No. 616,716. Patented Dec. 27, 1898.

J. J. MANN.

MACHINERY FOR CUTTING WEFT PILE FABRICS.

(Application filed Dec. 27, 1897.)

(No Model.) 5 Sheets—Sheet 1.

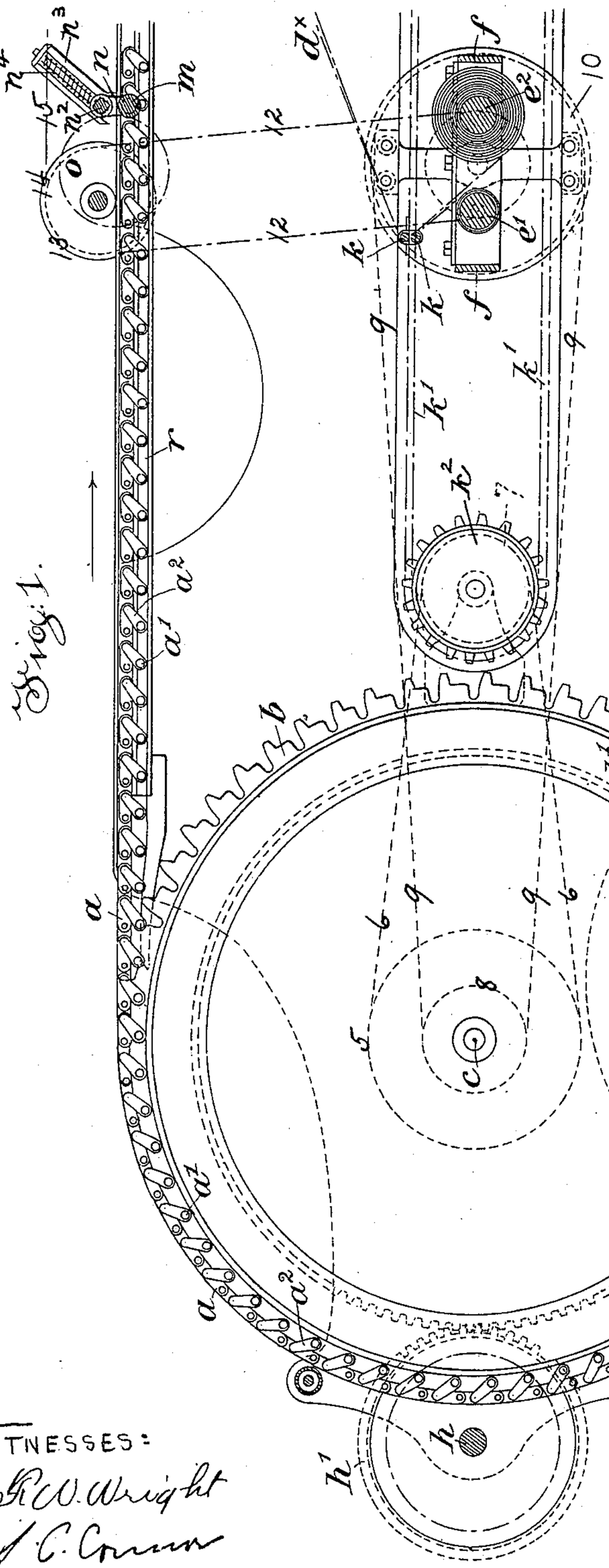

Fig. 1.

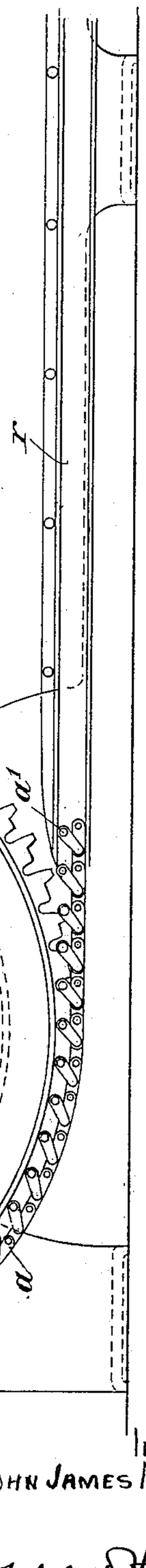

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Fig. 1a.

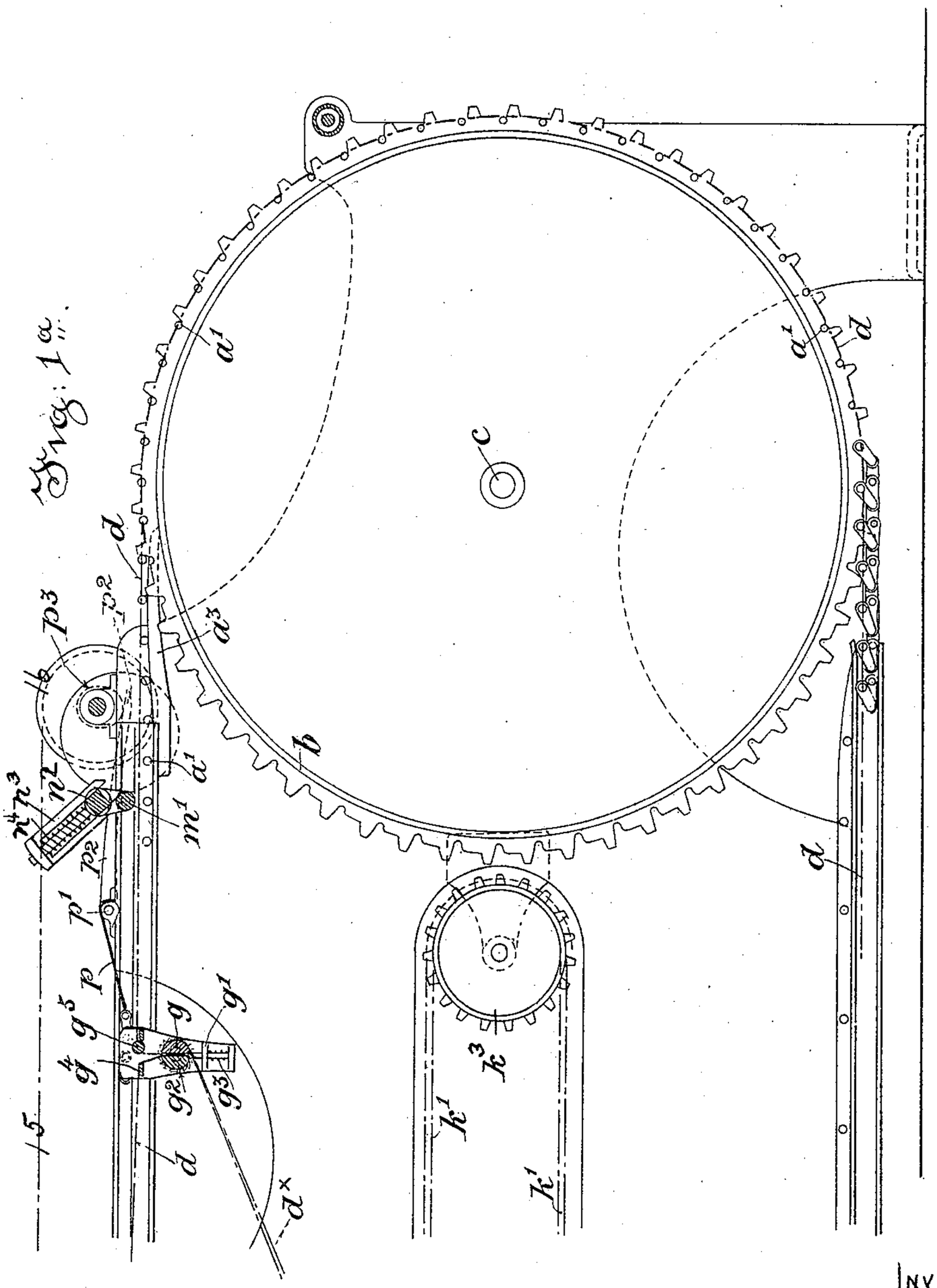

Fig. 3.

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Fig. 1b.

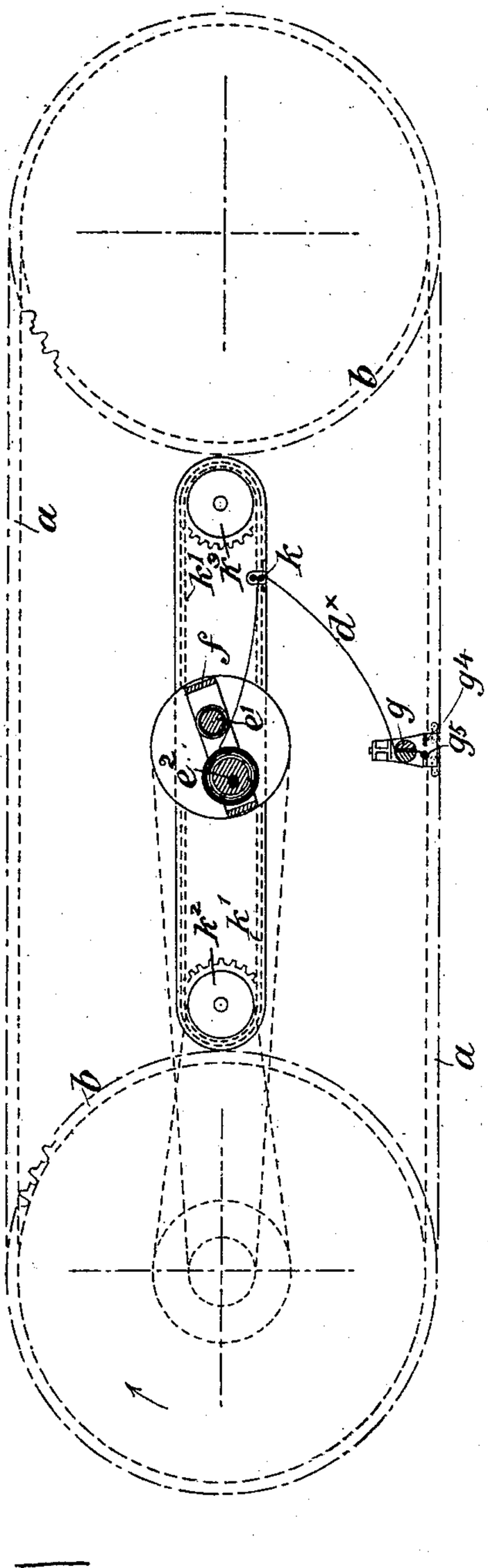
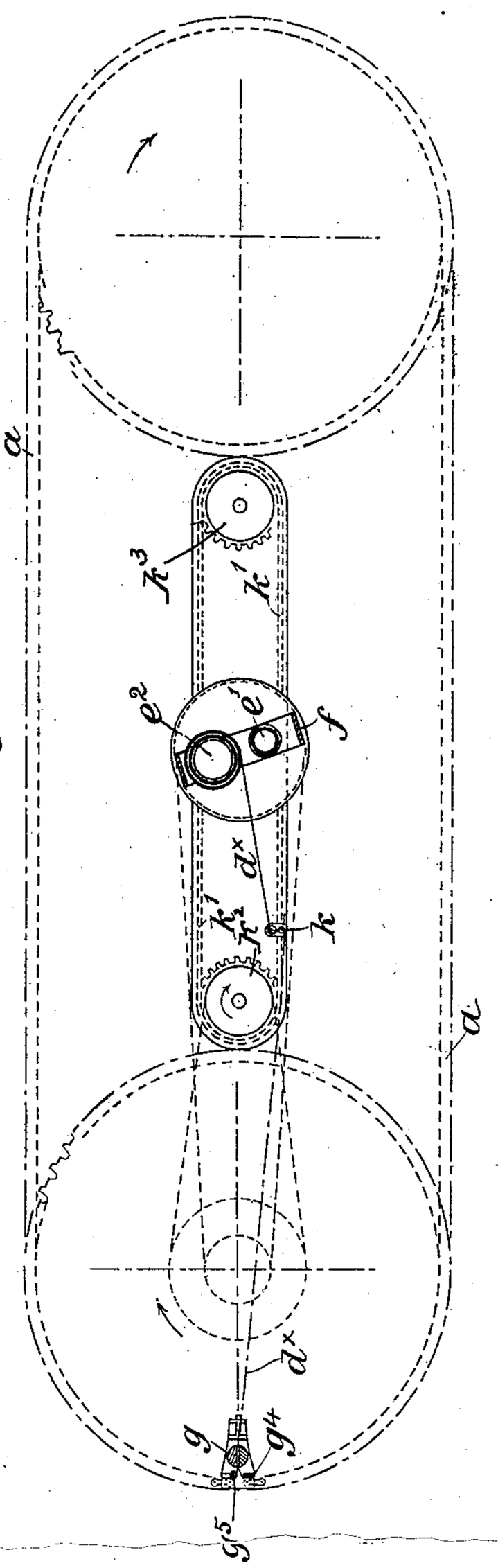


Fig. 1c.



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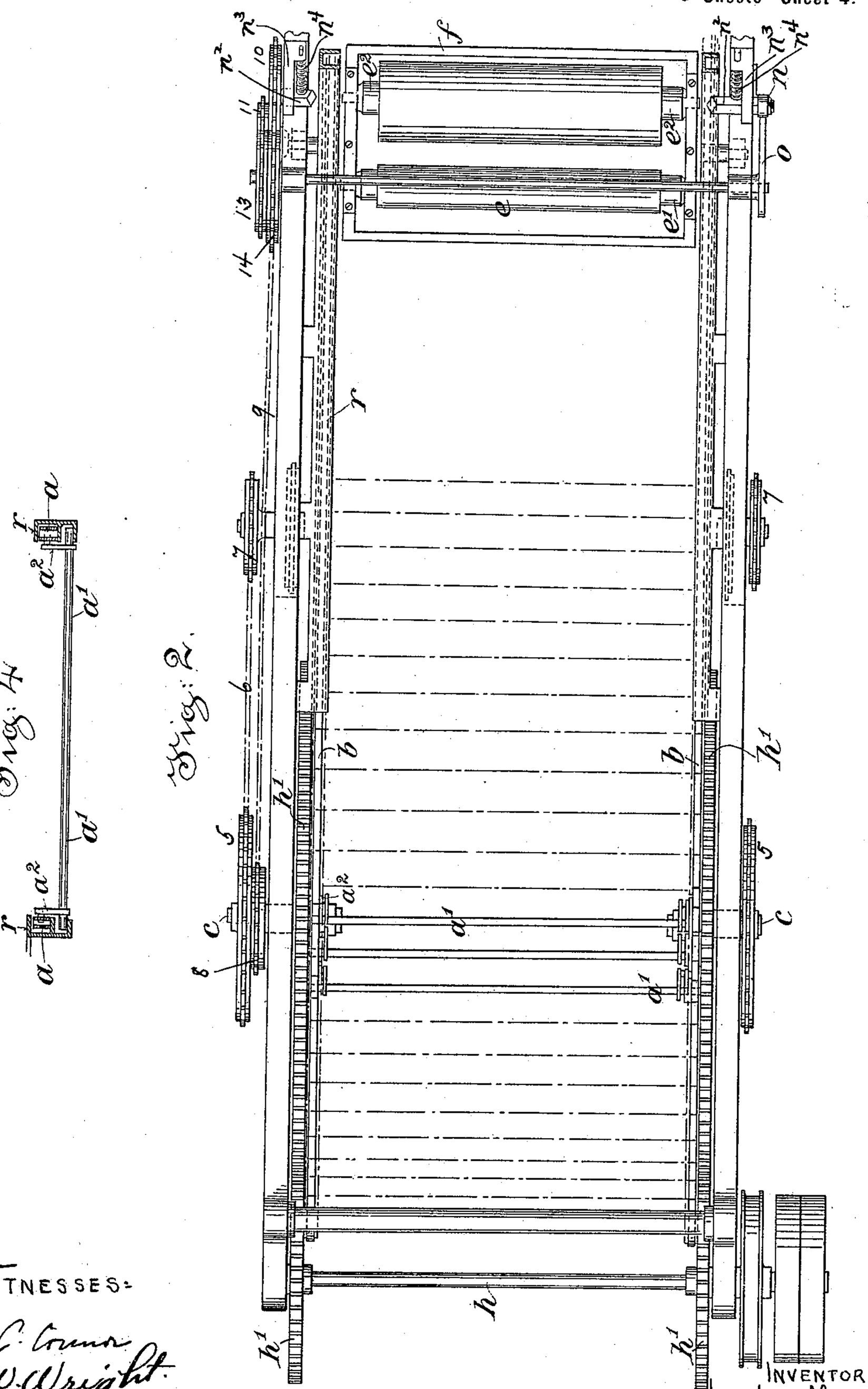

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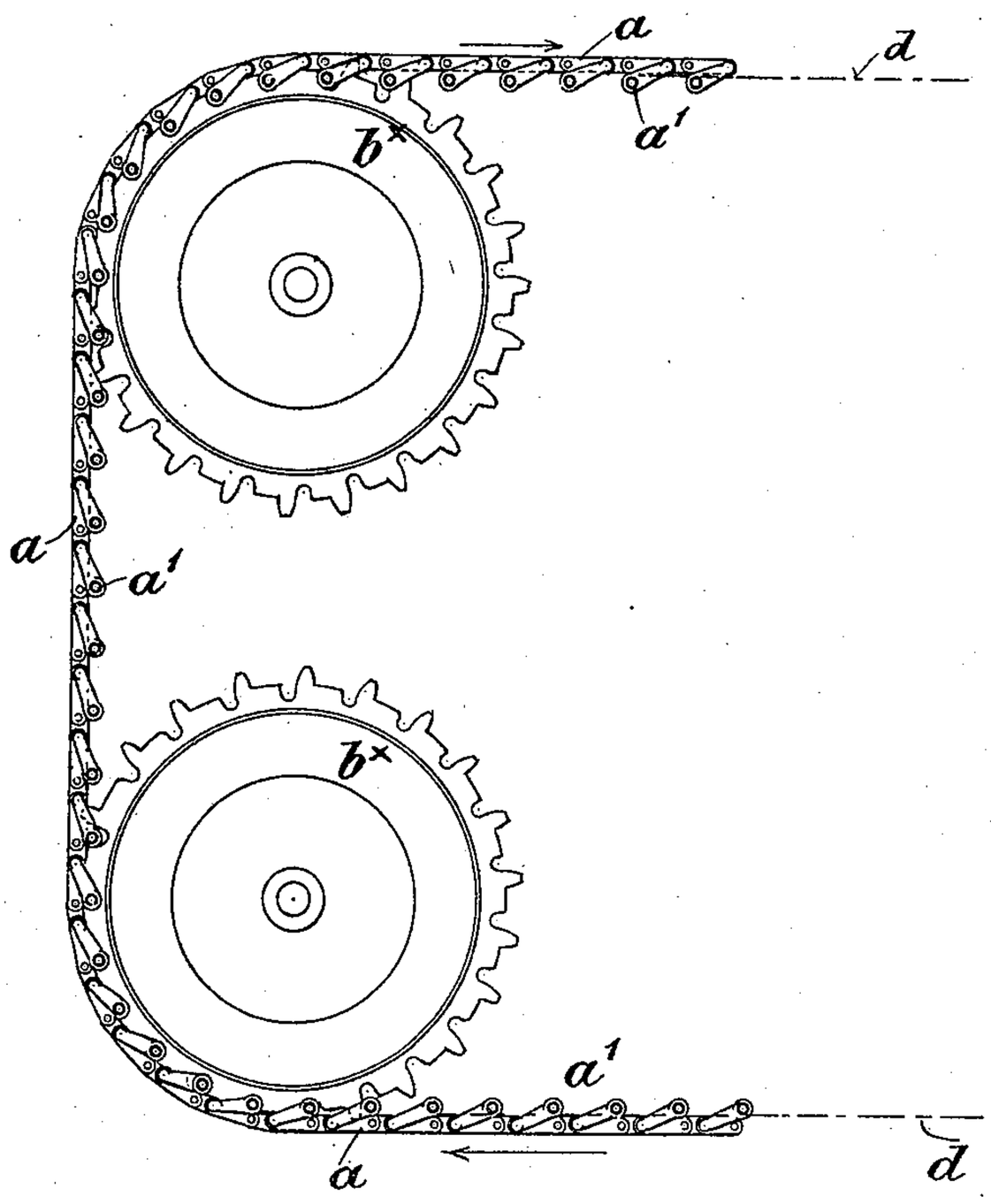
FIG: 5.



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UNITED STATES PATENT OFFICE.

JOHN JAMES MANN, OF PARIS, FRANCE.

MACHINERY FOR CUTTING WEFT PILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 616,716, dated December 27, 1898.

Application filed December 27, 1897. Serial No. 663,702. (No model.)

To all whom it may concern:

Be it known that I, JOHN JAMES MANN, a subject of the Queen of Great Britain and Ireland, formerly of Cheadle Hulme, in the county of Chester, England, now residing at Paris, France, have invented new and useful Improvements in Machinery or Apparatus Employed in Cutting Weft Pile Fabrics, (for which I have obtained British Patent No. 16,379, dated August 28, 1894, and German Patent No. 85,431, dated December 28, 1894,) of which the following is a specification.

This invention relates to machines employed in cutting weft pile fabrics in which the fabric is drawn past a stationary knife to cut the pile in short lengths of the piece—for example, as described in the specification of Letters Patent No. 475,620—the object being to dispense with the reciprocating motion such as described in the last-named specification.

My invention will be readily understood from the following description on reference to the accompanying drawings, in which—

Figure 1 is a section through the driving end of a machine constructed according to my invention, showing about one-half thereof. Fig. 1^a is a similar view of the remaining portion of the said machine. Fig. 2 is a plan view of the part shown on Fig. 1. Figs. 3 and 4 are detached parts hereinafter more particularly referred to; and Figs. 1^b, 1^c, and 5 are diagrams, drawn to a smaller scale, illustrative of special parts or modifications hereinafter described.

According to my invention I employ a pair of chains *a*, (or their equivalent,) mounted upon two pairs of chain-pulleys *b*, revolving upon suitable studs *c*. These chains *a* carry a series of transverse bars *a'*, of suitable material, forming a lattice upon which is stretched a length of the piece of fabric the pile of which is to be cut, as shown by the dot-and-dash line *d* on Fig. 1^a and Fig. 5. Each end of the fabric is rolled upon a suitable roller e' e^2 within the loop *d* of the fabric stretched on the lattice a' a', the said rollers e' e^2 being mounted in a suitable frame *f*, capable of motion as hereinafter described.

The lattice *a'* is provided with a suitable tension device, so that the fabric to be cut may be stretched thereon, as desired. This device consists or may consist of a split roller *g*, mounted on side plates or brackets *g'*, carried by the chains *a*. (See Fig. 1^a.) The parts $d^\times$ of the cloth coming from the rollers e' e^2 are passed through the split roller *g* to form the loop *d* and are tightened to the desired extent by the ratchet g^2 and spring-catch g^3. One end of the loop *d* is guided by the bar g^4, fixed to or forming part of the brackets *g'*, and the other end by the roller g^5, carried by the said brackets *g'*. (See also detached plan view Fig. 3.) One pair (or both pairs) of the said chain-pulleys *b* being driven from the driving-shaft *h* and gearing h' h^2 or otherwise and a suitable stationary knife of any known kind having been set in at about the bar g^4 in the first race, the cloth will be caused to travel beneath the said knife until the "setting-in" bar g^4 comes around to the starting-point again—that is, about the position shown on Fig. 1^a—when the apparatus is stopped and the knife is set in to cut the next race. It will be seen that the machine will not require to be reversed to bring it to the starting-point again, the interval of time between each cut being required only for setting in the knife into the next race.

The frame *f*, carrying the roll or rolls of the piece not stretched upon the lattice a a', (see Fig. 1,) is caused by the chain 9 or other gearing to turn over gradually as the lattice travels once for each motion or stroke of the said lattice, as seen by the two diagrams Figs. 1^b and 1^c, which show the lattice in two positions as it travels from and to the position shown in Figs. 1 and 1^a. By preference means are employed to take up or dispose of the slack part of the fabric $d^\times$ between the said roll or rolls and the tension device g g^2 g^3, above described, as the latter in its traverse with the lattice approaches or recedes from the frame *f*. I prefer to use for this purpose a pair of traveling bars, rollers, or rods *k*, (see Figs. 1, 1^b, and 1^c,) carried by a pair of chains *k'*, which pass around pairs of toothed wheels k^2 k^3, driven at such a speed that the slack of the parts $d^\times$ of the cloth which pass between the bars, rollers, or rods *k* is taken up or given off as required by the motion of the tension device g g^2 g^3 as it travels with the lattice a a' with regard to the frame *f* as it rotates. As will be readily seen from Figs. 1, 1^b, and 1^c,

the parts $d^{\times}$ of the cloth are almost straight, Fig. 1^{c}, when the tension device g g^2 g^3 is farthest from the frame f; but as the tension device g g^2 g^3 reaches the position nearest to the frame f, Figs. 1 and 1^{b}, the rollers k take such positions with relation to the frame f as to take up the slack.

The transverse bars which form the lattice a' a' are cranked downward or mounted on short hanging arms a^2, as shown also on the detached cross-section of the lattice, Fig. 4, or the bars may be otherwise so formed that those on the upper part of the chain can hang down or be depressed and leave the fabric g to be cut, (see Fig. 1^{a},) thereby forming a cutting-flat. The bars a' are raised again to pass around the pulley by means of suitable inclines a^3. (See Fig. 1^{a}.)

The frame of the tension device is so made that as the knife leaves the loop of cloth d at the top of the roller g^5, Fig. 1^{a}, it leaves it at a slightly-higher level than where it is set in, (the knife being set in, as above described, at the level of g^4,) and the said cloth d is depressed slightly at the cutting-flat by passing under rollers m m'. These depressing-rollers may be mounted in spring-bearings n n', as seen at Figs. 1 and 1^{a}, and raised at the proper moments by cams or eccentrics o o' to allow the tension device above described to pass freely beneath them. The specific form of spring-bearings illustrated in the drawings comprises in each case a pair of brackets n n', in which are mounted the journals of the rollers m m'. These brackets n n' are carried by a cross-bar n^2 of square cross-section, Figs. 1, 1^{a}, and 2, in fixed angular guides n^3, and each bar is acted upon by push-springs n^4, which tend to press the bar n^2, its brackets, and the rollers m m' downward.

The rear end of the fustian-cutter's knife is preferably steadied or supported by a cutting-table p in the manner usual in machines where the knife is held by the operator, and as the raising of the rollers m m' slightly raises the cutting-level I propose to alter the level of the cutting-table p by mounting it on a pivot at p' and tilting it at the required periods by a side lever or levers p^2, depressed by the eccentric or eccentrics p^3, thereby raising the edge $p^{\times}$ of the said table p. I prefer also to guide the chain a and lattice a' between the pulleys or wheels b in grooves r in the side framing of the machine. (See Figs. 1, 1^{a}, and 4.)

I sometimes pass the lattice-chains a or a^4 around more than one pair of pulleys at the end of the machine, as indicated by the diagram Fig. 5, where the chain a passes around two pulleys $b^{\times}$ instead of one pulley b.

It will be understood from the above arrangement that when all the races in the length of cloth that has been stretched upon the bars a' have been cut the machine is stopped, and the cut cloth is then wound upon the rollers e', thereby unwinding an uncut length of fabric from the roller e^2. This length is then treated as the preceding length, and so on throughout the piece which is thus cut, as above described, in short lengths and without reciprocating motion, such as was necessary in the machine described in Letters Patent No. 475,620.

The different moving parts of the machine may be driven by any suitable mechanism. In Figs. 1, 1^{a}, and 2 I have illustrated by way of example means suitable for the purpose. Thus motion may be transmitted from the left-hand shaft c to the shaft carrying the adjacent wheels k^2 by means of wheels 5 on the shaft c, belts or chains 6, and wheels 7 on the shaft carrying the wheels k^2. In a similar way motion may be imparted to the shaft carrying the frame f from the shaft c by means of a wheel 8 on the said shaft c, belting 9, and a wheel 10 on the shaft carrying the frame f. From this latter shaft motion may be transmitted through a wheel 11, belting 12, and wheel 13 to the shaft carrying the eccentric o. Thence corresponding rotary motion may be imparted to the shaft carrying the eccentric o' through the wheel 14, belting 15, and wheel 16.

I claim as my invention—

1. In machines for cutting the pile of weft pile fabrics in short lengths, of the piece, the combination of an endless lattice upon which a loop of the cloth to be cut is stretched, with means for causing the lattice to travel intermittently but always in the same direction, and rollers for carrying the cloth not being cut, the said rollers being mounted in a frame within the loop formed by the lattice, substantially as hereinbefore described.

2. In a machine for cutting the pile of weft pile fabrics, the combination of endless chains, and a lattice carrying a loop of the fabric, and chain-wheels therefor, with a tension device carried by the chain, to tighten the loop of fabric, and a rotating frame carrying the remainder of the fabric, substantially as hereinbefore described.

3. The combination of endless chains and a lattice carrying a loop of the fabric with chain-wheels, a tension device carried by the chains to tighten the loop of fabric, a rotating frame carrying the remainder of the fabric, and means for taking up or disposing of the slack of the cloth between the tension device and the rotating frame, substantially as hereinbefore described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN JAMES MANN.

Witnesses:

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J. H. OLLIVER.