

(No Model.)

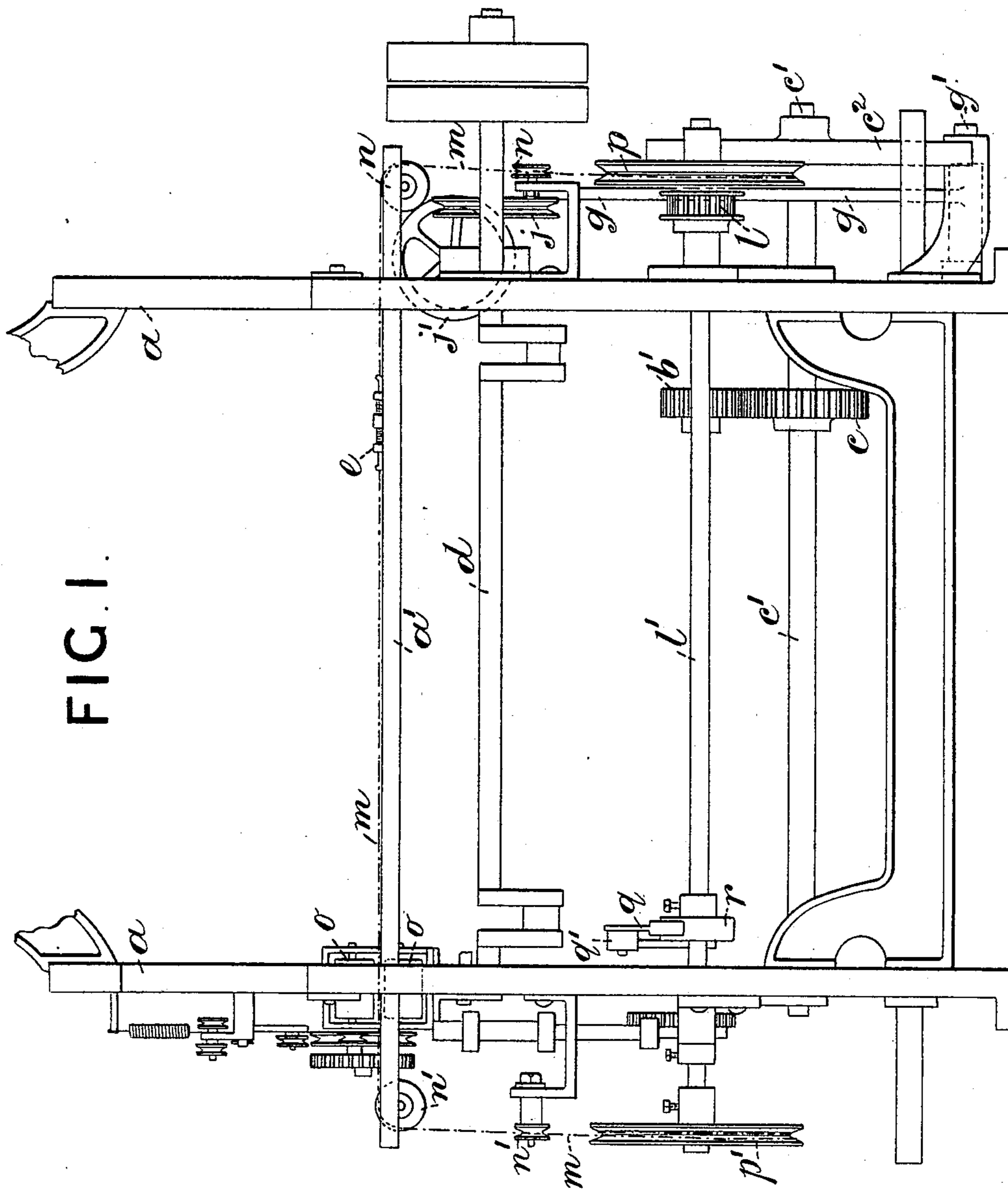
**3 Sheets—Sheet 1.**

W. SMITH.

# CUTTING MECHANISM FOR LOOMS FOR WEAVING DOUBLE PILE FABRICS.

No. 368,247.

Patented Aug. 16, 1887.



Witnesses:  
W. R. Faight.  
A. Fichtl

Inventor:  
Wm Smith  
by Wm H Babcock  
Atty.

(No Model.)

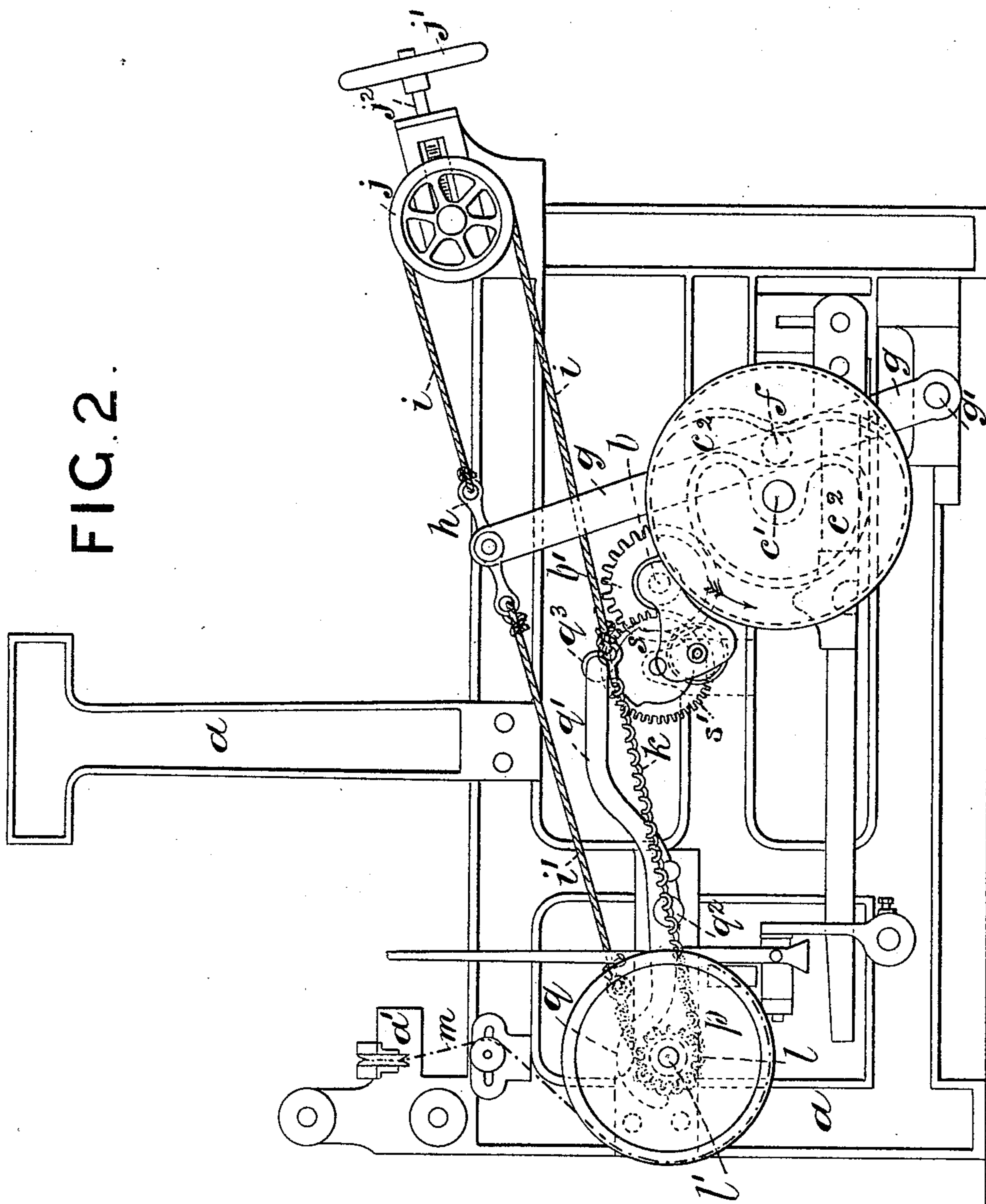
3 Sheets—Sheet 2.

W. SMITH.

CUTTING MECHANISM FOR LOOMS FOR WEAVING DOUBLE PILE FABRICS.

No. 368,247.

Patented Aug. 16, 1887.



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(No Model.)

3 Sheets—Sheet 3.

W. SMITH.

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FIG. 3.

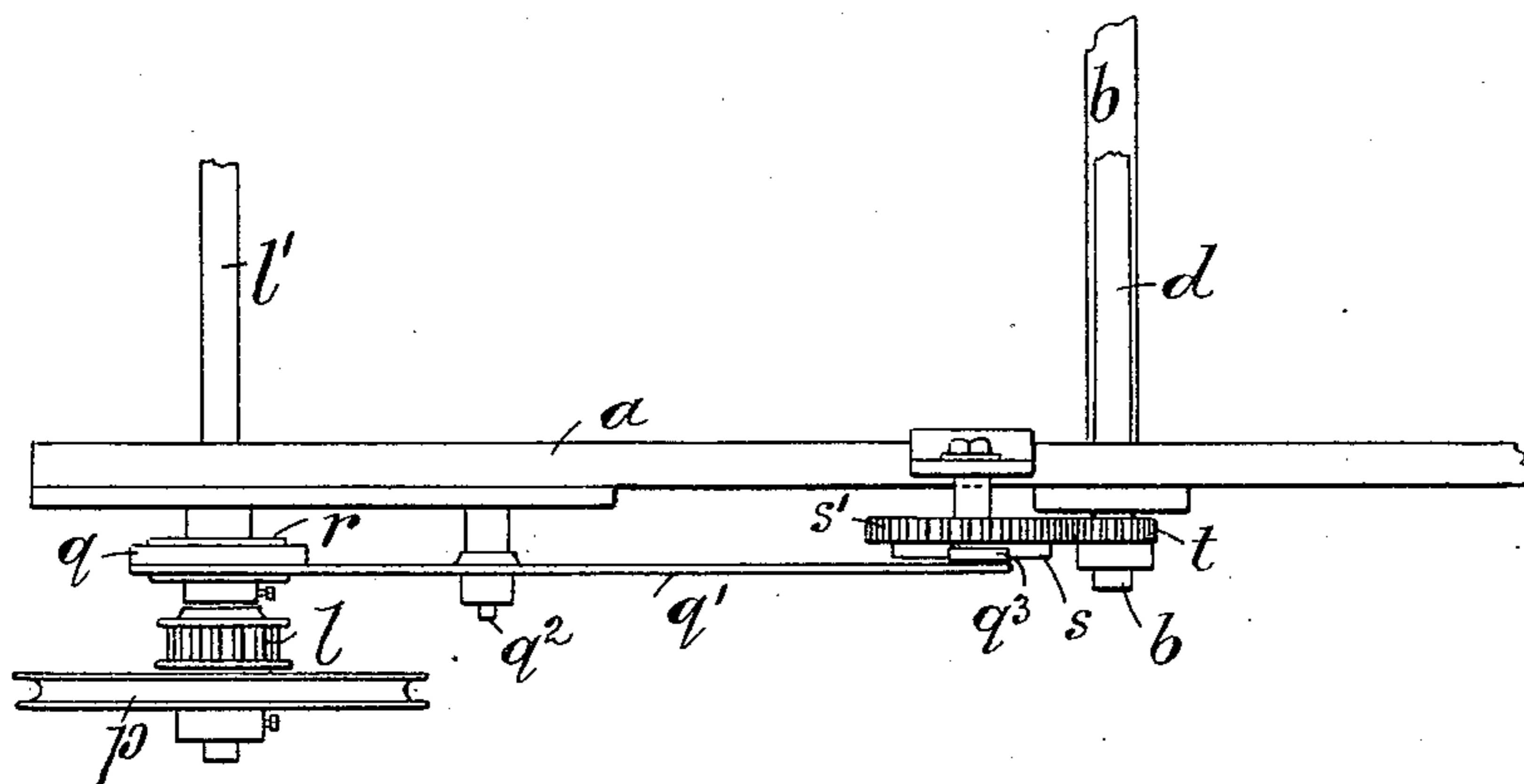
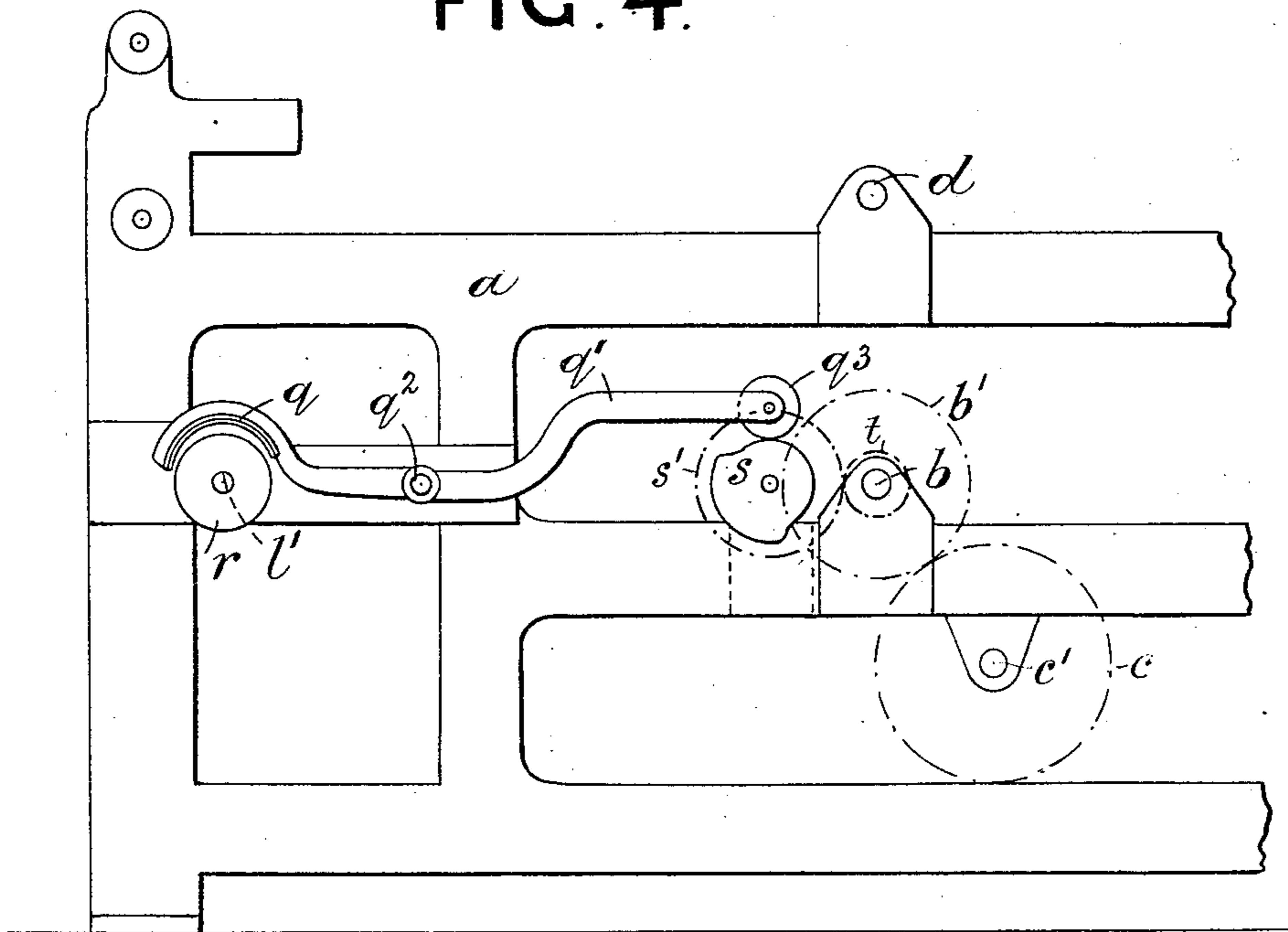


FIG. 4.



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# UNITED STATES PATENT OFFICE.

WILLIAM SMITH, OF HEYWOOD, COUNTY OF LANCASTER, ENGLAND.

CUTTING MECHANISM FOR LOOMS FOR WEAVING DOUBLE PILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 368,247, dated August 16, 1887.

Application filed October 18, 1886. Serial No. 216,538. (No model.) Patented in England July 20, 1886, No. 9,386; in France August 17, 1886, No. 173,010, and in Austria-Hungary November 17, 1886, No. 31,290 and No. 57,070.

*To all whom it may concern:*

Be it known that I, WILLIAM SMITH, a subject of the Queen of Great Britain, residing at Heywood, in the county of Lancaster, England, have invented certain new and useful Improvements in Cutting Mechanism for Looms for Weaving Double Pile Fabrics, (the same having been patented in Great Britain by Letters Patent No. 9,386, dated July 20, 1886; in France by Letters Patent No. 173,010, dated August 17, 1886, and in Austria-Hungary by Letters Patent No. 31,290 and No. 57,070, dated November 17, 1886,) of which the following is a full, clear, and exact description.

My invention relates to improvements in looms employed in the manufacture of double pile fabrics, the object of my improvements being to simplify and render more effective the mechanism by which a reciprocating or to-and-fro motion across the loom is imparted to the carriage of the knife or cutter employed to cut the pile.

It is usual to employ a toothed segment or quadrant and gearing for imparting an oscillating or reciprocating motion to a shaft carrying a pulley at each end, to which pulleys the ends of the knife-carriage cords are fastened, and on which the said cords are alternately wrapped and unwrapped as the pulley-shaft oscillates and the knife-carriage and knife moves from side to side of the loom.

The invention consists in dispensing with this mechanism and in substituting therefor a rocking lever, which receives its reciprocating motion from a cam or any known equivalent and transmits this motion, by connections hereinafter set forth, to the above-named pulley-shaft.

The invention also consists in an automatic brake and its actuating mechanism, substantially as hereinafter set forth and claimed, for the purpose of stopping the knife-carriage quickly at the end of every completed traverse.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of a portion of a loom for weaving and cutting a double pile fabric, and to which my improvements have

been applied. Fig. 2 is an end elevation of the same. Fig. 3 represents a plan view, and Fig. 4 a side elevation, of the brake, the pulley against which it operates, the devices for actuating said brake, the frame which supports them, and certain proximate devices, some parts being broken away or removed from each of these figures. In said Figs. 3 and 4, as well as in Fig. 2, the brake and its actuating devices are shown outside of the loom-frame at the right-hand end, whereas in Fig. 1 it is shown within the latter and at the left; but there is no substantial difference between these arrangements.

In the views, *a* is the loom-frame, and *a'* the front part of the frame, in which there is the usual slideway for the knife-carriage *e*.

*d* is the crank-shaft, and *b* the tappet-shaft, to which is secured a spur-wheel, *b'*, which gears into a spur-wheel, *c*, fixed on an additional shaft, *c'*. On this shaft *c'* is keyed a hollow cam, *c''*, into the path of which is fitted an anti-friction bowl, *f*, secured to a lever, *g*, pivoted below to the loom-frame at *g'*. On the upper end of the lever *g* is a swivel-piece, *h*, to one end of which is connected an end of the rope *i*, which then passes round a guide-tightening pulley, *j*, which is supported in a slide on the frame and is free to be moved by operating the hand-wheel *j'* on the screw *j''*, for the purpose of adjusting the tension on the rope. The rope *i* is tied to one end of a sprocket-chain, *k*, which passes over and gears into a sprocket-wheel, *l*, keyed on the ordinary pulley-shaft, *l'*. The other end of the chain *k* is secured by a short piece of rope, *i'*, to the other end of the swivel-piece *h*. On the shaft *l'* are mounted, one at each end, the usual pulleys, *p p'*, to each of which is secured, but wound in opposite directions, an end of one of the two cords *m*, which pass over guide-pulleys *n n'*, the other ends of these cords being connected to the knife-carriage *e*.

The operation is as follows: When the parts are in the position shown in the drawings and motion is given to the loom, the tappet-shaft *b* revolves and the spur-wheel *b'*, gearing into the wheel *c*, transmits motion to the shaft *c'* and cam *c''*, causing them to revolve in the direction indicated by the arrow in Fig. 2, and

thus a rocking motion is imparted to the lever *g* by the action of the cam *c*<sup>2</sup> on the bowl *f*. As the lever *g* is rocked the ropes *i* *i'* and chain *k* move with it, thus causing the sprocket-wheel *l* and shaft *l'* to turn in one direction. 5 The effect of this movement is to wrap the cord *m* on the pulley *p'* and to draw the knife-carriage *e* along the slideway in *a'* from the right to the left side of the loom, where it dwells 10 until the cam *c*<sup>2</sup> causes the reverse movement of the lever *g* and chain *k*, and so turns the shaft *l'* in the opposite direction, thus wrapping the cord on the pulley *p* and carrying the carriage *e* back to the right side of the loom, 15 as shown in the drawings.

When I employ an ordinary tappet, four to the round, the knife-carriage *e* travels from the left to the right side of the loom during one revolution of the crank-shaft *d*, returning 20 from the right to the left side in the following revolution and remaining stationary on the left side during two more revolutions of the crank-shaft.

In order to bring the knife-carriage *e* and 25 knife quickly to rest on the left side of the loom after each traverse to and fro, I employ a brake, *q*, on a lever, *q'*, which acts upon a brake-wheel, *r*, keyed to the shaft *l'*. The lever *q'* is pivoted to the frame at *q*<sup>2</sup> and weighted at the end *q*<sup>4</sup>, where it carries an anti-friction 30 bowl, *q*<sup>3</sup>, which lies on an eccentric, *s*, cast with a pinion, *s'*. The pinion *s'* is preferably driven by a pinion, *t*, from the same shaft. In this case the shaft *b*, that drives the shaft *c'* and 35 the eccentric *s*, is adjusted to raise the bowl *q*<sup>3</sup> and apply the brake *q* as soon as the carriage *e*

comes to rest on the left side of the loom, and before the carriage is again set in motion the brake is raised automatically off the wheel *r* by its weighted end *q*<sup>4</sup>.

Having stated the nature of my invention and described the manner of its operation, I declare that what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination of pulley-shaft *l'*, pulleys *p* *p'*, knife-carriage *e*, the cord connecting them, and the chain-wheel *l* on said shaft, with cam *c*<sup>2</sup>, the rocking lever *g*, actuated by said cam, the toothed chain *k*, and the ropes *i* *i'*, the pulley *j*, over which said rope *i* passes, 45 and additional devices for extending said ropes, whereby said lever transmits reciprocating motion to said chain-wheel and pulley-shaft, substantially as and for the purpose set forth.

2. In combination with the knife-carriage, 55 the shaft which actuates it, the means for actuating said shaft, and intermediate devices for transmitting motion from said shaft to said carriage, a brake-lever acting against said shaft, and a cam arranged to operate said 60 brake-lever simultaneously with the coming to rest of the carriage at one end of its traverse, substantially as set forth.

The foregoing specification of my improvements in the cutting mechanism of looms for 65 weaving double pile fabrics signed by me this 1st day of October, 1886.

WILLIAM SMITH.

Witnesses:

GEORGE SMITH,  
RICHARD RIGBY.