(No Model.) 4 Sheets—Sheet 1.

W. SCOTT.

MECHANISM FOR TRANSMITTING MOTION.

No. 516,227. Patented Mar. 13, 1894.

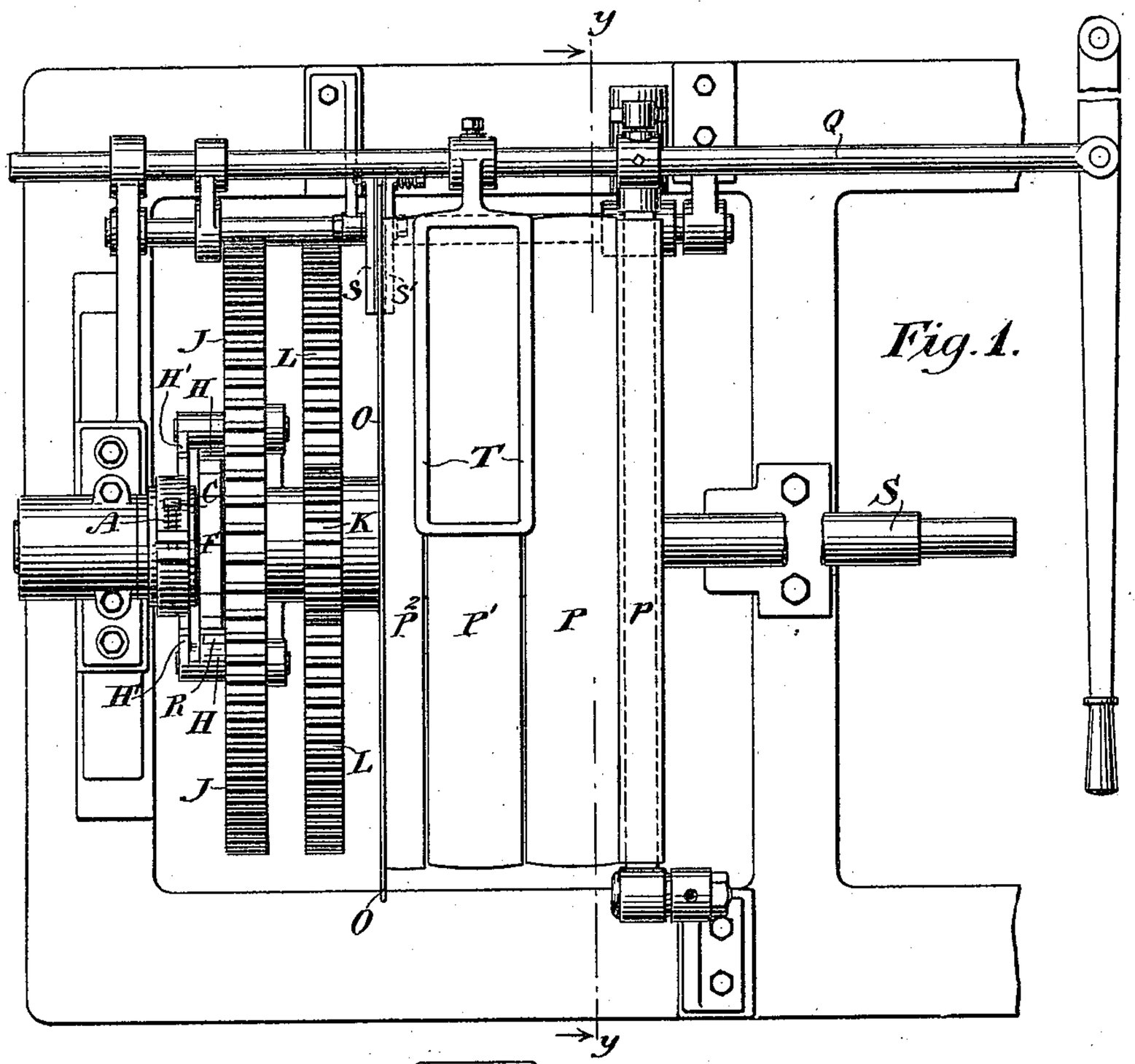


Fig. 1.

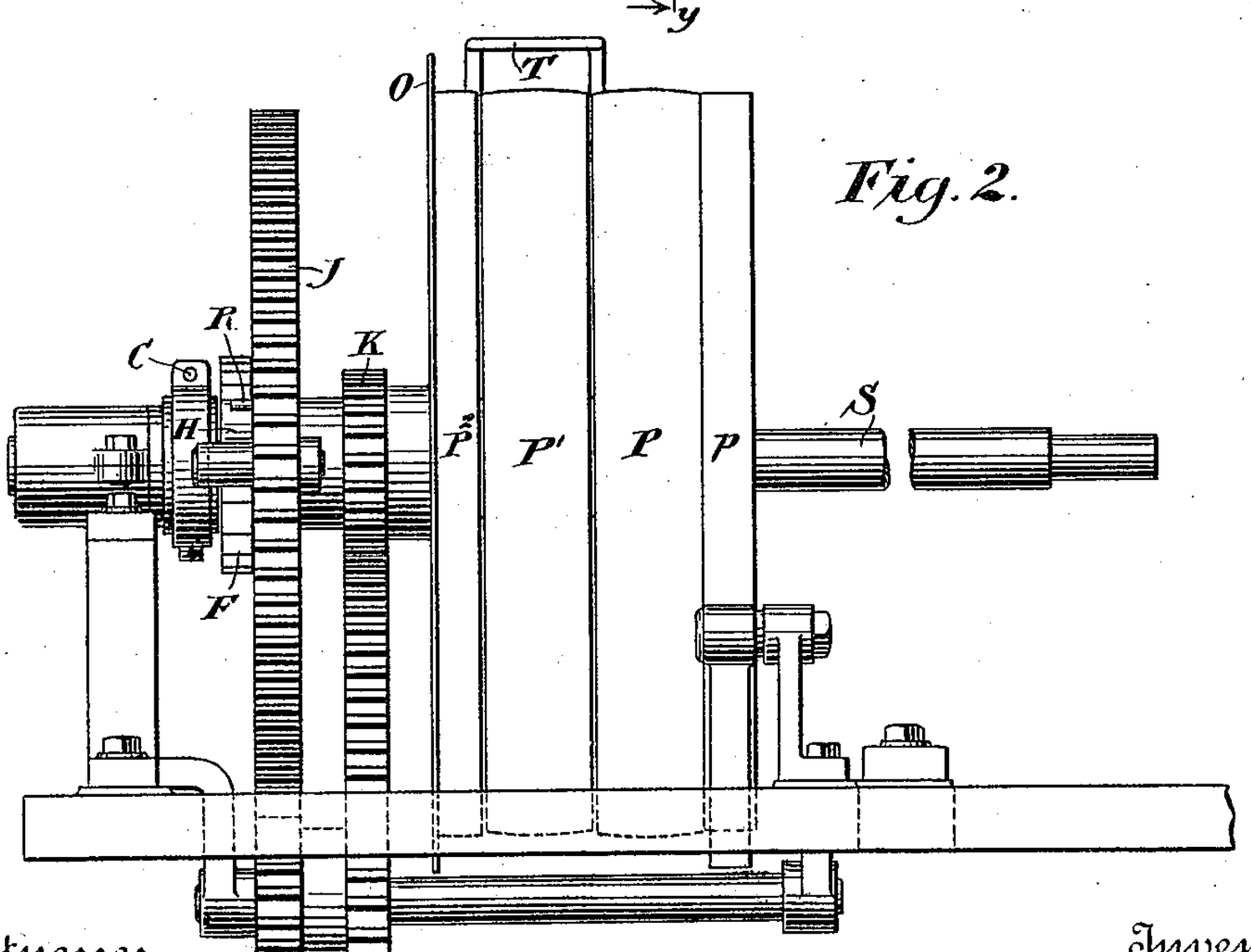


Fig. 2.

Witnesses
Edward Thorpe.
Amos A. Stephens.

Inventor
Walter Scott.
By his Attorney
Henry Mehrieee

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 4 Sheets—Sheet 2.

W. SCOTT.

MECHANISM FOR TRANSMITTING MOTION.

No. 516,227. Patented Mar. 13, 1894.

Fig. 3.

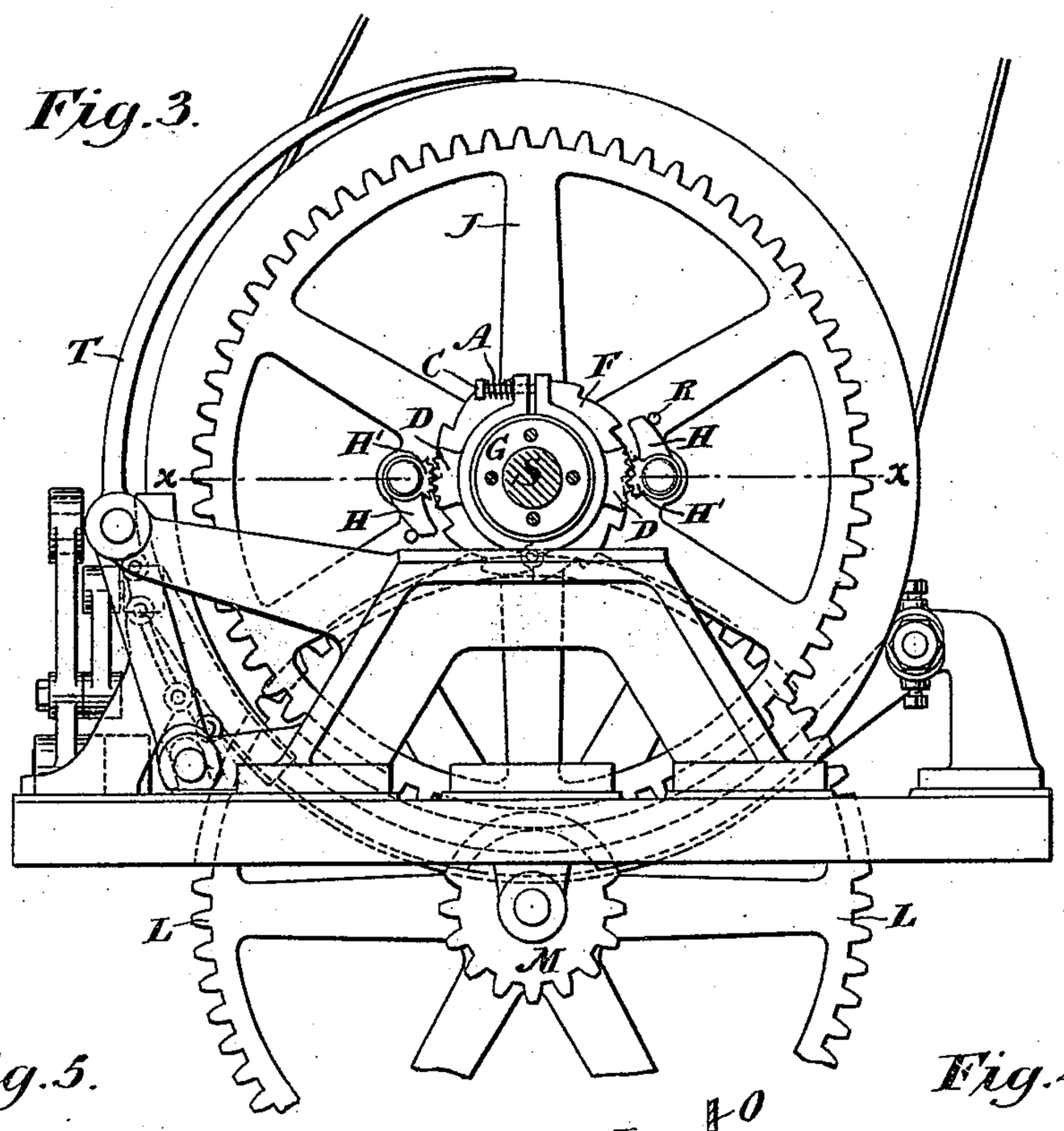


Fig. 5.

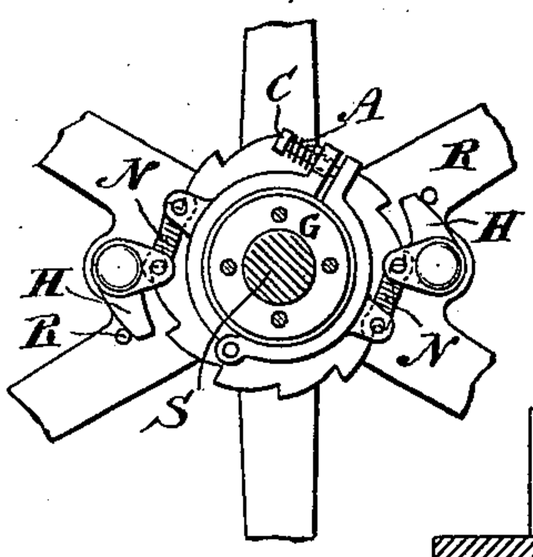
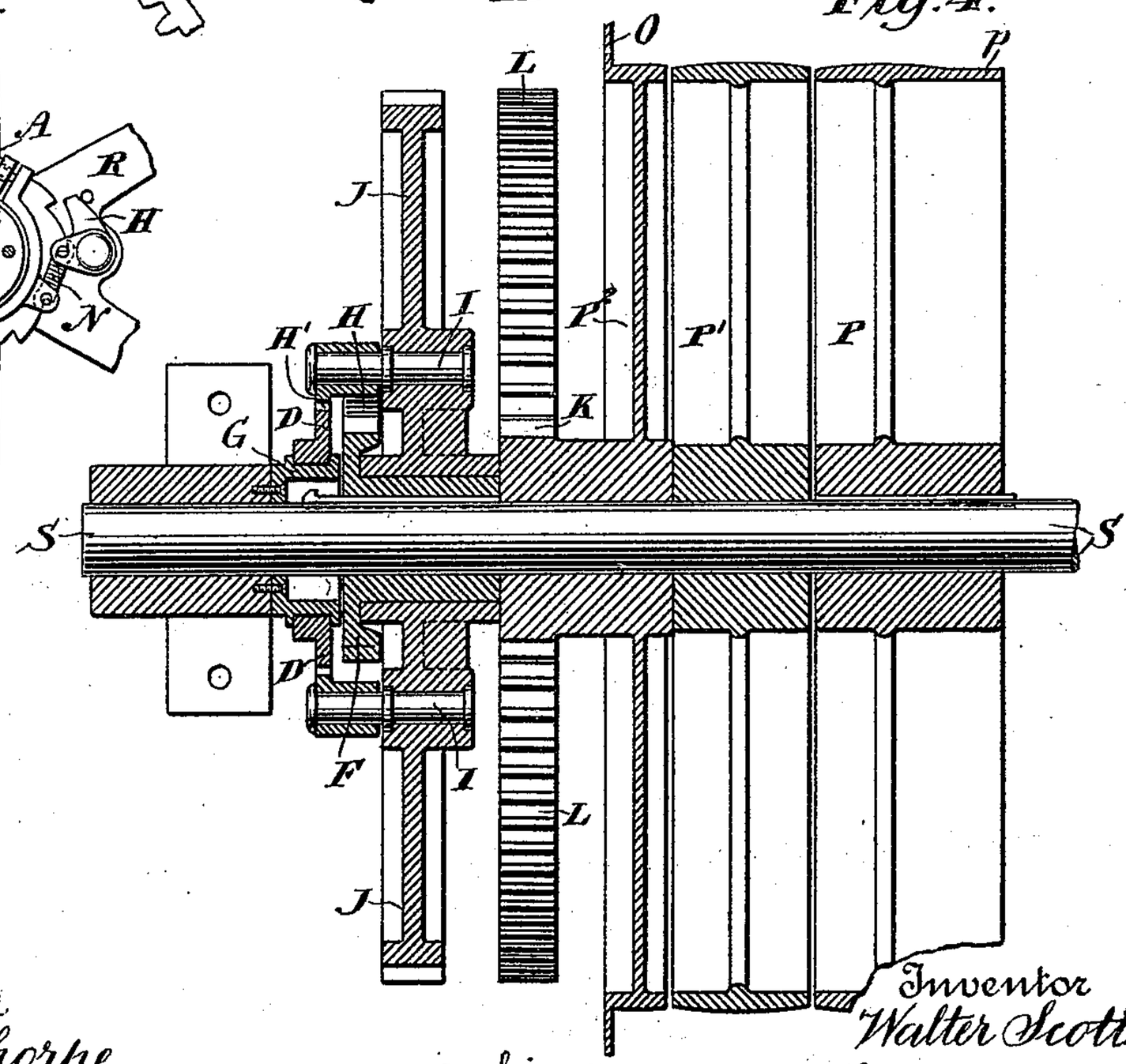


Fig. 4.



Witnesses:
Edward Thorpe.
Amos H. Stephens.

Inventor
Walter Scott.
By his Attorneys
Henry Melvill

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 4 Sheets—Sheet 3.

W. SCOTT.

MECHANISM FOR TRANSMITTING MOTION.

No. 516,227. Patented Mar. 13, 1894.

Fig. 6.

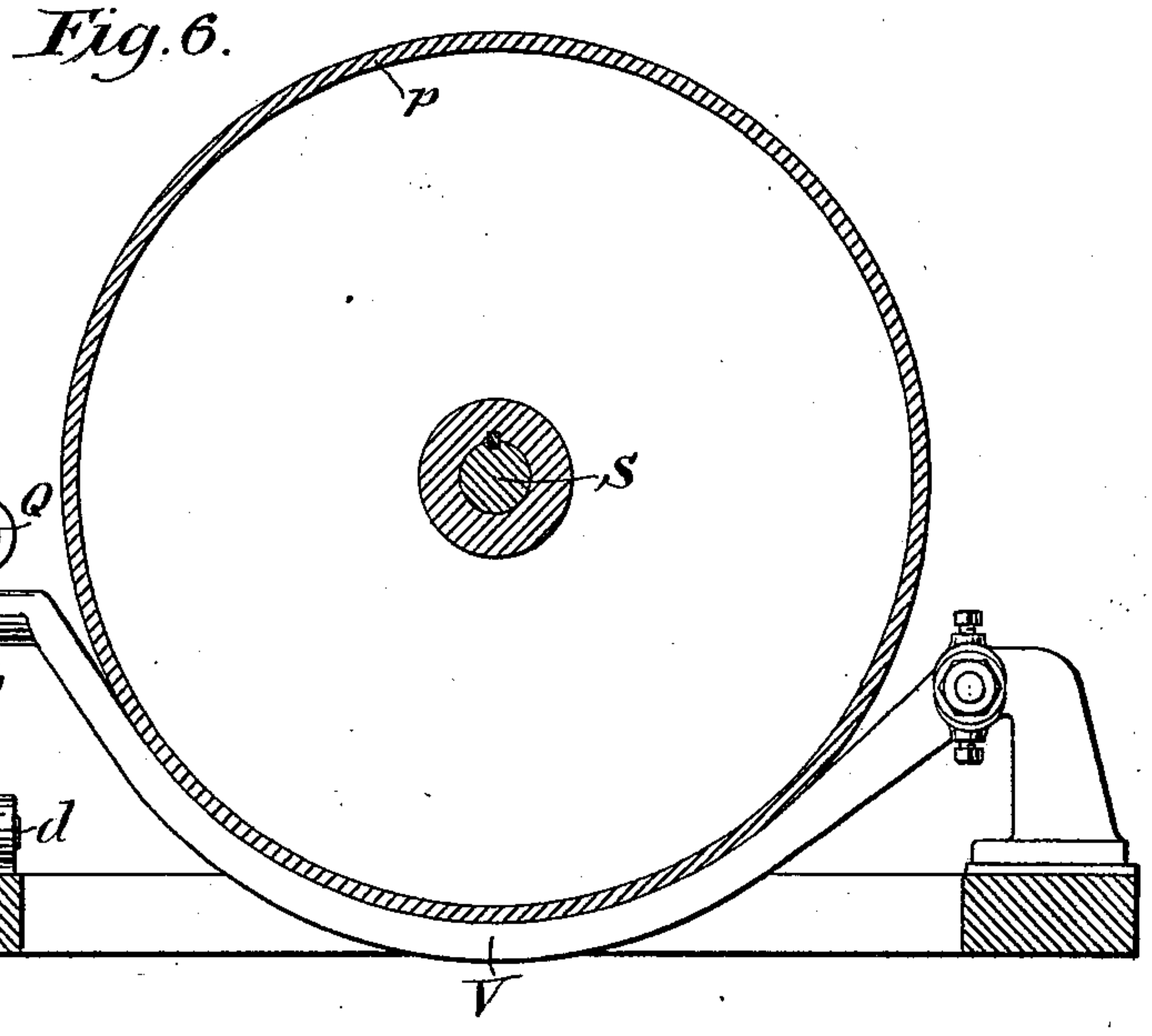


Fig. 7.

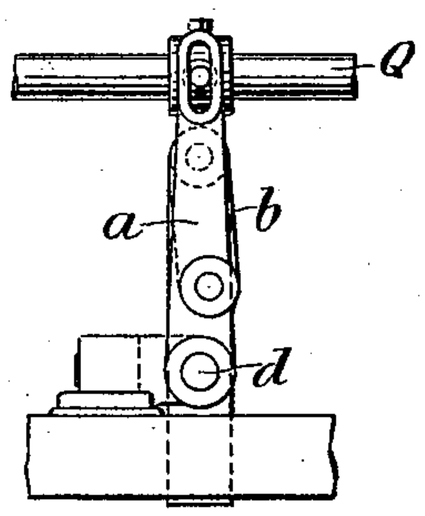


Fig. 8.

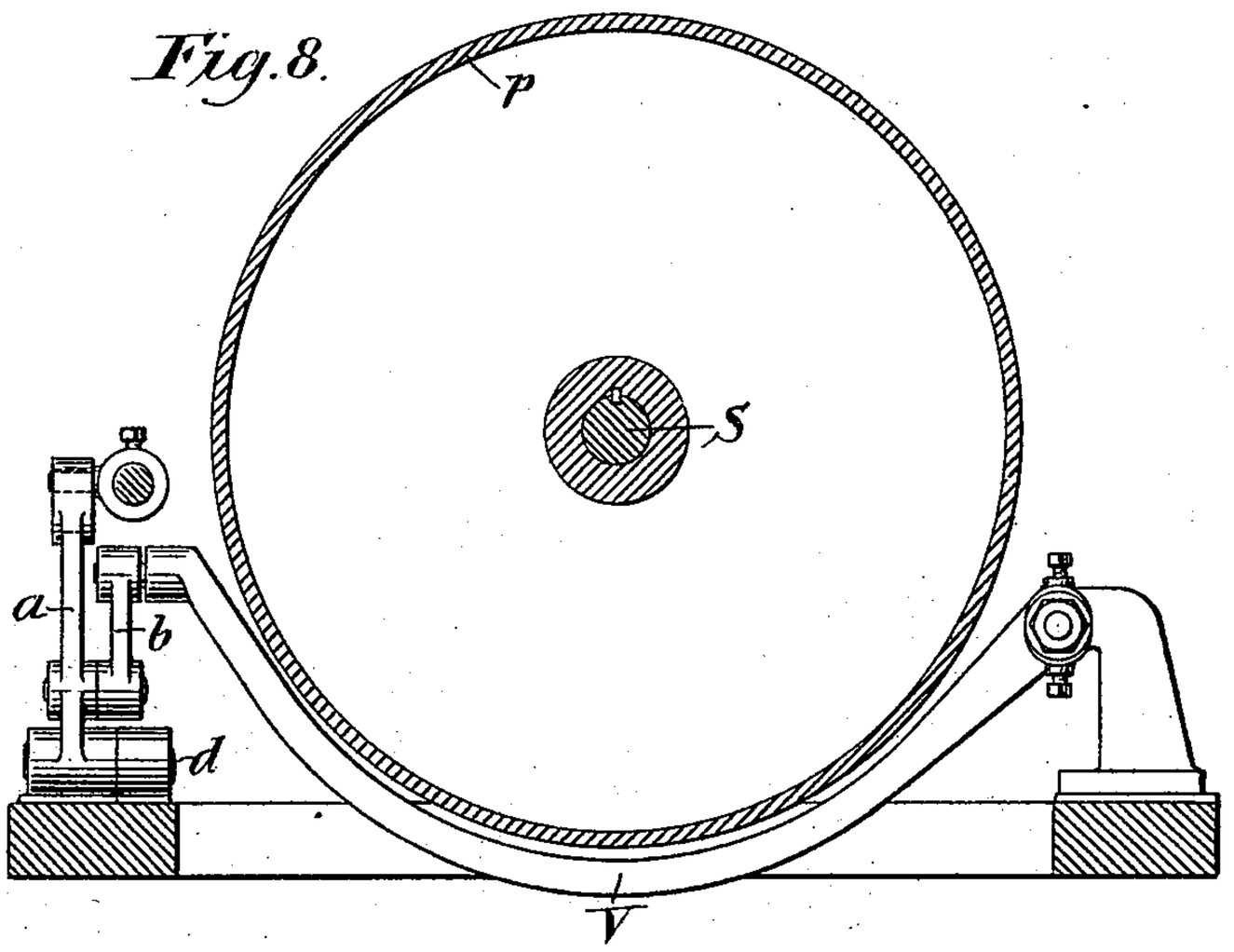
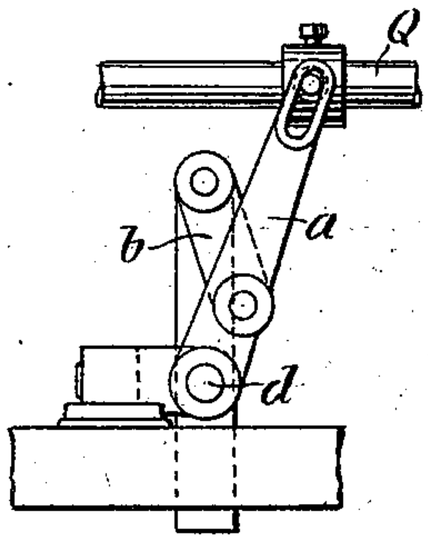


Fig. 9.



Witnesses
Edward Thorpe.
Amos A. Stephens.

Inventor
Walter Scott.
By his Attorneys
Munn & Melville

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

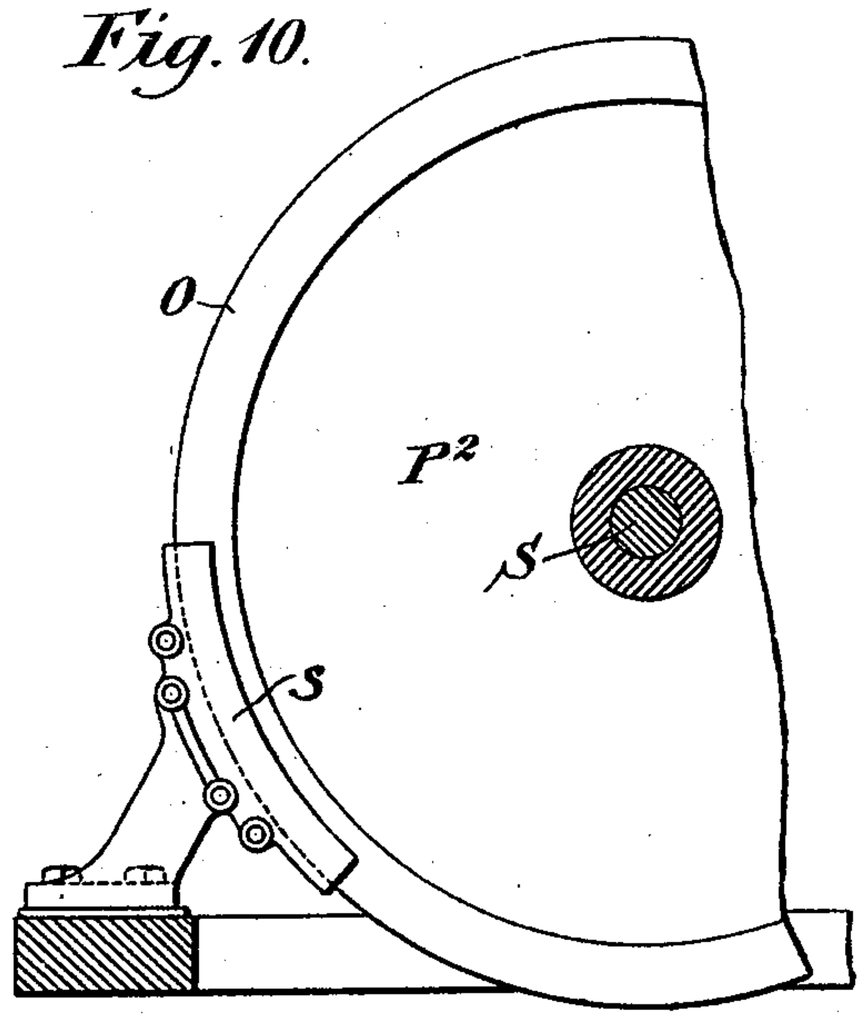
(No Model.) 4 Sheets—Sheet 4.

W. SCOTT.

MECHANISM FOR TRANSMITTING MOTION.

No. 516,227. Patented Mar. 13, 1894.

Fig. 10.



Witnesses
Edward Thorpe.
Amos A. Stephens.

Inventor
Walter Scott.
By his Attorney
Henry Melville

THE NATIONAL LITHOGRAPHING COMPANY.
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

MECHANISM FOR TRANSMITTING MOTION.

SPECIFICATION forming part of Letters Patent No. 516,227, dated March 13, 1894.

Application filed October 13, 1893. Serial No. 488,040. (No model.)

To all whom it may concern:

Be it known that I, WALTER SCOTT, a citizen of the United States, residing at Plainfield, in the county of Union and State of New Jersey, have invented a new and useful Mechanism for Transmitting Motion, of which the following is a full and accurate description and specification, such as will enable others skilled in the art to construct and use the same, reference being had to the accompanying drawings, of which—

Figure 1 is a plan view. Fig. 2 is a side view. Fig. 3 is an end view with bearings cut away to show parts more plainly Fig. 4 is a plan section on line *x x* of Fig. 3. Fig. 5 shows a link connection between disk and pawl, of which the tooth connection shown in Fig. 3 is a modification. Fig. 6 is a side section on line *y y* of Fig. 1, showing the brake band in operation. Fig. 7 is a back view of what is shown in Fig. 6. Fig. 8 shows a similar view to Fig. 6 with the arm bearing the toggle link thrown to one side releasing the brake band. Fig. 9 is a back view of what is shown in Fig. 8. Fig. 10 is an enlarged detailed view of the attachment of the brake device shown in Figs. 1 and 3.

In the different figures the same letter indicates corresponding parts.

The object of my invention is to provide a means of arresting or changing the speed of a driving shaft.

S is the main driving shaft, the speed of which is to be affected. Upon this shaft are three pulleys, P, P′ and P^2. Of these P is keyed to the shaft and is the ordinary medium by which motion is imparted to it; P′ runs loose on the shaft; P^2 is also loose and has attached to its hub the gear wheel K. Beyond K is another gear wheel J, which runs on a hub or sleeve projecting from the ratchet F, the latter being keyed to the shaft. When K moves it transmits motion to J, through the gear wheels L and M. With the construction shown in the drawings J will have a slower speed than K and one in the same direction. It is obvious, however, that by modifying this train of gears any other desired relation between K and J may be obtained; for example, J might be made to move faster than K, in the same direction, or either faster or slower in an opposite direction. The method of construction of trains to secure such results is too familiar to require particular description. In place of the gears drums and belt bands might be used, but the gears I consider more accurate.

My invention has principally to do with the way in which connection is made between the gear J and the shaft. This is accomplished as follows: Referring to Figs. 3 and 4, H is a pawl pivoted on the stud I in the gear wheel J, adapted to engage with the ratchet F. D is a collar, adjustable by the screw C and spring A so as to render it free to revolve, with any desired amount of friction, upon the sleeve G, which is attached to the frame of the machine. D may be made or lined with vulcanized rubber or any other suitable material. This collar is connected with the pawl H. I prefer the method shown in Fig. 5 by means of the link N, but that illustrated in Fig. 3, where a toothed segment on the collar D engages with the toothed segment H′ on the pawl H, is also practicable. When the gear J bearing the pawl H begins to turn the collar D is held fast by its friction upon the sleeve G, and consequently through the said link or tooth connection the pawl is thrown into the notch of the ratchet F and thus a rigid connection is made between the gear wheel J and the shaft, and the latter is driven with the speed of the former. The collar D also moves with it, the power overcoming the friction secured by the screw C and spring A. When, however, the power is removed and J stops, the connection with the shaft is broken. A projection R prevents the pawl from moving farther than is desirable.

The operation of the shaft is therefore as follows: When the power is applied to the fixed pulley P, the shaft is turned at a certain speed. The ratchet F moves around with it but the pulleys P′ and P^2, the train of gears K, L, M, J and the collar D are at rest. When, in turn, the power is applied to the loose pulley P′ that alone moves and the shaft and all other parts are at rest. Finally when the power is applied to the loose pulley P^2 it operates the train of gears throwing the pawl into the ratchet and thus moving the shaft at a different speed from that secured by pulley P.

To overcome momentum, when the speed

is changed or the shaft is stopped, I have the following devices: The pulley P^2 has a flange O against which a brake composed of the clamps *s s'*, shown in Figs. 1, 3 and 10 constantly presses. These clamps are affixed to the frame of the machine as shown in Figs. 3 and 10 and are adjusted with a screw. When the power is removed from this pulley the friction of these clamps tends to stop its motion at once. The result is that the gear wheel J, on which is the pawl H, stops more quickly than the shaft to which is attached the ratchet F. The ratchet is carried forward by the momentum of the shaft and consequently the notch of the ratchet moves away from the point of the tooth of the pawl and thus disengages the shaft. I also have a band brake V which is applied to the pulley P by the same action that throws the power from either pulley P or pulley P^2 on to the loose pulley P'. The driving band acts on the surface of the pulley P shown as convex, while the brake band acts on an extension of this surface marked *p* and shown as flat. T is the band shifter by which the driving band may be shifted from one pulley to another. This shifter is attached to and operated by the rod Q which slides through bearings in the frame of the machine. The arm *a* is pivoted at its lower end *d* in the frame of the machine, while its upper end has a sliding attachment to the rod Q by means of a slot and pin as shown in Figs. 7 and 9. This arm is connected with the brake V by the toggle link *b*. Figs. 6 and 7 show the position of these parts when the driving band is on the loose pulley P'. The arm and link being in line the brake is applied and the motion of the shaft stopped.

Figs. 8 and 9 show the position of the parts when the driving band is shifted right or left to the driving pulley P or P^2, and the pressure of the brake is removed.

Having thus described my invention, I claim as follows:

1. The combination of a driving shaft; a ratchet affixed to it; a gear wheel running on the hub of the ratchet; a pawl pivoted on said gear wheel, together with a friction collar moving on a sleeve attached to the frame of the machine, and means for connecting the collar with the pawl, substantially as and for the purposes described.

2. The combination of a driving shaft; a ratchet affixed thereto; a loose pulley having a gear affixed thereto; a second gear mounted on the hub of the ratchet; a train of gears connecting the gear on the pulley with the gear on the ratchet; a pawl pivoted on such second gear and made to engage with the ratchet by friction on the frame of the machine; together with a friction device substantially as and for the purposes described.

3. The combination of a driving shaft; a fixed pulley; a loose pulley; a second loose pulley, having a gear wheel affixed thereto; a ratchet fixed to the shaft; a gear wheel loose on the hub of the ratchet; a train of gears connecting the gear wheel on the pulley with the gear wheel on the ratchet; a pawl pivoted on the gear wheel on the ratchet; a friction collar on the frame of the machine, together with a connection between the friction collar and the pawl substantially as and for the purposes described.

4. The combination of the friction collar D; the sleeve G; the screw C; the spring A; the link N; the pawl H; and the ratchet F, substantially as and for the purposes described.

5. The combination of the band shifter T, the rod Q; the arm *a;* the link *b;* the brake V; the driving pulley P; the loose pulley P' and the driving pulley P^2, substantially as and for the purposes described.

6. The combination of the brake *s s';* the pulley P^2; the train of gears K, L, M, J; the pawl H; the ratchet F; the collar D; the spring A, the screw C and the link N, substantially as and for the purposes described.

Subscribed on this 10th day of October, 1893.

WALTER SCOTT.

In presence of—
DAVID E. GOLDFARB,
SAMUEL NEWMARK.