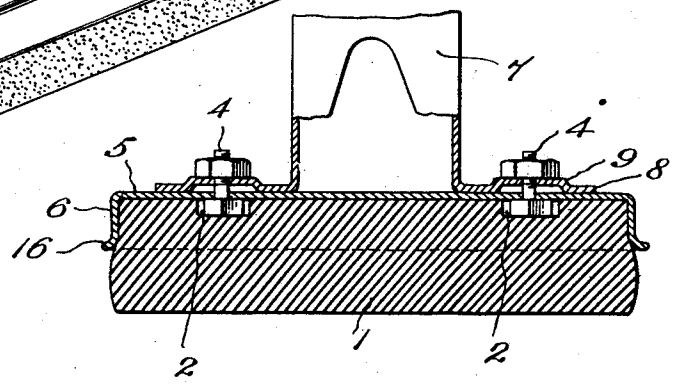


Fig. 3.

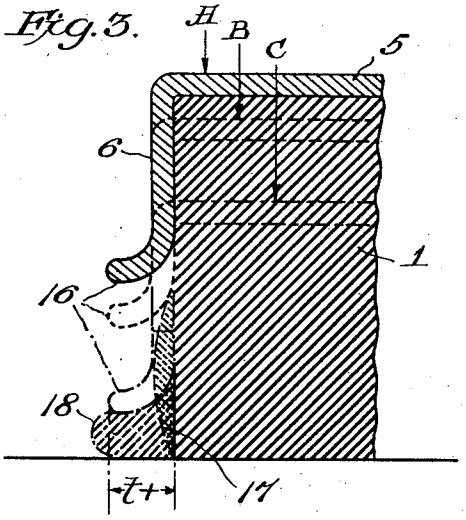
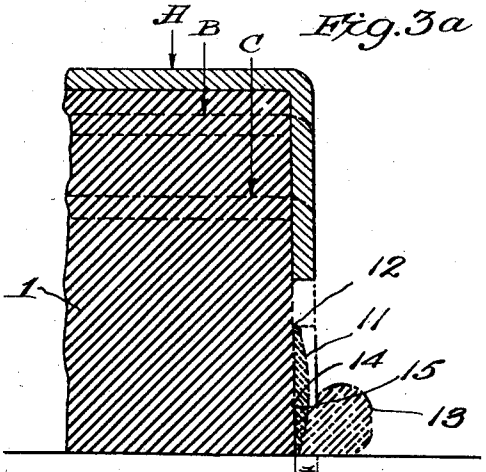


Fig. 3a



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SEWING MACHINE SUPPORT

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2 Claims. (Cl. 248—24)

This invention is a support for electrically operated sewing machines such as are commonly employed by professional operators in production plants. Sewing machines of this type are operated at high speed. The moving parts thereof are heavier than in the common household machine and such machines are commonly mounted on tables which are supported from the floor by stamped or cast metal frames with legs. When a number of these machines are in operation, heavy vibration of the moving parts is transmitted through the table to the floor and if these machines are supported directly on the floor, the floor and the walls of the building unite to form a sounding board so that persons on the floor below find the noise unbearable and in some cases, particularly in frame buildings, it is impossible to keep tenants on the lower floors.

Numerous attempts have been made to overcome these difficulties. The most satisfactory, from the noise aspect, has been to interpose felt pads between the machine table legs and the floor. This practice has materially assisted in damping of vibration to the floor, but this practice has not met with favor for the unforeseen reason that the felt pads are found, in practice, to be ideal breeding places for roaches and other forms of vermin. It is not uncommon for a work room equipped with felt machine pads to be overrun with roaches. These are obnoxious, physically damage the product of the shop, and get into the goods which are shipped out and result in lost or dissatisfied customers.

Notwithstanding a long felt want for some satisfactory solution to these troublesome problems, universal in the sewing industry, no satisfactory solution has been suggested until the advent of the present invention. One factor of the problem consists in the wide diversity in the weights that must be supported for in some cases weights as low as sixty pounds are transmitted through the legs of the machine table while in other cases the weights will run as high as 500 pounds. Pads of laminated felt are well able to withstand these widely different weights, and at the same time cushion the vibration. However, when it was attempted to substitute for the felt some other resilient element, such, for example, as springs or rubber, great difficulty was experienced in providing either springs or rubber which would satisfactorily operate under these widely different weight conditions. For example, rubber which was sufficiently resilient or springy to carry sixty pounds weight would be crushed so as not to satisfactorily carry out its functions when subjected to pressures of five hundred pounds. Attempts were made to enclose soft rubber within casings. However, if the casing completely enclosed the rubber the latter lost the necessary resiliency while if the casing did not completely enclose the rubber, the rubber squeezed from the open part of the casing in such manner that the casing cut the protruding portion of the rubber which, after a short time, lost its usefulness by permitting portions of the casing to directly contact with the floor.

After much experimentation and prolonged tests I at last succeeded in producing a satisfactory solution of the difficulties stated, by employing a relatively soft rubber, such as sponge rubber, and by confining only a portion of the mass of such rubber within a metal casing, so constituted that those portions of the rubber which might be expanded to the exterior of the casing under the load of heavy weights would be adequately protected against damage by the casing. This structure constitutes the present invention.

In the support of this invention I provide a block of rubber which is, in practice, a thick flat rectangular slab somewhat greater in length than in width. This slab is adapted to rest flat upon the floor. On the top of the rubber slab is a metal plate provided around its four sides with an integral depending skirt of a depth approximately one-half of the thickness of the slab. The upper portion of this skirt is perpendicular to the plate and closely conforms to and embraces the contiguous edges of the slab. The lower margin of the skirt, however, is flared outwardly on a curve substantially tangent to the upper portion of the skirt and terminates in a blunt or rounded free edge, so that no matter how much weight is applied to the plate or how much the exposed portion of the rubber slab is squeezed laterally beyond the confines of the skirt, there will be no sharp confining edges to cut the rubber or disintegrate the same.

This structure has proven to be a complete solution of the problem and permits of the satisfactory support of machines and tables ranging within the weights indicated with very marked efficiency in the damping of vibration. There is no necessity of securing the machine or rubber directly to the floor for, in practice, it is found that the rubber slab grips the floor so firmly and with such friction that, when such machine is bolted or otherwise secured to the plate, the machine will not shift on the floor.

Features of the invention, other than those adverted to, will be apparent from the herein-

after detailed description and claims, when read in conjunction with the accompanying drawing.

The accompanying drawing illustrates one practical embodiment of the invention, but the construction therein shown is to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 is a perspective view of the lower end portion of a sewing machine table leg resting upon a support embodying the present invention.

Figure 2 is a central vertical longitudinal section of the installation shown in Fig. 1 with a portion of the leg and the binding bolts in elevation.

Figure 3 is a diagrammatic fragmental vertical section of the structure of the present invention showing the manner in which the rubber slab reacts under the imposition of various weights thereon.

Figure 3*a* is a view similar to Figure 3, but showing the behavior of the rubber slab with a skirt which is not flared as hereinbefore described.

Referring to the drawing, 1 designates a slab of rubber which is of relatively soft resilient character and may conveniently be sponge rubber. In practice this slab is formed with parallel upper and lower surfaces and straight sides. It is in the form of a solid block, except that it is provided with recesses 2 in its upper face to receive the heads of binding bolts 4 the function of which will be hereinafter explained. The lower face of the rubber slab is adapted to rest upon the floor and frictionally engage therewith.

Overlying the upper face of the slab and substantially coextensive therewith is a metal plate 5 which may be conveniently made in the form of a metal stamping provided around its outer periphery with an integral depending skirt 6 closely embracing the rubber slab 1 and extending downwardly for about one-half the height of the slab. The leg 7 of the sewing machine table is of channel form and is provided at its bottom with one or more laterally extending anchorage ears 8 each of which is provided with a reinforcing boss 9 having therein a slot 10 for a binding bolt 4.

The ears 8 are adapted to seat upon the upper surface of the plate 5 which is perforated to register with the slots 10 of said ears and the binding bolts 4 are passed through these alined openings with the heads of the bolts occupying the recesses 2 in the rubber slab. The nuts of the bolts seat on the bosses 9 and serve to firmly bind the leg of the machine to the plate 5 with the leg disposed substantially centrally of the plate, so as to impose the weight of the machine uniformly over the plate in such manner that there is no tendency of the plate to tilt.

The manner in which the present invention serves to carry out its function is exhibited diagrammatically in Figs. 3 and 3*a*, the former of which shows a skirt flared at its lower portion, while the latter of which shows a straight skirt without the flare. In these figures, the full line position of the plate and skirt indicated at A is that wherein the parts are not subjected to any load. The position indicated in dotted lines at B shows the parts depressed under a load of say 60 pounds, while the dot and dash line position indicated at C is that which might correspond with a load of say 500 pounds.

From the neutral position A the plate and its skirt are increasingly depressed as the load is increased and as the load is increased the rubber slab is placed under greater compression. That portion of the rubber which is housed within the straight portion of the skirt cannot expand laterally, but the unembraced portion of the slab below the lower edge of the skirt is free to expand and does in practice expand to a greater or lesser extent depending upon the load. Note first Figure 3*a*. When no load is present the entire lateral edge of the slab is substantially perpendicular and straight except that it may be slightly compressed where it fits into the skirt. In the position B in Fig. 3*a*, that portion of the rubber below the edge of the skirt has expanded into the dotted line position indicated at 11 so as to form a bulge, the upper edge of which is defined by the lower relatively sharp edge of the skirt, the inner periphery of which tends to bite into the top of this bulge as indicated at 12. If the weight is increased to the value indicated at C in Fig. 3, the bulge of the rubber, beyond the confines of the skirt will be greatly increased and as this bulge increases the lower edge of the skirt will bite into it, not only at the inner periphery 14, but also at the outer periphery 15 for the bulge beyond the thickness of the wall, indicated at *t*, will expand in an upward direction because it is freed from directly imposed downward pressure. That portion of the rubber lying beneath the plate will be subjected to a downward compression coextensive with the plate, that portion beneath the edge of the skirt and within the area *t* will also be subjected to a downward compression, while that portion of the bulge 13 beyond the periphery of the skirt will expand upwardly. Thus the relatively thin edge of the plate will bite into this bulge, particularly at the edges 14 and 15 and tend to cut and disrupt the same. When it is borne in mind that these parts are not in a condition of rest, but are rather under continuous vibration, it will be apparent that the lower edge of the skirt of Fig. 3*a* will have a cutting or sawing action upon the rubber which in a relatively short time will do serious damage thereto. In time the relatively sharp thin edge of the skirt may cut through the bulging portion of the rubber so as to actually contact with the floor and transmit directly thereto the vibration which it is the intended purpose of the device to eliminate.

In contradistinction to the arrangement shown in Fig. 3*a*, the structure of Fig. 3 is illustrative of the present invention. Here the lower portion of the skirt is flared outwardly as shown at 16, so as to present a smooth and unbroken curvilinear inner and under surface forming a continuation or merging into the sheer surface of the superimposed portion of the skirt. When a load indicated at B is imposed upon the rubber in Fig. 3, the resulting bulge 17 merges into the curvilinear portion of the skirt in a substantially tangential manner. There is no sharp edge to cut into the bulge as in Fig. 3*a* nor any tendency of the skirt to harm the rubber. Moreover, when a load indicated at C is imposed upon the structure, the rubber may bulge to the extent indicated at 18, but this bulge is minimized by the fact that the flared portion of the skirt bears directly down on the bulge over an area designated *t*+, which is equal to the thickness of the skirt plus the lateral extension of the flare thereof, so that the flare of the skirt actually becomes a load carrying member over the area *t*+, in contradistinction to the lesser area *t* of Fig. 3*a*. Throughout the area *t*+ the entire bulge bears against the smooth uninterrupted curvilinear sur-

face of the flare and there is no cutting action whatsoever, such as is shown in Fig. 3a. The result of the flared portion therefore is to eliminate all cutting action, and to increase the bearing surface on the rubber whereby it is rendered better able to withstand heavy loads without damage and with efficiency in the performance of its intended functions.

By utilizing this construction I find it possible to use much softer rubber and thus obtain a much superior cushioning action than could possibly be even hoped for with such an arrangement shown in Fig. 3a.

In the accompanying drawing I have set forth the preferred form of the present invention but the invention is to be understood as fully commensurate with the appended claims.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. A support for a sewing machine table comprising a rigid metal plate secured to and underlying the lower end of the leg of the table with the leg of the table arranged centrally of the plate, said plate having at its outer margin a depending skirt the upper portion of which is substantially normal to the plate and the lower free edge portion of which skirt is outwardly flared in a curve merging into the superimposed portion of said skirt, and a relatively soft slab of rubber positioned wholly beneath the plate with the upper portion of the slab embraced by said skirt and the lower portion of the slab being unconfined to permit lateral expansion thereof.

2. In an assembly of the character described, a sewing machine table leg having at least one perforated attaching lip, a flat rigid plate underlying said leg and lip and perforated for the passage of a bolt through the perforations of the lip and plate to bolt the plate to the lip, said plate being provided at its outer periphery with a depending skirt the upper portion of which is substantially normal to the plate and the lower portion of which is flared outwardly on an unbroken curve, and a slab of relatively soft rubber positioned wholly below the plate with the upper portion of the slab embraced by the skirt and the lower portion of the slab being unconfined to permit lateral expansion thereof.

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