Oct. 14, 1924. 1,511,718

C. W. BURGER

DETONATING TOY

Filed May 25, 1921

Fig. 1.

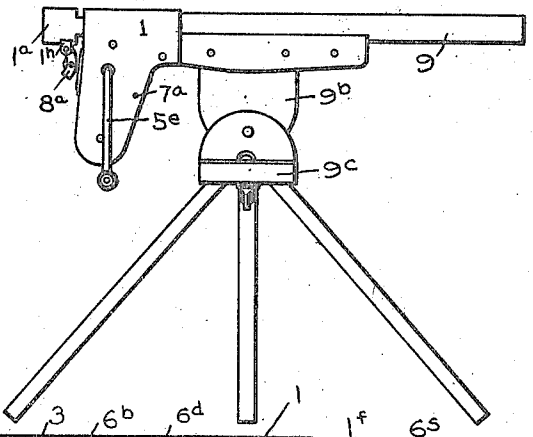


Fig. 2.

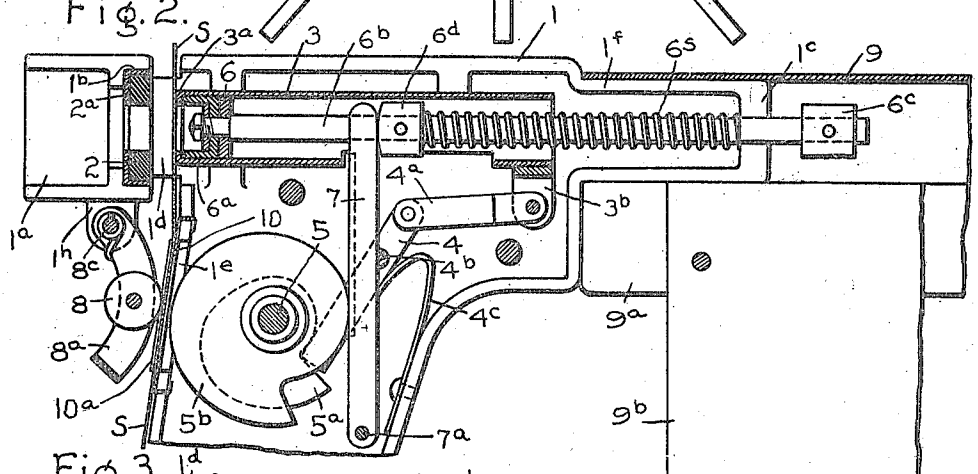


Fig. 3.

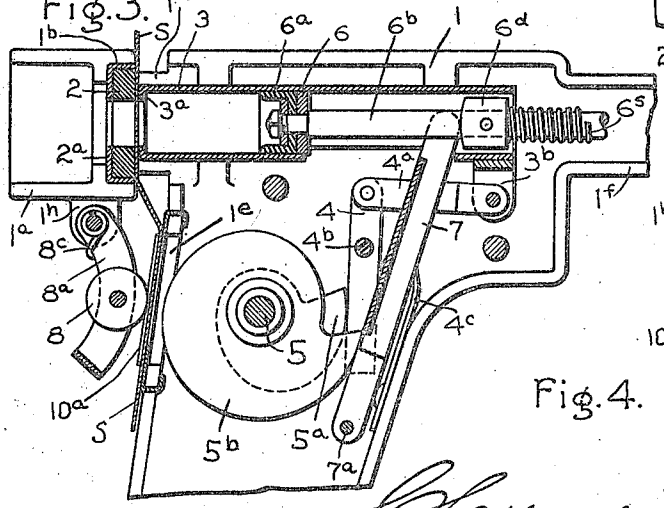
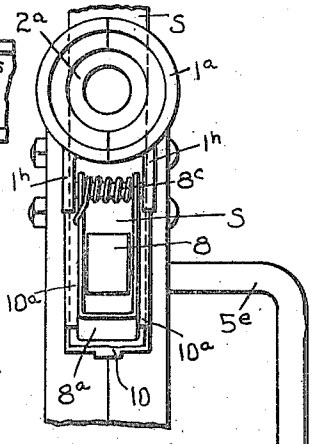


Fig. 4.



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UNITED STATES PATENT OFFICE.

CLARENCE W. BURGER, OF WASHINGTON, DISTRICT OF COLUMBIA.

DETONATING TOY.

Application filed May 25, 1921. Serial No. 472,426.

To all whom it may concern:

Be it known that I, CLARENCE W. BURGER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Detonating Toys; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is a novel detonating toy. Its object is to provide a simple toy by which loud detonations may be produced in a perfectly harmless manner by novel means for perforating a strip of paper by means of compressed air and which may externally resemble a gun, pistol, or other desired object.

The invention resides in the novel construction and combination of parts whereby a piece of paper or the like may be used as a closure for a movable cylinder, and then be perforated by the action of a spring impelled piston in the cylinder adapted to compress the air therein until the air pressure ruptures the paper with a loud detonation. The invention includes novel means for feeding the paper; novel means for clamping the paper against the open end of the cylinder; novel means for operating the piston; and novel means whereby the several parts are operated in proper sequence and time.

I will explain one practical embodiment of the invention as illustrated in the accompanying drawings, and summarize in the claims the essentials of the invention and novel features of construction and novel combinations of parts for which protection is desired.

In said drawings:

Fig. 1 is a side view of a toy embodying the invention.

Fig. 2 is an enlarged longitudinal sectional view showing the operative parts after a detonation, and in position preparatory to feeding the strip of paper.

Fig. 3 is a similar view showing the parts in position just previous to a detonation.

Fig. 4 is an end view of Fig. 3.

As shown the toy has a casing or handle portion which may be made of any suitable exterior form, and is shown in Fig. 1 as formed like the handle and stock of a pistol, or rapid fire gun. This casing is preferably vertically divided longitudinally for ready convenience in assembling the operative parts therein. The casing has a preferably cylindrical portion 1^a projecting from its rear end near its upper end, and in this portion is a vertical slot 1^d for the passage of a strip of paper S.

An annular gasket or abutment 2, preferably of rubber, is set against an annular flange 1^b within the casing at the outer side of the slot 1^a, or within a metal ring 2^a set against said flange 1^b.

Arranged within the casing in axial alinement with the gasket 2 is a cylinder 3, which is capable of longitudinal movement toward and from the gasket 2. The end of this cylinder adjacent the gasket is preferably flanged, as shown at 3^a, to bear against and bind a piece of paper or other suitable material, between the end 3^a of the cylinder and the gasket as shown in Fig. 3.

The cylinder is provided with an ear 3^b on its lower side which is connected by a link 4^a with the upper end of a lever 4, which is pivoted on a pin 4^b within the casing. The lower end of lever 4 engages a cam 5^a mounted on a transverse shaft 5, and said cam is adapted to oscillate the lever 4 once for each rotation of the shaft 5. Said shaft 5 can be turned by a handle 5^e, which may be removable. A spring of any suitable kind may be arranged to normally hold the cylinder 3 in retracted position and the end of lever 4 in contact with cam 5^a, a bent spring 4^c being shown. Within the cylinder is a piston 6, which may be of any suitable construction, and is shown as having a flexible cup washer 6^a on its end facing gasket 2. This piston is connected to a rod 6^b which extends beyond the inner end of the cylinder to and through a guide opening in the end 1^c of the casing, as shown. A collar 6^c may be pinned to the outer end of rod 6 to limit the outward movement of the piston.

A collar 6^d is pinned to the rod within the cylinder and a suitable helical expansion spring 6^3 is strung on the rod 6^b between the collar 6^d and the end 1^c of the casing, which spring is compressed as the piston is moved toward the end 1^c. The collar 6^d is engaged by the upper end of a lever 7, which is pivoted on a pin 7^a in the casing, preferably below and adjacent the shaft 5; this lever 7 engages a cam 5^b fixed on shaft 5

beside cam 5^a. Cam 5^b is shown as a one step cam and is so arranged that lever 7 will be released by cam 5^b before lever 4 is released by cam 5^a.

The swell portion of the cam 5^b is adapted to partially project through a slot 1^e in the casing, below slot 1^d, and to cooperate with a roller 8 to feed the strip of paper S. Roller 8 is mounted in a link 8^a pivotally suspended from ears 1^h on the projecting end portion 1^a of the casing, as shown, at the outer side of the slot 1^d. A suitable spring 8^c is provided to press the link inward so as to cause roller 8 to yieldingly engage the portion of the cam 5^b which projects through the slot 1^e. Any other suitable spring might be provided. Preferably a flanged guide plate 10 is attached to the casing below the slot 1^d and exterior to the slot 1^e, this plate having side flanges 10^a to guide the strip of paper S.

The end 1^f of the casing is preferably reduced in diameter and a gun barrel 9 attached thereto as indicated in the drawing, this barrel having depending portions 9^a by which it is connected to a plate 9^b pivotally connected to a tripod 9^c which may be of any suitable construction. Obviously the invention is not restricted to any particular construction of form of the casing, or of the support for the casing.

To operate the device a strip of paper S, which may be cut from an ordinary newspaper, is inserted through the slot 1^d and between the flanges of the guide plate 10 and between the roller 8 and cam 5^b while the parts are in the position indicated in Fig. 2.

When ready for operation shaft 5 is turned and cam 5^a first causes lever 4 to move the cylinder 3 outward until the paper strip is clamped between the flange 3^a on the end of the cylinder and the gasket 2 (as shown in Fig. 3). While the cylinder 3 is thus being moved outward to clamp the paper the cam 5^b engages lever 7 and forces the piston 6 rearwardly in the cylinder thereby compressing spring 6^s. Just after the paper has been clamped as described, and during the continued rotation of the shaft 5, cam 5^b releases lever 7 and the spring 6^s instantly projects the piston outwardly in cylinder 3, forcibly compressing the air in the cylinder to such a degree as to disrupt the paper and cause a loud detonation. Immediately thereafter cam 5^a releases lever 4 and spring 4^c returns the cylinder to the retracted position indicated in Fig. 2. During the further rotary movement of shaft 5 the swell portion of cam 5^b projects through the slot 1^e and coacts with the roller 8^a to feed the strip of paper S upwardly sufficiently to bring a fresh unperforated part of the strip into position to be clamped between the flanged end of the cylinder and gasket 2. Upon further rotation of the shaft 5 cam 5^a moves the cylinder 3 forward to clamp the paper, and the cycle of operations above described is then repeated.

In this construction the cam 5^b causes the compression of springs 6^s, and coacts with roller 8 to feed the strip of paper into position for perforation and also acts as the trigger of the gun.

The invention provides a harmless, amusing noisy toy, the detonations being loud but entirely harmless.

In the claims I refer to a "gasket," meaning thereby to designate a part or member against which the cylinder clamps the paper previous to a detonation but I do not intend by such term to restrict myself to the particular form of gasket hereinbefore described and shown in the drawing, as any equivalent part or member cooperating with the cylinder to hold the paper could be used. By "paper" any suitable material usable for the purpose described is intended to be covered.

Obviously various changes may be made in the mechanical form and construction of the parts and the exterior appearance of the casing and its support, within the scope of the invention as set forth in the following claims.

I claim—

1. In a toy the combination of a casing, a gasket, a movable cylinder mounted in the casing, means for clamping paper between said gasket and cylinder; a piston in the cylinder, a spring for projecting the piston, a rotatable shaft, a cam on said shaft, and a lever operated by said cam for moving the cylinder to and from the gasket, and the piston being actuated by the spring after a piece of paper has been clamped between the gasket and the cylinder.

2. In combination with devices as set forth in claim 1, a second cam on said shaft, and a lever actuated by the second cam adapted to compress the spring, substantially as described.

3. In combination with devices as set forth in claim 1, means for automatically feeding a strip of paper between the gasket and cylinder, substantially as described.

4. In combination with devices as set forth in claim 1, and means coacting with said cam for intermittently feeding a strip of paper between the gasket and cylinder, substantially as described.

5. In a toy of the character specified, a casing having a slot, a gasket at one side of the slot, a longitudinally movable cylinder at the opposite side of the slot, means independent of the piston for moving the cylinder toward the gasket to clamp a piece of paper therebetween, a piston in the cylinder, a spring for projecting the piston, means for compressing the spring, and means for releasing the spring to operate

the piston after the cylinder has clamped the paper against the gasket.

6. In combination with devices as set forth in claim 5, the means for moving the cylinder including a rotatable shaft, a cam on said shaft, and a lever operated by said cam for moving the cylinder to and from the gasket, substantially as described.

7. In combination with devices as set forth in claim 5, the means for compressing the spring including a rotatable shaft, a cam thereon, and a lever actuated by the cam adapted to compress the spring, substantially as described.

8. In a toy as set forth in claim 5, the means for moving the cylinder including a rotatable shaft, a cam on said shaft, a lever operated by said cam for moving the cylinder to and from the gasket, and the means for compressing the spring including a second cam on said shaft, and a second lever actuated by the second cam to compress the spring, substantially as described.

9. In a toy as set forth in claim 5, the means for compressing the spring including a rotatable shaft, a cam thereon, and means actuated by the cam to compress the spring, and means coacting with said cam for intermittently feeding the strip of paper, substantially as described.

10. In a toy of the character specified, a casing having a slot for the passage of a strip of paper, a gasket at one side of the slot, a longitudinally movable cylinder at the opposite side of the slot, means independent of the piston for moving the cylinder to and from the gasket and causing it to clamp a piece of paper between it and the end of the gasket, a piston in the cylinder, a spring for projecting the piston, means for moving the piston in the cylinder to compress the spring and means for releasing the spring after the cylinder has clamped the paper against the gasket.

11. In combination with devices as set forth in claim 10, means for intermittently feeding a strip of paper through the passage between the cylinder and gasket.

12. In a toy as set forth in claim 10, the means for moving the cylinder including a rotatable shaft, a cam on said shaft, a lever operated by said cam for moving the cylinder to and from the gasket, and connections between the lever and cylinder, substantially as described.

13. In a toy as set forth in claim 10, the means for compressing the cylinder including a rotatable shaft, a cam thereon, a lever actuated by the cam adapted to compress the spring, and connections between the lever and cylinder, substantially as described.

14. In a toy as set forth in claim 10, the means for compressing the cylinder including a rotatable shaft, a cam on said shaft, a lever operated by said cam for moving the cylinder to and from the gasket, and the means for compressing the spring including a second cam on said shaft, and a second lever actuated by the second cam to compress the spring, substantially as described.

15. In a toy as set forth in claim 10 the means for compressing the spring including a rotatable shaft, a cam thereon, means actuated by the cam to compress the spring, and means coacting with said cam for intermittently feeding the strip of paper, substantially as described.

16. In combination with devices as set forth in claim 10, a guide for directing a strip of paper through the slot between the cylinder and gasket.

In testimony that I claim the foregoing as my own, I affix my signature.

CLARENCE W. BURGER.