No. 631,325. Patented Aug. 22, 1899.

A. F. ROCKWELL.

ALARM BELL MECHANISM.

(Application filed Mar. 18, 1897.)

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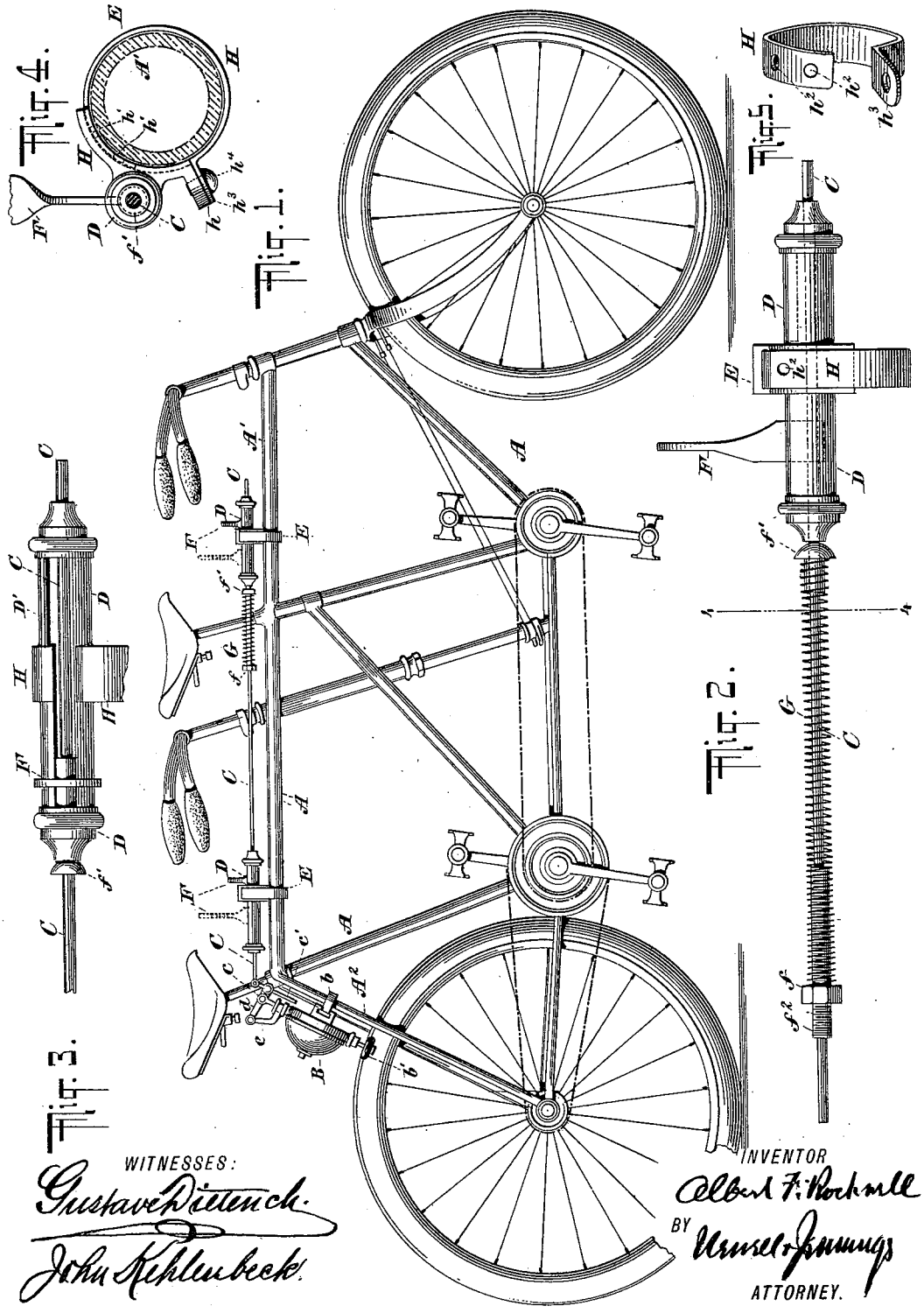


Fig. 1.

Fig. 4.

Fig. 5.

Fig. 2.

Fig. 3.

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Fig. 9.

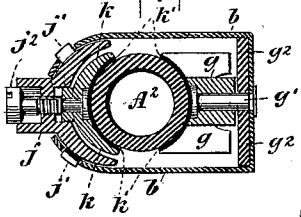


Fig. 6.

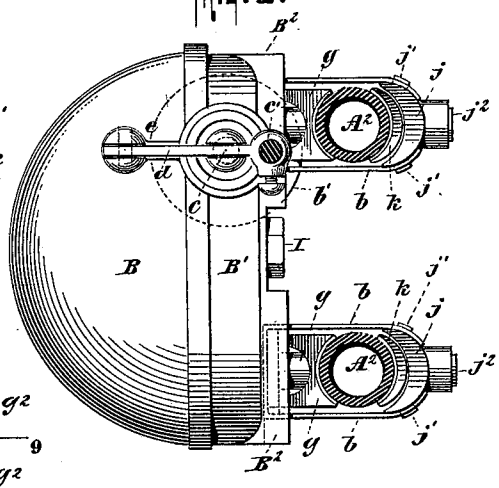


Fig. 12.

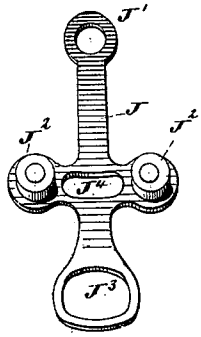


Fig. 10.

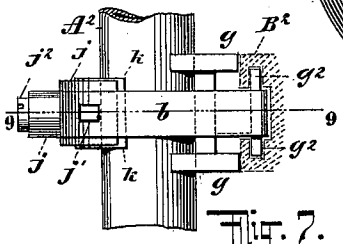


Fig. 11.

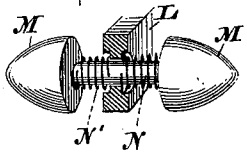


Fig. 7.

Fig. 8.

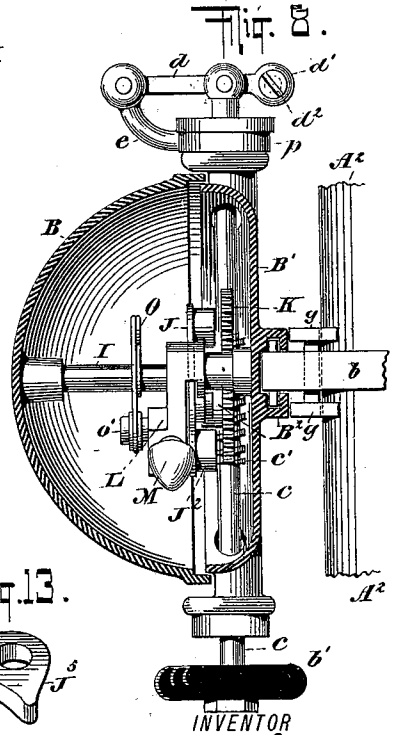


Fig. 13.

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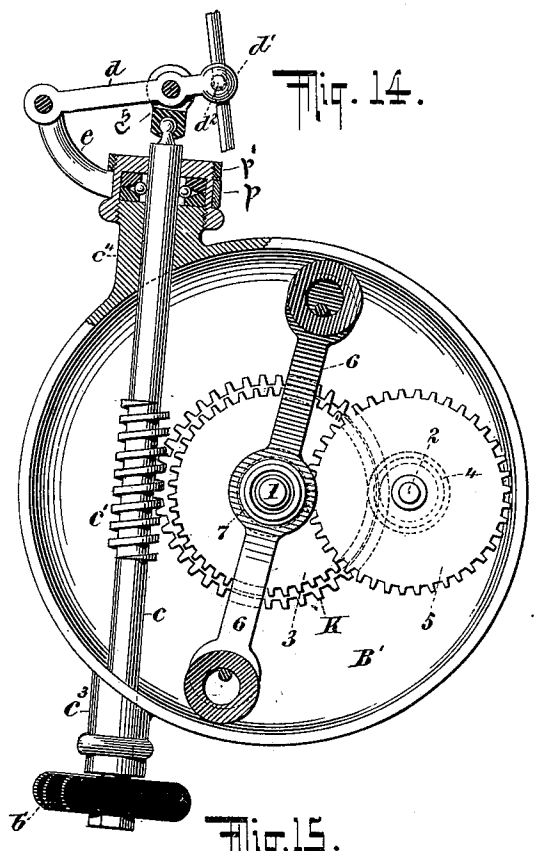
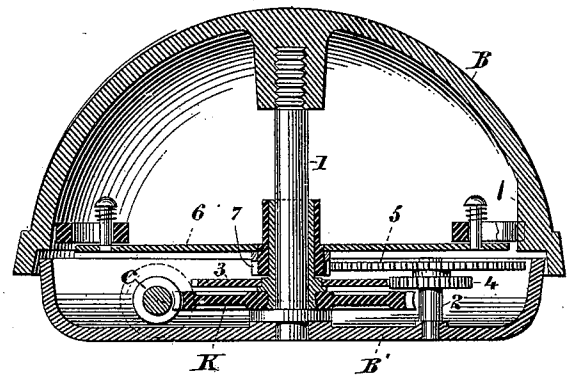


Fig. 14.

Fig. 15.



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UNITED STATES PATENT OFFICE.

ALBERT FENIMORE ROCKWELL, OF BRISTOL, CONNECTICUT, ASSIGNOR TO THE NEW DEPARTURE BELL COMPANY, OF SAME PLACE.

ALARM-BELL MECHANISM.

SPECIFICATION forming part of Letters Patent No. 631,325, dated August 22, 1899.

Application filed March 18, 1897. Serial No. 628,132. (No model.)

To all whom it may concern:

Be it known that I, ALBERT FENIMORE ROCKWELL, of Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Alarm-Bell Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to provide a gong-bell and mechanism for controlling its action for attachment to bicycles, vehicles, or any moving object to sound an alarm at the will of the rider. Many efforts have been made to produce such a bell and mechanism, but not, so far as I am aware, with any marked degree of success. Various attempts also have been made to produce bells, particularly for bicycles, which are usually called "continuous-ringing" bells—that is to say, a bell which will give forth an alarm at stated intervals or sound continuously. I am not aware that the efforts put forth in this direction have so far met with large success.

For the purpose of overcoming the difficulties heretofore encountered and of meeting the requirements of a bell which shall be rung by reason of some attachment to a moving vehicle and which shall be at will silent or continuous-ringing my invention consists in the details of mechanism and other various combinations hereinafter more particularly described, and pointed out in the claims. For the purpose of making my invention clear I have chosen to show its embodiment by attachment to a tandem bicycle, as that is the use to which it is perhaps best adapted. It can, however, be attached to a sole bicycle or to any other vehicle by suitable adjustment of the various mechanisms.

Reference is to be had to the annexed drawings and to the letters and figures marked thereon, forming a part of this specification, the same letters and figures designating the same parts or features wherever they occur.

Figure 1 is a side elevation of a tandem bicycle, slightly in perspective, with my invention applied thereto. Fig. 2 is a detailed side view of locking device for the bell-controlling mechanism. Fig. 3 is a plan view of said mechanism. Fig. 4 is a plan view in detail of said mechanism on line 4 4 of Fig. 2, with parts broken away so as to show the construction from said line up to and including the clamping-band E. Fig. 5 is a detached detailed perspective view of the clamping-band E. Fig. 6 is a plan view of the bell attached to the rear fork of the bicycle-frame. Fig. 7 is a face view of the striking mechanism with the gong removed. Fig. 8 is a section of the gong and striking mechanism taken on line 8 8 of Fig. 7. Fig. 9 is a horizontal sectional view of the adjustable attaching-clips on line 9 9 of Fig. 10. Fig. 10 is a side view of the same. Fig. 11 is a detail perspective section of the striker. Fig. 12 is a detail perspective view of the striker-actuating lever. Fig. 13 is a detail perspective view of the cam oscillating the actuating-lever. Fig. 14 is a plan view, and Fig. 15 is a vertical sectional view, of a modification of the striking mechanism.

A is the frame of the bicycle.

A′ is the top main tube, to which the rod C, controlling the bell-actuating mechanism, is clamped at E.

A^2 A^2 are the tubes forming the supporting-fork of the bicycle, to which the bell is clamped at *b b*, Figs. 1 and 6.

B is the gong of the bell itself, which is here represented as screwed onto a central post I, fixed to the base-piece B′.

The controlling-rod C is attached to the main tube A a little above and at one side by as many latching devices as there are riders. In the present case there will be two attached to the tube at E E. The drawings show the rod raised somewhat above the tube for the sake of clearness.

D is the latching device, which consists, substantially, of a cylinder with ends provided with apertures, so that the rod C will play freely therein. This motion is controlled by the latch F, which is clamped upon the rod C, so as not to permit longitudinal motion to the latch F upon C, but to allow circular motion about it. The cylinder is broken away or slotted to permit free movement of the latch F longitudinally therein. The slot is widened at D′ to permit a limited circular motion to the latch F.

H is the clamp-supporter made integral with D or secured firmly thereto by brazing or otherwise. It is applied about at the center of the cylinder and on the left presents a shoulder to restrict the motion of the latch when turned down into the enlarged slot D'. It is provided at h with a tapped and threaded ear, to which the end of the flexible strap E is fixed at h^3 by the screw h^4. The strap is provided with holes at different points h^2 h^2 to adjust it to tubes of different diameters. On the inner upper curved surface of H is a short stud. The strap is fixed at one end to the ear h, passed round the tube, drawn tight, and the end h' passed under the holder H and fastened by passing the orifice h^2 over the stud.

At a suitable distance back of the latching device D a section of the rod C, f^2, is screw-threaded or a screw-threaded cylinder is applied thereto.

G is a spiral spring, which is confined by the nut f at one end and the head f' at the other. f' butts against the end of the latching device D. Posteriorly the rod hinges into the rod C'.

b' is a roller adapted to engage with the rubber tire of the wheel. It is fixed on a spindle c, which is journaled in two sides of the base B' of the bell at c^3 c^4 and passes through it at one side. Upon this spindle is a worm c^2.

A collar p is applied loosely to the case of the journal c^4, with an arm e projecting backward and upward. This collar is kept in place by the milled screw p'. An arm d is hinged to the end of the arm e, and this is provided with a bulb d', through an aperture in which passes the rod C', where it is adjustably fixed by the set-screw d^2. The upper extremity of the rod c is provided with an end piece c^5, to which it is fastened by a loose ball-joint, so that c may turn freely in c^5 and have play enough to permit the arm d to work freely up and down. The arm d is hinged into the end of c^5. The base of the bell is provided with a grooved track B^2, in which are adjustably secured the clamps which fasten the bell to the forked tubes A^2 A^2. These clamps consist of flexible straps b, attached to a block with shoulders g^2, which slide into the grooved base B^2. Blocks g are held in place by the pin g', fitting square against the base g^2 and rounding to fit the tube A^2. k is a block similarly fitting around the tube A on the opposite side, and about this fits the yoke j, provided with a screw-threaded aperture, into which fits the screw j^2. Upon the yoke at each side are studs j' j', over which are fastened the straps b by apertures therein.

The base of the bell having been adjusted to the proper position on the fork, the clamps are slipped along the grooves B^2 until opposite the tubes, the blocks g are inserted and the clamps placed against the tubes A^2, the blocks k are adjusted against the opposite face of the tube, the yokes j are placed against the block, and the straps b fastened over the studs j'. The screw j^2 forces the blocks toward the tubes against the yokes j, which are held by the straps b at j'. Thus the bell is securely fastened by clamps which are adjustable to tubes of different diameters and to a considerable range of divergence.

K is a gear-wheel loose upon the central post, meshing with the worm and through which the mechanism for sounding the bell is actuated.

The operation is as follows: Either rider desiring to set the bell in operation pushes the latch F forward and turns it downward to the left until it takes the position shown in Fig. 1, when the handle catches against the shoulder of the support H. This movement advances the rod C, and with it the nut f, which compresses the spring G against the ear f', which butts upon the latching device D. Advancing the rod C depresses the rod c through the various arms and connections. This brings the roll b' into contact with the tire of the wheel, causing it to change from the dotted-line to the full-line position illustrated in Fig. 7. The revolution of the wheel will cause the roll b', the spindle c, and worm c^2 to revolve with a rapidity commensurate with the speed of the wheel. The gear K is rotated by engagement with the worm c^2, and thus is provided actuating means for the bell mechanism. When there is no longer need of an alarm, the rider releases the latch F, which takes the position shown in dotted lines in Fig. 1 and full lines in Figs. 2 and 3. The spring G retracts the rod C, which through the intermediate levers raises the rod or plunger c, and with it the roll b', from the full-line position, Fig. 7. The roll is thus thrown out of engagement with the tire, and the mechanism ceases to operate.

The bell-operating mechanism to be combined with the bell-controlling mechanism may be of different varieties, of which I will describe two. One form is illustrated by Figs. 7, 8, 11, 12, and 13. T is a post fixed near the edge of the base B', opposite the worm. This post serves as a pivot and support for the striker-mount, which is preferably, but not necessarily, cast in one piece and consists of the hub U, from which extends the crank or arm L. A roll W is fixed to the under side of the crank and a roll o' to the upper side. At the end of the crank is attached a double-ended striker, which may be of any form which will permit of a forward-and-backward motion in the line of its length. I have found the form herein illustrated effective in a bell of the size demanded in a case such as is illustrated herein. M M are striker-heads attached to a rod loose in an aperture near the end of the crank L. Between the striker-heads and the crank are coiled about the rod spiral springs N N'. O is a bent single-wire spring attached to the roll O' at one end and coiled loosely about the central post I at the other. J is the actuating-lever, fixed to a post

at J' at the side of the base opposite the post T, having a transverse elongated slot J^4 placed over the central post I and an enlarged slot J^3 at the opposite end to engage the roll W, fixed to the under side of the crank L. On the under side of the two ears on opposite sides of the slot J^4 are fixed rolls J^2 J^2. The lever is shown in Fig. 12 as viewed from below. J^5 is a cam loose upon the central post I, but either integral with or fixed to the gear-wheel K. The adjustment is such that the striker-heads are maintained normally out of contact with the gong by reason of the roll W being against the periphery of the slot J^3. The lever is in turn limited in motion by the slot J^4 and the central post. As the gear rotates in either direction the cam, coming in contact with the rolls J^2, drives the lever from one side to the other. The cam and rolls are shown in dotted lines in Fig. 7. The lever through the slot J^3 being against the roll W will draw the striker-mount to a point where the spring *o* will operate to drive it quickly and sharply toward the gong, where its motion will be checked suddenly by the roll W striking against the opposite periphery of the slot J^3. The striker will continue its motion against the force of the springs N N' and impinge against the gong and be immediately retracted and held away from the gong by said springs. Whereupon the gear continuing to revolve drives the lever to the opposite side, when the operation is repeated. It will be observed that the operation is the same in whichever direction the gear is rotated and that the rapidity of the strokes is controlled by the rapidity of revolution of the wheel A^3, there being a single sharp stroke for a certain number of revolutions of the wheel.

My invention is equally applicable to the operation of a rotary bell, and this modification is illustrated in Figs. 14 and 15. In this modification the gong is provided with a lug 1. A toothed wheel 3 is fixed to the gear-wheel K and revolves with it. 2 is a post fixed to the base and provided with a pinion 4, which meshes with the toothed wheel 3, it is also provided with a large gear 5. 6 is the revoluble striker-arm, provided with strikers loosely carried upon the central post and provided with a pinion upon one side which meshes with the gear 5. When the gear K rotates, the striker-arm will be caused to revolve by the train of gearing and sound an electric or continuous alarm in a well-known manner.

I have attempted to describe one form of my invention, with two modifications of the striking mechanism with considerable minuteness, but by this I do not intend to limit myself to the exact details of construction herein shown. It is clear, for example, that the controlling mechanism may be varied in detail without departing from the spirit of my invention. The spring G may be used to hold the roll upon the wheel, so that the operation of the latching device will be reversed, a plan which, indeed, I have practiced with success, and in many such details changes may be made. The clamps for attaching the bell to the forked tubes of the bicycle may be of any suitable variety also. The construction I have herein illustrated I have found practical and effective in use.

What I claim is—

1. In bicycle alarm-bell mechanism, a suitable bell and means of attachment to a bicycle-frame, bell-striking mechanism, a plunger traversing the interior of the bell and provided with a worm within the bell and a roll to rotate the plunger by contact with the tire of the wheel, a gear-wheel meshing with the worm connected with means to actuate the bell mechanism, and means by which the rider at will may cause the roll to remain in continuous contact with the tire or in continuous non-contact therewith, substantially as described.

2. In bicycle-bell mechanism, a suitable bell provided with a lug and means of attachment to a bicycle-frame, a plunger traversing the interior of the bell and provided with a worm within the bell and a roll to rotate the plunger by contact with the tire of the wheel, a gear loose on the central post, meshing with the worm and provided with a secondary gear, a revoluble striker-arm loose upon the central post, with a pinion upon one side, carrying loosely-mounted strikers adapted to strike the lug upon the gong, gearing intermediate of the secondary gear and said pinion, and means by which the rider at will may cause the roll to remain in continuous contact with the tire or in continuous non-contact therewith, substantially as described.

3. In bicycle alarm-bell mechanism, a suitable bell and means of attachment to the bicycle-frame, a latching device clamped upon the main tube of the bicycle, a rod working in said device provided with a latch operating as described, a spring fixed to the rod at one end and bearing against the frame of the latching device at the other to retract the rod as described, a plunger traversing the interior of the bell and provided with a worm within the bell and a roll to rotate the plunger by contact with the tire of the wheel, connections between the upper end of said plunger and said rod arranged substantially as described, so that the rider may maintain the roll in continuous contact or continuous non-contact with the tire at will, a gear loose upon the central post of the bell meshing with the worm and rotated thereby, and bell-striking mechanism substantially as described actuated by means of said gear, substantially as described.

4. Mechanism for controlling the operation of a bicycle-bell comprising a latching device consisting of the guide attached to the main tube of the bicycle, the rod with attached latch working loose in said guide, a spring to retract the same, and crank and hinge connections by which, through said latch, a roll may be held in continuous contact or con-

tinuous non-contact with the tire of the wheel, substantially as described.

5. In bicycle alarm-bell mechanism, a plunger rotated by a roll in contact with the tire of the wheel and constructed with a worm thereon, bell-striking mechanism, and mechanism for actuating the bell-striking mechanism operated by said worm, and means by which the rider at will may cause the roll to remain in continuous contact, or continuous non-contact with the tire, substantially as described.

6. An alarm-bell provided with adjustable clamps for attaching it firmly to the fork of the bicycle and striking mechanism within the same, mechanism for actuating said striking mechanism, a plunger rotated by a roll in contact with the tire and provided with a worm in operative connection with said actuating mechanism, and means by which the rider at will may cause the roll to remain in continuous contact, or continuous non-contact with the tire, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALBERT FENIMORE ROCKWELL.

Witnesses:
JOHN J. JENNINGS,
ROGER S. NEWELL.