No. 692,239. Patented Feb. 4, 1902.

G. W. COLLIN.

ACETYLENE GAS GENERATOR.

(Application filed Jan. 3, 1901.)

(No Model.) 2 Sheets—Sheet 1.

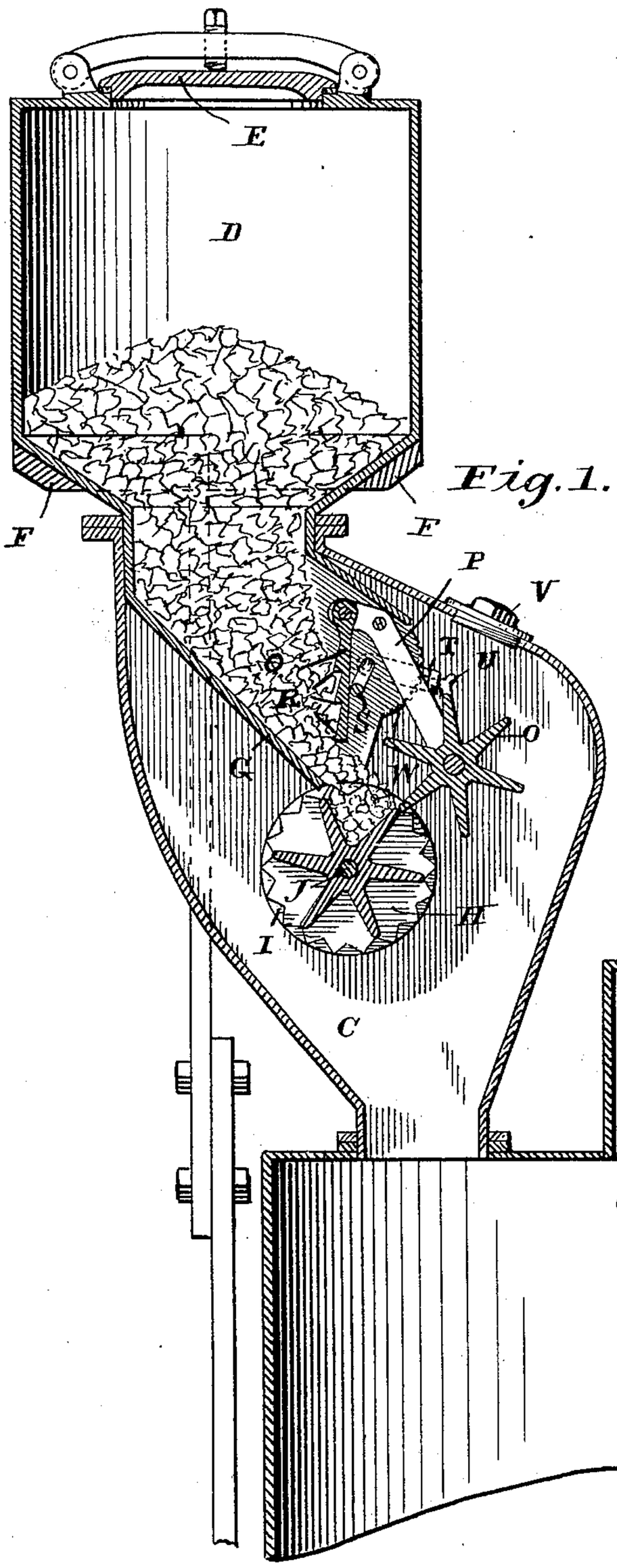

Fig. 1.

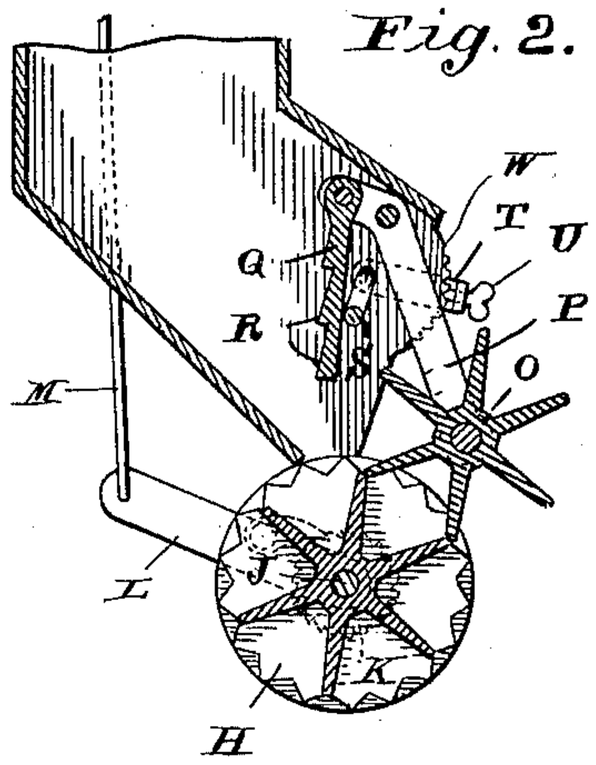

Fig. 2.

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Fig. 3.

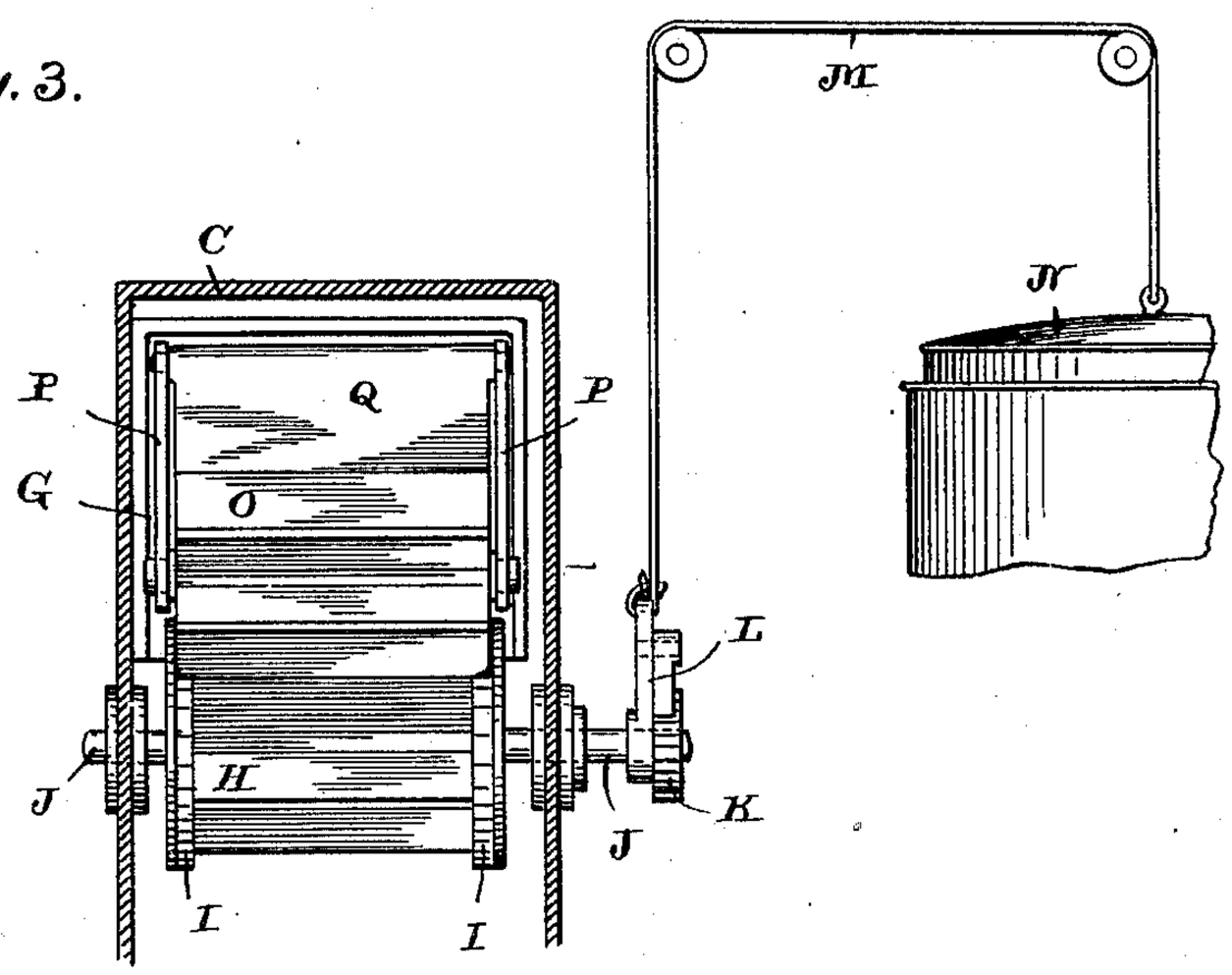


Fig. 4.

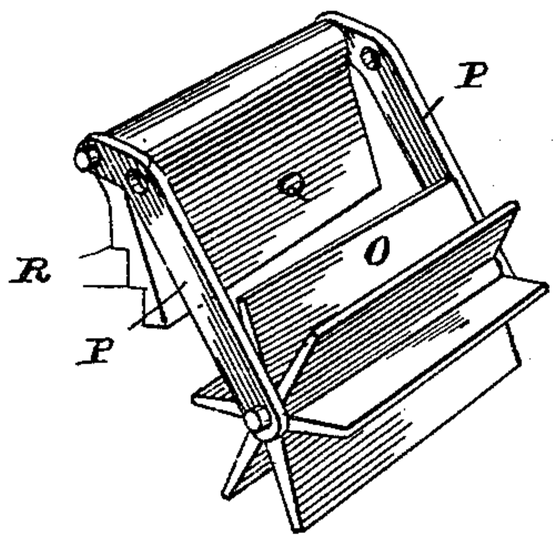
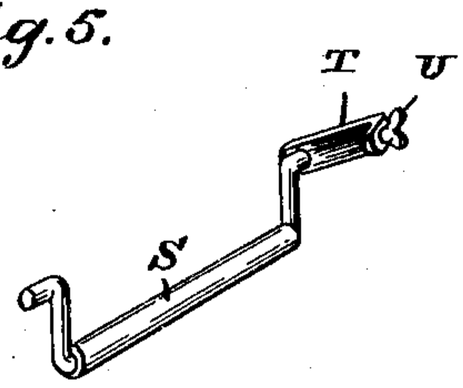


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE W. COLLIN, OF BRIDGEPORT, CONNECTICUT.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 692,239, dated February 4, 1902.

Application filed January 3, 1901. Serial No. 41,958. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. COLLIN, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Carbid-Feed Mechanism for Acetylene-Gas Machines, of which the following is a specification.

My invention relates to new and useful improvements in carbid-feed mechanism for acetylene-gas machines, and especially to that class designed to feed lump-carbid in a raw state from a hopper.

In a prior application filed by me for carbid-feed mechanism on September 19, 1900, Serial No. 30,500, I have shown, described, and claimed certain features which are in a measure common with some of those shown in this application; and the gist of this invention comprises improvements upon the mechanism shown in said prior application. My present improvements, however, are equally applicable to other forms of feeding devices, as will later be apparent.

It is the object of my invention to improve upon devices of the above class by providing a feeding device which may be automatically operated by the movement of the bell of the gasometer in such a manner as to deposit given charges of raw carbid into the generator with each lowering movement of said gasometer-bell; further, to so construct the above as to permit it to take said raw or irregularly-shaped carbid from the chute of the hopper, divide it into given charges, and successively deposit said charges in a generator with each operation of the bell before mentioned. I further provide means whereby the size of the outlet of the chute from the hopper may be adjusted to accommodate the size and regulate the flow of carbid as may be desired, and, finally, I provide an agitating device whereby a flow of carbid at the desired time is assured.

With the above objects in view my invention resides and consists in the novel construction and combination of parts shown upon the accompanying two sheets of drawings, forming a part of this specification, upon which similar characters of reference denote like or corresponding parts throughout the several figures, and of which—

Figure 1 shows a central vertical cross-section through a carbid-feeding mechanism embodying my invention and located intermediate of the hopper and generator. Fig. 2 is a further sectional detail of said feeding mechanism, the parts, however, being in a different position from that shown in Fig. 1. Fig. 3 is a front elevation of said feeding mechanism, illustrating the connection therefrom to the gasometer-bell whereby said feeding mechanism is operated. Fig. 4 is a perspective view of a part of my feeding mechanism, comprising a star-wheel, its supporting-links, and a deflected agitator hung from said links. Fig. 5 is a further perspective view of the mechanism employed for adjusting the position of the agitator to regulate the flow of carbid.

Referring in detail to the characters of reference marked upon the drawings, A indicates the top of a generator, which may be of any of the usual or preferred constructions, and B is a gas-outlet from said generator.

C represents a casing built upon the generator and inclosing the feeding mechanism. An opening is provided through the bottom of said casing to the generator for the passage of carbid from the feeding mechanism, which later will be more fully described. A cap V is provided in the top of this casing, through which access may be had to the feeding mechanism for repairs or otherwise. Within this casing is located feeding mechanism, and to the upper end thereof is connected a carbid-hopper D, having a charging-opening through its top and a sealable cover E to inclose the same. This hopper is mounted in a frame F, which can be supported on the floor, as will be apparent from the drawings. A chute G, preferably substantially square in cross-section, is connected to the bottom of the hopper and deflected to one side at substantially an angle of forty-five degrees. In line with the bottom of this chute I arrange the special feeding mechanism before mentioned, and which consists of a pocketed wheel H, as shown in Figs. 1, 2, and 3, preferably comprising an integral casting having a series of radial paddles and a circular web inclosing the ends, thus forming transverse pockets. The periphery of the inner edge of these end webs contains a series of notches

I, and in practice I prefer to use substantially three of these notches to each pocket, as shown in the drawings. This pocketed wheel is mounted upon the cross-shaft J, which latter is fitted in suitable bearings in the casing before mentioned. On the outer end of this shaft is mounted a suitable ratchet-wheel K, with a lever-and-pawl mechanism L, adapted to operate the same by reason of its connection M with the gasometer-bell N.

From the foregoing it will be noted that with the rise of the bell the lever and pawl are permitted to drop in a manner to engage one of the lower teeth of the ratchet-wheel, and as the gas is consumed from the bell and the latter drops said pawl and ratchet-wheel will be raised in a manner to turn the shaft and its pocketed wheel, thus conveying a charge of carbid from the mouth of the chute of the hopper and dropping it down through the opening of the casing to the generator. In order to prevent the pockets of this wheel from overflowing and to divide the carbid into charges of uniform quantities, so as to positively control the same, I use a star-wheel O, mounted in bell-crank links P P, secured to either side of the vertical walls of the chute. In practice the paddles of this star-wheel engage the notches I of the feed-wheel H, before mentioned, and also are designed to register with those of the feed-wheel below, as will be apparent from Figs. 1 and 2 of the drawings. It will thus be seen that in the feeding operation these two wheels operate together, one by the other, in a manner to successively receive, inclose, and deposit into the generator separate, distinct, and uniform charges of carbid from the chute of the hopper. Both of these wheels are preferably made of cast-iron, and it will be obvious that the weight of the top one is sufficient to insure it snugly riding in the notches of the lower one and turning therewith. Should one or more extra-large lumps of carbid be taken in between the wheels, the top one would rise by reason of its linked supports, thus allowing said charge to be fed through uninterrupted.

Between the rear end of the links above mentioned and within the chute I hang an agitating-gate Q, the rear face of which is provided with transverse shoulders R to engage the carbid which flows thereagainst from the hopper. This gate serves the double purpose of closing the chute from the hopper more or less, in accordance with its adjusted position, and the further and more important purpose of agitating the carbid at the proper time in a manner to insure its movement or flow from the chute into the pockets of the wheel below. This agitating movement of the gate is secured from the movement of the pocketed wheel H through the medium of the star-wheel and its hangers, as follows: With the movement of the two wheels in question and by reason of the peculiar engagement one with the other the uppermost one is given a slight vibratory movement, which of course is imparted to the hangers and through them to the agitator before mentioned. At the rear of the gate I provide an adjustable rocker-support S, which is preferably in the shape of a crank and is pivoted in the two vertical sides of the chute. This support is provided with an arm T at one end and contains a set-screw U, designed to engage the serrated edge W of the chute, so that by the movement of said arm the crank S is turned within its bearings in a manner to throw its loop portion backward or forward, thus adjusting the gate Q to and from the carbid in a manner to make the opening large or small, so as to better accommodate different sizes of carbid.

It will be obvious, of course, that the carbid of the hopper at all times readily flows into the chute; but from this chute said flow is checked by means of the gate before mentioned and, further, by the presence of the pocketed wheel at the mouth of said chute. It is further apparent and an important feature of my construction that the weight of the carbid is supported by the chute and not the feed-wheel and also that the carbid flows from said chute into the top pockets and against the forward part of the wheel, as seen in Figs. 1 and 2. The pressure of this flow, together with the weight of the carbid in the preceding pockets, insures an exceptionally easily operating feeding device, which is very desirable.

Having described the construction of my machine, I will briefly refer to its method of operation, which is as follows: Assuming that the machine is in operation and that the gasometer-bell is lowering by reason of its gas being used out and the other parts of the machine are in the positions shown, the connection M from said bell will draw up the lever L and its pawl in a manner to throw the pocketed wheel forward and dump a charge of carbid therefrom. Simultaneously with this operation the star-wheel will likewise turn, causing its hangers to vibrate, thus transmitting to the agitator-gate a slight vertical movement. The shoulders arranged upon the rear of this gate press upon the carbid sufficiently to insure its starting to flow through the chute into the pocketed wheel, where it is caught and temporarily retained in a manner to check the flow. During this movement of the carbid the charge previously discharged into the generator will have produced sufficient gas to again raise the gasometer-bell, which of course lowers the lever and pawl to their normal position in readiness for a further and practically similar operation.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a carbid-feeding device, the combination with a hopper adapted to contain lump-carbid, of a pocketed wheel having notches

in its end flanges, a star-wheel adapted to be engaged and operated by said notches to cut out specific charges of carbid from the chute.

2. The combination with a carbid-hopper, of a pocketed wheel to receive and feed therefrom given charges of carbid, a star-wheel operated by said pocketed wheel, links in which said star-wheel is mounted, and a shouldered plate in said hopper carried by said links to agitate the carbid in the hopper with each movement of the wheel.

3. A carbid-feeding mechanism comprising a hopper, a wheel connected therewith comprising a series of radial paddles and circular webs inclosing the ends, to form a series of pockets to receive the carbid, a series of teeth in the periphery of said webs, a star-wheel riding upon said wheel engaged by the teeth of its end webs so as to insure the registration of the radial paddles on one wheel with those of the other to constitute separate and distinct compartments to receive separate and form successive charges of rough carbid from the hopper, links connected to the star-wheel and an agitator supported by said links and operated by said star-wheel to insure the feeding of the carbid.

4. In a carbid-feeding mechanism, the combination with a carbid-chute, of a pocketed wheel, flanges inclosing the ends of said pockets provided with a toothed inner peripheral edge, a star-wheel adapted to rotate against said toothed edge in a manner to check and divide the flow of carbid into specified charges, means for operating said pocketed wheel and means for agitating the carbid within the chute at each movement of the pocketed wheel in a manner to insure the desired movement of the carbid.

5. A carbid-feed mechanism for acetylene-gas machines comprising a pocketed feed-drum and mechanism for driving the same, a star-wheel to ride upon and be operated by said drum, a gate controlling the size of the opening for the carbid from its hopper and connections between the star-wheel and gate for automatically and bodily raising and lowering the latter to expand and contract the passage under said gate with each feeding operation of the pocketed drum.

6. A carbid-feeding device comprising a pocketed wheel, a star-wheel engaged thereby, bell-crank links in which said star-wheel is hung, an agitator attached to said links to prompt the flow of carbid, and means to cause the positive rotation of the star-wheel with the pocketed wheel and insure the registration of the pocket of one with that of the other, so as to receive separate and form specific quantities of rough carbid from the hopper into charges, substantially as shown and described.

7. The combination of a carbid-feed mechanism comprising a feed-drum having a series of pockets to receive carbid, a star-wheel riding upon said drum adapted to separate the flow of carbid into specific charges, bell-crank links in which said star-wheel is hung, a gate hung upon the rear end of said links in a manner to impart thereto a slight vertical movement, and a series of shoulders upon the inner side of the gate adapted to engage and agitate the carbid resting thereagainst and insure its further flow into the pockets of the drum.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 24th day of December, A. D. 1900.

GEORGE W. COLLIN.

Witnesses:
C. M. NEWMAN,
WILLIAM V. DEVITT.