

(No Model.)

2 Sheets—Sheet 1.

G. ROGER.

MACHINE FOR CUTTING PILE OF WELT PILE FABRICS.

No. 592,714.

Patented Oct. 26, 1897.

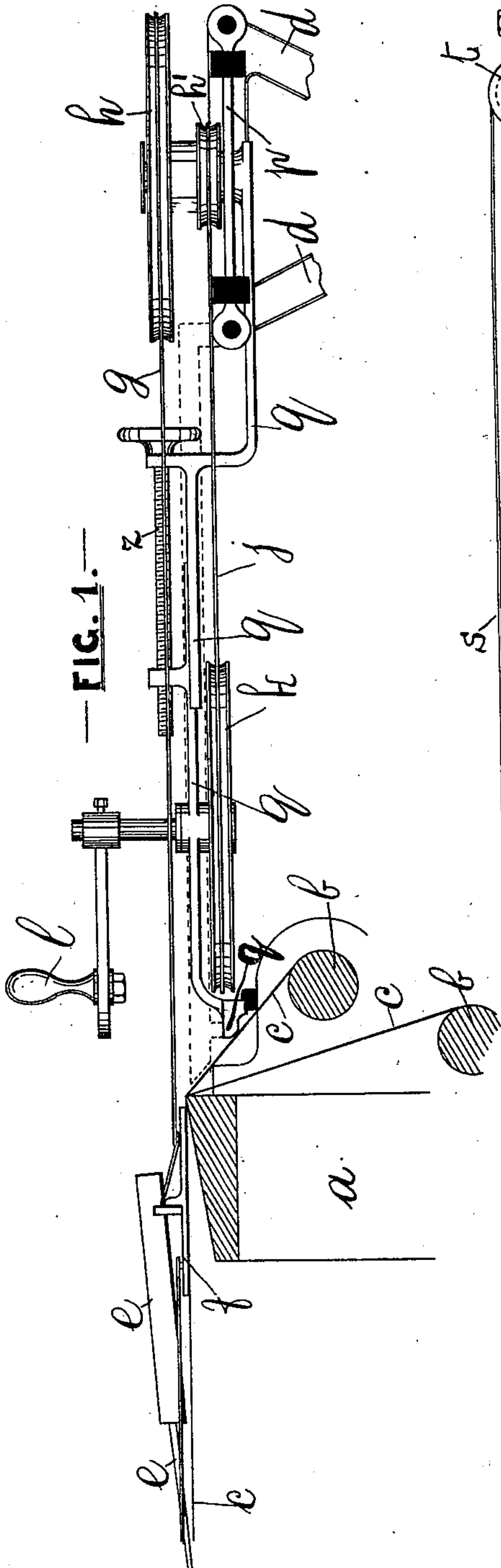


FIG. 1.

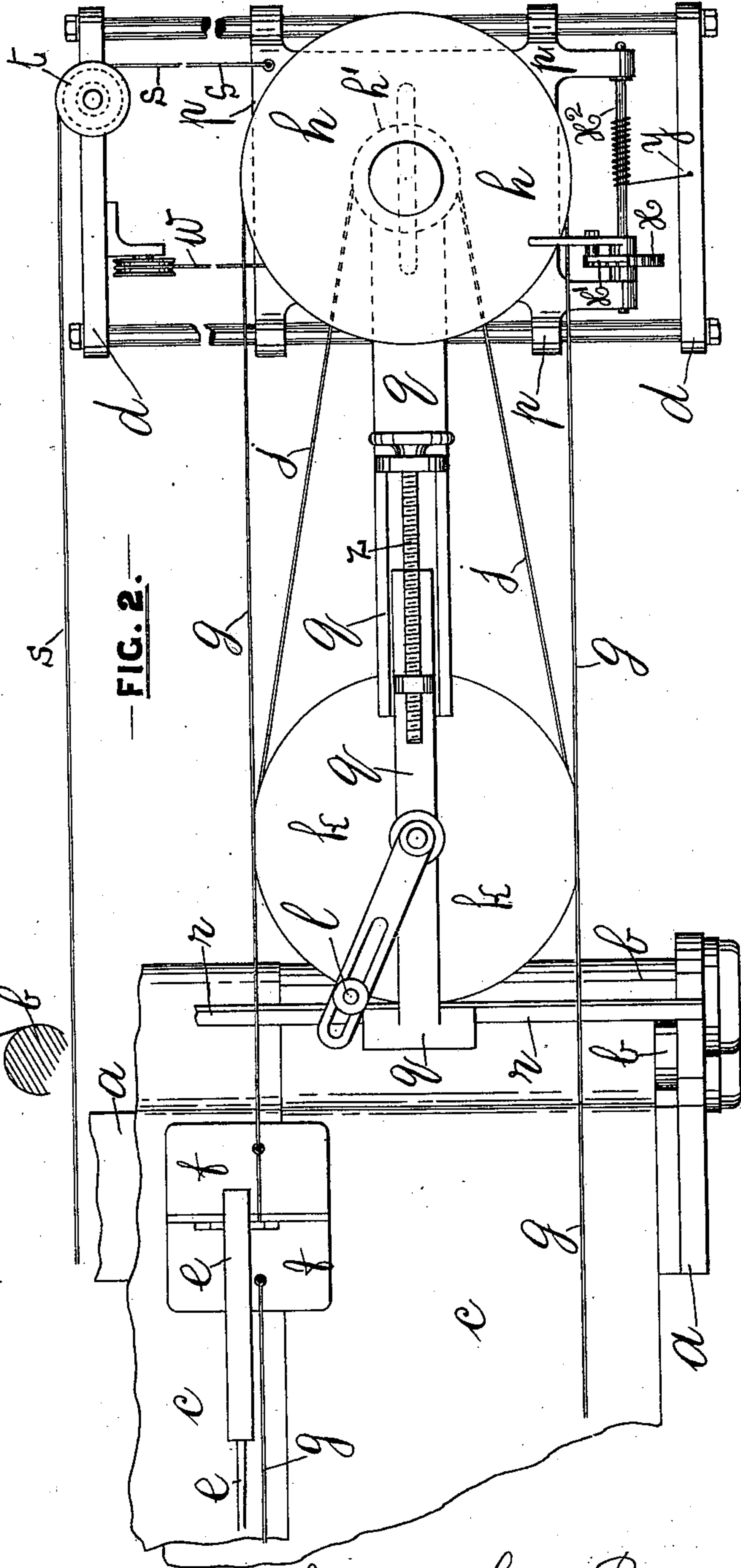


FIG. 2.

Witnesses
George Frederick Gadd.
Arthur Gadd.

Inventor: George Roger
per William Gadd
Attorney.

(No Model.)

2 Sheets—Sheet 2.

G. ROGER.

MACHINE FOR CUTTING PILE OF WEFT PILE FABRICS.

No. 592,714.

Patented Oct. 26, 1897.

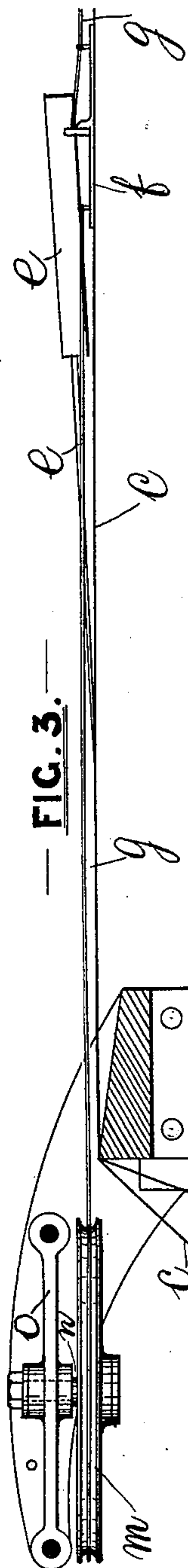


FIG. 3.

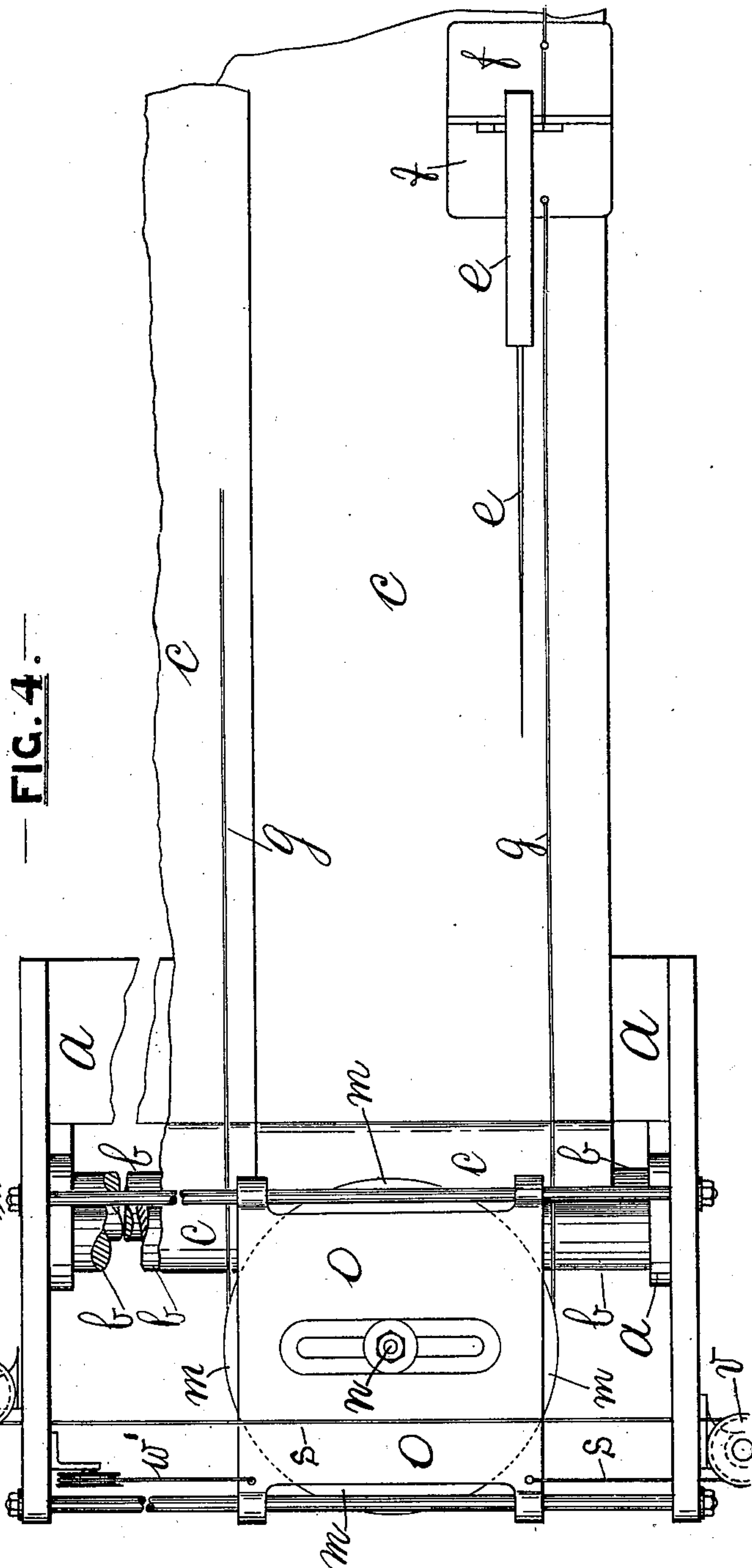


FIG. 4.

Witnesses:
George Frederick Gadd.
Arthur Gadd.

Inventor: George Roger.
per William Gadd.
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE ROGER, OF WARRINGTON, ENGLAND.

MACHINE FOR CUTTING PILE OF WEFT PILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 592,714, dated October 26, 1897.

Application filed January 23, 1897. Serial No. 620,497. (No model.) Patented in England October 16, 1895, No. 19,381; in France February 11, 1896, No. 253,846; in Belgium February 11, 1896, No. 119,786; in Germany February 14, 1896, No. 88,931, and in Austria December 16, 1896, No. 46/5,021.

To all whom it may concern:

Be it known that I, GEORGE ROGER, a subject of the Queen of Great Britain, residing at Warrington, in the county of Lancaster, England, have invented new and useful Improvements in Cutting the Pile of Weft Pile Fabrics, (for which I have obtained patents in the following countries: Great Britain, numbered 19,381 and dated October 16, 1895; France, numbered 253,846 and dated February 11, 1896; Belgium, numbered 119,786 and dated February 11, 1896; Germany, numbered 88,931 and dated February 14, 1896, and in Austria, numbered 46/5,021 and dated December 16, 1896,) of which the following is a specification.

The improvements relate to the cutting of the weft pile fabrics, and are more particularly applicable to cutting on what is known as the "long run," although they may be adapted to the short frame, if requisite, and have for their object greater facility in connection with such cutting. To accomplish this and to effect my improvements, I mount in any convenient manner at each end of a stretched piece of cloth in a cutting-frame, preferably a drum or pulley, either vertically, horizontally, or at an angle, around which pulleys I cause to pass an endless cord, wire, or band, or it may be a light chain-gearing, which cord, wire, or band stretches above the surface of the fabric in sufficiently-close proximity thereto. To this cord, wire, or band I attach at two points a light frame, by means of which the cutting-knife is actuated in its travel in such manner that as the band is moved the knife is pulled or pushed along in the "race" of the fabric. Attached to, connected with, or forming part of each of the pulleys aforesaid may be arranged a second pulley, preferably concentric with the first and of smaller diameter, around which smaller pulleys a second cord, wire, or band is caused to pass in such manner that as the operator moves the last-named band the pulleys are revolved and the band passing over the larger pulleys is moved to a greater distance than the actuating-band, whereby a distance of race is cut at one operation which may greatly exceed the travel of the operator, or the operator may

remain stationary, moving the cord only within arm's length, and yet cause the knife to travel a considerable distance, or, in lieu of this second set of pulleys and bands, a handle may be attached to one of the first-named pulleys, and thereby the knife may be carried forward by the simple turning of such handle. In like manner a handle may be attached to one of the secondary pulleys above named and the actuation effected thereby in an analogous manner. At the same time the operator can readily become sensibly aware of any varying actuation given to the knife arising from penetration of the fabric or other cause by means of a screw or other tension apparatus for stretching apart the pulleys to the proper degree requisite for the purpose.

That the improvements may be better understood I will, with the aid of the accompanying drawings, proceed more fully to describe means employed by me.

In the drawings, Figure 1 shows an elevation partly in section; and Fig. 2 a plan view of apparatus arranged in accordance with one form of my invention at the operating end of the stretched piece of cloth, while Fig. 3 shows an elevation partly in section, and Fig. 4 a plan view of apparatus arranged in accordance with a like form of my invention at the opposite end of the strained piece of cloth.

The same letters indicate corresponding parts wherever they occur.

a is a portion of the framing carrying the tightening-rollers *b* for the purpose of stretching the cloth to be cut, as will readily be understood, and all details of which are omitted for the sake of clearness.

c are the pieces of cloth, although only one may be operated upon at once; but it is practicable to operate two, as shown, which may be arranged either to overlap each other in their width or may be arranged clear of each other side by side.

d is a portion of the framing carrying the special apparatus to be described, the other end being supported by the ordinary framing *a*, although, if preferred, the framing may be designed to carry the apparatus independently.

e shows a weft-pile-cutting knife which is preferably carried forward by means of the carrier *f*, which is supported solely by the stretched fabric and actuated by the band or cord *g*, which passes around the pulley *h*, to which is attached the smaller pulley *h'*, and which is driven by the band or cord *j*, passing around the third pulley *k*, which is operated by the handle *l*, as will be readily understood. The cord or band *g* traverses the length of the strained portion of cloth and around the pulley *m*, which is mounted on the stud *n*, attached to the sliding plate or frame *o*. In similar manner the pulley *h* is mounted on the slide *p*, which carries with it the pulley *k*, with its handle *l*, by means of the projection *q*, the end of which rests and slides on the bar *r*, forming part of or attached to the frame *a*. The slide *p* is caused to synchronize with the slide *o* by means of the cord or band *s*, passing from its attachment of the one slide to the attachment of the other slide around the pulleys *t*, *u*, and *v*. In addition counterbalancing-cords *w* and *w'* are shown in Figs. 2 and 4 passing over pulleys, and to the ends of which weights are attached, but which are omitted in the other views for the sake of clearness. Any suitable means may be employed for adjusting the length of this cord for the purpose of keeping the slides in their proper relative positions, and in Fig. 2 a ratchet-wheel *x* and pawl *x'* is shown on the shaft or drum *x²*, upon which a cord whose other end is fixed, as at *y*, is wound at intervals by such ratchet-wheel and pawl.

To keep the band *j* of the requisite degree of tension, the screw extension *z* is provided, whereby the pulleys *h* and *k* are forced apart or drawn together, as desired.

In operation the knife is set into the race in the ordinary manner, when the handle is turned and the knife-carrier travels with the knife to the opposite end, and is brought back by reversing the motion of the handle. The knife may be attached loosely to the carrier by means of a cord and hook or other convenient arrangement to insure the same being brought back to the operator. When two pieces of cloth are strained, as shown, a knife-carrier is provided to both halves of the cord in such manner that one goes forward as the other returns. By means of the adjustment of tension of the actuating-cord *j* great delicacy of operation may be obtained, so as to enable the operator to readily feel any variation in the resistance to the force required to actuate the knife. Only just sufficient tension may be given to the actuating-cord to enable it to propel the knife when cutting a single race, so that in the event of the knife meeting with any obstruction or more than normal resistance to its travel the actuating-cord will slip on the pulley and the knife will cease to travel, so that if the knife turns into the "slip" or "double race" or

makes a hole in the cloth it stops in its progress and thus avoids further damage to the cloth.

In lieu of the handle-pulley a pulley without a handle, as already described, may be employed, and the operator would in that case actuate the apparatus by pulling the cord *j* to and fro. Also, when only one knife is employed, the pulleys carrying the band *g* may be mounted in other positions than the horizontal, as shown, and the design of the parts and precise mode of actuating and connecting the same may be made, together with other variations in detail, without departing from the peculiar character of the invention.

Inasmuch as the value and quality of the cloth operated upon by machines of this character depends wholly upon the degree of perfection and accuracy of the cutting of the pile, I have discovered from actual experience that by causing the knife or its carrier to ride directly upon or be supported solely by the stretched fabric (whether such cloth is supported or not by a table) the knife will be enabled to accurately follow the curve or undulation of such fabric and thereby cut the pile with great nicety and precision, and at the same time, owing to the delicacy of this operation, the operator instantly feels any obstruction or undue resistance to the free travel of the knife, and thereby, knowing that something is going wrong, ceases to propel the knife at once, thus preventing the knife from puncturing or otherwise injuring the cloth.

An apparatus made in accordance with my invention is very simple in construction and can be cheaply manufactured. Its parts are also within reach and can be easily got at for repair and adjustment.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I would have it understood that I do not claim the employment of a running band and traveling knife *per se*; but

What I claim is—

1. In apparatus for cutting weft pile fabrics, the combination of a traveling knife or knives supported solely by the cloth, a flexible cord or band carrying said knife or knives, and adapted to be moved to and fro to reciprocate the said knife or knives, substantially as and for the purposes hereinbefore set forth.

2. In apparatus for cutting weft pile fabrics, the combination of a traveling knife or knives, supported solely by the cloth, a flexible cord or band carrying said knives, and mechanism arranged at the opposite ends of said apparatus for supporting said cord or band, substantially as and for the purposes hereinbefore set forth.

3. In apparatus for cutting weft pile fabrics, the combination of a traveling knife or knives, a carrier or carriers therefor supported solely by the said cloth, a flexible cord or band, attached to said carrier or carriers,

pulleys or drums located at opposite ends of the frame and supporting the said cord or band, and means for actuating the said cord or band, substantially as and for the purposes hereinbefore set forth.

4. In apparatus for cutting weft pile fabrics, the combination of a traveling knife or knives, supported solely by the cloth, a flexible cord or band, pulleys or drums arranged at opposite ends of the apparatus for supporting said cord or band, driving-pulleys h' and k , a cord or band j passing around said last-named pulleys and means for actuating said cord or band j , substantially as and for the purposes hereinbefore set forth.

5. In apparatus for cutting weft pile fabrics, the combination of a traveling knife or knives, supported solely by the cloth, a cord or band g carrying said knife or knives, pulleys or drums h and m arranged at opposite ends of the frame, a secondary driving-cord j , pulleys h' and k around which cord j passes,

a tension device z adapted to regulate said cord or band g , substantially as and for the purposes hereinbefore set forth.

6. In apparatus for cutting weft pile fabrics, the combination of a traveling knife or knives, supported solely by the cloth, a cord or band connected to said knife or knives, pulleys or drums supporting said cord or band arranged at opposite ends of the frame, secondary pulleys or drums h' and k , connecting-cord j therefor, carrier-pulleys t , u and v on the frame of the apparatus, as set forth, slides o , p , carrying pulleys h and m and connecting cord or band s for moving the slides synchronically across the width of the cloth, substantially as and for the purposes hereinbefore set forth.

GEORGE ROGER.

Witnesses:

WILLIAM GADD,

GEORGE FREDERICK GADD.