No. 877,266. PATENTED JAN. 21, 1908.

J. A. ULLMAN & G. R. HOWELL.

ROTARY TUBE CLOSING MACHINE.

APPLICATION FILED MAY 4, 1907.

2 SHEETS—SHEET 1.

FIG. 2

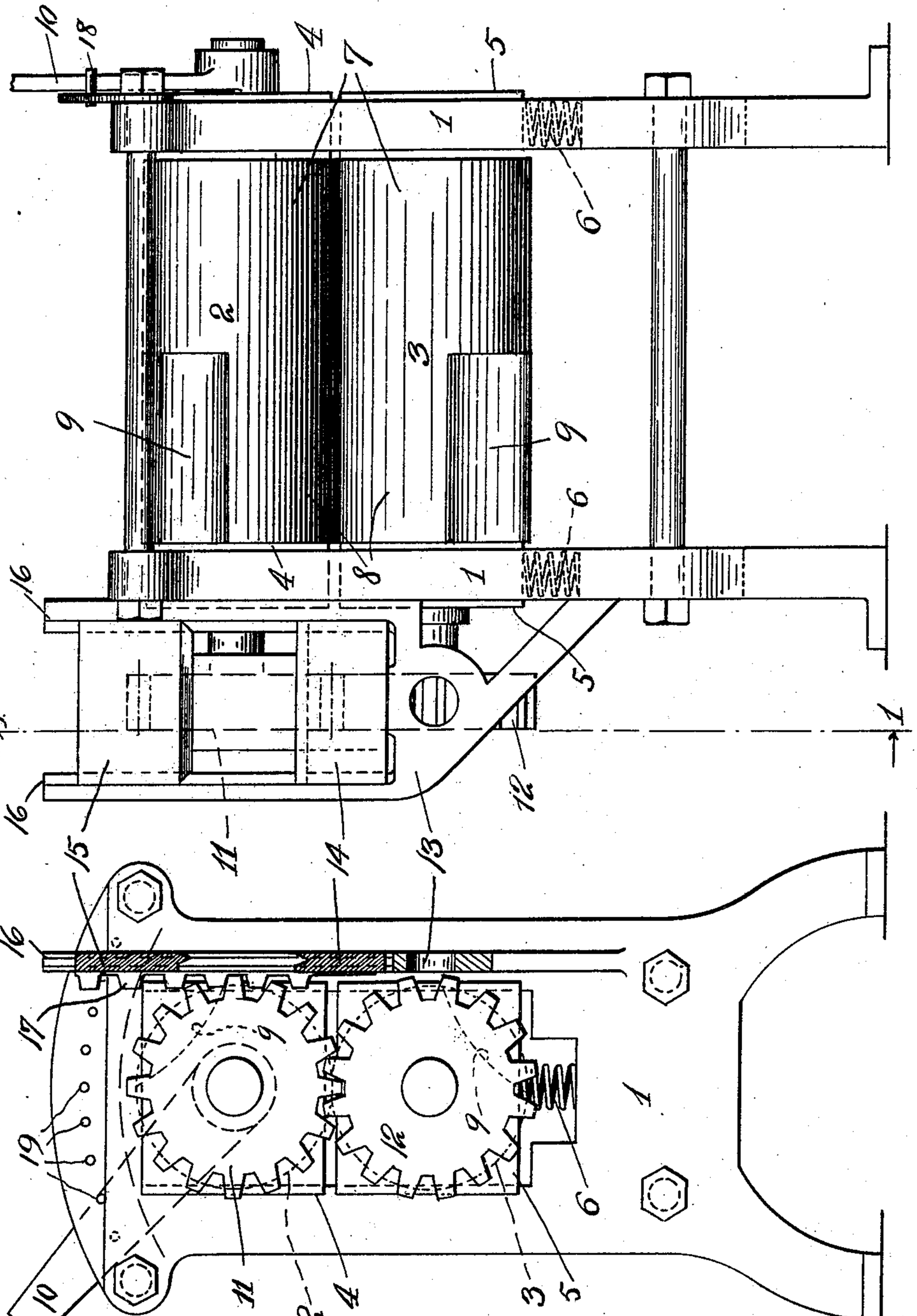

FIG. 1

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2 SHEETS—SHEET 2.

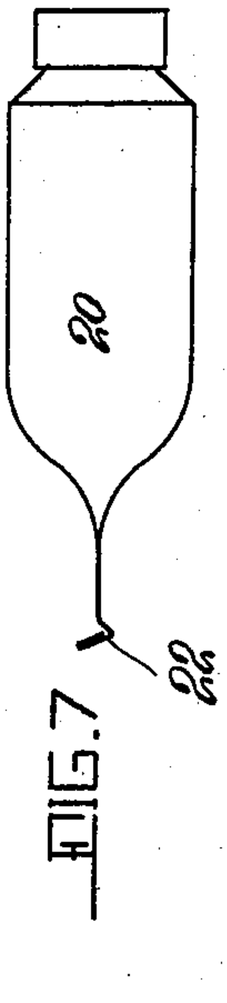

FIG. 7

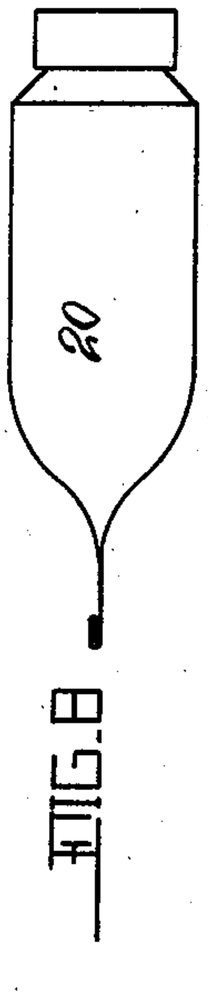

FIG. 8

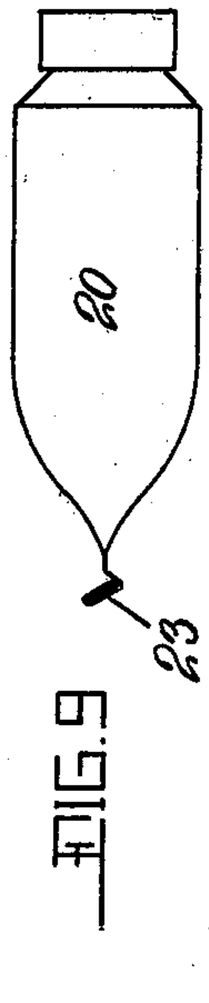

FIG. 9

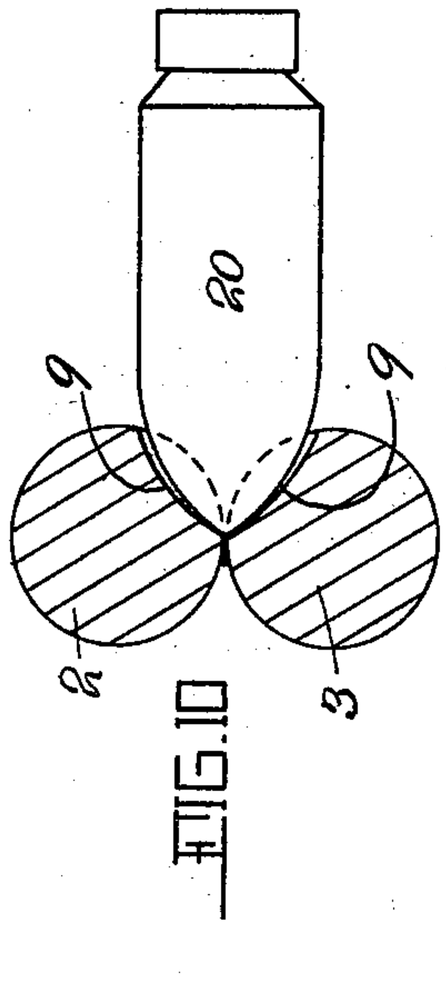

FIG. 10

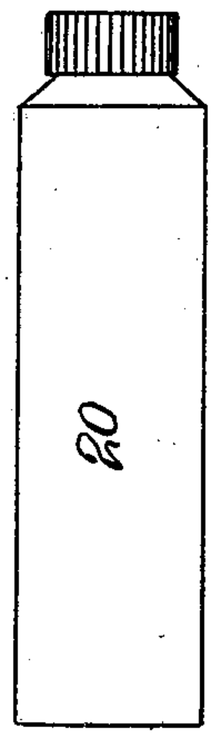

FIG. 3

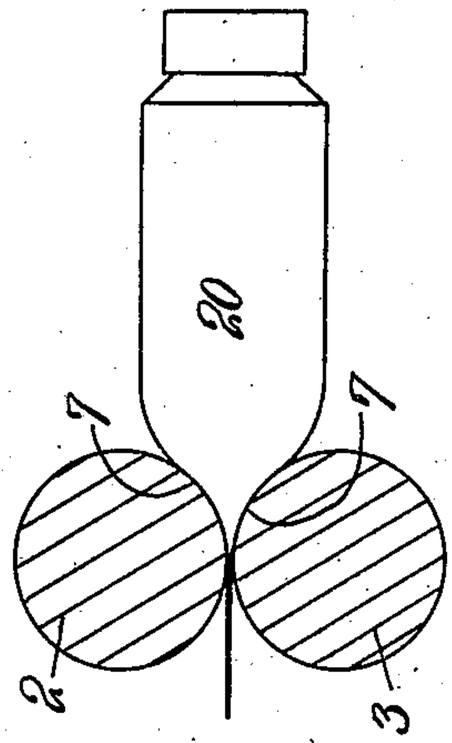

FIG. 4

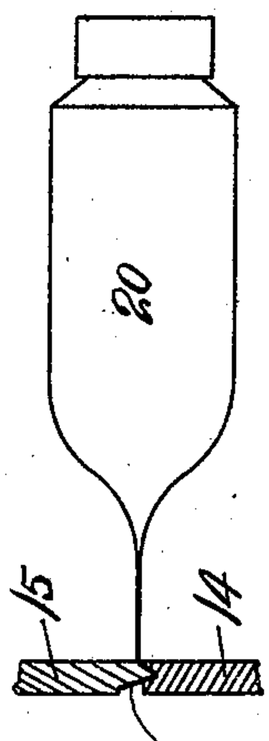

FIG. 5

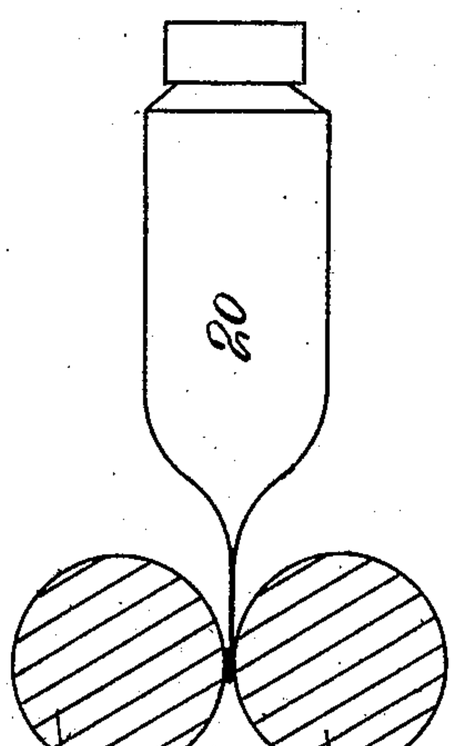

FIG. 6

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UNITED STATES PATENT OFFICE.

JAMES A. ULLMAN AND GEORGE R. HOWELL, OF NEW YORK, N. Y., ASSIGNORS TO SIGMUND ULLMAN COMPANY, A CORPORATION OF NEW YORK.

ROTARY TUBE-CLOSING MACHINE.

No. 877,266. Specification of Letters Patent. Patented Jan. 21, 1908.

Application filed May 4, 1907. Serial No. 371,894.

To all whom it may concern:

Be it known that we, JAMES A. ULLMAN and GEORGE R. HOWELL, citizens of the United States of America, and residents of borough of Manhattan, city of New York, county of New York, State of New York, have invented certain new and useful Improvements in Rotary Tube-Closing Machines, of which the following is a specification.

The present invention relates to a machine for closing the open end of soft-metal tubes such as are used for holding oil colors, printing inks, etc.

In the prior art of tube closing machines, it has been customary to have members acting rectilinearly for flattening the end, and the seams or folds used to close the open end, of the tube. With this construction, when the tool descends, the contents of the tube will be forced in both directions both inwardly and outwardly. Furthermore, the lower end of the tube bevels off in a straight direction and has the appearance of being but scantily filled which it really is since the long bevel reduces the capacity of the tube.

The object of the present invention is to obviate these objectionable conditions, that is, to prevent the outward splashing of the contents, and to give the tube a plump appearance.

To this end the invention embraces means for acting upon the end of the tube so as to flatten the same and for acting upon the body thereof so as to press the contents of the tube inwardly away from the end thereof. This flattened portion of the tube is folded over several times so as to seam or close the lower end of the said tube, and is then subjected to means which act upon the flattened portion or seam of the tube only, without acting upon the body portion thereof. This is rendered necessary by the fact that the seam to be flattened is by this time immediately adjacent to the body portion.

The particular means utilized in carrying out the invention consist of a pair of rolls, one portion of which presents convergingly curvilinear surfaces for flattening the end of a tube and for acting upon the body portion thereof to press the contents of the tube inwardly away from the end thereof, and another portion of which presents convergingly curvilinear surfaces partly cut away for acting upon the flattened portion of the tube only without acting upon the body portion thereof, and means for rotating said rolls.

A hook forming member is conveniently embodied in the machine, so that all the operations necessary to close a tube can be carried on in one machine.

In the accompanying drawings the invention is embodied in a concrete and preferred form, but changes of construction may of course be made without departing from the legitimate and intended scope of the invention.

In the said drawings:—Figure 1 is a vertical sectional view on the line 1—1 of Fig. 2. Fig. 2 is a front elevation of a machine embodying the invention. Fig. 3 shows the tube before it is acted upon. Fig. 4 shows the tube being acted upon by the flattening rolls. Fig. 5 shows the tube being acted upon by the hook forming member. Figs. 6, 7, 8 and 9 show subsequent steps in the closing of the tube. Fig. 10 shows the tube acted upon by that portion of the rolls which act to flatten the seam without acting upon the body portion thereof.

Similar characters of reference indicate corresponding parts in the several views.

1 indicates a framework of any suitable construction supporting the rolls 2 and 3. The roll 2 is carried by fixed bearings 4, while the roll 3 is mounted in the sliding boxes 5 yieldingly supported by means of the springs 6. These rolls are provided at one end with portions which present convergingly curvilinear surfaces 7, while at the other end, they are provided with portions presenting convergingly curvilinear surfaces 8, partly cut away at 9. The roll 2 is provided with the operating handle 10, and has the gear 11 intermeshing with the gear 12 on the roll 3.

13 indicates a bracket attached to the framework and provided with an anvil 14. 15 indicates a hook forming member sliding in the guides 16 of the bracket 13, and provided with a toothed rack 17 engaging with the gear 11. 18 indicates stops for limiting the movement of the operating handle. These stops can be adjusted by inserting them in the different holes 19.

A tube 20 is taken and the end thereof is inserted between the rolls 2 and 3 at the point where they present the convergingly curvilinear surfaces 7, thereby flattening the end of the tube and acting upon the body portion thereof to press the contents in-

wardly away from the end thereof. These rolls by reason of their configuration also act to shape the tube so as to present a plump appearance. The tube is now subjected to the action of the hook forming member as indicated in Fig. 5 and a hook 21 is formed which is then flattened down as indicated in Fig. 6. The flattened end of the tube is again subjected to the action of the hook forming tool as shown in Fig. 7, and the hook 22 thus produced is again flattened by the rolls. The tube is once more subjected o the action of the hook forming member and the hook 23 is formed. The flattened end of the tube is now inserted between the rolls at the point where they are provided with the convergingly curvilinear surfaces 8 having the cut-away portions 9 and the last seam is flattened down. It will be noted that if the cut-away portions 9 were not provided it would be impossible to get a good grip on the seam without spoiling the shape of the tube. The above description of the operation is typical only and can of course be departed from as circumstances may require.

What is claimed is:—

1. In a tube closing machine, a pair of rolls, one portion of which presents convergingly curvilinear surfaces for flattening the end of a tube and for acting upon the body portion thereof to press the contents of the tube inwardly away from the end thereof, and another portion of which presents convergingly curvilinear surfaces, partly cut away, for acting upon the flattened portion of the tube only without acting upon the body portion thereof, and means for rotating said rolls.

2. In a tube closing machine, a pair of rotatable rolls, a rectilinearly moving hook-forming member, and means for operating said rolls and hook forming member in unison.

3. In a tube closing machine, a pair of rolls presenting convergingly curvilinear surfaces, partly cut away, for acting upon the flattened portion of a tube only without acting upon the body portion thereof, and means for rotating said rolls.

Signed at New York this 10th day of April 1907.

JAMES A. ULLMAN.
GEO. R. HOWELL.

Witnesses:
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L. H. FREUND.