

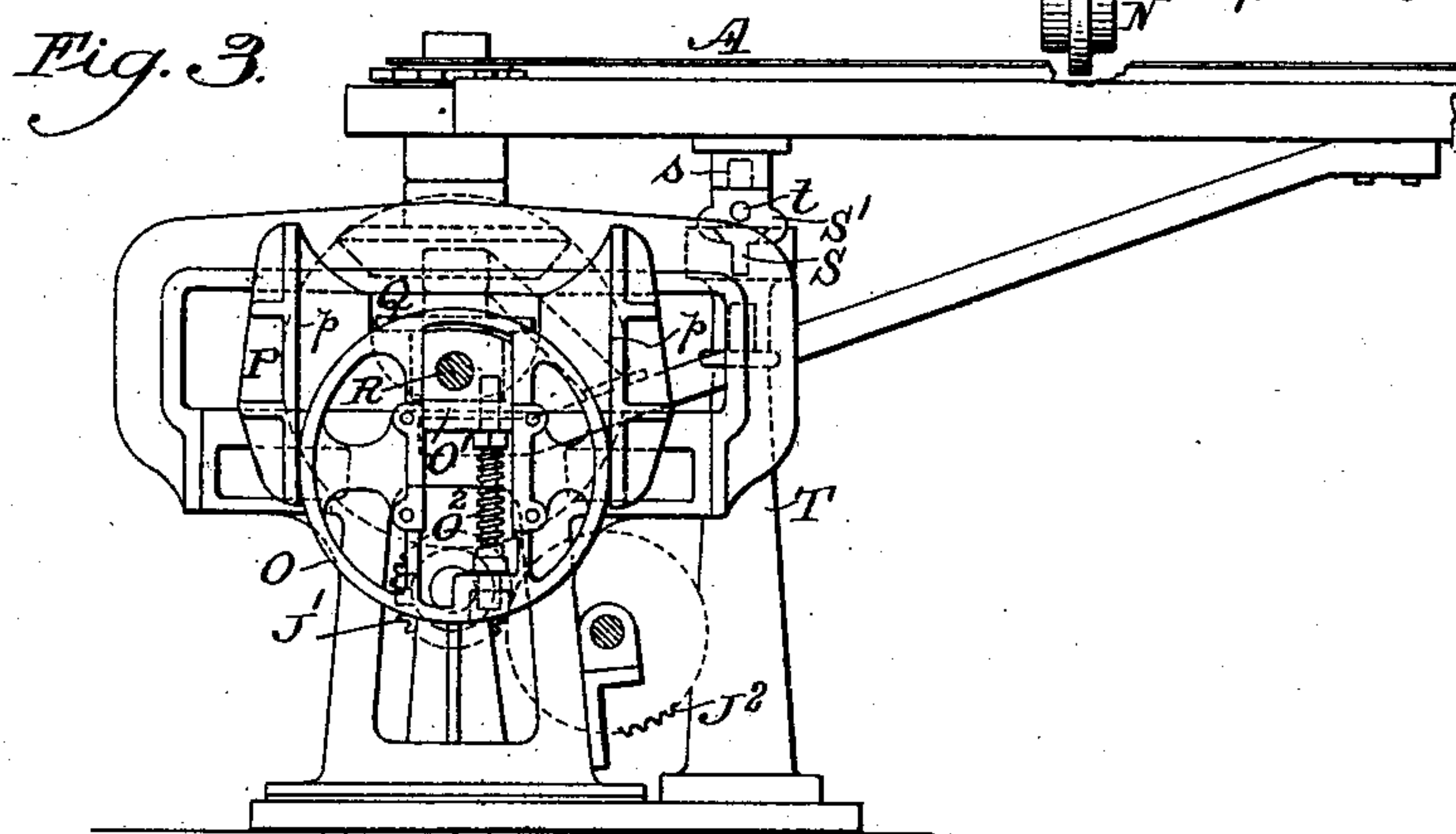
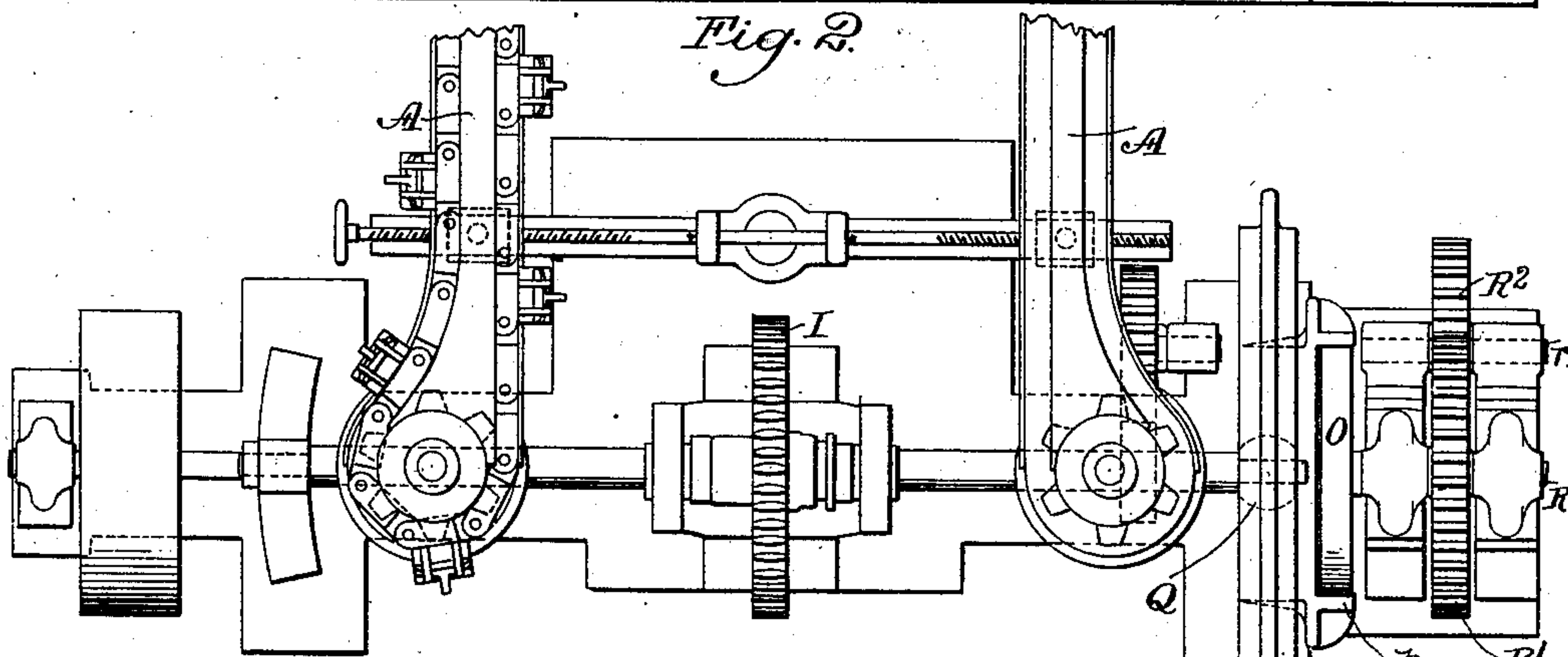
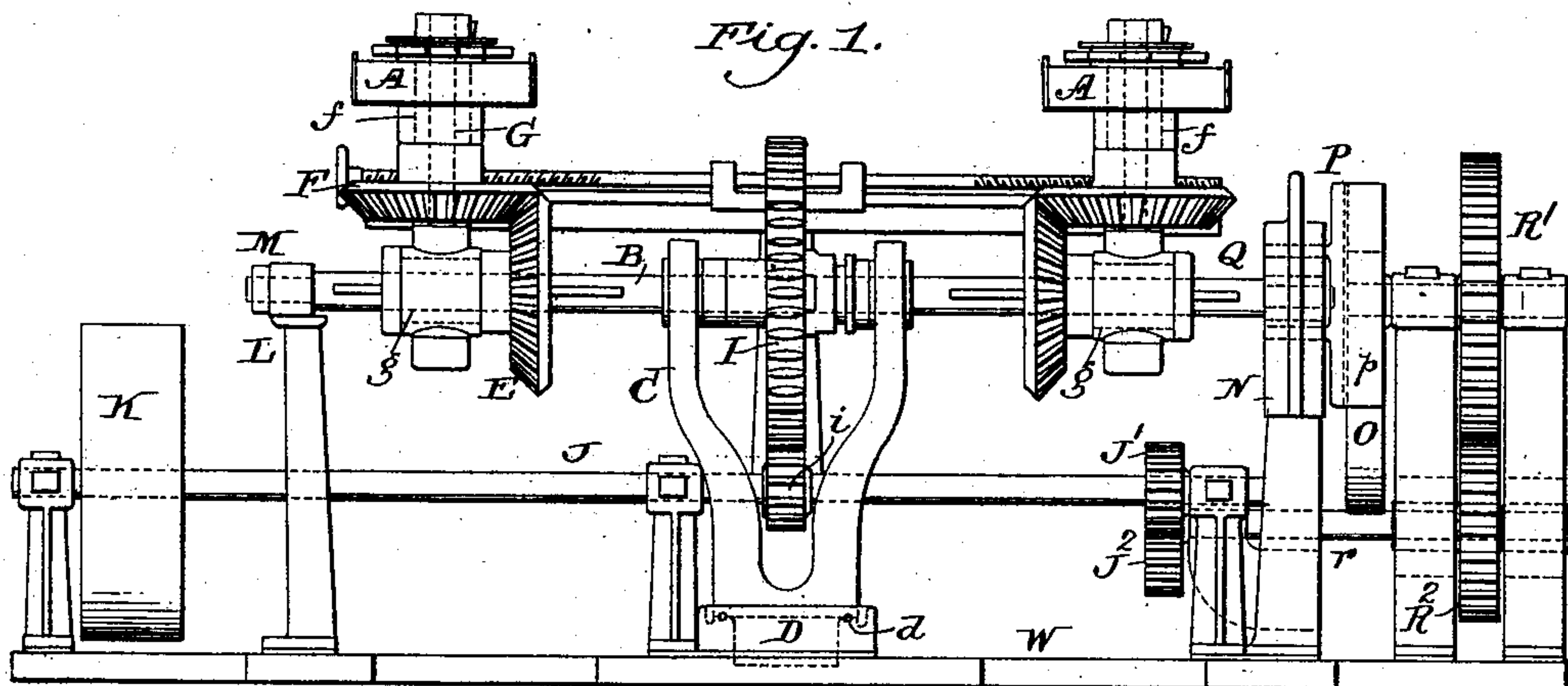
No. 606,780.

Patented July 5, 1898.

C. J. GADD.
TENTERING MACHINE.

(Application filed Apr. 17, 1897.)

(No Model.)



Witnesses.

Henry Dwyer
Am. Bureau

Inventor.

Charles J. Gadd

By *[Signature]*
Attorney.

UNITED STATES PATENT OFFICE.

CHARLES J. GADD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
H. W. BUTTERWORTH & SONS COMPANY, OF PENNSYLVANIA.

TENTERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 606,780, dated July 5, 1898.

Application filed April 17, 1897. Serial No. 632,535. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. GADD, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Tentering-Machines, of which the following is a specification.

My invention has reference to tentering-machines; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

My invention comprehends certain improvements in driving mechanism for tentering-machines, and more particularly means whereby a variable reciprocation may be imparted to the two parallel chains of clamps or stretching devices.

In the preferred form of my invention I maintain a constant or substantially constant speed of travel of the clamps irrespective of the variations in the adjustment of the longitudinal reciprocations imparted thereto.

The object of my invention is to provide means for the above adjustment in tentering-machines for the purpose of producing a capacity for a variable degree of stretching on the bias, since it is more desirable in some fabrics to produce a greater tension upon the fibers of the textile materials than others, and by my improvements this degree of stretching may be quickly and readily varied to suit the particular fabrics to be treated.

In carrying out my invention I support the longitudinal frames carrying the stretching devices so that they may be reciprocated longitudinally simultaneously in opposite directions, the said motions being secured by a transverse driving-shaft pivoted in vertical bearings and rocked in a horizontal plane by means of power and cam devices, the said cam devices operating upon the said shaft through a connection having capacity for varying its throw or cam action for the purpose of regulating the extent or angle of oscillation of the horizontal driving-shaft. The driving-shaft is connected by suitable power-transmitting devices with the cloth-stretching chains or conveyers, whereby its rotation produces a continual longitudinal travel of said conveyers or chains simultaneously with the reciprocation of the supports therefor.

My invention also comprehends minor details of construction, all of which will be better understood by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of one end of a tentering-machine embodying my improvements. Fig. 2 is a plan view of same, and Fig. 3 is a side elevation of same.

A A are the longitudinal reciprocating frames carrying the chains of cloth-clamps or other suitable conveying devices for holding the edges of the cloth to be stretched and moving it through the machine. These frames are journaled on vertical axes formed by upright pins G, which are journaled upon a transverse axis at g, concentric with the driving-shaft B. The driving-shaft B is journaled in a frame C, which is secured to a bed-plate W by means of a vertical axis D and may have interposed ball-bearings d to reduce the friction of oscillation.

J is a transverse power-shaft driven by means of a belt and pulley K or otherwise and extends transversely across the machine and over the axis D of the frame C. This shaft is provided with a pinion i, which meshes with a spur-wheel I, connected to the driving-shaft B, the said wheels I i being arranged immediately above the vertical axis of the oscillating frame C. The teeth of one or both these gear-wheels are made curved, so as to permit the oscillation of the spur-wheel upon the pinion, while maintaining its driving connection.

The driving-shaft B is provided with a bevel-gear E on each side of its axis, secured thereto by means of a key or feather, so as to permit adjustment longitudinally upon the shaft, but to positively rotate with it. The said bevel-gears E mesh with horizontal bevel-gears F, secured to vertical shafts f, extending upward, journaled upon the pins G and terminating in driving-wheels H for the conveyer-chains, which wheels may be of any suitable construction, such as sprocket-wheels, for example. These shafts f are concentric with the vertical pivoted supports or pins G for the longitudinal frames A, so that during the oscillation of the driving-shaft the power-transmitting connections to the conveyer-chains are constantly maintained. The longi-

tudinal frames A are supported, as is customary, at intervals of their length by suitable pivoted supports, one of which is shown and consists of a transverse frame S, centrally pivoted upon a pedestal T and having adjustable supports S' connecting with the under side of the longitudinal frames by vertical pivots s. By means of a suitable hand-screw t these supports S' and their vertical pivots may be moved to or from each other to adjust the positions of the longitudinal frames relatively one to the other. These supports may be made in any other suitable manner desired.

At one end of the oscillating driving-shaft B is arranged a curved guide L, upon which slides a block or shoe M, in which the end of the said shaft B is journaled, the said construction taking up the downward thrust due to the weight of the longitudinal frame and conveyers at that side. The opposite end of the shaft B is journaled in a box movable upon a vertical axis and carried in a transversely-reciprocating frame P, movable horizontally in bearings N under the action of a cam O, which works between the flanges p. The cam O is secured upon a cam-shaft R, with provision for adjustment thereon to vary its throw. Any suitable means of adjustment may be employed; but that shown is excellently adapted to the purpose—namely, securing a box O' on the cam-shaft and attaching the cam or eccentric O upon the said box by suitable guiding-surfaces and providing it with an adjusting-screw O², by which its position relatively to the said cam-shaft may be adjusted to vary its throw or cam action to suit the desires of the operator. The cam-shaft R is geared with a counter-shaft r by means of speed-reducing gears R' R², and said counter-shaft is also geared to the power-shaft J by a second set of gears J' J². It will now be observed that the power-shaft J is the primary cause of rotation of the cam to impart the reciprocation to the driving-shaft B, as well as the source of power for rotating the said driving-shaft. The particular gearing employed is immaterial, as any suitable means may be employed for rotating the cam or eccentric, as well as other means for rotating the driving-shaft—as, for instance, such means as illustrated, for example, in the patents to A. McLean, No. 569,763, dated October 20, 1896; E. Ainsworth, No. 569,734, dated October 20, 1896, and R. M. Hunter, No. 568,349, dated September 29, 1896.

It is immaterial which particular means is employed between the driving-shaft and conveyers, since various other methods of gearing for this purpose are well known, as shown, for example, in the patents above referred to.

While I prefer the construction shown, I do not limit myself to the minor details thereof, as they may be modified in various ways without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a tentering-machine, the combination

of two longitudinal carriers or conveyers for holding the cloth to be treated, a transverse driving-shaft pivoted at a point intermediate of said conveyers or carriers upon a vertical axis, power-transmitting connections between said driving-shaft and the conveyers or carriers whereby the same may be moved to cause the material to travel through the machine, power devices to cause said driving-shaft to rotate, means to reciprocate said driving-shaft in a horizontal plane consisting of a reciprocating frame supported independently of the driving-shaft having a movable connection maintaining continuous power-transmitting relation with the driving-shaft, a cam arranged parallel to the said frame for reciprocating it, power devices for rotating the cam, and means for varying the throw of the cam to change the extent of the reciprocation of the driving-shaft comprising a box secured to a cam driving-shaft, a connection between the cam and box whereby the cam is guided relatively to the box and movable transversely to the cam-shaft, and an adjusting-screw for adjusting the cam upon the box.

2. In a tentering-machine, the combination of two longitudinal carriers or conveyers for holding the cloth to be treated, a transverse driving-shaft pivoted at a point intermediate of said conveyers or carriers upon a vertical axis, power-transmitting connections between said driving-shaft and the conveyers or carriers whereby the same may be moved to cause the material to travel through the machine, power devices to cause said driving-shaft to rotate, a fixed frame, a reciprocating frame arranged close to the end of the driving-shaft movable on and having its weight carried by the fixed frame independently of the driving-shaft, a mechanical connection between the reciprocating frame and the end of the driving-shaft whereby the latter is oscillated, and a cam directly acting upon the reciprocating frame to reciprocate it.

3. In a tentering-machine, the combination of two longitudinal carriers or conveyers for holding the cloth to be treated, a transverse driving-shaft pivoted at a point intermediate of said conveyers or carriers upon a vertical axis, power-transmitting connections between said driving-shaft and the conveyers or carriers whereby the same may be moved to cause the material to travel through the machine, power devices to cause said driving-shaft to rotate, horizontal guide-supports for each end of the driving-shaft, a rotating cam arranged adjacent to one end of the driving-shaft, means embracing the cam and mechanically connected to the driving-shaft operated by the rotating cam for imparting a horizontal oscillation to said driving-shaft, means for adjusting the throw or cam action of the cam, and power-transmitting connections between the power devices and the cam whereby the rotations of the cam to produce the oscillation of the driving-shaft are commensurate with the rotations of the said driving-shaft.

4. In a tentering-machine, the combination of two longitudinal carriers or conveyers for holding the cloth to be treated, a transverse shaft pivoted at a point intermediate of said conveyers or carriers upon a vertical axis, power-transmitting connections between said driving-shaft and the conveyers or carriers whereby the same may be moved to cause the material to travel through the machine, power devices to cause said driving-shaft to rotate, supports for the driving-shaft to hold it against vertical movement while permitting horizontal movement, a guide-frame, a reciprocating frame independent of the driving-shaft movable in the guide-frame, a power connection between the reciprocating frame and the driving-shaft, a cam-shaft, an adjustable cam upon the cam-shaft operating to reciprocate the reciprocating frame, and connecting devices between the cam-shaft and the power devices for rotating the driving-shaft whereby the several parts are operated from a single source of power and the movements are properly timed.

5. In a tentering-machine, the combination of two longitudinal carriers or conveyers for holding the cloth to be treated, a transverse driving-shaft pivoted at a point intermediate of said conveyers or carriers upon a vertical axis, power-transmitting connections between said driving-shaft and the conveyers or carriers whereby the same may be moved to cause the material to travel through the machine, power devices to cause said driving-shaft to rotate, a rectilinear guide located to one side of the vertical axis of the transverse driving-shaft, a reciprocating frame

guided in said rectilinear guide, a movable connection between the reciprocating frame and the driving-shaft whereby the latter is positively reciprocated about its pivot, a cam for reciprocating the reciprocating frame in the rectilinear guides having its plane of rotation substantially parallel to the said guides, and power devices for rotating the cam.

6. In a tentering-machine, the combination of two longitudinal carriers or conveyers for holding the cloth to be treated, a transverse driving-shaft pivoted at a point intermediate of said conveyers or carriers upon a vertical axis, power-transmitting connections between said driving-shaft and the conveyers or carriers whereby the same may be moved to cause the material to travel through the machine, power devices to cause said driving-shaft to rotate, a rectilinear guide located to one side of the vertical axis of the transverse driving-shaft, a reciprocating frame guided in said rectilinear guide, a movable connection between the reciprocating frame and the driving-shaft whereby the latter is positively reciprocated about its pivot, a cam for reciprocating the reciprocating frame in the rectilinear guides having its plane of rotation substantially parallel to the said guides, means for varying the throw of the cam, and power devices for rotating the cam.

In testimony of which invention I have hereunto set my hand.

CHARLES J. GADD.

Witnesses:

R. M. HUNTER,
J. W. KENWORTHY.