

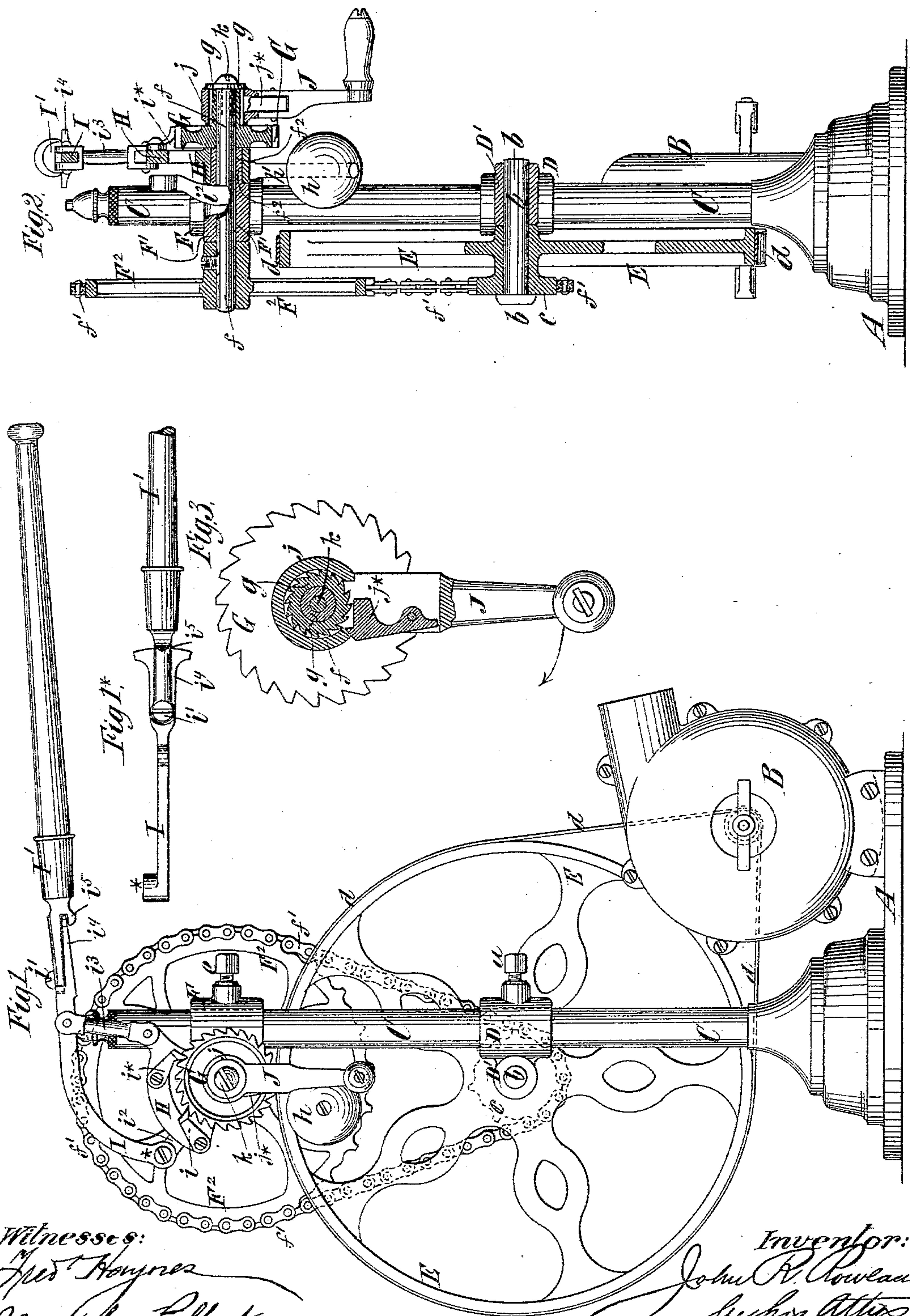
(No Model.)

J. R. ROWLANDS.

DRIVING MECHANISM FOR FAN BLOWERS.

No. 300,283.

Patented June 10, 1884.



Witnesses:  
Jed Rogers  
Matthew Pollak

Inventor:  
John R. Rowlands  
By  
Brown & Hall



# UNITED STATES PATENT OFFICE.

JOHN R. ROWLANDS, OF BROOKLYN, NEW YORK, ASSIGNOR, BY DIRECT  
AND MESNE ASSIGNMENTS, TO HENRY F. READ, OF SAME PLACE.

## DRIVING MECHANISM FOR FAN-BLOWERS.

SPECIFICATION forming part of Letters Patent No. 300,283, dated June 10, 1884.

Application filed March 10, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN R. ROWLANDS, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Driving Mechanism for Fan-Blowers, of which the following is a specification.

My invention relates to the mechanism employed for driving blowers of comparatively small size—such as are largely used for small forges—by hand-power; and an important object of my invention is to provide a simple and inexpensive arrangement of mechanism capable of operation either by a frame which is rocked back and forth by a hand-lever or by a hand-crank capable of being rotated continuously in one direction, either being used at the will of the operator.

The invention consists in novel combinations of parts and details of construction, which are hereinafter described, and pointed out in the claims, and whereby provision is afforded for convenience of adjustment in the several parts of the apparatus.

In the accompanying drawings, Figure 1 is a side elevation of a blower and my improved driving mechanism for operating the same. Fig. 1\* is a plan view of an operating-lever. Fig. 2 is a sectional elevation in a plane at right angles to the side view, Fig. 1; and Fig. 3 is a detail sectional view upon a larger scale, and hereinafter described.

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

A designates a small base piece or plate, whereon is secured a blower, B, which may be of any well-known or suitable construction. Upon the said base or plate A is erected a standard or column, C, which in this example of my invention is round and turned cylindric throughout a portion or all of its height. Upon the standard or column C is fitted a sleeve or collar, D, which is capable of adjustment vertically and by turning on said standard, and which may be secured, after adjustment, by means of a set-screw, *a*, or otherwise. The sleeve or collar D has at right angles to its axis a second socket, D', which serves as a bearing for a fixed pin or shaft, *b*, whereon are mounted a large pulley, E, and a small

chain wheel or pulley, *c*, the two being rigidly fixed together, so as to turn as one upon the fixed shaft, arbor, or pin *b*. In lieu of this, said pulley E and wheel *c* might be fast on the shaft or pin *b*, and the latter would in such case turn freely in a longer socket or bearing, D'.

The blower B is operated by a belt or band, *d*, from the pulley E, and by adjusting the sleeve or collar D upward on the standard C the belt or band *d* may be tightened, while by turning said sleeve or collar on said standard the pulley E may be brought into the same plane with the pulley on the fan-shaft, so that the belt *d* will run truly.

Above the sleeve or collar D is a second sleeve or collar, F, which is also fitted to the column or standard C, and capable of adjustment thereon both by raising and lowering it and by turning it, and in said sleeve or collar is a set-screw, *e*, or some other suitable device whereby it may be secured in place on the column or standard after adjustment. The sleeve or collar F is provided with a hub or cylindric socket, F', at right angles to its axis, which forms a bearing for a short shaft, *f*, and on the one end of said shaft *f* is secured a wheel, F<sup>2</sup>, (here shown as a chain or sprocket wheel,) and from which a chain, *f'*, drives onto the wheel *c*, which is on the pin or fixed shaft *b*.

In lieu of making the wheel F<sup>2</sup> and the small wheel *c* in the form of chain or sprocket wheels, they may be smooth-surfaced pulleys, and a belt may be substituted for the chain *f'*. The chain and chain-wheels are, however, very advantageous, as they avoid any slip. By raising the sleeve or collar F on the standard or column C provision is afforded for tightening the drive-chain *f'*, or a belt which may be substituted therefor, and by turning the sleeve or collar on the standard or column provision is afforded for bringing the wheel F<sup>2</sup> accurately into line with the wheel *c*, so that the chain *f'* or the substitute belt will operate properly.

The hub or socket F', which constitutes a bearing for the shaft *f*, has at its end a tubular extension, *f*<sup>2</sup>, and beyond the latter is a ratchet-wheel, G, from the outer side of which pro-



jects a small ratchet hub or sleeve, *g*, and which is secured fast to that portion of the shaft *f* projecting beyond the tubular extension *f*<sup>2</sup>.

5 H designates a rocking frame fulcrumed upon the tubular extension *f*<sup>2</sup> and counterbalanced by a weight, *h*, which may be adjusted upon an arm, *h'*, projecting from the eye or hub of said rocking frame, as best shown in 10 Fig. 2. The rocking frame H is of segmental form and carries at its upper part a pawl or pawls, which take into the ratchet-wheel G and serve to drive said wheel when the rocking frame is moved in one direction, while they 15 move idly over the said wheel when the rocking frame is moved in the reverse direction. A single pawl will serve to drive the said ratchet-wheel G; but I have here shown two 20 pawls, *i i*<sup>\*</sup>, which are pivoted to the frame H, and are so set or spaced relatively to the wheel G that when one is in engagement with a tooth of the wheel the other will be between two 25 teeth. The teeth of the ratchet-wheel G may then be made quite coarse and strong, and yet the frame H will never have to move more than half a tooth-space to bring one or other of the pawls *i i*<sup>\*</sup> into action.

I I' designate the operating-lever, which is composed of two parts pivoted together at *i'*, 30 for a purpose hereinafter described. The portion I of the lever is curved downward, and at the end <sup>\*</sup> is fulcrumed to a post or projecting arm, *i*<sup>2</sup>, on the socket or bearing F'. The portion I of the operating-lever is connected 35 by a link, *i*<sup>3</sup>, with the rocking frame H, as most clearly shown in Fig. 1. The end of the portion I of the lever beyond the pivot *i'* is flattened, so as to form an extended horizontal bearing, *i*<sup>4</sup>, for the lever portion I' to swing 40 on, as best shown in Fig. 1\*, and the latter has a lip or tongue, *i*<sup>5</sup>, which underlies the portion *i*<sup>4</sup> and prevents the portion I' from being raised independently of the portion I. An operating-lever made of a single rigid 45 piece would serve every purpose of the lever I I', so far as rocking the frame H is concerned; but the pivot *i'* enables the portion I' to move slightly in a horizontal plane, as would be natural to a person operating it. The recip- 50 rocatating movement imparted to the rocking frame H causes the pawls *i i*<sup>\*</sup> to act on the wheel G when the frame is moving in one direction only; but the momentum of the wheels F<sup>2</sup> E and the momentum of the fan will pro- 55 duce a continuous movement of the fan.

In some cases it may be desired to turn the shaft *f* by means of a hand-crank, and I therefore preferably provide a crank, J, the eye *j* of which is bored out large enough to fit the 60 small ratchet-sleeve *g* loosely, as shown in Fig. 2, and in the detail view Fig. 3. In the crank J is a pawl, *j*<sup>\*</sup>, which is so constructed and pivoted that when the hand-crank hangs down, as shown, the weight of the pawl will cause it 65 to drop back clear of the teeth of the ratchet *g*, as is shown clearly in Fig. 3. The crank J

hangs loosely in that position so long as the shaft *f* is turned by the rocking frame H and its pawls; but if it is desired to use the crank J it is turned in the direction of the arrow, 70 Fig. 3, and a very slight movement from its depending position will cause the pawl *j*<sup>\*</sup> to drop into engagement with the teeth of the ratchet *g*, and so long as power is applied 75 through the crank the pawl *j*<sup>\*</sup> will retain its hold on said ratchet-teeth, and will operate the shaft *f*.

The crank J may be retained on the ratchet *g* by means of a screw, K, inserted in the end of the shaft *f*, as shown in Figs. 1 and 2. 80

I am aware that a ratchet-wheel having V-shaped teeth has been formed with concentric rims on the sides, and that two pawl-boxes have been arranged to slide on these 85 rims, and have been operated by means of a hand-lever and two links. In each of these pawl-boxes was arranged a pivoted pawl which could be adjusted so as to engage with and turn the wheel when the pawl-box was moved in one direction or the other direction, 90 as desired. The particular purpose of this combination was to transmit power from the hand-lever when moved both up and down, the pawl in one box acting when the lever is moved up, and that in the other box acting 95 when the lever is moved down. I make no claim to a combination of this sort. In my apparatus I use a frame, H, which is fulcrumed on and can turn loosely on the shaft of the ratchet-wheel, or on the tubular extension *f*<sup>2</sup> of its bearing. I use an ordinary ratchet-wheel and an ordinary pawl or pawls, which 100 act only when the frame moves in one direction. I make the teeth of the ratchet-wheel very long and strong; and in order that there shall not be too much lost motion I arrange 105 the pawls on the rocking frame so that one or other will always be brought into gear by a movement of the frame equal to half a tooth of the wheel. 110

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

1. The combination, with a fan-blower and a driving pulley or wheel from which the fan is operated, of a standard or column, and a 115 bearing for the shaft of said pulley or wheel, capable of vertical adjustment thereon, substantially as herein described.

2. The combination, with the blower B and the wheel or pulley E, of the standard or column C, the sleeve or collar D, adjustably secured to said standard or column, and provided with the bearing or socket D', and the shaft or pin *b*, supporting said wheel or pulley and supported in said bearing or socket D', sub- 125 stantially as herein described.

3. The combination, with a standard or column, of an upper shaft and means for rotating it, a lower shaft and a driving wheel or pulley thereon, wheels or pulleys, and a chain or belt 130 for transmitting rotary motion from said upper shaft to the wheel or pulley on said lower shaft,



and bearings for said upper and lower shafts, capable of vertical adjustment on said standard or column, substantially as herein described.

5 4. The combination of the standard or column C, the sleeves or collars D F thereon, comprising the cross bearings or sockets D' F', means for adjustably securing said sleeves or collars on said standard or column, the shaft  
10 *b* in said bearing D', the shaft *f* in said bearing F', means for rotating said shaft *f*, the wheel E on the shaft *b*, and the wheels F<sup>2</sup> *e*, and a chain or belt for transmitting motion from the shaft *f* to the wheel E, all substantially as herein described.

15 5. The combination, with a shaft, *f*, and ratchet-wheel G thereon, of a bearing, F', provided with a tubular extension, *f*<sup>2</sup>, a rocking frame, H, fulcrumed upon said tubular extension *f*<sup>2</sup>, and carrying a pawl or pawls engaging with said wheel G, and a hand-lever for rocking said frame, substantially as herein described.

20 6. The combination, with the shaft *f* and ratchet-wheel G, of the rocking frame H, fulcrumed about said shaft, devices for rocking said frame, and two pawls, *i i*<sup>\*</sup>, pivoted on said frame, and capable of acting on said wheel when the frame is moved in one direction only,  
30 said pawls being so arranged relatively to each other that one or other will always be engaged with said wheel by a movement of said frame in the proper direction equal to half a tooth of the wheel, substantially as herein described.

35 7. The combination, with a shaft, *f*, and ratchets G *g* fast thereon, of a rocking frame and a pawl or pawls for turning said shaft through the ratchet G, and a gravity-crank

loosely surrounding the ratchet *g*, and carrying a pawl capable of being engaged therewith 40 when desired, substantially as herein described.

8. The combination, with a shaft, *f*, and ratchets G *g* fast thereon, of a rocking frame and a pawl or pawls for turning said shaft 45 through said ratchet G, and a gravity-crank, J, loosely fitting said ratchet *g*, and provided with a gravity-pawl, *j*<sup>\*</sup>, capable of engaging automatically when said crank is moved, substantially as herein described. 50

9. The combination, with a shaft and ratchet-wheel, *f* G, and a rocking frame, H, carrying a pawl or pawls for engaging with said wheel, of an operating-lever fulcrumed at one end, and a link connecting said lever with said rock- 55 ing frame, substantially as herein described.

10. The combination of the shaft and wheel *f* G, the rocking frame H and its pawl or pawls, the arm *i*<sup>2</sup>, the lever composed of the parts I I', pivoted together and fulcrumed to said arm 60 *i*<sup>2</sup>, and the link *i*<sup>3</sup>, connecting the lever portion I with said frame H, all substantially as herein described.

11. The combination, with a shaft, *f*, and a ratchet-wheel, G, fast thereon, of a rocking 65 frame and a pawl or pawls for engaging with said wheel G, a second ratchet-wheel concentric with the wheel G, and a gravity-crank supported concentrically to said shaft, and carrying a pawl capable of being engaged with said 70 second ratchet-wheel when desired, substantially as herein described.

JOHN R. ROWLANDS.

Witnesses:

FREDK. HAYNES,  
C. HALL.