May 16, 1967 W. B. CUNNINGHAM 3,319,724

DEMOLITION DEVICE

Filed Feb. 17, 1965

Fig. 1

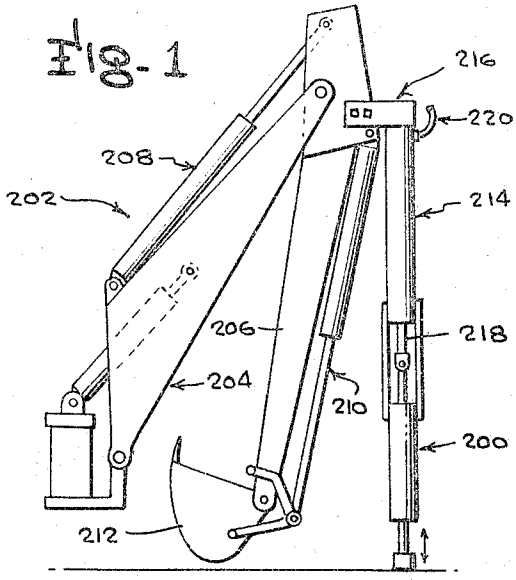


Fig. 2

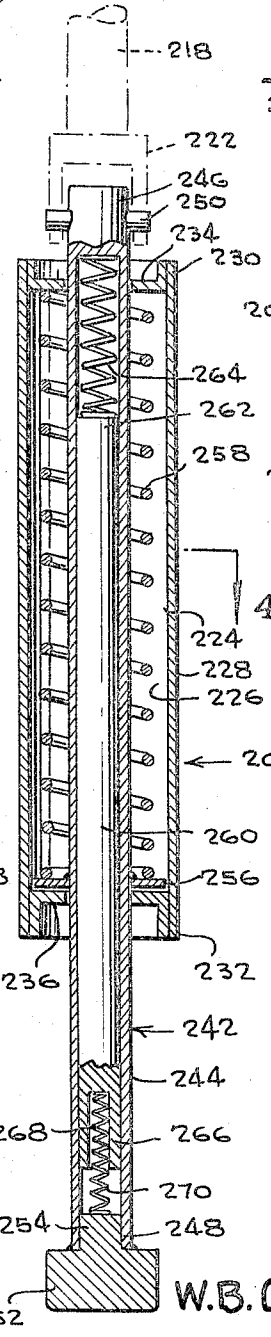


Fig. 3

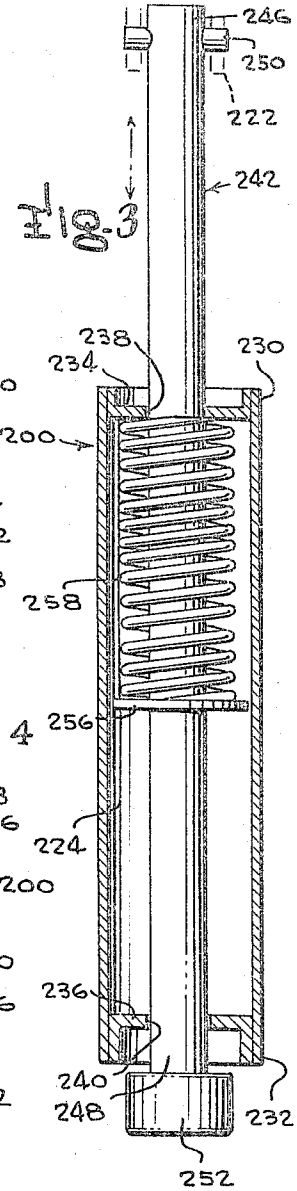
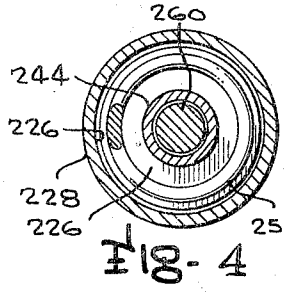


Fig. 4



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DEMOLITION DEVICE

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ABSTRACT OF THE DISCLOSURE

An impact-type demolition device mounted on a prime mover, the device having a housing with an impact member therein for delivery of a spring-urged striking force.

This invention pertains generally to demolition devices finding a particular area of utilization in cooperation with conventional mobile construction equipment in the clearing of construction sites, roadbed disintegration, and the like.

A basic object of the invention resides in the provision of readily portable impact imparting tools adapted for employment in the destruction of ground level materials such as existing pavement and roadbeds, and equally adapted for the clearance of walls and other upstanding materials.

A related object is to supply devices mounted on mobile apparatus and readily transported from place to place, and useable at varying angles with respect to the mounting thereof.

It is a further object of importance to supply an impact tool as aforesaid, for application to and use with existing construction machinery such as backhoes and/or other types of equipment, thereby obviating the need for special single function demolition tools at smaller job sites, or for the performance of relatively minor demolition projects at larger sites.

A further object of the invention is to provide an impact member having a secondary impact head which increases the efficiency of operation of the assembly.

Yet another general objective of the invention resides in the provision of a ram or demolition device with an impact member, the impact member being driven in striking position by a spring means or the like, and the potential striking force being built up by compression or extension of the spring or similar means.

Further objects and advantages will occur to those skilled in the art following a consideration of the specification and drawings hereof, in which:

FIGURE 1 is a side elevational view of the invention in a typical environment of use;

FIG. 2 is an enlarged sectional view of the demolition device of FIG. 1;

FIG. 3 is a view similar to FIG. 2, showing the elements in loaded position; and,

FIG. 4 is a detail view on the line 8—8 of FIG. 2, looking in the direction of the arrows.

Referring to 1 through 4 an embodiment 200 of the invention is shown therein, applied to an implement 202 similar to the machinery 12. The machinery 202 includes a tiltable and movable boom 204 mounted on a prime mover, with a pivotal end boom 206. A further hydraulic cylinder assembly 208 controls pivoting of the end boom, and a second cylinder assembly 210 controls a scoop 212 or similar element.

An additional hydraulic cylinder assembly 214 is secured to the end boom 206 by a bracket assembly 216, and the additional assembly is independent of the operation of the second cylinder assembly 210. The assembly 214 includes an extensible element 218 and is connected by a suitable fluid conduit means 220 to a power source on the

prime mover (not shown). The element 218 has a clevis 222 at its outer end for connection with the demolition device 200.

The device 200 comprises a tubular, elongated housing 224 having inner and outer surfaces 226, 228 and upper and lower ends 230, 232.

Journal caps 234 and 236 with coaxial openings 238 and 240 are fixedly mounted in the ends 230 and 232, respectively, of the housing, and serve to close the housing ends.

An impact member 242 is provided and comprises an elongated shaft 244 of substantially hollow construction, having a solid upper end 246 and an opposite lower end 248. The shaft 244 extends through the coaxial openings 238 and 240, and the upper end has a cross pin 250 connected in the clevis 222. The end 248 of the shaft has an anvil 252 with a reduced shank 254 seated in the open end, thus providing a striking head for the device. Intermediate the ends of the shaft, an annular collar 256 is fixed thereto, and a coil spring 258 is positioned between the collar 256 and the journal cap 234.

The cylinder 214 is operated to activate the device by retraction of the element 218, thus drawing the member 242 upwardly and loading or compressing the spring 258. Means (not shown) is provided for quick release of the hydraulic pressure in the cylinder, thus permitting the spring to drive the striking head 252 against a surface to be struck.

Increased efficiency of operation is provided by the incorporation of a secondary striking or rebound force. As illustrated in FIG. 2, this secondary force is supplied by the provision of an elongated, substantially cylindrical weight 260 slidably positioned within the shaft 244. The weight 260 has an upper end 262 and a spring 264 is positioned between the weight end 262 and the solid end 246 of the shaft. The opposite end 266 of the weight has a bore 268 therein, and a spring 270 of reduced size with respect to the spring 264 is seated in the bore and extends outwardly to contact the anvil portion 254. When the anvil strikes an object, a rebound blow is thereafter imparted by the shifting of the weight 260 within the shaft 242, the secondary blow being of increased force due to the differential between the springs 270 and 264.

Having described and illustrated an embodiment of this invention in some detail, it will be understood that this description and illustration are offered merely by way of example, and that the invention is to be limited in scope only by the appended claims.

What is claimed is:

1. An impact imparting device comprising:
an elongated hollow housing;
an impact member mounted in the housing and extendable outwardly thereof;
the impact member including a shaft and a striking head;
spring means in the housing adapted to bias the impact member in one direction;
means to load the impact member in opposition to the spring bias;
the shaft being of elongated hollow construction;
a weight having upper and lower ends, slidably mounted in the shaft;
springs arranged on opposite ends of the weight; and
release means to permit movement of the impact member.

2. An impact imparting device as defined in claim 1, wherein:
the springs are of different sizes.

3. An impact imparting device for use with a boom-mounted implement having a pivotal work element thereon and having an extensible and retractable cylinder as-

sembly thereon including an extensible element connected at one end to the work element, the impact imparting device comprising:

an elongated housing having upper and lower ends;

an impact member mounted in the housing and extendable outwardly of the roller ends thereof;

spring means in the housing adapted to bias the impact member in one direction;

the hydraulic cylinder assembly being connected to the impact member and comprising means to load the impact member in opposition to the spring bias;

the shaft being of elongated, hollow construction;

a weight having upper and lower ends, slidably mounted in the shaft;

springs arranged on opposite ends of the weight; and

release means to permit movement of the impact member.

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