United States Patent [19]

Ashbrook

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[45] **Nov. 4, 1975**

[54] **UNIVERSAL CARTRIDGE HOLDER**

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[52] **U.S. Cl.** **86/49;** 86/24; 279/46

[51] **Int. Cl.²** **F42B 5/26;** F42B 9/26

[58] **Field of Search** ..... 86/44, 23, 24, 26, 27, 86/29, 30, 31, 32, 33, 45, 46; 269/234, 156; 279/46 R, 50, 51, 57

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Primary Examiner—Verlin R. Pendegrass
Assistant Examiner—Harold Tudor
Attorney, Agent, or Firm—Arnold, White & Durkee

[57] **ABSTRACT**

A universal cartridge holder for supporting cartridge cases having a rim disposed at one extremity thereof and comprising a base element that is adapted to be received by the upper slotted extremity of the ram of a cartridge reloading press. About the base element may be positioned a housing having a cam surface formed therein, which cam surface may react against cam surfaces defined on a plurality of cartridge retaining segments that are disposed within the housing and are supported by the base element. The segments may be continuously urged to a position releasing engagement thereof with the rim of the cartridge and may be moved, by cooperative relationship between the internal cam surface of the housing and the cam surfaces of the segments, into a gripping or holding relationship with the rim of the cartridge. The housing may carry a second oppositely directed cam element cooperating with biased detent means carried by the base element to develop a resultant force that urges the housing in a direction tending to cause the cooperating cam surfaces to move the segments to the gripping position thereof.

6 Claims, 6 Drawing Figures

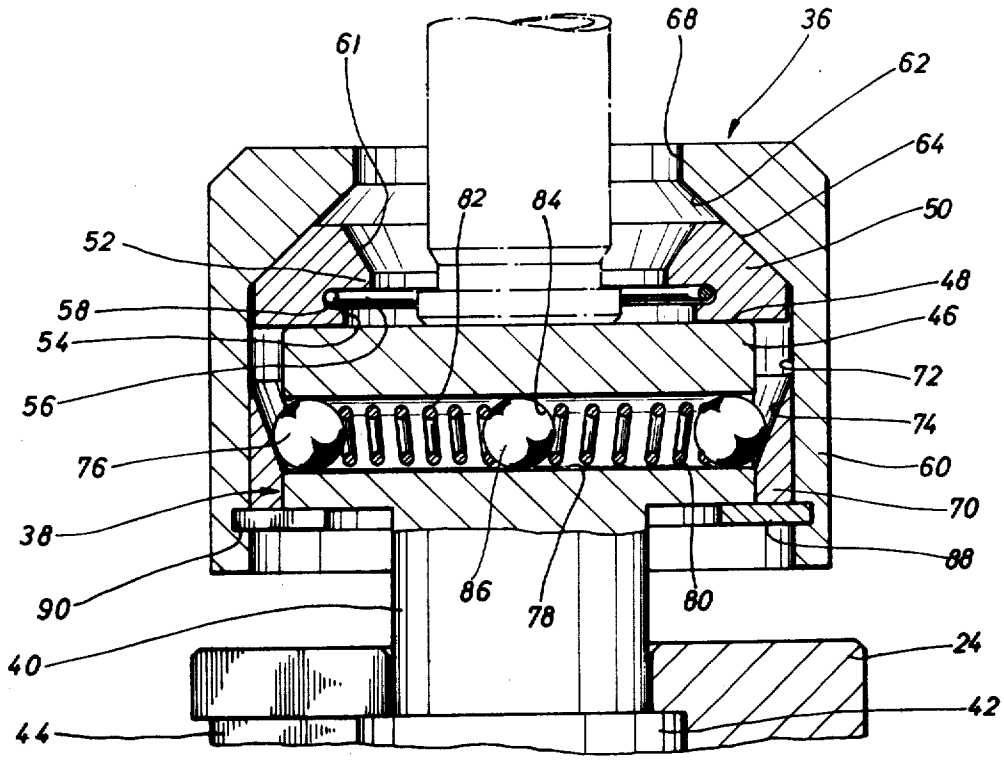


FIG. 1

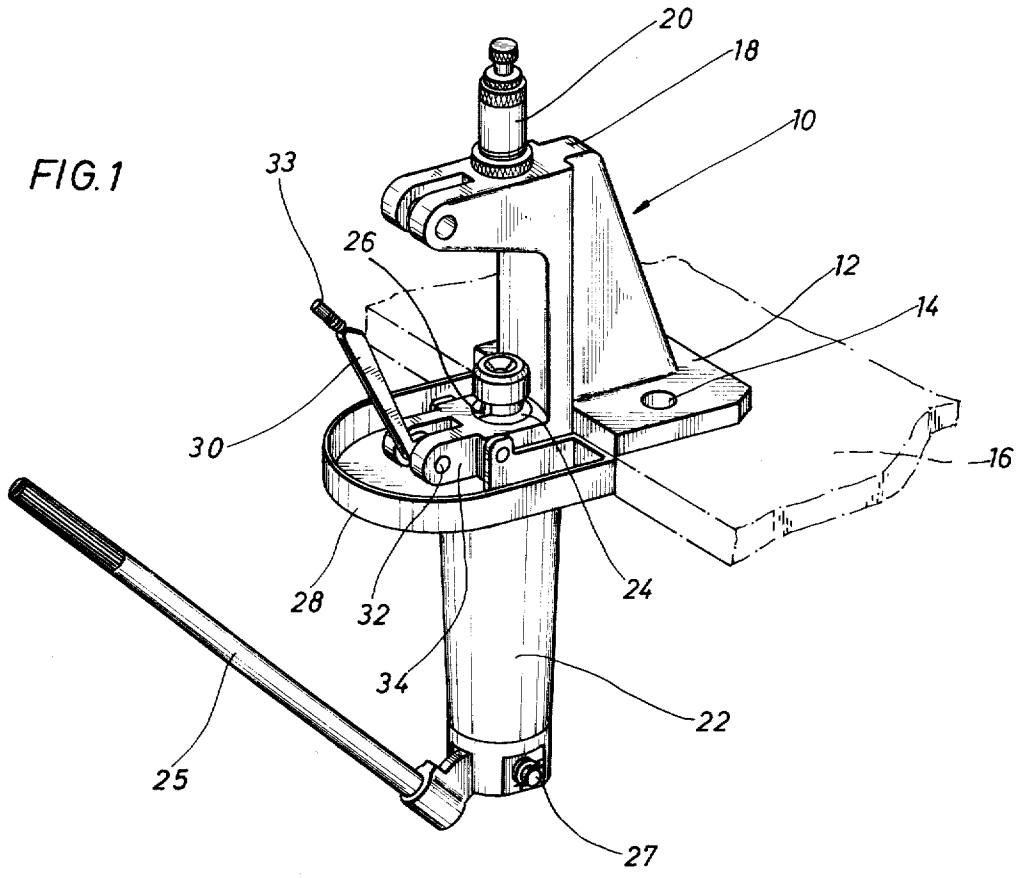

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FIG. 2

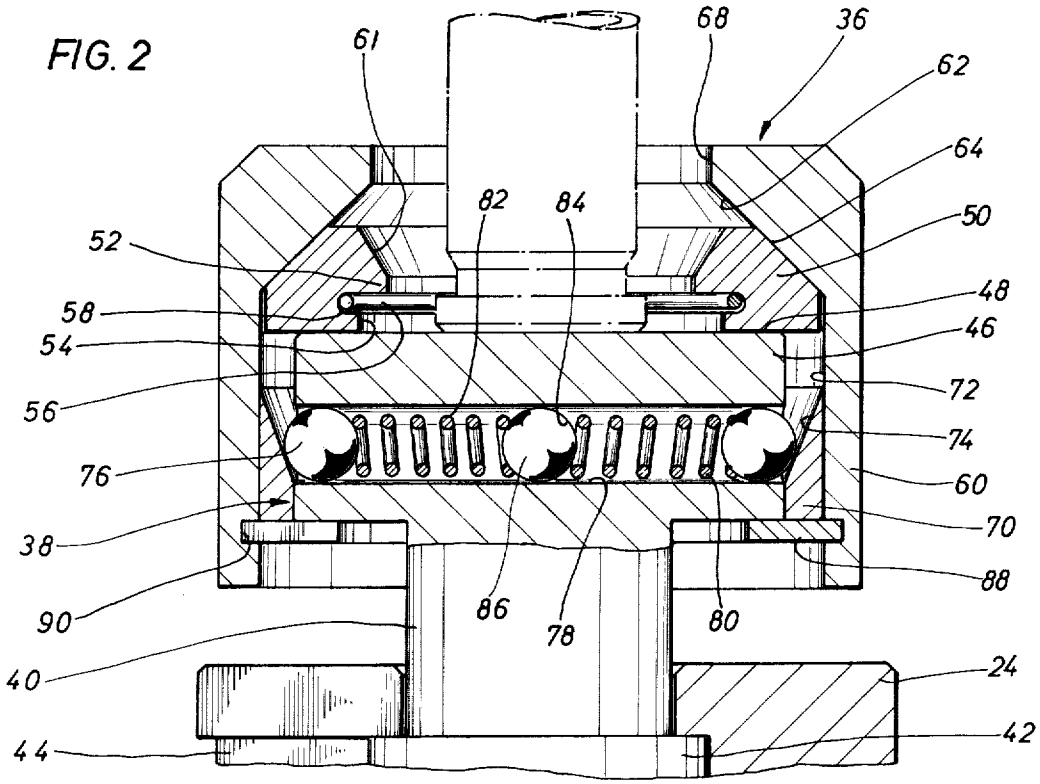

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FIG. 3

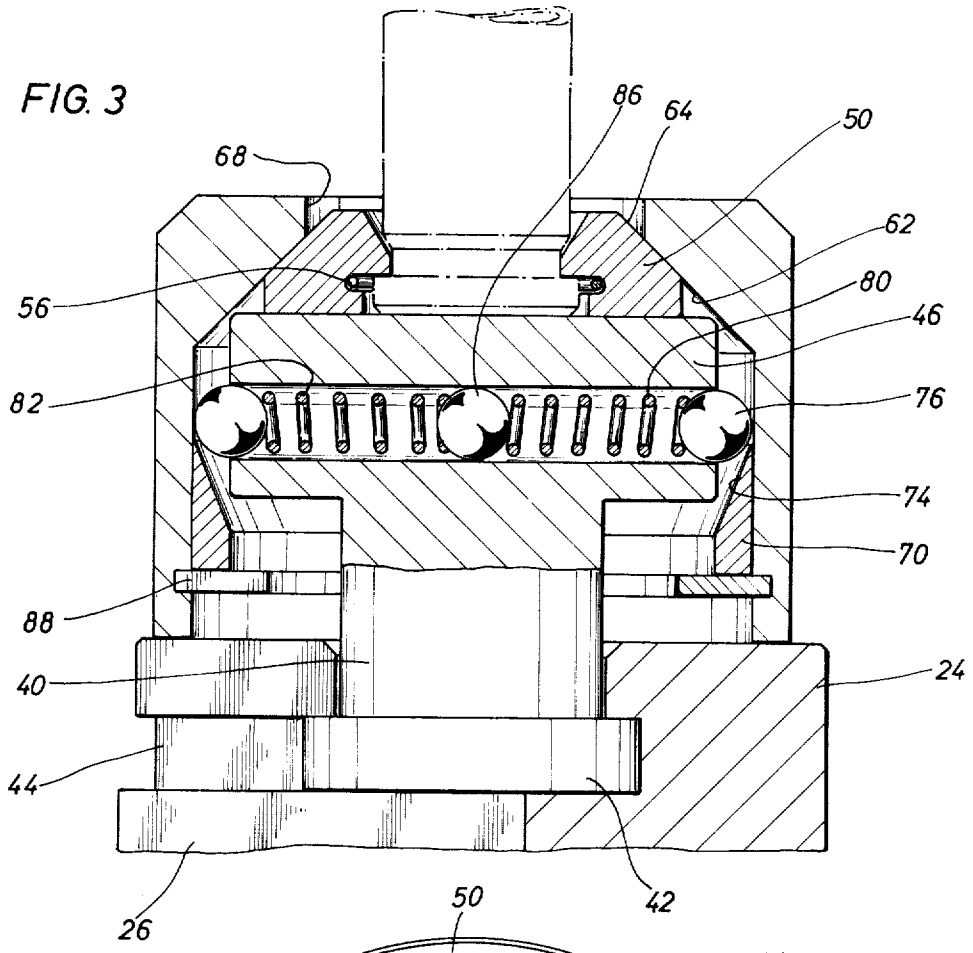

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FIG. 4

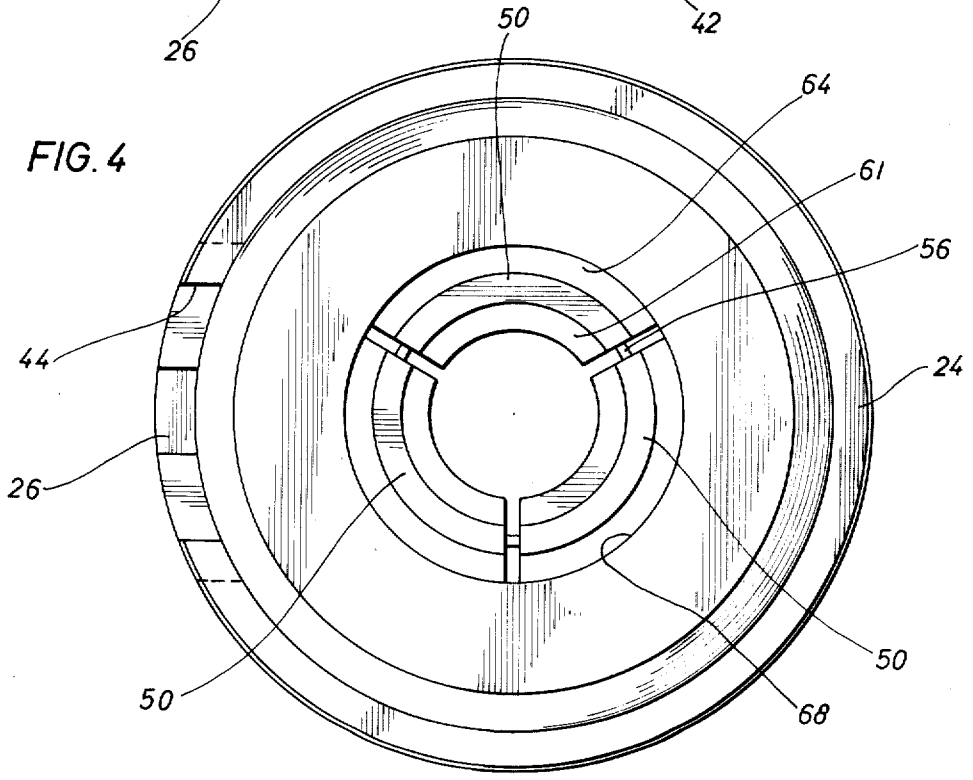

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FIG. 5

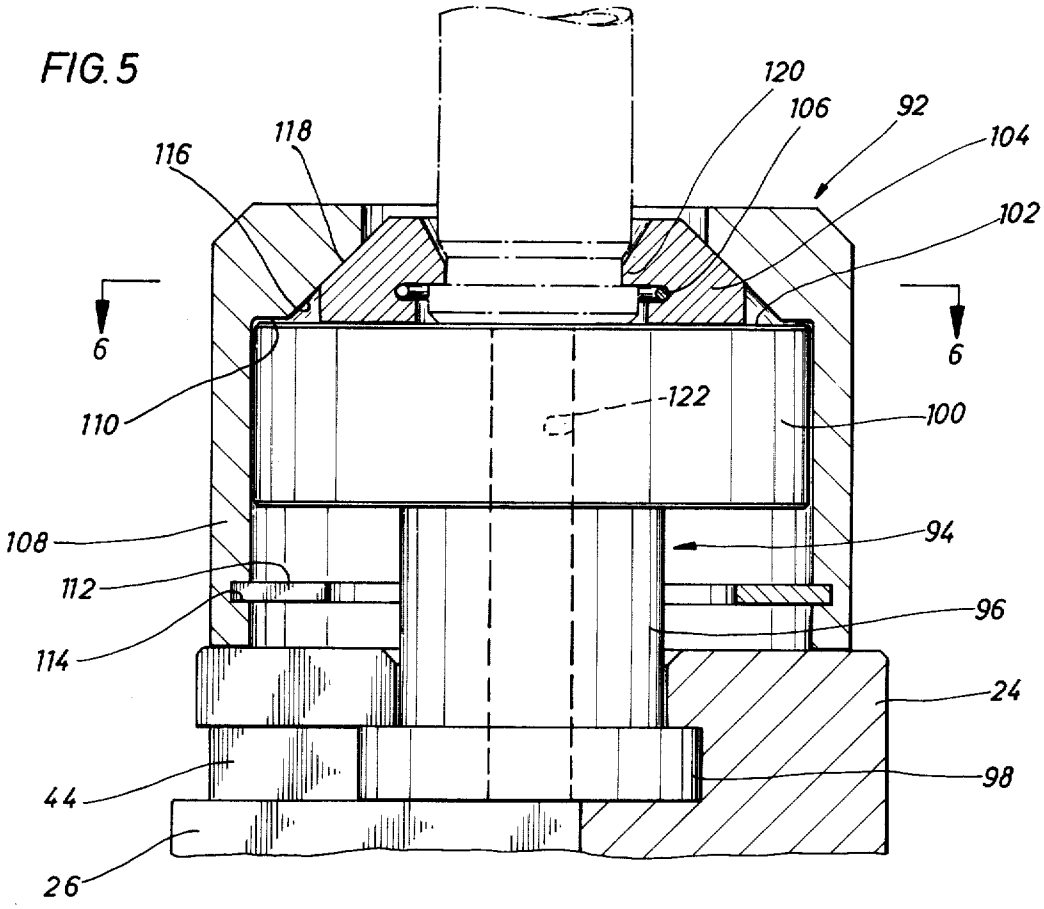
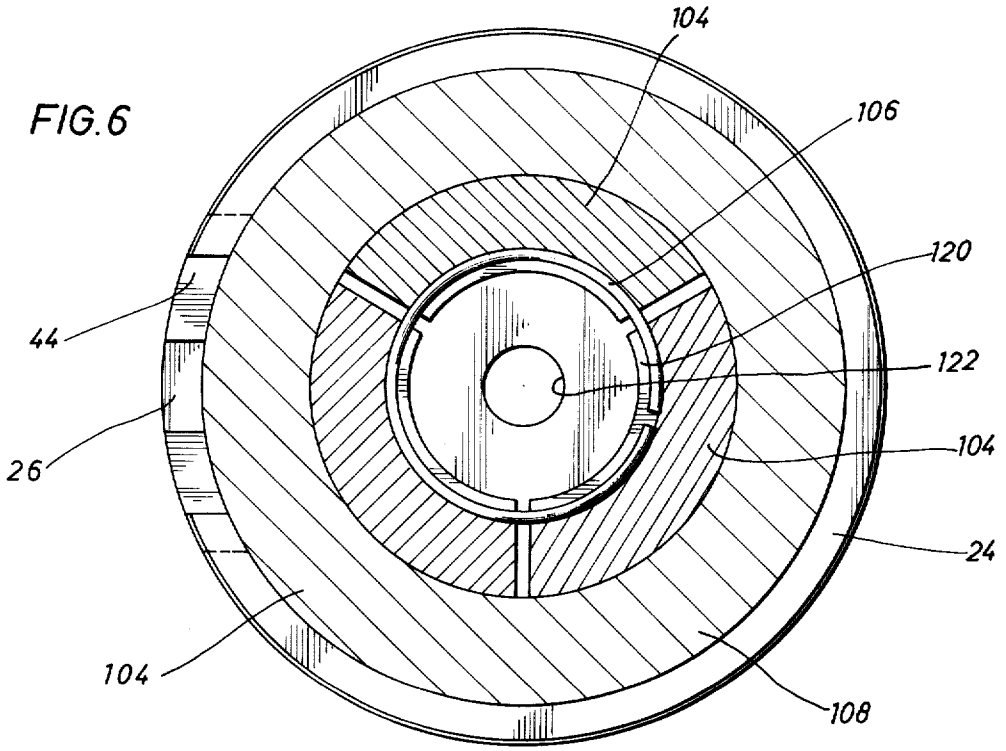

120
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92
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118
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102
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FIG. 6


104
106
120
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122
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UNIVERSAL CARTRIDGE HOLDER

FIELD OF THE INVENTION

This invention relates generally to support mechanisms for cartridge cases which support mechanisms may be connected to the upper extremity of the ram of a cartridge reloading press for the purpose of supporting the cartridge case against linear forces applied thereto during reloading operations. More specifically, the present invention is directed to the provision of a universal cartridge case holding mechanism that facilitates the handling of cartridge cases of many different sizes with the same cartridge case holding apparatus.

BACKGROUND OF THE INVENTION

Many persons who enjoy rifle and pistol shooting, for competitive purposes or for simple leisure enjoyment, find shooting a very expensive sport if ammunition is to be purchased commercially for both practice and competition. Moreover, it is well known that commercial ammunition is developed for optimum efficiency in a wide group of different firearms and, therefore, may not function to produce the maximum accuracy that is within the capability of any one particular firearm. Many competitive shooters, therefore, as well as other shooters, have determined that maximum efficiency and accuracy can be obtained from a particular firearm by controlling a number of variables such as the length of the cartridge cases, the bullet weight, the type and weight of the powder charge, the primer, the bullet seating depth, etc. It is, therefore, desirable, not only from the standpoint of cost involved, but also from the standpoint of efficiency and accuracy, to purchase the various components of the desired ammunition and to handload the cartridges one intends to shoot. Most firearms can be readily "tuned" by handloading to develop accuracy and consistency that is not ordinarily obtainable when factory loads are used.

From the standpoint of cost, handloaded ammunition may cost as little as one quarter to one third of that of commercially loaded ammunition.

In handloading operations, it is typical for the shooter to purchase a handloading press that is adapted to receive handloading dies for the particular type and size of cartridge he intends to shoot. If he shoots a number of firearms of different size it is necessary to purchase a set of handloading dies for each of the particular cartridges involved.

A handloading press, for example a "C" type press, will typically be provided with an upper portion that is adapted to receive the handloading dies either singly or in pairs. The handloading press will typically be provided with a ram, disposed below the dies, that is actuated by a lever arm and linkage specifically designed to impart force of considerable magnitude to the ram as it moves the ram upwardly and downwardly relative to the dies. The ram is conventionally provided with a cartridge holder that, for the most part, includes a U-shaped undercut slot of a particular size and configuration to receive the rim of a cartridge being inserted into the cartridge holder. The cartridge holder is also typically provided with a depending portion having a flange that is received in a complimentary slot formed in the upper extremity of the ram, thereby positively securing the cartridge holder to the ram. Locking means may be provided to prevent disassembly of the cartridge holder from the ram until disassembly is desired for replacement of the cartridge holder with one of different size when it is desired to reload cartridges of different size.

Obviously, since cartridge holders must be provided with a slot of particular size and configuration to receive the rim of a particular type of cartridge case, it is necessary that different cartridge holding devices be provided for each of the different types and sizes of cartridges for which handloading is desired. It is not unusual, therefore, for a handloader who handloads a number of different types of cartridges for a number of different types of rifles and/or pistols, to have an inventory of between five and twenty different cartridge holders. This of course requires considerable investment to facilitate varied handloading operations, which is, of course, less than desirable. Moreover, it is desirable, when handloading operations are conducted for a number of different types of cartridges, to eliminate the time factor for changing cartridge holder devices when setting up the handloading press for loading of a different type or size of cartridge, because, as is typically the case, several minutes time is required for changing cartridge holders.

It is, accordingly, a primary object of the present invention to provide a novel universal cartridge holding device that facilitates handloading of a number of different types and sizes of cartridges without replacing the cartridge holder from the ram of a reloading press.

It is another object of the present invention to provide a novel universal cartridge holder device that effectively supports cartridge cases of many different sizes and configurations, which cartridge holder device effectively facilitates centering of all cartridges, regardless of the size and configuration thereof, thereby providing precise alignment between the cartridge and the die supported by the handloading press.

Among the several objects of the present invention is noted the contemplation of a novel universal cartridge holding mechanism that facilitates simple vertical insertion and removal of cartridges into and from the universal cartridge holding mechanism.

Another object of the present invention contemplates the provision of a novel universal cartridge holding mechanism that is of simple nature, is reliable in use and is of inexpensive manufacture.

Other and further objects, advantages and features of the invention will become obvious to one skilled in the art upon an understanding of the illustrative embodiments about to be described and, various advantages, not referred to herein, will occur to one skilled in the art upon employment of the invention in practice.

THE PRIOR ART

In the development of handloading presses and related cartridge loading apparatus a number of different cartridge holding mechanisms have been developed, some of which are of universal nature, such as shown by the U.S. patents to Cecchi 3,025,749, McLean 3,319,511 and Robertson 3,082,660. Apparatus for vertical insertion of cartridge cases into a shell holder device have been employed as taught by the U.S. patent to Corcoran 3,610,090. Cartridge support devices employing segments for engaging the rim of the cartridge case have also been developed as taught by the U.S. patent to Ashbrook 3,646,661 and similar restraining devices have been employed in tool holding devices as shown by the U.S. patents to Felmet 2,974,967 and Benjamin 3,658,351.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the manner in which the above recited advantages and objects of the invention are attained, as well as others, which will become apparent, can be understood in detail, more particular description of the invention, briefly summarized above, may be had by reference to the specific embodiments thereof, which are illustrated in the appended drawings, which drawings form a part of this specification. It is to be understood, however, that the appended drawings illustrate only typical embodiments of the invention and therefore are not to be considered to be limiting of its scope, for the invention may admit to other equally effective embodiments.

In the Drawings:

FIG. 1 is an isometric view of a handloading press for cartridge cases, the ram of the press being provided with a universal cartridge holding mechanism constructed in accordance with the present invention.

FIG. 2 is a sectional view in elevation, illustrating a part of the upper extremity of the ram of the handloading press of FIG. 1 and illustrating the cartridge holding mechanism with the cartridge supporting segments thereof disposed in the retracted or released position.

FIG. 3 is a sectional view in elevation illustrating the cartridge holding mechanism of FIGS. 1 and 2 with the cartridge engaging segments thereof moved to a position gripping the rim of a cartridge.

FIG. 4 is a plan view of the universal cartridge holding mechanism of FIG. 3.

FIG. 5 is a sectional view of a universal cartridge holding mechanism comprising a modified embodiment of the present invention and showing the mechanism as being connected to the upper extremity of the ram of a handloading press.

FIG. 6 is a sectional view taken along line 6–6 in FIG. 5.

SUMMARY OF THE INVENTION

The present invention is directed toward the provision of a novel universal cartridge holding mechanism that is adapted to be received by the upper extremity of the ram portion of a cartridge handloading press and includes a base portion having a depending connector element of a configuration adopting it to be received within an undercut slot formed at the upper extremity of the ram. The base element of the cartridge holding mechanism may be enlarged to provide support both for a cartridge to be disposed in engagement therewith and for a plurality of partially circular segments that may be moved into gripping relationship with the lower rim portion of cartridge cases of a number of different sizes.

The mechanism may be provided with a housing that encloses the upper extremity of the base element and receives the segments in loose movable relationship therein. The housing may be provided with an internal cam surface that cooperates with cam surfaces defined on each of the segments to cause radially inward movement of the segments toward the rim portion of the cartridge upon downward linear movement of the housing relative to the base element. Urging means, such as a helical garter spring, may be received within grooves formed in each of the segments and may be operative to urge the segments toward a position releasing engagement with the rim portion of a cartridge, thereby allowing the segments to move out of engagement with the cartridge automatically upon release of the camming force between the camming surfaces of the housing and segments.

The cartridge holding mechanism may also be provided with means for urging the housing in a direction relative to the base element to achieve camming of the segments toward the gripping position thereof, which means may conveniently take the form of biased detent elements engaging a second cam carried by the housing and cooperating with the second cam to develop a resultant force urging the housing to move in a linear direction, thereby causing the segments to be driven inwardly toward retaining or gripping engagement with the rim of a cartridge received within the cartridge holding mechanism. A cartridge may be inserted in vertical manner through an opening in an upper wall of the housing where it will be retained and centered by the segment elements. Removal of the cartridge, subsequent to operations such as sizing, decapping and primer insertion, may be accomplished simply by manipulating the housing to cause retraction of the cam actuated retaining segments.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

With reference now to the drawings for a more detailed description of the present invention, and with particular reference to FIG. 1 of the drawings, there is depicted a handloading press generally at **10**, which press is of the type typically referred to as a "C-type" press that may be provided with a support base **12** having apertures **14** formed therein through which bolts or other suitable connecting devices may extend for connection of the press to a support element **16**, such as a work bench. The upper portion **18** of the press **10** may be provided with a threaded aperture, not shown, within which may be threadedly received the lower threaded extremity of a handloading die **20**. The die **20** may be a sizing and decapping die that is employed for sizing a previously fired cartridge and to remove the primer from the cartridge. Alternatively, the die **20** may be a bullet seating die, having internal parts that achieve proper seating of a bullet within the cartridge case as the case is inserted into the die.

The lower portion of the press may be provided with a depending ram support **22** having a bore formed therethrough within, which bore may be movably retained a ram element **24**. The ram may be suitably connected at the lower extremity thereof to a linkage that is actuated by a lever arm **25**, thereby causing vertical reciprocation of the ram upon movement of the lever arm about the pivot **27** thereof.

The upper portion of the ram of most reloading presses are typically machined in such manner as to define a vertical slot that extends beyond the vertical center line of the ram. Cartridge holders received by the slot are typically provided with a vertical bore therethrough of sufficient dimension to allow the fired primer of a cartridge being decapped to be displaced from the cartridge where it falls through the opening in the cartridge holder and is conducted by the slot in the ram to a primer tray **28** that prevents the ejected primers from falling to the floor during the decapping operation. The machined slot **26** in the ram **24** is also of sufficient dimension to receive a primer insertion arm **30** that may be connected by a pivot **32** to extending lugs **34** of the reloading press. When the ram is in its uppermost position the primer insertion arm **30** may be piv-

oted into the slot in the ram, thereby causing a primer insertion element 33 to be accurately aligned relative to the bore extending through the cartridge holding mechanism. As the ram is moved downwardly, subsequent to the decapping operation, a new primer carried at the upper extremity of the primer insertion element 33 will be transported through the bore of the downwardly moving cartridge holder and will be inserted into the primer pocket of the cartridge case.

With reference now to FIG. 2 a universal cartridge holding mechanism, constructed according to the present invention and depicted generally at 36, may comprise a base element, illustrated generally at 38, that may include a depending connector portion 40 having an enlarged flange 42 formed at the lower extremity thereof, which flange is adapted to be received within an undercut connector slot 44 formed in the upper extremity of the ram 24 of the cartridge loading press. The base element 38 may also include an enlarged support portion 46 having an upper generally planar support surface 48 defined thereon and adapted to support a plurality of cartridge retaining segment elements 50 and to support a cartridge that may be placed within the cartridge holder mechanism.

Each of the cartridge retaining segments 50 may be of partially circular configuration and may interfit, when moved radially inwardly to the full extent thereof, to define a cartridge rim engaging or gripping mechanism of substantially circular configuration. The segments 50 are of such size and configuration as to move into gripping or retaining engagement with the rim of the smallest cartridge for which the universal cartridge holding mechanism is designed. The inner peripheral portions of each of the segments 50 may define support shoulder portions 52 that may be received into the groove defined between the rim and body of a cartridge case in order to support the rim of the cartridge against upward movement when an upward force is applied to the cartridge during reloading operations. Enlarged diameter surfaces 54 may also be provided on each of the segments 50 in order to receive the rim of the cartridge with a suitable degree of clearance when the shoulder portion 52 is in full engagement within the groove between the rim and the body of the cartridge. This feature is clearly depicted in FIGS. 2 and 3 of the drawings.

It may be desirable to cause the segment elements 50 to be continuously urged toward a position releasing engagement of the support shoulder portions 52 with the rim of a cartridge received within the cartridge holding mechanism. One suitable means for accomplishing automatic retraction of the segments 50 may conveniently take the form of a helical garter spring 56 that may be received within grooves 58 formed in each of the segments, which spring continuously urges each of the segments 50 in a radially outward or retracted direction, thereby achieving release of the cartridge if the segments 50 are not otherwise biased into gripping engagement with the cartridge. Each of the segments may also be provided with internal cam surfaces 61 that may, under certain conditions, be engaged by the rim portion of the cartridge as the cartridge is inserted into the supported position thereof relative to the universal cartridge holding mechanism. For example, if the segments 50 are urged radially inwardly to the fully contracted position thereof, as will be discussed hereinabove, the segments may be moved radially outwardly to allow passage of the rim portion of the cartridge past the shoulder portion 52 of the segments by a resultant force developed as the cartridge rim is forced downwardly into engagement with the support surface 48 of the base element. The segments will "snap" into gripping relation with the cartridge as it is inserted into the cartridge holding mechanism.

It will be desirable to provide a mechanism for overcoming the urging means and moving the segment elements 50 radially inwardly to bring the support shoulder portions 52 thereof into engagement above the rim of the cartridge in order to support the cartridge against upwardly directed forces. It will also be desirable to provide suitable means for retaining the segments 50 in proper assembly with the base portion of the cartridge holding mechanism and to achieve centering of the cartridge in order to accurately align the cartridge with the die of the handloading press. One suitable means for achieving radially inward movement of the segments, retaining the segment against disassembly from the base portion and achieving accurate centering of the cartridge case may conveniently take the form illustrated in FIG. 2, for example, where a housing 60 may be disposed about the upper enlarged support portion 46 of the base element 38. Within the housing 60 may be formed a generally frusto-conical cam surface 62 that may be disposed in cooperative camming engagement with partially conical cam surfaces 64 defining the upper outer portions of each of the segments 50. As the housing 60 is moved downwardly relative to the base element 38, the cam surfaces 62 and 64 of the housing and segments, respectively, will cooperate to develope a resultant force causing the segments 50 to be moved radially inwardly, against the bias of the helical garter spring 56, toward a position bringing the support shoulder portions 52 of the segments into overlying relationship with the rim portion of the cartridge.

To facilitate insertion of a cartridge into receiving relationship with the segments 50, an aperture 68 may be formed in the upper wall of the housing, thereby allowing the cartridge to be moved vertically into receiving relationship within a cartridge holding mechanism. This feature greatly facilitates production of finished handloaded cartridges, because it eliminates the lateral or sideways movement that is ordinarily necessary to move cartridges into receiving relationship with a cartridge holder. Moreover, vertical movement of the cartridge into and out of the universal cartridge holding mechanism of this invention effectively facilitates use of the cartridge holding mechanism for automatic or semi-automatic loading of cartridges, if desirable.

It may also be desirable to provide means for imparting a force to the housing 60 that continuously urges the housing in a direction achieving movement of the segments radially inwardly toward the gripping position thereof. According to the present invention, such means may conveniently take the form of a second cam element of annular configuration that may be interposed between the enlarged support portion 46 of the base element 38 and the inner peripheral wall 72 of the housing 60. The cam element 70 may be provided with a generally frusto-conical cam surface 74 that is oppositely disposed relative to the cam surface 62 and is disposed for engagement by ball detent elements 76 that may be received in a transverse bore 78 defined in the support portion of the base element 38 and may be urged radially outwardly by compression springs 80 and 82 into engagement with the cam surface 74. Al-

though only two compression springs **80** and **82** are illustrated in FIG. **2** of the drawings, it is not intended to limit the present invention thereto; it being obvious that other transverse bores may be defined in the support portion **46** of the base element and may support other detent elements. For example, a bore **84** may extend through the vertical axis of the base element **38** and may be disposed in normal relation to the bore **78.** In this case, a ball element **86** may be disposed at the intersection between the bores **78** and **84** and four compression springs similar to that shown at **80** and **82** may be employed to urge four ball detent elements into functional engagement with the cam surface **74.**

As the ball detent elements are urged against the tapered cam surface **74,** the cam **70,** being supported in assembly with the housing by a retainer ring **88** received within an appropriate groove **90** formed in the skirt portion of the housing **60,** will allow the downwardly directed resultant force, applied to the retainer element, to be transmitted to the housing **60.** The housing **60** will, therefore, be urged downwardly relative to the base element **38,** thereby causing the upper cam surface **62** of the housing to be moved downwardly relative to the segments **50.** The cooperating cam surfaces **62** and **64** of the housing and segments, respectively, will cooperate to impart a resultant force to the segments, urging them radially inwardly toward gripping relation with a cartridge that might be disposed through the aperture **68** and into engagement with the support surface **48** of the base element.

If spring biased ball detent means are employed to impart a linear force tending to move the housing downwardly relative to the base element **38** and a cartridge is not in position within the cartridge holding device, the segment elements **50** will be moved radially inwardly to the maximum extent thereof. Assuming it is desirable then to insert a cartridge into receiving relation within the universal cartridge holding mechanism, the cartridge would be manually brought into engagement with the tapered cam surfaces **60** of the segments and a downwardly directed force would be applied to the cartridge that causes the rim of the cartridge to react with the tapered cam surfaces **61** to develop a resultant force urging the segment elements radially outwardly. When this is done, the cam surfaces **64** of the segment elements react against the tapered cam surface **62** of the housing thereby urging the housing upwardly relative to the base element **38.** This feature causes the lower cam surfaces **74** of the cam element **70** to be brought into engagement with the ball detent elements **76,** thereby urging the ball detents inwardly against the compression of springs **80** and **82.** As the rim of the cartridge clears the shoulder **52** of the segments, reaction of the ball detent **76** with the cam surface **74** will quickly move the housing downwardly relative to the base element, thereby urging the segments **50** radially inwardly against the compression of the helical garter spring **56.** The segments, therefore, will snap into receiving engagement above the rim of the cartridge, thereby securely retaining the cartridge against upwardly directed forces that might be applied thereto during reloading operations. Simultaneously, the cooperating segment elements **50** apply equal force against three or more equally spaced portions of the cartridge, thereby causing the cartridge to be precisely centered relative to the cartridge holding mechanism. This feature causes the cartridge to also be precisely centered relative to the die supported by the reloading press.

Referring now to FIGS. **5** and **6,** a modified embodiment of the present invention is disclosed that may be secured to the upper extremity of a ram **24** in the same manner as described above in connection with FIGS. **2–4.** The universal shell holding mechanism, illustrated generally at **92** in FIG. **5,** may incorporate a base element, illustrated generally at **94,** having a depending connector portion **96** with an enlarged flange **98** disposed at the lower extremity thereof that may be received within the undercut slot **44** of the ram **24.** The base element **94** may be provided with an upper support portion **100** defining a support surface **102** providing support for cartridge retaining segments **104** that may be of the same configuration as described above in connection with segment elements **50** in FIGS. **2** and **3** and may likewise be biased radially outwardly by a helical garter spring **106** in the same or similar manner.

A housing **108** may be disposed about the support portion **100** of the base element and may be provided with an inner shoulder **110** that may be engaged by the support surface **102** of the support portion **100** to limit relative movement of the housing and base element in one direction. Movement of the housing in the opposite direction may be limited by a retainer element **112** retained within an annular retainer groove formed in the lower skirt portion of the housing.

For the purpose of achieving radially inward movement of the segment elements **104,** the housing **108** may be provided with an internal cam surface **116** of generally frusto-conical configuration, which may be disposed for camming engagement with tapered or partially conical cam surfaces **118** defined on each of the segment elements **104.** As the housing **108** is moved downwardly relative to the base element **94,** the cam surfaces **116** and **118** will interact to develop a resultant force moving the segment elements **104** radially inwardly, thereby bringing a support shoulder portion **120** thereof into overlying supporting relationship with the rim of a cartridge positioned within the cartridge retaining mechanism. As the housing **108** is moved upwardly relative to the base element **104,** the cam surfaces **116** and **118** will move apart and the helical garter spring **106** will urge the segment elements **104** radially outwardly, thereby disengaging the support shoulder portions **120** thereof from the rim of the cartridge. Likewise, the cartridge will be centered relative to the universal cartridge holding mechanism in similar manner as described above in connection with FIGS. **2** and **3.**

During reloading operations it may be appropriate to displace primers from the primer pockets of previously fired cartridges. This is typically accomplished by means of a decapping pin that is carried by the sizing die which extends through a flash hole in the base of the cartridge into engagement with the primer as the cartridge is forced upwardly into the die during sizing operations.

In order to allow the decapping pin to displace the previously fired primer from its pocket, the base element **94** may be provided with a vertically oriented axial bore **122,** illustrated in broken line in FIG. **5** and in full line in FIG. **6.** A primer that is displaced from its primer pocket will fall through the bore **122** into the milled slot **26** in the upper portion of the ram **24** and it will be conducted by the milled slot into the primer receiving pan **28** of the cartridge reloading press.

In view of the foregoing, it is apparent that I have provided a novel universal cartridge holding mechanism of simple and efficient design that is capable of positively holding or retaining and accurately centering a large number of different sized cartridges provided with similar rim configuration. My invention, therefore, facilitates loading a wide range of cartridges without necessitating removal of the cartridge holding mechanism from the ram of a handloading press. My invention also effectively achieves greater cartridge production than is ordinarily possible with a manually operated handloading press because the cartridges may be very simply and efficiently inserted and removed in vertical manner through an opening in the cartridge holding mechanism. The cartridges are inserted into receiving relationship with a plurality of retaining segments that may automatically move into retaining relationship with the rim of the cartridge as it is inserted into the cartridge holding mechanism. The cartridge may be efficiently released and removed vertically from the cartridge holding mechanism simply by manual or automatic movement of the housing element thereof relative to a base element secured to the ram of the handloading press.

It is therefore seen that my invention is one well adapted to attain all of the objects and advantages hereinabove set forth, together with other advantages which will become obvious and inherent from a description of the apparatus itself. It will be understood that certain combinations and sub-combinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the present invention.

As many possible embodiments may be made of this invention without departing from the spirit or scope thereof, it is to be understood that all matters hereinabove set forth or shown in the accompanying drawings are to be interpreted as illustrative and not in any limiting sense.

What is claimed is:

1. A universal cartridge holder for supporting cartridge cases having a rim disposed at one extremity thereof, said cartridge holder comprising:

base means having one extremity thereof defining a support surface for a cartridge to be supported by said holder and resisting the forces applied to said cartridge in one direction during cartridge loading operations;

segmented cartridge rim engaging means including a plurality of segments being disposed adjacent said base means and being oriented in generally circular relationship, said segments being movable radially inwardly to a cartridge gripping position, where each of said segments engage the rim of the cartridge and being movable radially outwardly to a released position, where said segments are retracted from the rim of the cartridge, each of said segments having inner and outer cam surface means formed thereon, said rim of said cartridge reacting against said inner cam surface means as said cartridge is inserted into said cartridge holder to cause radially outward movement of said segments;

means for continuously urging said segmented rim engaging means radially outwardly toward the released position thereof;

a housing being disposed in relatively movable relation about said base means and having an internal cam surface formed therein, said cam surface engaging said outer cam surfaces of said plurality of segments and, upon moving linearly toward said base means, overcoming said continuously urging means and imparting radially inward movement to said segments from the released position thereof to the gripping position thereof;

second cam means being located within said housing;

means located on said base means and imparting a force to said second cam means and urging said housing in a linear direction causing said internal cam surface to react with said outer cam surface means of said segmented rim engaging means and urge said rim engaging means radially inwardly toward the cartridge gripping position thereof; and

urging said housing in one linear direction relative to said base means.

2. A universal cartridge holder as recited in claim 1: said means for continuously urging said segmented rim engaging means toward the released position thereof comprising a spring member disposed in engagement with said segments and urging said segments radially outwardly.

3. A universal cartridge holder for supporting cartridge cases having a rim disposed at one extremity thereof, said cartridge holder comprising:

base means having one extremity thereof defining support surface means for a cartridge to be supported by said holder, said support surface means resisting the forces applied to said cartridge in one direction during cartridge loading operations;

housing means enclosing the upper extremity of said base means and being disposed in relatively movable relation with said base means, said housing means having side wall means and top wall means, said top wall means having an opening therein through which a cartridge case is inserted downwardly with the rim of the cartridge case facing downwardly, frusto-conical cam surface means being defined within said housing means;

a plurality of cartridge gripping segments being disposed within said housing and in engagement with said base means, said segments each having inner and outer partially conical cam surfaces formed thereon, said outer partially conical cam surfaces being disposed for cooperative camming engagement with said frusto-conical cam surface means of said housing for moving said segments radially inwardly to a cartridge gripping position, where each of the segments are disposed in retaining engagement with the rim of the cartridge and said segments being movable radially outwardly to a release position, where each of the segments is moved out of engagement with the cartridge upon linear movement of said housing means toward said base means;

means continuously urging said segments toward the release position thereof;

second cam means being located on said housing;

cam actuating means being located on said base means and having reacting engagement with said second cam means and imparting a force to said housing; and

continuously urging said housing means linearly in a direction toward said base means.

4. A universal cartridge holder as recited in claim 3: said means for continuously urging said segments toward the release position thereof comprising a

spring element disposed in engagement with said segments and urging said segments radially outwardly.

5. A universal cartridge holder as recited in claim **3**:

spring groove means being defined in each of said segments; and

said means for continuously urging said segments toward the release position thereof comprising a helical garter spring element disposed within the grooves of each of said segments and urging each of said segments radially outwardly away from contacting relation with a cartridge received within said opening of said housing.

6. A universal cartridge holder as recited in claim **3** wherein said cam actuating means comprises:

at least one ball detent being carried by said base means and being disposed for engagement with said second cam element; and

means urging said ball detent against said second cam element and imparting a resultant force to said second cam element and said housing.

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