

[54] <b>COIN CHUTE WITH DESTRUCTIBLE TOKENS</b>	2,100,860	11/1937	Lobley.....	241/DIG. 27
	2,558,255	6/1951	Johnson et al.....	194/4 R
	3,097,347	7/1963	Simjian.....	194/4 R
[75] Inventor: <b>Mitchell Adam Hall</b> , Fort Thomas, Ky.	3,209,882	10/1965	Stevenson et al.....	194/4 G
	3,412,837	11/1968	Myers.....	194/4 R
	3,685,625	8/1972	Loewy.....	194/4
[73] Assignee: <b>Monarch Tool and Manufacturing Company</b> , Covington, Ky.	3,710,910	1/1973	Smith.....	194/4

[22] Filed: **Aug. 31, 1973**  
 [21] Appl. No.: **393,670**

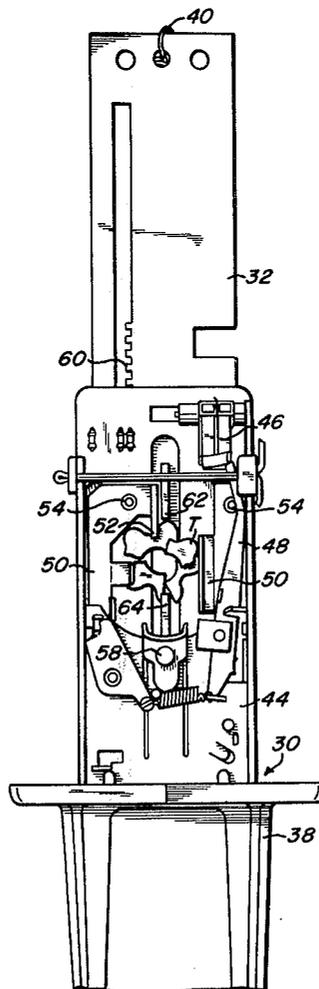
*Primary Examiner*—Stanley H. Tollberg  
*Attorney, Agent, or Firm*—J. Warren Kinney, Jr.

[52] U.S. Cl. .... 194/92; 194/4 E  
 [51] Int. Cl. .... **G07f 5/14**  
 [58] Field of Search..... 194/4 R, 4 F, 92, 4 E,  
 194/4 C, 93, 4 G; 241/DIG. 6, DIG. 5, DIG.  
 27

[57] **ABSTRACT**  
 The coin chute includes a slide for receiving and advancing an expendable, frangible token, and means for fragmenting or instantaneously shattering the token into a plurality of undefined, random pieces as the slide is moved between fully retracted and fully advanced positions thereof incident to a cyclic operation of the slide.

[56] **References Cited**  
**UNITED STATES PATENTS**  
 2,038,837 4/1936 Goetz..... 194/4 F

**17 Claims, 22 Drawing Figures**



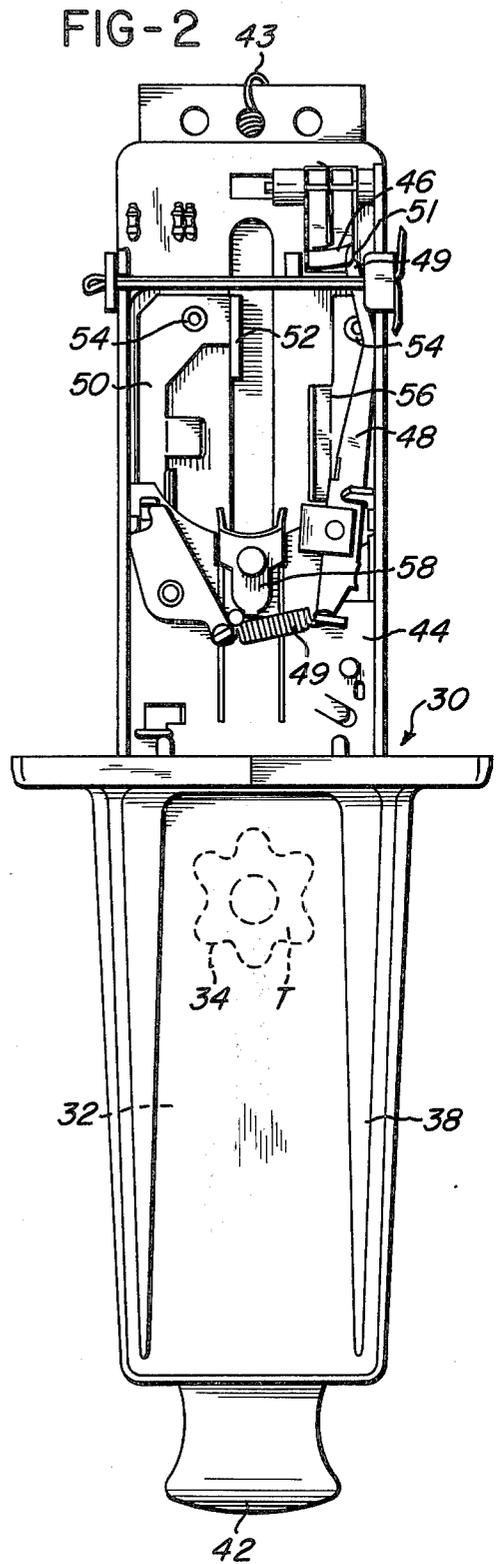
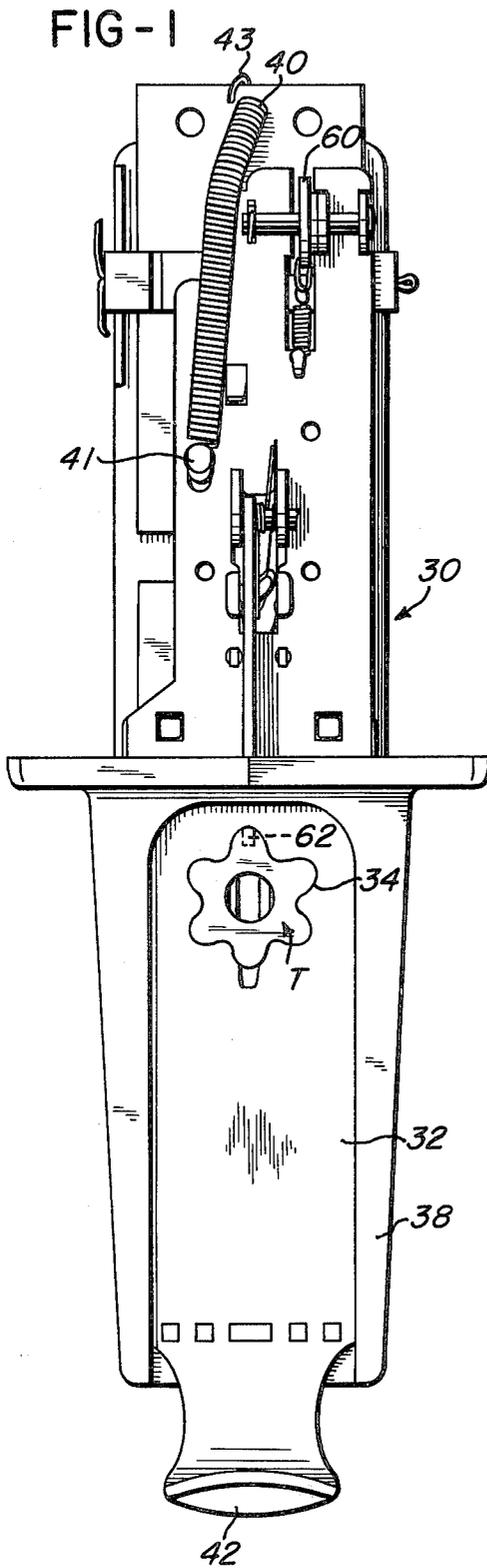


FIG-3

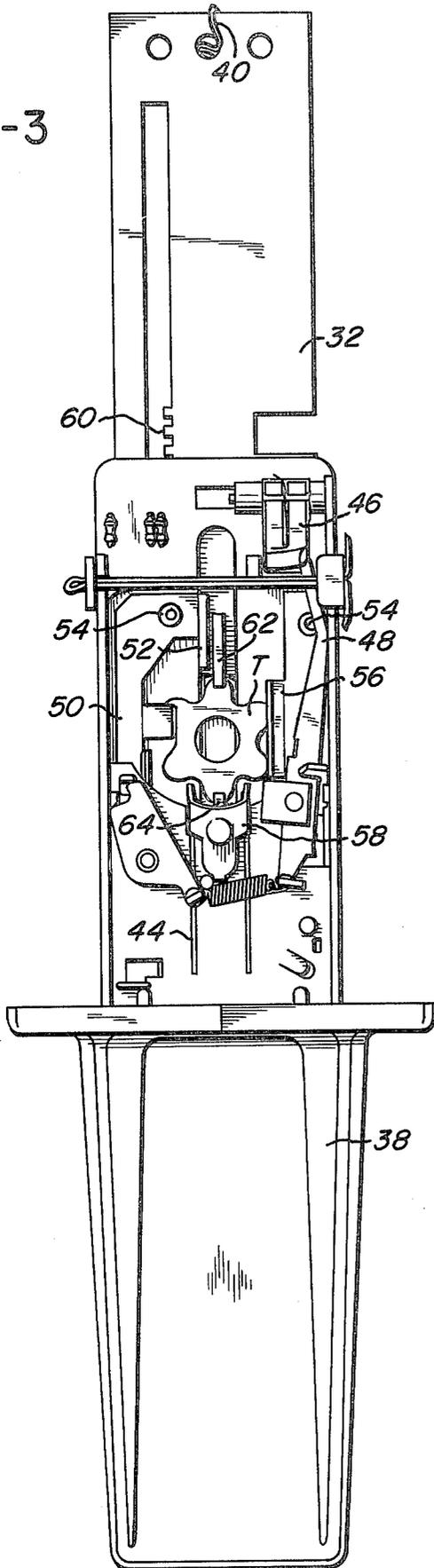


FIG-4

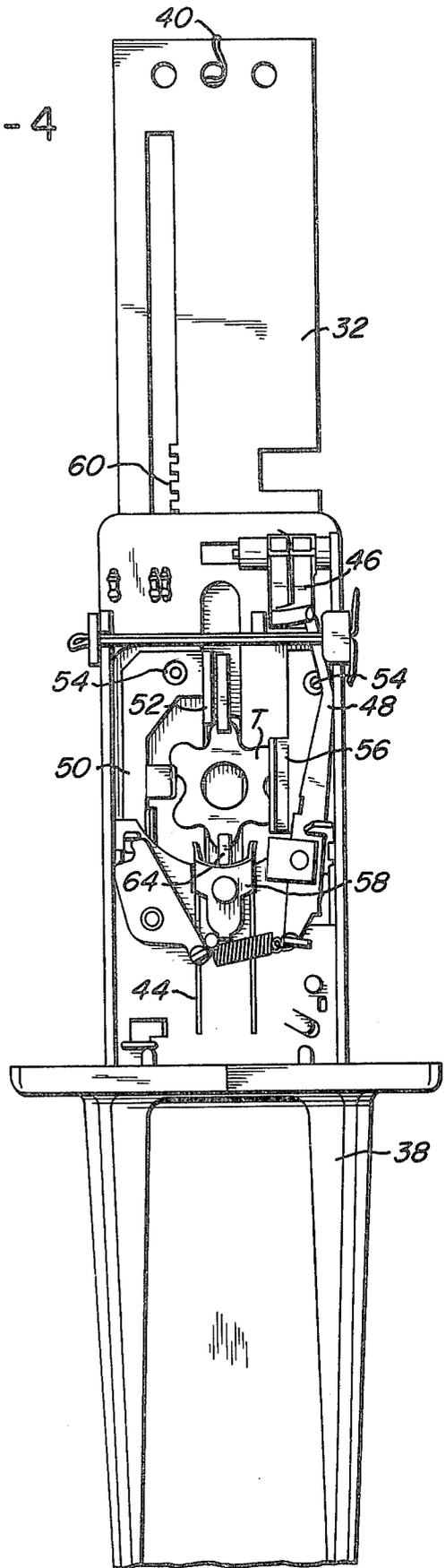


FIG-5

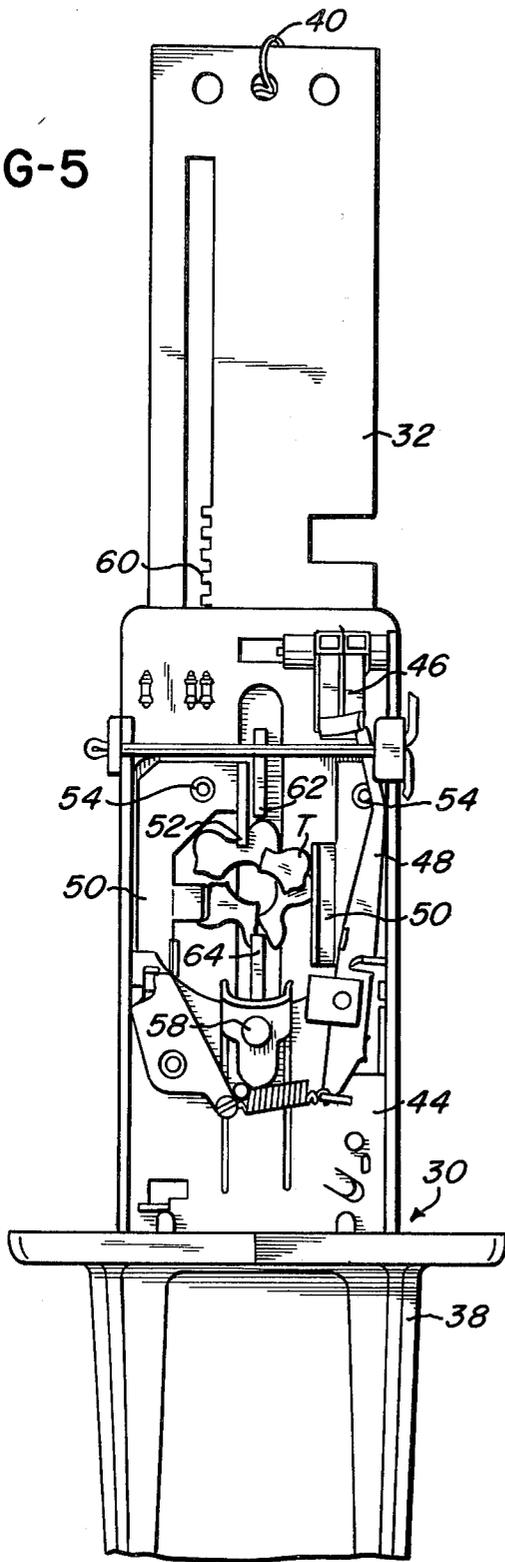


FIG-6

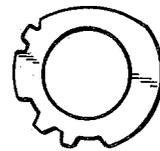
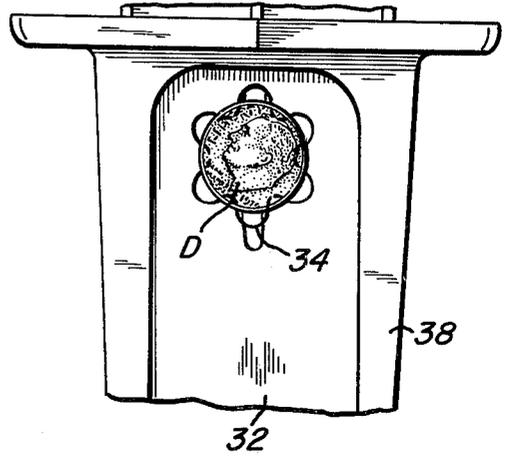


FIG-7

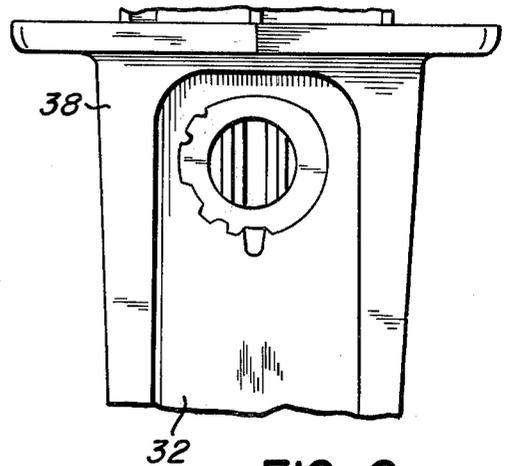


FIG-8

FIG-9

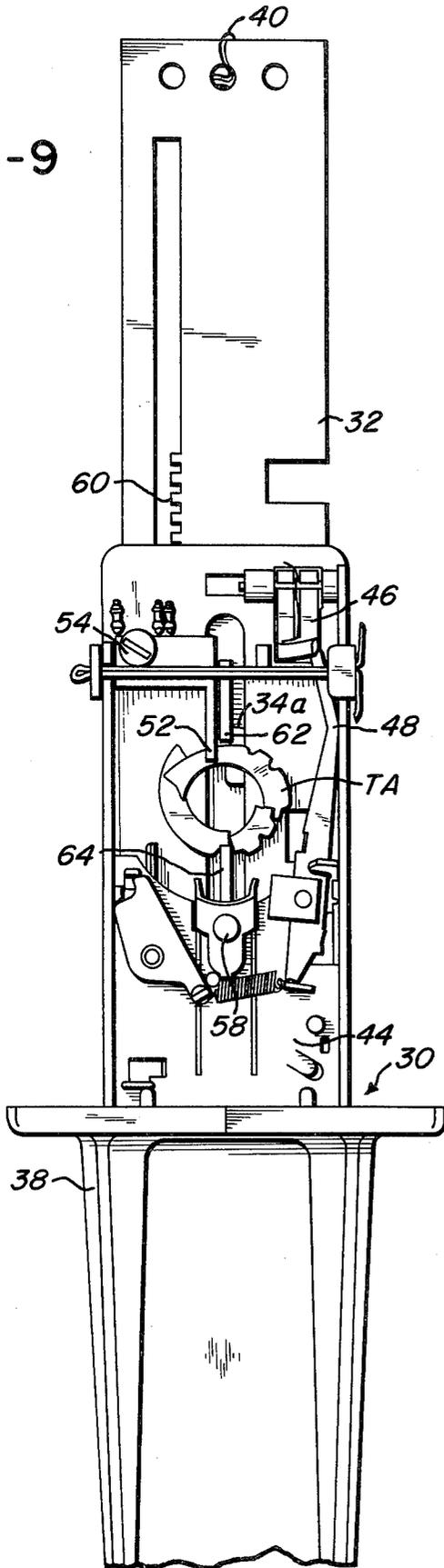
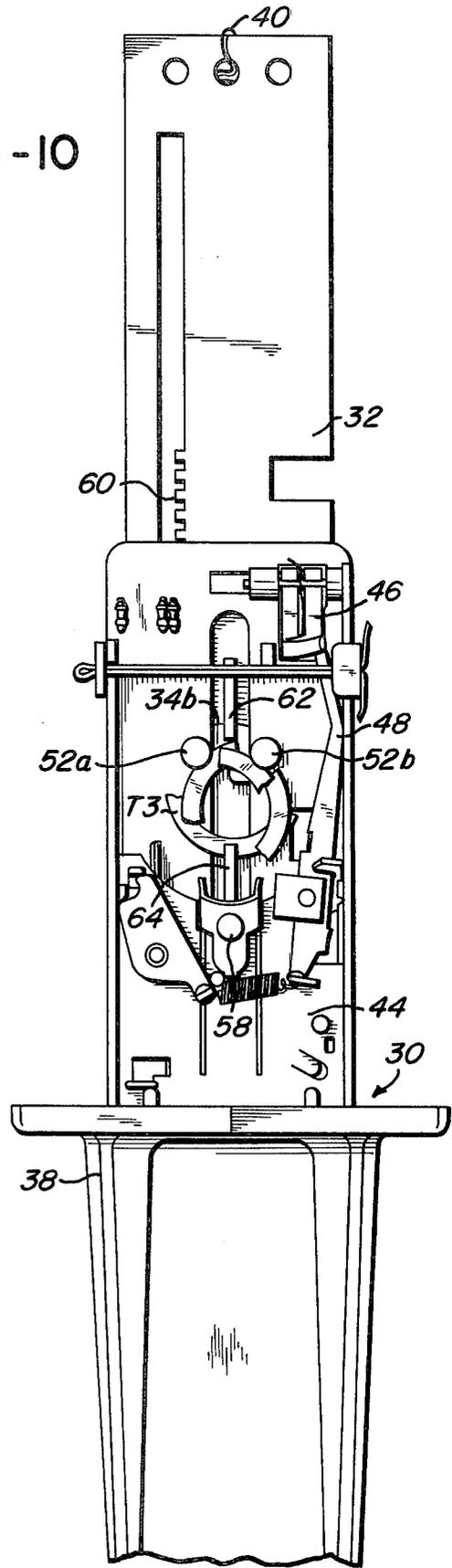


FIG-10



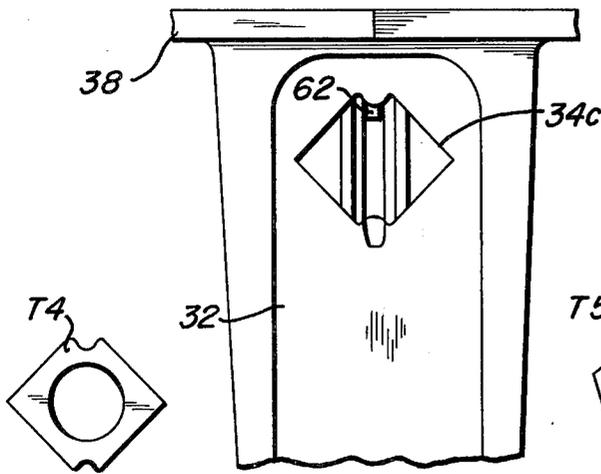


FIG-11

FIG-12

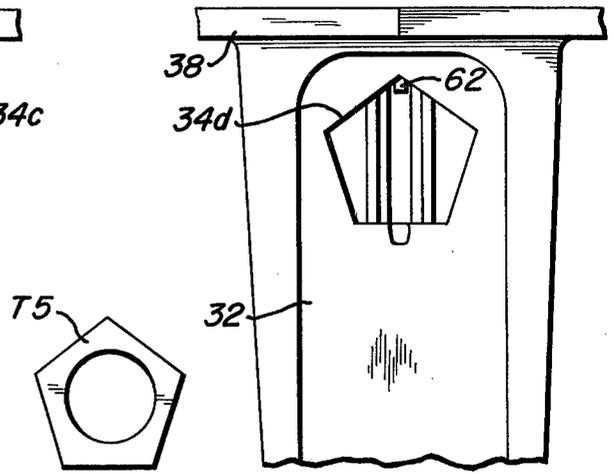


FIG-13

FIG-14

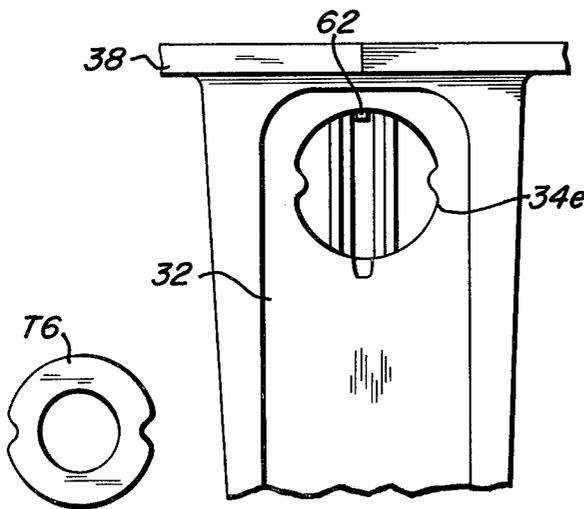


FIG-15

FIG-16

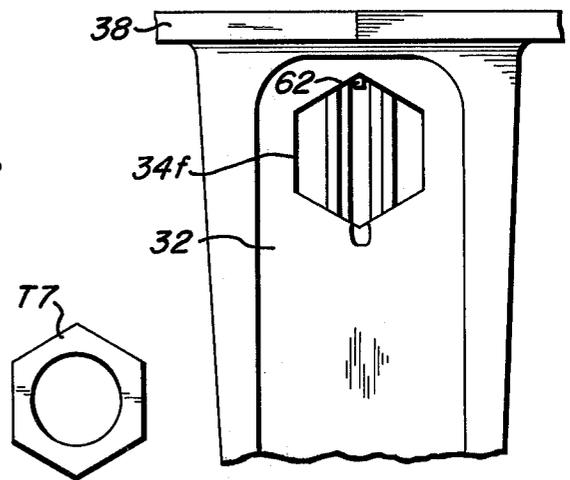


FIG-17

FIG-18

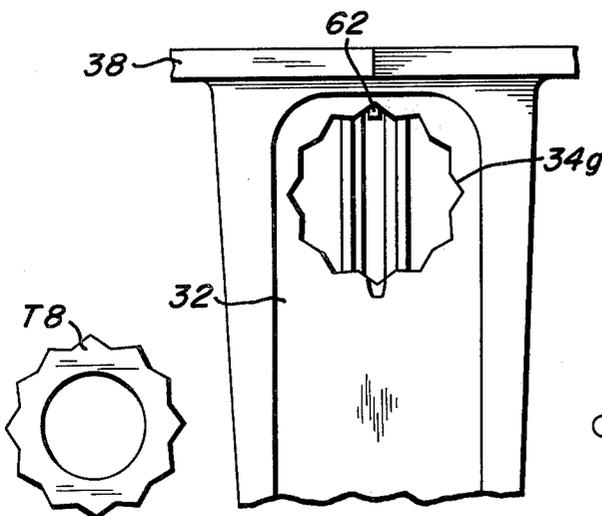


FIG-19

FIG-20

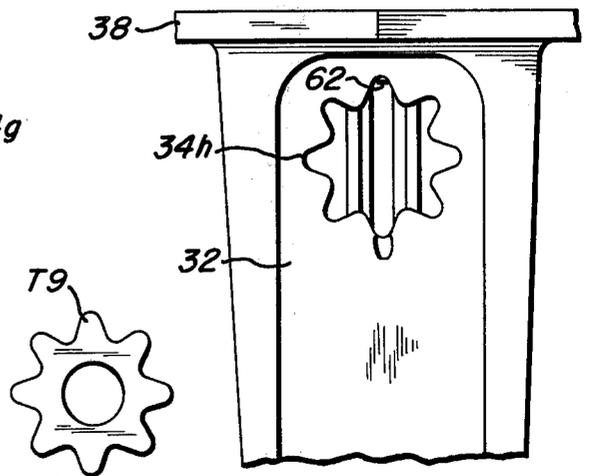


FIG-21

FIG-22

COIN CHUTE WITH DESTRUCTIBLE TOKENS

BACKGROUND OF THE INVENTION

1. Field of the Invention

In recent years the vending industry has experienced wide acceptance and use of token actuated vending mechanisms as an alternative to coin or currency actuated vending mechanisms. The change over to token actuators represents an attempt to reduce the incidence of theft and vandalism generated when currency is stored in the depository of a vending machine. Making vending machines and similar equipment more durable and more difficult to break did not prove a satisfactory solution since the expense of repair was only increased after successful or even unsuccessful robbery or vandalism attempts. The field of the invention is directed to the provision of a token actuated coin chute mechanism wherein the token is literally shattered into a mass of random particles which are deposited in a conventional coin-receptacle thereby rendering it impossible for the contents of the receptacle to be reused for effecting an unauthorized actuation of the token actuated mechanism.

2. Description of the Prior Art

Heretofore vending machines, appliances and the like have been actuated by coin controlled mechanisms which in turn have been actuated by disposable tokens which generally necessitate a substantial modification of the coin chute mechanism per se. Disposable tokens fall into three general classifications, to wit: chemically disintegratable tokens; electrically conductive tokens; and tokens that are distorted or mutilated by a coin receiving member incident to actuation of a vending mechanism.

U.S. Pat. No. 3,153,469 discloses a device which utilizes a token which is adapted to be chemically disintegrated after having served its purpose of actuating a vending mechanism. The token, having served its purpose, is deposited into a chamber containing a chemical dissolving agent which completely disintegrates the token.

U.S. Pat. No. 3,209,882 also discloses a token actuated device in which the token, after use, is subjected to the disintegrating action of a chemical dissolving agent.

U.S. Pat. No. 3,165,187 discloses a token actuated device which utilizes a token which establishes an electrical circuit for actuating a vending mechanism. Thereafter, the token is subjected to heat which distorts it thereby preventing its further, unauthorized reuse.

U.S. Pat. No. 3,542,180 discloses a token actuated device which utilizes a token comprising a plastic coated metallic core, the metal core of which completes an electrical circuit for actuating a vending mechanism after which the token is deposited in a receptacle which contains a dissolving agent in which the plastic coating is disintegrated.

U.S. Pat. No. 3,343,640 discloses a token actuated device which utilizes a token having calipering protuberance on a surface thereof. The protuberance of a genuine token enables it to be deposited into a receiving socket where it is retained while the protuberance is mechanically removed by a grinding operation thereby permitting the token to pass through the receiving socket and into a suitable storage receptacle.

Removal of the protuberance renders the token useless for further use.

Greenwald Industries, Inc. of New York, manufactures a token actuated device wherein a token fabricated from fibrous material is bent, folded, distorted or split in half when advanced along a coin chute for actuating a vending mechanism. The bent, folded, distorted or split token is deposited into a suitable collection receptacle. The Greenwald token is bent, folded or in some instances severed along a predetermined, diametrically extended weakened line prior to being deposited in a suitable collection receptacle. Under optimum conditions the Greenwald token is severed into two, identifiable, discrete halves; however, as often as not, the token is only bent or folded into a pair of interconnected halves. The having-been used Greenwald token can be easily rendered reusable, even when severed into two halves, by simply taping the halves together, or in those instances when the token is merely folded or bent, it may be reused by simply folding the halves into a common plane in which condition it may be placed into the token-receptive aperture of a coin chute to again actuate a vending mechanism.

SUMMARY OF THE INVENTION

The present invention is directed to a token-actuated device wherein the tokens are literally shattered beyond restoration and reuse, into a plurality of random, undefined pieces. The tokens are inexpensive, fool-proof, brittle and non-reusable. A feature of the present invention is that a conventional coin chute mechanism can be easily and inexpensively adapted or converted to the use of a brittle token without altering the mechanism except to add a token holder and a token abutment thereto.

It is, therefore, an object of the present invention to provide a coin chute utilizing a simple but irreparably destructive frangible token which is in fact reduced to a plurality of random, undefinable pieces of scrap incident to actuation of the vending mechanism.

It is also an object of the invention to provide a coin chute that is simple, and inexpensive to manufacture, requiring a minimum of new moving parts and permitting simple alteration of existing coin operated vending systems.

The present invention is adapted to be used in connection with a typical coin chute, for example, either of those disclosed in U.S. Pat. Nos. 3,137,378, entitled COIN SLIDE AND METHOD OF CALIPERING, or U.S. Pat. No. 3,354,998, entitled COIN CHUTE CONSTRUCTION. When so used, the invention provides a simple and economic expendable token-actuated device for replacement in applications utilizing coin operated vending mechanisms.

While particular embodiments are here shown and described, it is to be understood that any modification may be made in structural details within the scope of the appended claims without departing from the spirit of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view of a coin including one embodiment of the present invention.

FIG. 2 is a bottom view showing the underside of the coin chute of FIG. 1.

FIG. 3 is a view similar to FIG. 2 but showing the coin slide in a partially advanced position.

FIG. 4 is a view similar to FIG. 3, showing the token in a further advanced position.

FIG. 5 is a view similar to FIG. 3, showing the token undergoing fragmentation by the intercepting and shattering means of the present invention.

FIG. 6 is a plan view indicating rejection of a typical coin by the token-receiving aperture of the present coin chute.

FIGS. 7 and 8 are plan views of a modified form of token and a coin slide receptive thereof.

FIG. 9 is a bottom view of a coin chute similar to that of FIG. 5, illustrating fragmentation of the FIG. 7 token.

FIG. 10 is a bottom view of a modification of the coin chute.

FIGS. 11 through 22 are views similar to FIGS. 7 and 8, illustrating a variety of suggested modifications of the tokens and accommodating slides.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates the top side of a typical coin chute 30, including a slide member 32 having a coin or token receiving aperture 34 for accepting a token T. The slide member 32 is reciprocally supported in the coin chute body 30, having a fully retracted position, (FIGS. 1 and 2) and a fully advanced position, (FIG. 5), for carrying the token T through the coin chute 30 and actuating a vending mechanism (not shown). The actuating handle 42, attached to the slide member 32 is utilized to move the slide from the fully retracted to the fully advanced position, while the spring 40 attached to the housing 38 at 41 and to the slide 32 at 43 tends to constantly return the slide to retracted position.

With particular reference to FIG. 2, the coin chute includes a sub-housing 44 containing a caliper unit for gauging a token carried therethrough by slide 32 to disengage the latch 46. Passage of a properly calipered token through sub-housing 44 generates a sweeping movement of caliper arm 48 causing the tip 49 of the arm to move in "V" groove 51 of latch 46 for pulling the latch away from slide member 32 and allowing the slide member to advance to the fully advanced position. The pawl and ratchet mechanism indicated at 60 restricts the retraction of the slide 32 until the token T is released and the vending mechanism actuated.

Complete disclosure of the aforesaid relationship of the various coin chute components may be found in applicant's aforementioned U.S. Pat. Nos. 3,137,378 and 3,354,998. Further description of the coin chute operation per se is not here necessary, for the present invention is designed for use with any typical coin chute having a slide member 32 or similar mechanism for advancing a token from a fully retracted to a fully advanced position to actuate a vending mechanism.

The improvement comprising the present invention is best illustrated in FIGS. 2-5. A fixed rigid abutment member or anvil 52 is located in the path of the advancing token T to intercept and shatter the frangible token into a plurality of random, undefinable particles upon predetermined advancement of the slide 32, see FIG. 5. Token T is carried by the slide 32, and caused to pass through the caliper unit contained in subhousing 44 and over guide 58. The token is actually pushed by shoe 64 which is secured to the slide member 32 and disposed beneath the aperture 34. At this point the token drops from the coin chute and into a proper de-

pository, not shown. In the present invention, however, a token carrying mechanism is utilized to retain the token T within the control of the coin slide and shoe 64 upon advancement of the slide to a point beyond the guide rails 50 and 56 (FIGS. 3 and 4) which are secured to the underside of the body 38 at 54 by rivets or other suitable means, to provide a channel between the underside of the body and the rails for carrying the token upon advancement of the slide member 32. The token is thereby retained in control of the coin slide and in contact with the shoe or pusher 64 throughout advancement of the slide 32 to approximately the fully advanced position shown in FIG. 5.

As the slide 32 is advanced from the fully retracted position of FIGS. 1 and 2 to the position illustrated in FIG. 5, token T is intercepted by the rigid abutment member or anvil 52 and shattered into a plurality of undefinable random particles. As shown in the FIG. 5 embodiment, the abutment member 52 may be integral with at least one of the guide rails 50 or 56 to simplify change over from a coin operated mechanism to a destructible token system. When this simplification is utilized, only the rails 50 and 56, with the abutment member 52 integral therewith, need be added to the coin chute 30 to produce the expendable token system.

The tokens are made of a brittle plastic, glass, ceramic or similar material and are designed to instantaneously shatter at random when compressed by advancement of the shoe 64 toward the abutment member 52. Uniformly satisfactory results have been obtained in those instances in which the tokens comprise a mixture of 45% general purpose styrene, 10% high impact styrene, and 45% acrylic. It is also desirable to utilize a token T having a unique and irregular configuration and complementary aperture such as is illustrated in FIGS. 1, and 7, 8, and 11-22. In this manner, the possible use of improper tokens is minimized. Further, the use of an irregular configuration reduces the possibility of the use of unauthorized tokens, since all of the coin chutes of a particular merchant would differ in shape from the tokens of another merchant. It also may be desirable to design a token-receiving aperture in such a manner as to reject common currency. For example, the token T may have an overall diametric dimension substantially larger than that of a standard U.S. dime D, see FIG. 6. The large overall size of the token T facilitates handling while indentations about the circumference reduce the opening in the complementary aperture 34 to a size less than the diameter of the dime. Thus, the aperture 34 will automatically reject currency when constructed in this manner.

An alternative, irregular token TA and suitable complementary receiving aperture 34a are shown in FIGS. 7 and 8. Again, keyed token TA reduces the possibility of improper usage of the coin chute 30. FIGS. 11-22 indicate other suitable variations of the tokens, identified as T4-T9 and their mated receiving apertures 34c-34h, respectively. It should be understood that the various configurations here shown are only illustrative and are not intended to limit the scope of the application. The simplest token configuration is illustrated in FIG. 10 as T3, being a circular ring conforming in size and shape to a typical coin. Thus, when token T3 is incorporated in change over from a typical coin operated mechanism to the expendable token system of the present invention, no alteration of the receiving aperture

34B is necessary. Therefore, the original coin slide 32 may be retained in the system.

Alternative embodiments of the token carrying means and the intercepting and shattering means are illustrated in FIGS. 9 and 10. In each of the embodiments therein disclosed, the guide rails 50 and 56 have been omitted and an alternative token carrying mechanism 62 is utilized. As can be seen in both FIGS. 9 and 10, a shoe 62, similar to shoe 64, is secured to the underside of the slide 32 and extends inwardly beyond the lip of the aperture 34a or 34b to provide a shelf or seat for holding the token. The shoe 62 forms a tray or bearing surface for carrying the token from the fully retracted position to the fully advanced position. Thus, when a proper token TA or T3 is placed in either of the apertures 34a or 34b, it drops into the seat provided by shoes 62 and 64 and is contained therein while the slide 32 is advanced. Again, a suitable anvil or abutment means 52 secured to the underside of body 38 is disposed to intercept and shatter the token as it advances toward the fully advanced position.

It is often desirable to utilize a plurality of abutment means 52, for example the posts 52a and 52b shown in FIG. 10, to increase the number of contact points and the lines of compression upon advancement of the token. This reduces the force necessary to shatter the token.

When either of the alternative embodiments illustrated in FIGS. 9 and 10 is utilized, a typical coin operated mechanism requires only the addition of the anvil or abutment means 52, and the shoe 62, to provide an expendable token system.

In all of the embodiments disclosed herein, and as clearly shown in the drawings, the token is engaged at its edge in one half circular portion thereof and advanced into engagement at the edge thereof in the opposite half circular portion with an abutment means to shatter the token.

What is claimed is:

1. A coin chute comprising in combination: a housing; an apertured slide supported upon the housing for reciprocation between a position of retraction and a position of full advancement, the aperture of the slide receptive of a brittle token movable with the slide; means engageable with a portion of the edge of the token in one half circular portion thereof to advance the token; and abutment means operative upon predetermined movement of the slide intercepting forward movement of the token and engaging an edge portion of the token in the other half circular portion thereof whereby further movement of the slide to a position of full advancement shatters the token against said abutment means.

2. The combination as defined by claim 1, wherein the abutment means comprises an anvil.

3. A coin chute comprising in combination: a housing; an apertured slide supported upon the housing for

reciprocation between a position of retraction and a position of full advancement, the aperture of the slide receptive of a brittle token movable with the slide; and a plurality of stationary posts located at opposite sides of the center line of the slide operative upon predetermined movement of the slide intercepting forward movement of the token, whereby further movement of the slide to a position of full advancement shatters the token against said posts.

4. The combination as defined by claim 1, wherein the means last mentioned shatters the token while the token is under the control of the slide.

5. The combination as defined by claim 4, wherein the means last mentioned is operational prior to a full advancement of the slide.

6. The coin chute as defined by claim 1, wherein shattering of the token is completed instantaneously.

7. The coin chute as defined by claim 1, wherein shattering of the token is completed instantaneously.

8. The coin chute as defined by claim 1, wherein is included means for rejecting legal coins.

9. The coin chute as defined by claim 1, wherein is included means for rejecting common legal coins.

10. The combination as defined by claim 1, wherein the means last mentioned includes a plurality of stationary posts located at opposite sides of the centerline of the slide.

11. The combination as defined by claim 1, wherein the means last mentioned includes a rigid anvil supported by the housing in the path of advancement of the token.

12. The combination as defined by claim 11, wherein is included means operative to enforce movement of the token with the slide until the token reaches the point of interception and shattering.

13. The combination as defined by claim 12, wherein the last-mentioned means includes a plurality of guide rails depending from said housing in substantially parallel spaced relationship, to form with the housing a channel for maintaining the token in juxtaposition with the slide during advancement thereof.

14. The combination as defined by claim 13, wherein the last-mentioned means includes a shoe fixed to the slide, said shoe including a shelf disposed beneath the slide aperture to support the token during advancement of the slide.

15. The combination as defined by claim 14, wherein said last-mentioned means includes a pusher shoe carried by the slide.

16. The combination as defined by claim 1, wherein the slide aperture is characterized by a complex irregular configuration for acceptance of expendable tokens having a complementary configuration.

17. The combination as defined by claim 16, wherein shattering of the token is completed instantaneously.

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