

(No Model.)

2 Sheets—Sheet 1.

T. F. FREEMAN.
AMALGAMATOR.

No. 397,846.

Patented Feb. 12, 1889.

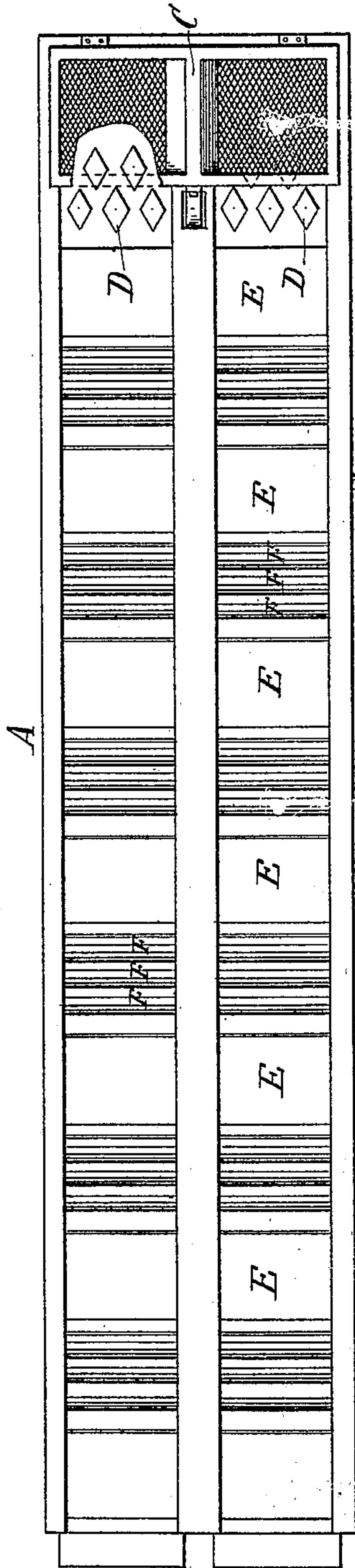


FIG. 1.

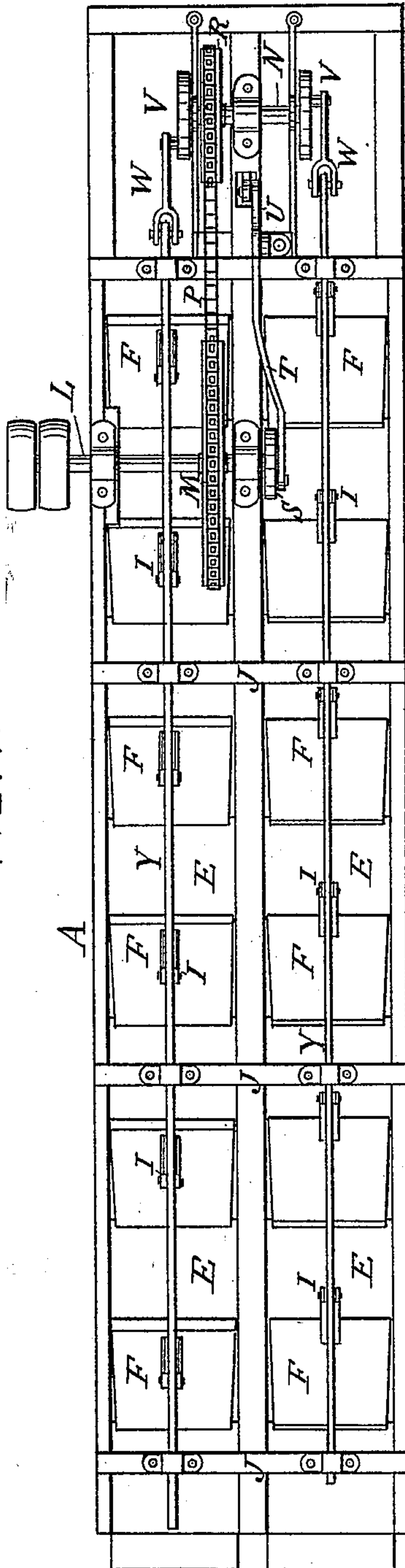


FIG. 2.

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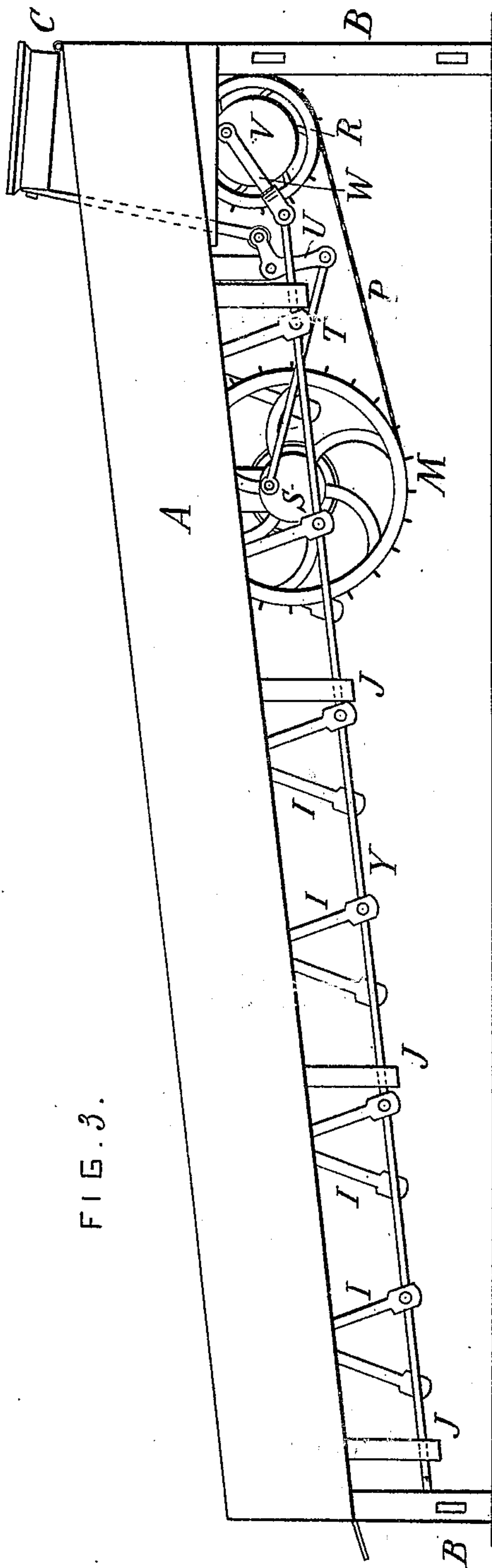


FIG. 3.

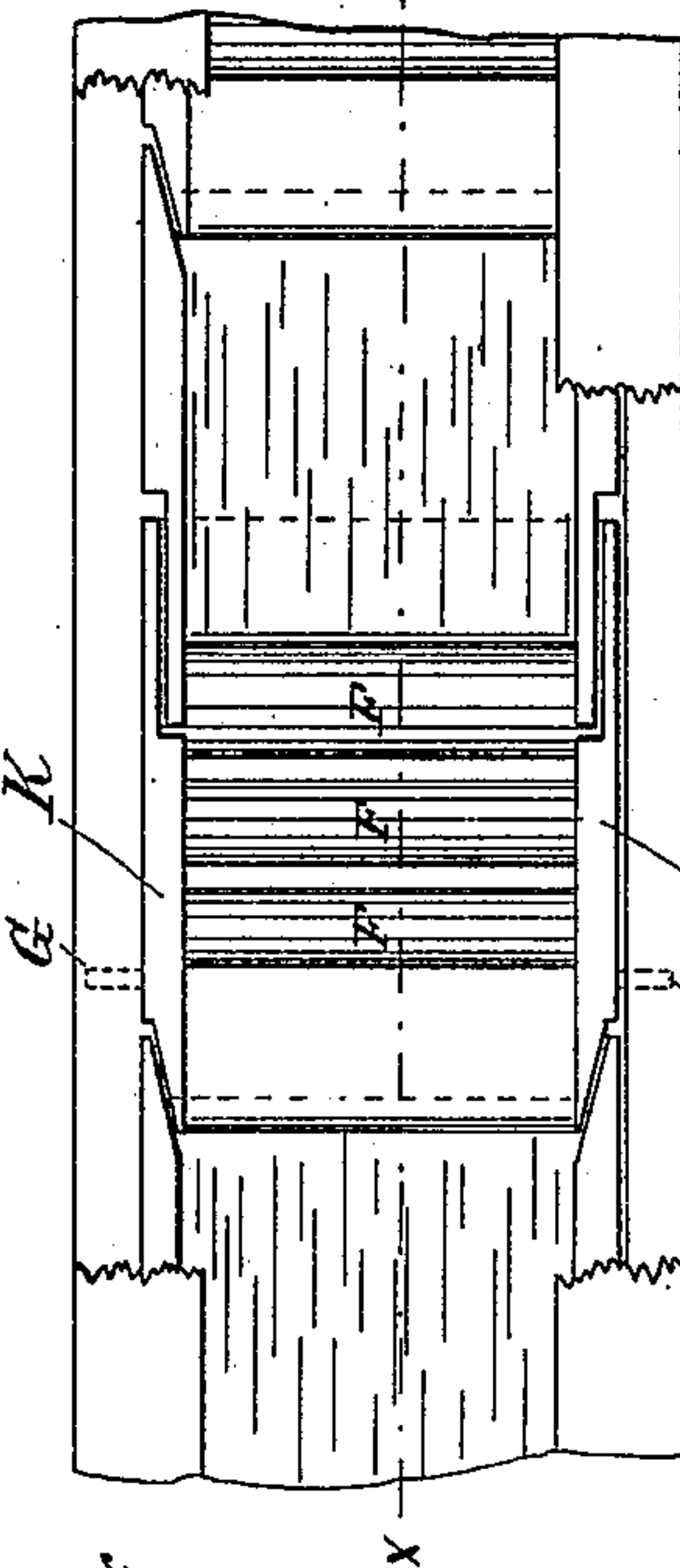


FIG. 4.

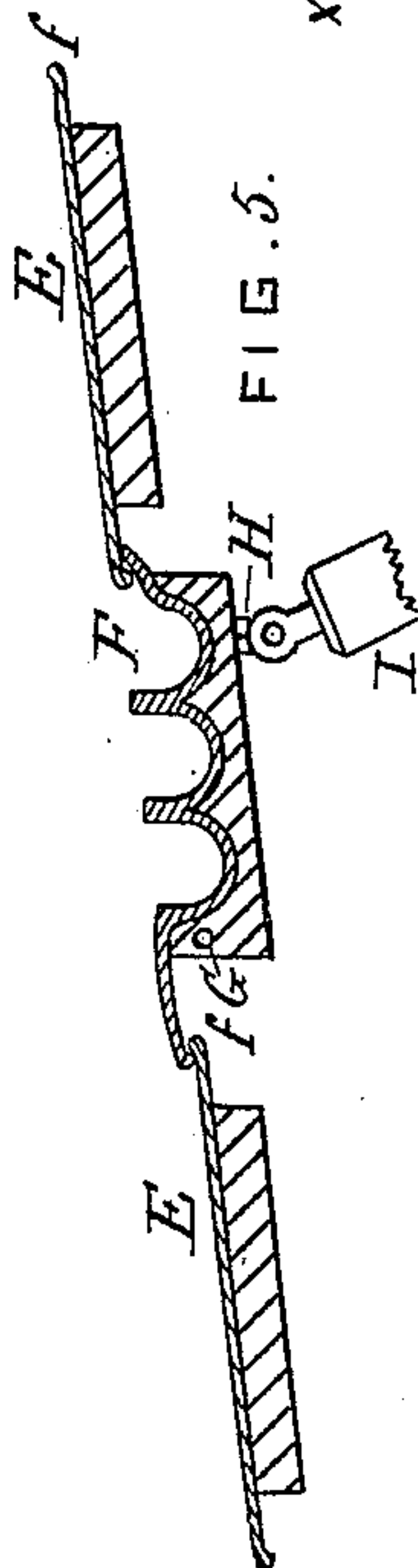


FIG. 5.

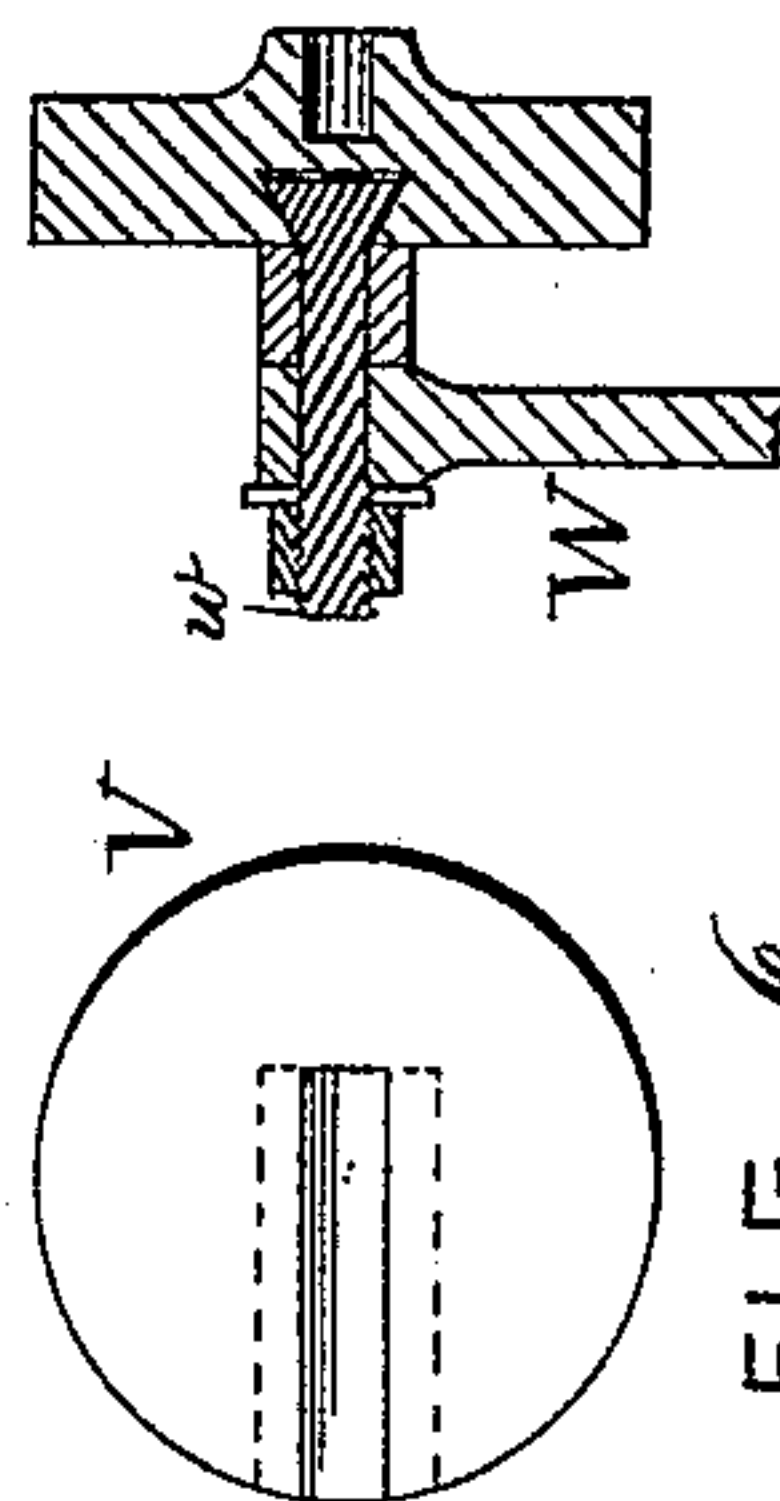


FIG. 6.

FIG. 7.

WITNESSES.

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UNITED STATES PATENT OFFICE.

THOMAS F. FREEMAN, OF BROOKLYN, NEW YORK.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 397,846, dated February 12, 1889.

Application filed February 3, 1887. Serial No. 226,398. (No model.)

To all whom it may concern:

Be it known that I, THOMAS F. FREEMAN, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Amalgamators, of which the following is a specification.

My invention relates especially to devices employed for gathering precious metals, particularly gold, from powdered ore or earth by the use of mercury, and has for its object the provision of an amalgamator simple to construct, easy to operate, and which shall gather substantially all the metal carried by the ore or earth wherewith it is operated.

To attain the desired end my invention consists, essentially, in a sloping conduit mounted upon a suitable supporting-frame, the bottom of said conduit consisting of a series of alternate amalgamated plates and agitatable riffles. At the head of the conduit is located a distributing-table, the bottom whereof is provided with a number of fixed blocks so arranged as to insure a proper spreading of the pulp before it flows onto the first amalgamated plate. Mounted above the said distributing-table is a sieve so arranged as to be constantly moved or shaken, showering the pulp onto the distributing-table; and my invention also involves certain other novel and useful combinations and arrangements of parts and peculiarities of construction and operation, all of which will be hereinafter first fully described, and then pointed out in the claims.

In the drawings, Figure 1 is a plan view of my improved amalgamator, and Fig. 2 is a bottom plan view thereof. Fig. 3 is a side elevation. Fig. 4 is a plan view of one of the riffles, showing the arrangement of the same. Fig. 5 is a longitudinal sectional view at line *x x* of Fig. 4. Fig. 6 is a front elevation, and Fig. 7 is a sectional view, of one of the crank-wheels, showing the method of adjustment of the movement of the parts.

Like letters of reference, wherever they occur, indicate corresponding parts in all the figures.

A are the sides of the conduit, supported upon suitable legs, B, and having an inclination, substantially as shown, in order to give a gentle flow to the ore pulp in its passage through the amalgamator.

C is a sieve, consisting of a frame provided with a bottom made of wire-gauze or equivalent material, said sieve being hinged or pivoted at one side or at its center, in order to permit a shaking movement, as hereinafter described.

Beneath the above-mentioned sieve, at the upper end of the conduit, is a receiving-table, said table being provided with fixed blocks D for distributing the pulp evenly across the bottom of the conduit.

E are amalgamated plates, fitting into the bottom of the conduit in such a manner as to be easily removed for scraping, &c.

F are riffles located at the bottom of the conduit alternately with the plates E. These riffles may be made of any suitable material—such as wood lined with sheet metal, as illustrated in Fig. 5; or they may be made of cast metal, if found desirable. The edge *f* of the riffle is made to pass beneath the plate E which it follows, and the other edge overlaps the succeeding plate E, thus preventing leakage or loss of amalgam. Each riffle-plate is pivoted at G to the main frame, the pivots engaging with a hole or slot in each side of said frame. Upon the under side of each riffle-plate is an eye, H, wherewith engages a downwardly-extending arm, I, the arms I being pivoted to the eyes H and to a driving-bar, Y, running parallel to the bottom of the conduit therebeneath, said driving-bars playing in hangers J. The end pieces, K, of the riffles are so arranged as to extend behind the side walls of the conduit next the plates E at the upper side of the riffle and overlap said walls at the lower side of each riffle, thus preventing leakage, as will be seen more particularly in Fig. 4. The end pieces, K, are held in place by the sides A of the main frame.

L is the driving-shaft of the amalgamator, provided with a fast and loose pulley in the usual manner and bearing a sprocket-wheel, M, movement being transmitted to a second shaft, N, through the medium of a chain, P, and sprocket-wheel R. The inner extremity of shaft L bears a crank-wheel, S, from which a rod, T, passes to a bell-crank, U, pivoted beneath the conduit, the other arm of the bell-crank U engaging with a rod attached to the sieve C. Upon each extremity of shaft

N are crank-wheels V, the cranks W thereon engaging with the bars Y. In order to regulate the movements of said bars, the crank-pins *w* are made adjustable to and from the center of the wheels V in the well-known manner.

When constructed and arranged in accordance with the foregoing description, the operation of my improved amalgamator is as follows: Powdered ore, sand, or earth and water being supplied to the sieve C, the movable parts are started, and the ore pulp will be showered onto the receiving-table, being evenly spread by the blocks D. From said table it flows to the first amalgamated plate E, and then into the first series of riffles, said riffles being supplied with mercury in the usual manner. Instead of being stationary, the riffles are kept in constant motion, the movement being the same as is imparted to the well-known "cradle," and thus all parts of the flowing pulp are brought in contact with the mercury, insuring the gathering of the metal contained in the ore. I have shown six sets of riffles; but it is obvious that any number of riffles and any number of amalgamated plates may be employed without departing from the spirit of my invention. From the peculiar construction of the device no oil can possibly get into the pulp—a feature of great importance and well understood by those skilled in the art to which my invention relates.

In cleaning up the amalgamator the plates E and the riffles may be easily and quickly removed, and the device will be found admirably adapted to the uses and purpose for which it is intended.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In an amalgamator, an inclined sluice-

way consisting of inclined fixed amalgamated plates and movable riffles, said plates and riffles alternating with each other, in combination with means for imparting motion to said riffles, substantially as set forth.

2. In an amalgamator, the combination, with the inclined sluiceway, of the riffles supported upon pivots in the main frame at each side, arms I, pivoted to the under side of each set of riffles, and a sliding bar engaging with said arms, and mechanism for imparting a longitudinal movement to said bar, substantially as set forth.

3. The combination, with the inclined sluiceway having inclined fixed amalgamated plates in the bottom thereof, of the pivoted riffles alternated with said fixed plates, each of said pivoted riffles consisting of a body, F, wherein are formed grooves or troughs, and end pieces, K, forming a portion of the side walls of the sluiceway, and mechanism for imparting a rocking motion to said riffles, substantially as set forth.

4. An amalgamator consisting of an inclined sluiceway having side walls, A, the bottom of said sluiceway being provided with inclined fixed amalgamated plates E and pivoted riffles F, alternating with said fixed plates, a sieve, C, at the upper end of said sluiceway, connected with a bell-crank, U, driven by a rod, T, crank-wheels S and V, spur-wheels N and R, chain P, rods Y, and arms I, the whole combined and arranged substantially as set forth.

Signed at New York city, in the county of New York and State of New York, this 24th day of August, A. D. 1886.

THOMAS F. FREEMAN.

Witnesses:

JOHN L. BRANCH,
GEO. H. GIDDINGS, Jr.