(No Model.) 2 Sheets—Sheet 1.

F. E. ALDRICH.

Machine for Preparing Light Weight Rubber Cloth.

No. 235,117. Patented Dec. 7, 1880.

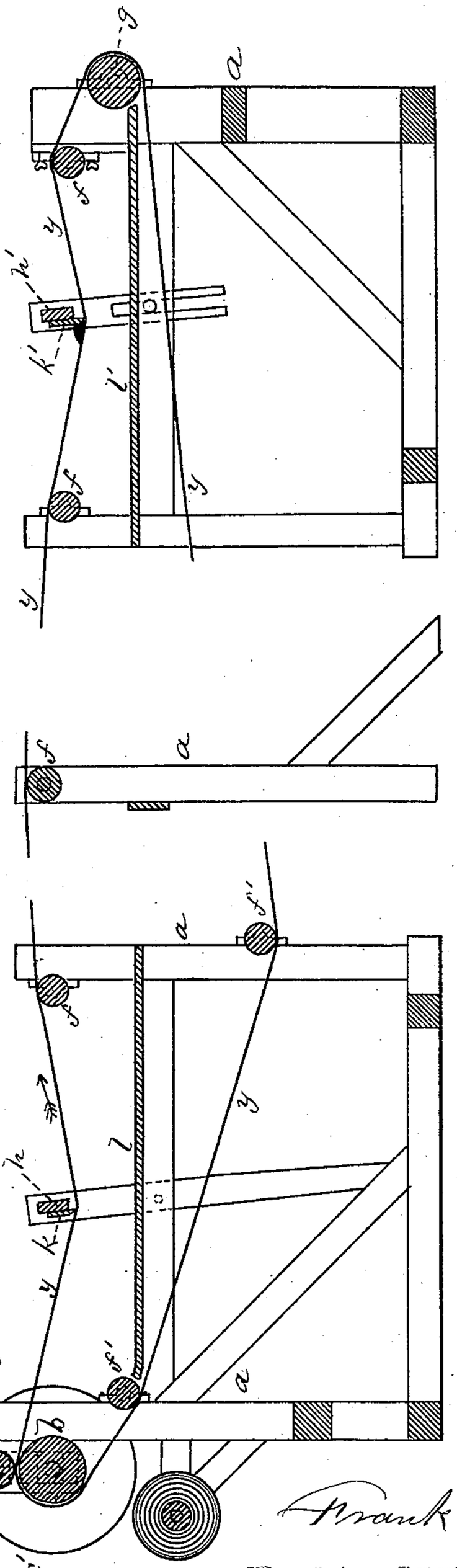

Fig. 1.

WITNESSES

D. W. Williams

George P. Mallon

INVENTOR

Frank E. Aldrich

By his Att'y

Henry W. Williams

(No Model.) 2 Sheets—Sheet 2.

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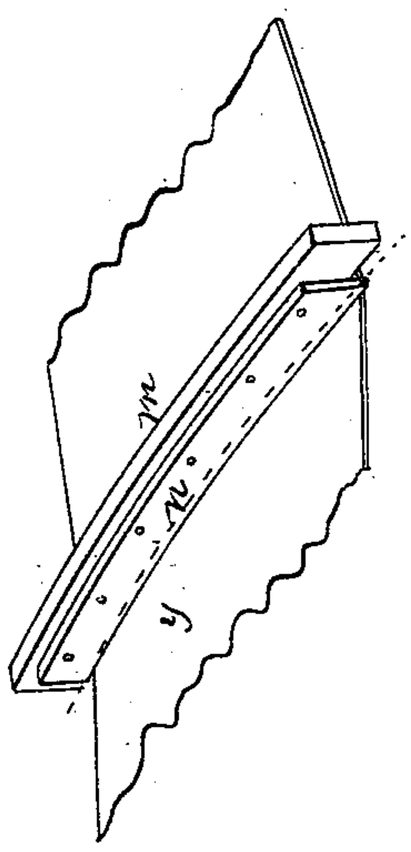

Fig. 4.

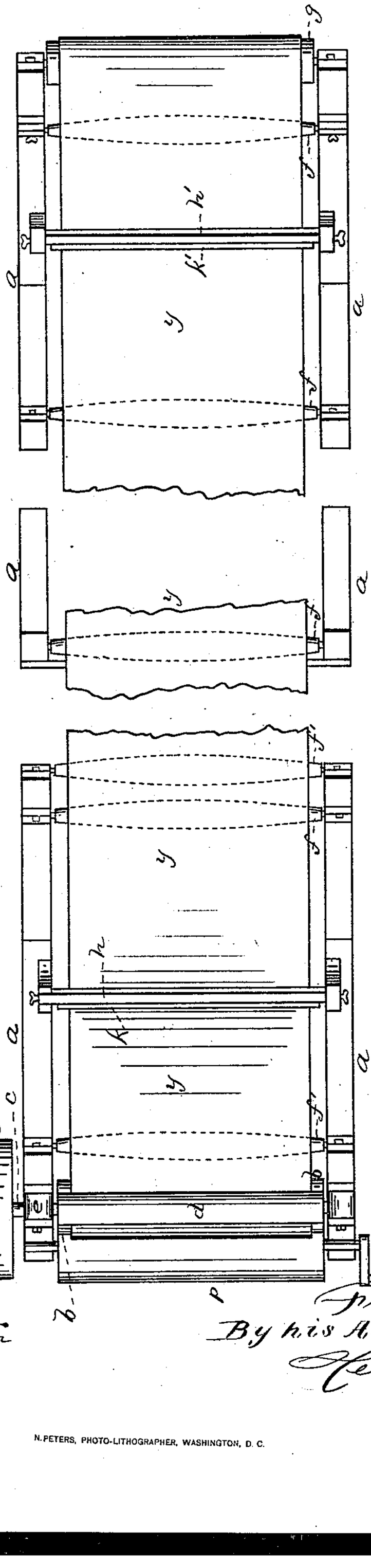

Fig. 2.

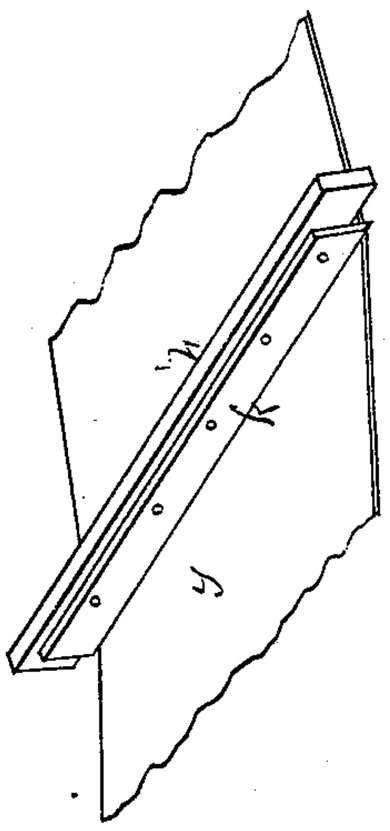

Fig. 3.

WITNESSES

L. B. W. Williams

George V. Mallon

INVENTOR

Frank E. Aldrich.

By his Atty

Henry W. Williams

UNITED STATES PATENT OFFICE.

FRANK E. ALDRICH, OF BOSTON, MASSACHUSETTS.

MACHINE FOR PREPARING LIGHT-WEIGHT RUBBER CLOTH.

SPECIFICATION forming part of Letters Patent No. 235,117, dated December 7, 1880.

Application filed October 21, 1880. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. ALDRICH, of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Machines for Preparing Light-Weight Rubber Cloth, of which the following is a specification.

This is an improved machine for coating cloth with rubber or a composition of which rubber is an ingredient, for the purpose of producing gossamer fabric, subsequently to be made into water-proof garments, &c.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a longitudinal vertical section of the improved machine, unimportant portions being broken out at the center. Fig. 2 is a plan view of the same. Figs. 3 and 4 are detached views of straight and curved knives, respectively.

a represents the frame of the machine. *b* is a roll fixed upon the shaft *c*, to which power is communicated by means of pulley *c'*. *d* is a pressure-roll lying upon roll *b* and allowed vertical play in the frame *e*. *g* is a roll at the opposite end of the machine, similar to roll *b*. At intervals between the rolls *b* and *g* are placed elliptical rolls *f f'*.

The fabric *y* is made into an endless belt, and is stretched from the roll *b* over elliptical rolls *f*, around roll *g*, and back under elliptical rolls *f'* to roll *b*. A knife, *k*, usually made adjustable in a support, *h*, stretches across and presses upon the fabric between the roll *b* and the first roll *f*.

Power having been applied to the shaft *c*, the roll *b* moves the fabric *y* in the direction indicated by the arrow in Fig. 1. Between the roll *b* and and the knife *k*, (which is inclined toward the approaching fabric,) the liquid coating is poured upon the cloth. The knife *k* presses the coating into the fabric and serves to spread it evenly. A drip-pan, *l*, is placed beneath the knife to receive the overflow.

In machines as commonly constructed the endless belt passes from roll *b* under a knife, *k*, and perhaps over rolls of even thickness to roll *g*, thence back to roll *b*, to receive another coat, and so on until, say, ten to forty coats have been applied. In this machine the fabric passes over and under elliptical rolls *f f'*, by which means all longitudinal wrinkling is avoided, as each elliptical roll has a tendency to stretch the fabric laterally, thus doing away with stretching by hand; also, in this machine a supplementary knife, *k'*, held in support *h'*, and having a drip-pan, *l'*, is provided near the roll *g*, at the opposite end of the machine, in front of which knife another liquid coat is poured upon the fabric. Thus two coats are applied to the fabric with sufficient drying space between them before it returns to the roll *b*.

When it is remembered that a large number of coats are often applied, and that the fabric moves slowly through a machine fifty to seventy-five yards long, it will be seen that much time is saved by applying a coat in front of the supplementary knife *k'*, at the farther end. The time taken for the fabric to return to the roll *b*, as well as to pass from it, is utilized, a coat drying while the fabric is returning.

A fine finish is produced by means of the pressure-roll *d*, which presses the liquid into the fabric, supplementing the work of the knives.

The knife as ordinarily constructed in such machines is straight and set so as to tip toward the approaching fabric, as shown in Figs. 1, 2, and 3. It is found that the liquid, when poured in front of a straight knife, has a tendency to flow toward the edges, thus slighting the center. To obviate this difficulty the knife *n*, (see Fig. 4,) secured to the support *m*, is constructed. This knife is curved, having been cut on a circle, so as to present a concave front to the approaching fabric and liquid. The curve is intended to be just sufficient to overcome the tendency to overcoat the sides, and to produce an even coat throughout the width. A corresponding curve downward toward the center is made upon the edge of the knife, so that it may tip forward and yet treat the fabric equally. The convexity of the edge is just sufficient to make it horizontal when the knife is properly inclined.

By means of this improved machine much time is saved and a fine finish is obtained.

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

1. The herein-described machine for apply-

ing the coating material in the manufacture of light-weight rubber cloth, the same consisting of the frame *a*, roll *b*, to which driving mechanism is applied, and knife *k* near said roll, and at the opposite end of the frame the roll *g*, and supplementary knife *k'* near said roll *g*, supporting-rolls being placed at intervals between the two rolls *b* and *g*, substantially as and for the purpose set forth.

2. In a machine for applying the coating material in the manufacture of light-weight rubber cloth, the combination, with the frame *a*, knife *k*, and roll *b*, of the pressure and finishing roll *d*, held in the frame *e*, all arranged and constructed substantially as and for the purpose described.

3. In combination with the rolls *b* and *g* and knife *k*, all supported by the frame *a*, the elliptical rolls *f*, constructed substantially as described, for the purpose of preventing the wrinkling of the fabric during treatment.

4. In a machine for applying the coating material in the manufacture of light-weight rubber cloth, the curved knife *n*, constructed as described, to present a concave front to the approaching fabric and coating material, and having its edge curved so as to be horizontal when the knife is inclined forward at a suitable angle, for the purpose specified.

FRANK E. ALDRICH.

Witnesses:
HENRY W. WILLIAMS,
B. W. WILLIAMS.