(No Model.)

3 Sheets—Sheet 1.

W. J. McCAUSLAND.

PRINTING TELEGRAPH.

No. 266,176. Patented Oct. 17, 1882.

Fig. 1.

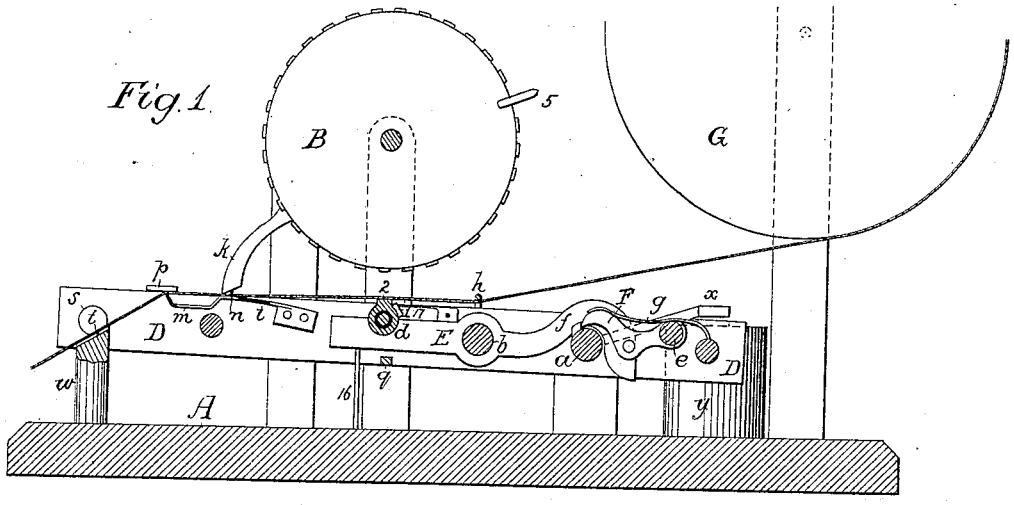
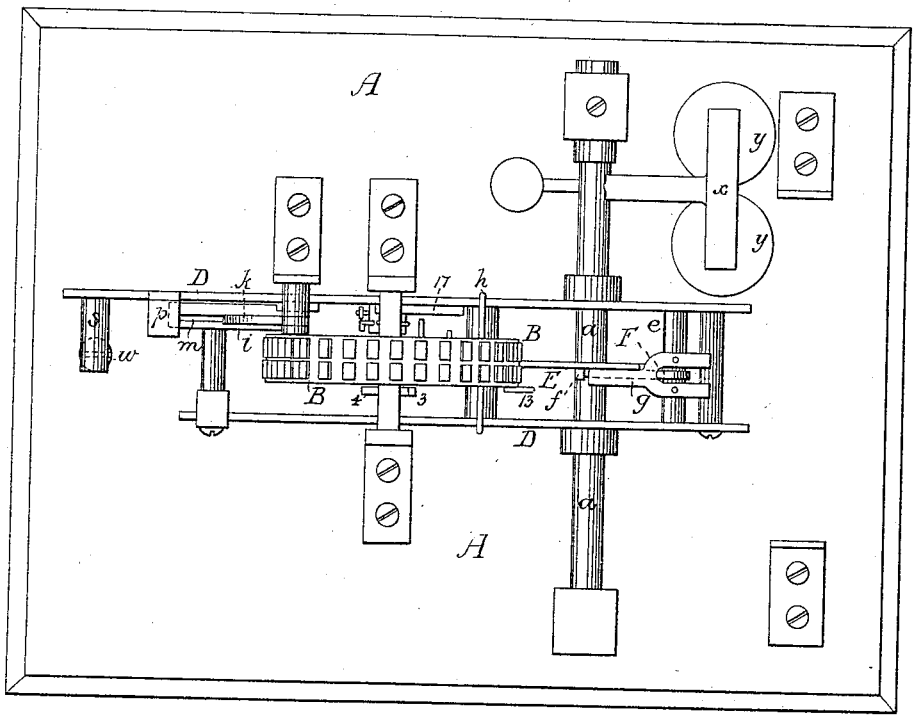


Fig. 2.



Witnesses:
David S. Williams
Harry Drury

Inventor:
William J. McCausland
by his attorneys
Howson and Sons

(No Model.) 3 Sheets—Sheet 2.

W. J. McCAUSLAND.

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No. 266,176. Patented Oct. 17, 1882.

Fig. 3.

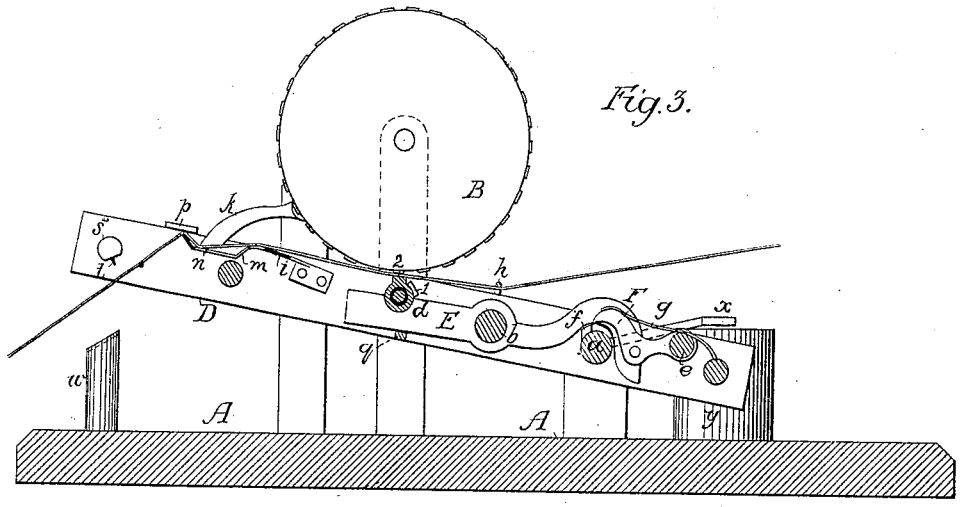


Fig. 5.

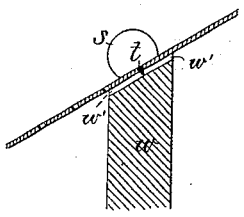


Fig. 4.

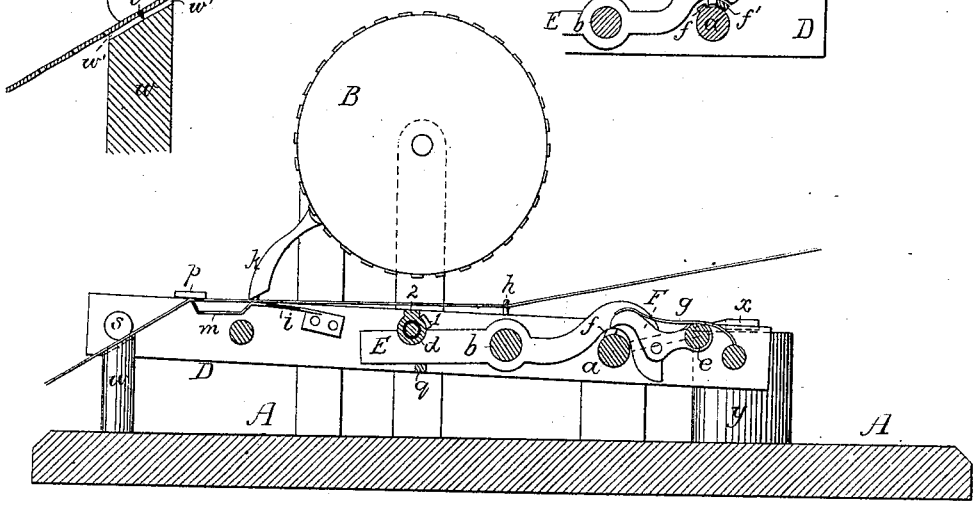
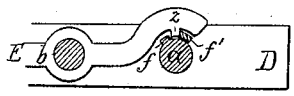


Fig. 6.



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(No Model.) 3 Sheets—Sheet 3.

W. J. McCAUSLAND.

PRINTING TELEGRAPH.

No. 266,176. Patented Oct. 17, 1882.

Fig. 7.

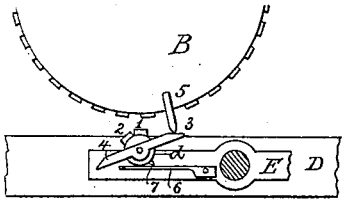


Fig. 8.

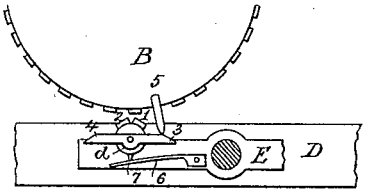


Fig. 9.

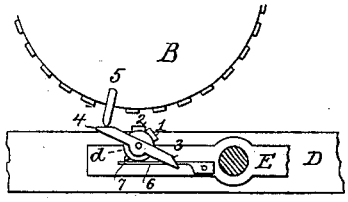


Fig. 11.

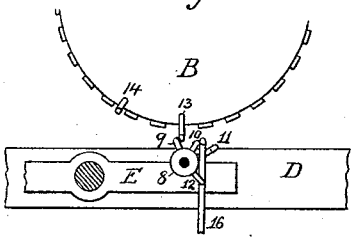


Fig. 12.

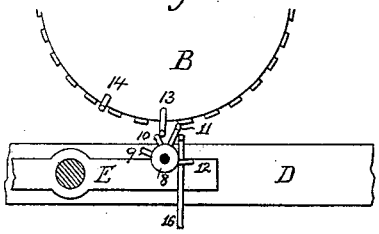


Fig. 13.

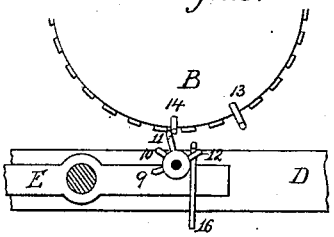


Fig. 10.

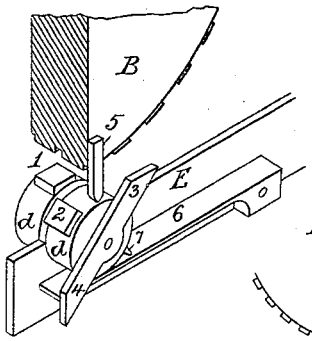


Fig. 14.

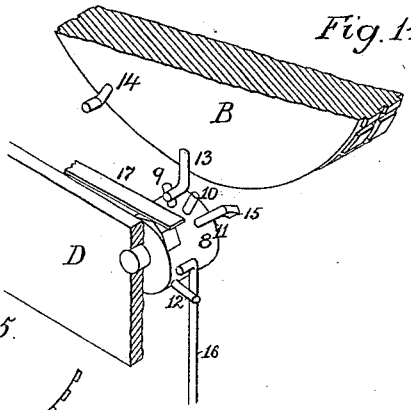
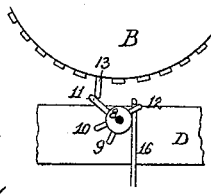


Fig. 15.



Witnesses:
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Harry Drury

Inventor
William J. McCausland
by his Attorneys
Howson and Sons

UNITED STATES PATENT OFFICE.

WILLIAM J. McCAUSLAND, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO WILLIAM W. KURTZ, OF SAME PLACE.

PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 266,176, dated October 17, 1882.

Application filed February 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. McCAUSLAND, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Stock Telegraph-Instruments, of which the following is a specification.

My invention relates to certain improvements in that class of telegraph-instruments which are used for recording stock-quotations, &c.; and the objects of my invention are to prevent interference with the movement of the type-wheel due to too long a contact of the strip of paper therewith, to provide for the definate feeding of the paper strip, to prevent the derangement of the instrument by the pulling of said strip, and to provide simple means for bringing the type-wheel to the zero position after the sending of a message, and for shifting the printing-block from the letters to the figures on the type-wheel.

In the accompanying drawings, Figure 1, Sheet 1, is a vertical section of sufficient of a stock telegraph-instrument to illustrate my invention; Fig. 2, a plan view of the same; Figs. 3 and 4, Sheet 2, sectional views of a portion of the instrument, with the parts in different positions from those shown in Fig. 1; Fig. 5, an enlarged section of the strip-retaining device; Fig. 6, a modification of part of the invention, and Fig. 7 to 15, inclusive, Sheet 3, detached views of the devices for bringing the type-wheel to the zero position and for shifting the printing-block.

A is the base of the instrument, to suitable standards on which are adapted a rock-shaft, *a*, and the journals of a type-wheel, B. Hung to the rock-shaft *a*, so as to be free to vibrate thereon, is a frame, D, comprising suitable side plates and transverse connecting-bars. To bearings in this frame D are adapted the ends of the fulcrum-bar *b* of a lever, E, one arm of which carries a rock-shaft, *d*, the opposite arm of the lever being bent to accommodate the rock-shaft *a*, and being connected to a finger, F, which is hung to a transverse bar, *e*, of the frame, and is adapted to engage with a lug, *f*, on the rock-shaft *a*, a spring, *g*, acting on the finger and tending to maintain the same in engagement with the lug *f*. The type-wheel B has two rows of type, one row containing the letters of the alphabet and the other containing the numerals and fractions used in recording stock-quotations. The rock-shaft *d* has two blocks, 1 2, one of which is adapted to be used in conjunction with the letters and the other with the numerals on the type-wheel, the blocks being brought into action alternately, as described hereinafter, so as to record either letters or figures in the printed message. The rock-shaft *a* carries the armature *x* of the electro-magnet *y*, whereby the frame D is operated, as described hereinafter.

The strip of paper on which the message is to be printed is drawn from a roll, G, and after passing under a yoke, *h*, on the frame D, and between the type-wheel B and impression-block, is acted upon by a feeding device comprising a spring-plate, *i*, with slot *m*, and a pivoted arm, *k*, with pin *n*, adapted to the slot *m* of the plate *i*, the end of said plate being bent so as to bear against a lug, *p*, on the frame and confine the paper. At the end of the frame D is a stud, *s*, having a projecting pin, *t*, and on the base A is a post, *w*, in the upper end of which is a slot, *w'*, adapted for the reception of the pin *t* of the stud *s*. A simple opening in the top of the post may take the place of the slot, however.

I have not shown in the drawings the devices for operating the type-wheel B, as these are similar to those usually employed, and form no part of my invention. In description it will be sufficient to say that the type-wheel is intermittently rotated or partially rotated, so as to bring the desired letters or characters in succession above the impression-block of the rock-shaft *d* on the frame D, the latter being operated and the strip of paper fed forward in the intervals between the operation of the type-wheel.

Usually the frame D is secured to the rock-shaft *a*, and as a consequence the impression-block on each operation of the frame holds the paper in contact with the type-wheel until the magnet *y* ceases to attract the armature *x*. It frequently happens that the armature is held by the magnet for some time after it should have been released, and the type-wheel is prevented from turning by contact of the paper

therewith, the result being the derangement of the operating mechanism and the rendering of the message unintelligible. The construction which I adopt provides for the release of the frame D before the armature *x* reaches the limit of its movement toward the magnet *y*, so that the retention of the armature will not prevent the proper rotation of the type-wheel. This result is effected as follows: When the frame D is in the position of rest, as shown in Fig. 1, the paper is free from contact with the type-wheel, and the latter can be rotated. The finger F engages with the lug *f* on the rock-shaft, and serves to lock the frame D thereto, so that when a current passes through the magnet *y* and the armature *x* is attracted the frame D is vibrated with the rock-shaft *a* until the impression-block on the rock-shaft *d* presses the paper against the type-wheel, when, the movement of the frame D continuing, the shaft *d* will be depressed and the lever E will be operated so as to lift the finger F free from the lug *f*, as shown in Fig. 3, whereupon the frame D will at once fall to its original position, as shown in Fig. 4, and the type-wheel will be free to turn. Lugs *q* are formed on the side bars of the frame D to prevent the undue depression of the rock-shaft *d*. When the armature is released from the control of the magnet the rock-shaft *a* is restored to the position shown in Fig. 1 by means of a suitable spring or a counter-weight, as shown in Fig. 2. On each vibration of the frame D the strip of paper will be fed forward to a certain extent, owing to the action of the arm *k* and plate *i*, the elevation of the plate causing the arm to swing outward, so that the pin *n* traverses the slot *m* and carries the paper with it, as shown in Fig. 3. On the downward movement of the plate the pin *n* is withdrawn from the paper and the arm *k* swings back to its first position, as shown in Fig. 4.

The plate *i* is bent, as shown, so as to prevent an undue elevation of the end of the arm *k*. A plate, rigidly secured to the frame D and having a slot, *m*, may in some cases take the place of the spring-plate *i*; but the use of the latter is preferred, as it permits the clamping of the paper between the end of the plate and the projection *p*, and thus prevents the pin *n* from drawing the paper backward on the downward movement of the plate *i*.

When the frame D is in the position of rest, as shown in Figs. 1 and 4, all movement of the strip of paper is prevented, owing to the pin *t* of the stud *s*, and by this means I overcome a serious objection to the ordinary form of stock telegraph-instrument, said objection being the liability of the mechanism to derangement caused by bringing the paper into contact with the type-wheel while the strip is being pulled through the machine by an observer, a partial turning of the type-wheel being thus effected, so that it does not accord with the transmitting-instrument.

Various modifications of the mechanism for releasing the frame D from the control of the rock-shaft *a* may be devised within the limits of my invention. For instance, instead of the spring-finger F, the lever may have a lug, *z*, adapted to engage with a lug, *f*, on the rock-shaft and a lug, *f'*, on the frame D, as shown in Fig. 6, the lug *z* serving to lock the frame D to the rock-shaft so long as it engages with the lugs *f f'*, but the frame being freed from the control of the rock-shaft as soon as the said lug *z* is lifted from between the lugs *f f'*.

The devices for bringing one impression-block after the other into operation, so as to print either letters or figures on the strip of paper, are shown in Figs. 7 to 10, Sheet 3, and comprise arms 3 4, secured to the rock-shaft *d* and adapted to be acted upon by a lug, 5, on the type-wheel. Thus when the rock-shaft is in the position shown in Fig. 7 the impression-block 1, which acts in connection with the letter-row of the type-wheel, is uppermost and in use, the block 2, which acts in conjunction with the numeral-row, being depressed.

When it is desired to print numerals instead of letters, the type-wheel is moved to the position shown in Fig. 7, so that on the elevation of the rock-shaft the lug 5 will strike the arm 3, as shown in Fig. 8, and thus cause a partial rotation of the rock-shaft, so as to bring the block 2 uppermost and throw the block 1 out of use. The reversal of this operation is effected by first bringing the type-wheel into the position shown in Fig. 9, so that the lug 5 is in line with the arm 4, whereupon on the elevation of the rock-shaft by the frame D, the lug will come into contact with said arm 4, and will depress the same and partially rotate the rock-shaft. The action of the lug 5 on the arms 3 and 4 simply commences the movement of the rock-shaft, the completion of the movement being due to the action of a spring-plate, 6, upon a lug, 7, carried by the rock-shaft, the action of the spring being to impart an abrupt movement to the shaft as soon as the lug has passed the center line in one direction or the other. The lug and spring also serve as a means of retaining the shaft in either of its extreme positions, as will be readily understood on reference to Figs. 7 and 9.

In working telegraph-instruments of the class to which my invention relates it is usual, after completing a message, to cause the type-wheel to make two or more complete revolutions, and then to bring it to a standstill at the zero or starting point, ready for proceeding with a new message. The means which I adopt for permitting this rotation of the type-wheel and effecting the stoppage of the same at the zero-point are shown in Figs. 11 to 14, and are as follows: To a pin on one of the side bars of the frame D is hung a sleeve, 8, from which project four pins, 9, 10, 11, and 12, and on the type-wheel are two bent pins, 13 and 14, the former projecting farther beyond the periphery of the type-wheel than the latter. The pin 11 of the sleeve 8 is also longer than the pins

9 and 10, and is furnished at the end with a lug, 15. The normal position of the sleeve 8 and its pins is that shown in Fig. 11, and the sleeve is restored to this position on each elevation of the frame D by the action of a bent rod, 16, on the pin 12. When the type-wheel has several revolutions imparted to it, however, without any operation of the frame D, the result will be that the pin 13 will first strike the pin 9 and partially turn the sleeve. On the next rotation of the wheel the pin 13 will strike the pin 10, as shown in Fig. 12, and still further rotate the sleeve, and on the third turn of the type-wheel the pin 14 will strike the lug 15 of the pin 11, and will be held thereby, as shown in Fig. 13, the sleeve being prevented from turning further by a suitable stop. The pin 12 then occupies a position so far removed from the bent end of the rod 16 as to permit a slight elevation of the frame D before said pin will come into contact with the bent end of the rod, and this movement is sufficient to free the pin 14 of the type-wheel from the control of the lug 15 of the pin 11, so that upon continuing the upward movement of the frame D the sleeve 8 will be restored to its original position by the action of the bent rod 16 on the pin 12. In printing the message each revolution of the type-wheel will effect a partial rotation of the sleeve 8, owing to the action of the pin 13 upon the pin 9; but, as after each separate operation of the type-wheel there is an operation of the frame D, the sleeve 8 will be thereby restored to its normal position and will not interfere with the movements of the type-wheel necessary in transmitting a message.

In order to prevent undue movement of the sleeve 8 by the action of the pin 13 upon the pins 9 and 10, I employ a spring, 17, which acts upon flattened portions of the sleeve and serves to retain the same in the positions to which it is adjusted.

In Fig. 15 I have shown a modification of my invention, in which the pin 14 is dispensed with, all of the pins 9, 10, and 11 acting in conjunction with the single pin 13 on the type-wheel, the length of the pin 11 permitting the pin 13 to pass beyond the center line of the type-wheel, as shown, so that it will be out of the path of the pins 9 and 10 as the frame D is elevated and the sleeve 8 rotated.

I claim as my invention—

1. The combination, in a telegraph-instrument, of the pivoted frame D and impression-block, the type-wheel B, the rock-shaft *a*, actuated by a magnet, and a device for clutching the frame to and releasing it from the said rock-shaft, all substantially as specified.

2. The combination, in a telegraph-instrument, of the type-wheel B, the pivoted frame D, the rock-shaft *a*, actuated by a magnet, a lug or finger adapted to clutch the frame D to the rock-shaft, and a lever, E, hung to the frame D, and having at one end the impression-block, and connected at the opposite end to the clutching lug or finger, as set forth.

3. The combination, in a telegraph-instrument, of a type-wheel, an impression-block, and means for actuating the same, with strip-retaining devices having a pin, *t*, for puncturing and holding the strip of paper, as set forth.

4. The combination of the strip-printing devices with the pivoted frame D, having a slotted plate, *i*, and the pivoted arm *k*, having a pin adapted to the slot of the plate, whereby the strip of paper is fed forward on each vibration of the frame, as set forth.

5. The combination of the pivoted frame D, having the spring-plate *i* and projection *p*, forming a strip-retainer, with the pivoted arm *k*, adapted to act in conjunction with the plate *i* to effect the feeding of the paper strip, as set forth.

6. The combination of the duplex type-wheel with the pivoted printing-frame D and the rock-shaft *d*, having two radial impression-blocks, 1 2, arranged in respect to each other and to the rows of type on the wheel, as set forth, whereby on the partial rotation of the rock-shaft one of said blocks is brought into use and the other is thrown out of operative position, as set forth.

7. The combination of the duplex type-wheel having a pin, 5, the frame D, and the rock-shaft *d*, having two radial impression-blocks, 1 2, and two arms, 3 4, as specified.

8. The combination of the duplex type-wheel having a pin, 5, the frame D, the rock-shaft *d*, having impression-blocks 1 2, arms 3 4, lug 7, and the spring 6, as set forth.

9. The combination of the type-wheel and pivoted printing-frame D, with stop mechanism, comprising a pin or pins on the type-wheel, and a sleeve hung to the frame D, and having pins adapted to engage with the pin or pins of the type-wheel, as specified.

10. The combination of the type-wheel having a pin or pins, the pivoted printing-frame D, the sleeve 8, hung to said frame D, and having pins adapted to engage with the pin or pins of the type-wheel, and a pin, 12, adapted to engage with the hooked pin 16 for restoring the sleeve to its normal position on the elevation of the frame D, as set forth.

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

WM. J. McCAUSLAND.

Witnesses:
HARRY DRURY,
HARRY SMITH.