

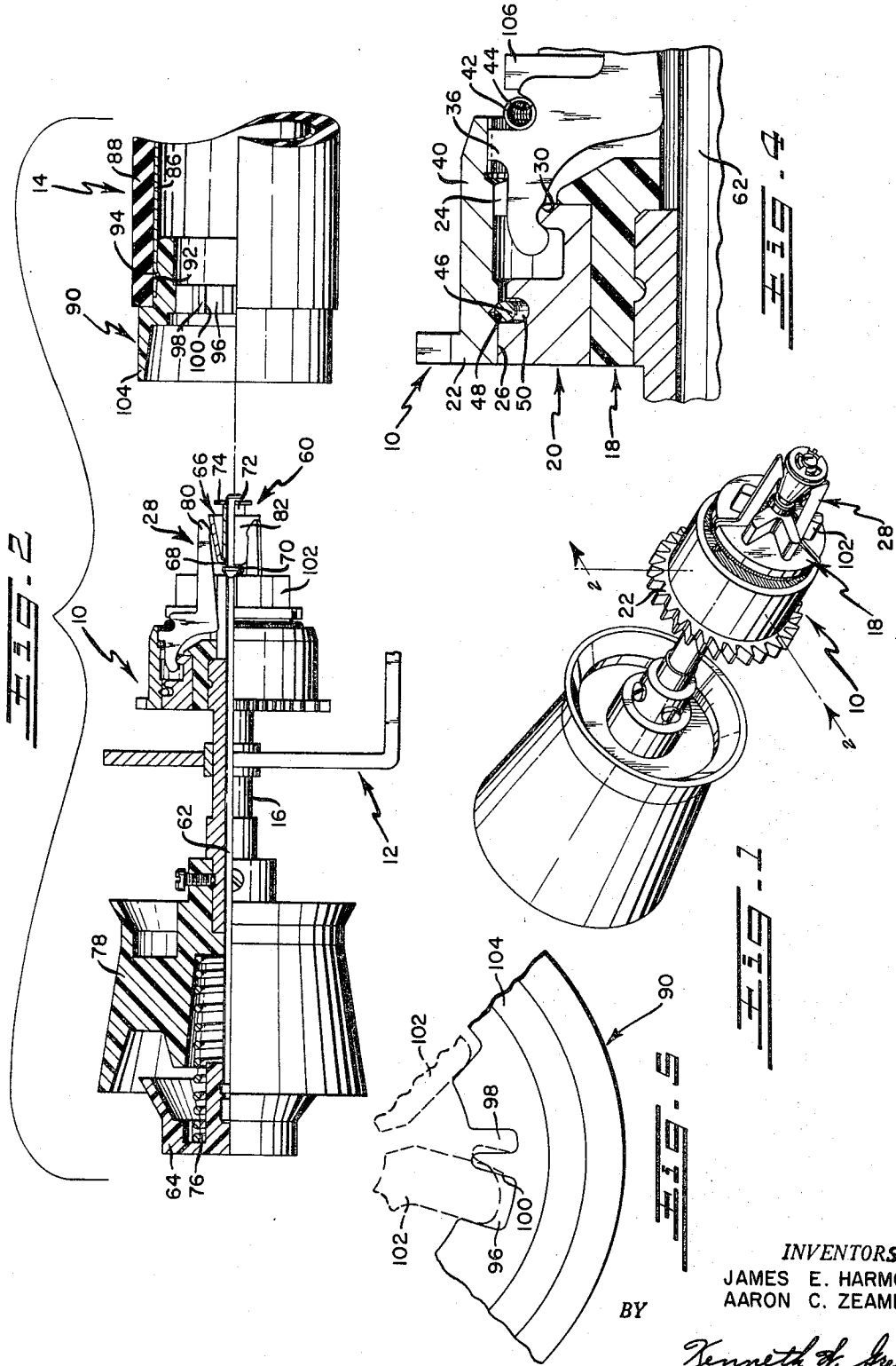
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J. E. HARMON ET AL
PLATEN RATCHET ASSEMBLY

3,342,299

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2 Sheets-Sheet 1



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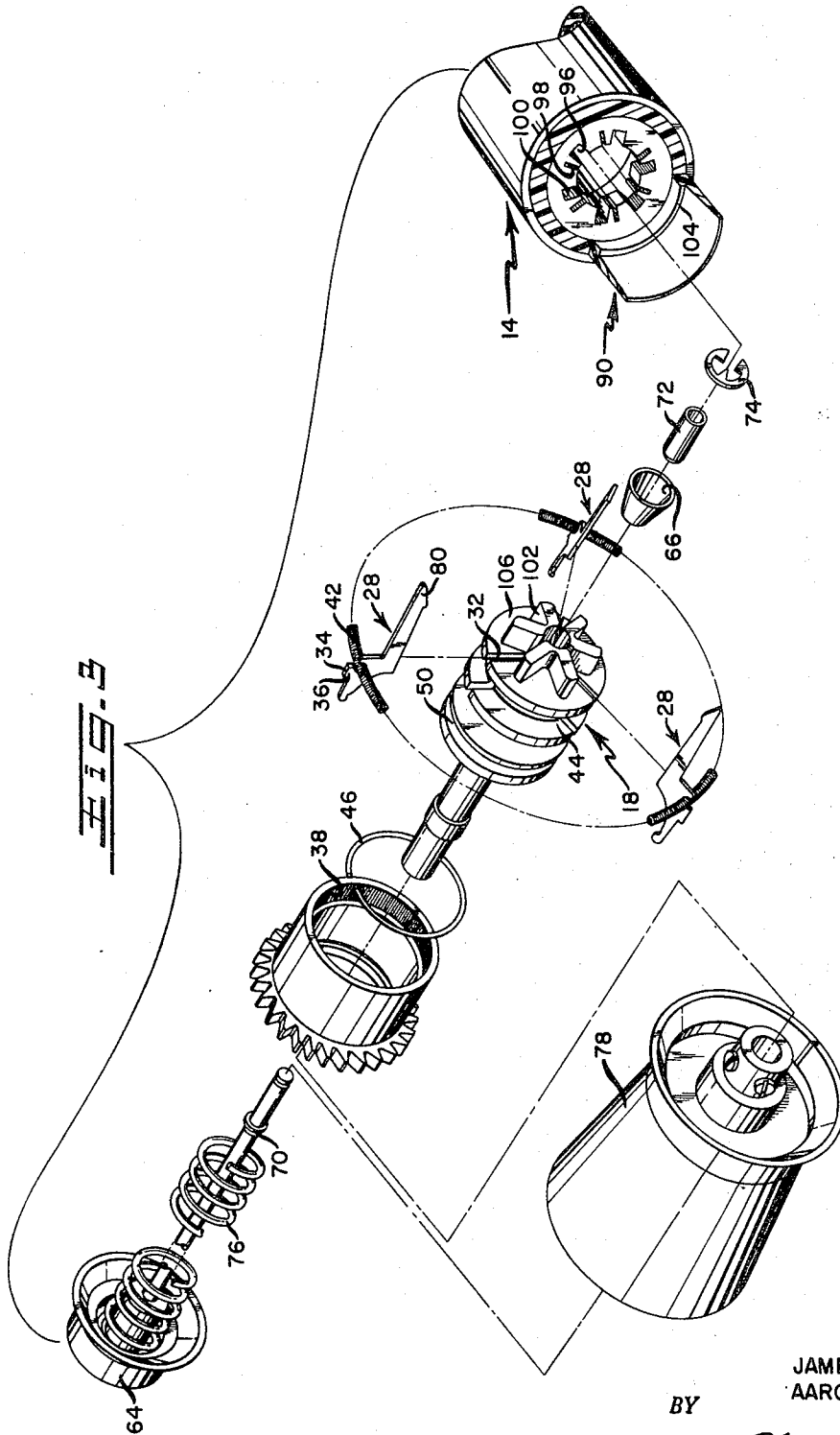


FIG. 2

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PLATEN RATCHET ASSEMBLY

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ABSTRACT OF THE DISCLOSURE

A platen ratchet assembly for typewriters having a pair of plastic members engageable with an interference fit to rigidly assemble a platen ratchet to a platen and separable to disconnect the platen from the ratchet.

Background of the invention

This invention relates to typewriters or like machines and more particularly to an improved means for coupling a platen ratchet to the platen.

The conventional means for coupling a ratchet to the platen utilize several metal parts that are operable to rigidly connect and/or release the ratchet from the platen. These metal parts add excessive weight to the platen assembly and add to the manufacturing costs thereof.

Some machines provide a detachable platen in which the platen may be conveniently removed from the carriage by being separated from a ratchet assembly which remains supported by the carriage as exemplified by H. A. Avery Patent 2,022,702, dated Dec. 3, 1935. In such machines, the coupling is made by mating metal parts which necessarily results in having open tolerances on the parts that permit convenient coupling and uncoupling. These open tolerances result in lost motion between the ratchet assembly and the platen when the ratchet is released for adjusting the platen with respect to the ratchet for a specific line of write. This lost motion requires more time and more skill of the operator in adjusting the platen to the desired line of write. Alternatively, if the parts are manufactured to closer tolerances to hold the lost motion to a minimum, the manufacturing costs are increased. A further disadvantage of the known detachable platens is that the ratchet engaging members are mounted on the platen and, therefore, are removed with the platen which results in higher platen replacement costs.

A main object of this invention is to provide a light weight, economical and rigid means for coupling the ratchet to the platen.

Another object of this invention is to provide a coupling means as defined in the above object for a detachable platen.

A further object of this invention is to provide a detachable platen having the ratchet engaging members removed from the platen assembly and to include them with the ratchet assembly which is supported on the carriage, thereby reducing platen replacement costs.

Still another object of this invention is to provide a detachable platen having a first plastic member in the ratchet assembly and a second plastic member in the platen assembly rigidly engageable with the first plastic member for eliminating the aforementioned lost motion.

Another object of this invention is to provide a detachable platen with the above identified first and second plastic members for reducing the weight and substantially reducing the manufacturing costs of the combined platen and ratchet assembly.

These and other objects of this invention will become more fully apparent by references to the appended claims and the following detailed description with reference to the accompanying drawings, wherein:

FIGURE 1 is a front perspective view of the ratchet assembly showing the ratchet dogs in a ratchet engaging position;

FIGURE 2 is a front elevational view of FIGURE 1 and including the platen assembly spaced therefrom shown partially in section along lines 2-2 of FIGURE 1;

FIGURE 3 is a front perspective exploded view of the ratchet assembly and a partially sectioned platen assembly;

FIGURE 4 is an enlarged sectional view of a portion of FIGURE 2; and

FIGURE 5 is an enlarged partial elevational left end view of the platen assembly and showing by way of hidden lines the elastic displacement of the plastic assembly when the ratchet assembly is engaged therewith.

Referring to the drawings and particularly to FIGURE 2, the platen ratchet assembly 10 is pivotally supported on the left carriage end frame 12 and the platen assembly 14 is shown as engageable with ratchet assembly 10.

Referring to FIGURES 2 and 4, the ratchet assembly 10 includes a shaft 16, a plastic member 18 rigidly assembled to shaft 16 and a metal bearing 20 rigidly assembled on plastic member 18. A ratchet 22 is pivotally supported on plastic member 18 at a support portion 24 and on bearing 20 at a support portion 26. A ratchet dog 28 is pivotally supported on bearing 20 at a support portion 30 and is guided for pivotal movement in a slot 32 in plastic member 18. Three ratchet dogs 28 (FIGURE 3) are similarly supported and guided and are equally spaced about the axis of shaft 16. Dog 28 has a plurality of relatively closely spaced teeth 34 projecting radially outwardly on an extension 36. Ratchet 22 has teeth 38 projecting radially inwardly around the inside diameter at right end 40 for mating with teeth 34 of dogs 28. A spring 42 extends around plastic member 18 and interconnects its ends to form a loop. Spring 42 is seated in a groove 44 in each dog 28 for constantly biasing the right end of each dog radially inwardly about the bearing support portion 30. Ratchet 22 is pivotally retained in its assembled position by a cross-sectional circular shaped C-ring 46 having a portion of its circular cross-section seated in a groove 48 in ratchet 22 and the remaining portion of its cross-section seated in a groove 50 in bearing 20. C-ring 46 is assembled with a slight amount of outward biasing force such that it will rotate with ratchet 22.

Ratchet assembly 10 includes a releasing means 60 for controlling dogs 28 for engaging or disengaging teeth 34 of dogs 28 with teeth 38 of ratchet 22. A shaft 62 is supported by shaft 16 for axial displacement relative thereto. An operator control button 64 is rigidly assembled on the left end of shaft 62. A bell shaped cam 66 is loosely assembled on the right end of shaft 62 by having an opening 68 with a diameter slightly larger than the diameter of shaft 62. A cam 66 is controlled axially on one side by an integral shoulder 70 and on the other side by a bushing 72 mounted on the shaft and retained with a keeper 74. A compression spring 76 is mounted on shaft 62 having one end abutting against button 64 and the other end abutting against a platen knob 78 for biasing shaft 62 toward the left. As shaft 62 moves toward the left, cam 66 contacts all three dogs 28 at its smaller diameter end and pivots the dogs radially outwardly as the dogs cam along the surface 82 toward the larger diameter end. The loosely assembled cam 66 is aligned with respect to shaft 62 by the three dogs 28 camming along surface 82. The movement of shaft 62 toward the left by spring 76 is limited by the teeth 34 of dogs 28 fully engaging the teeth 38 of ratchet 22. Under this condition, the dogs 28 are blocked from further outward radial movement and dog ends 80 frictionally pinch cam 66 thereby preventing further movement of shaft 62. This is the normal condition for rigidly coupling plastic

member 18 to ratchet 22 shown best in FIGURE 1. To release ratchet 22 from plastic member 18, button 64 must be pressed toward the right against the biasing force of spring 76 until dogs 28 cam off the smaller diameter end of cam 66 by spring 42. Teeth 34 of dogs 28 are now disengaged from teeth 38 of ratchet 22 which frees ratchet 22 with respect to plastic member 18.

The platen assembly 14 has a metal core 86, a rubber shell 88 and a plastic member 90. Plastic member 90 is rigidly assembled to the core 86 by having several lances 92 around core 86 seated in mating notches 94 in member 90 under a force fit condition. Plastic member 90 has a series of larger openings 96 and a smaller opening 98 adjacent each large opening. The smaller opening 98 provides a wall 100 that is capable of being elastically displaced. Plastic member 18 of ratchet assembly 10 has an equal number of integral projections 102 for larger openings 96 in plastic member 90. Platen assembly 14 is rigidly assembled to ratchet assembly 10 by inserting plastic member 90 on to plastic member 18 and forcing the projections 102 in the mating openings 96 to a limited position determined by a shoulder 104 of plastic member 90 abutting against a face 106 of plastic member 18. In this assembled position, each wall 100 is elastically displaced by a respective projection thereby preventing lost motion between the ratchet assembly 10 and the platen assembly 14. This rigid assembly also prevents lost motion when ratchet dogs 28 are released from the ratchet 22 by release means 60.

This is particularly important when the operator depresses button 64 for releasing the ratchet 22 from the platen for adjusting the platen to align the printing point with a line of write. Quite often it is necessary for the operator to rock the platen back and forth for an accurate platen adjustment. The rigid assembly between the platen knob 78 and the platen assembly 14 provides a faster and more convenient platen adjusting means.

By utilizing the plastic member 18 in the ratchet assembly 10 and the plastic member 90 in the platen assembly 14, an improved platen ratchet assembly for a detachable platen is provided by reducing weight and manufacturing cost and by eliminating lost motion between the ratchet assembly 10 and platen assembly 14.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are intended to be embraced therein.

What is claimed and desired to be secured by Letters Patent is:

1. In a typewriter or the like having a carriage frame and a detachable platen rotatably mounted thereon comprising:

(a) a ratchet assembly rotatably supported on the carriage frame including:

- (1) a rotatably mounted ratchet wheel;
- (2) a first plastic member;
- (3) a selectively operable means for connecting and disconnecting said ratchet wheel and said first plastic member; and

(b) a platen assembly rotatably supported on the carriage frame including a second plastic member, said second plastic member having means for engaging said first plastic member with an interference fit to eliminate lost motion between said ratchet assembly and said platen assembly when said operable means is in said disconnecting condition and for disengaging said first plastic member whereby said platen assembly may be removed from the carriage independently of said ratchet assembly.

2. A typewriter as defined in claim 1 wherein said first plastic member has projections extending therefrom and said second plastic member means includes apertures therein for receiving said projections such that said projections elastically displaces material of said second plastic member thereby providing said interference fit.

3. In a typewriter or the like having a carriage frame and a detachable platen rotatably mounted thereon comprising:

(a) a ratchet assembly rotatably supported on the carriage frame including:

- (1) a first plastic member;
- (2) a ratchet wheel rotatably supported on said first plastic member;
- (3) a selectively operable means supported by said first plastic member for connecting and disconnecting said ratchet wheel and said first plastic member; and

(b) a platen assembly rotatably supported on the carriage frame including a second plastic member, said second plastic member having means for engaging said first plastic member with an interference fit to eliminate lost motion between said ratchet assembly and said platen assembly when said operable means is in said disconnecting condition and for disengaging said first plastic member whereby said platen assembly may be removed from the carriage independently of said ratchet assembly.

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