

Jan. 10, 1933.

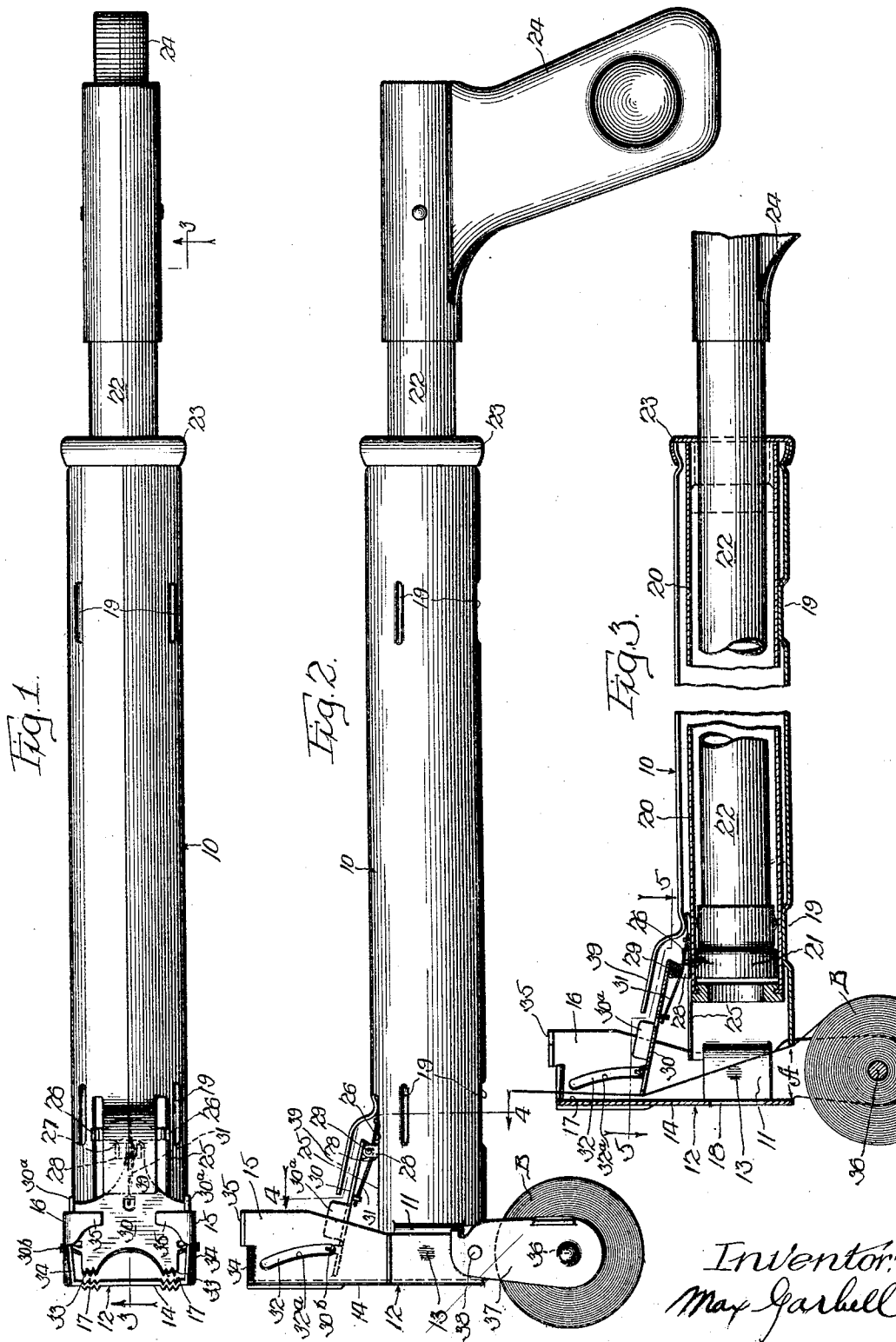
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TOY GUN

Filed May 25, 1931

2 Sheets-Sheet 1



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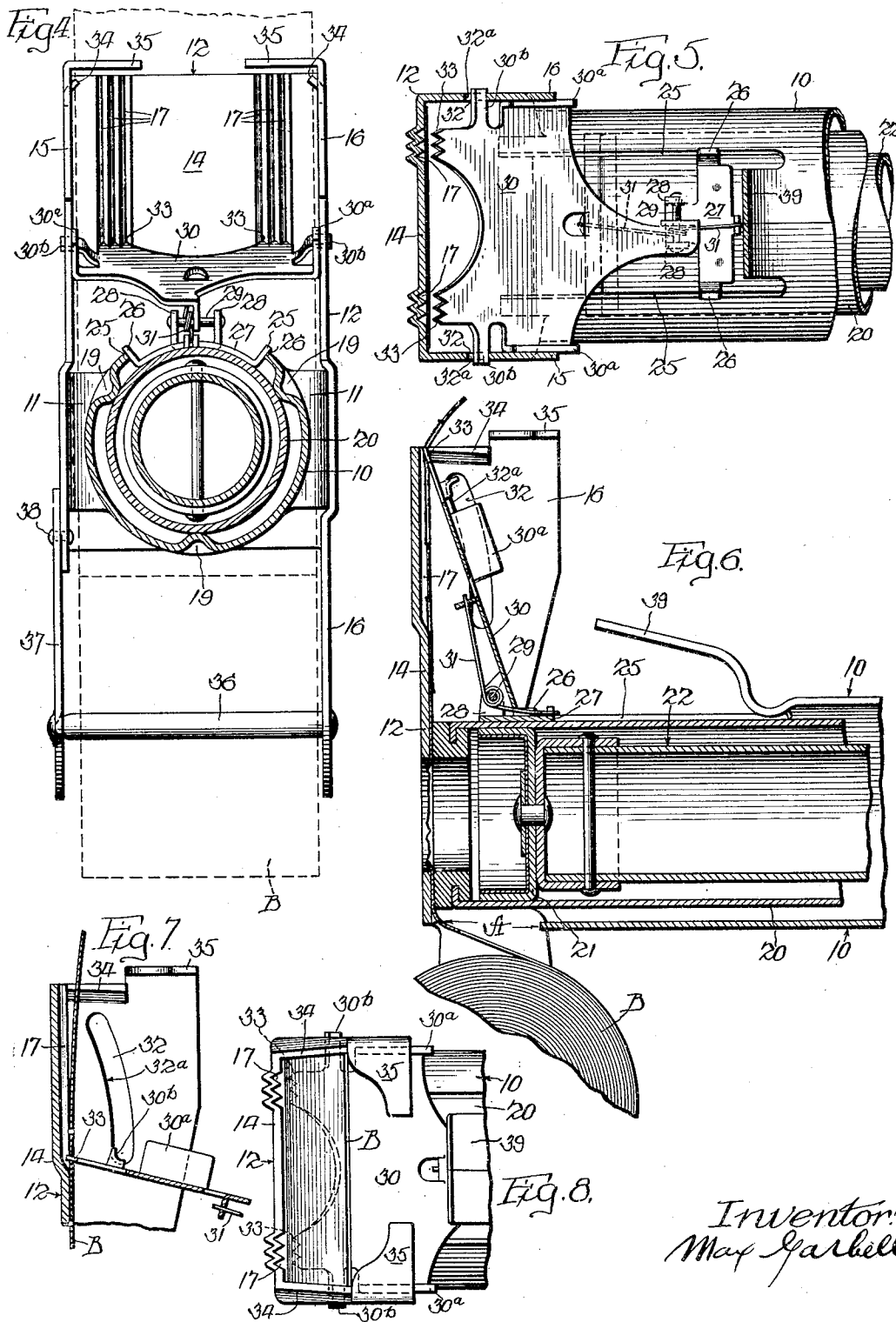
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TOY GUN

Application filed May 25, 1931. Serial No. 539,829.

My invention relates to improvements in toy guns or devices for producing successive reports by the pneumatic rupturing of a thin strip of material held air-tight over a cylinder.

The primary object of the invention is to obtain an automatic feed of the material strip, whereby a succession of reports may be made without reloading.

Another object is to construct a device as above stated that is simple in construction and operation, positive in action, assuring a perfect feed of the material strip.

A further object is that the moving parts in the device are contained within a housing so that the device may be safely and conveniently operated by a child.

A still further object is to accomplish the entire function through the actuation of a piston, whereby the material will be advanced a given distance and securely held.

Other objects and advantages will become apparent as the description proceeds.

In the drawings forming a part of this application Figure 1 is a top plan view of a toy gun embodying my invention;

Fig. 2 is a side elevation of the device;

Fig. 3 is a longitudinal sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged sectional view taken on the line 4—4 of Fig. 2;

Fig. 5 is an enlarged sectional view taken on the line 5—5 of Fig. 3 showing the material engaging and feeding device;

Fig. 6 is an enlarged view similar to Fig. 3 showing the material engaging means in advanced position;

Fig. 7 is an enlarged detail view showing the guide means for the material engaging means.

Fig. 8 is an enlarged detail plan view of the carrier and associated parts.

Referring to the drawings 10 designates a tubular housing provided with ears 11 extending forwardly of the housing 10 and having a carrier 12 perpendicular to the housing and secured to the ears 11 by means of spot-welding or other suitable means as at 13. The carrier 12 is substantially U-shaped in cross

section, having a front wall 14 and side walls 15 and 16 respectively.

The front wall 14 is provided with a plurality of grooves or ways 17 on either side thereof, and an aperture 18 in alined relation with the tubular housing 10. The front wall 14 being spaced from the housing to provide a passageway A for a material strip fed through the passageway A from a supply roll B mounted on the carrier 12.

The housing 10 is provided with a plurality of relatively long depressions 19 to guide a cylinder 20 for endwise movement in the housing 10. Cylinder 20 is somewhat shorter in length than the housing and has a piston 21 slidably mounted therein, with its shaft 22 extending through a cap 23 fixed to the free end of the housing 10. A handle 24 is secured to the piston shaft 21 to reciprocate the piston.

At 25 the housing 10 is cut away to form guides for the projections 26 of a member 27 secured to and extending from the cylinder 20, to permit the endwise movement of the cylinder in the housing and to prevent the same from turning. The member 27 is also provided with extending ears 28 having a pin 29 on which a material engaging member 30 is pivotally mounted.

A spring 31 coacting with the engaging member and the cylinder to normally hold the engaging member 30 in operative position when the cylinder is spaced from the carrier 12.

The material engaging member 30 is provided with upturned flanges 30a to form a guide between the side walls 14 and 15 of the carrier 12 and is also provided with an extension 30b on either side to extend through cam slots 32—32 in the side walls 14 and 15.

Member 30 is provided at its free end with a plurality of relatively sharp teeth 33 adapted to extend in the grooves 17 when the cylinder 20 is moved in one direction. As the member 30 is moved toward the grooves 17 the extension 30b in the cam slots 32 will allow for a free movement until the extensions 30b come in contact with the edge 32a of the cam slot 32, permitting the teeth 33 to enter the grooves but preventing them from

going into face to face contact with the grooves 17 of the carrier 12 and the teeth will remain in that same relation to the grooves during the entire travel of the engaging member in one direction.

Carrier 12 is provided with relatively short inwardly extending retaining lugs 34 on either side to engage the edge of a material strip that is advanced in the carrier 12. The retaining lugs 34 converge toward the front wall 14 (as clearly shown in Fig. 8) and adjacent the retaining lugs the side walls 15 and 16 are provided with inwardly extending guard member 35 to prevent the material strip from becoming disengaged from the retaining lugs 34.

At its other end the carrier 12 is provided with a pin 36 secured to the wall 16 to carry a roll of fracturable material thereon and a plate 37 pivotally mounted at 38 and the side wall 15 to retain the roll in position.

To protect the hands of the user from contacting the working parts of the device, the housing 10 is provided with a guard or plate member 39 extending from and overlying the opening between the guides 25—25.

To operate the device a roll of fracturable material is mounted on the pin 36, the free end being passed between the carrier wall 14 and the housing 10 and the engaging member 30 and the grooves 17 and is brought past the retaining lugs 34 to rest against the guard member 35. The piston is then withdrawn and as it is forced inwardly, the frictional contact of the piston on the cylinder will cause the cylinder 20 to move with the piston, carrying the engaging member 30 toward the wall 14 of the carrier, perforating the material strip as the teeth 33 on the engaging member enter the grooves 17. At this point extensions 30b of the engaging member come into contact with the edges 32a of the cam slots 32 and the engaging member is then caused to follow the cam surface advancing the material strip until it has been fully advanced and upon further movement in the same direction, the cylinder will hold the material air-tight over the opening in the carrier. Then the piston starts traveling in the cylinder, compressing the air against the material, causing the sudden breaking of the material and producing a very loud report. This operation may be repeated as often as desired and a series of loud reports will be produced until the supply roll is exhausted.

I contemplate as being included in these improvements all such changes, variations and departures from what is thus specifically illustrated and described herein as fall within the scope of the appended claims.

I claim:

1. A pneumatic gun of the character described, comprising in combination a housing, a carrier having an aperture therein and secured to and spaced from one end of said

housing, a cylinder slidably mounted within the housing, a piston arranged for reciprocating movements in the cylinder, material engaging means carried by the cylinder, a fracturable material strip extending between the housing and the carrier in the path of the material engaging means, said material engaging means being movable into engagement with the material strip to feed the same when the cylinder is moved in one direction upon the movement of the piston and free of said material strip in the other direction of cylinder travel upon the reverse movement of the piston.

2. The combination of claim 1 hereof, in which the material engaging means is adapted to engage the carrier upon the movements of the cylinder in one direction and to disengage the carrier in the other direction effected by the movements of the piston.

3. The combination of claim 1 hereof, in which the carrier is provided with a material roll supporting means, accessible from one side thereof and retaining means for holding said roll alined with the aperture in the carrier.

4. A pneumatic gun having a housing, a carrier having an aperture therein and secured to said housing and spaced from one end thereof with said aperture alined therewith, a cylinder slidably mounted in the housing, a piston in said cylinder, material engaging means carried by the cylinder, a fracturable material strip extending between the cylinder and the carrier in the path of said material engaging means, said engaging means being yieldingly supported on the cylinder adapted to engage the material strip and abut against the carrier to advance the material strip a given distance in one direction and to be disengaged and free of said material strip in the other direction of the cylinder travel.

5. The combination of claim 4 hereof, in which the material engaging means are toothed at the engaging end to perforate the material strip to positively grip and feed the same upon the movement of the piston in one direction.

6. A pneumatic gun comprising a tubular housing, a carrier having an opening therein and secured transversely and spaced from one end of the housing, the opening in said carrier being centrally of said housing, a cylinder slidably mounted within said housing, a piston arranged for reciprocating movement in the cylinder, a material strip fed between the end of the cylinder and the carrier, a yielding material engaging and feeding means carried by the cylinder, said feeding means yieldingly coacting with the carrier to engage and feed the material strip at a right angle to said cylinder, and material retaining means on the carrier in the path of the material strip to permit the material strip

to be moved in one direction and withheld from movement in the other direction.

7. A pneumatic gun comprising a tubular housing, a carrier having an opening therein, said carrier being secured transversely adjacent one end of said housing, a cylinder mounted for a relatively short endwise movement in the housing, a piston arranged for reciprocating movement in the cylinder, yieldable material engaging means carried by the cylinder, a material strip fed between the end of the housing and the carrier, material retaining means on the carrier in the path of the material strip the material engaging means yieldingly coacting with the carrier to engage the material strip, said material retaining means having inwardly extending converging edges to increasingly grip the material strip as the material engaging means approaches its limit of movement.

8. A pneumatic gun comprising in combination a tubular housing, a channel shaped carrier having a central opening therein and secured adjacent to one end of the housing with the opening centrally thereof, a cylinder slidably mounted for a relatively short travel in the housing, a piston arranged for reciprocating movement in the cylinder, yielding material engaging means carried by the cylinder, a fractureable material strip fed between the end of the housing and the carrier, the material engaging means being normally inclined toward the carrier to coact with said carrier to grip the material strip when the cylinder is moved in the direction of the carrier, said material engaging means being adapted to yield and slide on the carrier while the cylinder is moved and normally free of engagement with the carrier when the cylinder is retracted.

9. A gun comprising in combination a tubular housing, a carrier substantially U-shaped and having an opening therein, said carrier being secured perpendicular, adjacent one end of said housing and the opening therein alined and communicating with said housing, a cylinder slidably mounted for endwise movement in said housing, a piston arranged for reciprocating movement in the cylinder, toothed material engaging means carried by the cylinder, a material strip fed between the end of the cylinder and the carrier, said carrier having side walls provided with cam slots therein, the material engaging means having extensions extending through said cam slots to guide said material engaging means, and guard means on said housing to shield the moving parts of the material engaging means.

10. A pneumatic gun comprising in combination a housing, a U-shaped carrier having cam surfaces in the side walls thereof and an opening in the front wall, said carrier being secured adjacent to one end of the housing with the opening centrally thereto, a cylinder

slidably mounted in the housing, a piston arranged for reciprocating movement in the cylinder, material engaging means pivotally mounted on the cylinder, said material engaging means being provided with extensions extending into the path of said cam to limit the movement of the material engaging means for a predetermined amount of grip on the material strip, spring tension means coacting with the cylinder and the material engaging means to normally retain the same to be readily engaged, and guide means on said member to guide the same between the side walls.

11. A device of the character described, comprising in combination a tubular housing, a carrier having a front wall and side walls provided with an opening in the front wall and cam slots in the side walls, said carrier being spaced from and secured to one end of the housing with said opening alined therewith, a cylinder slidably mounted in the housing, said cylinder being guided in the housing for endwise movements, a piston in the cylinder adapted to compress air in said cylinder, toothed material engaging means pivotally mounted on the cylinder, tension means coacting with said engaging means and the cylinder to maintain said engaging means readily operable, a fractureable material strip extending between the cylinder and the carrier in the path of the material engaging means, material retaining means on the side walls of the carrier, the material engaging means having extensions thereon coacting with said cam slots to guide the material engaging means in its movements while engaged and disengaged with the material strip, and material retaining means on the carrier to withhold said material against movement while the material engaging means is disengaged.

12. The combination of claim 11 hereof, in which the material retaining means are provided with inwardly and upwardly extending edges arranged to grip the edge of the material strip and hold said strip against one direction of travel and to permit the same to be moved in the other direction.

13. A device of the character described, comprising in combination a housing having guide lugs therein, a substantially U-shaped carrier having an opening therein and provided with cam slots, said carrier being secured in spaced relation with one end of the housing with the opening alined therewith, a cylinder slidably mounted in the housing, a piston in the cylinder, pivotally mounted material engaging means carried on one end of the cylinder, said engaging means having portions extending into said cam slots in the carrier to guide the free end of the engaging means in either direction of travel, and spring tension means on said engaging means for normally holding the engaging means readily

operable, a material strip extending between the cylinder and the carrier in the path of the material engaging means, material retaining lugs extending inwardly of said carrier, said
5 retaining lugs permitting the material strip to be moved in one direction upon the movement of the cylinder, effected by the movement of the piston, and said material strip being withheld by the retaining lugs when
10 the cylinder is moved in the other direction upon the reverse movement of the piston.

14. The combination of claim 13 hereof, in which the carrier is provided with parallel ways and the engaging member being toothed,
15 said toothed engaging member coacting to interfit the ways in the carrier to perforate the material strip to grip the same.

15. The combination of claim 13 hereof, in which the cylinder is slidable in the housing
20 and held against turning movements by means of guide lugs engaging the housing wall.

16. The combination of claim 13 hereof, in which the carrier is provided with material guide means, said guide means being adjacent
25 the material retaining lugs to insure proper engagement of the material with said lugs.

17. The combination of claim 13 hereof, in which the housing is provided with guard means extending therefrom to protect the
30 working parts of the material engaging means.

In testimony whereof I have signed this specification.

MAX GARBELL.

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