

(No Model.)

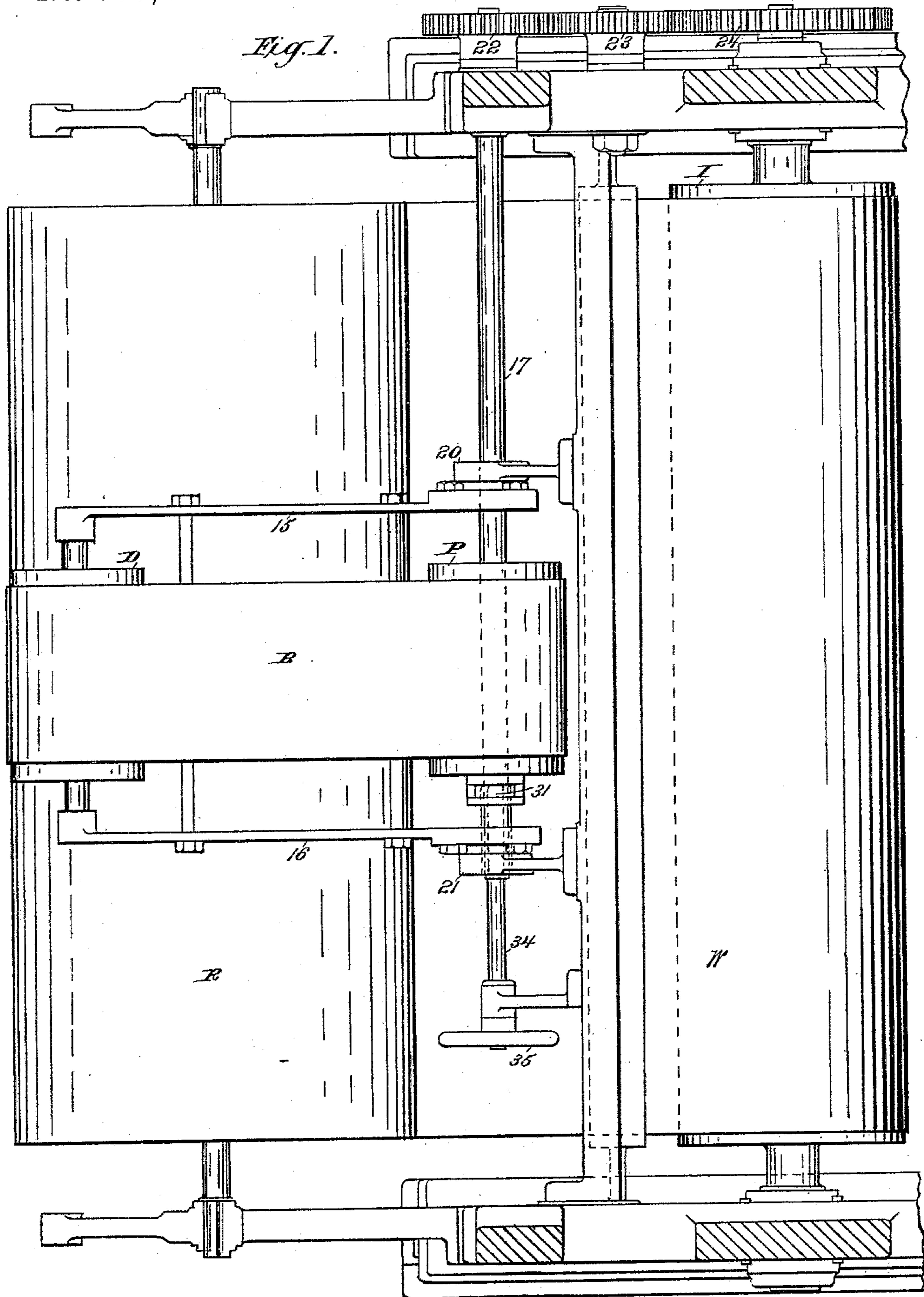
2 Sheets—Sheet 1.

J. H. MOODY.

WEB CONTROLLING DEVICE FOR PRINTING MACHINES.

No. 598,107.

Patented Feb. 1, 1898.



WITNESSES

Wm. B. ...
S. W. ...

INVENTOR

John H. Moody
By Philip ...

ATTORNEYS.

(No Model.)

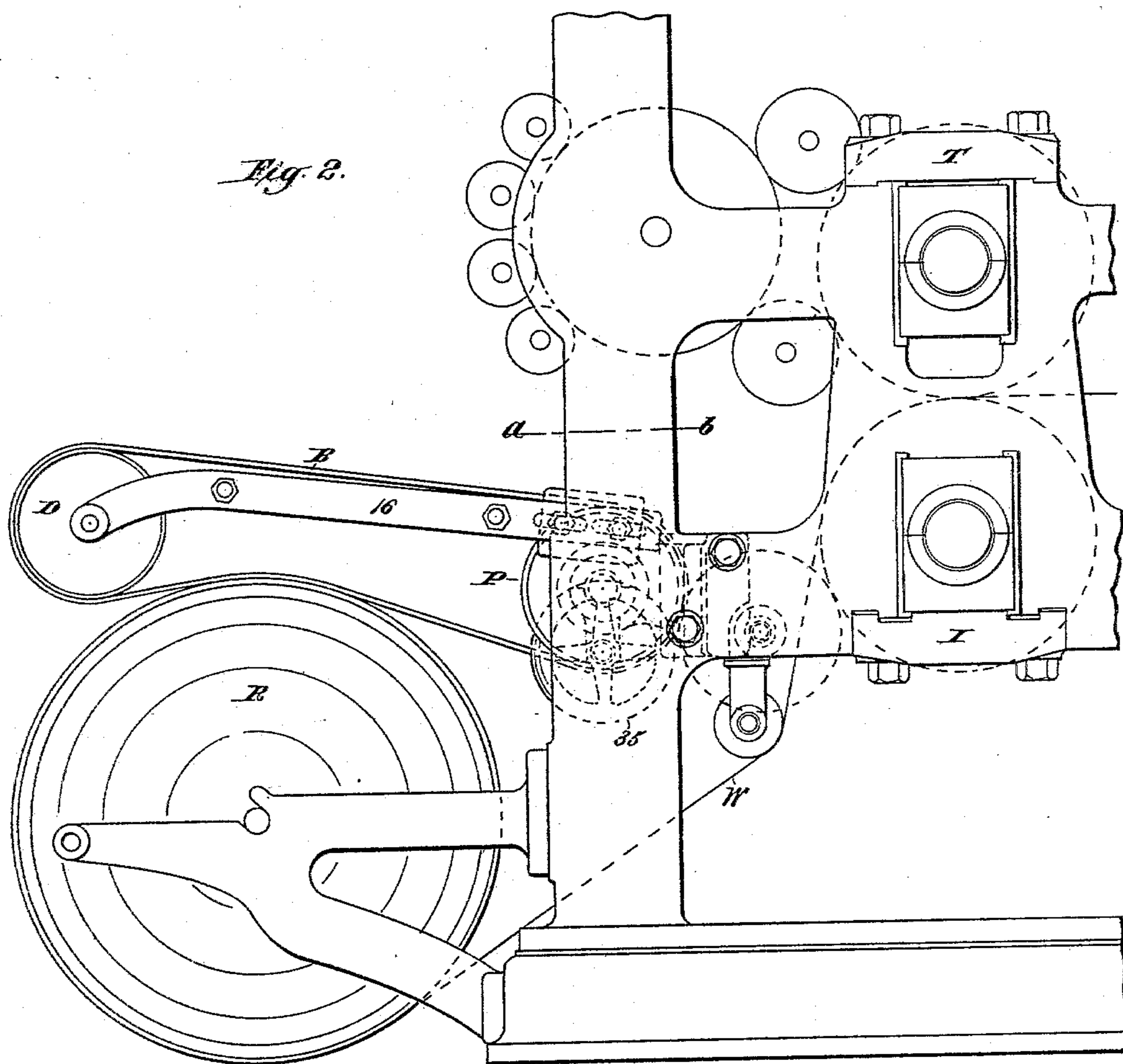
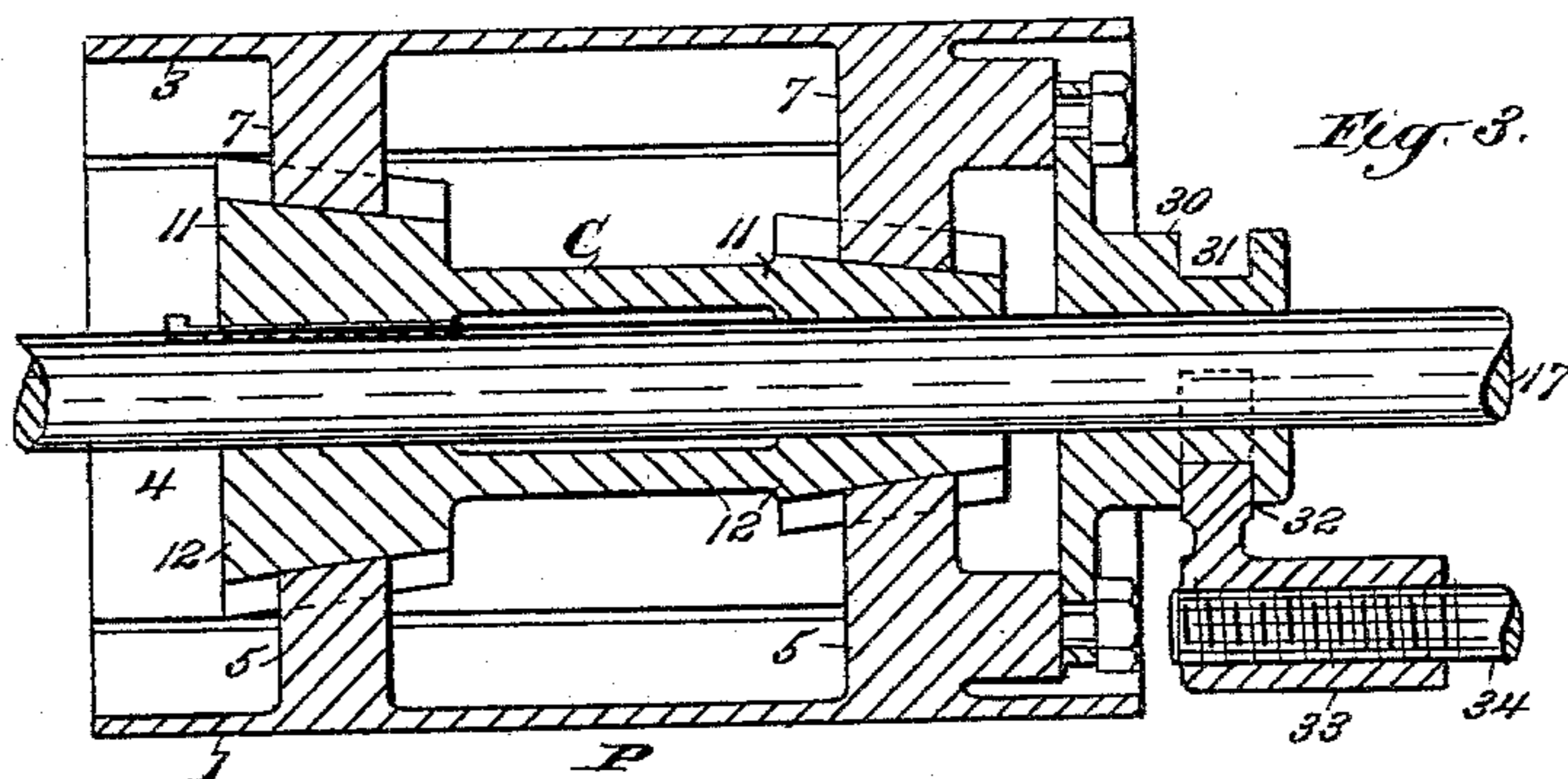
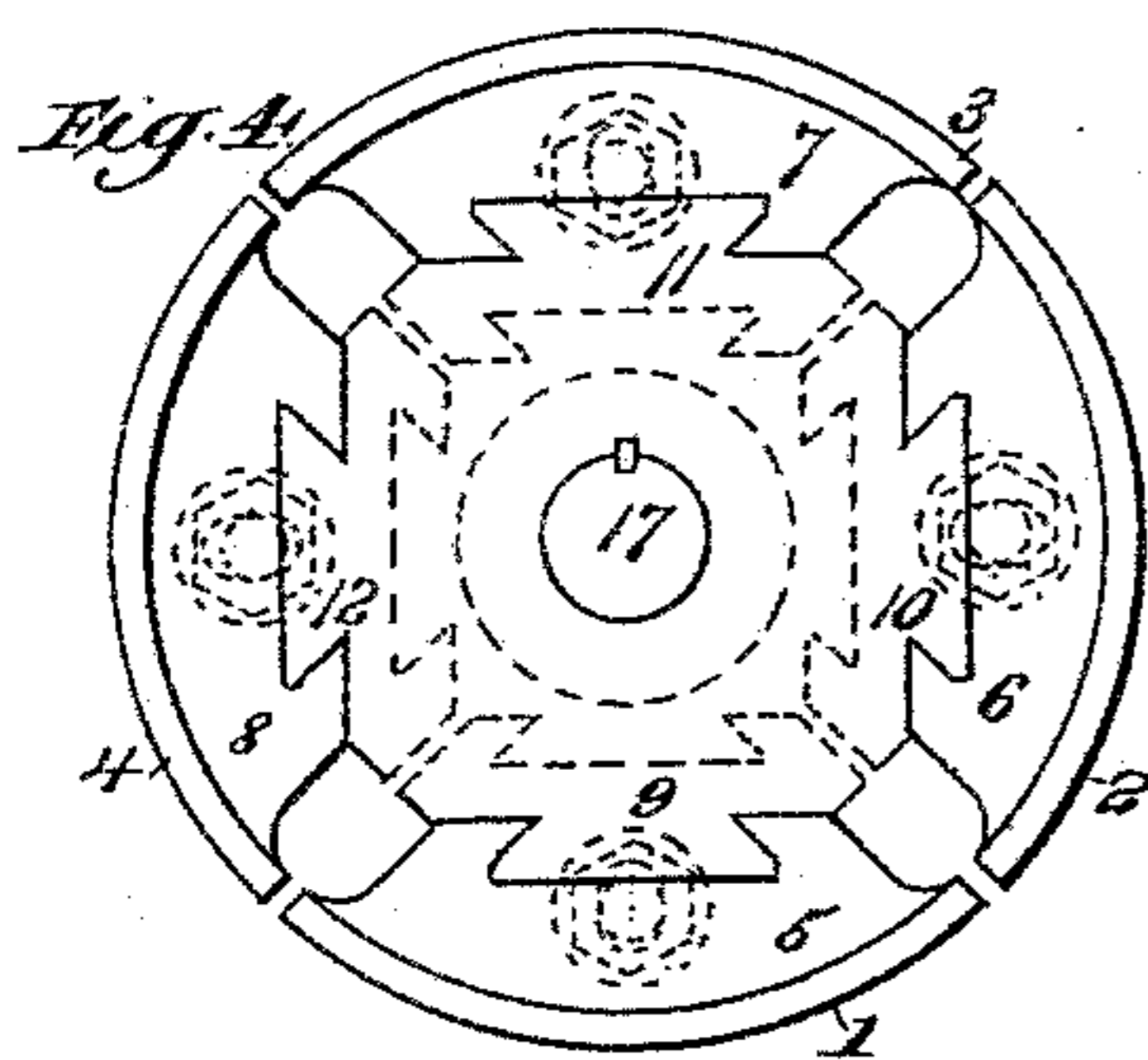
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Wm. B. Bond
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UNITED STATES PATENT OFFICE.

JOHN H. MOODY, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ROBERT HOE, THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF NEW YORK, N. Y.

WEB-CONTROLLING DEVICE FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 598,107, dated February 1, 1898.

Application filed December 1, 1892. Serial No. 453,714. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. MOODY, a citizen of the United States, residing at the city of Cambridge, county of Middlesex, and State of Massachusetts, have invented certain new and useful Improvements in Web-Controlling Devices for Printing-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to the means for controlling the movement of a web of paper while being fed into a printing-machine, which movement of the web varies considerably under different conditions. Thus when the blanket is changed, as is necessary in web-machines which run at high speed, the size of the impression-cylinder is constantly reducing as the blanket wears and a consequent variance in its driving speed results. Again, since the web must remain taut in order to remove wrinkles, it will be necessary when its quality is bad and its strength is limited to slightly drive it, and when it is moved from or brought into a state of rest it must be accelerated and retarded in order to prevent breakage or the paying out of an unused portion.

The invention consists in the provision of an expanding pulley and belt for controlling the unwinding movement of the web of paper, which pulley has hand-operated means for increasing and diminishing its circumferential extent, whereby its surface speed is so changed as to cause its feeding action to be appropriately varied, which varying feeding action is preferably applied to the rolled web through an endless controlling-belt carried in a swinging frame and arranged to follow the decreasing-roll, thus causing said belt to apply frictional contact resistance to retard, to move concertedly with the roll, or to drive it and thus increase its movement, from which results a complete control of the feeding movement of the paper web and a consequent smooth and even passage of the web to the printing mechanism suited not only to the high rate of speed during the printing operation, but a movement appropriate to the

quality of the paper used and its changing speed during the starting and stopping operations, whereby are maintained both an even feed and suitable tension.

The practical illustrations of the improvements shown in the accompanying drawings represent, in Figure 1, a plan view of the feeding end of a printing-machine, said view being taken on the line *ab* of Fig. 2; in Fig. 2, a side elevation of the same; while Fig. 3 is a longitudinal sectional elevation, and Fig. 4 an end elevation, of the expanding controlling-pulley.

The feeding end of the machine illustrated shows the impression-cylinder *I* and type or form cylinder *T* of the primary printing mechanism of a web-perfecting printing-machine. The paper web *W* to be printed is in the form of a large roll *R*, that is mounted upon a spindle resting in bearings provided in brackets that extend from the side frames, and the web *W* is led over a guide-roller and entered between the cylinders *I T*, and thence passes onward through the machine.

The expanding controlling-pulley *P* has its shaft 17 mounted in journals provided in brackets 20 21, that project from a cross-bar united to the side frames, and normally it is given the surface speed common to the printing-cylinders by means of a wheel 22, that is geared through an intermediate 23 to the wheel 24 on the impression-cylinder *I*.

The motion of the pulley *P* is communicated to the paper roll *R* by means of an endless belt *B*, that runs around the controlling-pulley *P* and around a pulley *D*, that is journaled in a frame consisting of side arms 15 16, tied together and pivoted to swing on the shaft of the pulley *P*, said frame being long enough to enable the belt *B* to rest upon the top of a large roll of paper *R*.

The controlling-pulley *P* is an expanding pulley, and while it may be otherwise constructed the structure of it shown herein has been found to be practically effective and is therefore preferred. Its shell is divided into four segments 1 2 3 4, each of which has inwardly-projecting lugs, as 5 6 7 8, provided with dovetailed grooves that embrace corre-

sponding dovetailed projections 9 10 11 12, provided on the sides of a central core C, that is splined on the shaft 17 of the pulley P.

The sets of lugs, as 5 6 7 8, and projections, as 9 10 11 12, may be duplicated to any extent required to secure stability of the parts; but two sets, as shown in Figs. 3 and 4, will ordinarily be found to be sufficient. These lugs and projections are tapered longitudinally, as shown, to an extent that will cause the segments 1 2 3 4 to move radially and thus increase or decrease the circumferential extent of the pulley as said lugs and projections are moved longitudinally with respect to each other. Their longitudinal movement is accomplished by the structure shown by means of a sliding head 30, which is reciprocated through a groove 31, into which is entered the semicircular clasp 32 of a running nut 33, that is moved by means of a screw-threaded rod 34, rotated in either direction by a hand-wheel or crank 35.

The parts are so related that normally the adjustment of the pulley P will be such that the surface of the belt B, which runs over it, will correspond with the pitch-line of the driving-wheel 22, and hence the normal surface speed of the belt B will be the same as that of the printing-cylinders. If, however, it is desired to cause the controlling-pulley P to move at a greater speed, and thus through the belt B drive the roll R at a corresponding speed, as during the starting operation, when from the accelerated movement of the printing-cylinders caused in attaining their normal high speed of travel, when undue strain upon the web would be occasioned, the hand-wheel is turned to properly rotate the rod 34, thus moving the nut 33 and through the clasp 32 forcing the head 30 inward, thus sliding the lugs 5 6 7 8 up the inclined faces of the projections 9 10 11 12 and causing the segments 1 2 3 4 to move radially outward, thus increasing the circumferential area of the pulley P to the desired extent and causing its surface speed to be appropriately increased.

If, on the contrary, the web is running too free, the controlling-pulley may, by a contrary movement of the parts, be appropriately reduced in its circumferential extent to properly control the web by imparting to it the frictional resistance of a slower motion. In the case where from its constantly growing smaller the roll R greatly resists the unwinding operation, as would be the case when it is comparatively small, the controlling-pulley may be appropriately expanded to drive the roll and thus insure the smooth unwinding of the web. Thus by the simple means of this expanding pulley I am enabled to so

actuate the belt controlling the unwinding movement of the web that during the main run of the paper it may move with a like surface speed, and thus only exert a resistant friction due to the incumbent weight of the belt B or even have that compensated for by being given a slightly-increased speed and may drive or retard, as is required, during the varying conditions of movement incident to the rapid printing of long lengths of paper fed to a machine from a large and compactly-formed roll.

It will be understood that the invention is not limited to the expanding pulley of the specific construction shown, but that expanding pulleys of any suitable form adapted to be adjusted by hand while running may be used, and that other modifications may be made in the construction shown without departing from the invention.

What is claimed is—

1. In a mechanism for controlling the movement of an unwinding rolled web while being fed to a printing mechanism, the combination with an expansible pulley, and an endless belt driven thereby and located so as to act upon the web, of a hand-operated means for adjusting the pulley while running, substantially as described.

2. In a mechanism for controlling the movement of an unwinding rolled web, the combination of an expansible pulley, an endless belt driven thereby and located so as to act upon the web, a hand-wheel, screw-rod rotated thereby, a nut traveling on said rod and connected with the reciprocating part of said pulley, whereby the pulley may be contracted and expanded while rapidly rotating, substantially as described.

3. In a mechanism for controlling the movement of an unwinding rolled web while being fed to the printing mechanism, the combination with an expansible pulley, an endless belt driven thereby and located so as to act upon the web, of gearing connecting the pulley-shaft with that of one of the printing-cylinders and operating to normally drive said pulley at the common running speed of the printing-cylinders, and means, capable of adjustment by hand for expanding and contracting said pulley circumferentially to vary its surface speed, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN H. MOODY.

Witnesses:

F. W. H. CRANE,
E. L. SPEIR.