

No. 822,452.

PATENTED JUNE 5, 1906.

H. F. HITNER.

SPEED CONTROLLING DEVICE FOR GLASS BLOWING MACHINES.

APPLICATION FILED APR. 26, 1905.

3 SHEETS—SHEET 1.

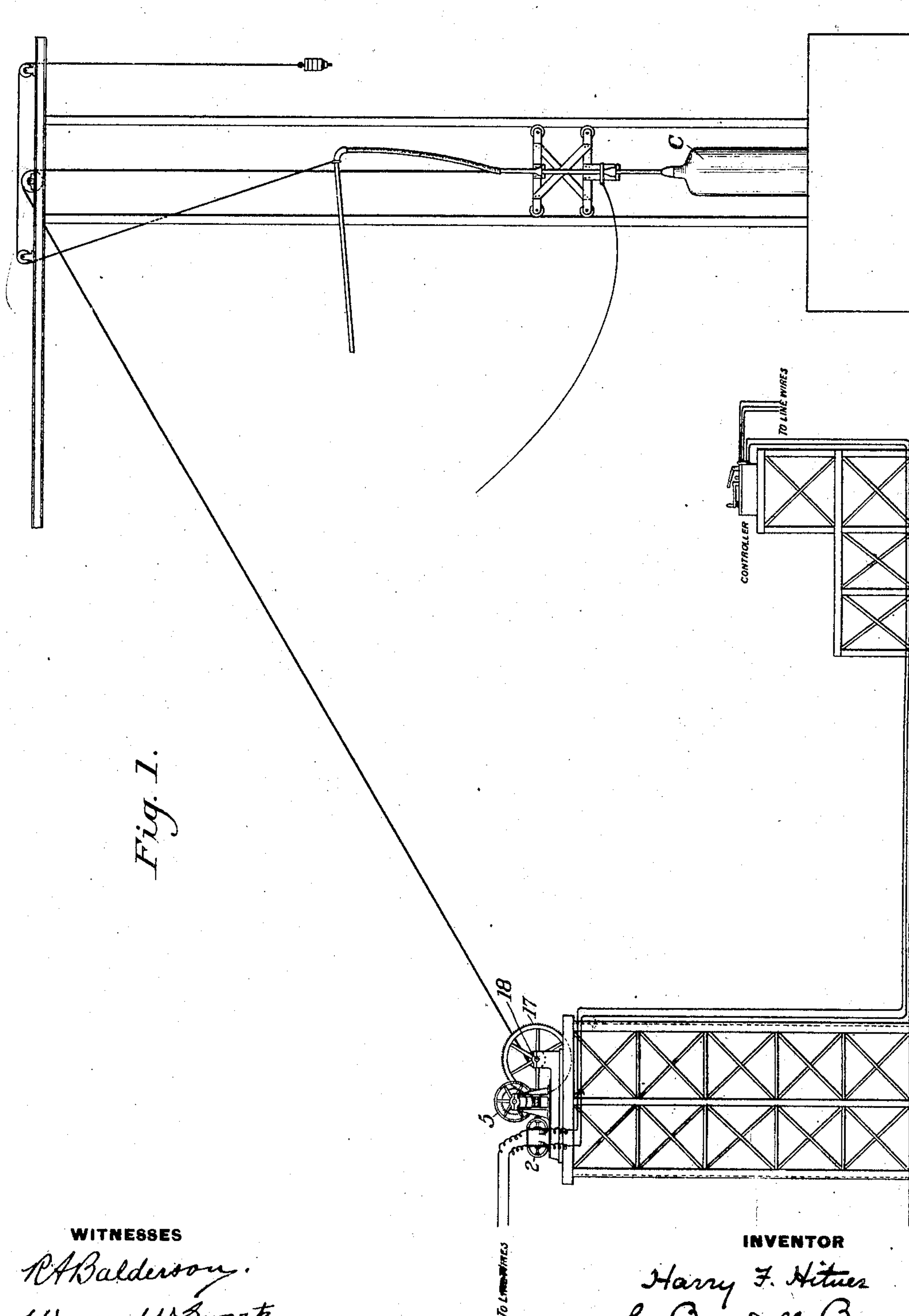


Fig. 1.

WITNESSES

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Fig. 2.

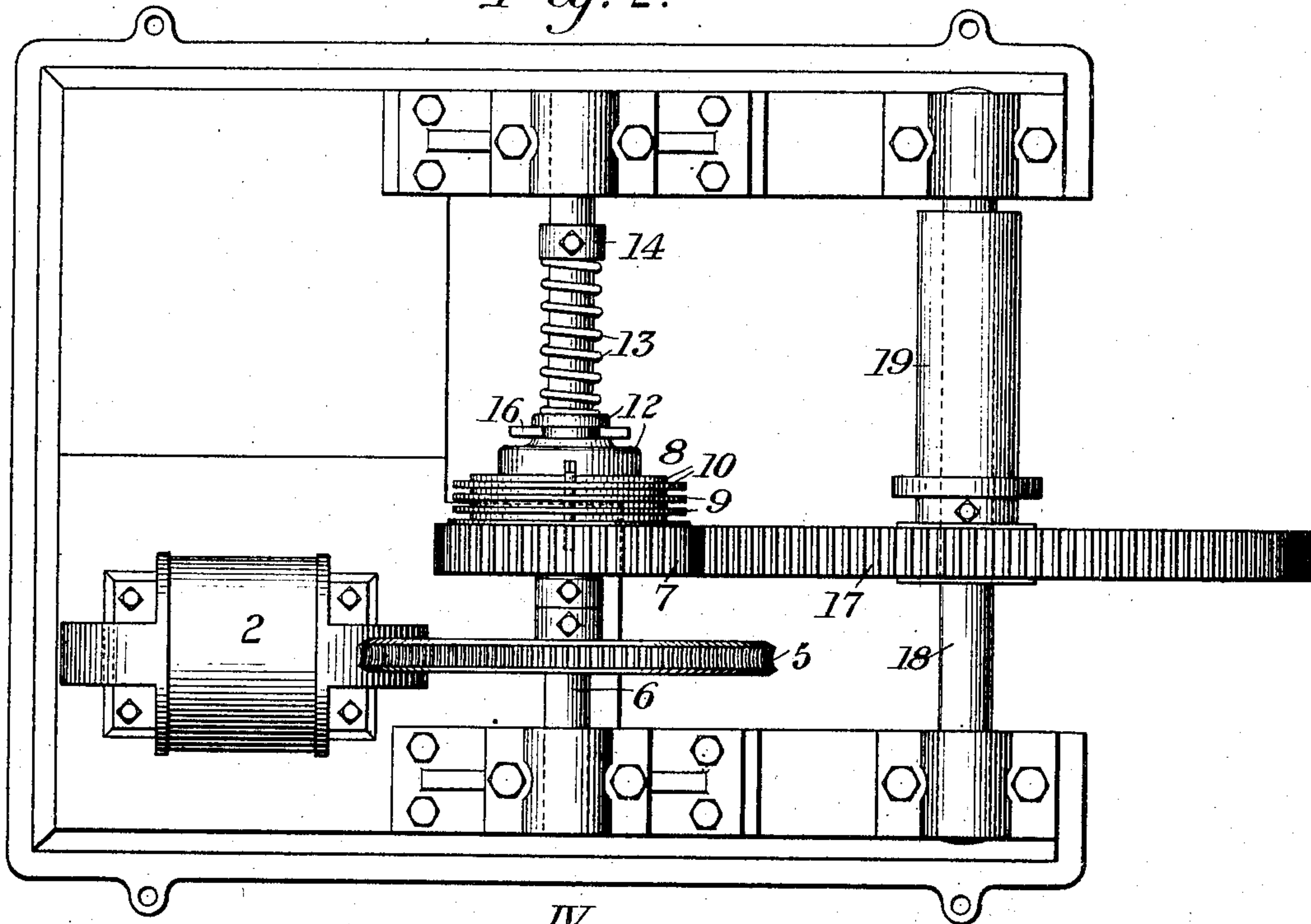
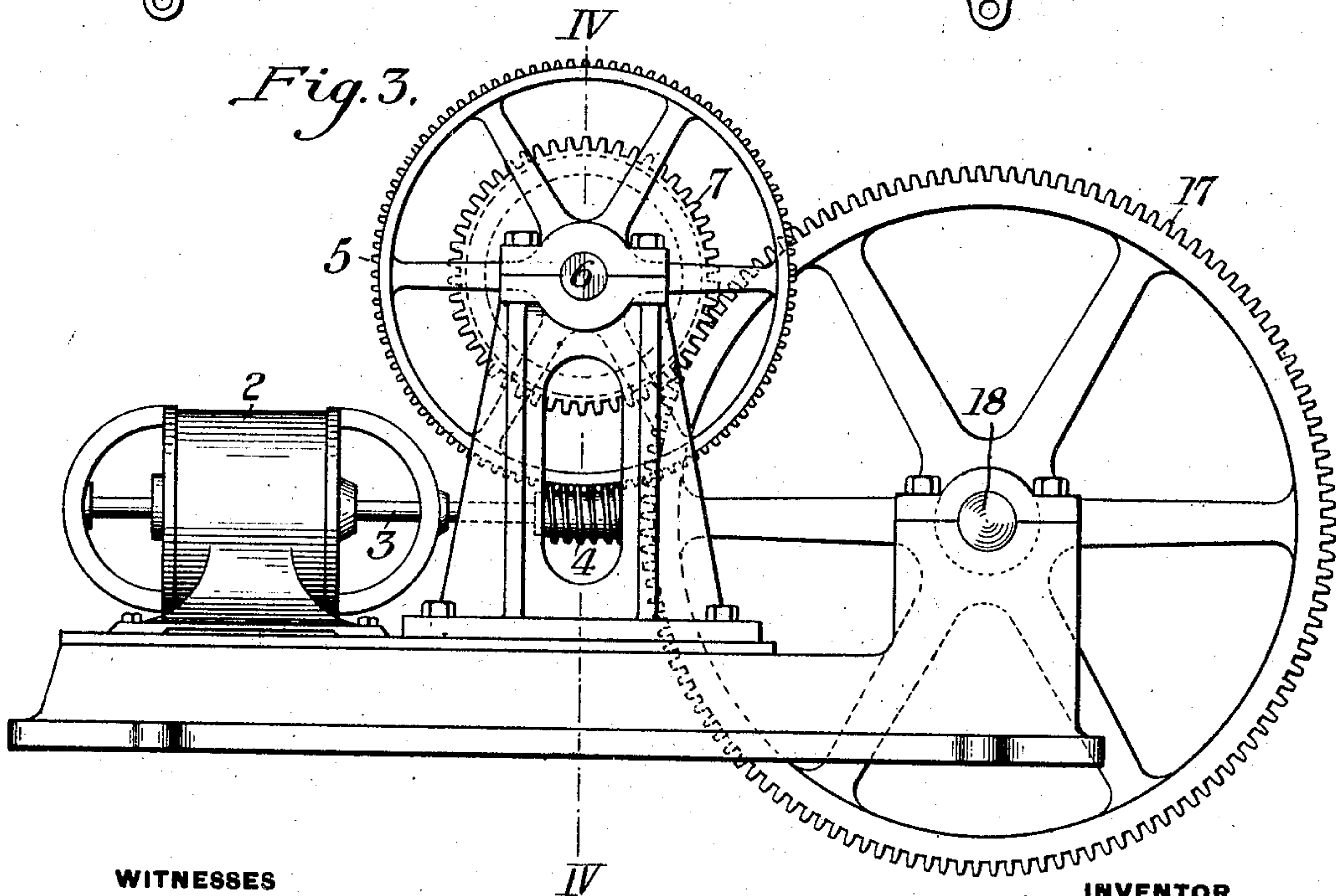


Fig. 3.



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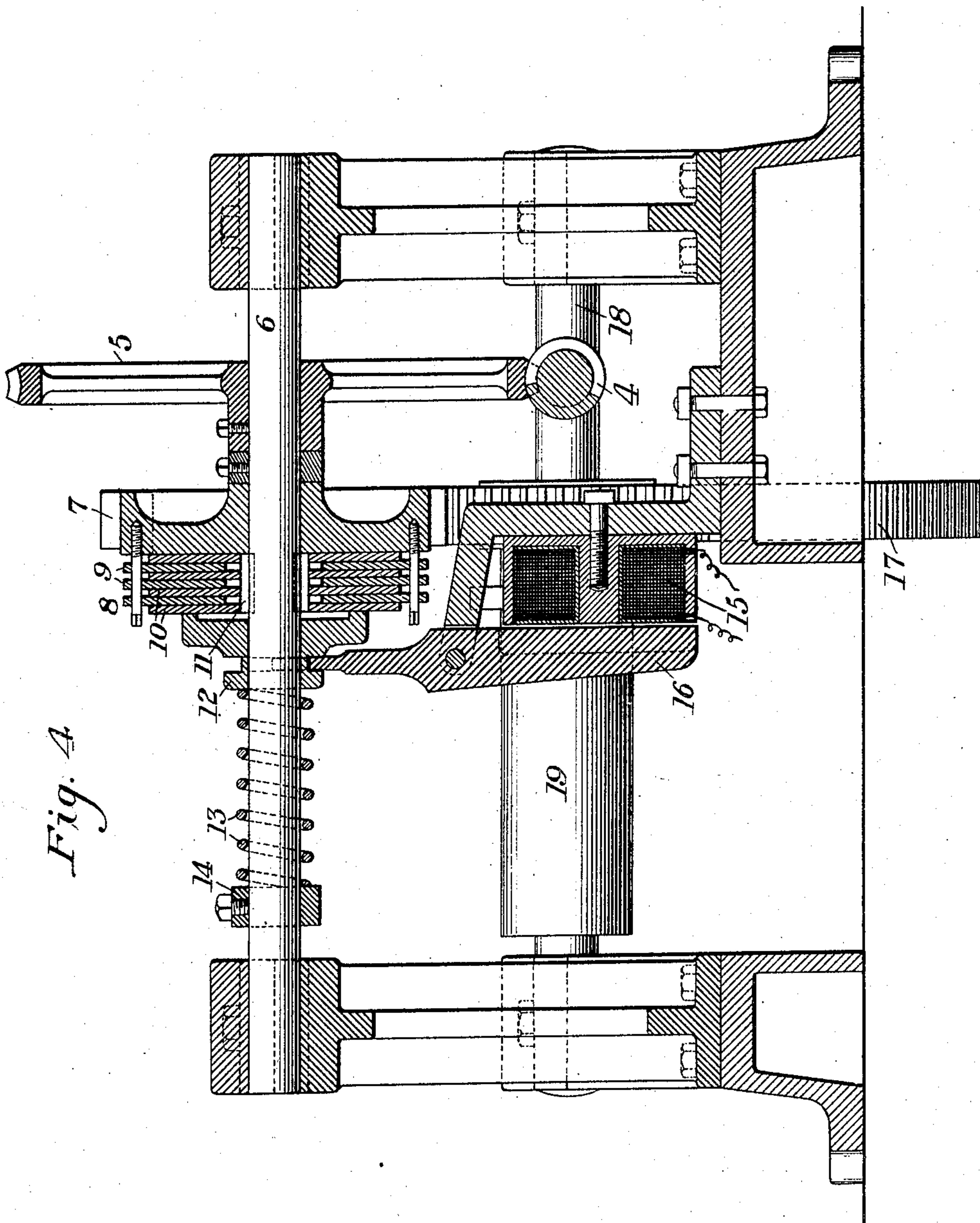


Fig. 4

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UNITED STATES PATENT OFFICE.

HARRY F. HITNER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO WINDOW GLASS MACHINE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

SPEED-CONTROLLING DEVICE FOR GLASS-BLOWING MACHINES.

No. 822,452.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed April 26, 1905. Serial No. 257,477.

To all whom it may concern:

Be it known that I, HARRY F. HITNER, of Pittsburgh, Allegheny county, Pennsylvania, have invented a new and useful Speed-Controlling Device for Glass-Blowing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 shows my improved apparatus for drawing glass cylinders. Fig. 2 is a plan view of the gearing and clutch. Fig. 3 is a side elevation. Fig. 4 is a vertical section on the line IV IV of Fig. 3.

In the drawing of glass cylinders from a body of molten glass variations of speed through a considerable range are required, as it has been discovered that it is necessary in order to get the best results to start the drawing at a comparatively low rate of speed and then to accelerate it rapidly. Thus in the drawing of the cap or upper end of the cylinder, the drawing-motor should revolve at the rate of say one hundred revolutions per minute. It should then be increased to six hundred revolutions per minute and then to about two thousand four hundred revolutions per minute. After the cylinder has been completed it is desirable to lower it at a speed many times greater than the highest speed used in the drawing operation. I accomplish this result by means of the apparatus shown in the drawings, which enables the drawing-motor to be controlled with safety during the varied conditions incident to the frequent changes of speed.

In the drawings, 2 is an electric motor, which may be of any suitable construction and has a shaft 3, which is geared down to a suitable speed, preferably by means of a worm 4 on the shaft, meshing with a worm-wheel 5 on the counter-shaft 6. The shaft 6 transmits motion to a gear-wheel 7 through a clutch 8, having friction members 9, which are connected to the gear-wheel 7, and having interfitting friction members 10, which are keyed to the shaft 6 by means of a key 11, or otherwise. So long as these clutch members are not pressed closely against each other the members 10 will revolve freely with the shaft without transmitting motion to the gear-wheel 7 through the clutch members 10; but if the clutch members are pressed

into close frictional contact the revolution of the members 10 will rotate the members 9 and with them the gear-wheel 7. To effect this frictional contact when desired, I employ a sliding sleeve 12, which is normally pressed against the clutch members by means of a spring 13, whose tension can be regulated by an adjustable collar 14, and when the spring is free to act it presses the clutch members into close contact. The pressure of the spring is counteracted and relieved from the clutch members by means of a magnet 15, having a pivoted armature 16, which is connected to the clutch-sleeve 12. This electromagnet is connected with a suitable controller situate at the point from which the machine is operated, so that at the will of the operator by controlling the circuit the magnet can be energized or deenergized and the clutch members thus released or permitted to be pressed into contact by the spring. The gear-wheel 7 meshes with a gear 17 on a shaft 18, which also carries a winding-drum 19, on which the chain or cable of the drawing apparatus is wound.

When it is desired to draw glass cylinders, the operator interrupts the circuit through the electromagnet 15, so as to permit the members of the clutch 8 to be pressed into contact by the spring 13, and the motor 2 having been started into operation, the shaft 18 and drum 19 are rotated through the intermediate gearing and clutch above described. The speed of rotation is determined by a suitable regulating-controller placed in the circuit of the motor and is varied during the drawing operation as required.

When the glass cylinder C has been drawn and has been detached from the pot or vessel of molten glass and it is desired to lower the drawn cylinder, the operator establishes the circuit through the electromagnet 15, thereby moving the armature 16 and releasing the members of the clutch 8, whereupon the winding-drum, being put out of connection with the motor, is free to rotate in the reverse direction and to lower the glass cylinder at a rapid rate, which, however, is entirely under the control of the operator, who, by interrupting the circuit of the electromagnet, can stop or retard the downward motion at any point desired.

By properly adjusting the tension of the

spring 13 the clutch can be made so sensitive that if during the drawing operation for any reason there should be an undue pull on the glass the clutch members will slip, and thus
5 relieve the strain. Moreover, in lowering the glass cylinder the clutch members, even when relieved from the tension of the spring, oppose sufficient frictional retarding effect to act as a brake and thus prevent the too sudden and rapid motion of the cylinder. The
10 apparatus is so easy to control that it makes it impossible for workmen by reason of carelessness to do any injury to the mechanism. Thus, if the operator should inadvertently interrupt the circuit of the electromagnet during the drawing operation it would not injure the machine, but by reason of the clutch
15 would simply allow the glass cylinder to descend, the only injury being to the particular glass cylinder being drawn. It is also impossible for the operator to impart any sudden jar to the machine, for if he should apply the clutch suddenly during the descent of the glass cylinder there is a sufficient slipping
20 between the members of the clutch to bring the parts to rest gradually.

I claim—

1. Glass-drawing apparatus, comprising in

combination, a motor, a winding-drum, an intermediate friction-clutch, means normally holding said clutch in driving engagement, and an electromagnet arranged to release the said clutch. 30

2. Glass-drawing apparatus, comprising in combination a motor, a winding-drum, an intermediate friction-clutch, an electromagnet adapted to release the clutch, and a spring to bring the clutch into frictional contact. 35

3. Glass-drawing apparatus, comprising in combination a motor, a winding-drum, an intermediate friction-clutch, and an electromagnet, said clutch consisting of interfitting disks placed respectively on the driving and driven parts of the apparatus. 40

4. Glass-drawing apparatus, comprising in combination, a motor, a winding-drum, an intermediate friction-clutch, an electromagnet adapted to release the clutch, a spring to bring the clutch into frictional contact, and means for adjusting the force of said spring. 45

In testimony whereof I have hereunto set my hand.

HARRY F. HITNER.

Witnesses:

JOHN MILLER,

H. M. CORWIN.