

(No Model.)

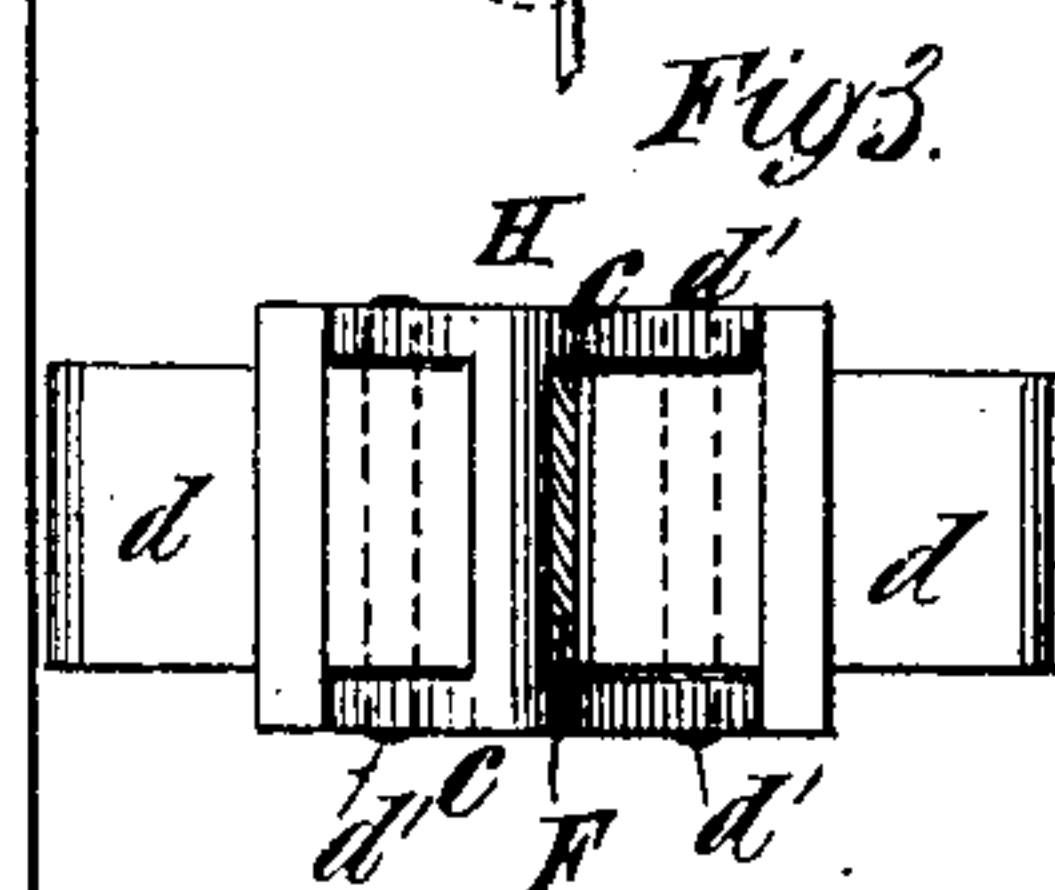
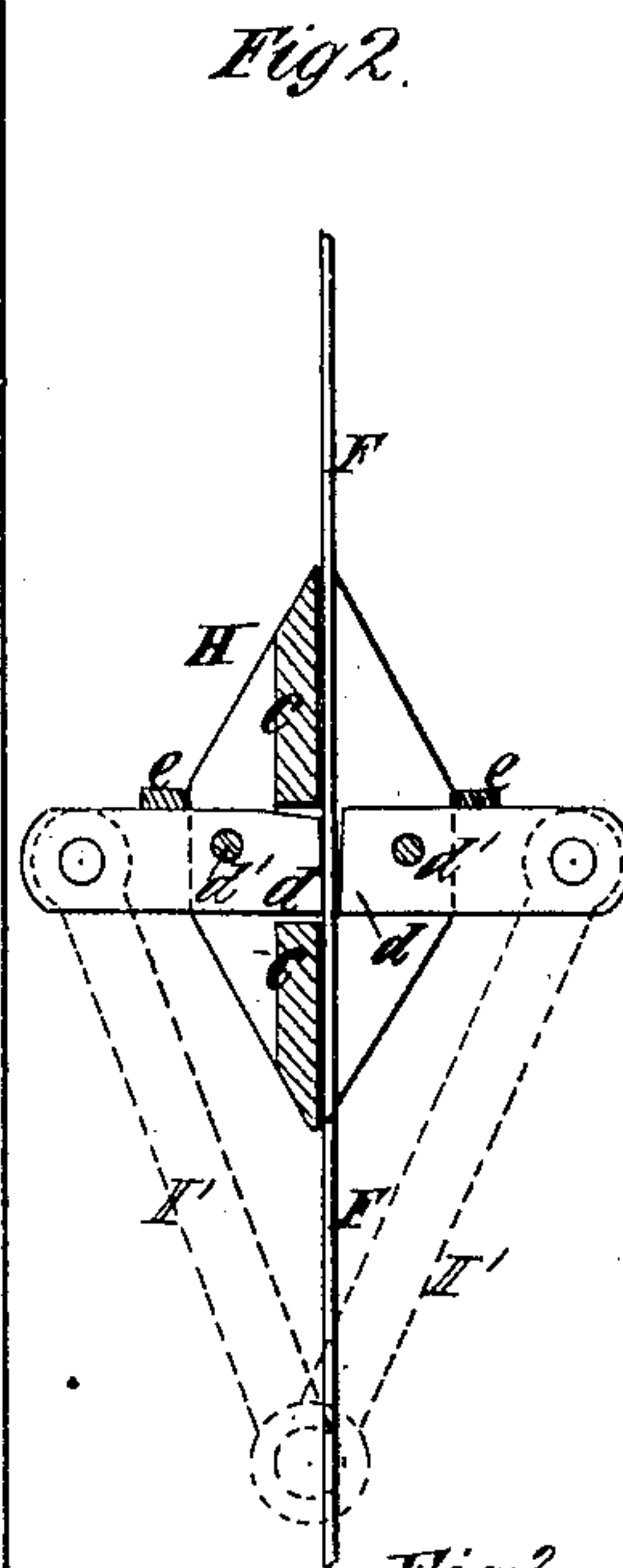
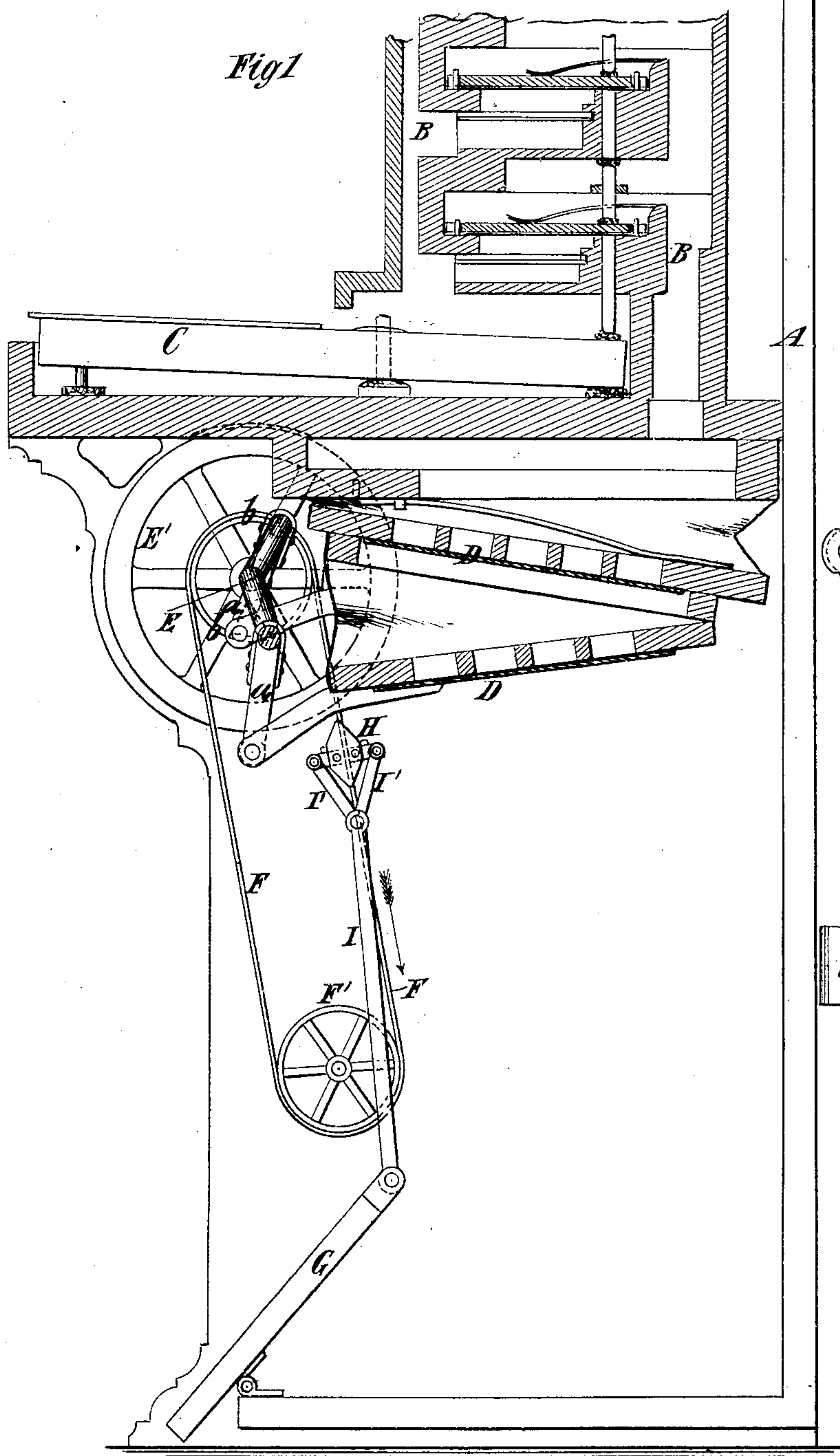
2 Sheets—Sheet 1.

E. P. NEEDHAM.

MECHANISM FOR TRANSMITTING MOTION.

No. 274,812.

Patented Mar. 27, 1883.



Witnesses
Geo. Hays
Ed. L. Moran

Inventor
Elias P. Needham
by his Attorney
Brown & Brown

(No Model.)

2 Sheets—Sheet 2.

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Fig 7.

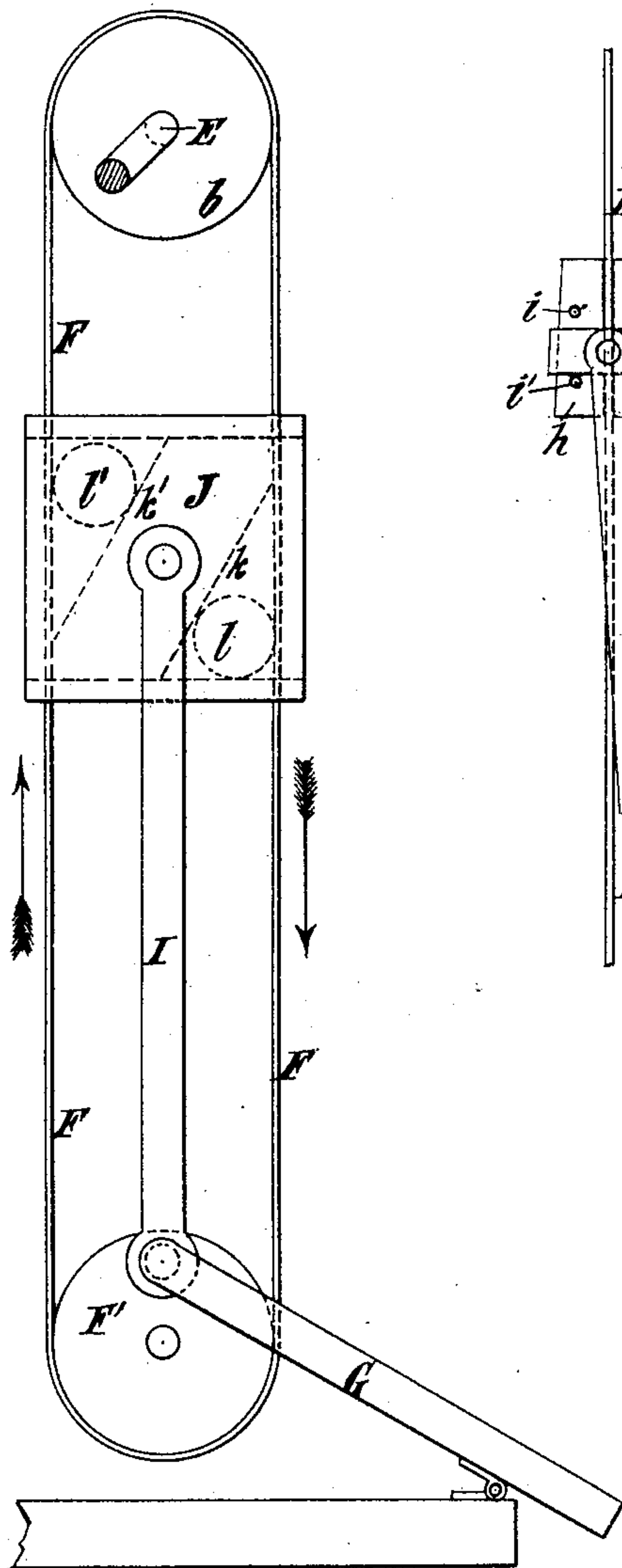


Fig 5.

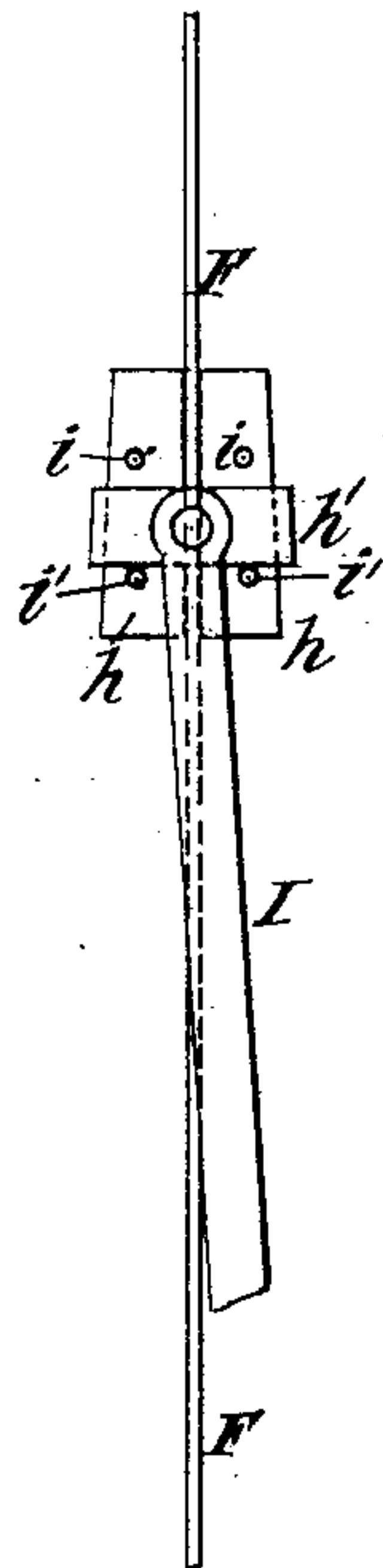


Fig 4.

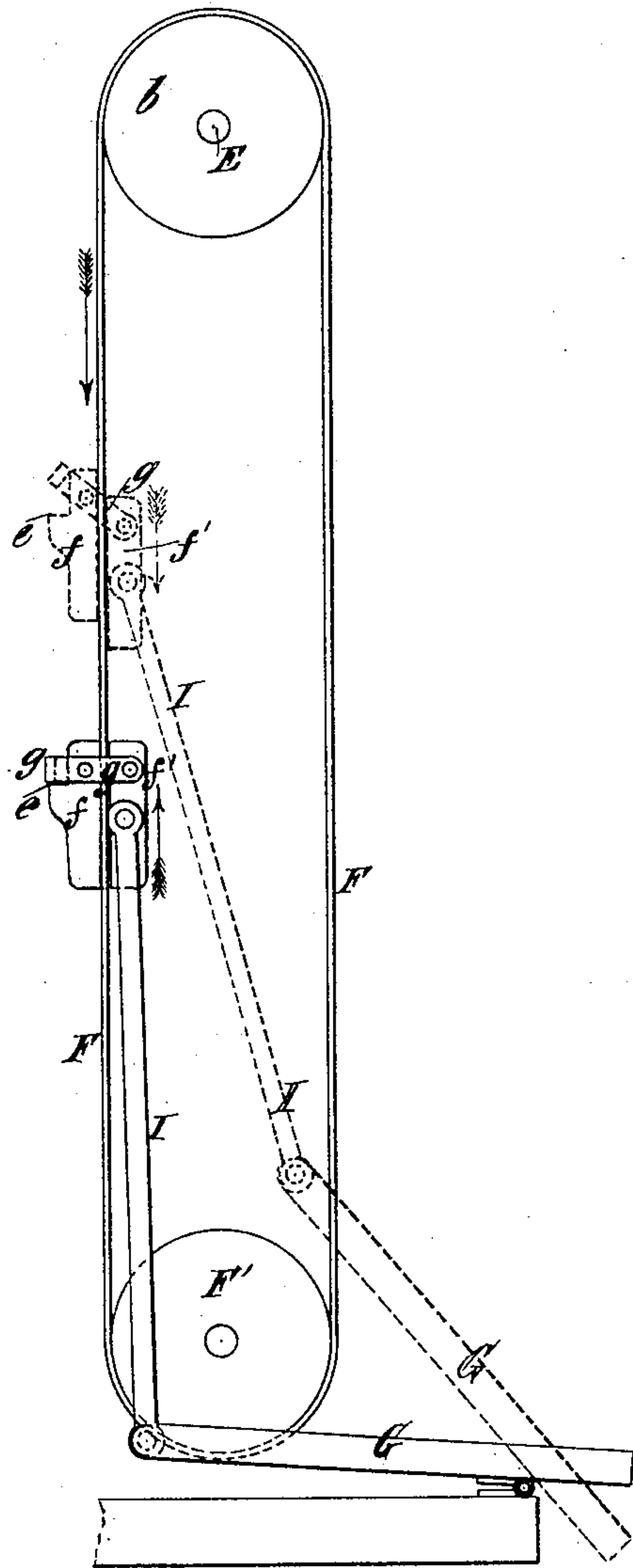
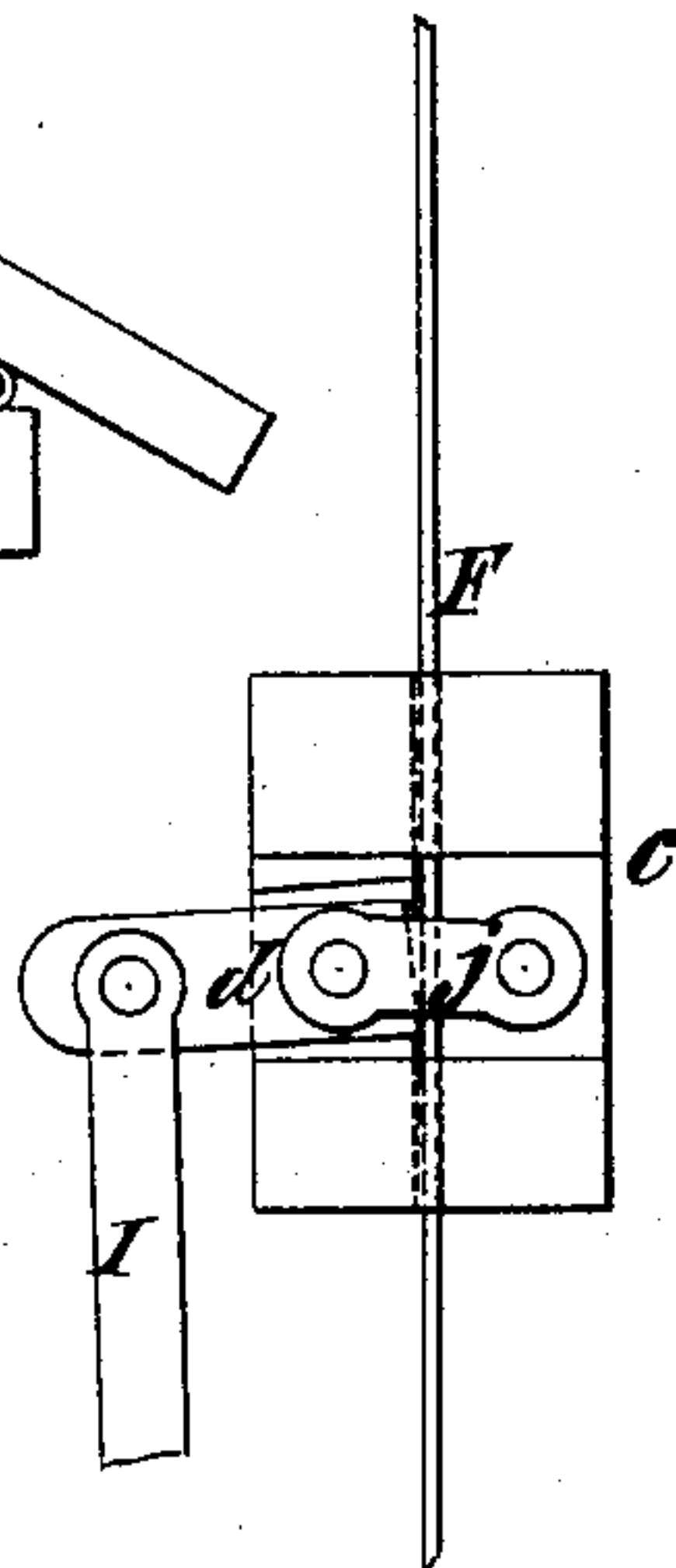


Fig 6.



Witnesses
Geo. Haynes
Ed. L. Moran

Inventor
Elias P. Needham
by his Attorneys
Rownt & Brown

UNITED STATES PATENT OFFICE.

ELIAS P. NEEDHAM, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND
CHARLES A. NEEDHAM, OF SAME PLACE.

MECHANISM FOR TRANSMITTING MOTION.

SPECIFICATION forming part of Letters Patent No. 274,812, dated March 27, 1883.

Application filed July 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, ELIAS P. NEEDHAM, of the city and county of New York, in the State of New York, have invented certain new and
5 useful Improvements in Mechanism for Transmitting Motion, of which the following is a specification.

My invention relates to means employed for transmitting motion from a reciprocating device—such as a treadle, for instance—to a rotary shaft without the difficulties and annoyance attending the use of a crank, because of the liability of a crank stopping on the center; but the invention is also applicable for transmitting to a belt, band, or strip a motion continuously in one direction, or even a reciprocating motion, from a reciprocating driving device for any purpose.

The invention consists in the combination,
20 with a strip or band, of a gripping device composed of a frame or body through which the strip or band passes, and a dog or dogs pivoted in said frame or body, and adapted to bite upon the strip or band, and a reciprocating connection or connections attached to said dog or dogs for causing it or them to bite the strip or band when moved in one direction,
25 and for releasing the strip or band when moved in the opposite direction.

30 The invention also consists in the combination, with a pulley and an endless band for operating it, of a pair of gripping devices, substantially such as hereinafter described, adapted to be reciprocated together, and adapted,
35 one to grasp one portion of the band when moved in one direction, and the other to grasp the reversely-moving portion of the band when moved in the other direction.

40 The invention also consists in the combination, with the bellows or air-inducing devices of a musical instrument, of a rotary shaft for operating said bellows or devices, a band for operating said shaft, a treadle, and a reciprocating gripping device of the kind before described, connected with the treadle and applied
45 to the band, as fully hereinafter described.

In the accompanying drawings, Figure 1 represents a portion of a musical instrument having my invention applied. Fig. 2 represents

a portion of the band and a side view of the
50 gripping device upon a larger scale. Fig. 3 represents a transverse section of the band and a plan of the gripping device. Fig. 4 represents a side view of a mechanism embodying a gripping device of modified form. Fig. 5
55 represents a portion of a band and a gripping device of modified form. Fig. 6 represents a portion of a band and a gripping device of another form; and Fig. 7 represents a view similar to Fig. 4, with a gripping device of still
60 another form.

Similar letters of reference designate corresponding parts in all the figures.

Referring first to Figs. 1, 2, and 3, A designates a portion of the case of a musical instrument. B designates the reed-chamber, C
65 designates the manual-keys, and D designates the bellows, of the instrument. This instrument is only chosen for the purpose of illustration, and the several parts described may
70 be constructed in any ordinary manner. E designates a shaft, which may be provided with a fly-wheel, E', to make its motion uniform, and a designates links whereby the cranks on said shaft are connected with the bellows
75 D. F designates a driving-band, which passes over a pulley, b, on the shaft E, and around a guide or idler pulley, F'. G designates the treadle, and H designates the gripping device, which is applied to a downwardly-moving part
80 of the belt or band F, and is connected with the treadle by a rod, I, and a bifurcated link, I', as clearly shown.

By reference to Figs. 2 and 3 it will be seen that the gripping device is composed of a
85 frame or body, c, through which the band F passes, and two jaws, d, pivoted by pins or pivots d' in opposite sides of the frame or body, and extending approximately horizontally in opposite directions. The bifurcated link I' is
90 connected with the outer ends of the pivoted dogs d, and consequently it will be seen that a downward pull on the rod I and said link will tilt the dogs on their pivots and cause their lower corners to bite upon the band. 95
When the rod I and link I' are moved up the dogs d will be released from the band, and, striking against stops e on the frame or body

c, will be prevented from moving past the position which they occupy in Fig. 2. When the treadle G is pressed down, the rod I and link I', by a slight movement, tilt the dogs d, so that they bite on or grasp the band F, and by their continued movement draw down the whole gripping device, and with it the band, and when the treadle rises the dogs d are tilted upward until they strike the stops e, thus releasing the band, and the further movement will move the whole gripping device upward freely along the band. Thus as the gripping device is reciprocated it alternately grasps and releases the band and operates it intermittently, and the motion is rendered uniform by the fly-wheel E'. It will also be seen that no matter what position the shaft, treadle, and gripping device may occupy, the mechanism can always be started without the necessity of employing the hands, as when a crank gets on the center. It will be understood that if the inner ends of the dogs d were similarly formed at the upper and lower corners, and the stops e were dispensed with, the gripping device might be employed to give a reciprocating motion to a band or strip passing through the frame or body c, and the gripping device would only be released from the band or strip for an instant as the dogs d are passing their middle position, (Shown in Fig. 2.)

Referring now to Fig. 4, E designates the shaft to be rotated, and F the driving-band, passing over a pulley, b, on said shaft, and an idler pulley, F'. G designates the treadle, and I a rod through which the treadle transmits a reciprocating motion. The gripping device here shown consists of two blocks or jaws, f f', adapted to bear against opposite sides of the band F, and connected on opposite edges of the band by links or a stirrup, g. The rod I is connected to the part f', and the part f is provided with a stop, e. After the gripping device has been drawn down the first upward movement of the treadle G will raise the part f' until the links or stirrups g strike the stop e, as shown in full lines in Fig. 4, when the gripping device will be free to move up independently of and along the band F. When the rod I is pulled down by the treadle the part f' will be drawn down, and by the tilting of the links g, as shown in dotted lines, the parts f f' will be clamped upon the band and will draw it down, thus rotating the shaft E.

In Fig. 5, F designates the band, and h h designate the two parts of the gripping device which bear against opposite faces of the band, and are inclined on their backs. h' designates a band or collar surrounding the parts h h, and adapted to have a limited movement independently of said parts h h, which said movement is limited by pins or stops i i'. The collar h' has connected with it a rod, I, which has a reciprocating motion imparted to it, and it will be readily understood that when the col-

lar h' is pulled down it will tighten the parts h h upon the band F, the parts being prevented from moving down with the collar h' by reason of their frictional hold on the band F. When the collar h' is pushed up the parts h h will be loosened and the said parts will be raised and slid loosely along or upon the band F, the collar h' acting upon the stop-pins i for moving upward the parts h h.

The gripping device shown in Fig. 6 consists of a frame or body, c, through which the band F passes, and which is slotted on one side, and a dog, d, fitting in the slot in the frame or body, and connected therewith by a link, j, upon each side thereof. The lower surface of the slot in the frame or body c forms a stop for limiting the movement of the dog d, and a rod, I, connected with the dog, serves to tilt it. When the rod I is pulled down the lower corner of the dog bites or grasps the band F and pulls it down, and when said rod is pushed up the dog releases the band and the gripping device is moved upward for a new hold.

Referring now to Fig. 7, E designates the shaft to be driven, and F designates the driving-band, which passes round a pulley, b, on said shaft, and an idler-pulley, F'. G designates the treadle, and I the rod for operating the gripping device or devices. These latter are composed of a frame or body, J, which embraces both the ascending and descending portions of the band, and which has in it two cavities, the backs k k' of which are inclined in opposite directions. In these cavities are spheres or rollers l l', which may or may not be faced with rubber or analogous material. The rod I is connected directly to the frame or body J, and the frame or body, with its rollers, virtually constitutes two gripping devices, which are reciprocated together. The band F is caused to move in the direction indicated by the arrows, and when the rod I is drawn down the sphere or roller l becomes wedged between the inclined surface k and the band F and tightly holds the latter, thus drawing it down, while when the rod I and frame or body J are pushed up the sphere or roller l' becomes wedged between the inclined surface k' and the band and draws it up, while the roller l moves freely over the band.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a strip or band, of a gripping device composed of a frame or body through which the strip or band passes, and a dog or dogs pivoted in said frame or body and adapted to bite upon the strip or band, and a reciprocating connection or connections attached to said dog or dogs, substantially as herein specified.

2. The combination, with a pulley and an endless band for operating it, of a pair of reciprocating gripping devices, substantially such as described, receiving both portions of said band, and adapted one to grasp one portion of

the band when moved in one direction and the other to grasp the reversely-moving portion of the band when moved in the other direction, substantially as herein described.

- 5 3. The combination, with the bellows or air-inducing devices of a musical instrument, of a rotary shaft for operating said bellows or devices, a band for driving said shaft, a treadle, and a gripping device applied to the band and

connected with the treadle, and adapted to pass freely along the band when moved in one direction and to bite or grasp the band when moved in the reverse direction, substantially as herein specified.

ELIAS P. NEEDHAM.

Witnesses:

E. STEPHENSON,

W. S. BECKLEY.