

(No Model.)

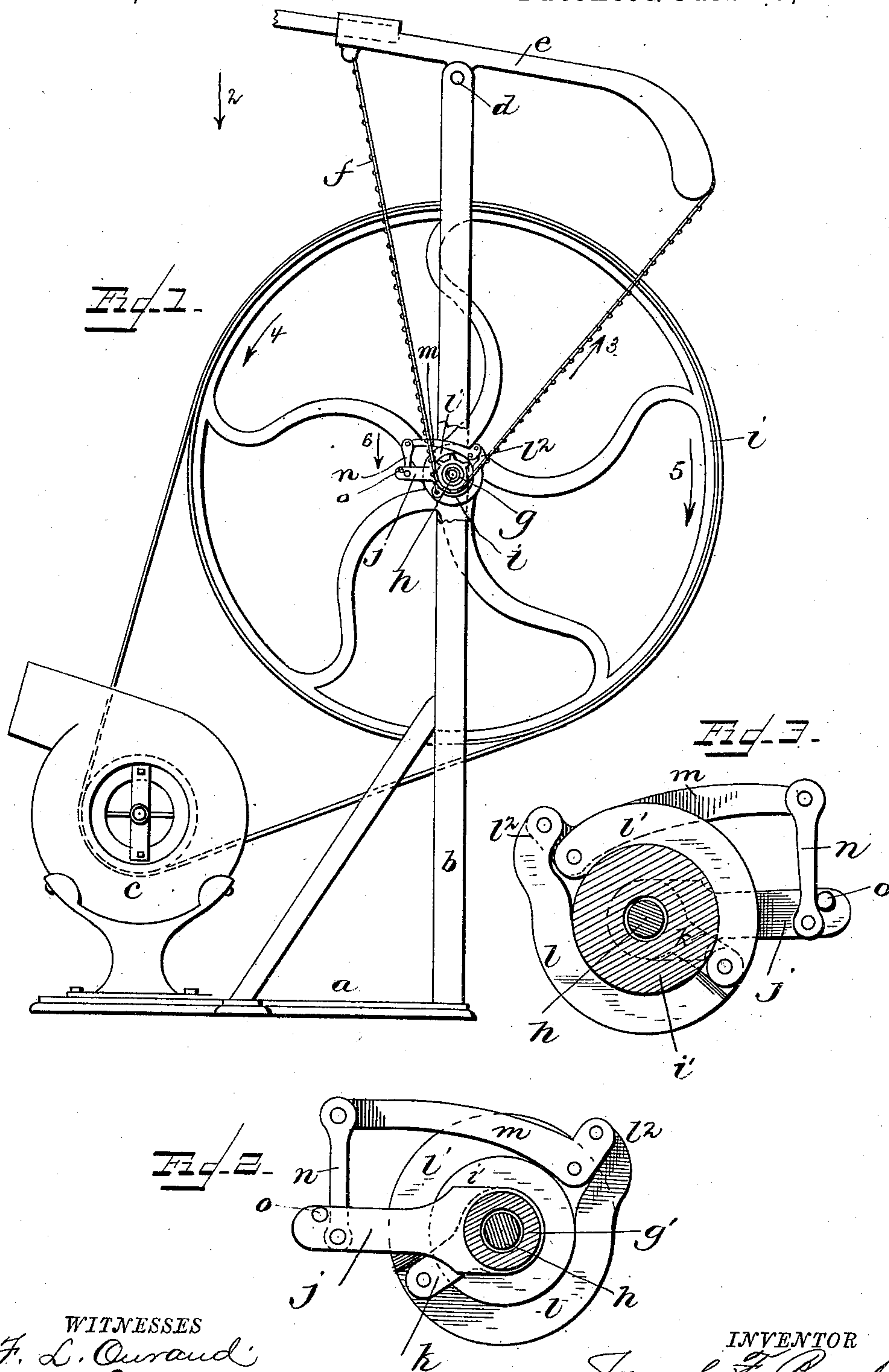
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J. F. BENDER.

## INTERMITTENT GRIP FOR FAN BLOWERS OR OTHER MACHINES.

No. 376,361.

Patented Jan. 10, 1888.



*WITNESSES*

F. L. Oursand  
W. A. Smith

INVENTOR

Jacob F. Bender  
by Wm H. Finckel  
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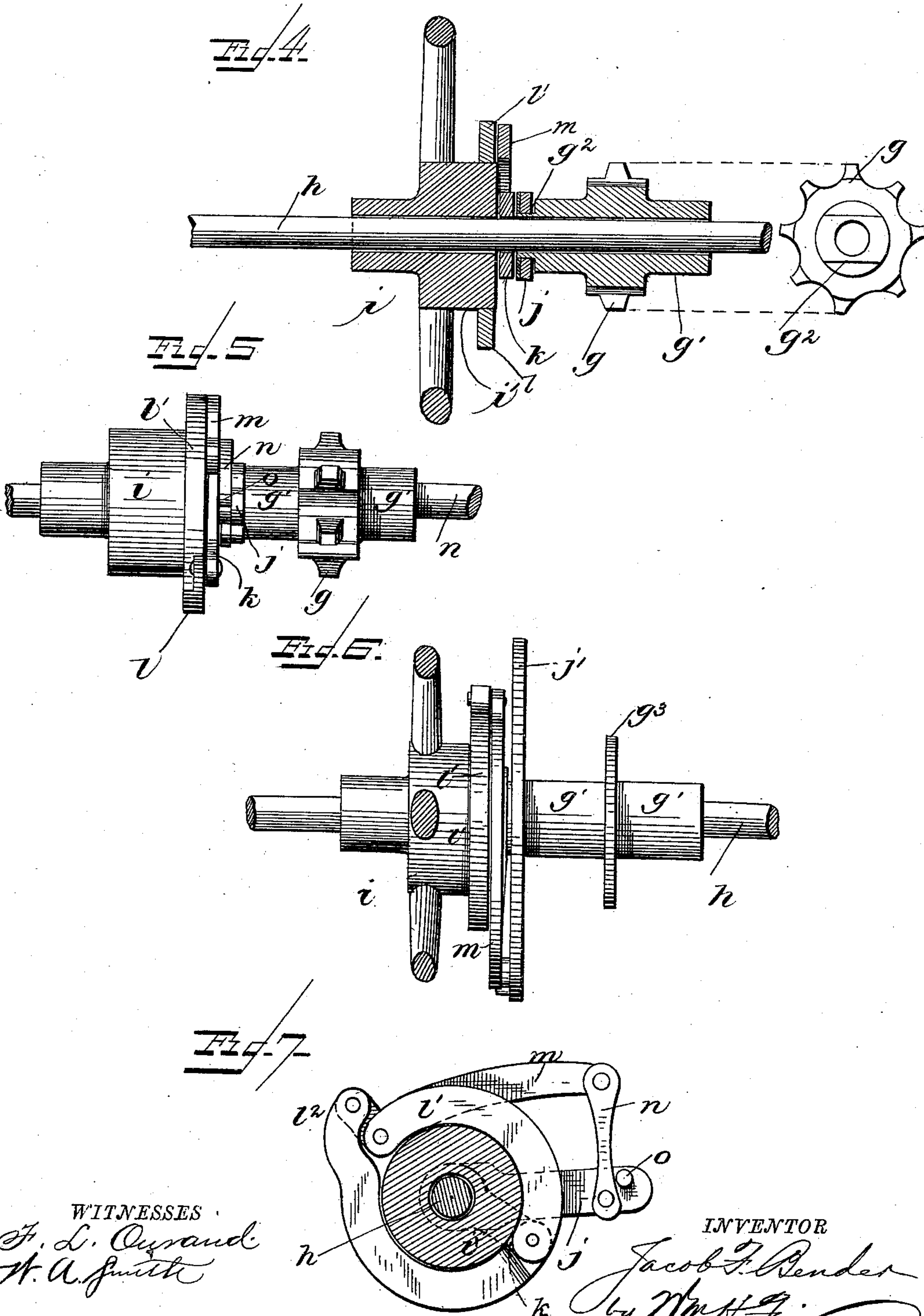
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# UNITED STATES PATENT OFFICE.

JACOB F. BENDER, OF COLUMBIA, ASSIGNOR OF ONE-HALF TO POTTS & WEBER, OF LANCASTER, PENNSYLVANIA.

## INTERMITTENT GRIP FOR FAN-BLOWERS OR OTHER MACHINES.

SPECIFICATION forming part of Letters Patent No. 376,361, dated January 10, 1888.

Application filed August 10, 1887. Serial No. 246,602. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB F. BENDER, a citizen of the United States, residing at Columbia, in the county of Lancaster and State of Pennsylvania, have invented a certain new and useful Improvement in Intermittent Grips for Fan-Blowers or other Machines, of which the following is a full, clear, and exact description.

10 The primary object of this invention is to furnish a mechanism for rapidly and easily driving a blower of portable forge-blowers; but the invention is applicable to all classes of machinery where a rotary motion is desired to be obtained from a reciprocating motion. I wish to be distinctly understood, however, as laying no exclusive claim to the application of my mechanical movement for this one purpose.

20 Prior to my invention a wheel has been given a continuous rotary motion in one direction by means substantially as follows: A rim, a drum, a hub, or some equivalent body or part has been attached to or formed with or connected with the said wheel, and this body or part has had applied to it a friction-strap or equivalent friction device consisting of jointed arms or fingers encircling wholly or in part the said body and adapted by suitable connecting mechanism to periodically grasp and release the said body or part, and while grasping it to pull it and its connected wheel around so as to rotate it, and while releasing to permit the wheel to continue its rotary motion and it itself go back to a position to obtain a fresh grasp for giving additional impulse to the wheel. I make this statement in order to make plain what will presently appear, that the grasping fingers, hereinafter described, are simply an equivalent of or substitute for the friction-strap, as the state of the art clearly shows, and that such friction-strap or its equivalent has been applied to a member of the wheel of some sort. In this view, then my invention, stated in very general terms, consists in a fly-wheel, which also subserves the purposes of a band-wheel, running loosely on a shaft and provided with a member—such as a hub—for the reception of a friction device within the above definition, com-

55 bined with a sleeve on the said shaft, and the said friction device, which, as will presently appear, is adapted to receive an intermittent reciprocating motion that is converted into a continuous rotary motion of the said wheel, all as hereinafter particularly set forth and claimed.

In the accompanying drawings, in the several figures of which like parts are similarly designated, Figure 1 is a side elevation of a portable blower containing my invention, part 60 of the frame being broken away. Fig. 2 is a side elevation of the clutching and releasing mechanism. Fig. 3 is a similar view of the same mechanism, looking at the opposite side. Fig. 4 is a longitudinal section of the said mechanism, with the sprocket-wheel and sleeve displayed to the right. Fig. 5 is a front elevation of the same. Fig. 6 is a plan view, and Fig. 7 is a side elevation, of the clutching and releasing mechanism in releasing position.

70 Blowers for forges and the like are commonly constructed of a base, *a*, vertical standards *b*, suitably erected upon said base, and a blower proper, *c*, of any approved pattern, also supported on said base, the standards *b* receiving at their upper ends a rock-shaft, *d*, to which is swiveled a lever, *e*, having a band or bands, *f*, connecting said lever with a sprocket-wheel, *g*, arranged upon a shaft, *h*, of a combined fly and band wheel, *i*. So far 80 as my invention comprises a blower of this description it differs in no particular from the ordinary blowers on the market, excepting in relation to the arrangement of the sprocket-wheel *g*, as hereinafter particularized.

85 In my invention the shaft *h* is a non-rotating rod having bearings in the standards *b*. The fly or band wheel *i* rotates freely upon this rod or shaft, and said wheel, regarded as a band-wheel, differs from the ordinary band-wheel in that it has the hub *i'* projecting from one side. The sprocket-wheel *g* is made with a sleeve, *g'*, which also turns loose on the shaft *h*. One end of this sleeve *g'* is provided with a squared projection, *g''*, which receives a projection—such as an arm, *j*—extending laterally therefrom. Instead of the arm *j*, the sleeve may be made with a circular flange or disk, *j'*, as indicated in Fig. 6.

By the expression “projection made fast to 100



the sleeve," or words of like import, I mean the arm *j* or its substitute and equivalent, the disk *j'*.

An arm, *k*, is arranged to turn loosely upon the shaft *h*, and this arm serves as a pivot for two segmental fingers, *l l'*, which fingers are concentric with respect to the hub *i'*; but the finger *l* has an eccentric projecting portion or crook, *l''*, which is pivoted to the shorter arm of a bell-crank lever, *m*, and to the angle of this lever is pivoted the other finger, *l'*. These fingers, as already stated, are the equivalent in function of a friction strap. The bell-crank lever *m* is connected by a link, *n*, with the arm *j*. The arm *j* has a pin or stop, *o*, which at certain periods engages and disengages the link *n*, for a purpose presently appearing.

The operation is substantially as follows: When the lever *e* is depressed in the direction of arrow 2 in Fig. 1, the chain *f* will obviously be moved in the direction of the arrow 3. This will rotate the sprocket-wheel, and with it the sleeve *g'* and the arm *j*. The depression of the arm *j* effects, through the link *n*, the depression of the lever *m*, and this movement of the lever *m* draws the fingers *l l'* into frictional contact with the hub *i'*, causing the said fingers to firmly grasp the said hub. The stop *o* on the arm *j*, bearing against the link *n*, makes a firm connection of the arm with the lever *m*, and through it with the fingers *l l'*, and thereby causes said link, lever, and fingers to rotate with the sprocket-wheel and sleeve. When the motion of the lever *e* is reversed, the arm *j* will be elevated and its stop *o* will leave the link *n*, the link *n* will be correspondingly elevated, and the lever *m* will be vibrated so as to separate the fingers *l l'*, substantially as indicated in Fig. 7, thus releasing the band-wheel and allowing it to run free until the down motion of the lever is repeated.

I desire to call special attention to the fact that on the upstroke of the lever the clutch mechanism entirely releases the band-wheel, and hence, after the wheel is once under way, its continuous rotation in one direction is not interrupted at all by the vibration of the lever *e*, so that the said band-wheel may run for some little while of its own momentum.

In Fig. 1 I have shown a continuous band, *f*, in the shape of a chain to engage the sprocket-wheel; but there are many other equivalent devices for driving machinery in this connection which may be substituted for this chain. When steel ribbons are used as the driver, the sleeve *g'* will be modified somewhat, as shown in Fig. 6, wherein the flange *g''* divides the sleeve into two spools which receive the ribbons or other bands by having them wound thereon in opposite directions.

I have shown my devices for driving a wheel in the direction of the arrow 4, Fig. 1; but it is obvious that if the said device were reversed the wheel might be driven in the other direction.

The clutch mechanism herein shown might be employed as a brake. For example, if the direction of rotation of the wheel were that indicated by the arrow 5 in Fig. 1, then the wheel could be braked by this device as now arranged by moving it in the direction of the arrow 6.

I desire to be distinctly understood that my invention is applicable to all classes of machinery where a continuous rotary motion in one direction is desired to be obtained from a reciprocating motion; and as the hub will not always afford the most convenient or desirable surface or device to be grasped by the friction device I wish to be understood as including within the term "member to be grasped," or words of like import, all such parts as drums, pulleys, rims, and the like, it being remembered that drums, pulleys, rims, and the like are commonly used for this purpose.

What I claim is—

1. A shaft, a wheel thereon, and its member engaged by a friction device, combined with such friction device, the lever *m*, to which said device is secured, a projection fast to the shaft, a link connecting the said lever and projection, and a stop for said link, substantially as described.

2. A shaft or rod and a wheel loosely secured thereon and provided with a member engaged by a friction device, combined with such friction device, composed of pivotally-connected fingers, a lever to which they are secured at different points, a rotatable sleeve loose on said shaft or rod, a projection from said sleeve made fast thereto, and a link connecting said projection and the aforesaid lever, substantially as described.

3. The combination, substantially as set forth, of the stationary shaft or journal, a rotary sleeve thereon having a projection made fast to it, an arm rotatable upon the sleeve, fingers pivoted to each other and to said arm, and a lever to which said fingers are pivoted at different points, a link connecting said lever with the projection from the sleeve, and a wheel to be rotated intermittently engaged to this end by the said fingers, substantially as described.

In testimony whereof I have hereunto set my hand this 8th day of August, A. D. 1887.

JACOB F. BENDER.

Witnesses:

ANDREW J. KAUFFMAN,  
H. C. YOUNG.