(No Model.) 4 Sheets—Sheet 1.

D. C. SUMNER.

MACHINERY FOR SHEARING CLOTH.

No. 324,428. Patented Aug. 18, 1885.

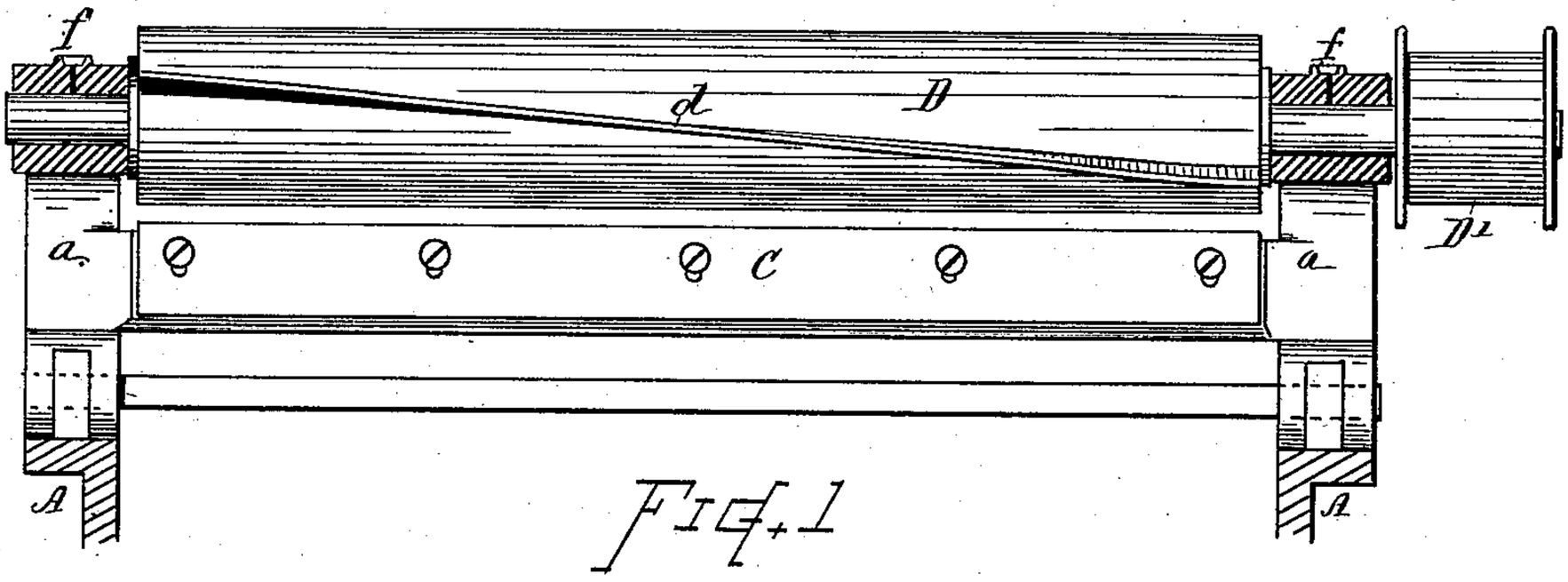

FIG. 1

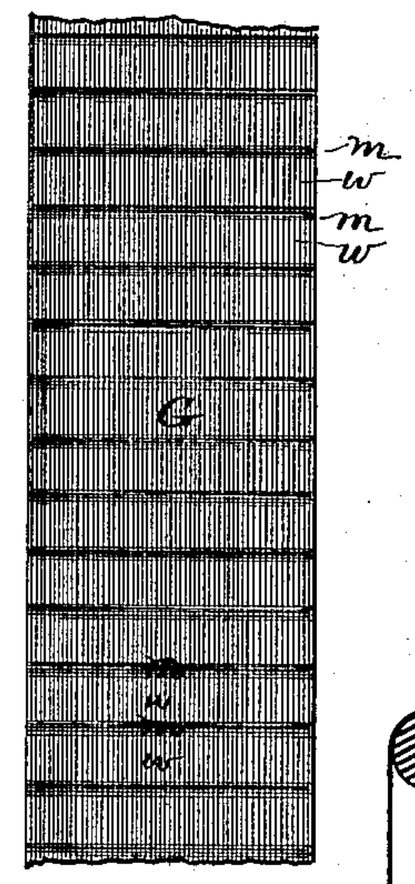

FIG. 3

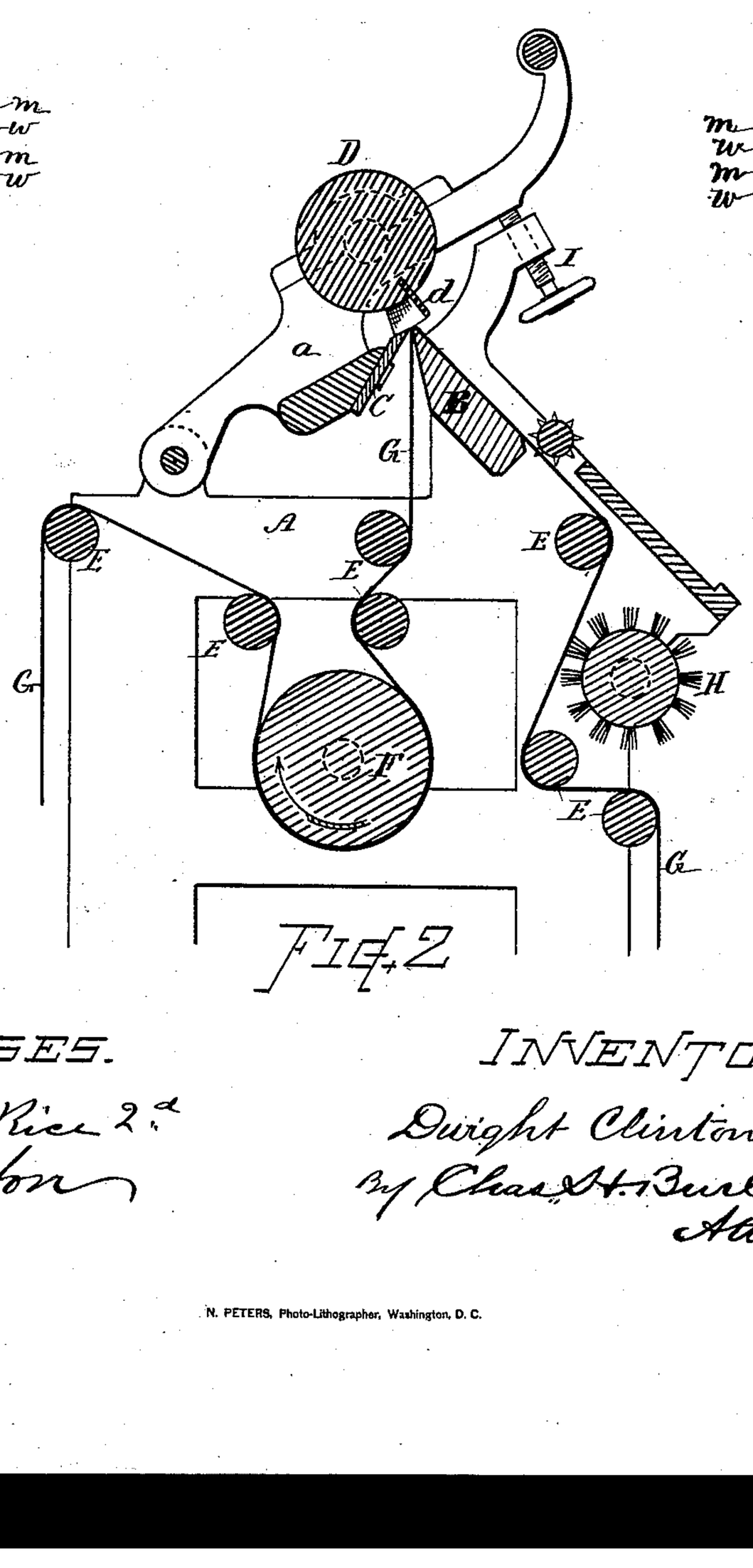

FIG. 2

FIG. 4

WITNESSES.

Geo. M. Rice 2d

D. R. Barton

INVENTOR.

Dwight Clinton Sumner

by Chas. H. Burleigh

Atty.

(No Model.) 4 Sheets—Sheet 2.

D. C. SUMNER.

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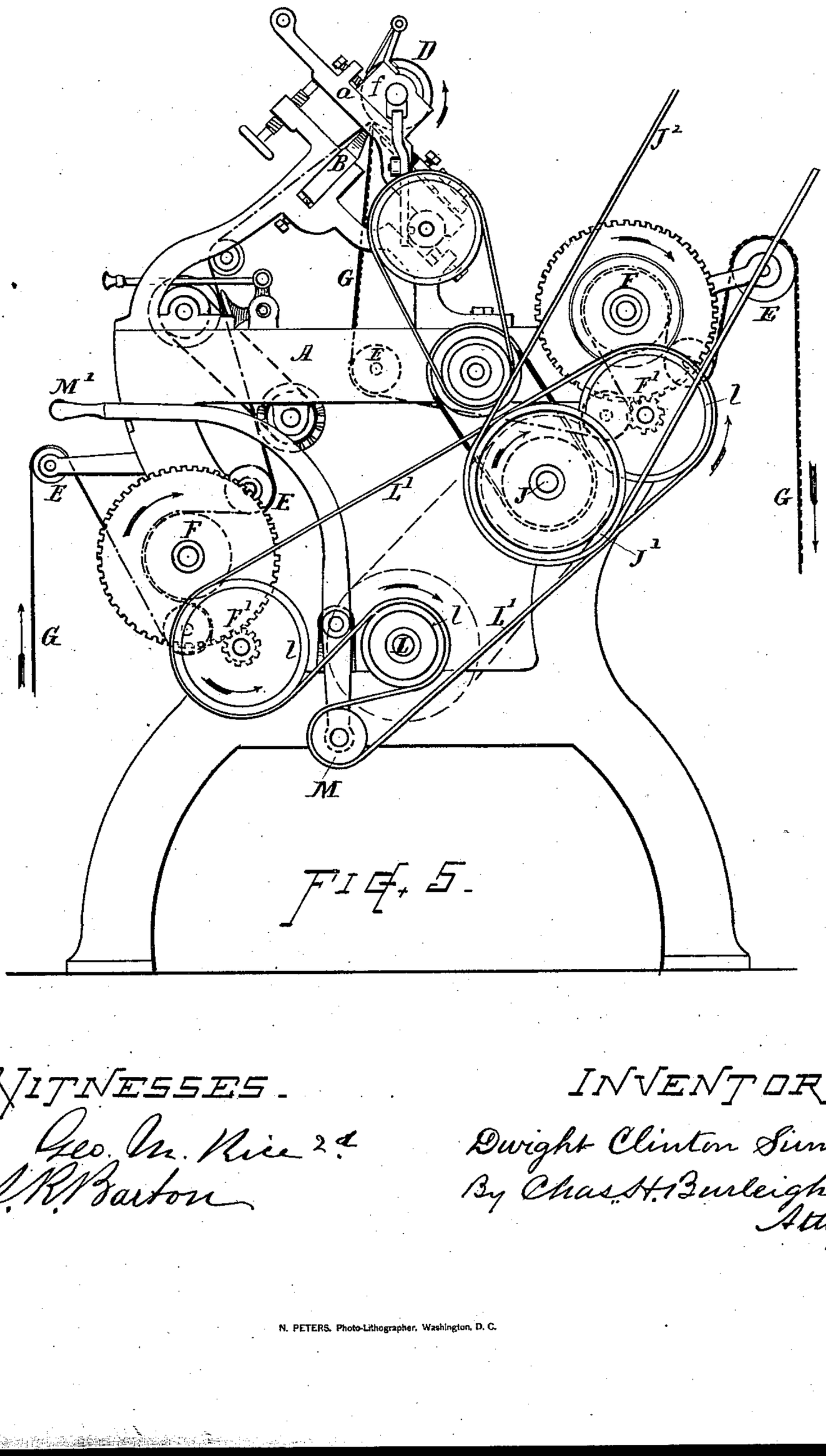

FIG. 5.

WITNESSES.

Geo. Ch. Rice 2d

L. R. Barton

INVENTOR.

Dwight Clinton Sumner

By Chas. A. Burleigh

Atty.

(No Model.) 4 Sheets—Sheet 3.

D. C. SUMNER.

MACHINERY FOR SHEARING CLOTH.

No. 324,428. Patented Aug. 18, 1885.

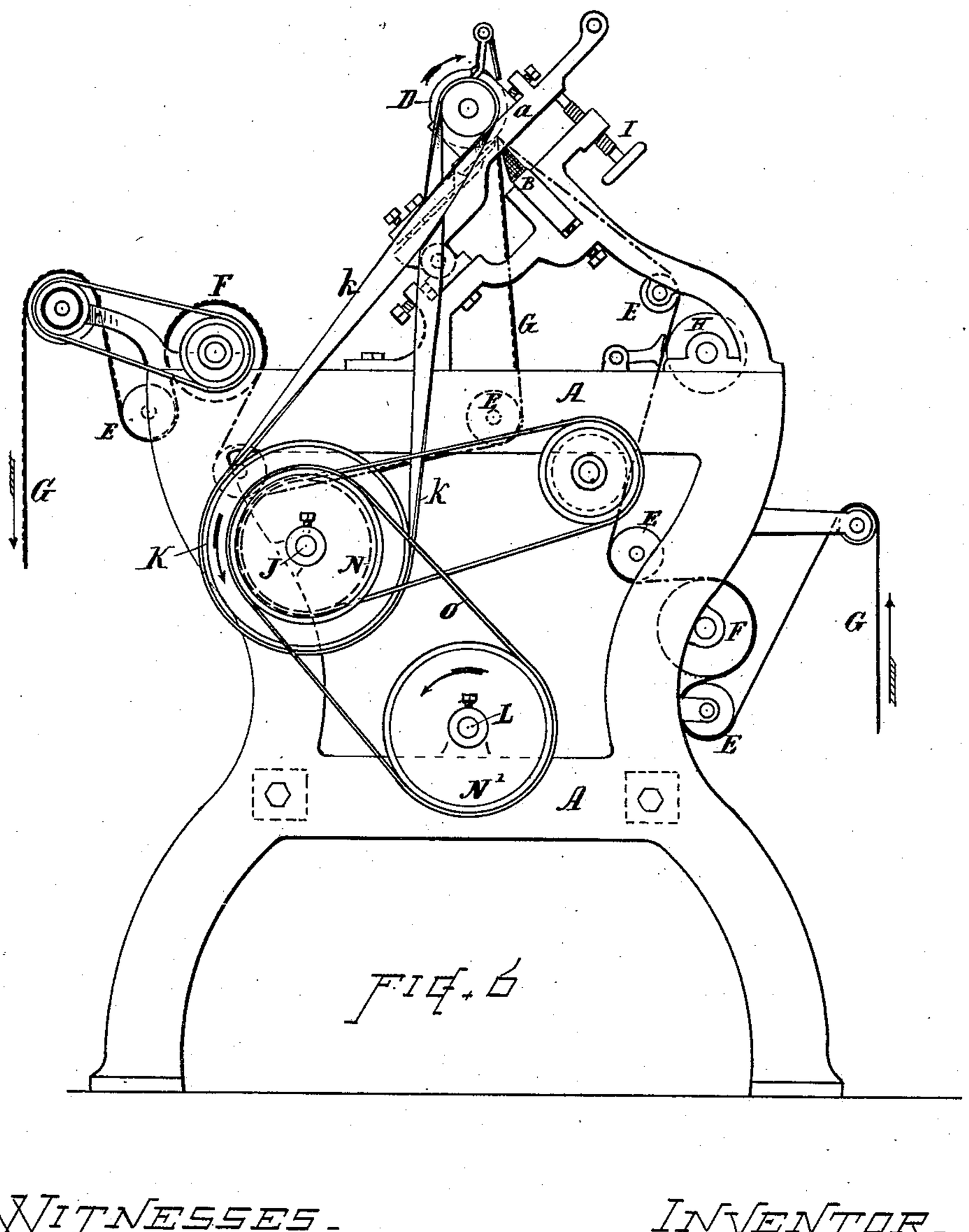

FIG. 6

WITNESSES.
Geo. M. Rice 2d
S. R. Baston

INVENTOR.
Dwight Clinton Sumner
By Chas. A. Burleigh
Atty.

(No Model.)

4 Sheets—Sheet 4.

D. C. SUMNER.

MACHINERY FOR SHEARING CLOTH.

No. 324,428. Patented Aug. 18, 1885.

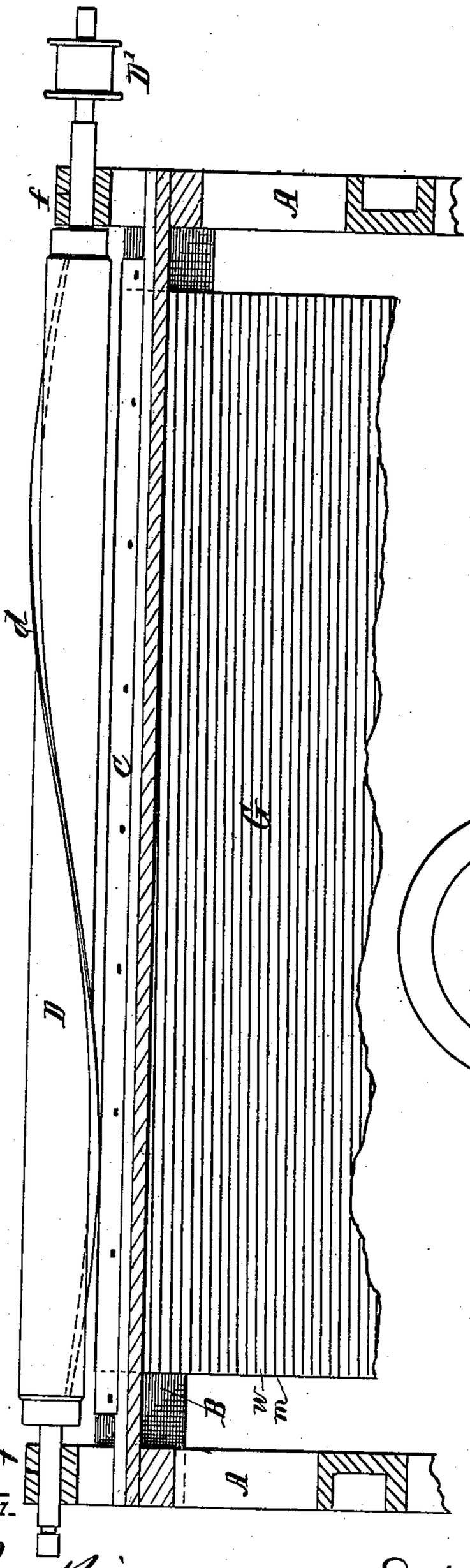

FIG. 7

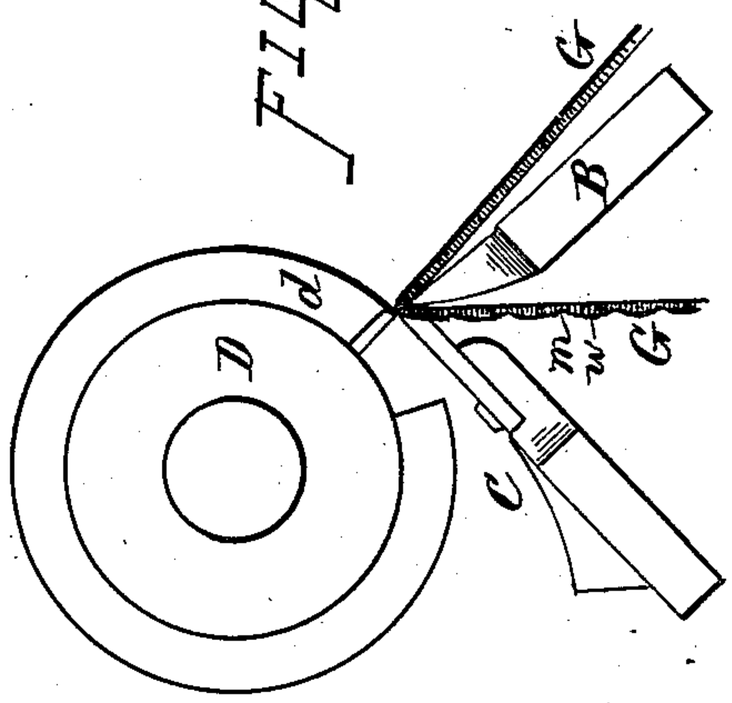

FIG. 8

WITNESSES.

Geo. W. Rice 2d
L. K. Barton

INVENTOR.

Dwight Clinton Sumner
By Chas. A. Burleigh
Atty.

UNITED STATES PATENT OFFICE.

DWIGHT CLINTON SUMNER, OF WORCESTER, MASSACHUSETTS.

MACHINERY FOR SHEARING CLOTH.

SPECIFICATION forming part of Letters Patent No. 324,428, dated August 18, 1885.

Application filed December 5, 1883. (No model.) Patented in England April 27, 1883, No. 2,144.

To all whom it may concern:

Be it known that I, DWIGHT CLINTON SUMNER, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machinery for Shearing Cloth, (for which I obtained a patent in Great Britain, No. 2,144, April 27, 1883;) and I declare the following to be a description of my said invention sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

In my former Letters Patent Nos. 265,644, 282,401, and 282,402, I have shown and described special mechanisms or devices for producing certain peculiar classes of sheared ornamentation, wherein the designs are composed of longitudinally-disposed lines with intersecting transverse lines or checks, intermeshing checks or basket patterns, and diagonally-arranged checks and spots. My present invention relates to another specially-constructed mechanism adapted for producing a design or style of finish not included in the above-named patents.

The object of my present invention is to afford a practical and efficient means for producing by shearing action on piled or napped fabrics a peculiar class or style of surface, ornamentation, or finish, consisting of a series of parallel laterally-disposed ribs or welts extending across the fabric and separated by sheared lines or shorter-cut pile, said style of finish being very desirable and admirably adapted for such goods as plush, canton flannels, and other long-pile fabrics. I attain these objects by a mechanism the nature, construction, and operation of which is illustrated in the drawings and hereinafter explained.

In the drawings, Figure 1 is a sectional view showing the front of the shear-revolver and ledger-blade, and Fig. 2 is a vertical transverse sectional view showing such parts of a shearing-machine as will illustrate the nature of my present improvements. Fig. 3 is a front view of a piece of fabric illustrating the style of finish effected by my improvement. Fig. 4 is a longitudinal section of the fabric. Fig. 5 is a view of one end of the shearing-machine, showing the arrangement of the driving-pulleys and belts and gearing for operating the feed-rolls. Fig. 6 is a view of the opposite end of the shearing-machine, showing the arrangement of pulleys and belts for operating the revolver and for changing the relative speed of the feed. Fig. 7 is a sectional view showing the revolver, the ledger-blade, and the sheared fabric as disposed in a broad shearing-machine. Fig. 8 is an end view on somewhat larger scale, showing the revolver, the ledger-blade, the guiding-support, and a portion of fabric as passing over the support.

In referring to parts, A designates the frame of the shearing-machine, of suitable construction to support the working parts.

B indicates the cloth-support, over which the fabric passes while undergoing the shearing operation.

C is the ledger-blade, fixed in usual manner on the adjustable part *a* of the frame.

D is the revolver or shearing-cylinder, constructed in the peculiar manner hereinafter described for effecting the desired results.

E denotes guiding-rolls for directing the fabric, and F the feed-roll for carrying forward the fabric G as it is finished.

H is a brush for straightening out the nap or pile on the surface to be sheared, and I indicates the screws for adjusting the blades to or from the face of the cloth.

J denotes the operating-shaft, provided with pulley or pulleys J′ for the driving-belt J^2, and with a pulley, K, for the belt K′, which operates the revolver D; also, with pulleys for the operation of other parts of the mechanism, as shown.

L denotes an auxiliary shaft for operating the feed devices or rolls F, said rolls being connected with said shaft by the gears and pinions F′, pulleys *l l l*, and belt L′, arranged as shown in Fig. 5.

M indicates a belt-tightener worked by a hand-lever, M′, whereby the feed devices can be thrown into and out of action independently of the other parts of the mechanism. Shaft L is operated from shaft J by the pulleys N N′ and belt O. (Shown in Fig. 6.) The direction of movement of the several parts is indicated by the arrows on the drawings.

For producing the laterally-ribbed surface on textile fabrics according to my improved

method, the revolver D is provided with a single cutting-blade, *d*, fixed in the cylindrical body and extending longitudinally thereof in the manner shown. This revolver is preferably made about three and one-half inches in diameter, with the blade *d* projecting about half an inch from the body or cylinder, which gives a working diameter of about four and one-half inches. Its length may be more or less, according to the requirements of the machine. That shown in Fig. 1 is on a scale of about twenty-five inches in length, and that shown in Fig. 7 is on a scale of about sixty-two inches length, or to shear goods sixty inches or less in width. The blade *d* may have sufficient curve or spiral set to prevent jarring or shaking the machine when in operation, the amount of curvature or spiral being for the length of revolver shown some less than once around the cylinder. Any desired degree of spirality within practical working limits may be given to the blade *d;* but I prefer that shown as giving good results in cutting action. The revolver is mounted in bearings *f*, and adjusted in relation to the inclined ledger-blade C and support B, so that when the cylinder D is revolved by the belt K on its pulley D′ the edge of the blade *d* will act in conjunction with the edge of the ledger-blade C for shearing off such of the pile or nap from the face of the fabric as may stand between the edges, while the balance of the pile passes uncut. Each revolution of the revolver brings the edge of its single blade *d* across that of the ledger-blade, giving an intermittent cutting action the full length of said blade, thus producing, as the cloth is moved forward with a uniform continuous motion over the guiding support B, a series of furrows, *m*, and ribs *w*, about one-half inch (more or less) apart in their central spacings, which furrows and ribs extend transversely, or substantially so, across the piece of goods, or nearly at a right angle to the direction of its movement through the machine, thereby imparting to the surface of the fabric a style of finish very desirable for certain classes of materials, especially long-piled fabrics.

The distance to which the fabric is moved over the edge of the support B during the time the revolver is making a revolution gives the width or spacing of the ribs *w* and furrows *m*, and this is governed by the relative speeds of the revolver D and feed-rolls F. The speed of the revolver may be three hundred and fifty revolutions (more or less) per minute. As illustrated in the present case, the feed-rolls F move the fabric about one-half inch forward during each revolution of the revolver, giving the appearance to the fabric as shown in Fig. 7.

This method of effecting the production of transversely-extending lines by the aid of a single-bladed shearing-revolver is of great utility, economy, and practical value in the finishing and ornamentation of pile fabrics by shearing, as it can be cheaply and rapidly worked and effects as a result a finish of great richness and beauty when applied on such goods as plush, velvets, canton flannels, fur beavers, and other long-piled fabrics.

The relative width of the ribs *w* can be somewhat varied by varying the speed at which the cloth moves forward in relation to the speed at which the revolver rotates. This can be accomplished by changing the pulleys N and N′, on the ends of the shafts J and L, and substituting pulleys of other proportional diameters, so that the auxiliary shaft L will be operated by the belt O at greater or less speed in relation to the shaft J. The pulleys N N′ are so arranged that by loosening their set-screws they may be readily slipped from the shafts for interchanging, as desired.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. A revolver or shearing-cylinder for cloth-shearing machines, having a single longitudinally-arranged blade, as described, combined for action with a ledger-blade and cloth-guiding support, disposed in the manner shown, for the purpose set forth.

2. A cloth-shearing machine provided with the single-bladed revolver D *d*, the ledger-blade, the cloth-support, the roll or rolls for guiding and feeding forward the fabric, and means, such as shown and described, for imparting motion to said revolver and feed-rolls, in combination, for the purpose set forth.

Witness my hand this 30th day of November, A. D. 1883.

DWIGHT CLINTON SUMNER.

Witnesses:
CHAS. H. BURLEIGH.
S. R. BARTON.