Feb. 13, 1968 E. R. MUMPOWER 3,368,659

SHOCK-ABSORBING TYPEBAR STOP

Filed April 3, 1967

FIG.1

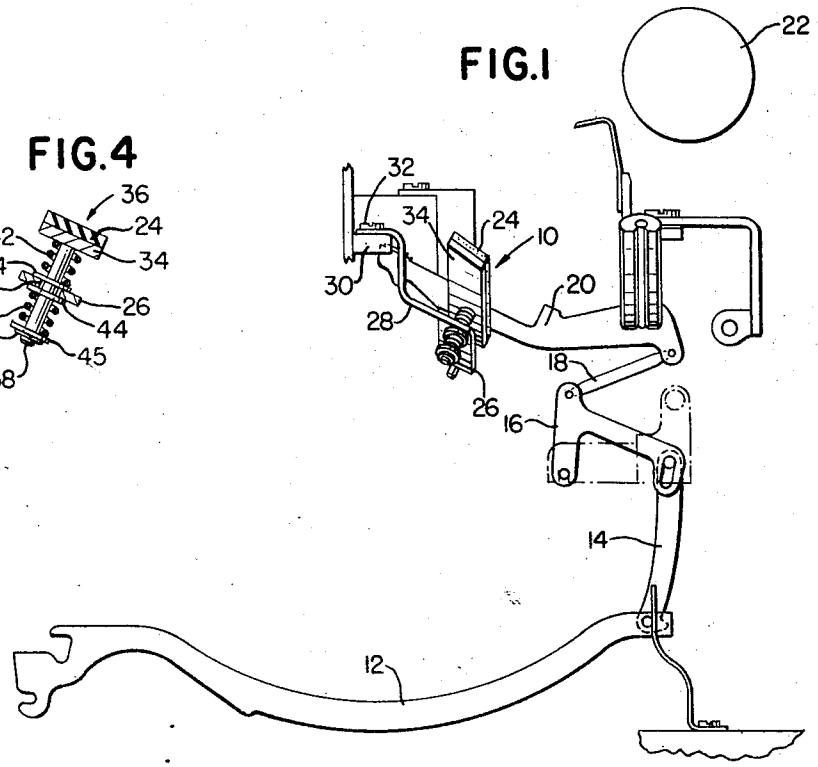

FIG.4

FIG.3

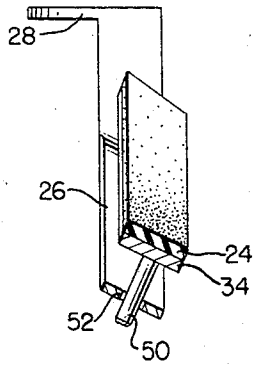

FIG.2

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SHOCK-ABSORBING TYPEBAR STOP

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ABSTRACT OF THE DISCLOSURE

A shock-absorbing stop to minimize rebound of typewriter levers. The stop includes an arcuately-shaped member which is yieldably supported near each end on spring-loaded pins for movement towards a similarly-shaped support member. Each lever, upon returning to a home position after printing, strikes an elastomer strip secured to the movable member and moves it towards the support member to thereby prevent rebound of the lever and minimize the noise of impact.

Background of the invention

This invention relates to a shock-absorbing stop, and, more particularly, it relates to a shock-absorbing stop which is especially adaptable for use with typewriter levers to prevent the rebounding thereof when the levers return to a home position after hitting the platen of the typewriter or similar machine in which the stop is used.

Resilient shock-absorbing stops to prevent typewriter lever rebound are known; however, the prior-art constructions wear rapidly when subjected to extensive use. This is especially true when the prior-art constructions are used with electric-power-operated typewriters, whose returning typewriter levers have comparatively large amounts of kinetic energy to be transferred to the shock-absorbing stops upon impact thereagainst. Because the electrically-operated typewriters operate at high speeds, it is also necessary that the shock-absorbing stops used therewith quickly absorb the kinetic energy of the returning levers.

The shock-absorbing stop of this invention quickly absorbs the impact energy of typewriter levers returning to a home position after striking the platen of the typewriter in which the stop is used. Said stop is inexpensive to produce and has sufficient flexibility and responsiveness to be effective even when used with light-weight typewriter levers which are operated at high speeds.

Summary of the invention

The shock-absorbing stop of this invention includes a first elongated member, which has end portions adapted to be secured to a support in a typewriter or other similar printing machine with which said stop may be used. The stop also includes a second elongated member, having first and second opposed sides thereon with a strip of resilient material secured to said first side. When said stop is used in a typewriter, the typewriter levers actually rest upon said strip when the levers are idle, or in the home position. The stop also includes resilient means secured to said second side for yieldably maintaining said second member in spaced relation with said first member, whereby at least a portion of said second member is moved towards said first member when one of said typewriter levers impacts against said strip in returning to said home position after striking the platen in the machine in which the stop is used.

Brief description of the drawings

FIG. 1 is a side view in elevation of the shock-absorbing stop of this invention as used in a typewriter.

FIG. 2 is a general view, in perspective, of the invention itself.

FIG. 3 is a cross-sectional view of the invention, taken along the line 3—3 of FIG. 2.

FIG. 4 is a cross-sectional view of the invention taken along the line 4—4 of FIG. 2, showing the means for resiliently mounting the second member to the first member thereof.

Description of the preferred embodiment

FIG. 1 shows the shock-absorbing stop **10** of this invention as used in a typewriter. The levers **12**, **14**, **16**, and **18** are connecting levers used to actuate the typewriter levers **20** to move them individually to strike the platen **22**. Because said connecting levers are conventional and do not form a part of this invention, they are shown only generally, so as to orient the stop **10** within the structure of a typewriter. The levers **20** are shown in the home position, resting on the resilient strip **24** of the stop **10**. After each individual lever **20** is actuated to strike the platen **22**, it rebounds therefrom to impact against the stop **10**, which is adaptable to quickly absorb the kinetic energy of the impacting lever **20**.

The construction of the shock-absorbing stop **10** is best shown in FIG. 2. The stop **10** includes a first, generally arcuately-shaped, elongated member **26**, having end portions **28** adapted to be secured to a support **30** (FIG. 1) by fasteners **32**. Positioned adjacent to said first member **26** is a second, generally-arcuately-shaped, elongated member **34**, which has the resilient strip **24** secured to one side thereof by conventional adhesives. The strip **24** is made of elastomeric material, such as vinyl chloride, and, in the embodiment shown, was approximately 3/32 inch thick.

The second elongated member **34** is yieldably held in spaced relation to the first elongated member **26** by the following construction. Each end of the elongated member **34** is secured to the elongated member **26** by a resilient means **36**, having the arrangement shown in FIG. 4, which includes a stud or pin **38** projecting from one side of said member **34**. The stud **38** extends through a slot **40** in the first elongated member **26**, and a compression-type spring **42** is mounted on the stud between the members **34** and **26**, suitable washers **44** being positioned on the stud on opposite sides of the slot **40** in the member **26**, as shown. A second compression-type spring **46**, producing slightly less compression than the spring **42**, is also mounted on the stud **38** between one of the washers **44** and a washer **45**, a retaining C-shaped clip **48** being used to retain the spring **46** on the free end of the stud **38**. By this construction, the area near each end of the second elongated member **34** is provided with a resilient means **36**, which may act as a pivot point for the opposite end of said member **34** when a typewriter lever **20** strikes said opposite end. Also included in this construction is a third stud **52**, which projects from the second member **34** (FIGS. 2 and 3) and passes through an opening **50** in the first member **26**; both sides of the opening **50** are countersunk.

The operation of the stop **10** is as follows. When an object, such as a typewriter lever **20**, strikes the resilient strip **24** near one of the resilient means **36** (the one shown in the left side of FIG. 2, for example), its spring **42** is compressed somewhat against its bias, and the second member **34** is resiliently moved towards the first member **26**, thereby absorbing some of the kinetic energy of the impacting lever **20**. Some of said energy is also absorbed by the resilient strip **24**, which deadens some of the noise of impact. In addition, when the left end of the member **34** (as viewed in FIG. 2) moves toward the member **26**, the right end of the member **34** is moved slightly away

from the member **26** due to a slight pivoting of the member **34** about the stud **52**, which is located approximately in the center of the length of the member **26**. In normal operation, all the typewriter levers **20** rest upon the resilient strip **24**, as shown in FIG. 1; however, when one end of said member **34** moves away from the member **26**, as mentioned in the previous sentence, the levers **20** resting on said one end are also moved with it, thereby absorbing some of the said kinetic energy. The springs **46** then assist in restoring the second member **34** to the static position, shown in the drawings. When a lever **20** impacts against said resilient strip **24** near the center of the second member **34**, the center of the member **34** (near the stud **52**) moves toward the member **26** against the bias of the springs **42** to absorb most of the kinetic energy of impact. The resilient strip **24** also absorbs some of the kinetic energy.

The particular size of the springs **42** and **46** and the other elements in the stop **10** are determined by the particular application in which the stop is used. The particular stop **10** shown herein is responsive enough to be used with typewriter levers **20**, which are considered lightweight in the art.

While the invention has been particularly shown and described with reference to a preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. A shock-absorbing stop adapted to be secured to a support and comprising:

a first elongated, arcuately-shaped member having end portions adapted to be secured to said support;

a second elongated, arcuately-shaped member having first and second opposed sides thereon, and first and second opposed ends;

a strip of elastomer material secured to said first side of said second member;

a stud projecting from said second side near each said end of said second member;

said first member having slots therein to receive said studs, with each said stud being of sufficient length to provide a section which extends through and beyond its pertaining said slot;

a first compression-type coil spring mounted on each said stud between said first and second members;

a second compression-type coil spring mounted on each said section between said first member and the free end thereof; and

fastener means to secure said second springs on the free ends of said sections and to subject all said springs to a slight compression;

said slots being of sufficient size to enable one end of said second member to move towards said first member against the bias of at least said first springs when an object impacts said strip near said one end while said second member is pivoted about a point near its opposite end.

2. The stop as claimed in claim **1** in which all said first springs provide a slightly greater compressive force than said second springs and yieldably maintain said second member in spaced parallel relation with said first member, and in which said first member has a hole in the center thereof, said second member also having a third stud projecting from said second side thereof and adapted to extend through said hole to assist in maintaining said second member in said spaced parallel relation with said first member, and to provide a pivot point for said second member when an object impacts said strip near one said end of said second member.

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