Aug. 4, 1959 R. D. DODGE 2,897,941

TYPE BAR TRIP MECHANISM

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FIG. 1

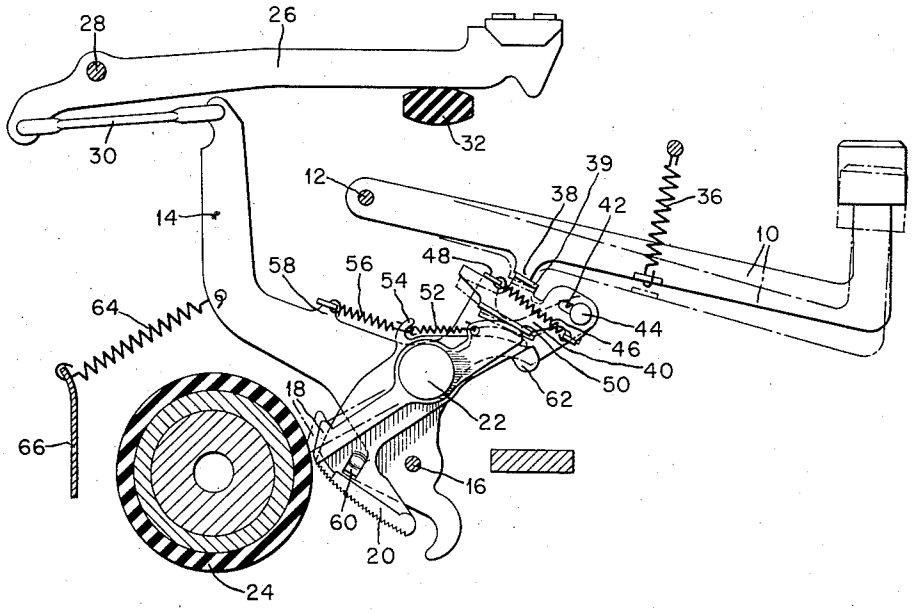

FIG. 3

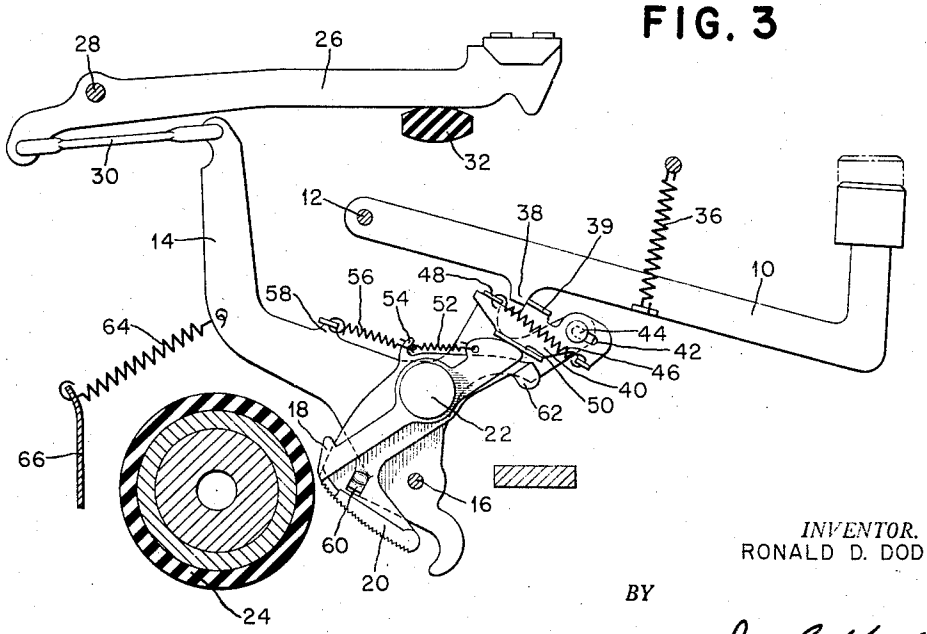

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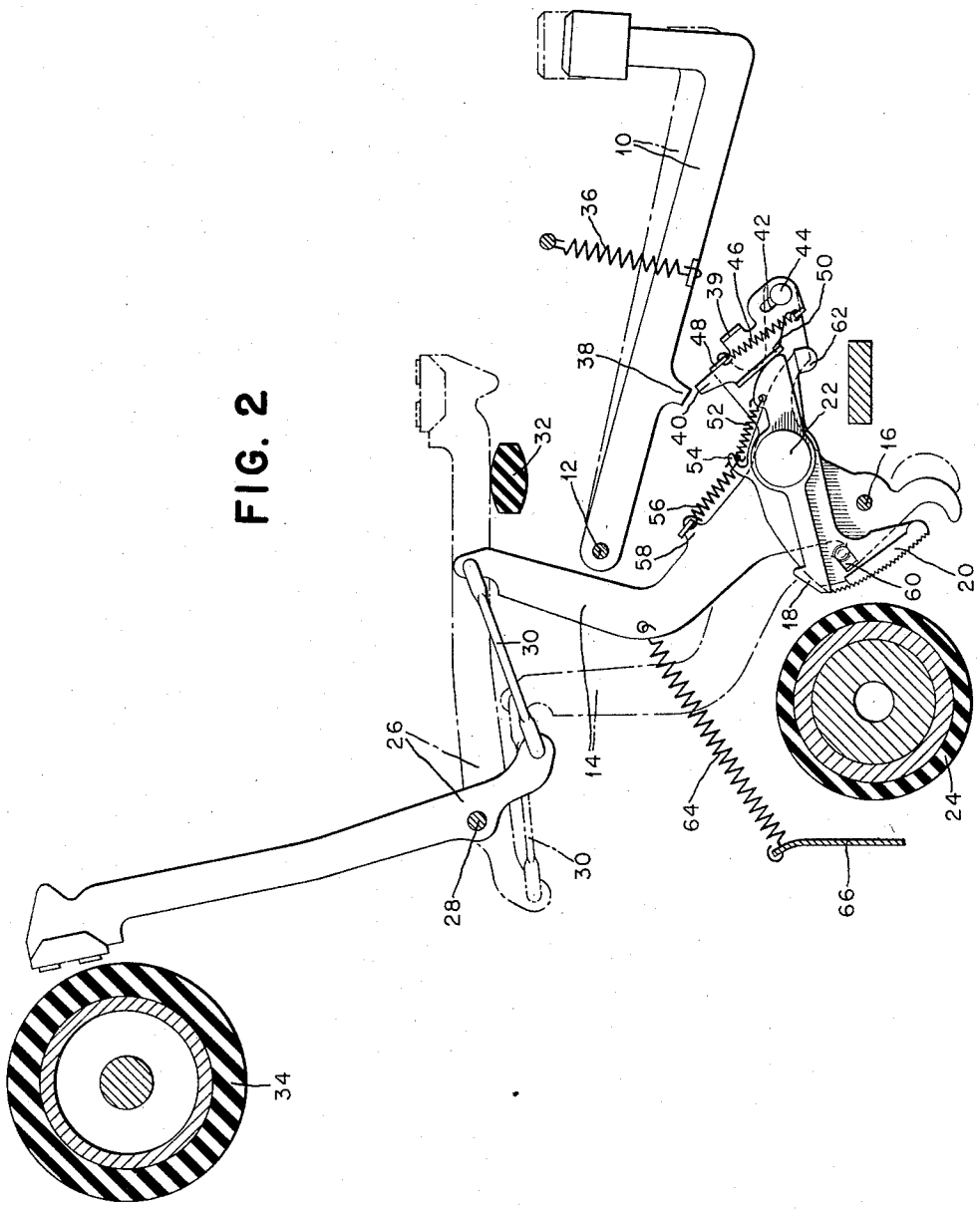
FIG. 2



United States Patent Office 2,897,941 Patented Aug. 4, 1959

2,897,941

TYPE BAR TRIP MECHANISM

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Application November 12, 1957, Serial No. 695,949

7 Claims. (Cl. 197—17)

This invention relates to typewriters and more particularly to an improved tripping mechanism and cam control for a power driven type bar drive.

In conventional power driven type bar mechanisms, examples of which are shown in U.S. Letters Patent 2,723,740 and 2,796,966, a cam is held normally out of engagement from a continuously driven power source, such as a power roller, and is pushed into engagement with the power roll to initiate a type bar print stroke.

One of the primary objects of power typewriters is to reduce the effort exerted by the operator and thereby reduce fatigue. It is desirable to require a very light touch on the keys to initiate a type bar operation. The conventional operating cam must be of sturdy construction and, of course, has weight and inertia which must be overcome to initiate a type bar stroke.

One object of this invention is to provide an improved tripping mechanism for a power driven type bar drive.

A further object of this invention is to provide an improved tripping mechanism for a power driven type bar requiring less tripping force than the conventional trip mechanisms.

A still further object of this invention is to provide a type bar tripping mechanism having a light weight member manually actuated to thereafter effect a power driven engagement of the usual type bar actuating cam with the power roller.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

Briefly, this invention relates to an improved power driven type bar cam control and tripping mechanism therefor, wherein a relatively light weight pilot cam is manually engaged with a power roller and is driven thereby to drive the usual operating cam into engagement with the power roller rather than to manually push the heavier operating cam into engagement with the power roll.

In the drawings, Figs. 1, 2 and 3 are side elevations showing the type bar drive mechanism at various stages of operation.

The type bar mechanism illustrated in the drawings comprises a key lever **10** pivotally mounted on a rod **12**, a cam lever **14** pivotally mounted on a rod **16**, a pilot cam **18** and an actuating cam **20** both pivotally mounted on a pin **22** carried by the cam lever **14**, a continuously driven power roll **24** and a type bar **26** pivotally mounted on a rod **28** and connected by a link **30** to the cam lever **14**. The type bar normally rests on a pad **32** and, when actuated, is thrown against a platen **34** shown in Fig. 2.

The key lever **10** normally is biased to a raised position by a spring **36** and is movable to an actuated position shown in Fig. 2. The key lever **10** carries a finger **38** which is adapted to engage a lug **39** on an actuating plate **40** pivotally and slidably mounted by a slot **42** on a pin **44** carried by the cam lever **14**. The actuating plate

40 is biased to the left by a spring **46** attached to a lug **48** on the cam lever **14**. A lug **50** on the actuating plate **40** rests on the upper end of the pilot cam **18** whereas the lower end of the pilot cam **18** rests closely adjacent the power roll **24**. The pilot cam **18** is biased counterclockwise by a spring **52** attached to a finger **54** on the actuating cam **20**. The cam **20** is biased counterclockwise by a spring **56** connected to a finger **58** carried by the cam lever **14** and is limited in counterclockwise movement by a lug **60** bearing against the cam lever **14**.

When the key lever **10** is moved to the dotted position of Fig. 1, the finger **38** bearing on the lug **39** pivots the actuating plate **40** counterclockwise about the pin **44** whereby the lug **50** bearing against the pilot cam **18** pivots the latter clockwise about the pin **22** moving the lower end of the pilot cam into engagement with the power roll **24**. The pilot cam has little weight and is freely rotatable on the pin **22** and, due to the light weight and the mechanical advantage gained by the various lever arms of the system, very little force is required to bring the pilot cam into engagement with the power roll.

When the power roll engages the pilot cam it continues the clockwise rotation of the pilot cam which engages a stud **62** formed on the actuating cam **20** and drives the cam **20** in a clockwise direction about the pin **22**. This clockwise movement brings the cam **20** into engagement with the power roll **24** and, due to the contour of the cam **20**, drives the cam lever **14** clockwise, about its pivot **16**, thereby, through the link **30**, driving the type bar **26** against the platen **34**. As the cam lever swings clockwise, the cam **20** moves away from the power roll and the cam lever and the type bar continue in free flight while the cam **20** is restored to its normal position, relative to the cam lever, by its spring **56**, and the pilot cam **18** is restored to its normal position, relative to the cam **20**, by its spring **52**. Upon completion of the type bar stroke, the cam lever **14** is restored to its normal position by a spring **64** connected to a bracket **66** on the machine frame.

When the cam lever **14** is rocked counterclockwise by the spring **64** at the end of the type bar stroke, it is desirable to prevent a repeat type bar stroke if the key **10** is still in the actuated position. As the cam lever swings counterclockwise, the lug **39** on the actuating plate engages the right hand edge of the finger **38** on the key lever **10** causing the plate **40** to slide on the pin and slot connection to the position shown in Fig. 3. All the parts except the actuating plate **40** are in their normal inactive positions corresponding to the full line positions of Fig. 1.

When the key lever **10** is released and is returned to its normal position by the spring **36**, the finger **38** is retracted and the actuating plate **40** is free to move to the left, under tension of the spring **46**, to the normal full-line position of Fig. 1.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention therefore, to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. An improved type bar drive mechanism for a typewriter having a power driven roller comprising, a cam lever with an associated type bar, means mounting said cam lever and said type bar for movement from a rest position to a print position, a manipulatable key lever, and means responsive to manipulation of said key lever for initiating a type bar print stroke comprising, a pilot

cam, an actuating cam, means pivotally supporting said cams on said cam lever for selective engagement with said power roller, means operable by said key lever for engaging said pilot cam with said power roller, and means operative to drivingly connect said pilot cam and said actuating cam when said pilot cam is engaged with said power roller for moving said actuating cam into engagement with said power roller whereby said cam lever and said type bar are moved to said print position.

2. An improved type bar drive mechanism for a typewriter having a power driven roller comprising, a cam lever with an associated type bar, means mounting said cam lever and said type bar for movement from a rest position to a print position, a manipulatable key lever, and means responsive to manipulation of said key lever for initiating a type bar print stroke comprising, a pilot cam, an actuating cam, means pivotally supporting said cams on said cam lever for selective engagement with said power roller, means operable by said key lever for moving said pilot cam into engagement with said power roller, means operative to drivingly connect said pilot cam and said actuating cam when said pilot cam is engaged with said power roller for moving said actuating cam into engagement with said power roller whereby said cam lever and said type bar are moved to said print position, and means operative to block a second engagement of said cams with said power roller when said key lever is held in its manipulated position.

3. An improved type bar drive mechanism for a typewriter having a power driven roller comprising, a cam lever with an associated type bar, means mounting said cam lever and said type bar for movement from a rest position to a print position, a key lever, and means responsive to manipulation of said key lever for initiating a type bar print stroke comprising a pilot cam, an actuating cam, means pivotally supporting said cams on said cam lever for selective engagement with said power roller, means resiliently restraining said pilot cam from engagement with said power roller, means resiliently restraining said actuating cam from engagement with said power roller, means resiliently holding said cam lever and said type bar in said rest position, means biasing said key lever to an inoperative position, means operable by said key lever for overcoming said pilot cam restraining means and moving said pilot cam into engagement with said power roller, and engaging means drivingly connecting said pilot cam and said actuating cam when said pilot cam is engaged with said power roller for overcoming said actuating cam restraining means and moving said actuating cam into engagement with said power roller whereby said cam lever and said type bar are moved against the force of said cam lever and type bar restraining means to said print position.

4. The device of claim 3 having means operative to block a repeat engagement of said cams with said power roller when said key lever is held in its manipulated position.

5. An improved type bar drive mechanism for a typewriter having a power driven roller comprising, a cam lever with an associated type bar mounted for movement from a rest position to a print position and spring biased to said rest position, a key lever, and means responsive to manipulation of said key lever for initiating a type bar print stroke comprising, a pilot cam spring biased from engagement with said power roller, an actuating cam spring biased from engagement with said power roller, means pivotally supporting said cams on said cam lever, for selective engagement with said power roller, means operable by said key lever for moving said pilot cam into engagement with said power roller, means operative to drivingly connect said pilot cam and said actuating cam when said pilot cam is engaged with said power roller for moving said actuating cam into engagement with said power roller whereby said cam lever and said type bar are moved to said print position.

6. The device of claim 5 having means operative to block a repeat engagement of said cams with said power roller when said key lever is held in a manipulated position.

7. The device of claim 6 wherein the last said means comprises an interposer carried by said cam lever and normally interposed between said key lever and said pilot cam for transmitting actuating movement of said key lever to said pilot cam, means mounting said interposer for pivotal and sliding movement on said cam lever, and latch means operative at the end of said print stroke to latch said interposer in an inoperative position relative to said key lever and said pilot cam as long as said key lever is held in said manipulated position.

No references cited.