No. 670,629. Patented Mar. 26, 1901.

C. T. BONN.

RAPID FIRE TOY CANNON.

(Application filed Jan. 18, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

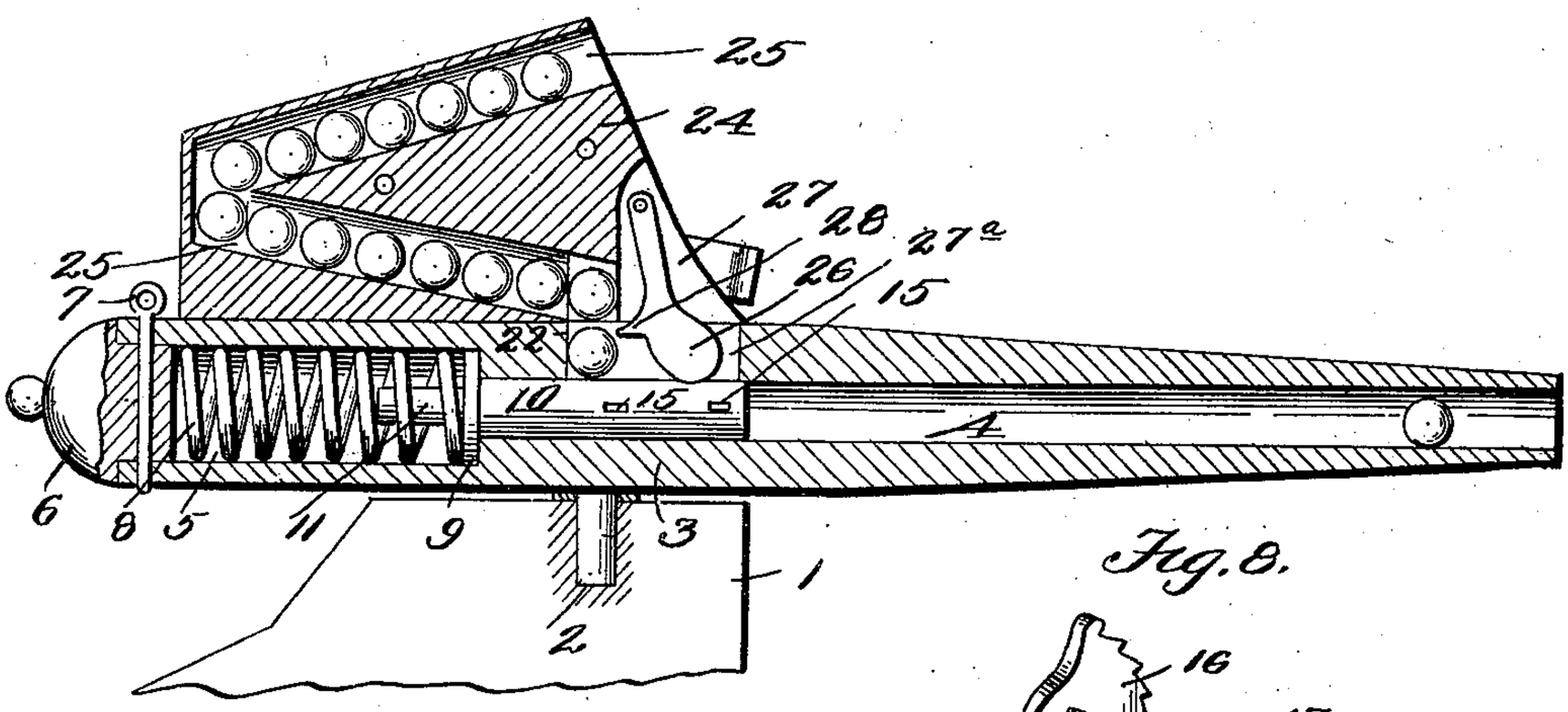

Fig. 8.

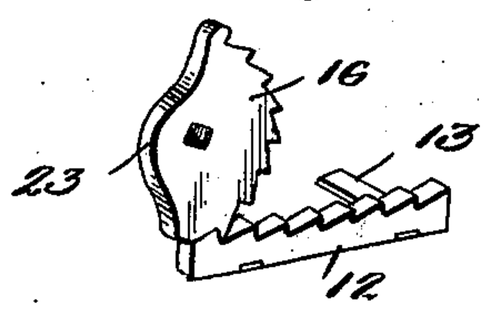

Fig. 2.

Fig. 12.

Fig. 3.

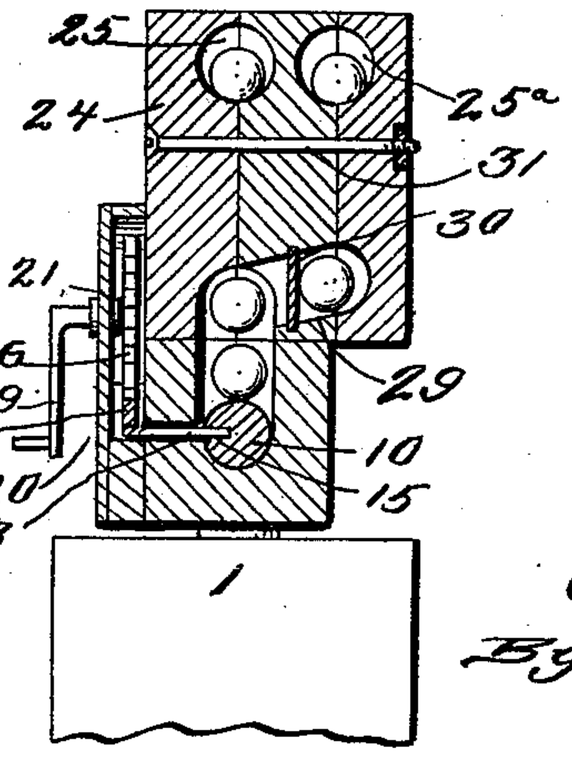

Fig. 9.

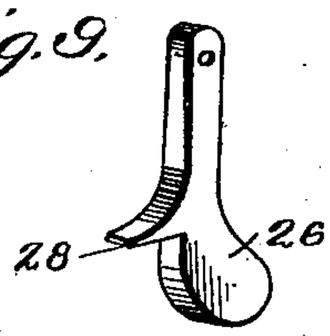

Fig. 10.

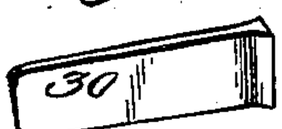

Fig. 11.

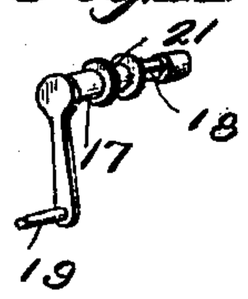

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Fig. 4.

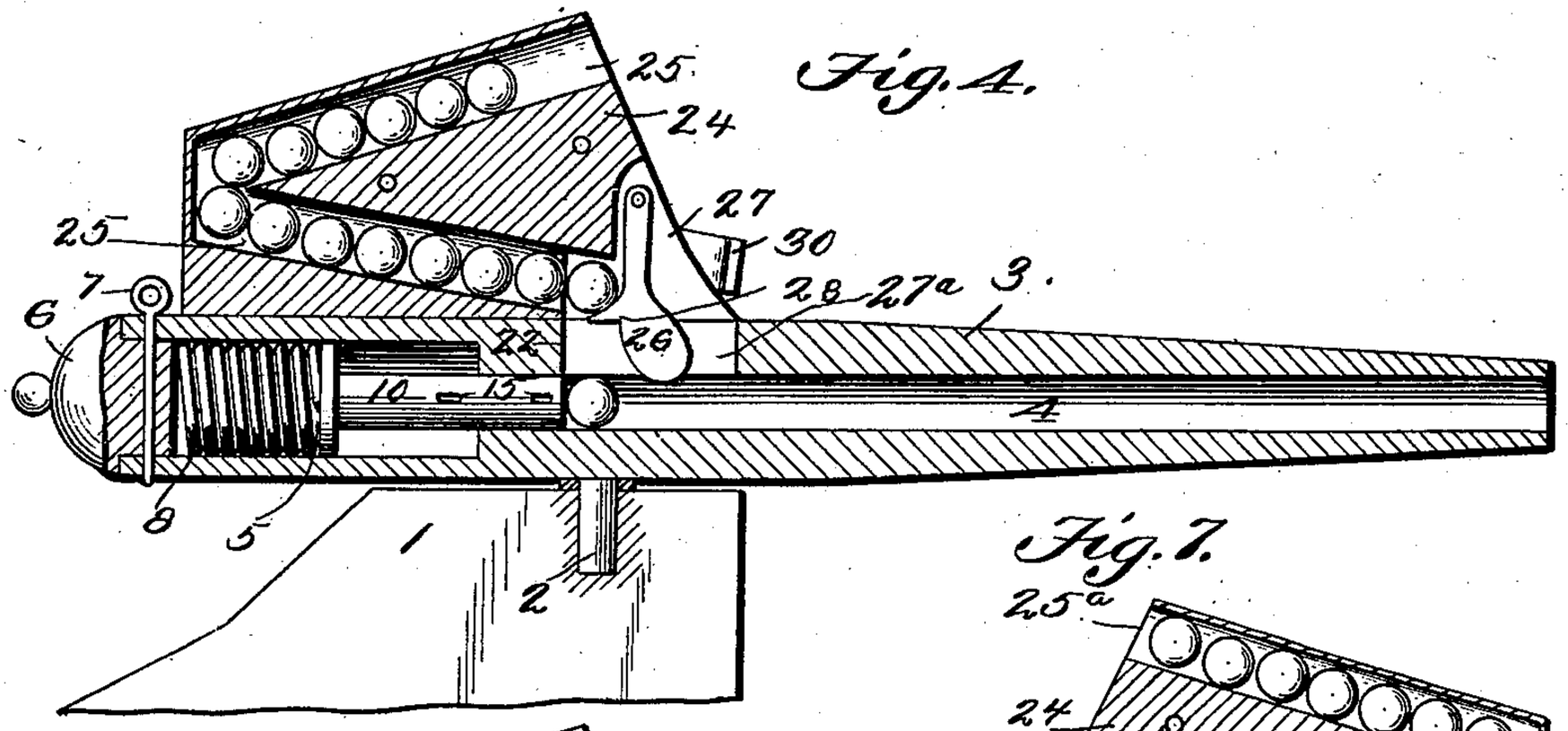


Fig. 7.

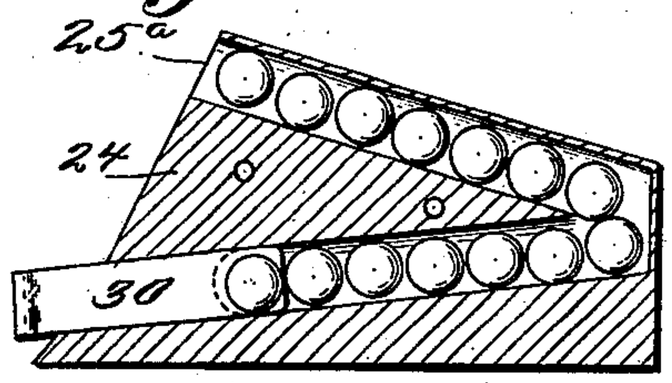


Fig. 5.

Fig. 6

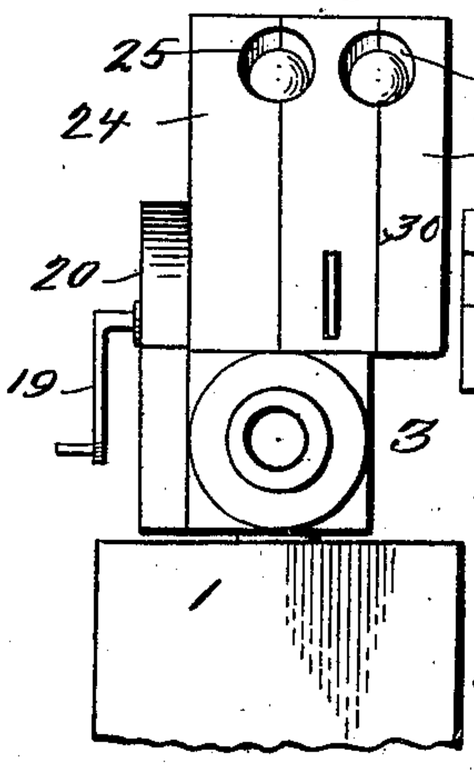
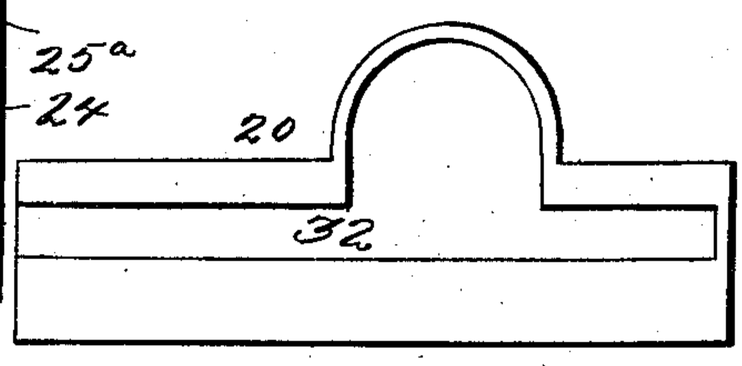


Fig. 13.



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UNITED STATES PATENT OFFICE.

CHARLES T. BONN, OF BALTIMORE, MARYLAND.

RAPID-FIRE TOY CANNON.

SPECIFICATION forming part of Letters Patent No. 670,629, dated March 26, 1901.

Application filed January 18, 1901. Serial No. 43,747. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. BONN, a citizen of the United States, residing at Baltimore city, in the State of Maryland, have invented new and useful Improvements in Rapid-Fire Toy Cannons, of which the following is a specification.

My invention relates to improvements in rapid-fire or magazine toy cannons, and has for its objects to provide a novel magazine of large capacity in which the projectiles are carried in a single line to prevent crowding of the projectiles and deliver the same one at a time into the bore of the cannon to be projected; also, to provide a duplex magazine one part of which is normally in communication with the bore of the cannon and means for placing the other part in communication therewith upon the exhaustion of the first; also, to provide novel means for insuring the delivery of the projectiles to the bore of the cannon one at a time; also, to provide mechanism for operating the plunger for throwing the projectiles arranged in novel manner.

To said ends my invention consists in the novel features of construction, arrangement, and combination of parts hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a longitudinal central section showing the parts in position immediately after the projectile has been thrown by the plunger. Fig. 2 is a view, partly in section and partly in elevation, to show the arrangement of the plunger-operating means. Fig. 3 is a sectional view through the magazine. Fig. 4 is a view similar to Fig. 1, showing the plunger retracted with a projectile in front thereof and the controller engaging the following projectile to prevent it from passing into the bore of the cannon. Fig. 5 is a side elevation. Fig. 6 is a front view. Fig. 7 is a sectional view through one of the magazine-sections with the gate cutting off communication thereof from the bore of the cannon. Fig. 8 is a detail perspective view of the mechanism for operating the plunger; Fig. 9, a similar detail of the controller; Fig. 10, a like view of the gate; Fig. 11, a detail of the crank and crank-shaft; Fig. 12, a detail of the removable plug which closes the rear of the spring-chamber of the cannon, and Fig. 13 is a detail view of the housing.

In said drawings the reference-numeral 1 indicates a carriage upon which a cannon is swiveled by means of an engaging socket and pin 2, so that the mouth of the cannon may be aimed in different directions.

The numeral 3 indicates a cannon having a bore 4 and a rear spring-chamber 5, the latter being closed by a removable plug 6, secured in place by a pin or similar means 7. Within the spring-chamber is arranged a coil-spring 8, one end of which bears against the plug and the other end against a collar 9, formed on the plunger 10. This plunger is provided with a rearward extension 11, which projects somewhat into the spring to serve as a guide. The plunger is adapted to play in the rear of the bore of the cannon, as shown, being retracted by the means hereinafter described to admit of the entrance of a projectile into the bore and when released by such mechanism thrown forward by the then-compressed spring to eject the projectile from the cannon.

The retracting mechanism for the plunger consists of a rack 12, located outside of the body of the cannon and provided with laterally-extending pins 13, which extend into the bore of the gun through a longitudinal slot or raceway 14, formed in the cannon-body, and engaging in sockets 15, formed in the plunger 10.

The numeral 16 indicates a toothed segment which is adapted to engage the teeth of the rack 12, said segment being carried upon a crank-shaft 17, rotatably mounted, preferably, as shown, in the body of the magazine hereinafter described, being fitted on a squared portion thereof, 18, so that when the handle 19 of the crank is rotated the segment will also rotate and by reason of its engagement with the rack 12 retract the plunger 10 from the position shown in Fig. 1 to that illustrated in Fig. 4. The segment and rack are inclosed in a housing 20, suitably secured at the side of the cannon-body, through which housing the crank-shaft extends, said shaft being formed with collars 21, lying against opposite faces of the housing, as shown in Fig. 3, whereby it is positioned therein.

During the retraction of the plunger 10 in the manner described the foremost projectile, which is located in the ammunition-orifice 22 of the cannon, drops into the bore in front of the plunger, and when the plunger has been fully retracted the teeth of the segment 16 will have traversed and passed out of engagement with those of the rack 12, the plain portion 23 of the segment then being presented toward but out of engagement with the rack-teeth, so that the plunger under the impulse of the spring 8 is thrown forward and by its forceful action against the projectile ejects the latter from the cannon.

It is desirable that the cannon shall be capable of discharging with rapidity a large number of projectiles and at the same time be of small compass; also, that the projectiles shall be arranged in the magazine in a manner to prevent crowding of the same together and possible obstruction of the feed of projectiles avoided and said projectiles be fed with accuracy and certainty one at a time into the bore of the gun in front of the plunger, and to accomplish these results I provide a magazine of novel construction. Said magazine is indicated by the numeral 24 and is mounted upon the body of the cannon, as shown. It is provided with oppositely-inclined projectile ways or passages 25, which ways communicate at their converging ends, forming a continuous passage-way which is adapted to hold in a single consecutive line a large number of projectiles. At the discharge end this passage-way communicates with the ammunition-orifice 22, as shown. Its opposite end is open for the introduction by the operator of the projectiles. To provide for the proper feed of the projectiles to the bore of the gun one at a time, I arrange a controller 26 in a recess 27 of the magazine, directly in front of the delivery end of the projectile-way 25, the lower end of this controller playing in a recess 27^a, formed in the body of the cannon, and being of sufficient weight at its lower end to normally assume the position shown in Fig. 4, with its free end projecting slightly into the bore of the gun and a finger 28, formed thereon, interposed beneath the foremost projectile in the way 25. When the plunger is thrown forward to eject the projectile standing in front thereof, as in Fig. 4, it engages the controller and swings it to the position shown in Fig. 1, withdrawing the finger from the succeeding projectile and permitting it to drop down into the feed-orifice 22 and rest upon the plunger. When the plunger is again retracted by the mechanism described, the projectile which is in the feed-orifice drops down in front of the plunger, and the controller, swinging to the position shown in Fig. 4, interposes its finger beneath the next projectile, preventing it from dropping into the orifice. This arrangement is valuable, as in its absence when the plunger is retracted there would be nothing to prevent a number of projectiles running down into the bore.

In order to provide for an increased capacity of the magazine, it is preferably provided with two projectile-ways arranged parallel with each other, the second way being similar in all respects to the first and indicated by the reference-mark 25^a in Fig. 3 of the drawings. The lower leg of the passage or way 25^a, in addition to being inclined longitudinally, as shown, at its forward or delivery end, has a lateral inclination, as indicated at 29, Fig. 3, so that the projectiles contained therein will pass across the delivery end of the passage 25 and deliver its projectiles into the feed-orifice 22.

It is desired, of course, that the delivery end of the second projectile passage or way 25^a shall be cut off from the other way 25 and the feed-orifice until the first section of the magazine has become exhausted of its projectiles, and this is accomplished by means of a sliding gate 30, which is adapted to be projected into the magazine between the delivery-mouths of the projectile-ways, as shown most clearly in Fig. 3, and when the first section of the magazine has become exhausted to be withdrawn to permit the projectiles to pass from the second way across the first and into the feed-orifice.

The magazine is shown as conveniently constructed of three parts held together by bolts 31; but I do not restrict my invention to this construction, as it may be otherwise formed and provided with the projectile-ways described. The housing for the toothed segment and rack is preferably constructed as shown in Fig. 13 of the drawings, being provided with a longitudinal guideway 32, in which the rack reciprocates.

The slot in which the pins projecting from the toothed rack move is continuous to the rear of the body of the cannon, whereby the projecting-spring, the plunger, and the rack may be readily withdrawn. All that is necessary to accomplish the withdrawal of the parts for repair, if such should be necessary, or for any other purpose is to remove the plug which closes the end of the spring-chamber, whereupon the spring may be withdrawn, as may be the plunger and the rack.

My invention provides a novel and simple rapid-fire toy cannon having magazine construction of large capacity in which the projectiles are carried in a single line, so that they will feed into the bore of the gun readily and without liability of becoming jammed in the magazine and being presented for projection singly in succession by reason of the novel feed-controller.

It will be understood, of course, that the projectiles may be small pellets or small rubber balls or of other suitable character.

Having thus described my invention, what I claim is—

1. In a toy cannon, the combination of a body having an elongated slot, of a projectile-magazine having communication with the interior of said body, a spring-actuated plunger

arranged in said body, means for retracting said plunger consisting of a toothed rack and rotary toothed segment located outside of the cannon-body, and devices passing through the elongated slot in the cannon-body and connecting the rack with the plunger, substantially as described.

2. In a toy cannon, the combination of a body having an elongated slot, of a projectile-magazine having communication with the interior of said body, a spring-actuated plunger arranged in said body, means for retracting said plunger consisting of a toothed rack and rotary toothed segment located outside the cannon-body, devices passing through the elongated slot in the cannon-body and connecting the rack with the plunger, and a housing for the rack and segment provided with a guideway for said rack, substantially as described.

3. In a toy cannon the combination with a body, of a projectile-magazine having communication with the interior thereof through an ammunition-orifice to deliver the projectiles into the bore of the cannon, a plunger arranged in the cannon, means for operating the plunger, and a pivoted projectile-feed controller projecting into the bore of the cannon in the path of the plunger and having a finger adapted to obstruct the ammunition-orifice, substantially as described.

4. In a toy cannon the combination with a body, a plunger arranged therein, and means for operating said plunger, of a projectile-magazine having communication with the interior of the cannon and provided with oppositely-inclined passages communicating at their converging ends, substantially as described.

5. In a toy cannon the combination with a body, a plunger arranged therein and means for operating said plunger, of a duplex projectile-magazine having communication with the interior of the cannon, and a gate for cutting off communication of one of the sections of the magazine, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHAS. T. BONN.

Witnesses:
JOHN H. FRANCIS,
GEO. W. REA.