

No. 887,788.

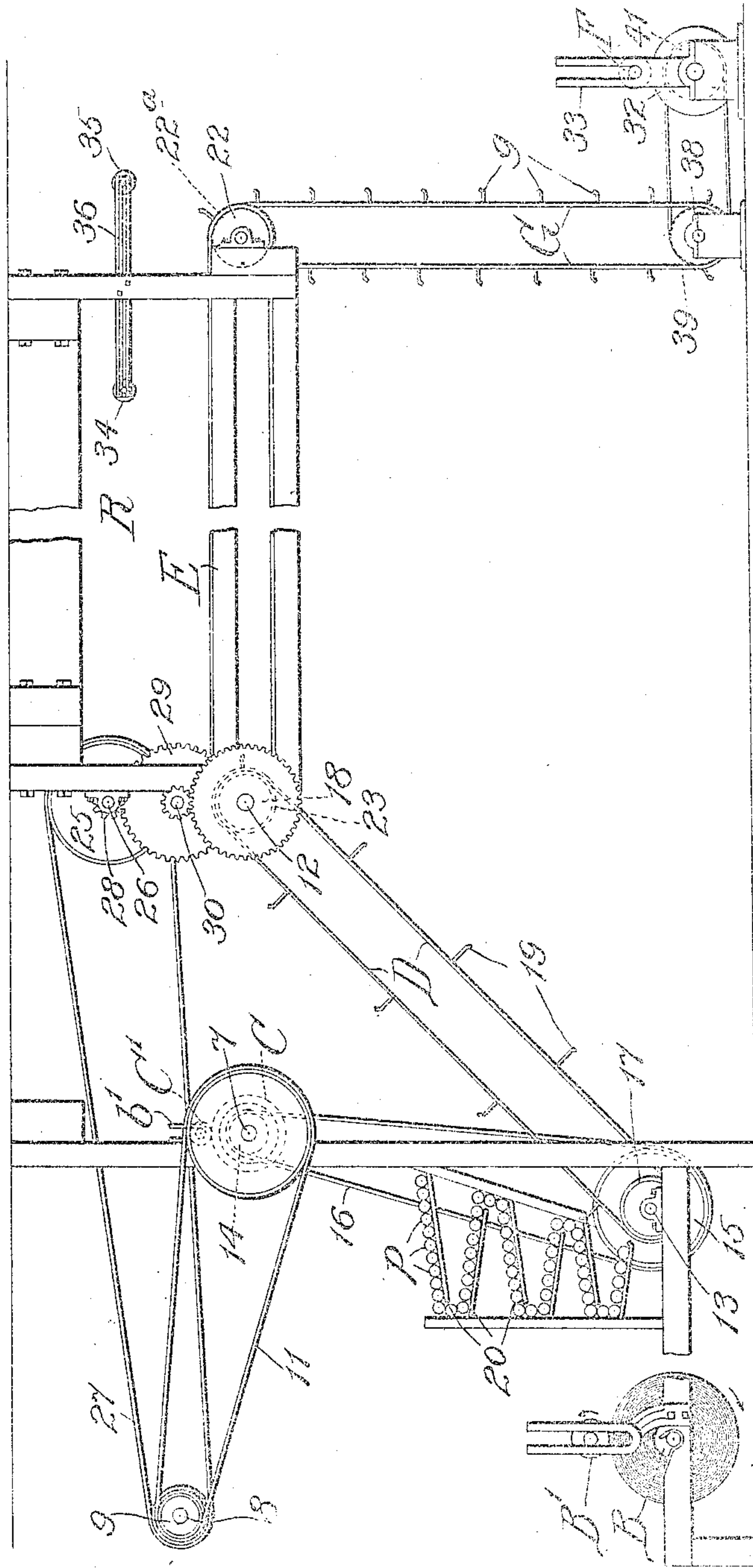
PATENTED MAY 19, 1908

W. G. GOTTSCHALL.

MACHINE FOR SHRINKING AND DRYING CLOTH.

APPLICATION FILED DEC. 11, 1907.

3 SHEETS--SHEET 1.



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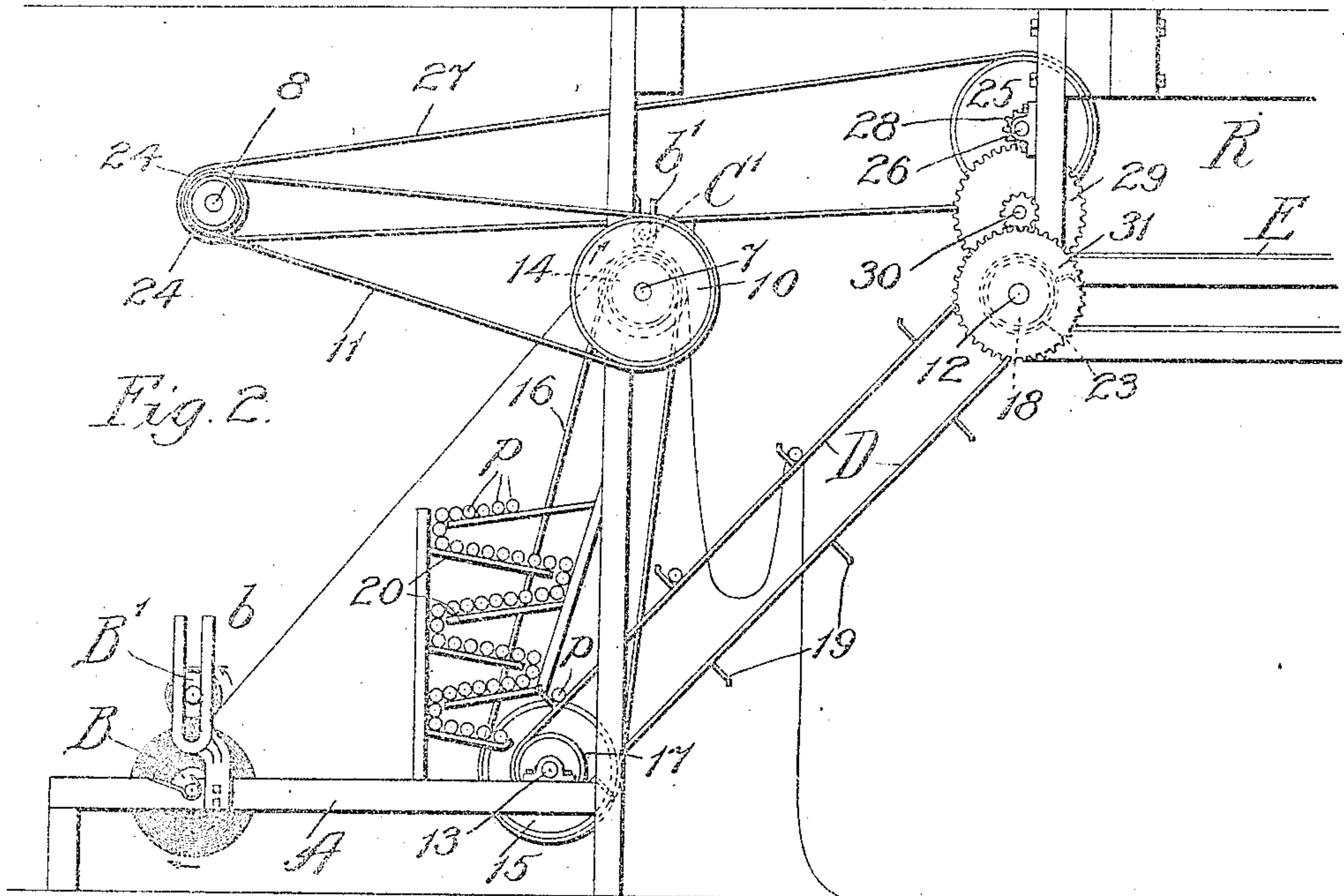


Fig. 2.

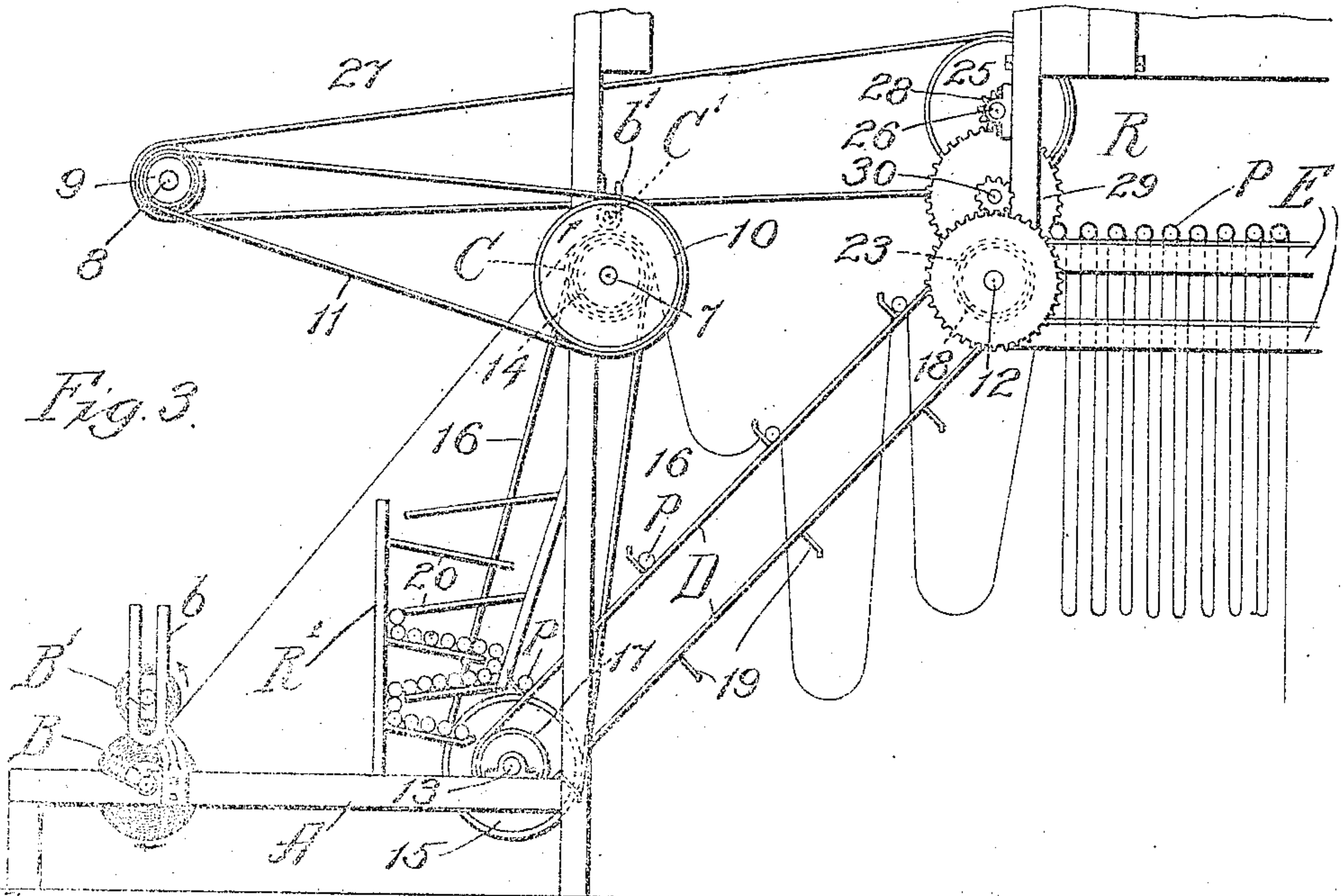


Fig. 3.

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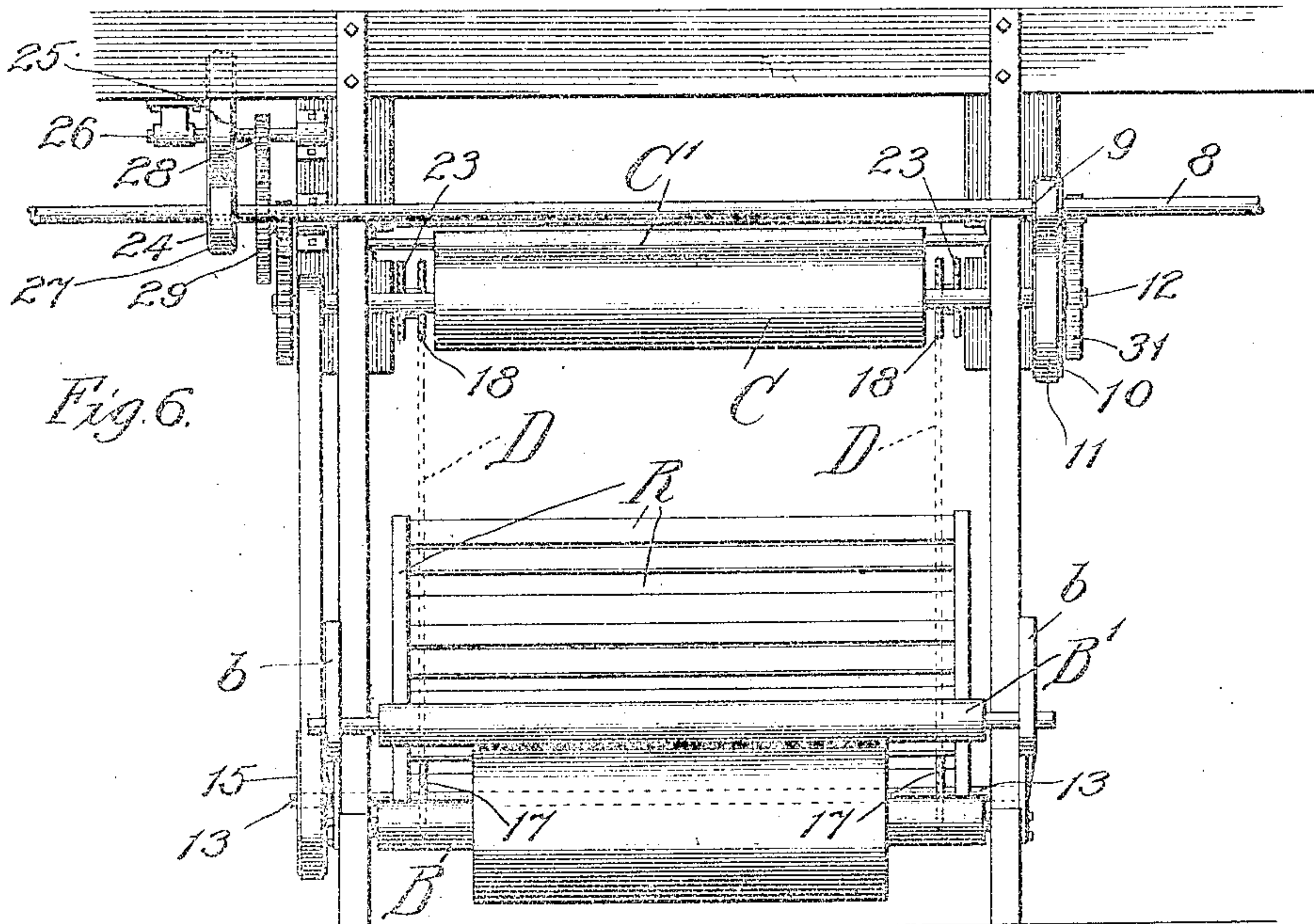
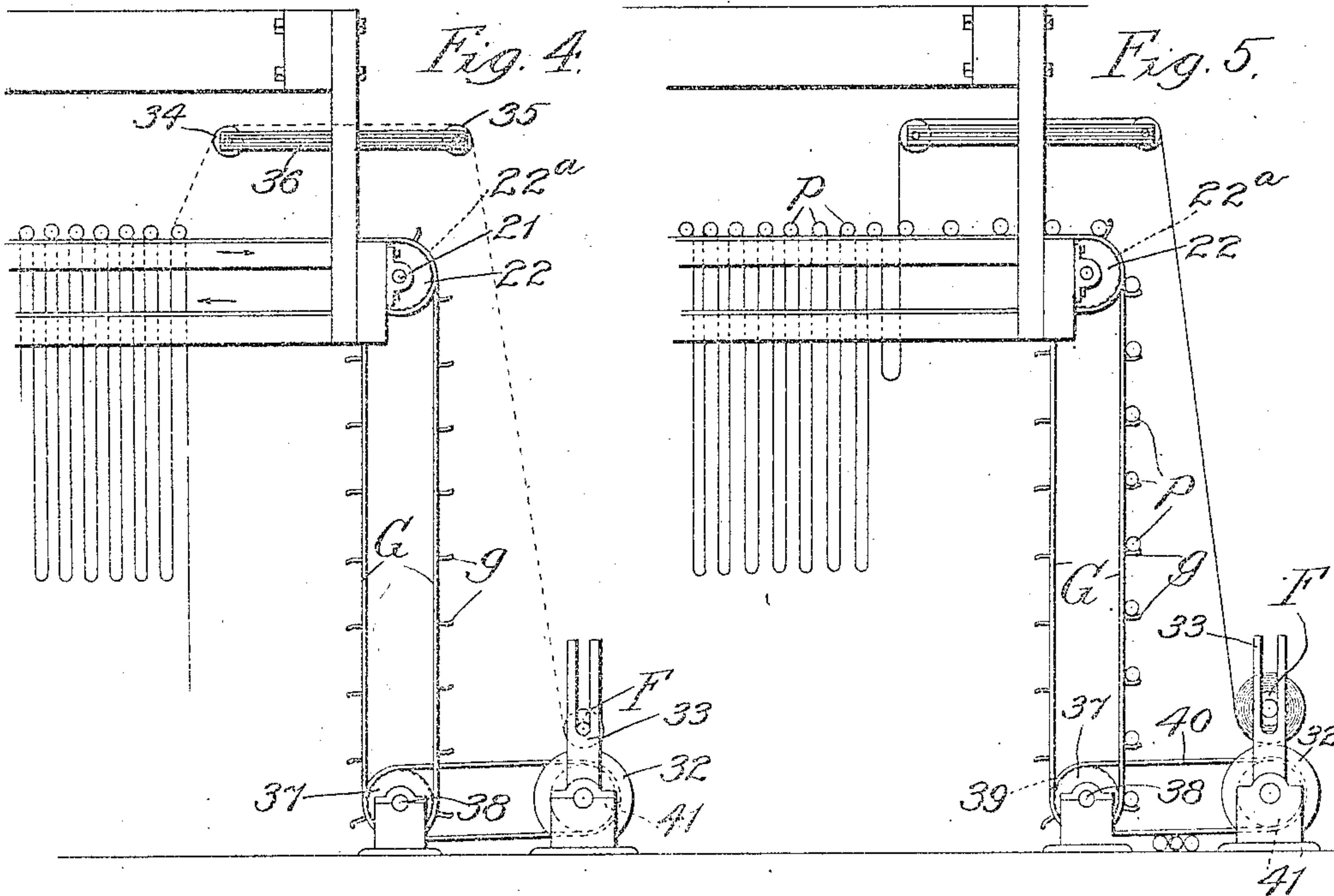
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UNITED STATES PATENT OFFICE.

WILLIAM G. GOTTSCHALL, OF CHICAGO, ILLINOIS, ASSIGNOR TO HARRY HART, MAX HART, JOSEPH SHAFFNER, AND MARCUS MARX, COPARTNERS, DOING BUSINESS AS HART, SHAFFNER & MARX, OF CHICAGO, ILLINOIS.

MACHINE FOR SHRINKING AND DRYING CLOTH.

No. 887,788.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed December 11, 1907. Serial No. 406,027.

To all whom it may concern:

Be it known that I, WILLIAM G. GOTTSCHALL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Shrinking or Drying Cloth, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to machines for shrinking woolen cloth and analogous fabrics.

The object of the invention is to provide an economical and efficient device of this character, capable of operating automatically on a large scale on woolen cloth, which has been dampened by interwinding on a cloth roll with a moistener, to thoroughly, evenly, and expeditiously shrink and dry it.

In general, the invention comprises mechanism for automatically removing and winding up the moistener; mechanism for positively pulling off and stretching the woolen in a fall at right angles to the path of travel of moving poles, carried by the ends on endless chains having a central open space as wide or wider than the width of cloth treated, thereby festooning the cloth in regular lengths on the poles, notwithstanding the decreasing diameter of the cloth roll; and means for automatically running off the poles so laden into position on overhead racks, where the cloth is exposed to natural evaporation; and automatic means for rolling up the cloth when dried.

I am aware that steam and hot air have been applied in extensive operations, but the results are unsatisfactory, because the application of heat injures the natural oils of the wool, imparts an objectionable luster or brashness, and deteriorates the quality, condition, or texture. Consequently, shrinking and drying woollens by natural evaporation is preferable, but as this process has heretofore been performed by hand, it has been found impracticable in operations upon a large scale, not only because of the labor involved and space required, but because inaccuracies and mistakes frequently cause portions of the woolen to wrinkle, twist, or shrink unevenly, thereby spoiling the check or pattern, or necessitating under grading of such portions.

In the accompanying drawings, I have

shown a machine embodying my invention in its preferred form.

Figure 1 is a side-view thereof, illustrating the mechanism as a whole; Fig. 2 is a side view of the forward end of the machine, illustrating the position assumed by the damp woolen cloth as the first pole on the carrier picks it up; Fig. 3 is a similar view, showing the rack partly filled with festoons; Fig. 4 is a side view of the rear end of the machine, showing the end of the woolen cloth secured to the take-off roll preparatory to winding up after treatment; Fig. 5 is a similar view, showing the woolen cloth winding onto the take-off roll and the poles collecting at the end of the machine; Fig. 6 is a top view of the forward end of the machine.

In the drawings, A indicates a frame in the forward end of which a cloth roll B is removably mounted in suitable bearings. This roll has wound about it in alternate thicknesses the woolen cloth to be treated and lengths of wet muslin or other fabric for evenly moistening the same. Above the cloth roll B, and resting upon it to rotate with it by friction is a winding-roll B' held in oppositely disposed slotted U-shaped guide bearings b and adapted to roll up the muslin or moistening fabric as the woolen cloth is stretched and pulled into the machine. On the upper forward portion of the machine is provided means for automatically and positively stretching and pulling off the damp woolen in a smooth, unwrinkled fall to the rear, this operation being independent of the decreasing diameter of the thicknesses on the cloth roll B. I prefer to accomplish this by providing a shaft 7 supported at opposite ends in suitable bearings to the rear of the frame upright A'. This shaft, carrying the cloth-feeding drum C, is driven in the direction of the arrow shown in Fig. 3 from the overhead power or drive-shaft 8 by pulley 9 on the drive-shaft alined with a pulley 10 on the shaft 7 and the belt 11 rotatively connecting them.

Coöperating with roll C, to form a grip for unwinding the woolen cloth from the roll B, is a weight or grip roller C' in-slotted U-shaped guide bearings b', the two rolls C and C' being adapted to stretch and draw the damp woolen cloth off the roll B and feed it in a smooth fall at the rear. A conveyer adapted to support the ends of poles or cloth

supports, traveling on an incline to a rack or overhead conveyer for exposing the fabrics to evaporation, is arranged to carry the poles in succession against the woolen cloth to form festoons over the poles. On the forward end of an overhead rack R, in suitable bearings, is mounted a shaft 12 in alinement with and to the rear of shaft 7. Forward of the frame A, and below shaft 7 is mounted, in suitable bearings, a shaft 13 driven from shaft 7 by means of the alined pulleys 14 and 15 on shafts 7 and 13, respectively, and the belt 16. A pair of sprockets 18 alined therewith on opposite ends of shaft 12 carry two parallel endless chains forming a conveyer D, having a central open space wider than the width of the woolen cloth, the chains being provided with a plurality of fingers arranged at corresponding intervals in the exterior surface of each and curved in the direction of travel of the conveyer. The poles or cloth supports *p* are laid crosswise of the machine in a rack R' located above the lower end of the conveyer D, and provided with inclined fingers 20 adapted to support the opposite ends of each pole to guide the same in a zig-zag downward inclined run, and there suspend each in turn in the path of the fingers 19 so that the poles are picked up, by the pairs of fingers 19 and carried crosswise by the conveyer B. The various revolving parts above described are so timed that the rolls C and C' will have dropped a length of damp woolen cloth into the open space between the parallel chains of conveyer D to hang below it in a fall before the first pole picked off the rack R' runs into it. The weight of the fall of damp woolen cloth coming in contact with the pole and turned over it, creates a frictional grip between the two, thus carrying the woolen cloth along with the conveyer, while the continuing feed from rolls C C' make a fold or bight behind the first pole.

The positive feed above described insures the falls or bights being of regular length throughout the operation. The poles are presented squarely at right angles to the woolen cloth by the conveyer D and the interval between them is such as to allow the feed to form a long fold or bight of woolen cloth between succeeding poles, constituting a series of long festoons.

The conveyer D is adapted to present the laden poles or cloth-supports *p* to an overhead carrier or conveyer E, carried by shaft 12 and a shaft 21, the latter being mounted in suitable bearings secured at the rear of rack R. A pair of sprockets 22 on opposite ends of shaft 21 are alined with a pair of sprockets 23 on opposite ends of shaft 12, and these sprockets carry two parallel endless chains or belts forming the conveyer or carrier E with a central open space similar to that in conveyer D. The laden poles are delivered upon the top of carrier E, the

weight of the damp woolen cloth creating sufficient friction between the poles *p* and conveyer E to cause the former to be carried longitudinally of the rack R on the conveyer E. I prefer to drive this conveyer from the drive-shaft 8 by means of alined pulleys, pulley 24 on shaft 8 and pulley 25 on shaft 26 mounted in bearings on the forward end of rack R, and rotatively connected by belt 27. Shaft 26 is located above shaft 12 in vertical alinement therewith. A gear 28 on shaft 26 entraining with an idler or gear 29 on shaft 30 located intermediate of and in alinement with shafts 12 and 26, which in turn entrain with a gear 31 on shaft 12 drives conveyer E, as indicated by the arrows.

The rack R may be of any suitable length and is adapted to suspend the carrier E to form a traveling support of woolen cloth to hang down therefrom. While on this rack the cloth is exposed to the evaporating action of the air, which, if desired, may be accelerated by fans or air blasts. After the cloth is thus dried, it is removed and the poles collected. I prefer to accomplish this by providing at the end of the machine cloth take-off roll F, resting upon a drum 32 from which it is frictionally driven, held at the ends by slotted A-shaped guide bearings 33 and drawing the end of the woolen over the guide drums 34 and 35 mounted on a support 36 secured to the rear of the rack above conveyer E, down to roller F and fastening it thereto. On shaft 21 near the ends is a pair of pulleys 22^a in vertical alinement with and corresponding to a pair of pulleys 37 on a shaft 38 supported in suitable bearings below the tail of the rack. Corresponding pulleys of each pair carry one of a pair of parallel belts or endless chains forming the conveyer G, provided on the exteriors with opposite corresponding fingers *g* curved in the direction of travel of the carrier and adapted to pick off the poles *p* by the ends as the latter freed from the weight of the woolen travel within their path on the conveyer E. At the bottom of the conveyer G they are dropped into a receptacle or return conveyer (not shown) for replacement in the rack R'. The roller 32, which drives the take-off roll F, is in turn driven by means of a pulley 39 on shaft 38, the pulley 41 on the shaft of roll 32 and the belt 40, which rotatively connects them.

I am aware that many changes and modifications may be made in the machine described and shown, and I do not wish to be understood as limiting myself thereto, but

What I claim is:

1. In a woolen cloth shrinking and drying machine, a cloth roll adapted to have wound upon it in alternate thicknesses woolen cloth and moistening fabric; means coöperating with said cloth roll for winding said moistening fabric off said cloth roll; feed rolls above said cloth roll adapted to grasp an end of the

width of woolen cloth and pull it regularly and evenly off of said cloth roll in an even, unwrinkled fall behind said feed rolls; poles or cloth supports and inclined endless carriers on opposite sides of said fall adapted to present said poles or cloth supports at regular intervals substantially at right angles to said fall, whereby said cloth is festooned in substantially equal lengths on said poles or supports.

2. In a machine of the class described, a cloth roll adapted to have wound upon it in alternate thicknesses woolen cloth and moistening fabrics; means for winding off said fabric; feed rolls above said cloth roll adapted to grasp an end of said cloth, stretch it

and pull it in a regular and even fall behind said rolls; cloth supports; endless conveyers; inclined, as shown, on opposite sides of said fall adapted to pick up said poles at regular intervals and bring them in contact with said cloth at right angles thereto; to festoon the cloth in equal lengths; and an overhead carrier adapted to support said poles and expose the cloth to natural evaporation.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

WILLIAM G. GOTTSCHALL.

Witnesses:

CHARLES L. HINE,
ARTHUR GREENE.