

June 11, 1940.

E. S. OSTLER

2,204,187

TIME RECORDER

Filed Sept. 29, 1938

2 Sheets-Sheet 1

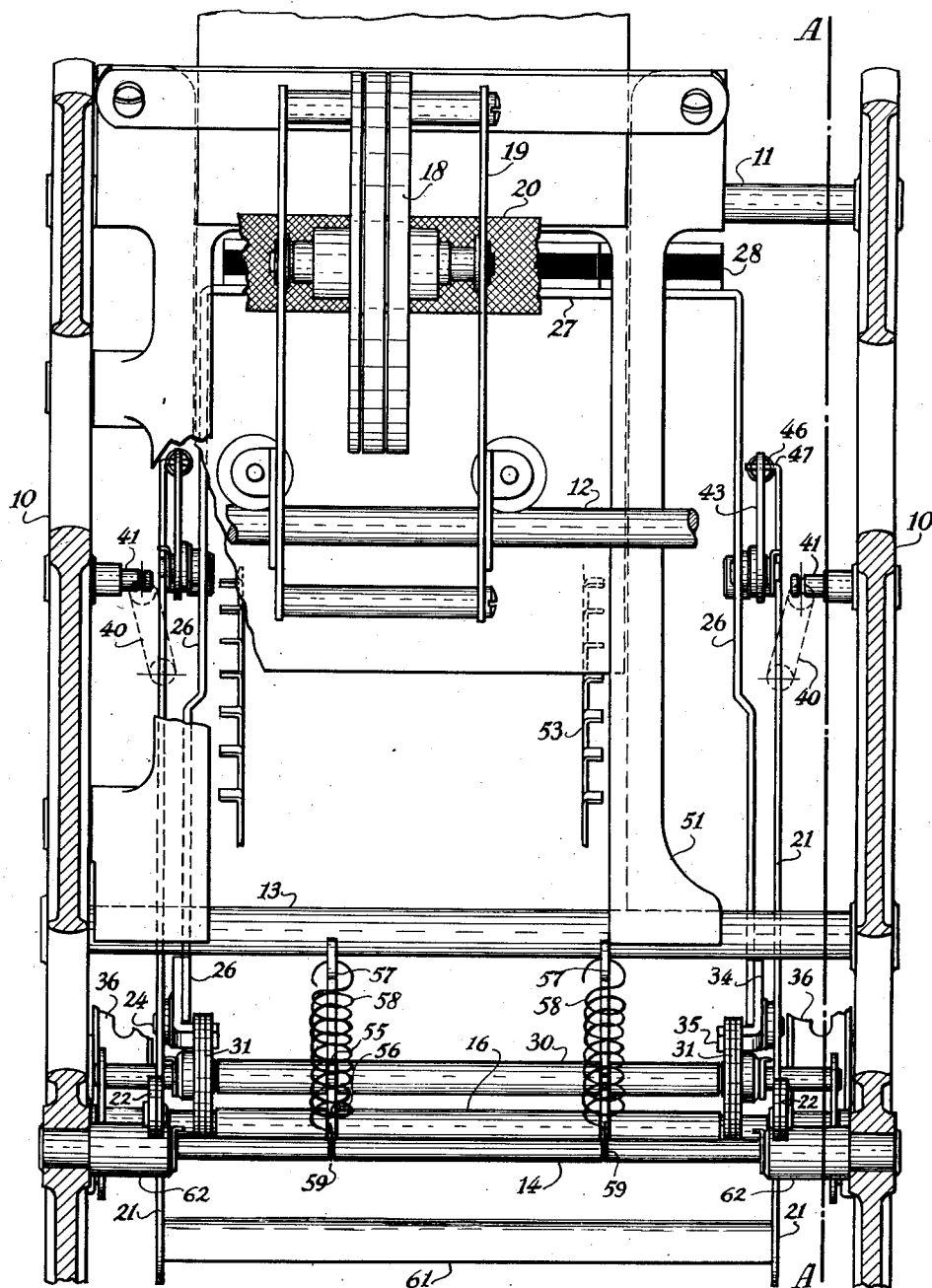


FIG. 1

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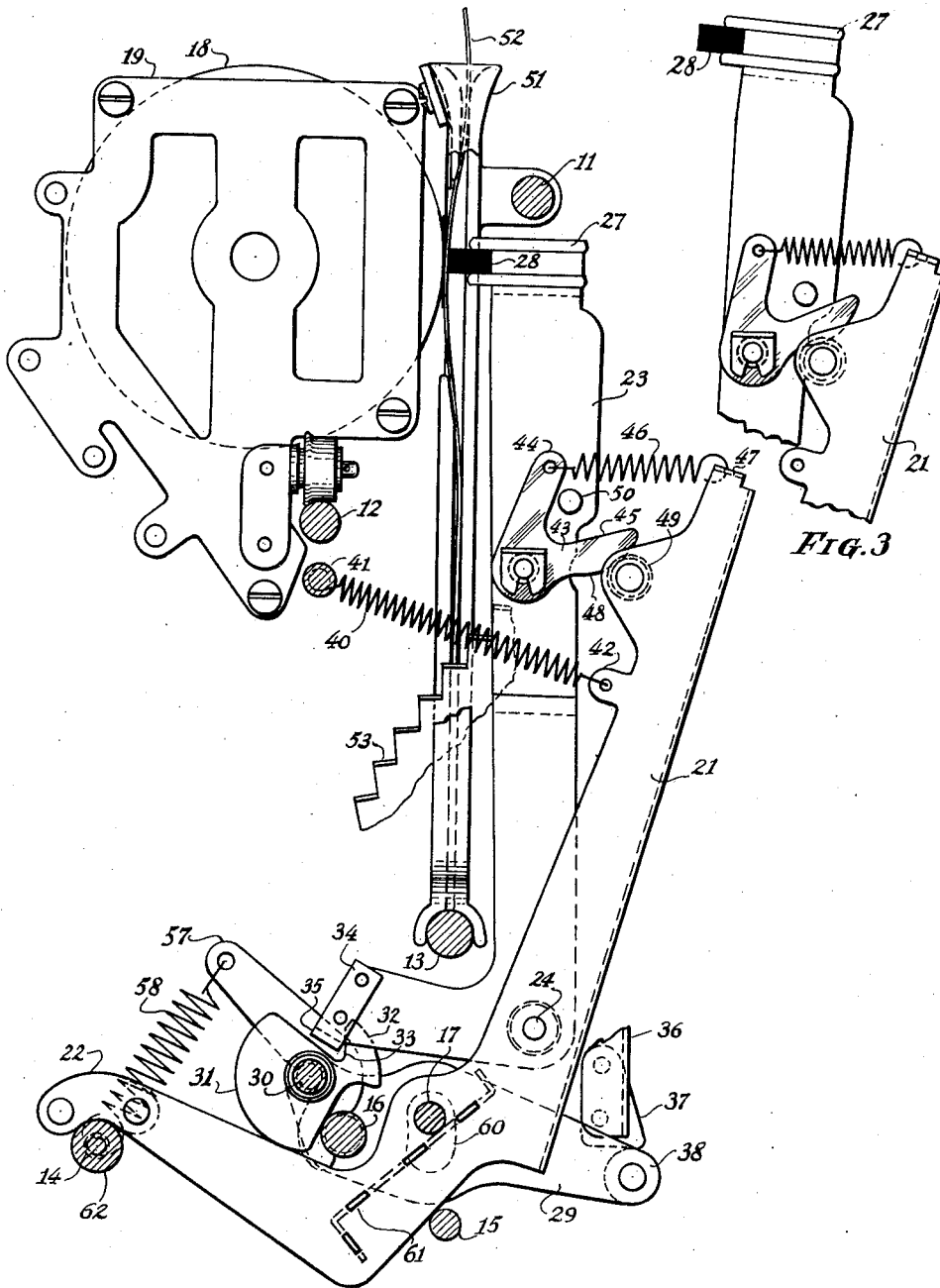


Fig. 2

Fig. 3

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TIME RECORDER

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mesne assignments, to General Time Instru-
ments Corporation, New York, N. Y., a corpora-
tion of Delaware

Application September 29, 1938, Serial No. 232,298

3 Claims. (Cl. 101—93)

This invention relates to time recorders and in particular to the mechanism by which the printing operation is performed.

In time recorders in which type wheels and a platen cooperate to print the time on a card that is positioned between them it is necessary that the platen strike the type wheels with a reasonably heavy blow and it is preferable that the blow be sharp to avoid blurring of the characters printed on the card and also to effect a speedy operation. It has been found that the sharp blow may be effected by permitting the platen to move freely into engagement with the type wheels and allowing it to bounce back, the rebound being used to effect the return motion to normal position. As considerable momentum is necessary to effect the heavy and sharp blow with a rapid rebound and as a stop is necessary to limit the return movement of the platen, it has been found that the platen is likely to rebound a second time from the stop back into engagement with the type wheels thereby printing the characters a second time. This is evidently undesirable as the card will very likely have changed its position with respect to the type wheels at the time of the second impact, thereby blurring or doubly printing the characters. To prevent this second rebound I herein disclose shock absorbing means of simple construction and efficient operation. In the past resilient means have been employed to hold the platen normally out of engagement with the type wheels, the resilient means being sufficiently strong to serve the dual function of preventing a second rebound, but in connection with this construction it has been found necessary to use an increased force to operate the printing mechanism in opposition to the action of said resilient means. The tension of the resilient means, although it will prevent a second rebound of such extent as to cause a second printing operation, will not substantially decrease the chattering or vibration of the printing mechanism caused by a series of rebounds of much smaller extent. My shock absorbing and vibration dampening construction permits the use of printing mechanism that may be operated with very little manual pressure as compared to the pressure required to operate prior machines of this sort.

An object of my invention is to provide an improved time recorder which will print the desired characters without blurring and in which the printing operation is performed only once for each operation of the mechanism.

A further object is to provide an improved

mechanism for the operation of time recorders, which mechanism may be motivated by the application of a comparatively light manual pressure.

A further object is to provide an improved printing mechanism for a time recorder in which undesirable rebound of the platen is eliminated.

A further object is to provide shock absorbing means of positive and efficient operation and of inexpensive construction which may be used in connection with time recorders.

Other objects, features and advantages of my invention will become apparent as this description proceeds.

Reference is hereby made to the accompanying drawings forming a part of this specification and in which like reference numerals refer to like parts;

Figure 1 is a front elevation of a time recorder embodying a preferred form of my invention, only the printing mechanism being shown in detail;

Figure 2 is a sectional elevation taken along line A—A of Figure 1;

Figure 3 is a detailed sectional elevation showing the shock absorbing means at a different position during its operation than shown in Figure 2.

With reference to Figures 1 and 2 reference numeral 10 indicates the side frame pieces of the time recorder, the frame pieces being affixed to each other by cross members 11, 12, 13 and 15. Shafts 16 and 17 are rotatably mounted in the frame pieces 10. Type wheels 18 are mounted in a frame 19, said frame being suitably mounted on the cross member 12, and a printing ribbon 20 is suitably associated with the type wheels.

Carrier member 21 is affixed to shaft 17 and adapted to rotate therewith. The carrier member has at one end thereof a wear plate 22, that is, a hardened steel member, which is adapted to engage banking stud 62 and limit the motion of carrier 21 in a counterclockwise direction. A stud 24 is suitably positioned on carrier 21 on which stud is pivotally mounted hammer 23. It will be noted in the following description that in connection with certain of the parts, such as carrier 21 and stud 24, appear in duplicate, one member being positioned on each side of the machine, and as the functions of the duplicate members are identical the same reference numerals will be used for corresponding parts. Hammer 23 comprises a U-shaped member having arms 26 extending downwardly from a top cross member 27 of heavy laminated ma-

terial such as steel, and having mounted therein a rubber platen 28, which is adapted to co-operate with the type wheels 18. Lever 29 is affixed to shaft 16 and is adapted for rotation therewith, the lever carrying at one end a cross member 30 on which cross member is suitably journaled for rotation with respect thereto a dog 31 which may be made of hardened steel plates and which presents surface 32 with which the bent-over portion 35 of a lug 34 mounted at one extremity of hammer 23, is adapted to co-operate. The dog also has a drop 33 on the surface thereof over which bent-over portion 35 is adapted to slide when the dog is rotated in a clockwise direction. A vertically sliding push bar 36, of which only the lower portion is herein shown, has at the lower extremity thereof a hardened contacting surface 37 which is adapted to bear on co-operating roller 38 mounted at the opposite end of lever 29 from the cross member 30.

An operating spring 40 is affixed at one end to a stud 41 on the frame piece 10 and at the other end to a lug 42 on carrier 21, the spring tending to urge the carrier 21 in the counterclockwise direction so that wear plate 22 engages banking stud 62. A pivoted member 43 in the shape of a bell crank is suitably mounted for rotation on hammer 23, the pivoted member having arms 44 and 45. A spring 46 is attached at one end to arm 44 and at the other end to a suitable lug 47 on carrier 21. Arm 45 is provided with a cam surface 48 which is adapted to cooperate with a stud 49, in the form of a cam rider, which is mounted on carrier 21. A stop 50 is provided on hammer 23 which serves to limit the rotation of pivoted member 43 in a clockwise direction.

Card receiver 51 is mounted on cross members 11 and 13 and is adapted to hold and guide a card 52 which is inserted in the machine and on which the time is to be recorded or printed. A stepped card rest 53 is also provided to limit the extent of the insertion of card 52 in holder 51, the operation of the card rest not being herein shown in detail as it forms no part of this invention. Similarly the type wheels are not herein shown or described in detail nor is the slidable mounting of frame 19. A detailed description of these details is available in Patent No. 1,719,000 issued on July 2, 1929, to C. M. Crook.

A spring carrying rod 14 is associated at either end thereof with studs 62. Grooves 55 and 56 are provided in cross member 30 and shaft 16, respectively, to provide means by which a spring holder 57 may be anchored so that a spring 58 may be positioned between the spring holder and rod 14 to urge the cross member and lever 29 in a counterclockwise direction. A groove 59 in rod 14 is provided through which one end of the spring may be hooked, the other end being affixed to said spring holder. A slot 60 is provided in lever 29 through which slot shaft 17 extends to permit the rotation of lever 29 about shaft 16. An apron 61 is affixed securely at either end thereof to the carriers 21 to act as a stiffener thereby making the carrier assembly more rigid and causing unity of operation between the two halves of the machine.

With regard to the operation of the mechanism, after the card 52 is inserted in holder 51, the push bar 36, the upper end of which extends through the housing of the machine, is manually depressed thereby rotating lever 29 in a clockwise direction which raises and rotates the shaft 30 and the dog 31 to displace the hammer in a clockwise direc-

tion and also rotates the carrier 21, engaged by the hammer, so that the wear plate 22 is disengaged from banking stud 62. During this operation the bent-over portion 35 slides over the surface 32 of the dog until it reaches the drop portion 33 at which time the bent-over portion slips over the drop thereby permitting spring 40 to rotate the carrier 21 in a counterclockwise direction to the limit of its motion. The carrier carries with it hammer 23 which by virtue of its inertia continues its motion upon the limitation by banking stud 62 of the motion of carrier 21 until the rubber platen 28 engages the inserted card, forcing the same against the ribbon and the type wheel from which it immediately rebounds. The action of spring 46 and pivoted member 43 is such that the hammer normally engages the stud 49 on the carrier as shown in Figure 3, but at the moment that the platen is in contact with the type bar the spring 46 has rotated pivoted member 43 in the clockwise direction so that cam surface 48 engages stud 49. As hammer 23 rebounds from the type bar the pivoted member is rotated in the counterclockwise direction by the action of cam 48 and stud 49 in opposition to the action of spring 46 which acts to absorb the shock and dampen the vibration caused by the return motion of the hammer to its normal position as it strikes the carrier and which will prevent rebound of the hammer from carrier 21 back to the type wheel a second time.

As the push bar 36 is released by the operator, springs 58 will return lever 29 to its normal position and as the dog 31 drops its rotatable mounting will permit the drop portion 33 to slide over the bent-over portion 35 until the dog is entirely clear, after which it will rotate in a counterclockwise direction so that the surface portion 32 is directly under the bent-over portion 35 and is ready for a subsequent operation.

The shock absorbing construction herein described has been found very effective not only in preventing a second rebound of the hammer or platen to the type wheels but also in preventing the vibration or chattering which ordinarily accompanies or results from the impact of the hammer upon the carrier.

It is evident that my invention may be employed in conjunction with printing mechanisms other than that herein disclosed and although I have herein shown a preferred embodiment of my invention it will be understood that various modifications and changes in the construction and in the shape, size and proportion of the several elements thereof may be effected without departing from the spirit of my invention as defined in the following claims.

I claim:

1. In a time recorder the combination with a printing member and an actuating member therefor, of means to limit the motion of said actuating member, stop means against which said printing member may perform a printing operation and adapted to cause rebound of said printing member into contact with said actuating member, and shock absorbing means to prevent rebound of said printing member from said actuating member after contact therewith, said shock absorbing means including a bell crank pivoted on said printing member, one arm of which is provided with a cam surface adapted to engage said actuating member, and a resilient member connecting said other arm and said actuating member, said engagement of said first arm and said actuating member being such that motion

of said printing member toward said actuating member will rotate said bell crank in opposition to the tension of said resilient member.

2. A time recorder comprising type members, 5
a reciprocable platen to co-operate therewith, an actuating member adapted for limited reciprocable motion for imparting motion to said platen beyond the limit of motion of said actuating member and into engagement with said type members, 10
a pivoted member mounted on one of said reciprocable members, a spring positioned between and affixed at either end to said pivoted member and the other of said reciprocable members, said pivoted member being provided with an arm having 15
a cam surface adapted to engage said other reciprocable member and to rotate said pivoted member to tension said spring as said platen approaches said actuating member after rebounding from said type.
3. A time recorder comprising a frame, type 20
wheels mounted thereon, a movable platen to co-operate with said type wheels, a carrier for said platen, stop means determining the normal po-

sition of said carrier, resilient means for urging said carrier against said stop means, means for displacing said platen and said carrier away from said type wheels in opposition to said resilient means, tripping means to permit said resilient means to return said carrier to normal position, said platen being carried to said normal position by said carrier, and beyond said normal position into operative engagement with said type wheels by the inertia of said platen, a bell crank on said platen, a spring connecting one arm of said bell crank with said carrier, a second arm of said bell crank being adapted to engage said carrier in advance of said platen to rotate said bell crank in opposition to the tension of said spring, said bell crank and said spring coacting to prevent rebound of said platen on said carrier subsequent to rebound of said platen from said type wheels and coacting to hold said platen in normal position away from said type wheels and in engagement with said carrier. 20

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