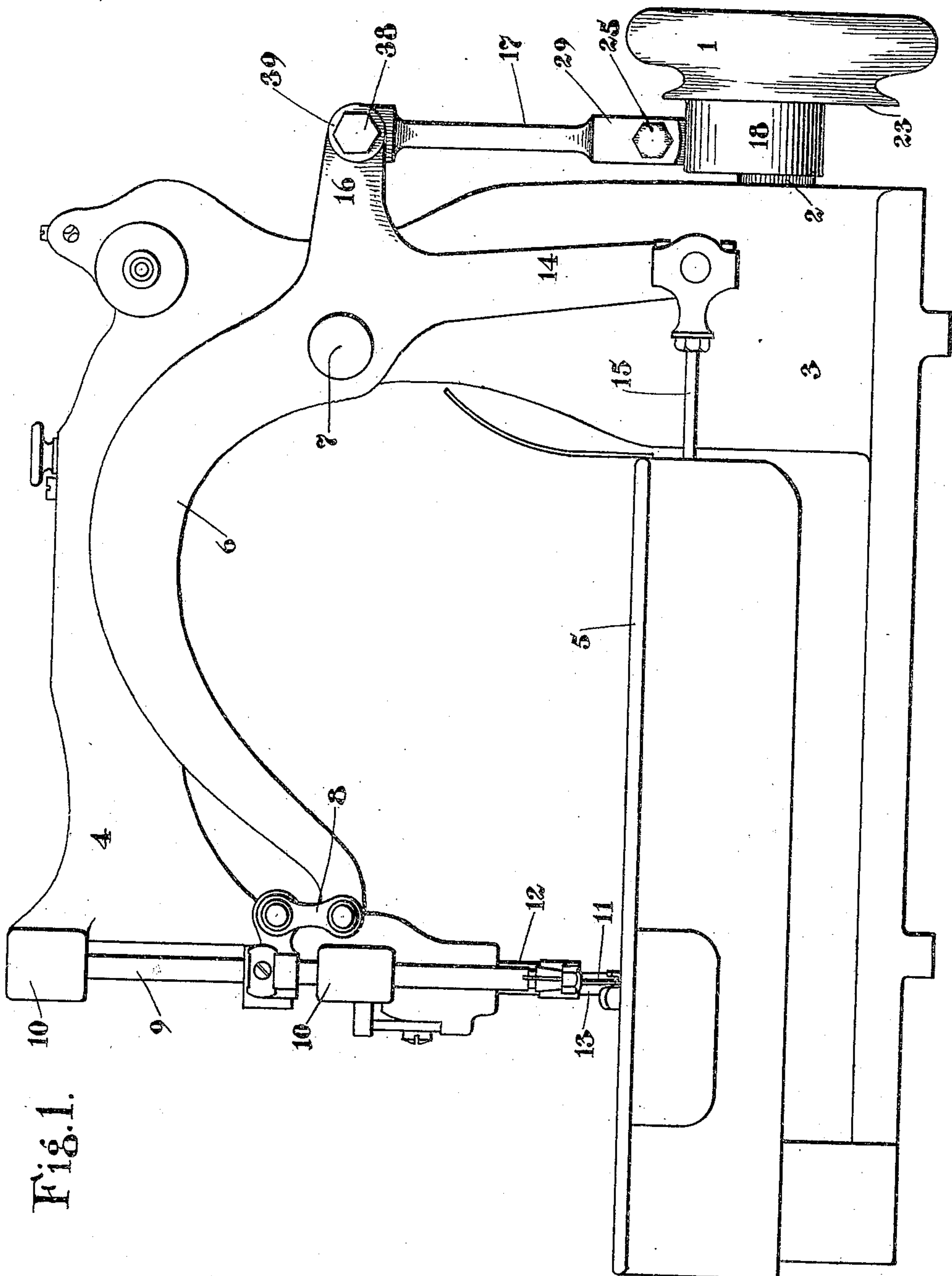


No. 810,961.

PATENTED JAN. 30, 1906.

W. V. MILLER.  
PITMAN CONNECTION.  
APPLICATION FILED APR. 4, 1904.

2 SHEETS—SHEET 1.



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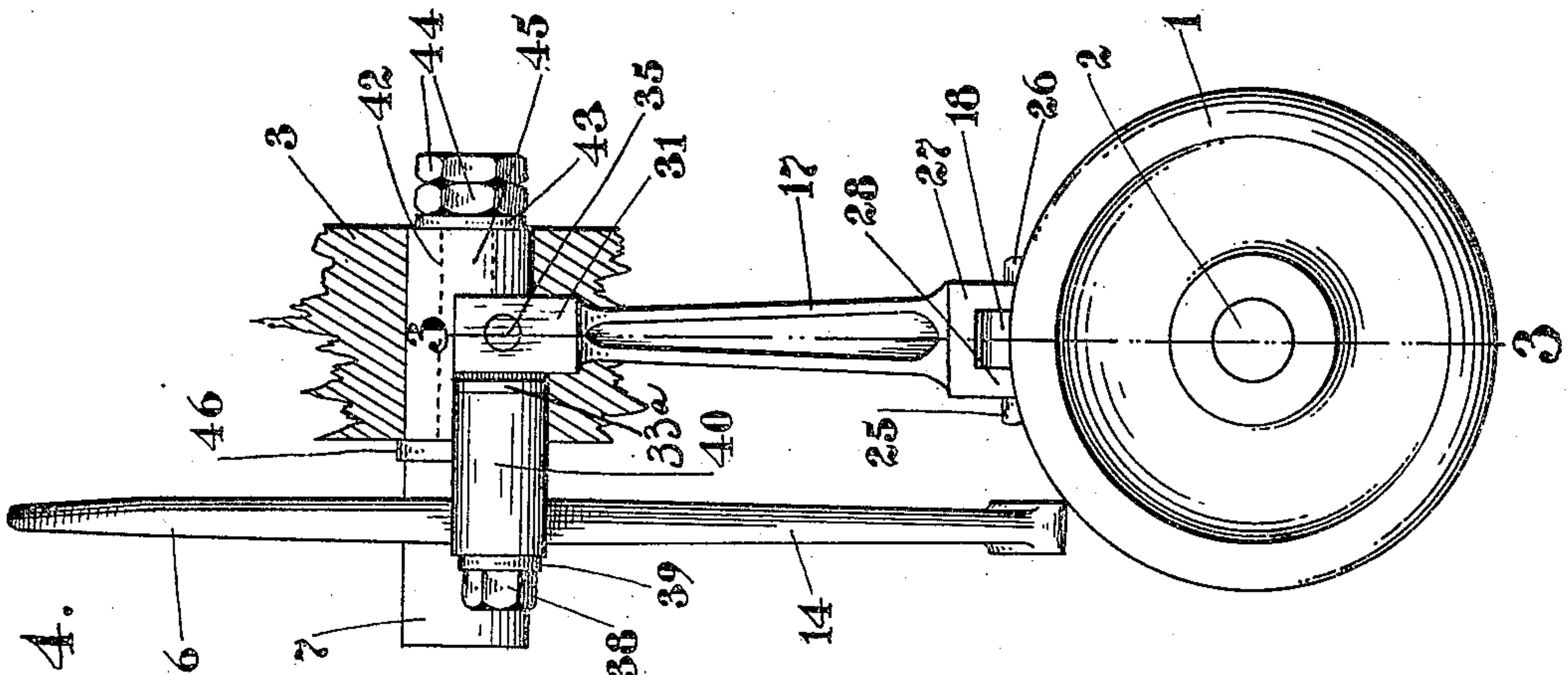


Fig. 4.

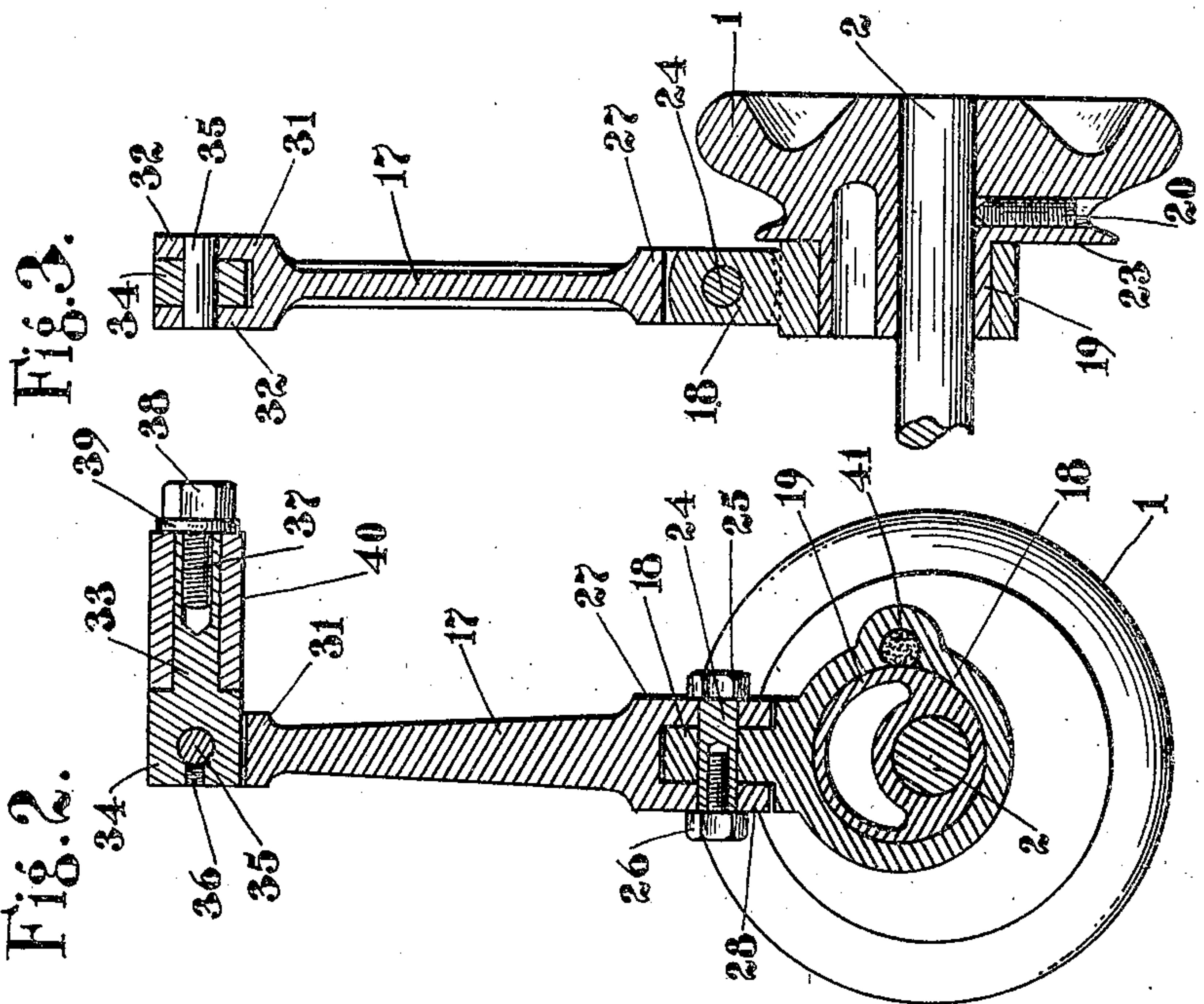


Fig. 3.

Fig. 2.

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# UNITED STATES PATENT OFFICE.

WILLIAM V. MILLER, OF NYACK, NEW YORK, ASSIGNOR TO METROPOLITAN SEWING MACHINE COMPANY, OF NYACK, NEW YORK, A CORPORATION OF NEW YORK.

## PITMAN CONNECTION.

No. 810,961.

Specification of Letters Patent.

Patented Jan. 30, 1906.

Application filed April 4, 1904. Serial No. 201,367.

*To all whom it may concern:*

Be it known that I, WILLIAM V. MILLER, a citizen of the United States, residing in Nyack, county of Rockland, and State of New York, have invented a new and useful Improvement in Pitman Connections, of which the following is a description.

This invention relates to pitman connections, and particularly to connections of the character which are actuated from an eccentric or cam on a driving-shaft.

An object of my invention is to provide a pitman connection of the eccentric-strap variety which will transmit motion from a driving-shaft to a driven device with ease of motion and quietude of action and without binding or strain.

Another object of my invention is to so construct the parts of the pitman that it may transmit rotary motion from the driving device and convert the same into reciprocating or oscillating motion in a driven device, and this without drag, bind, or friction.

With the above and other objects in view, such as will be hereinafter set forth, my invention consists in the parts, features, and combinations of elements hereinafter described and claimed.

In the drawings forming part of my invention, Figure 1 is a side elevation of so much of a sewing-machine as is considered necessary to properly illustrate one application of my invention. Fig. 2 is a transverse vertical section of the pitman connection, showing the same coupled with a rotary shaft or driving device. Fig. 3 is a longitudinal vertical section taken on the line 3 3 of Fig. 4; and Fig. 4 is a rear end elevation of the pitman, showing its connection with a driven lever, which latter is pivoted in the frame shown in section.

Primarily, it should be understood that the application herein shown of my invention is merely explanatory and an indication only of the manner in which the same may be employed to carry out its useful purposes and subserve its functions. Other applications will occur to those skilled in the art.

Referring to Fig. 1, the numeral 1 indicates the driving-wheel and band-pulley for the driving-shaft of a sewing-machine, 2 indicating said shaft; 3, the frame of the machine, in which said shaft is journaled; 4, the

overhanging arm, supported by the frame; 5, the bed-plate of the machine; 6, the needle-bar-actuating lever, pivoted at 7 to the arm 4 and connected at its forward end by a pivotal link 8 to a needle-bar 9, which reciprocates in bearings in the head 10 of the machine. The needle-bar carries at its lower end the needle 11, and the head of the machine supports a presser-bar 12, carrying a presser-foot 13. The lever 6 has the depending arm 14, connected by a pitman 15 to the usual looper mechanism of the machine. The lever 6 has the rearwardly-extending portion 16, to which the pitman of my invention is connected, and which lever receives motion (oscillations) from the driving-shaft of the machine.

The pitman is indicated by 17, the body of which, between its ends, is given any desired conformation. At its lower end the pitman 17 has pivotally connected thereto the strap portion 18, which surrounds the eccentric 19, formed on the driving-wheel 1, as shown in Fig. 3, the latter being fixed to the driving-shaft by means of the set-screw 20, Fig. 3. This eccentric is cylindrical instead of, as usual, being curved transversely on its periphery to form what is known as a "ball" eccentric or cam. By my construction a flat eccentric can be employed, thus very much reducing cost and absolutely avoiding uncertainty of motion and wobbling between the strap and the eccentric. The strap 18 operates close to the face or flange 23 of the driving-wheel 1. The strap 18 is pivotally secured to the pitman 17 by means of the smooth bolt 24, having the head 25, and the shank of which at its end is internally bored and screw-threaded for the reception of the holding-screw 26. The bolt 24 passes through a smooth bore in the reduced and squared end of the strap 18, which end extends into the bifurcated portion 27 of the pitman 17, the prongs 28 of said portion 27 being correspondingly bored for bolt 24 and embracing the end of the said strap 18 and the several parts being thus held together pivotally, as shown in Fig. 2. This connection provides for any lateral play or movement of the pitman 17 relatively to the eccentric 19 and prevents binding between the latter and the pitman, the strap 18 always riding easily and



freely in a vertical plane or in a plane perpendicular to the plane of the driving shaft or device. At its upper end the pitman 17 has the bifurcated portion 31, the prongs 32 of which pivotally support a connection between the pitman and the driven device, which in this instance is the oscillating lever 6. This pivotal connection consists of the journal pin or bearing 33, having the angular head 34 set between the prongs 32 at the end of pitman 17; a pivotal pin 35, fixed in said head 34 by set-screw 36, affording oppositely-extending journals entering apertures in said prongs and turning freely therein. The journal-bearing 33 is bored and screw-threaded at its outer end for the reception of the screw 37, having the head 38, between which and the bearing is held a washer 39.

The end of the extension 16 of lever 6 is formed into a laterally-prolonged sleeve 40, which journals upon the bearing 33, said bearing and sleeve being thus extensive for a purpose to be presently described; but it will now be noted that the pitman by the construction set forth may have movement at its lower end relatively to the strap 18 and in the direction of the length of the driving-shaft and at its upper end has a pivotal or swivel movement relatively to the end of the extension 16 of lever 6. Moreover, the angular head is so set in the bifurcated portion 31 as to have a clearance at the bottom for vertical motion of the journal-pin 33 relatively to the pitman 17, and additional clearance is also provided between the portion 31 and the flange 33<sup>a</sup> on the pin 33, thus allowing the pivotal movement of pitman 17 relatively to pin 33.

An oiling-aperture is provided in the eccentric-strap, opening upon the periphery of the eccentric 19, in which wick 41 may be disposed.

Viewing Fig. 4, it will be seen that the driving-shaft 2 is arranged centrally with reference to the frame or standard 3 of the machine, this view, however, for the purposes of simplicity showing only a portion of said frame in section, and that the pitman extends vertically from the driving-shaft centrally of said frame, the thrust of the pitman being substantially in a vertical plane cutting the driving-shaft centrally longitudinally. It will also be seen that the journal pin or bearing 33 extends laterally from the upper end of the pitman toward the front of the machine and that the extension 16 of lever 6 is connected to the sleeve 40 substantially at the end thereof, said sleeve 40 extending substantially the length of the journal-pin 33, and thus providing an extensive bearing or connection between the pitman 17 and the lever 6. This construction enables the pitman 17 and the lever 6 to operate or reciprocate in two planes substantially parallel with each other and enables the direct thrust of

the pitman to be imparted positively and directly to the lever without disturbing the parallelism of the two parts, and consequently, the "balance" of the mechanism. Furthermore, to prevent binding of the lever 6 in its bearing at 7 and afford a steady and substantial support said bearing is made in the form of a long pin (indicated by dotted lines 42, Fig. 4) which journals in a bushing 45, set in a bore in the frame 3. The pin 42 is held in place by locking and jam nuts 44, set upon the outer screw-threaded end thereof, a washer 43 being interposed between the bushing 45 and said nuts, if desired. A flange 46 may also be provided on the bushing so as to set between the frame and the enlarged head 7 of the pin 42, taking up wear and securing steadiness of pin 42. From this construction and disposition of parts it will be apparent that perfect balance in the action of the pitman 17 and lever 6 is secured, thus avoiding strains, friction, and vibration, for all the movements of the pitman are centrally of the frame, and the long bearing of the lever 6 in the frame makes its action steady and prevents lateral vibration, and the long bearing and pivotal connection between the lever and pitman, combined with the pivotal connection of the latter with strap 18, enable the direct thrust of the pitman to be transmitted powerfully and directly to the lever 6.

From the above construction it will be clear that I have provided a pitman connection between a driving and a driven device which is capable of being used with a flat eccentric and transmitting rotary motion directly and energetically, which will transform said motion into reciprocating or oscillating motion in a driven part without any possibility of binding or drag, which constitutes what may be termed a "flexible pitman," because it yields in all necessary directions, and thus avoids any possibility of friction or drag consequent upon the difference in the angular motion of the driving and driven parts or devices. These functions and advantages will appear obvious and appeal to one skilled in the art as most important, inasmuch as it is a well-known fact that the greatest wear and tear falls upon this character of pitman and that in high-speed machines the greatest trouble emanates from this connection, frequent breaking resulting, necessitating replacing the parts and involving great expense and delay. It will also be apparent that I have provided a pitman connection, and so disposed the same relatively to the driving and the driven parts, which will transmit and transform motion without any drag or binding between the parts without in any manner disturbing or flexing the driven member or device and which will perfectly maintain the balance between the driving and the driven parts and absorb and prevent all vibration.



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

5 1. In combination, a driving member, a driven member and a frame supporting the two on axes at right angles to each other, a pitman connecting the two members, and a pivotal connection between the pitman and the driven member including a long journal-  
10 pin extending at a right-angle to said member and pivotally connected to the pitman and having a swivel connection with the driven member.

15 2. In combination, a supporting-frame; a driving member journaled in said frame; a driven member also journaled in said frame; a pitman connecting the two members and pivotally joined to the driven member; the journal of the driven member being sleeved  
20 in and extending entirely through said frame, and the pivotal connection between the said member and said pitman being disposed in

rear and centrally of the journal of said member, whereby the drive of the pitman will not disturb the balance of the said member nor  
25 cause it to bind at its journal.

3. In combination, a supporting-frame; a driving member journaled in said frame; a driven member also journaled in said frame; a pitman connecting the two members, the  
30 connection between the pitman and the driven member consisting of an extended tubular bearing on the latter, an elongated pin journaled in said bearing and having an angular head, and a pivotal connection between  
35 said head and said pitman.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM V. MILLER.

Witnesses:

CHAS. MCC. CHAPMAN,  
M. HERSKOVITZ.