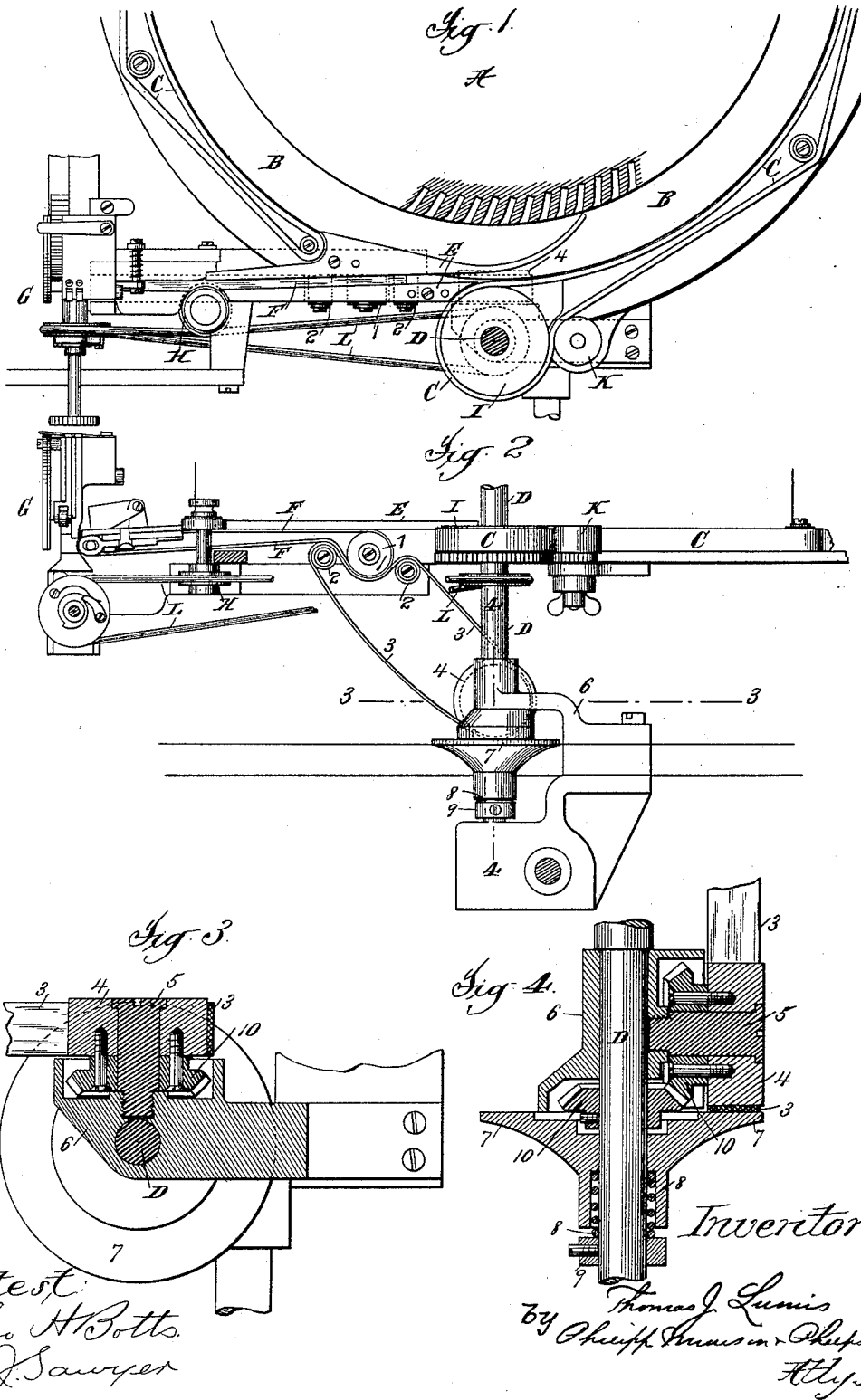


(No Model.)

T. J. LUMIS.
BELT DRIVING MECHANISM.

No. 468,078.

Patented Feb. 2, 1892.



UNITED STATES PATENT OFFICE.

THOMAS J. LUMIS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE THORNE
TYPE SETTING MACHINE COMPANY, OF JERSEY CITY, NEW JERSEY.

BELT-DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 468,078, dated February 2, 1892.

Application filed September 23, 1891. Serial No. 406,552. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. LUMIS, a citizen of the United States, residing at Hartford, county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Belt-Driving Mechanism, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of the present invention is to provide a simple means for driving a belt by which all slack shall be taken up on the driving side, so that the belt is always taut on that side and any slackness is carried to the return side of the belt.

A further object is to provide an improved construction of driven and driving belts and driving mechanism for the latter, whereby the slack in both belts is so taken up as to secure a uniform movement of the driven belt.

With these objects in view my invention consists in various constructions and combinations of parts, all as fully described in the following specification, and pointed out in the claims.

While my invention is of general application with all classes of mechanism in which a belt is used for driving another belt, a shaft, or any mechanism, the construction embodying the same has been designed especially for use in a type-setting machine of the general construction shown and described in United States Letters Patents No. 224,167, to Fraser, No. 283,934, dated August 28, 1883, and Nos. 372,186 and 372,187, dated October 25, 1887, to Thorne, and No. 417,057, dated December 10, 1889, to Lumis, and it will be shown and described as thus applied.

The organization and operation of the parts of the machine in connection with which the improvement of the present invention is used are fully set forth in the above Letters Patent, and only a sufficient showing will be made to illustrate the application of the present improvement, reference being had to the above-named Letters Patent for a full showing and description of the other parts and the operating mechanism.

In the accompanying drawings, forming a part of this specification, Figure 1 is a horizontal section taken above the type-carrying table and delivery devices, showing a portion of the composing-case in section. Fig. 2 is a

side elevation of the same. Fig. 3 is a horizontal section on the line 3 of Fig. 2. Fig. 4 is a vertical section on the line 4 of Fig. 2.

Referring to said drawings, it will be understood that A is the composing-case; B, the revolving type-carrying table; C, a guard-belt extending about the table and by which the table is driven from the shaft D; E, the guides by which the type are guided from the type-carrying table; F, the type-conveying belt by which the type are advanced between the guides to the packing mechanism G, by which the type are packed in the galley, this belt being shown as running at an angle to the guides E; and H, a rubber-faced separating-roll rotating in the opposite direction to the movement of the belt F and adapted to secure the correct delivery of the type to the packing mechanism by preventing the passage of more than one type at a time. The guard-belt C is driven from the shaft D by a pulley I, and an eccentrically-mounted tightening-roll K, driven from the shaft D, is used to take up the slack in the belt C as it passes about the table B. The packing mechanism G is driven from the shaft D by a driving-belt L, which also drives the roll H by engagement with a pulley on its shaft. The general construction and operation of these parts is substantially the same as that of the patents above referred to, except the arrangement of the guard-belt C, and means for securing the proper delivery of the type by the type-conveying belt to the packing mechanism, which, however, form no part of the present invention, but are described and claimed in my applications, Serial Nos. 403,537, dated August 24, 1891, and 406,551, dated September 23, 1891.

Referring now to the parts embodying my invention, the type-conveying belt F is shown in the patents above referred to as driven by a pulley mounted on the opposite side of the shaft D from the packing mechanism and actuated from the shaft D through a series of gears.

In the present construction the driving-pulley 1 for the belt is mounted in front of the shaft D, so as not to interfere with the belt C, and below this pulley are mounted two pulleys 2, over which passes a belt 3 in frictional engagement with the type-conveying belt F and by which the type-conveying

belt is driven. It is important that the type-conveying belt should be driven at a perfectly-uniform rate of speed and should present a perfectly-uniform surface to the type, and it is desirable, therefore, that means should be provided for avoiding slack in that portion of the belt by which the type are carried. It is found that by the construction shown any slack in the belt F is so taken up that the surface carrying the type is always taut and uniform. In order to secure the driving of the belt F at a perfectly-uniform rate of speed and take up all slack on the driving side of the belt 3, I have devised the belt-driving mechanism forming the main feature of the present invention and which will now be described.

The driving-pulley 4 of the belt 3 is mounted to rotate on a stud 5, secured in a bracket 6, mounted on the frame of the machine and in which the shaft D rotates. On the shaft D below the bracket and pulley is mounted a disk 7, so that its axis is at right angles to the axis of the pulley 4. This disk is held in position to engage the belt 3 as it passes about the pulley 4 with sufficient pressure to drive the belt by friction. The disk may be rigidly mounted upon the shaft D, but is preferably mounted to slide thereon and spring-pressed, preferably, by a coiled spring 8, pressing against the disk, and a collar 9, adjustably secured upon the shaft, as shown, so that the disk will yield to irregularities in the belt and a constant and uniform pressure be maintained. The belt 3 and pulley 4 may be driven solely by the disk 7, and it will be seen that with this construction all slack in the belt between the rolls 2 and driving-pulley 4 on the driving side will be taken up and any slack transferred to the other side of the belt, the friction between the type-conveying belt F and belt 3 being sufficient to prevent any transfer of slack about the rolls 2. In the preferred construction, however, which I have found most efficient and which forms an important part of my invention, the pulley 4 is driven positively, preferably from the shaft D by bevel-gears 10, as shown. In this construction it is necessary for securing the special function of the disk that the disk should move in the same direction as the belt and pulley, and at a little higher rate of speed, so that the belt will be frictionally advanced by the disk 7 about the pulley 4, so as to thereby take up all slack on the driving side of the belt. In the construction shown the increased speed of the disk 7 relatively to the pulley 4 is secured by the greater diameter of the disk, both the disk and pulley being driven at the same rate of speed as the shaft D, but the outer edge of the disk which engages the pulley moving at a higher rate of speed than the latter. It will be understood, however, that the proper relative speeds of the pulley and engaging portion of the disk may be secured in any other manner, as by driving the pulley at a lower speed than the shaft D.

While I have shown my improved belt-driving mechanism as applied to driving a belt which is in frictional engagement with and drives a second belt, it will be understood that my invention is not to be limited to any such use of the driving-belt, but that it is of general application.

What I claim is—

1. The combination, with a belt and its driving-pulley, of a disk engaging the belt as it passes over the pulley and moving in the same direction as and at a higher rate of speed than the pulley, substantially as described.

2. The combination, with a belt and its driving-pulley, of a spring-pressed disk engaging the belt as it passes over the pulley and moving in the same direction as and at a higher rate of speed than the pulley, substantially as described.

3. The combination, with driving-shaft D, of disk 7, carried by said shaft, pulley 4, mounted at right angles to said shaft, and belt 3 on said pulley, pressed between said pulley and disk, substantially as described.

4. The combination, with driving-shaft D, of disk 7, carried by said shaft, pulley 4, mounted at right angles to said shaft, means for driving said pulley at a lower rate of speed than the surface of the disk adjacent thereto, and belt 3 on said pulley, pressed between said pulley and disk, substantially as described.

5. The combination, with driving-shaft D, of disk 7, carried by said shaft, pulley 4, mounted at right angles to said shaft, gears 10, connecting said shaft and pulley, whereby the pulley is driven at a lower rate of speed than the surface of the disk adjacent thereto, and belt 3 on said pulley, pressed between said pulley and disk, substantially as described.

6. The combination, with driving-shaft D, of disk 7, movable on said shaft, coiled spring 8 on said shaft, pressing against the disk, pulley 4, mounted at right angles to said shaft, gears 10, connecting said shaft and pulley, whereby the pulley is driven at a lower rate of speed than the surface of the disk adjacent thereto, and belt 3 on said pulley, pressed between said pulley and disk by said spring 8, substantially as described.

7. The combination, with driving-belt 3, its driving-pulley 4 and pulleys 2, and a disk engaging the belt as it passes over the pulley and moving in the same direction as and at a higher rate of speed than the pulley, of pulley 1 between said pulleys 2, and belt F on said pulley 1, driven by engagement with said belt 3, substantially as described.

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

THOMAS J. LUMIS.

Witnesses:

ROBERT W. NELSON,
A. L. ULRICH.