

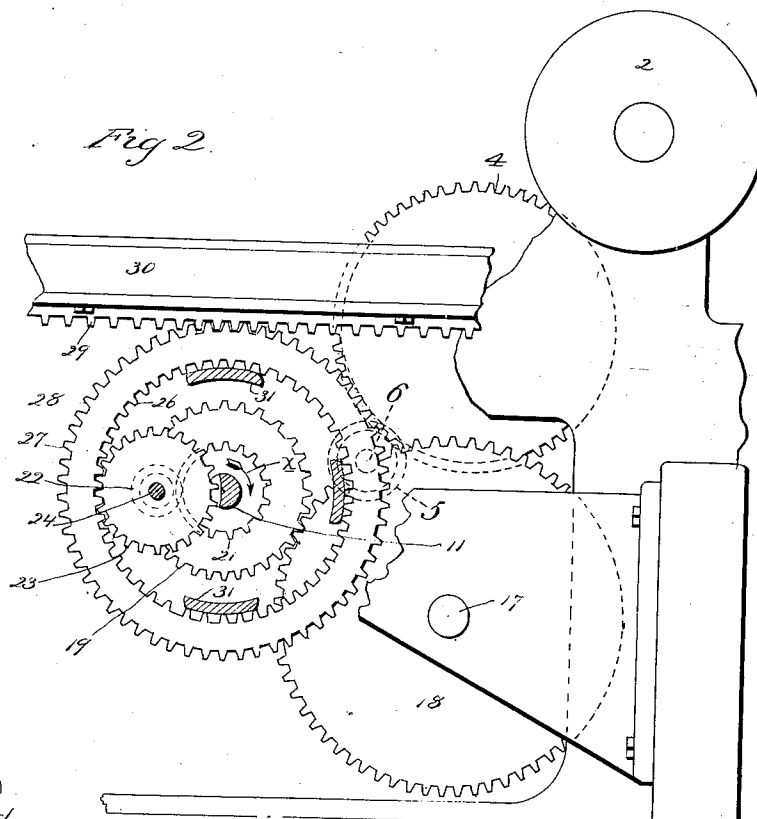
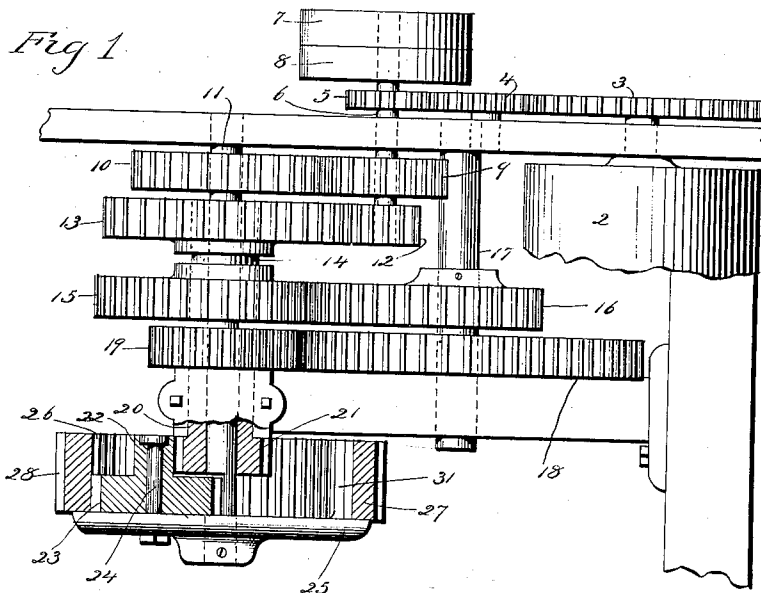
No. 895,820.

PATENTED AUG. 11, 1908.

S. WHITLOCK.
BED MOVEMENT FOR PRINTING PRESSES.

APPLICATION FILED NOV. 25, 1907.

2 SHEETS—SHEET 1.



Witness
C. J. Reed.
C. L. Reed

Sturges Whitlock
by Seymour & Coe - atty.

No. 895,820.

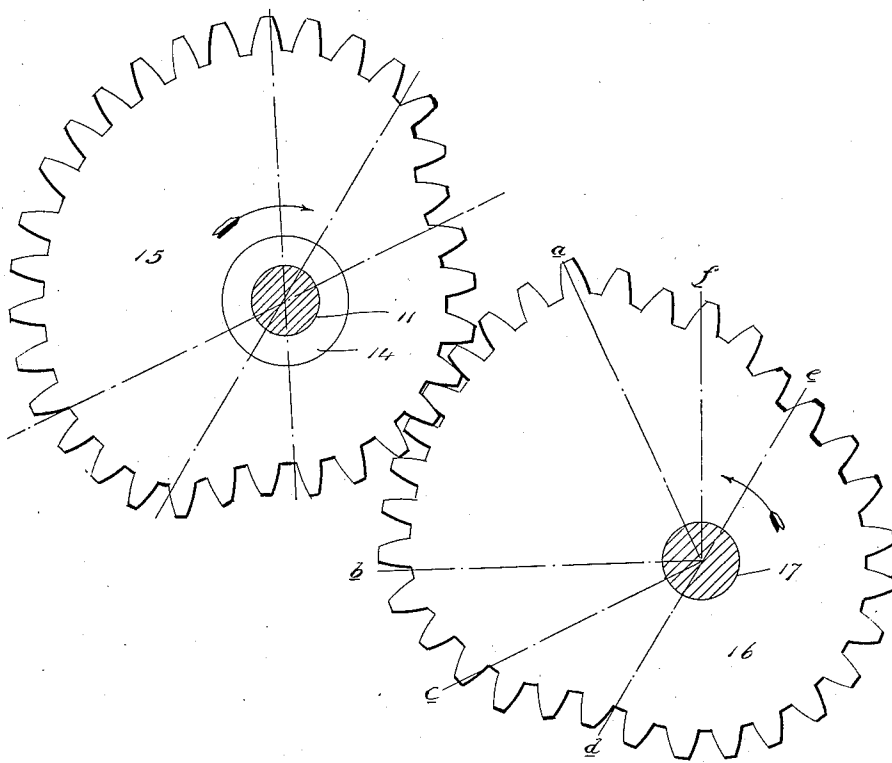
PATENTED AUG. 11, 1908.

S. WHITLOCK.
BED MOVEMENT FOR PRINTING PRESSES.

APPLICATION FILED NOV. 25, 1907.

2 SHEETS—SHEET 2.

Fig. 3.



Witnesses
C. J. Reed
C. L. Weed

Sturges Whitlock
Inventor
by Seymour T. Case
Attys

UNITED STATES PATENT OFFICE.

STURGES WHITLOCK, OF SHELTON, CONNECTICUT.

BED-MOVEMENT FOR PRINTING-PRESSES.

No. 895,820.

Specification of Letters Patent.

Patented Aug. 11, 1908.

Application filed November 25, 1907. Serial No. 403,699.

To all whom it may concern:

Be it known that I, STURGES WHITLOCK, a citizen of the United States, residing at Shelton, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Bed-Movements for Printing-Presses; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a broken view partly in plan and partly in horizontal section of my improved bed-movement from which the bed has been removed. Fig. 2 a view partly in end elevation and partly in vertical section of the mechanism. Fig. 3 a diagrammatic view of the variable gears.

My invention relates to an improvement in reciprocating bed-movements for printing presses, the object being to produce a simple, reliable, accurate and smooth-running mechanism.

With these ends in view my invention consists in the combination with the reciprocating bed of a printing press, of a sun-and-planet gear system connected with the said bed for driving the same, and means for imparting a variable angular velocity to the sun-member of the said system.

My invention further consists in the construction and combination of parts to be hereinafter described and pointed out in the claims.

In carrying out my invention as herein shown, I employ a cylinder 2 driven by gears 3, 4 and 5, the gear 5 being mounted upon a main driving shaft 6 carrying pulleys 7 and 8, all these parts being of ordinary construction and arrangement. Upon the shaft 6 I locate a pinion 9 meshing into a gear 10 fixed upon the driven shaft 11. I also locate upon the shaft 6 a pinion 12 meshing into a gear 13 loosely mounted upon the shaft 11 and formed with a sleeve 14 carrying a variable gear 15 which meshes into a complementary variable gear 16 mounted upon a supplemental driven shaft 17 carrying the main transmitting gear 18 which meshes into a transmitting pinion 19 located at one end of an integral sleeve 20 the opposite end of which has formed upon it the "sun" pinion 21 of a sun-and-planet system of gears. The said "sun" pinion 21 meshes into a "planet" pinion 22

formed integral with a "planet" wheel 23 mounted upon a stud 24 carried by a circular plate or disk 25 fixed to the driven shaft 11 and partaking of the rotation thereof. The "planet" wheel 23 meshes into the internal gear teeth 26 of a rack wheel 27 the exterior gear teeth 28 of which mesh into a rack 29 located upon the bottom of the reciprocating type-bed 30 which may be of any approved construction and which is reciprocated back and forth with respect to the cylinder 2 by means of the mechanism described. The rack wheel 27 is mounted so as to be rotated in either direction upon segmental arms 31 projecting inward from the plate 25 and extending parallel with the driven shaft 11.

With reference now to the variable gears 15 and 16, their complementary conformation is such that they will so far vary the speed, or angular velocity, to use a technical phrase, of the "sun" pinion 21 as to cause the rack wheel 27 to be rotated in opposite directions with the effect of securing the properly timed or speeded reciprocation of the bed 30. Let it be assumed, for convenience of illustration, that the variable gears 15 and 16 are driving the "sun" pinion 21 at the speed of the driven shaft 11, and hence of the plate 25 and the "planet" wheel 23. When the "sun" pinion 21 and the "planet" wheel 23 are thus revolving at the same speed, the "planet" wheel will have no rotation on its axis 24 but will carry the rack wheel 27 around with it. Therefore there will be one complete revolution of the rack wheel 27 for every complete revolution of the "sun" pinion 21 in the direction of the arrow *x* of Fig. 2. Now when the gears 15 and 16 double the speed of the "sun" pinion 21 in the direction of the arrow *x*, the "planet" wheel 23, in addition to its planet-wise motion, will be revolved upon its own axis so that it will ride around, so to speak, upon the inside of the wheel 27 and leave the same at rest. These periods of rest thus ascribed to the rack wheel 27 are utilized for stopping the bed 30 at the ends of its stroke. Now when the variable gears 15 and 16 increase the speed of the "sun" pinion 21 three-fold and cause it to make three turns in the direction of the arrow *x* for every turn of the driven shaft 11 and plate 25, the "planet" wheel 23 in addition to its planet-wise movement around the "sun" pinion 21, will revolve on its stud 24 so rapidly as to effect the reverse revolution of the rack wheel 27 so that during the

period that the "sun" pinion 21 is making three complete revolutions in the direction of the arrow *x*, the wheel 27 is making one complete revolution in the opposite direction, whereby the reverse movement of the bed 30 is provided for.

It will be understood that the variable gear 15 is driven at uniform speed and makes one complete revolution for every cycle of the press; that is to say, one complete revolution of the gear 15 provides for one complete reciprocation of the type bed 30. The variable gear 16 which is driven from the gear 15, does not, however, have a uniform velocity, but is driven at what is called an angular velocity, which is determined by the conformation of the gears 15 and 16 as required to produce the speeds in the "sun" pinion necessary for turning the wheel 27 nearly through one revolution in one direction, then causing it to stop, then driving the said wheel 27 nearly through one revolution in the opposite direction; then causing it to stop and so completing one cycle of the movement of the press. To meet these requirements the variable gear 16 is carefully laid out to have an irregular or eccentric form. Thus between the points *a* and *b* on its periphery, its angular velocity will be uniform so as to provide for one complete revolution of the "sun" pinion 21 in the direction of the arrow *x* for the inward movement of the bed 30. From the point *b* to the point *c* the angular velocity of the gear doubles or increases in velocity from 50 to 100 to provide for stopping the rack wheel 27 preparatory to reversing the direction of its rotation so as to reverse the movement of the type-bed 30. From the point *c* to the point *d* the periphery of the gear 16 provides for increasing the velocity of the "sun" pinion 21 fifty per cent. more or from 100 to 150. From the point *d* to the point *e* the periphery of the wheel 16 provides for running the "sun" pinion at a uniform speed of 150 so as to provide for three revolutions of the "sun" pinion which will be driven three times as fast by the gear 16 when that portion thereof lying between the points *d* and *e* is in play as it will be driven when that portion of it between the points *a* and *b* is in play. From the point *e* to the point *f* the periphery of the gear 16 is plotted so that the "sun" wheel 21 will decrease in velocity from 150 to 100, whereby the wheel 27 will be brought to a stop preparatory to its being reversed in rotation for reversing the bed 30. From the point *f* to the point *a* the periphery of the wheel 16 reduces the speed of the pinion 21 from 100 to 50, thus completing one cycle in the operation of the machine.

I claim:—

1. In a bed-movement for printing presses, the combination with a reciprocating bed, of a sun-and-planet gear system connected with the said bed for driving the same, and means for imparting variable angular velocity to the "sun" member of the said system.

2. In a bed-movement for printing presses, the combination with a reciprocating bed, of a rack wheel, "sun" and "planet" gears for driving the said rack-wheel in opposite directions, and variable gears for varying the speed of the "sun" member of the sun-and-planet gears.

3. In a bed-movement for printing presses, the combination with a reciprocating bed, of a sun-and-planet gear system connected therewith for driving the same, variable gears for imparting variable angular velocity to the "sun" member of the said system, and transmitting gears for transmitting the variable angular velocity of the variable gears to the said "sun" member.

4. In a bed-movement for printing presses, the combination with a reciprocating bed, of a rack carried thereby, a reversely rotatable rack-wheel for the said rack, provided with internal gear teeth, a driven shaft, means for mounting the said rack-wheel concentric with the said driven shaft, a planet-wheel meshing into the internal teeth of the said rack wheel and rotating around the said shaft, a "sun" pinion loosely mounted upon the said shaft and meshing into the "planet" wheel, and means for imparting variable angular velocity to the "sun" pinion, whereby the rack wheel is reversely rotated and stopped at the ends of the reverse rotations.

5. In a bed-movement for printing presses, the combination with a reciprocating bed, of a rack carried thereby, a reversely rotatable rack wheel for the said rack, provided with internal teeth, a driven shaft, a plate carried thereby and provided for having the rack wheel mounted upon it, a "planet" wheel carried by the plate and meshing into the internal teeth of the said rack-wheel, a "sun" pinion loosely mounted upon the said shaft, and means for imparting variable angular velocity to the said "sun" pinion, whereby the rack wheel is reversely rotated and stopped at the ends of its reverse rotations.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

STURGES WHITLOCK.

Witnesses:

CLARA L. WEED,
GEORGE D. SEYMOUR.