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W. E. EICKMAN
PRINTER HAMMER DAMPENER
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FIG. 1

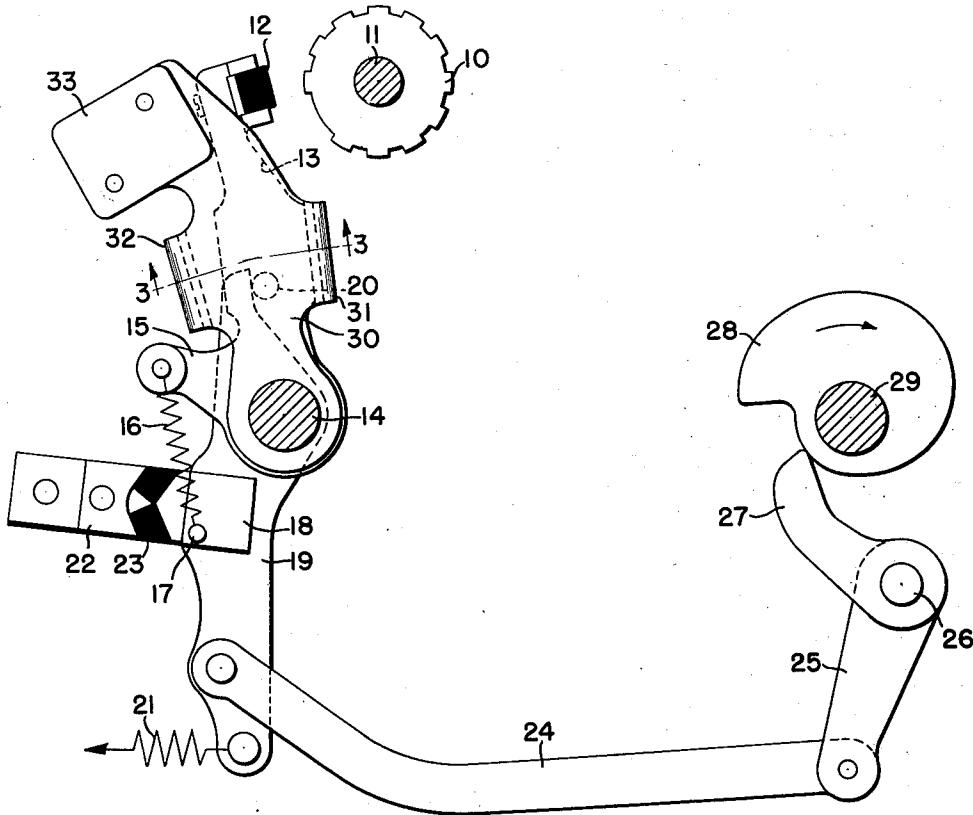


FIG. 2

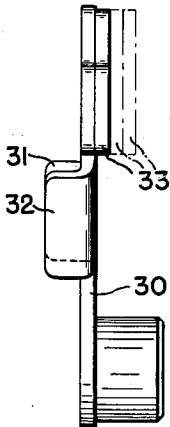
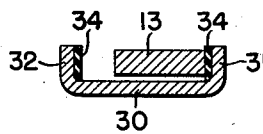


FIG. 3



INVENTOR
WILLIS E. EICKMAN

BY *Karl Benst.*
Henry Silburs

HIS ATTORNEYS

UNITED STATES PATENT OFFICE

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PRINTER HAMMER DAMPENER

Willis E. Eickman, Dayton, Ohio, assignor to The
National Cash Register Company, Dayton,
Ohio, a corporation of Maryland

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5 Claims. (Cl. 101—93)

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This invention relates to improvements in printing hammer dampeners.

The principal object of the invention is to provide means to prevent spring-actuated printing hammers from rebounding after a printing stroke, to thereby avoid blurred impressions caused by an overprinting due to the rebounding of the printing hammer.

Another object of the invention is to provide a printing hammer dampener which can be applied to an existing hammer mechanism without the necessity of changing the construction of the hammer per se in any respect.

It is a specific object of the invention to provide a simpler mechanism, for preventing rebounding of a printing hammer, than those known in the prior art.

A specific object of the invention is to provide a dampening member adjacent a printing hammer, mounted on the same pivot as the hammer, and providing the dampening member with projections engageable with both sides of the printing hammer arm, the projections being spaced apart to provide room for relative movement between the hammer and the member.

With these and incidental objects in view, the invention includes certain novel features of construction and combinations of parts, a preferred form or embodiment of which is hereinafter described with reference to the drawing which accompanies and forms a part of this specification.

In said drawing:

Fig. 1 is a side elevation of an embodiment of the invention shown applied to one type of printing mechanism.

Fig. 2 is a detail edge view of the weighted member associated with the printing hammer of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1 and looking in the direction of the arrows.

General description

In printing hammer mechanisms of the type disclosed herein, the hammer is actuated by a powerful spring, which, when released, impels the hammer against type carriers with a sudden blow. In this form of printing mechanism, when the hammer falls back to its normal position, it reacts against the driving spring, which, in many instances, causes the hammer to rebound sufficiently to cause a second impression to be made. In the present application, one form of spring-actuated printing mechanism is disclosed for the purpose of illustration; however, many other forms of actuating mechanism may be provided.

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In order to prevent the rebound of the hammer, the present invention comprises a loosely mounted dampening member, pivoted on the same axis as the printing hammer and adjacent thereto, and said dampening member is provided with projections extending laterally therefrom and into the path of movement of the hammer. The projections are spaced far enough apart to permit relative movement of the hammer between the projections.

The dampening member may be constructed to receive a plurality of weights in the form of plates to provide for varying its weight to accommodate the dampening member for varying requirements.

The projections on the dampening member are arranged to act as a counteracting means to prevent the hammer from being actuated a second time after an impression has been made on record material. When the hammer is operated by its spring to effect a sudden blow on the type carrier, one projection of the dampening member is engaged by the hammer, which carries the dampening member therewith, and, when the hammer is arrested by its contact with the type carrier, the momentum of the dampening member carries it forward. After the hammer strikes the type carriers it rebounds, and during such rebound movement the hammer meets the second projection of the dampening member, and the opposing forces of the two elements act to arrest the potential oscillatory movements of the hammer.

The weight of the dampening member varies with each installation and depends on a number of factors, such as the distance from the pivot point of the member to the center of the weight, the weight of the hammer, the strength of the springs for operating the hammer, friction, etc. To provide for the proper weight of the dampening member, weights made up of a plurality of plates can be added to or removed from the dampening member according to the requirement of a particular installation.

Detailed description

The mechanism illustrated in the drawing represents one form of printing mechanism to which the invention can be applied. In such a mechanism, a plurality of type carriers 10, mounted on a stationary shaft 11, are provided. These type carriers are adjusted to position any desired type characters on a printing line opposite a printing hammer platen 12, by any well-known means. The platen 12 is suitably mounted on the free end of a hammer 13 pivotally mounted on a shaft

14. The hammer 13 has an arm 15, to which is secured one end of a spring 16, the other end of which is secured to a stud 17 on a block 18, mounted on a hammer-operating lever 19. The lever 19 is pivoted on the shaft 14, adjacent the hammer 13. The spring 16 normally maintains a stud 20 on the hammer 13 in contact with the upper end of the lever 19.

A spring 21 normally maintains the block 18 in contact with a stop 22 secured to a machine frame. A block 23, of rubber or any other suitable material, may be interposed between the block 18 and the stop 22 to act as a cushioning means to absorb the blow of the lever 19 during machine operations, and to reduce excessive noises resulting from such blows.

Connected to the lower end of the lever 19 is a link 24, the other end of which is connected to an arm 25, pivoted on a shaft 26. The arm 25 is secured to a cam follower 27, held in engagement with an operating cam 28 on the cam shaft 29 by the spring 21.

Upon rotation of the cam 28 in the direction indicated by the arrow, the cam follower 27 is rocked counter-clockwise, thus moving the link 24 rightwardly, and the spring 21 is tensioned. At the same time, the lever 19 is rocked, and the spring 16 causes the stud 20 of the hammer 13 to follow the movement of the lever 19. When the high point on the periphery of the cam 28 passes the end of the cam follower 27, the spring 21 impels the lever 19 and, through the stud 20, impels the hammer 13 to cause the platen 12 to strike the type carriers. After the printing takes place, the hammer 13 rebounds toward normal position, but, during the return of the hammer 13 toward normal position, the stud 20, striking the spring-actuated lever 19, sometimes again impels the hammer against the type carriers.

To avoid such second impression, a dampening member 30 (Figs. 1, 2, and 3) is loosely mounted on the shaft 14, adjacent the hammer 13. The dampening member 30 is provided with flanges 31 and 32, formed to embrace the hammer 13, and the flanges are spaced apart to permit a limited free relative movement of the hammer 13 between the flanges. The upper end of the dampening member 30 can be provided with one or more removable weights 33, by means of which the proper weight can be attached thereto, for the purpose presently described. The weights are located on the dampening member 30 in such a position that gravity normally maintains the flange 31 in contact with the hammer 13. Shock- and noise-absorbing material 34 may be provided on the inner walls of the flanges 31 and 32, if desired.

When the hammer 13 is impelled against the type in the manner described, the right-hand side (Fig. 1) of the hammer carries the dampening member 30 therewith until the hammer is stopped upon striking the type carriers. The momentum of the dampening member 30 is sufficient at this time to carry it on after the hammer strikes the type carrier. Immediately thereafter, the hammer rebounds, and, as the hammer returns toward its home position, the hammer is met by the flange 32 of the dampening member 30, which member is at this time approximately in the position in which the hammer is arrested in its home position. Both the hammer 13 and the member 30 come to rest simultaneously due to the equalization of the force of each element acting on the other. The rest period of the dampening member 30 is only momentary, since

gravity immediately restores the weighted member to its home position.

The opposing forces of the two elements act to dampen the potential oscillatory movements of the hammer, and, therefore, the hammer does not rebound to make a second impression, or to make what is known in the art as a "shadow print."

In dampening mechanisms known in the prior art, the means for obtaining the dampening effect were constructed at the time the printing mechanism was made and installed and usually required special design of the parts. In applicant's novel device, the dampener can be applied to any existing printing hammer without redesigning thereof.

While the dampener shown herein is illustrated applied to a printing hammer, it is not limited in its use to printing hammers but can be applied to any desired oscillating member where oscillations thereof must be controlled.

While the form of mechanism shown and described herein is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form or embodiment herein disclosed, for it is susceptible of embodiment in various other forms.

What is claimed is:

1. The combination of a pivotally mounted printing hammer; type carriers; an actuator for impelling the printing hammer against the type carriers; a spring to restore the printing hammer to unoperated position after being impelled against the type carriers; a dampening member pivotally mounted adjacent the printing hammer, rigid projections on the dampening member extending into the paths of movements of the impression hammer, said rigid projections being spaced apart to enable the dampening member to move relatively to the printing hammer when the printing hammer strikes the type carriers and rebounds therefrom; and a weight on the free end of the dampening member to render the dampening member sufficiently heavy to arrest the hammer when the hammer engages one of the rigid projections during the said rebound movement of the hammer.

2. The combination of a shaft; an impression hammer pivotally mounted on said shaft; type carriers; an actuator for impelling the hammer against the type carriers; a dampening member pivotally mounted on said shaft adjacent the impression hammer; two rigid projections on the dampening member extending into the paths of movement of the impression hammer, one of said rigid projections engaged by the impression hammer as the hammer is impelled in printing direction by the actuator, said rigid projections being spaced apart to enable the dampening member to move relatively to the printing hammer when the printing hammer strikes the type carriers and rebounds therefrom; and a weight mounted on the end of the dampening member remote from the shaft on which the dampening member is mounted to give the dampening member added momentum to cause the dampening member to move relatively to the hammer after the hammer strikes the type carriers and rebounds, whereupon the hammer engages the other rigid projection to dampen the oscillations of the hammer.

3. The combination of a shaft, an impression hammer pivotally mounted on the shaft, type carriers, an actuating means to impel the im-

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pression hammer against the type carriers, a dampening member pivotally mounted on said shaft adjacent the impression hammer, a rigid projection on the dampening member projecting into the path of movement of the impression hammer when the impression hammer is impelled against the type carriers whereby the dampening member is moved therewith, a second rigid projection on the dampening member, said rigid projections being spaced apart an extent to enable the impression hammer to move relatively to the dampening member, said second projection being in the path of return movement of the impression hammer after an impression has been made by the hammer, said second projection being engaged by the hammer to dampen the oscillations of the hammer, and a weight comprising an inertia means on the free end of the dampening member.

4. The combination of a pivotally mounted impression hammer, type carriers, means to impel the impression hammer against the type carriers, a dampening member pivotally mounted beside the impression hammer, two rigid projections on the dampening member embracing the impression hammer, said rigid projections being spaced apart to permit relative movement between the impression hammer and the dampening member, and a weight comprising an

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inertia means on the free end of the dampening member.

5. The combination of a pivotally mounted impression hammer movable from a home position into a printing position, type carriers, means to impel the impression hammer from the home position to printing position to take impressions from the type carriers and to return the impression hammer to home position, a dampening member pivotally mounted beside the impression hammer, a pair of rigid projections on the dampening member embracing the impression hammer and spaced to permit relative movement between the hammer and the dampening member, and a weight in the free end of the impression hammer, said weight acting as an inertia means to arrest the impression hammer when returning to home position without setting up rebounding action in the hammer.

WILLIS E. EICKMAN.

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

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