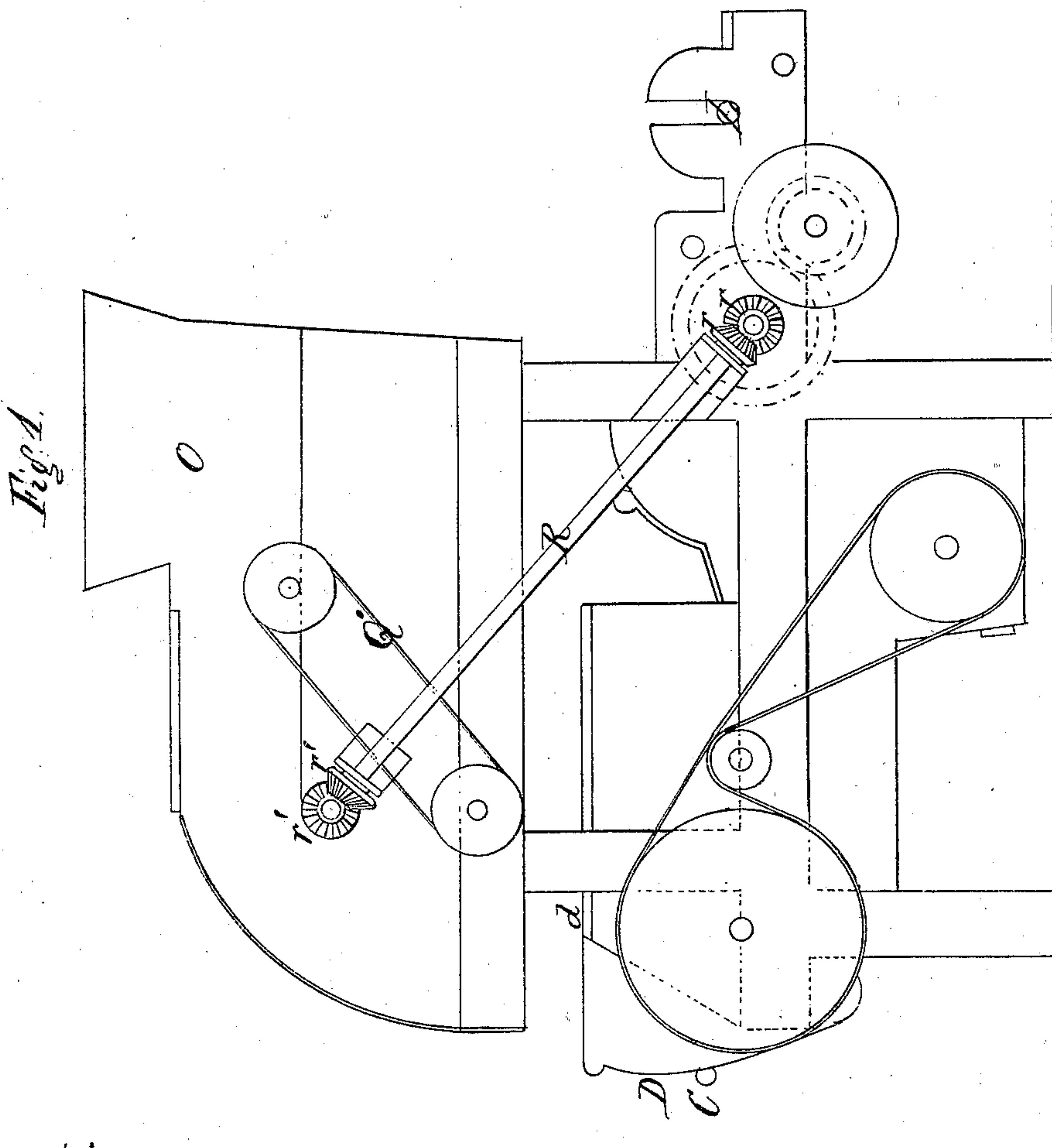


T. C. CRAVEN.

Machines for Making Cotton Laps.

No. 135,528.

Patented Feb. 4, 1873.



H. H. Doubleday
Atty. at Law

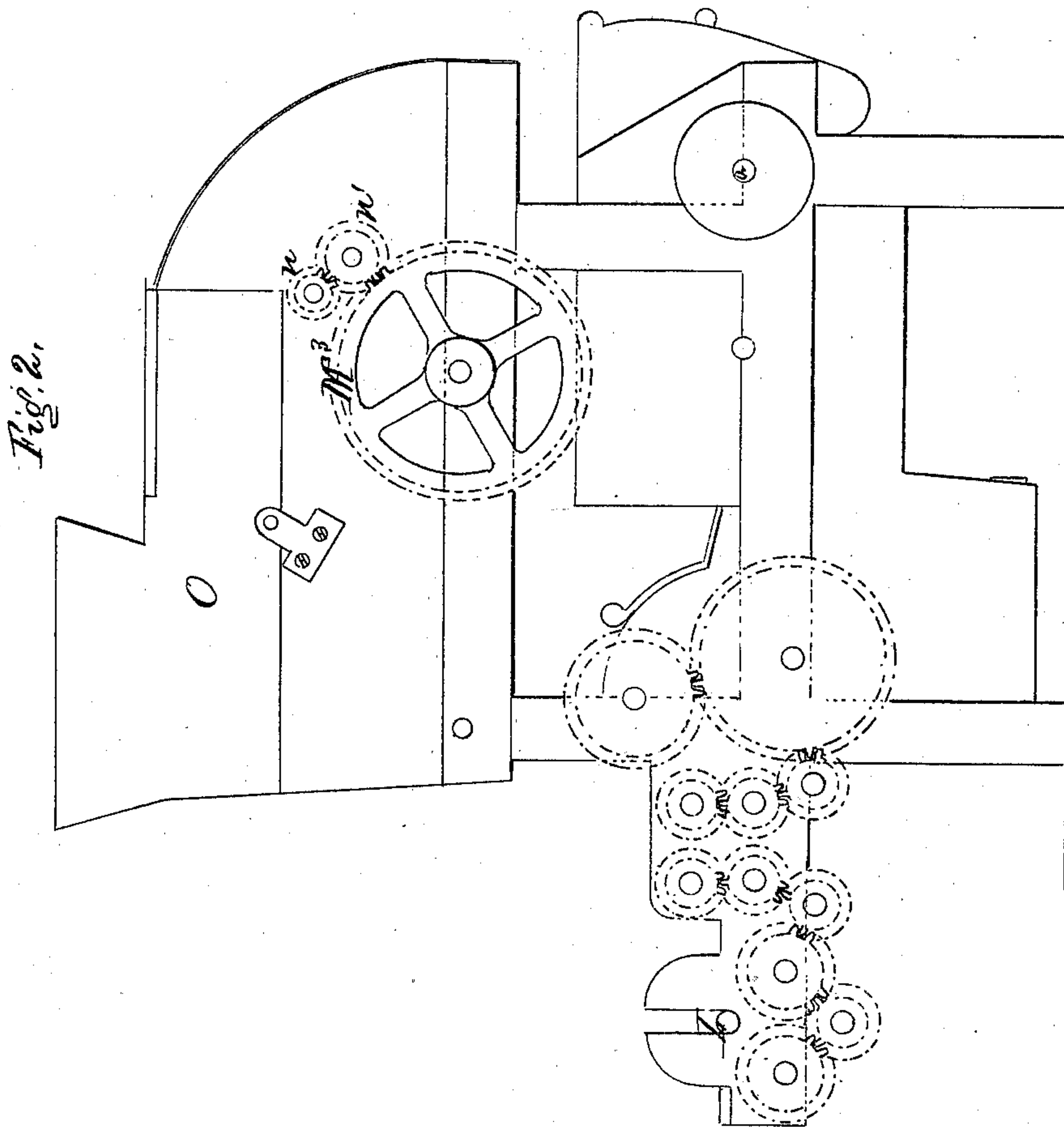
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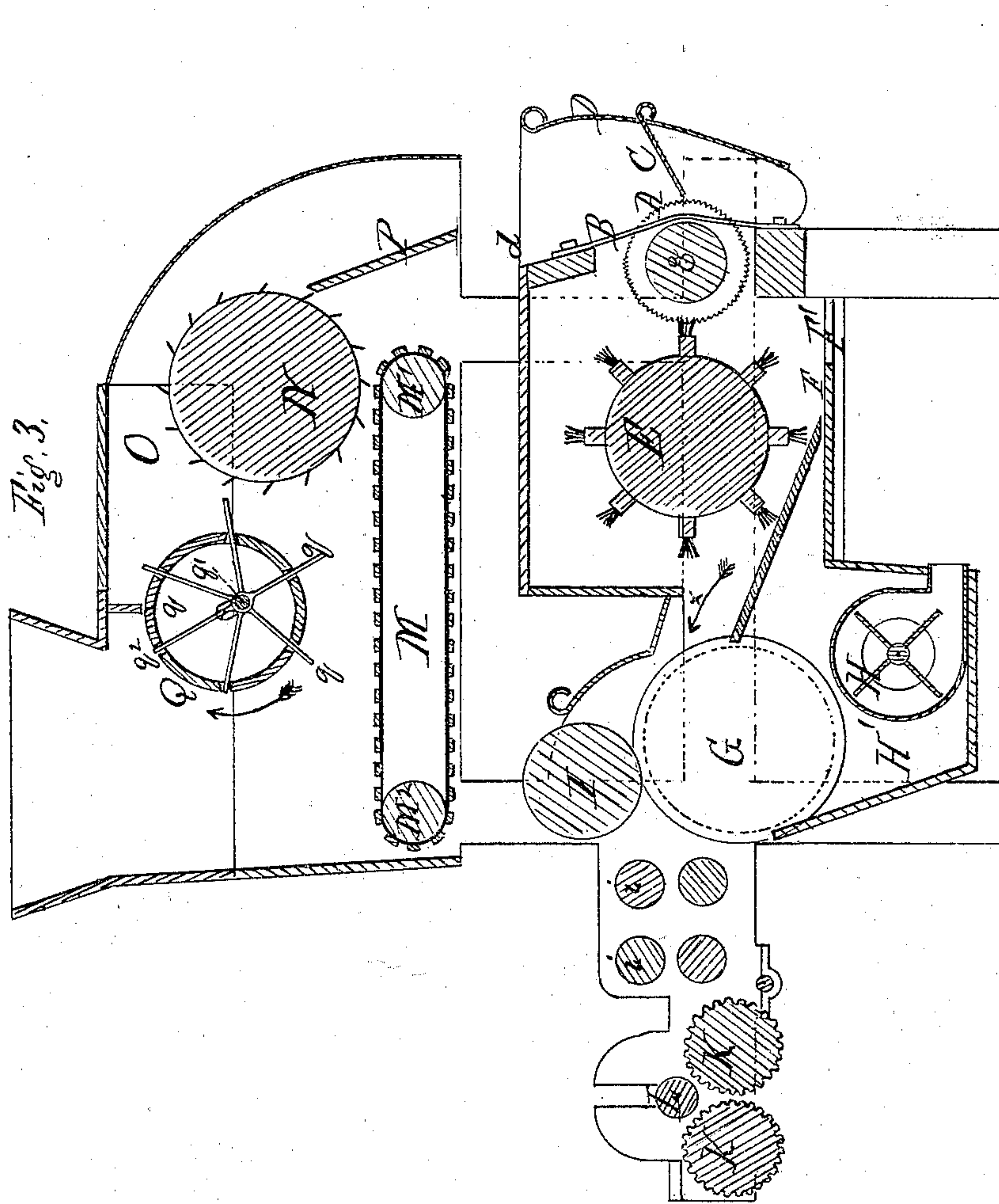
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UNITED STATES PATENT OFFICE.

THOMAS C. CRAVEN, OF HUDSON, NEW YORK.

IMPROVEMENT IN MACHINES FOR MAKING COTTON LAPS.

Specification forming part of Letters Patent No. 135,528, dated February 4, 1873.

To all whom it may concern:

Be it known that I, THOMAS C. CRAVEN, of Hudson, county of Columbia, State of New York, have invented a new and useful Improvement in Machine for Making Cotton Laps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figures 1 and 2 are side elevations taken from opposite sides of the machine. Fig. 3 is a vertical longitudinal section.

Similar letters of reference denote corresponding parts in all the figures.

The process of handling or manipulating cotton previous to the operation of carding, under the system of machinery ordinarily employed for that purpose, is substantially as follows: First, it is ginned at or near the plantation where it is grown; second, it is baled for transportation; and, third, it is opened or scutched, or both; and, fourth, it is lapped—these last two operations being usually performed in one and the same machine.

Even with the most approved machinery and the exercise of the greatest possible amount of care during the various operations above recited, a serious loss is entailed, growing partly out of the fact that the heavy pressure to which the cotton is subjected during baling compacts and knits the fibers so closely that it is difficult to separate them perfectly without breaking them. Another defect in the present system is this: It is very difficult, if not practically impossible, to feed the cotton which has been baled to the scutching or lapping machine with the desired regularity by any of the methods of weighing and spreading by hand upon the feeding-aprons; hence the lap thus produced lacks uniformity in weight, and to regulate the feed automatically requires very delicate and sensitive mechanism, which is liable to be easily deranged.

I am aware that machines have been constructed to remedy the objections above enumerated by combining a cotton-gin and a lap-motion in one and the same organized machine, so that the lint or ginned cotton should be delivered directly to the scutcher or lap-motion; but in these machines, as heretofore

constructed, there was no provision for controlling automatically the feed of the cotton to the gin, nor for regulating with precision the weight of the laps produced; and with a view to supply this deficiency I have made this invention, which consists in combining with the gin and its feeding-apron a revolving picker-cylinder for the purpose of insuring a steady and uniform supply of seed-cotton to said gin. My invention also relates to a novel combination of devices for regulating the rate at which the seed-cotton is fed to the gin, for the purpose of determining the weight of the lap, said feeding devices being operated independently of the gin in order that the velocity of said gin may be varied as the condition of the cotton may determine.

A is a saw, of which there is a series mounted on an axle, *a*. Between the saws is arranged a series of bars, B, forming a grate or breast. C is a seed-board, the grate, seed-board, and front wall D of the case forming a hopper for the reception of the cotton while being acted upon by the saws, as will be readily understood. E is a brush-cylinder operating in connection with the saws, as is usual in cotton-gins. F is an adjustable mote-board, provided with a handle by which to draw it out, so as to regulate the amount of material which shall be discharged through the opening F', and thus determine the quality of the fiber which is delivered through the throat, as indicated by the arrow *x*, it being well known that the centrifugal action of the brush E throws off in tangential lines the heavier particles of matter. G is a condenser or "cage," having the usual reticulated surface, through which a current of air is drawn by a fan, H, arranged in the proper relation to said cage and the exhaust-chamber H'. It will of course be understood that exhaust-chamber H' has a door through which to remove the refuse which will collect therein. I is a condensing-roller employed to compress the layer of fiber on cage G, and giving it (the sheet) sufficient density and tenacity, so that it can be transferred to the weighted rollers *i*, the calendering-rollers K, and the spindle or receiving-roller L. It will of course be understood that the receiving-roller L is mounted in vertical slots, so that it is free to rise as the lap is wound upon it. Any desired de-

vice may be employed to press the roller L down upon the calendering-roller. M is an endless feeding-belt driven by rollers M¹ M². N is a toothed feeding-cylinder, arranged in a feed-box, O, which should be so located relatively to other devices that the seed-cotton is delivered by the feeding-cylinder, through chute P, into the hopper of the gin.

In order to regulate the delivery of the cotton to the gin, I employ the following device: Q is a cylinder, made to revolve slowly in the direction indicated by the arrow *y*. Within this cylinder is mounted a series of fingers, *q*. These fingers are supported upon a shaft, *q*¹, arranged eccentric to the axis of the shell or cylinder Q in such manner that when both cylinder and fingers are made to revolve the fingers protrude through the lower surface of the cylinder, but are withdrawn from the upper surface, as shown at *q*². That portion of the shell or casing which contains and supports the breast B and seed-board C is hinged, as at *d*, so that it can be swung up to afford access to the saws A and brush E, and suitable openings may be made in the sides of the case to enable the operator to get at any part of the mechanism. The condensing-roller I, weighted rollers *i*, calendering-rollers K, and cage G may be connected with each other and driven by any suitable train of gearing, in Fig. 2.

The gearing which I have adopted for regulating the weight of the lap is as follows: In Fig. 1 R is a shaft mounted in suitable bearings on the frame of the machine. The lower end of this shaft is connected with the lap-motion by means of bevel-gears *r r*, its upper end being connected with the feeding devices by bevel-gears *r' r'*. By an inspection of Fig. 2 it will be seen that the spur-gear *n*, which is keyed to and moves with the shaft of the feeding-cylinder N, is connected by means of an idler, *n'*, with the spur-gear M³, which drives the endless belt M. By changing the size of pinion *n* the motion of the belt may be increased or diminished, and the amount of feed regulated at will. The cylinder Q may be driven from one of the feed-belt rollers by means of a belt, Q', as in Fig. 1.

The operation of my machine is as follows: The seed-cotton is fed in at the feed-box O upon the endless apron M, by which it is car-

ried to the feed-cylinder N. It will be readily seen that by the action of the fingers *q* in cylinder Q the layer of cotton on the endless apron is always maintained at a uniform depth, and is fed to the gin with great regularity. After the roll in the gin has attained its proper working size, the ginned cotton will be delivered upon the cage with a flow regulated at will by increasing or diminishing the speed of the feed-apron M. It is evident that by changing the speed of the lap-motion relative to that of the gin-feed the thickness and consequent weight of the lap can be varied at will.

In the drawing I have shown but a single set of connecting-gears; but of course I do not wish to be limited to any particular weight of lap, and hence may change the speed of either the feeding devices or the lap-motion, as circumstances may indicate.

In place of the endless apron M I may employ a series of rollers for the purpose of carrying the cotton to the gin, in which case I should also wish to use my evener Q for the purpose of determining the depth of the cotton passing over the rollers. By preference I drive the gin independently of the lap-motion, in order that I may run the gin at such speed as the nature and condition of the cotton may require.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the toothed feeding-cylinder N, the endless apron M, and the evener-cylinder Q provided with the retracting-fingers *q*, substantially as described.

2. The toothed feeding-cylinder, endless apron, and evener-cylinder provided with retracting-fingers, in combination with a cotton-gin provided with saws and a brush-cylinder, substantially as described.

3. In combination with the devices of the second clause, a lap-forming mechanism constructed and operating substantially as described.

In testimony whereof I have hereunto set my hand this 5th day of December, A. D. 1872.

THOS. C. CRAVEN.

Witnesses:

ALEXR. MAHON,
H. H. DOUBLEDAY.