

(No Model.)

5 Sheets—Sheet 1.

F. CRAVEN.

MACHINE FOR TENTERING AND DRYING FABRICS.

No. 401,932.

Patented Apr. 23, 1889.

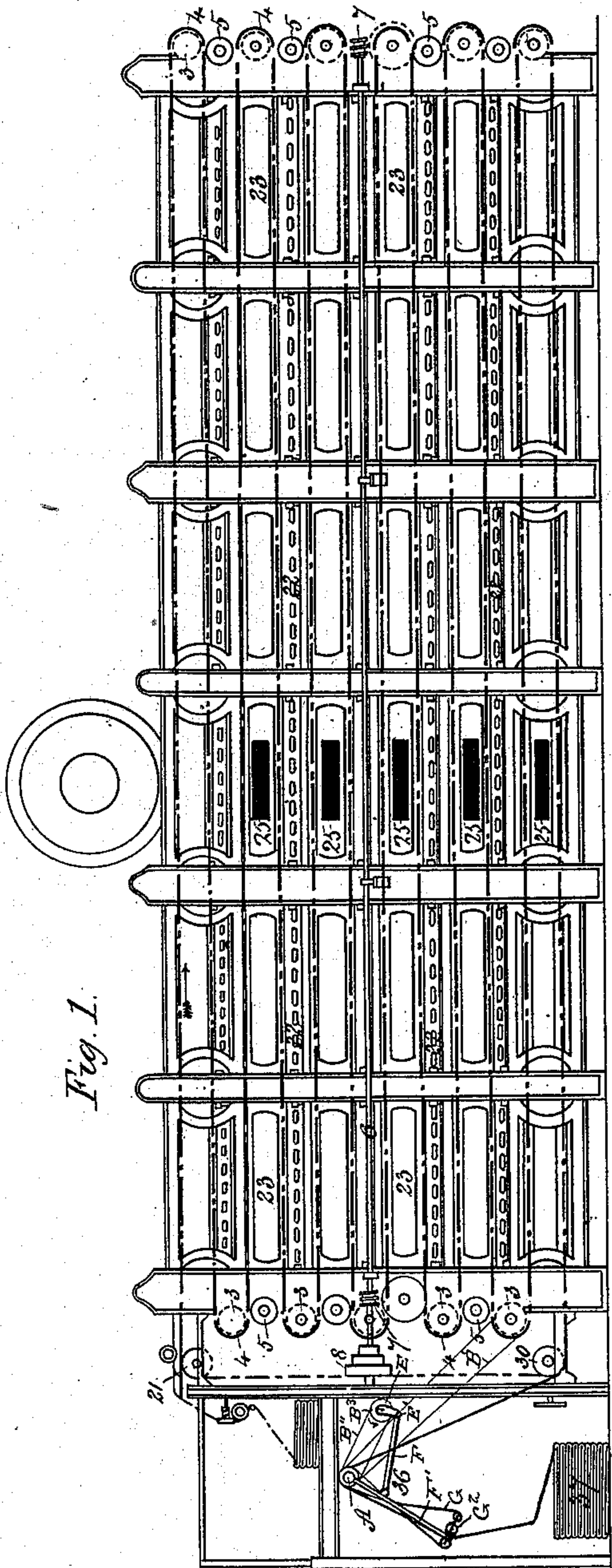


Fig. 1.

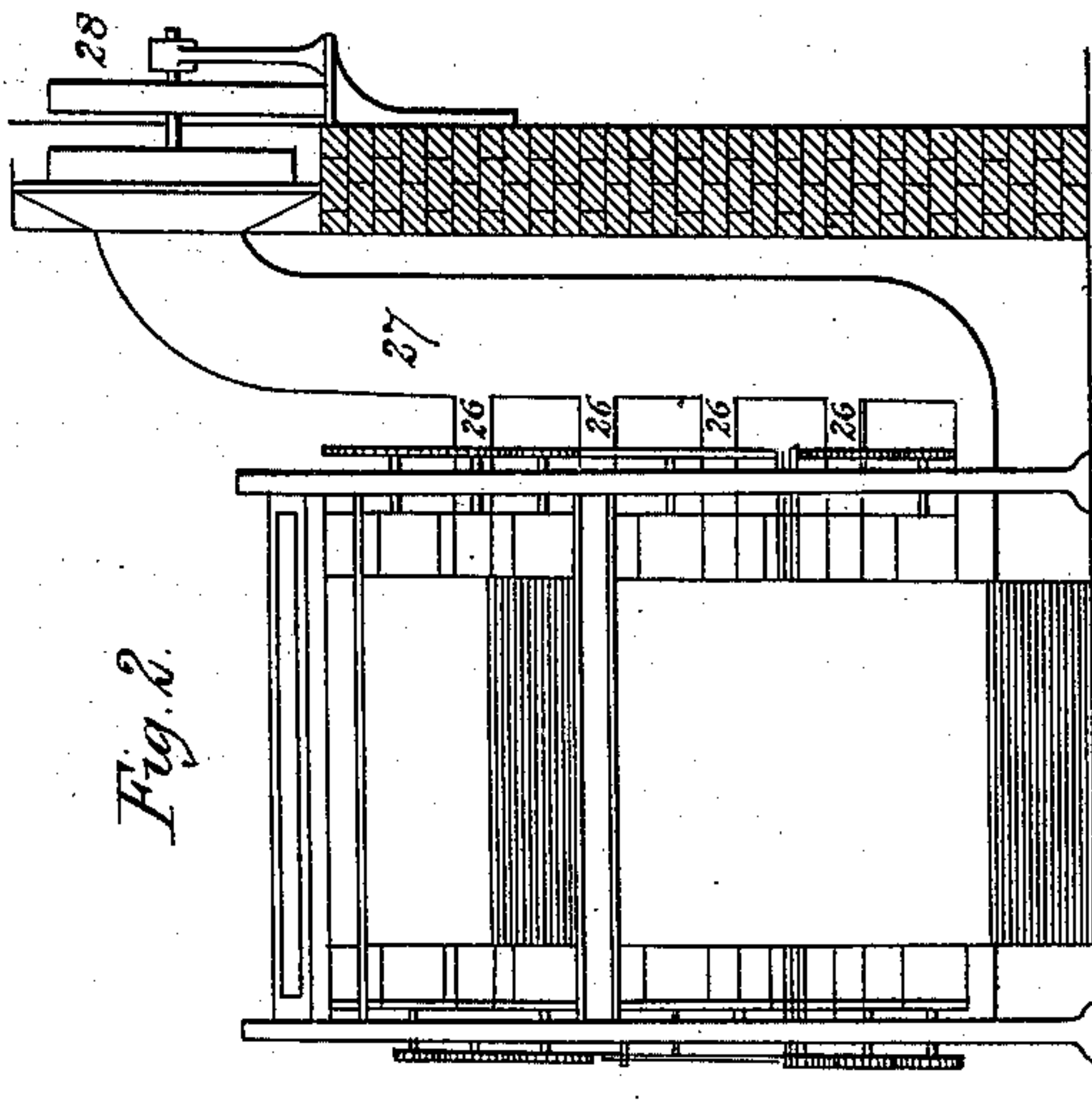


Fig. 2.

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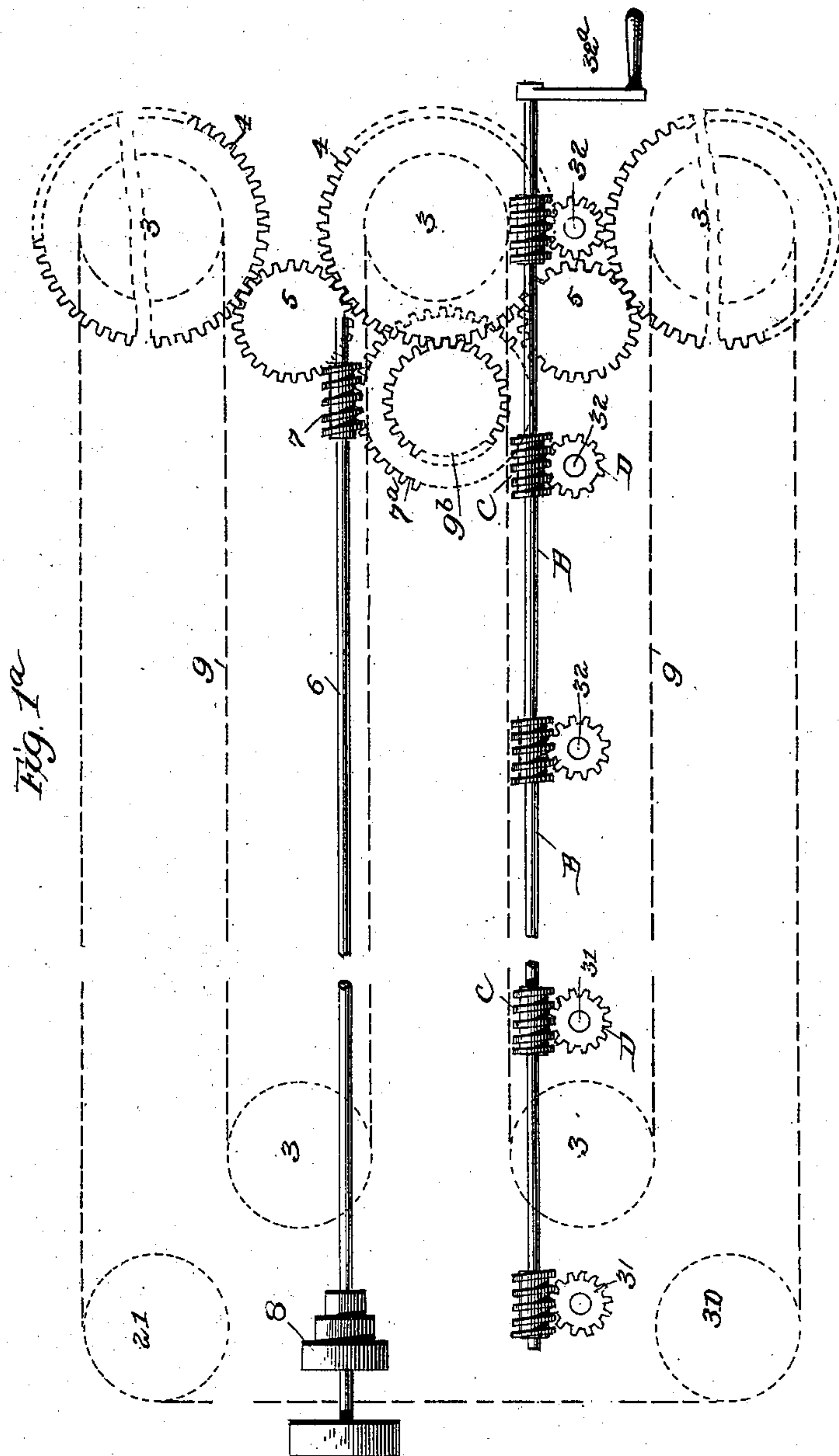
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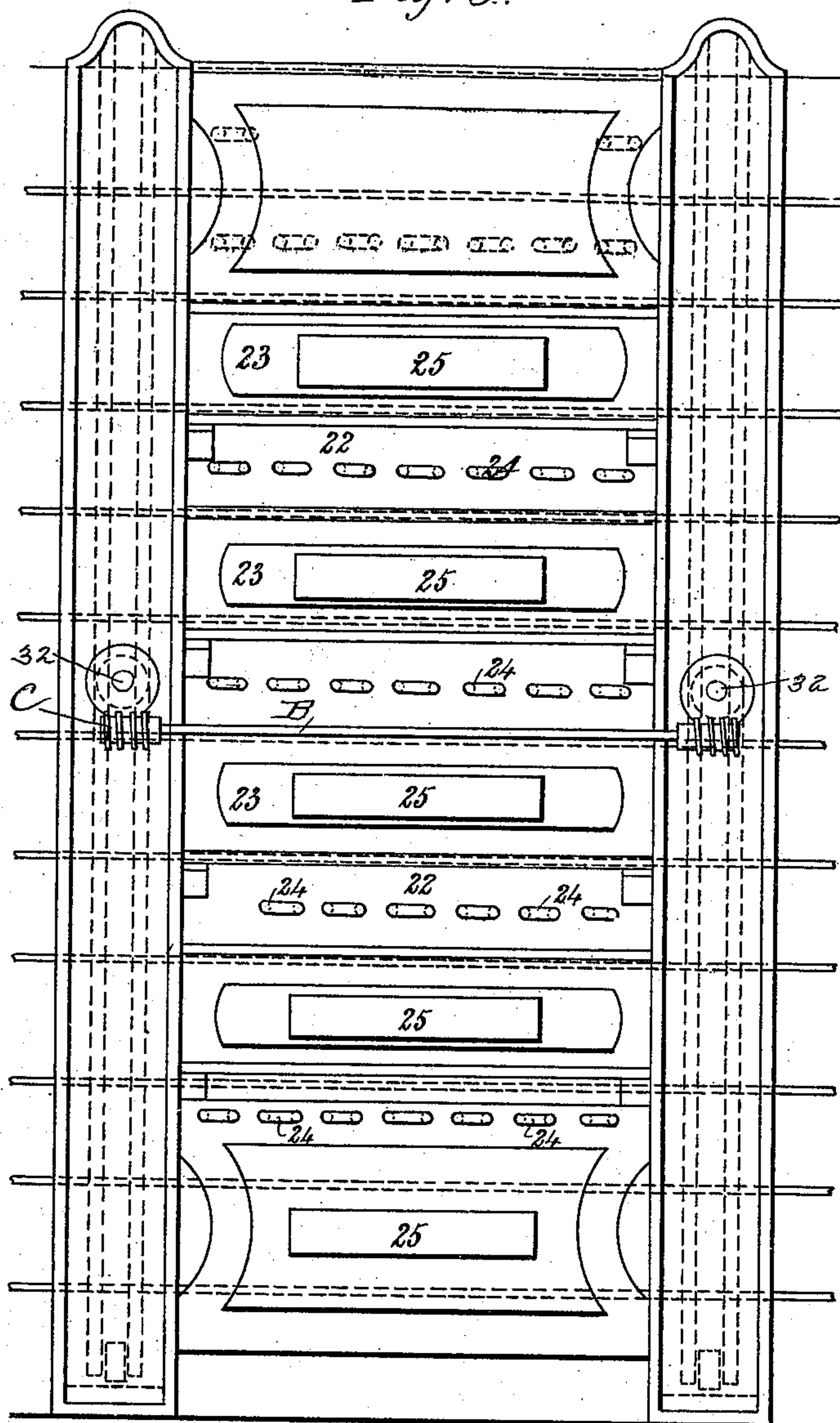
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Fig. 3.



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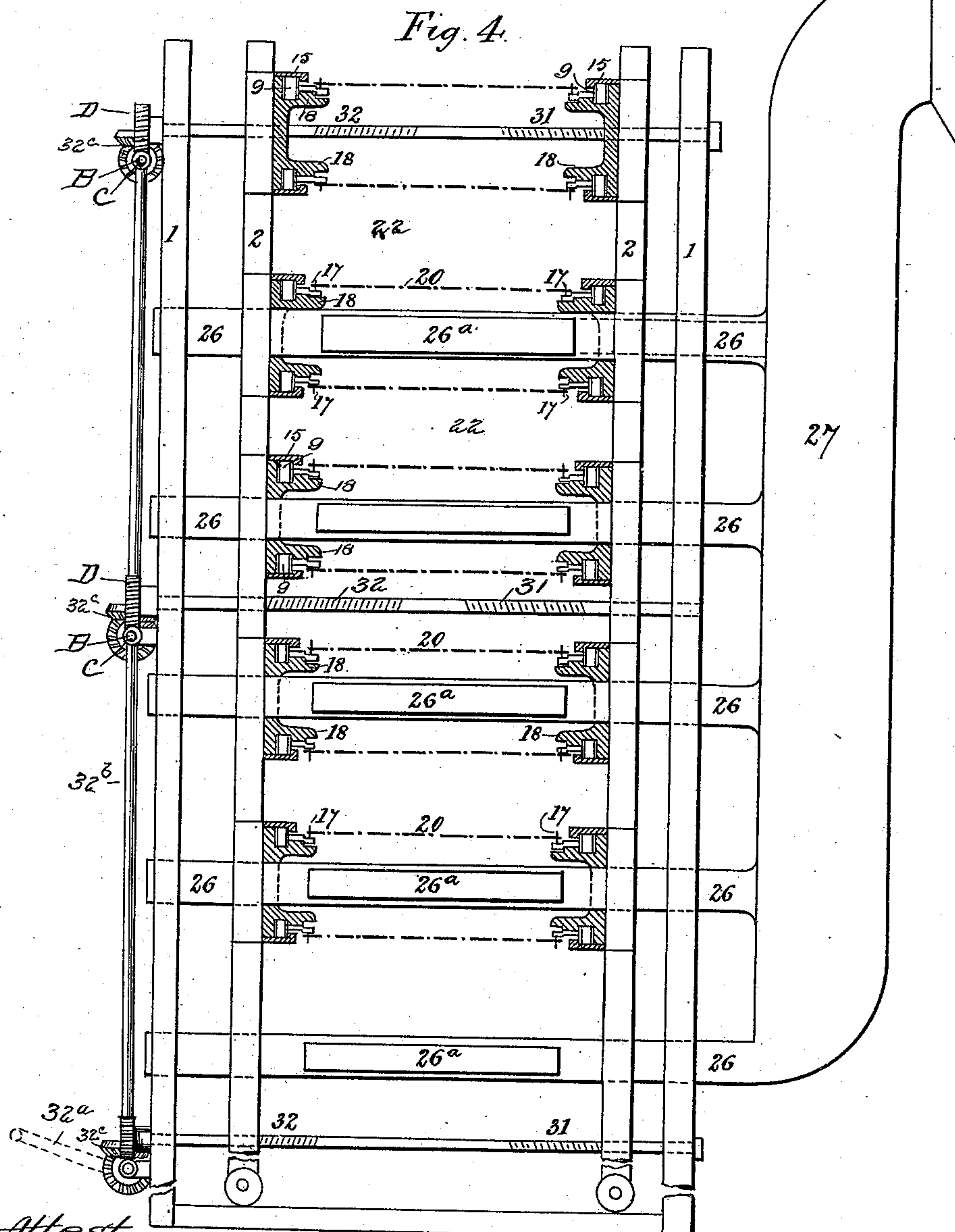
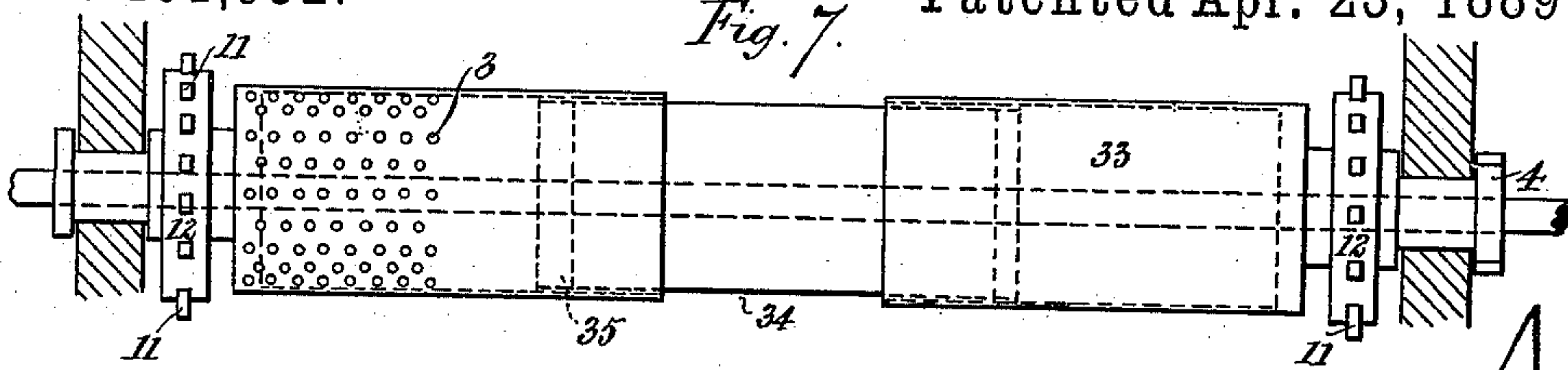
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Fig. 5.

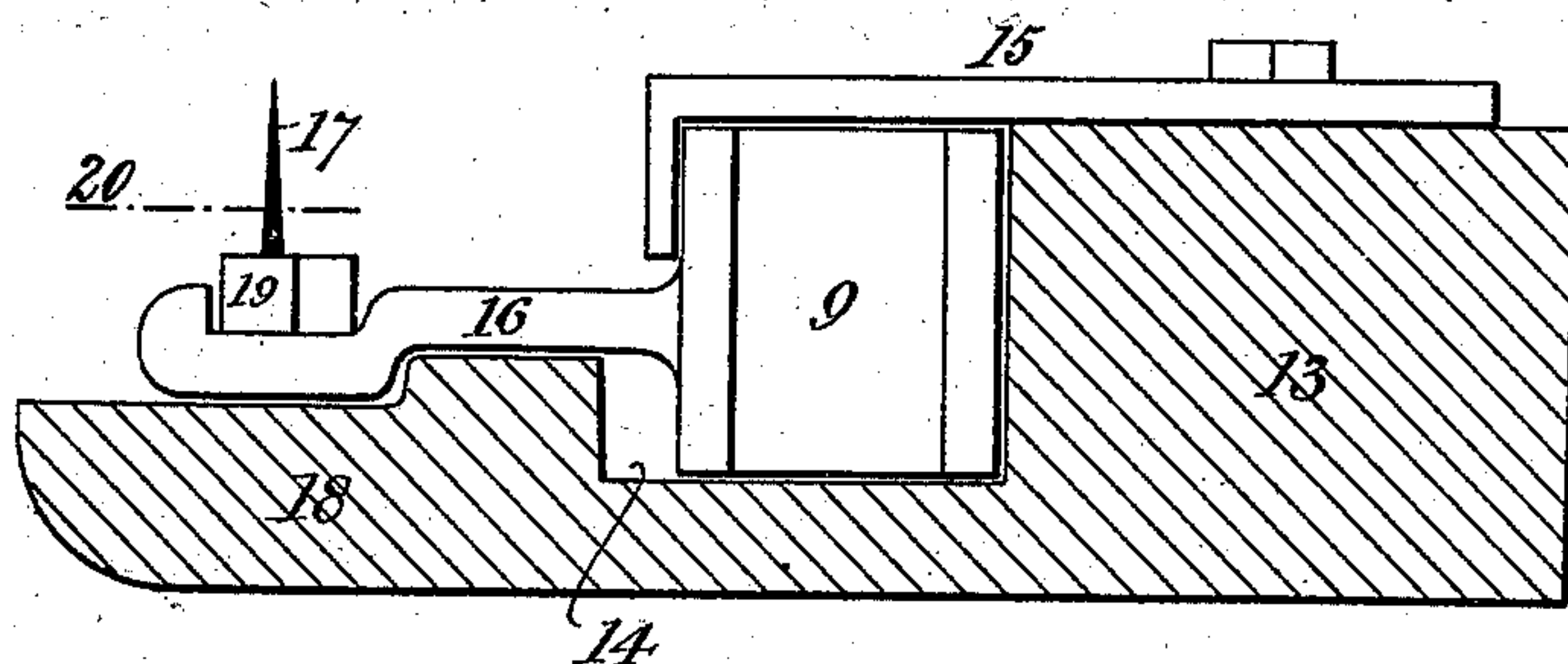
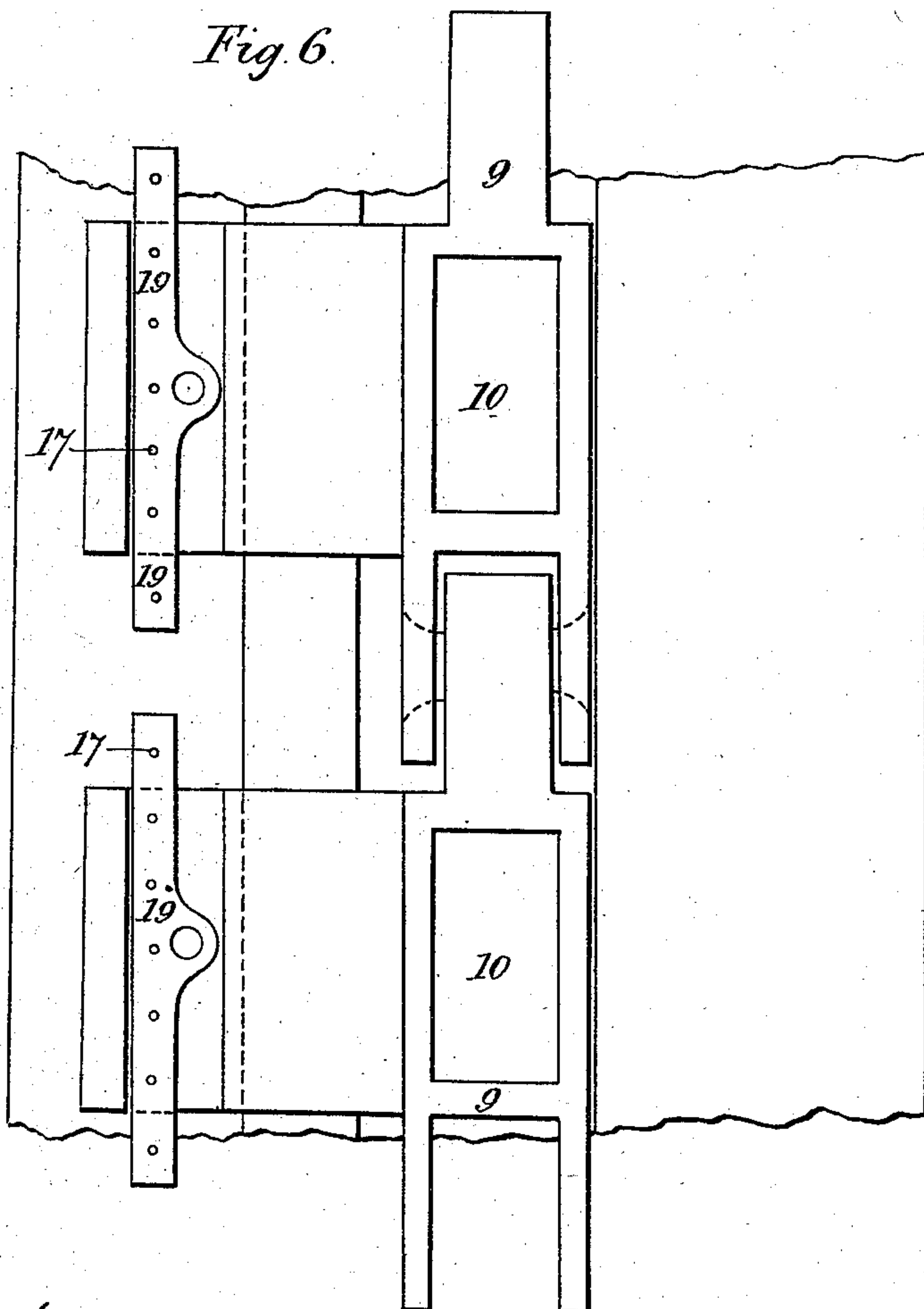


Fig. 6.



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UNITED STATES PATENT OFFICE.

FRED. CRAVEN, OF BRIGHOUSE, COUNTY OF YORK, ENGLAND.

MACHINE FOR TENTERING AND DRYING FABRICS.

SPECIFICATION forming part of Letters Patent No. 401,932, dated April 23, 1889.

Application filed December 3, 1885. Serial No. 184,541. (No model.)

To all whom it may concern:

Be it known that I, FRED. CRAVEN, a subject of Her Britannic Majesty Queen Victoria, residing at Brighouse, in the county of York, England, have invented new and useful Improvements in Machines for Tentering and Drying Fabrics, of which the following is a specification.

This invention consists of an improved arrangement, construction, and combination of parts for securing the tentering, transit, and drying of fabrics, illustrated by the annexed drawings, in which—

Figure 1 is a side elevation of my machine, showing its general form. Fig. 1^a shows in diagrammatic form a few of the supporting-rolls with the carrying-chains, the operating-shaft, and the train of gearing therefrom for moving the rolls, it being understood that only a sufficient number of rolls is shown to illustrate the continuity and course of the chains, the figure being broken away horizontally to show that a portion of the mechanism is omitted. The driving-gearing is shown only at one end, that at the other end, as in Fig. 1, being a mere duplication. This figure also shows the shaft and devices for adjusting the width of the inner frame to adapt it to different widths of fabrics. Fig. 2 is an end elevation of the same, showing also the air-exhausting apparatus and the connection between the same and the exhausting-pipes which extend across the machine. Fig. 3 is a side elevation of a section or portion of the machine, drawn on an enlarged scale in order to clearly illustrate the construction thereof. Fig. 4 is an end elevation of the same. Fig. 5 is a sectional elevation enlarged, about full-size of tenter-hook chain, its slide, and a partition-piece. Fig. 6 is a plan illustrating two links of the said tentering-chain, the tentering-pins, and supports therefor, and the slide-piece. Fig. 7 represents one of the perforated telescopic rollers.

Similar figures refer to similar parts throughout the several views.

The parts 1 2 constitute the outer and inner frame-work of the machine, across which, at each end thereof, are the telescopic or expanding rollers 3, geared at their ends by spur-wheels 4 and the intermediate or carrier

wheels, 5, so as to rotate in proper direction, as shown more particularly in Fig. 1^a. The carrier-wheels 5 and the gears 4 receive motion from the side shaft, 6, and worms 7 thereon, driven by a strap on the speed-cone 8. The worm 7 meshes with a gear, 7^a, and on the axis of this is a pinion, 9^b, which in turn meshes with the gear 4 of the expansible roller 3, from which gear the carrier-wheels 5 transmit the movement. The several rollers 3 are connected by endless chains 9, linked and jointed, as shown at Figs. 5 and 6. The chains 9 (one for each side) pass around the rollers 21 30, back and forth around the rollers 3 3, and thence back again around rollers 21 30, through the circuit of the machine, as shown in Figs. 1 and 1^a.

The holes 10 of the chains serve to gear the chains with lugs or pins 11 on flanges 12 on the ends of each roller 3, whereby, as the rollers revolve, the said chains 9 are caused to travel, after the manner of an endless belt. The chains are supported between the several rollers 3 by projecting slide-pieces 13, each having the recess 14 and the angle-iron 15, while the arm 16, extending from each link of the chain, is provided with hackle-pins or tentering-pins 17, and is supported by the extended limb 18 of the slide 13, the hackle-pins 17 being secured in short lengths of metal bars 19, so as to admit of the said bars passing round the flanges on the rollers 3. On the "piece" or fabric 20 to be tentered and dried being passed over the guide-roller 21 to and over the several rollers 3, there will be formed a series of compartments or spaces, 22 23, between the several folds of the fabric, the spaces 22 being open-sided and having therein steam-pipes 24, while the spaces 23 are closed at their sides by panels 25, and contain air-exhausting pipes 26, extending across the machine. Each of the pipes 26 has an aperture, 26^a, and is connected to the main vertical pipe 27, at the mouth of which is the exhaust-fan 28, Fig. 2; also, the pipes 26 are closed or sealed at their extremities, and can take in supply of air only through the openings 26^a therein.

The cloth to be tentered or dried is fed over the roller 21 and placed upon the hackle-pins 17 of the chains 9, whereupon the machine

will be set in motion and the traveling chains 9 and revolving rollers 3 will draw in the piece.

The parts of the inner frame, 2, which support the endless chains 9 are mounted on rollers, as shown in Fig. 4, and these parts are adjustable toward or from each other to allow for different widths of fabric. Rods or shafts pass through from one part to the other of the frame, being provided with right and left hand screw-threads, 31 32, and these rods are in connection with a source of power by which they may be rotated to adjust the space between the parts of the frame, the mechanism for which will be hereinafter described. Each of the rollers 3 is, for a like purpose, made so as to admit of endwise expansion and contraction by means of the perforated tubes 33, within which is the length of tube 34. The perforations in the tubes 33 admit the passage of air through the portion of the fabric thereon. The screws 31 32, for widening or narrowing the inner frame, are rotated by means of the shafts B, on which are worms C, gearing with and driving worm-wheels D on the ends of the screws 31 32. The shafts B are rotated by means of the handle 32^a, secured to one of the shafts, the movement of which is transmitted to the other shafts by the shaft 32^b and pinions 32^c, Fig. 4.

The cloth to be tentered and dried is guided by the attendant over the roller 21 to and upon the hackle-pins 17 on the endless chains 9, as such pins 17 in succession pass the roller 21, and the fabric is thus drawn into the machine and over the several rollers 3 to the guide-roller 30, thence to the cuttle 36, and there is folded at 37. The cuttle is operated in any well-known manner. In Fig. 1 I have shown the general arrangement and mode of operating said device, which may be briefly described as follows: The shaft or roller A of the cuttle is driven by means of a belt, B', from the shaft of the lowest of the expanding and contracting rollers 3. The roller A drives through a belt, B'', a shaft, E, to a crank, E', on the end of which a rod, F, is attached, which is secured to the arm F' of the cuttle and which rocks the same. A cord, G, passes over a cord-pulley on the roller A and around two pulleys, G², which form the ends of bars, between which the cloth passes, and over an idler-pul-

ley adjacent thereto, as shown. The cloth comes up from the guide-roller 30, over roller A, which is revolved by band B, and down between the rotating bars or rollers, the arms F' being meanwhile reciprocated by rod F, so as to bring the cloth backward and forward and lay it evenly in a pile on the floor. While the fabric is thus passing through and from the machine the exhaust-fan 28 is in operation, and as the air is drawn in at the open sides and circulates through or among the steam-pipes it is precluded reaching the intake-openings 26^a, except by passing through the fabric 20, as it will be observed (see Fig. 5) that the part 18 of the slide 13 extends under the hackle-pins 17, and in the next layer over the hackle-pins and fabric 20, as shown in Fig. 4, thereby effectually preventing circulation of air down the sides of the machine or otherwise than through the fabric when on its way to the aperture 26^a and exhaust-pipes 26 27.

I am aware that the use of steam-pipes, guide-rollers, arranged as described, and exhaust fans and pipes are not new; nor the use of endless chains having hackle or tenter pins; neither is the method of cuttling or folding the piece new, and to these, therefore, I lay no claim; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a machine for tentering and drying fabrics, of side frames, a main exhaust-pipe having a series of branch pipes, 26, closed at their outer ends and having elongated slits or air-entrance ways, 26^a, steam-pipes 24, and the endless chain 9, having hackle-pins 17, with projecting partition slide-piece 18, all for the purpose and substantially as set forth.

2. In machines for tentering and drying fabrics, the outer frame, the inner adjustable frames, 2, the expansible rollers 3, the chains 9, supporting-slides 13, having projecting partition-pieces 18, and hackle or tentering pins 17, for the purpose and substantially as set forth herein.

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Witnesses:

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