

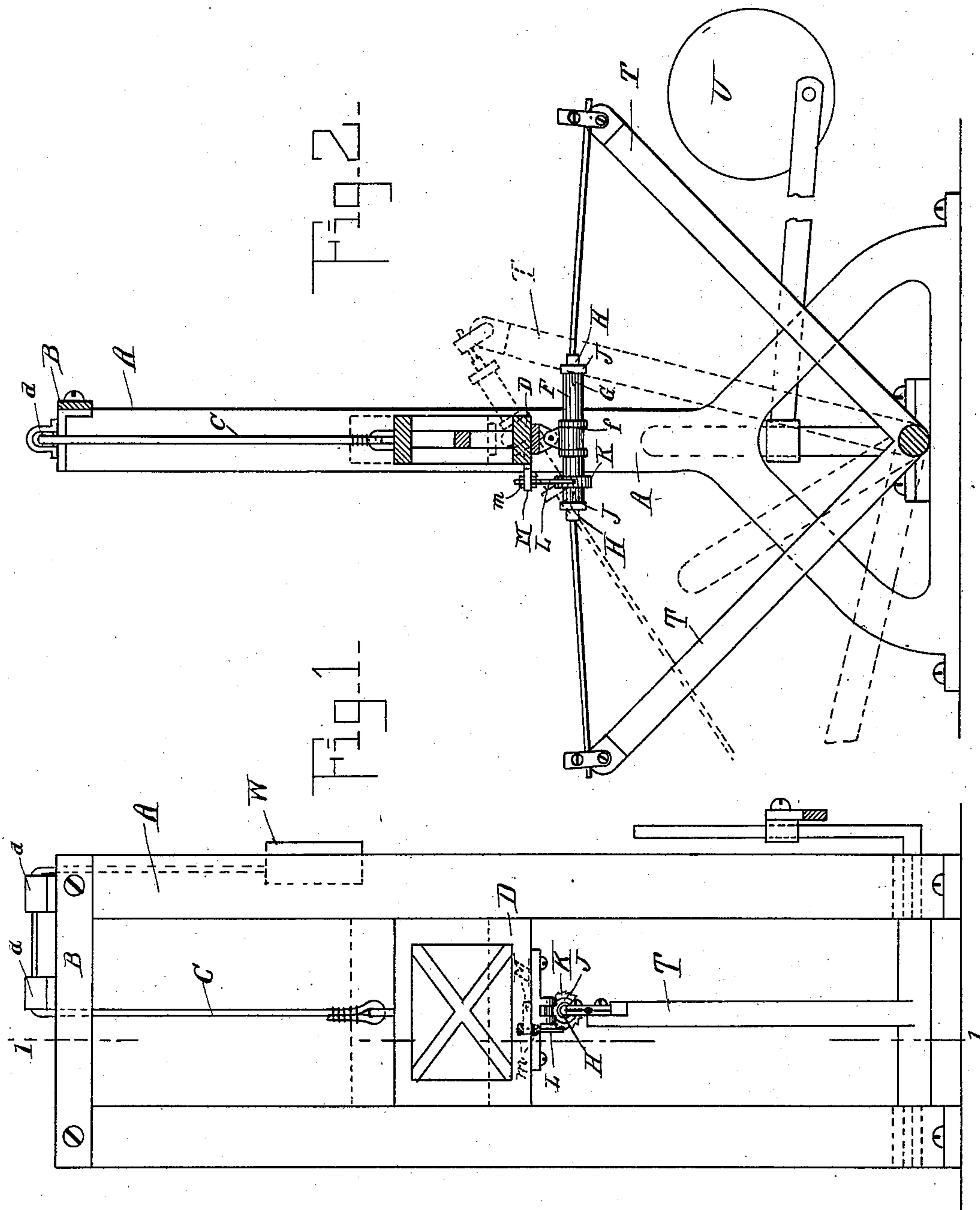
(No Model.)

2 Sheets—Sheet 1.

T. W. VAN HOESSEN.
MACHINE FOR GRINDING GLASS TUBES.

No. 601,720.

Patented Apr. 5, 1898.



Witnesses:

W. H. Brown
James C. Sinn

Inventor.
Theodore W. Van Hoesen
by *Ward Cameron*
Attys.

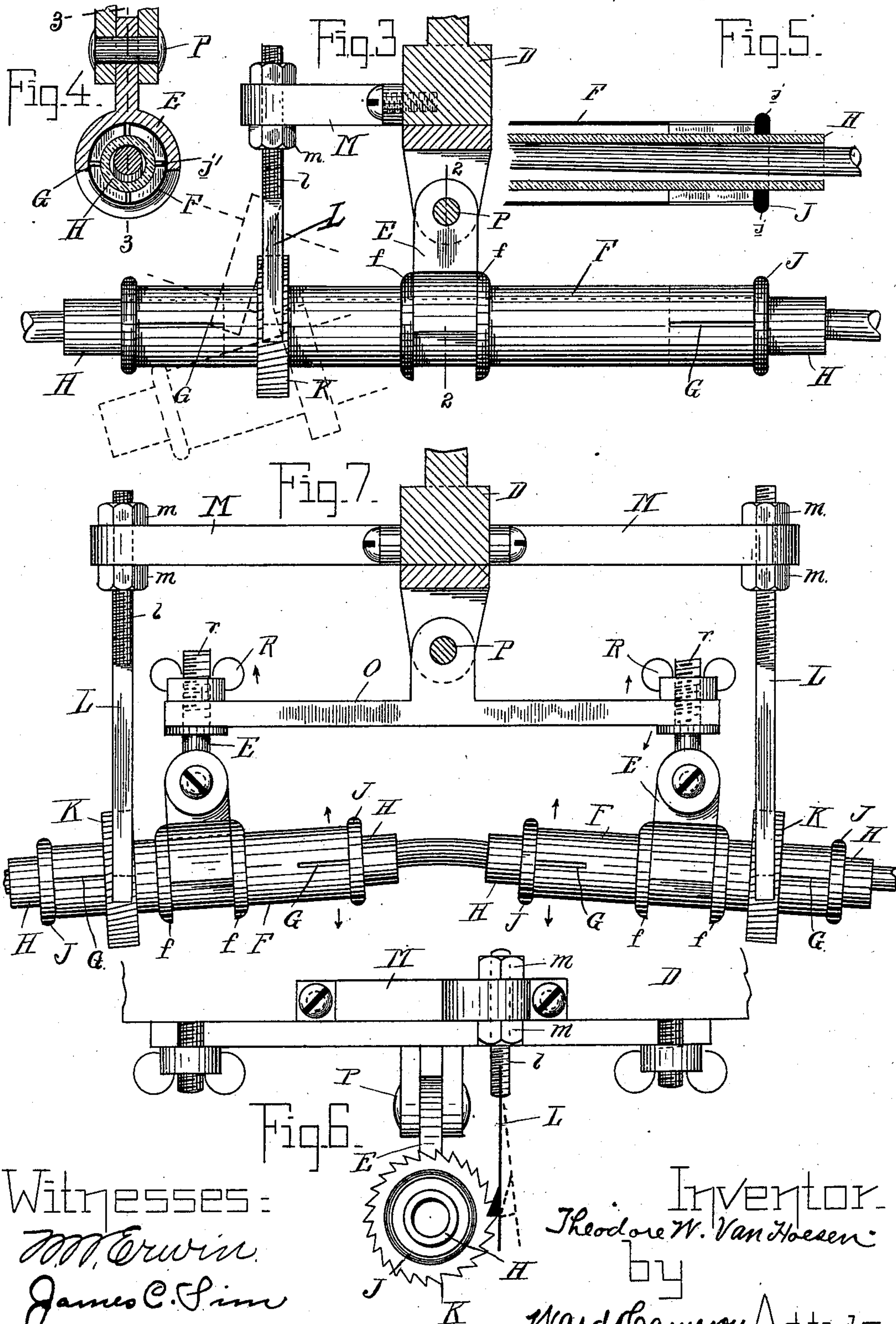
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2 Sheets—Sheet 2.

T. W. VAN HOESEN.
MACHINE FOR GRINDING GLASS TUBES.

No. 601,720.

Patented Apr. 5, 1898.



Witnesses:
M. Erwin
James C. Sim

Inventor
Theodore W. Van Hoesen
by
Ward Cameron, Atty's.

UNITED STATES PATENT OFFICE.

THEODORE W. VAN HOESEN, OF TROY, NEW YORK.

MACHINE FOR GRINDING GLASS TUBES.

SPECIFICATION forming part of Letters Patent No. 601,720, dated April 5, 1898.

Application filed August 2, 1897. Serial No. 646,756. (No model.)

To all whom it may concern:

Be it known that I, THEODORE W. VAN HOESEN, a citizen of the United States, residing at the city of Troy, county of Rensselaer, and State of New York, have invented a new and useful Improvement in Machines for Grinding Glass Tubes, of which the following is a specification.

My invention relates to improvements in machines for grinding the interior surface of glass tubes; and the object of my invention is to provide a tube-holder and clutch so arranged that the tube shall be held rigidly and positively in position and the holder caused to revolve automatically by the operation of the grinding-tool. I attain this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation; Fig. 2, a section along the line 1 1 on Fig. 1. Fig. 3 is a detail front elevation of the carrier with parts broken away; Fig. 4, a cross-section along the line 2 2 on Fig. 3; Fig. 5, a section along the line 3 3 on Fig. 4. Fig. 6 is a front elevation of Fig. 3; Fig. 7, a side elevation of a modified form.

Similar letters refer to similar parts throughout the several views.

In my United States Letters Patent No. 580,913, dated April 20, 1897, I describe and claim a glass-tube-grinding machine upon which I have made various improvements. I have discovered that it is advisable to provide an automatic means of revolving the tube-carrier, and also to arrange a machine so that two or more tubes may be ground simultaneously. I prefer to reciprocate the grinding-rod through the tubes, as described in the said patent, although I may hold the rod in a fixed position and move the tubes thereon. I mount the machine in a similar manner to that shown in said patent. Uprights A A are suitably supported, and the upper ends are connected, as at B. A block D is movable in the uprights A A, held in position by chain or rope C, passing over sheaves or pulleys *d d*, carrying the weight W. The weight W is arranged to hold block D in proper position, which may be regulated as desired. To the block D is pivotally secured, as at *e*, a concavo-convex hanger E, adapted to conform with the contour of the tube-car-

rier F, but preferably not entirely encircling the same, and arranged to fit snugly between the annular shoulders *ff* on said tube-carrier F, allowing for the revolution of the tube-carrier within the hanger, but preventing a longitudinal movement therein. The tube-carrier F is preferably constructed of a metallic substance, and is provided near each end with a series of longitudinal slots G G, and the ends of the carrier, beginning at or near the commencement of said slots, are preferably tapered or made slightly smaller in diameter than the rest of the carrier. Within the carrier is placed a glass tube H to be ground, held securely in position by means of rubber thimbles J, which thimbles are inserted within the ends of the carrier F and which thimbles are preferably provided at one end with the enlarged rim *j*. The thimbles J are also slotted at *j'*. (See Fig. 4.) As thus arranged, the tapering slotted ends of the carrier form a spring, the resiliency of which tends to compress the slotted rubber thimble, exerting an even constant pressure against the glass tube within the thimble and providing for the retention of tubes which may slightly differ in diameter. This manner of securing the tube within the carrier is an important part of my invention.

It is readily understood that the delicate tube must be rigidly held in position and at the same time the clamping or holding device must be sufficiently mobile to prevent breaking the ends. During the operation of the grinding process the tube is submitted to a very considerable degree of friction. Upon the carrier F, I arrange a ratchet K, provided with teeth preferably arranged at an angle to the axis of the carrier and adapted to engage with a dog L, suitably supported within an arm M, projected from the block D, or in any other suitable manner. I usually thread the shank *l* of the dog L adjacent to the arm M, through which the shank passes, and place nuts *m m* on the shank, one on each side of the arm M, for the purpose of adjusting the dog. I do not limit myself to this adjusting feature, as many other methods of adjusting devices will readily suggest themselves to the mechanic. The operation of the dog in connection with the ratchet is apparent. As shown in Fig. 6, when the carrier is substan-

tially horizontal the dog will be in contact with the ratchet. As the grinding-rod moves, as shown in dotted lines in Fig. 2, the carrier will rise at one end and descend at the other.

5 The dog prevents that side of the carrier on which is the tooth of the ratchet in contact with the dog from rising until it has revolved sufficiently to bring the dog away from contact with that tooth of the ratchet. The position
10 of the teeth at an angle to the axis of the carrier will assist in disengagement of the dog from the ratchet. Thus the movement for grinding the rod will cause a partial revolution of the carrier, and therefore of the tube,
15 each time the rod passes through the tube. The extent of the revolutionary movements will of course depend upon the number of teeth and the location of the dog and may be regulated as desired.

20 In Fig. 7 I show two carriers, each carrying a tube. Both are capable of being ground at the same time. In this case I mount on the block D a lever O by means of a pin P, allowing for a movement of the lever O in a vertical plane about the pin P, and upon the lever
25 I mount the hangers E E, preferably by adjusting-screws R R, meshing with the threaded shank on the hanger-support. For the purpose of engaging with the ratchets K K on
30 the carrier I arrange the dogs L L, which I preferably secure to arm M M, supported by block D.

It is understood that although I show in Fig. 7 but two carriers I could arrange side by
35 side several pivotally-connected levers, each

carrying two or more tube-carriers, and I therefore do not limit myself to the number. For the purpose of grinding tubes I place rods slightly bent, the ends of each rod secured to the arms T T, which rods are connected with a shaft l, operated by the power-wheel. I do not, however, limit myself to this movement.

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

1. In a machine for grinding glass tubes, a hanger, pivotally supported; a tube-carrier capable of revolving within said hanger; a means for preventing the longitudinal movements of said carrier in said hanger; a thimble adapted to be inserted within the ends of
50 said carrier; the end of said carrier slotted and tapered, arranged to exert a pressure upon the thimble substantially as described.

2. In a machine for grinding glass tubes, a hanger suitably supported; a carrier adapted to engage with said hanger, allowing for the revolution of the carrier within the hanger; a means for preventing the longitudinal movements of the carrier within the hanger; a
60 ratchet mounted on the carrier, a dog suitably mounted adapted to engage the said ratchet when the carrier is horizontal and to become disengaged therefrom after the carrier has made a partial revolution substantially as described.

THEODORE W. VAN HOESSEN.

Witnesses:

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