J. B. LOCRAFT.

HOLDING MEANS FOR PORTABLE APPARATUS.

APPLICATION FILED JULY 30, 1915.

1,313,307. Patented Aug. 19, 1919.

Fig. 1.

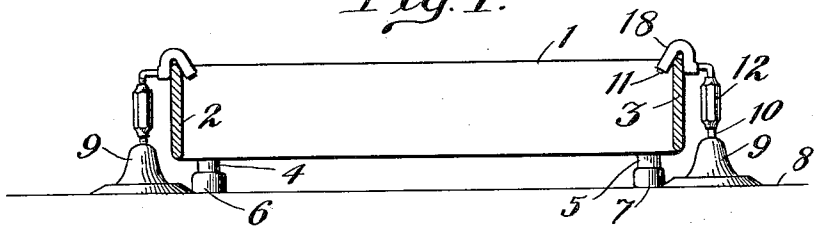


Fig. 2

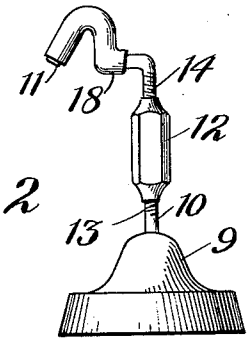


Fig. 3.

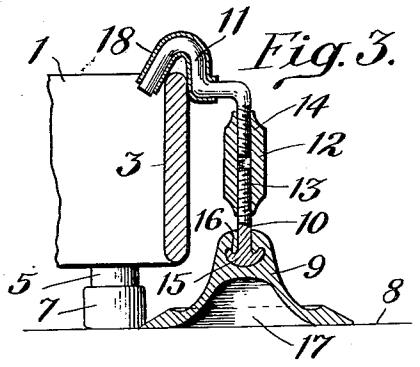


Fig. 4.

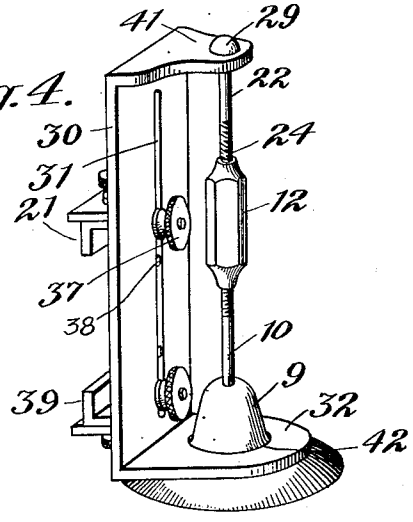
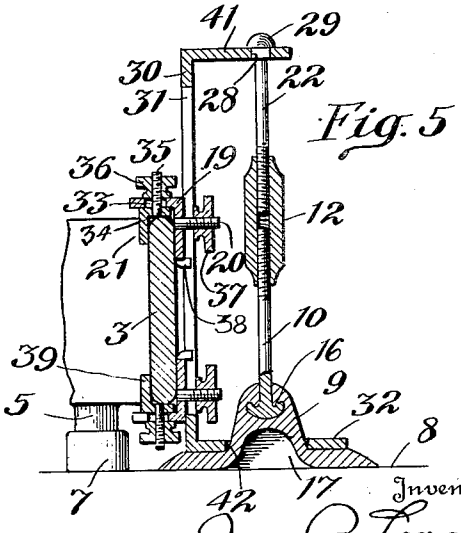


Fig. 5



Witnesses

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HOLDING MEANS FOR PORTABLE APPARATUS.

1,313,307. Specification of Letters Patent. Patented Aug. 19, 1919.

Application filed July 30, 1915. Serial No. 42,729.

To all whom it may concern:

Be it known that I, JAMES B. LOCRAFT, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Holding Means for Portable Apparatus, of which the following is a specification.

My invention relates to holding means for portable apparatus, and more particularly to means for holding typewriters or other instruments requiring to be held stationary during use on various temporary supports unprovided with attaching means.

A common objection to most light portable machines and apparatus, particularly to typewriter machines of the light portable type, is that the vibration or jar during operation causes them to creep out of position with much annoyance to the operator, an objection which cannot be met by the use of the usual bolts or screws as such are prohibitive in connection with the temporary supports on which such machines are usually used, as public desks of other supporting surfaces of glass or metal available in emergency.

In light typewriting machines, especially those of the portable type, the heavy strokes on the keys and spacing bar and the rising and falling of the type bars or carriage, produce vertical vibrations or jars, which when in the upward directions effect a momentary lightening of the machine during which moment the machine is easily jarred to one side by the lateral hammer blow of the carriage at each spacing, the carriage being quite heavy in proportion to the total weight of the machine.

It is the object of my invention to eliminate the above mentioned objectionable feature, through the provision of simple and effective means for elastically holding the machine against vibration in all directions, acting to absorb the smaller shocks and so arranged and applied as to transform any slight upward movement into a momentary increase of the holding force.

I accomplish the object of my invention by the use of an elastic suction cup adjustably connected to the machine so as to normally tend to hold the machine down on a suitable supporting surface with sufficient traction or friction to hold the machine against lateral movement at all times and to transform any upward movement into an increased degree of vacuum, the adjustable connection being operable to adjust the device to different machines and to vary the initial degree of vacuum in the cup.

Other objects of the invention and the means of their accomplishment will be apparent from a perusal of the following specification and the accompanying drawings.

In the accompanying drawings:

Figure 1 is a view of the frame of a typewriter or other portable machine, shown partly in section with one form of my invention applied thereto.

Fig. 2 is an elevation of the form of the device as shown in Fig. 1.

Fig. 3 is a longitudinal vertical cross section of the device in operative connection with a supporting surface and the frame of a machine.

Fig. 4 is a perspective view of a modified form.

Fig. 5 is a vertical longitudinal cross section of Fig. 4.

While, for the purpose of disclosure, I will herein describe the invention as applied to a typewriter machine, it is to be understood that it is not limited to this specific use, all such uses and modifications of form, as fall within the scope of the appended claims, being contemplated by me.

Referring to the drawings in detail, and first to Figs. 1, 2 and 3, the lower front and side portions of a typewriter frame are indicated at 1, 2 and 3, respectively, the working parts of the typewriter machine, which may be of any known structure, being omitted for the sake of clearness. The frame carries at its corners, the usual supports or feet, only two of which are here shown, indicated at 4 and 5. These feet are provided with the usual elastic cups or shoes 6 and 7 which act to partly absorb the vibrations and to increase the friction or traction on the supporting surface 8. The holding means comprises a suction cup 9, of elastic material such as rubber, in the top of which is secured a stem 10, connected with the

frame-engaging hook member 11 through a suitable adjusting member such as the turn-buckle 12. This turn-buckle has a threaded bore with right and left threads at opposite ends taking the complementary threaded ends 13 and 14 of the stem 10 and hook member 11, respectively. Instead of the turn-buckle herein described and shown, the usual form of turn-buckle having a threaded connection at one end and a swivel connection at the other may be used, or any other suitable, adjustable connection. A sleeve 18 of soft material, such as rubber or fabric, is carried on the engaging hook to prevent marring of the machine frame. The stem 10 is secured to the cup by means of the headed end 15 embedded in the body of the cup the head having an annular groove at 16 to receive the material of the cup and form an interlocking connection and an increase of contact surface therewith. The sides of the hook member are formed at an angle with each other so that frames of different widths may be engaged by both the inner sides of the hook member without lateral play or lost motion. In order to leave ample room for the finger in adjusting the turn-buckle 12, the hook member is offset from the threaded end 14 which engages the turn-buckle. One of the frame-engaging sides of the hook member 11, preferably the side adjacent the turn-buckle, is arranged parallel to the threaded end 14 so that in adjusting the turn-buckle, the hook member may move vertically or parallel to the side 3 of the frame with one side of the hook member in constant contact, whereby the upward pull on the suction cup is maintained substantially in line at right angles to the supporting surface 8. The device when not in use assumes the form shown in Fig. 2.

When it is desired to anchor a machine to any suitable support, two of the devices are used, one on either side of the machine with their hook members 11 engaging the upper edges of the frame as shown in Fig. 1, the suction cup 9 of each being first pressed down on the supporting surface to expel the greater part of the air from the interior of the cup, after which the turn-buckle is operated to draw the members 10 and 11 together until the desired degree of tension between the suction cup and the machine frame is obtained. When so adjusted, the device will assume the position and form shown in Fig. 3, in which the vacuum cup is pulled up to form a small chamber 17 and produce a partial vacuum therein, the hook member 11, because of the angular relation of its inner sides, taking a wedging hold on the side 3 of the frame.

The desired degree of adjustment is that which will normally hold the machine down with the greatest degree of tension obtainable without overcoming the holding force of the suction cup or causing the outside air to seep in under the contacting surface of the cup. It is to be noted however, that while such is the maximum degree of tension to be normally maintained, it is possible to momentarily increase this tension without rupture, and that any increase in the upward pull at the center of the suction cup will increase the degree of vacuum in the cup which will result in a corresponding increase of the holding force of the cup. From this it will be seen that with the combination and arrangement of parts herein described, any momentary, upward movement of the machine, however slight, will produce a corresponding momentary increase in the holding force of the vacuum cup to offset the displacing effect of any lateral jar occurring during the momentary upward movement. By connecting the suction cup 9, to the machine, through its central mobile portion and using in combination with this the usual elastic shoes 7, I obtain an all elastic connection between the machine and the supporting surface which allows slight lateral movement and recoil of the machine while maintaining the location of contact stationary with the supporting surface.

Referring now to Figs. 4 and 5, these illustrate another form of my invention in which connection is made with the machine through an adjusting frame 30 which renders the device adaptable to different size machines and affords the use of a pressure foot 32 for increasing the friction between the contacting surface of the suction cup 9 and supporting surface 8. In this form the vacuum cup 9, stem 10 and turn-buckle 12 are the same as used in the form first described, the upper end of the turn-buckle in this case, however, engaging with the threaded end 24 of a straight stem 22 depending from the arm 41 of the bracket. This stem 22 passes through the arm 41 and is held against downward movement by the head or shoulder 29 and against turning movement by a squared neck and aperture connection at 28. The bracket 30 is rendered adjustable to different size machines by means of the adjustable engaging hooks 21 and 39, slidably mounted in a slot 31 in the bracket. As the structure of both of these engaging hooks is identical, a detailed description of one, for example 21, will suffice. To afford adjustment of the width of the hook, it is made in two sections, a front section 34 and back section 19, connected by a pin 35 fixed in the section 34 and passing through a slot 33 in the section 19 where it may be locked in any position by the thumb nut 36 threaded on the upper end of the pin. Vertical adjustment of the hook, as a whole, is effected through the pin and slot connection of the back section 19 with

the frame 30, which connection consists in a pin 20 fixed in the section 19 and passing through the slot 31 where its projecting end engages with a thumb nut 37 for clamping the hook in any position in the slot. A tongue 38, formed integral with the back member at its lower end, also projects into the slot 31 to prevent turning of the hook. The pressure foot 32 preferably integral with the bracket 30, is positioned substantially at right angles to the slotted portion of the bracket so as to project therefrom in the same direction as the arm 41 and parallel to the supporting surface 8, when the device is attached to a machine frame such as 3. An aperture 42 is provided in the pressure foot to allow adjustment of the vacuum cup therethrough, the pressure foot taking, substantially, the form of a ring engaging the suction cup around its upper edge so that downward pressure on the foot will hold the cup near its edges in contact with the surface 8 under pressure while allowing the tension on the center of the cup to be adjusted to vary the degree of vacuum.

It will be seen that the adjustable hooks 21 and 39 subserve two functions; first to effect firm engagement of the bracket with different size machine frames, and second to effect adjustment of the height of the bracket. It is this latter adjustment which determines the degree of pressure exerted by the pressure foot 32.

When it is desired to apply this latter form of the holder to the frame of a machine, the lower hook 39 is adjusted in width to fit firmly around the lower edge of the side 3 of the machine frame, and the bracket 30 adjusted vertically in relation to the hook until the desired degree of pressure is exerted by the pressure foot 32 on the suction cup. The upper hook 21 is then slid down the bracket into engagement with the upper edge of the frame member 3, either before or after which the width of the hook may be adjusted to fit firmly over the edges of the member 3. It then remains to adjust the degree of vacuum in the cup 9, and the tension between the cup and the bracket, and this is accomplished by turning the turnbuckle 12 in a direction to draw the stems 10 and 22 together. With this arrangement, it will be noted the downward pressure exerted by the foot 32 is independent of the tension between the cup and bracket and is neither increased nor diminished by an increase or diminution of said tension. The use of this pressure foot permits the maintenance of a higher normal degree of vacuum in the cup 9, and a greater degree of friction between the cup and the supporting surface 8, than would be obtainable without it.

In operation, the tendency to displacement by any lateral shocks occurring alone as during the occurrence of a downward shock, is overcome by the hold or friction between the cup and the supporting surface produced by the combined pressure of the pressure foot and the atmospheric pressure, while lateral shocks occurring during an upward shock are prevented from effecting any lateral displacement by the momentary increased upward pull on the center of the vacuum cup, the upward pull producing an increased degree of vacuum resulting in a corresponding increase in the effective downward pressure of the atmosphere on the cup. As the machine is supported elastically, an upward shock of any degree of force will result in a corresponding degree of upward movement which however, is usually too slight to raise the supporting feet 5, etc., from the supporting surface.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A holding device comprising an elastic suction cup, a bracket, a pressure foot carried by the bracket adapted to fit over the dome of the cup and press on the outer portion of the cup opposite the suction side, engaging means adjustable to engage different size objects to be held adjustably carried by the bracket and operable to connect the bracket and an object to be held in variable relation to each other to vary the pressure between the object held and the pressure foot, a threaded stem connected to the cup at the dome and projecting away therefrom, a threaded stem carried by the bracket and a turn-buckle connecting said threaded stem operable to vary the tension between said bracket and said suction cup.

2. A holding device comprising an elastic suction cup, a bracket, a perforated pressure foot carried by the bracket adapted to fit over the dome of the cup and press on the outer portion of the cup opposite the suction side, a threaded stem fixed in the dome of the cup, a threaded stem connnected to the bracket, a turn-buckle connecting said stems and operable to vary the tension between said cup and said bracket, and engaging means for engaging an object to be held carried by the bracket and adjustable in relation to each other and in relation to the bracket, whereby the bracket may be connected to an object to be held in variable relation thereto to vary the pressure between the object held and the pressure foot.

3. A holding device comprising an elastic suction cup, a bracket, means carried by the bracket adapted to engage an object to be held, a pressure foot carried by the bracket and bearing on the cup opposite the suction side of the cup, means for adjusting the amount of pressure between the object held and said pressure foot and an adjustable connection between the central por-

tion of said cup and said bracket operable to vary the tension between said central portion of the cup and the object held.

4. A holding device comprising a suction cup, engaging means adapted to engage an object to be held, a threaded stem carried by said suction cup, a threaded stem carried by said engaging member and an adjusting nut engaging both of said stems, said stems being oppositely threaded to feed through the nut in opposite directions.

In testimony whereof I affix my signature.

JAMES B. LOCRAFT.