Dec. 16, 1952 C. M. KOONS 2,621,404

MOTOR-DRIVEN SHEAR MEANS

Filed Feb. 21, 1952 2 SHEETS—SHEET 1

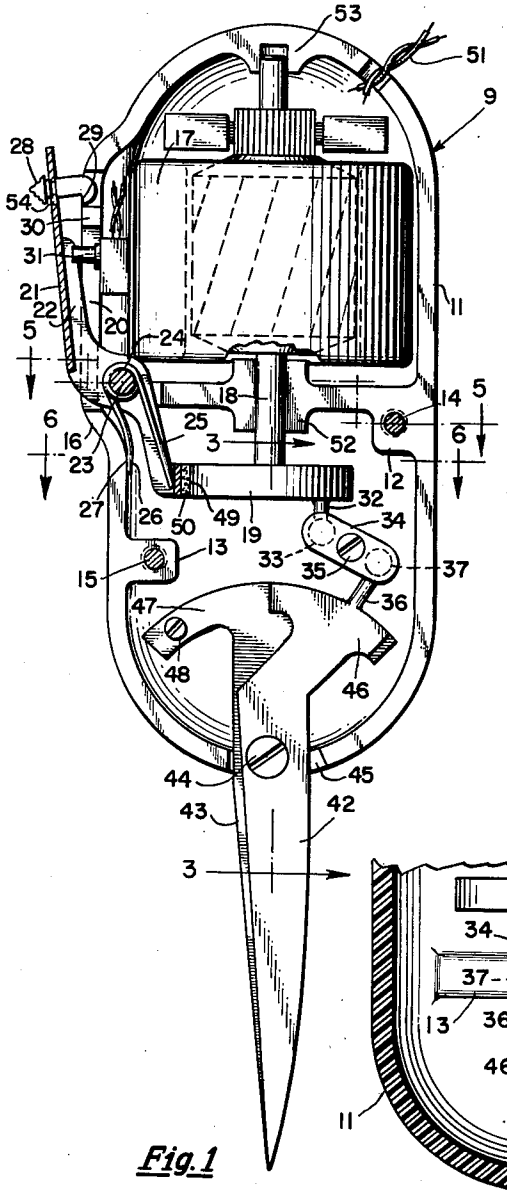


Fig. 1

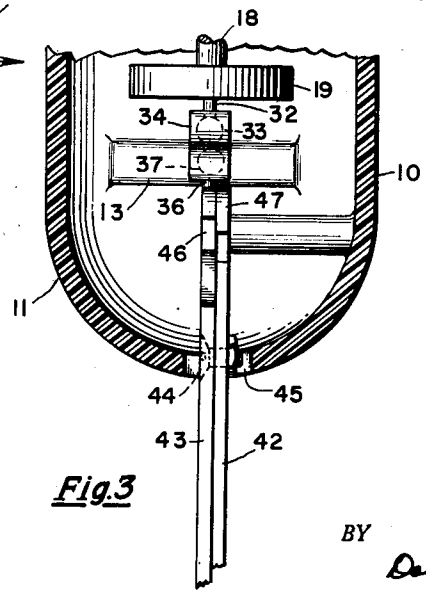


Fig. 3

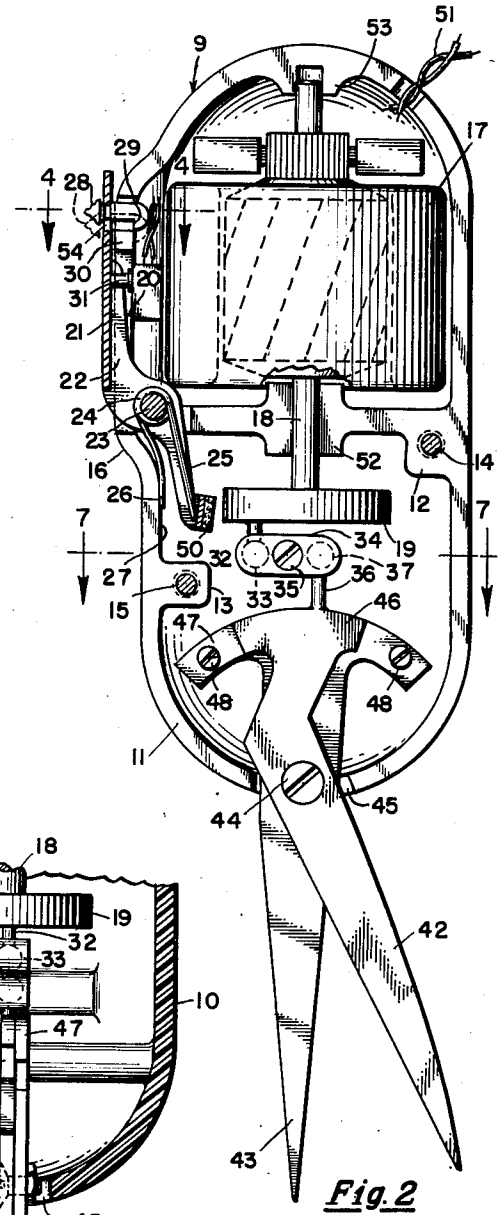


Fig. 2

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MOTOR-DRIVEN SHEAR MEANS

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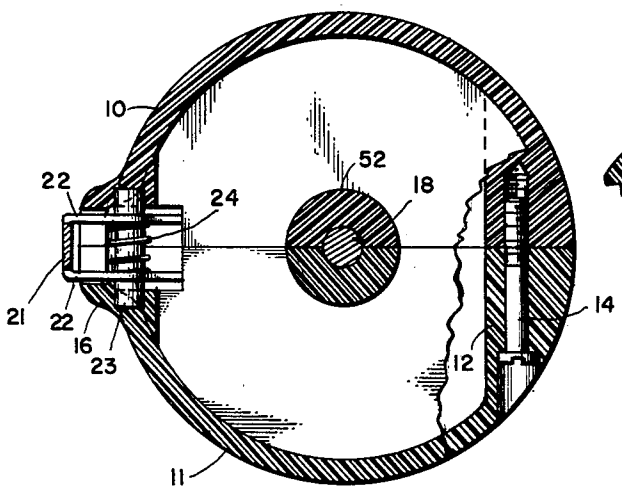


Fig. 5

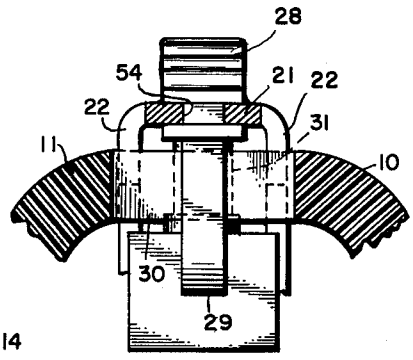


Fig. 4

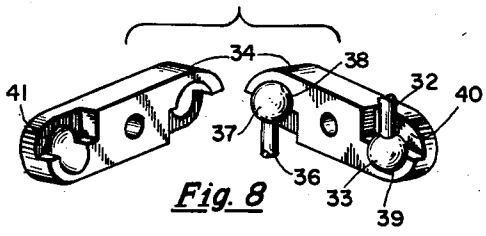


Fig. 8

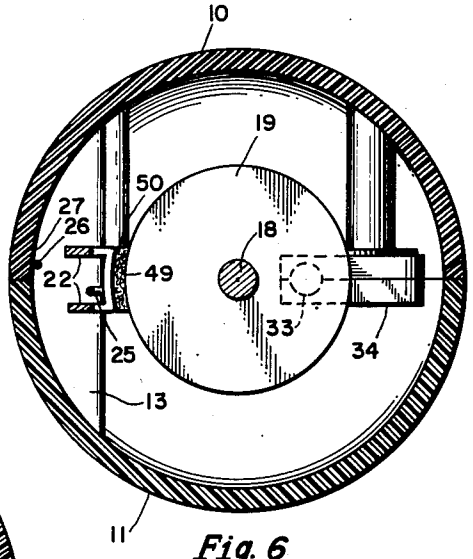


Fig. 6

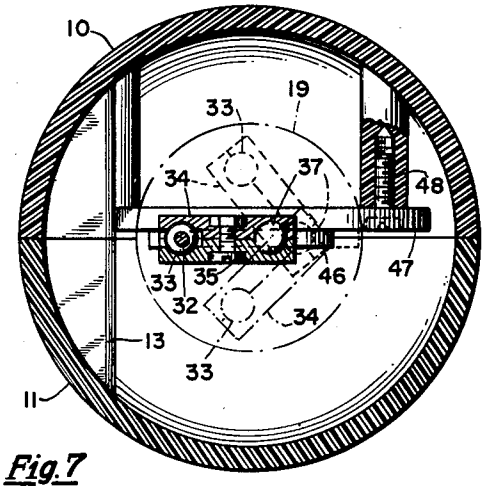


Fig. 7

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Patented Dec. 16, 1952

2,621,404

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2,621,404

MOTOR-DRIVEN SHEAR MEANS

Carl M. Koons, Chicago, Ill.

Application February 21, 1952, Serial No. 272,837

10 Claims. (Cl. 30—228)

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My invention relates to motorized shear mechanism which is useful for barbers, for tonsorial purposes, as well as for cutting material, such as textiles, and the like.

An important object of my invention is to provide a mechanism of the aforementioned character, embracing a casing having a prime mover mounted therein, and shear means extending therefrom, interconnected to the said prime mover means by means of duplex universal coupling means.

Another object of my invention is to provide in a mechanism of the aforementioned character, shear means consisting of pivotally connected cross members provided at the actuating extremities thereof, with riding saddle means in order to insure the proper cutting action of the said shear means.

Another object of my invention is to provide, in a mechanism of the aforementioned character, switch control means provided with brake shoe means adapted to set the said brake shoe means into inoperative position when the switch means is in operative position, and vice versa.

Another object of my invention is to provide a mechanism of the aforementioned character, which is of simple construction, can be held in the hand for manipulative purposes in guiding the cutting shear means thereof, and is of such simple elemental construction as to lend itself ideally to economical manufacture in quantity production.

Other features and objects inherent in my invention will become apparent from an examination of the accompanying drawings, bearing further elucidation in the ensuing description, in which like numerals designate like parts, and in which:

Fig. 1 is a longitudinal cross-sectional view of my invention, showing the shears in closed position, the switch means being in idle or inoperative position.

Fig. 2 is a view similar to Fig. 1, showing the shears in open position, and the switch means in operative position.

Fig. 3 is a fragmentary cross-sectional view taken, substantially, on the lines 3—3 of Fig. 1.

Fig. 4 is a fragmentary and enlarged cross-sectional view taken, substantially, on the lines 4—4 of Fig. 2.

Fig. 5 is a staggered cross-sectional view taken, substantially, on the lines 5—5 of Fig. 1.

Fig. 6 is a cross-sectional view taken, substantially, on the lines 6—6 of Fig. 1.

Fig. 7 is a cross-sectional view taken, substantially, on the lines 7—7 of Fig. 2.

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Fig. 8 is a perspective exploded view showing the detailed elemental structure of the duplex universal means comprising an essential element of my invention. Referring to the various views, my invention is generally designated 9 and consists of an outer shell or case made in two halves, designated respectively 10 and 11.

The said halves, 10 and 11, are provided with bosses arranged in staggered relationship, and designated 12 and 13 to furnish suitable anchorage for the screws 14 and 15 to maintain the two halves in compact and assembled relationship.

Within the casing comprised of the halves 10 and 11 is mounted a prime mover 17. It will be noted that the casing has a hump portion 16, to accommodate the switch means 31 and the trip lever mechanism 21, it should be also noted, that the prime mover is provided with an extension of the driving shaft 18 operating in bearings 52 and 53.

On the inner terminal of the driving shaft 18 is mounted the flywheel 19. The said flywheel has secured thereto a lug portion 32 having a ball terminal portion 33 which is seated in one of the sockets 39 or 38 of the individual coupling element 34, which provide the duplex universal connection means from the flywheel 19 to the movable shear blade 42, so that its motivation with respect to the stationary blade 43 will cause the cutting edges of the shear means to afford a shearing action to cut material inserted there between.

The blades 42 and 43 are cross members and are pivoted by the pivot screw 44 and at the interior termini thereof the shear blade 42 is provided with a riding saddle 46, which operates on the stationary saddle 47 of the blade 43.

The stationary blade is secured by screws 48 to the case section 10. Both sections are provided with slotted openings 45 to furnish clearance for the movement of the shear blade 42.

The saddle portion 46 terminates in extension 36 which has a ball portion 37 operating in the socket 38 or 39. The clamp screw 35 retains the two sections of the duplex universal connecting joint 34 in assemblage with the ball portions 33 and 37.

When the flywheel 19 rotates, it will impart to the movable shear blade 42 motion within the ambit or range exemplified comparatively between Figures 1 and 2.

The prime mover is energized through the circuit 51, to which a switch element 31 is connected, the switch button thereof being depressed by the switch actuating lever 21 which has web

portions 22 for reinforcement thereof, as well as for mounting the same articulately on the pivot 23, which also furnishes the means for holding the coiled portion of the spring 24 so that its two terminals, namely, the terminal 26 rests against the inner wall 27 of the shell, and the other terminal 25 of the spring 24, rests on a brake shoe 50, which is adapted to operate against the peripheral portion 49 of the flywheel 19.

It will be noted that the switch actuating lever 21 is provided with a switch button 28 having a hooking latch 29, adapted to catch the bottom portion of the web 30 when in operative position.

It will also be noted that when the switch lever 21, operable in slot 28, is locked by the hooking latch 29, in operative position, illustrated in Fig. 2, the brake shoe 50 is free from engagement with the peripheral portion 49 of the flywheel 19, thus permitting the shear blade 42 to be oscillated to operate effectively in cutting whatever material is inserted between the shear blades 42 and 43.

Whereas, when the switch button 28 is slid in slot 54 in the switch actuating element 21, so as to cause the same to be released from engagement with the web 30, then the lever, or element 21, is released by virtue of the action of the terminal portions 25 and 26 of the spring 24, simultaneously causing the brake shoe 50 to engage the peripheral portion 49 of the flywheel 19, thus effectively stopping movement of the blade 42, the switch 31 also being released by spring pressure which normally tends to maintain the switch in operative position.

It will be noted in Fig. 3 that the duplex universal coupling 34 has clearance openings 41 and 40 to permit the extensions 36 and 32 to operate freely therein, and not impair, nor impede the operation of the duplex universal coupling 34 in its rotational ambit, during which course of action it will be subjected to resultant angular movements, in order to translate the rotary motion of the flywheel 19 to an oscillating motion of the blade 42.

To operate the shears it is grasped in one hand, the lever 21 is depressed in order to close the circuit by means of switch 31.

The switch actuates lever 21 being locked in operative position by the hooking latch 29 engaging the lower or inner portion of the web 30.

The device is then held conveniently in the hand and may be manipulated for tonsorial purposes, hair cutting, cutting of textile materials, and the like.

When the cutting operation is completed, the hooking latch 29 is caused to be disengaged from the web 30 allowing the potential energy stored in the spring 24 to be converted to kinetic energy, releasing the switch actuating lever 21, simultaneously releasing the switch 31, opening the electrical circuit and simultaneously with that operation causing the spring 24 to effectuate a braking action of the brake shoe 50 against the peripheral surface 29 of the flywheel 19.

I believe I have herein illustrated and described the nature of my invention, and expounded, in expository form, the teachings so that those familiar with the art will be able to practice my invention. Inasmuch as the same is susceptible of many modifications, alterations, and improvements, I hereby reserve the right to any improvements, alterations and modifications coming within the scope and spirit of my invention and disclosure, also the right to any improvements impliably embraced in the accompanying illustrations depicting the generally suggested elemental structure of my invention, and also any modifications, improvements, or alterations, falling within the purview of the foregoing description; my invention to be limited only by the subjoined claims.

Having thus disclosed and revealed my invention, what I claim as new and desire to secure by Letters Patent is:

1. Motorized shear means, comprising a shell enclosure, a prime mover confined within the shell enclosure, flywheel means mounted on the rotor of the said prime mover, shear means including pivoted cross members, namely, a stationary cross member provided with a saddle portion secured interiorly of the said shell enclosure, and an oscillating cross member provided with a saddle portion adapted to ride on the said first-mentioned saddle portion, primary ball means eccentrically mounted on the said flywheel means, secondary ball means mounted on the said second-mentioned saddle portion, and duplex universal means interconnecting the said secondary ball means and the said primary ball means.

2. Motorized shear means, comprising a shell enclosure, a prime mover confined within the said shell enclosure, flywheel means mounted on the rotor of the said prime mover, shear means including pivoted cross members, namely, a stationary cross member provided with a saddle portion secured interiorly of the said shell enclosure, and an oscillating cross member provided with a saddle portion adapted to ride on the said first-mentioned saddle portion, primary ball means eccentrically mounted on the said flywheel means, secondary ball means mounted on the said second-mentioned saddle portion, duplex universal means interconnecting the said secondary ball means and the said primary ball means, and spring-urged switch means connected to the said prime mover and normally maintained in inoperative position.

3. Motorized shear means, comprising a shell enclosure, a prime mover confined within the said shell enclosure, flywheel means mounted on the rotor of the said prime mover, shear means including pivoted cross members, namely, a stationary cross member provided with a saddle portion secured interiorly of the said shell enclosure, and an oscillating cross member provided with a saddle portion adapted to ride on the said first-mentioned saddle portion, primary ball means eccentrically mounted on the said flywheel means, secondary ball means mounted on the said second-mentioned saddle portion, duplex universal means interconnecting the said secondary ball means and the said primary ball means, and spring-urged switch means connected to the said prime mover and normally maintained in inoperative position, and trip lever means articulately secured intermediate its ends within the said shell enclosure one end thereof extending beyond the confines of the said shell enclosure and adapted to depress the said switch means to operative position.

4. Motorized shear means, comprising a shell enclosure, a prime mover confined within the said shell enclosure, flywheel means, mounted on the rotor of the said prime mover, shear means including pivoted cross members, namely, a stationary cross member provided with a saddle portion secured interiorly of the said shell enclosure, and an oscillating cross member provided with a saddle portion adapted to ride on the said first-mentioned saddle portion, primary

ball means eccentrically mounted on the said flywheel means, secondary ball means mounted on the said second-mentioned saddle portion, duplex universal means interconnecting the said secondary ball means and the said primary ball means, spring-urged switch means connected to the said prime mover and normally maintained in inoperative position, trip lever means articulately secured intermediate its ends within the said shell enclosure one end thereof extending beyond the confines of the said shell enclosure and adapted to depress the said switch means to operative position, switch button means secured slidably on the exposed end of the said trip lever means, web means on the said shell enclosure, and hooking latch means on the said switch button means adapted to engage releasably the said web means to maintain the said switch means in operative position.

5. Motorized shear means, comprising a shell enclosure, a prime mover confined within the said shell enclosure, flywheel means mounted on the rotor of the said prime mover, shear means including pivoted cross members, namely, a stationary cross member provided with a saddle portion secured interiorly of the said shell enclosure, and an oscillating cross member provided with a saddle portion adapted to ride on the said first-mentioned saddle portion, primary ball means eccentrically mounted on the said flywheel means, secondary ball means mounted on the said second-mentioned saddle portion, duplex universal means interconnecting the said secondary ball means and the said primary ball means, spring-urged switch means connected to the said prime mover and normally maintained in inoperative position, and trip lever means articulately secured intermediate its ends within the said shell enclosure one end thereof extending beyond the confines of the said shell enclosure and adapted to depress the said switch means to operative position, the other end of the said trip lever means having brake means secured thereto adapted to engage frictionally the peripheral portion of the said flywheel means when the said switch means is in inoperative position.

6. Motorized shear means, comprising a shell enclosure, a prime mover confined within the said shell enclosure, flywheel means mounted on the rotor of the said prime mover, shear means extending beyond the confines of the said shell enclosure and including pivoted cross members namely, a stationary cross member provided with a saddle portion secured interiorly of the said shell enclosure, and an oscillating cross member provided with a saddle portion adapted to ride on the said first-mentioned saddle portion, primary ball means eccentrically mounted on the said flywheel means, secondary ball means mounted on the said second-mentioned saddle portion, duplex universal means interconnecting the said secondary ball means and the said primary ball means, spring-urged switch means connected to the said prime mover and normally maintained in inoperative position, trip lever means articulately secured intermediate its ends within the said shell enclosure one end thereof extending beyond the confines of the said shell enclosure and adapted to depress the said switch means to operative position, switch button means secured slidably on the exposed end of the said trip lever means, web means on the said shell enclosure, and hooking latch means on the said switch button means adapted to engage releasably the said web means to maintain the said switch means in operative position, the other end of the said trip lever means having brake means secured thereto adapted to engage frictionally the peripheral portion of the said flywheel means when the said switch means is in inoperative position.

7. Motorized shear means, comprising a shell enclosure, a prime mover confined within the said shell enclosure, flywheel means mounted on the rotor of the said prime mover, shear means extending beyond the confines of the said shell enclosure and including pivoted cross members, namely, a stationary cross member provided with a saddle portion secured interiorly of the said shell enclosure, and an oscillating cross member provided with a saddle portion adapted to ride on the said first-mentioned saddle portion, primary ball means eccentrically mounted on the said flywheel means, secondary ball means mounted on the said second-mentioned saddle portion, duplex universal means interconnecting the said secondary ball means and the said primary ball means, and spring-urged switch means connected to the said prime mover and normally maintained in inoperative position, and trip lever means articulately secured intermediate its ends within the said shell enclosure one end thereof extending beyond the confines of the said shell enclosure and adapted to depress the said switch means to operative position, and spring means urging the said trip lever means to inoperative position.

8. Motorized shear means, comprising a shell enclosure, a prime mover confined within the said shell enclosure, flywheel means mounted on the rotor of the said prime mover, shear means extending beyond the confines of the said shell enclosure and including pivoted cross members, namely, a stationary cross member provided with a saddle portion secured interiorly of the said shell enclosure, and an oscillating cross member provided with a saddle portion adapted to ride on the said first-mentioned saddle portion, primary ball means eccentrically mounted on the said flywheel means, secondary ball means mounted on the said second-mentioned saddle portion, duplex universal means interconnecting the said secondary ball means and the said primary ball means, spring-urged switch means connected to the said prime mover and normally maintained in inoperative position, trip lever means articulately secured intermediate its ends within the said shell enclosure one end thereof extending beyond the confines of the said shell enclosure and adapted to depress the said switch means to operative position, switch button means secured slidably on the exposed end of the said trip lever means, web means on the said shell enclosure, and hooking latch means on the said switch button means adapted to engage releasably the said web means to maintain the said switch means in operative position, and spring means urging the said trip lever means to inoperative position.

9. Motorized shear means, comprising a shell enclosure, a prime mover confined within the said shell enclosure, flywheel means mounted on the rotor of the said prime mover, shear means extending beyond the confines of the said shell enclosure and including pivoted cross members, namely, a stationary cross member provided with a saddle portion secured interiorly of the said shell enclosure, and an oscillating cross member provided with a saddle portion adapted

to ride on the said first-mentioned saddle portion, primary ball means eccentrically mounted on the said flywheel means, secondary ball means mounted on the said second-mentioned saddle portion, duplex universal means interconnecting the said secondary ball means and the said primary ball means, spring-urged switch means connected to the said prime mover and normally maintained in inoperative position, trip lever means articulately secured intermediate its ends within the said shell enclosure one end thereof extending beyond the confines of the said shell enclosure and adapted to depress the said switch means to operative position, the other end of the said trip lever means having brake means secured thereto adapted to engage frictionally the peripheral portion of the said flywheel means when the said switch means is in inoperative position, and spring means urging the said trip lever means to inoperative position.

10. Motorized shear means, comprising a shell enclosure, a prime mover confined within the said shell enclosure, flywheel means mounted on the rotor of the said prime mover, shear means extending beyond the confines of the said shell enclosure and including pivoted cross members, namely, a stationary cross member provided with a saddle portion secured interiorly of the said shell enclosure, and an oscillating cross member provided with a saddle portion adapted to ride

on the said first-mentioned saddle portion, primary ball means eccentrically mounted on the said flywheel means, secondary ball means mounted on the said second-mentioned saddle portion, duplex universal means interconnecting the said secondary ball means and the said primary ball means, spring-urged switch means connected to the said prime mover and normally maintained in inoperative position, trip lever means articulately secured intermediate its ends within the said shell enclosure one end thereof extending beyond the confines of the said shell enclosure and adapted to depress the said switch means to operative position, switch button means secured slidably on the exposed end of the said trip lever means, web means on the said shell enclosure, hooking latch means on the said switch button means adapted to engage releasably the said web means to maintain the said switch means in operative position, the other end of the said trip lever means having brake means secured thereto adapted to engage frictionally the peripheral portion of the said flywheel means when the said switch means is in inoperative position, and spring means urging the said trip lever means to inoperative position.

CARL M. KOONS.

No references cited.