

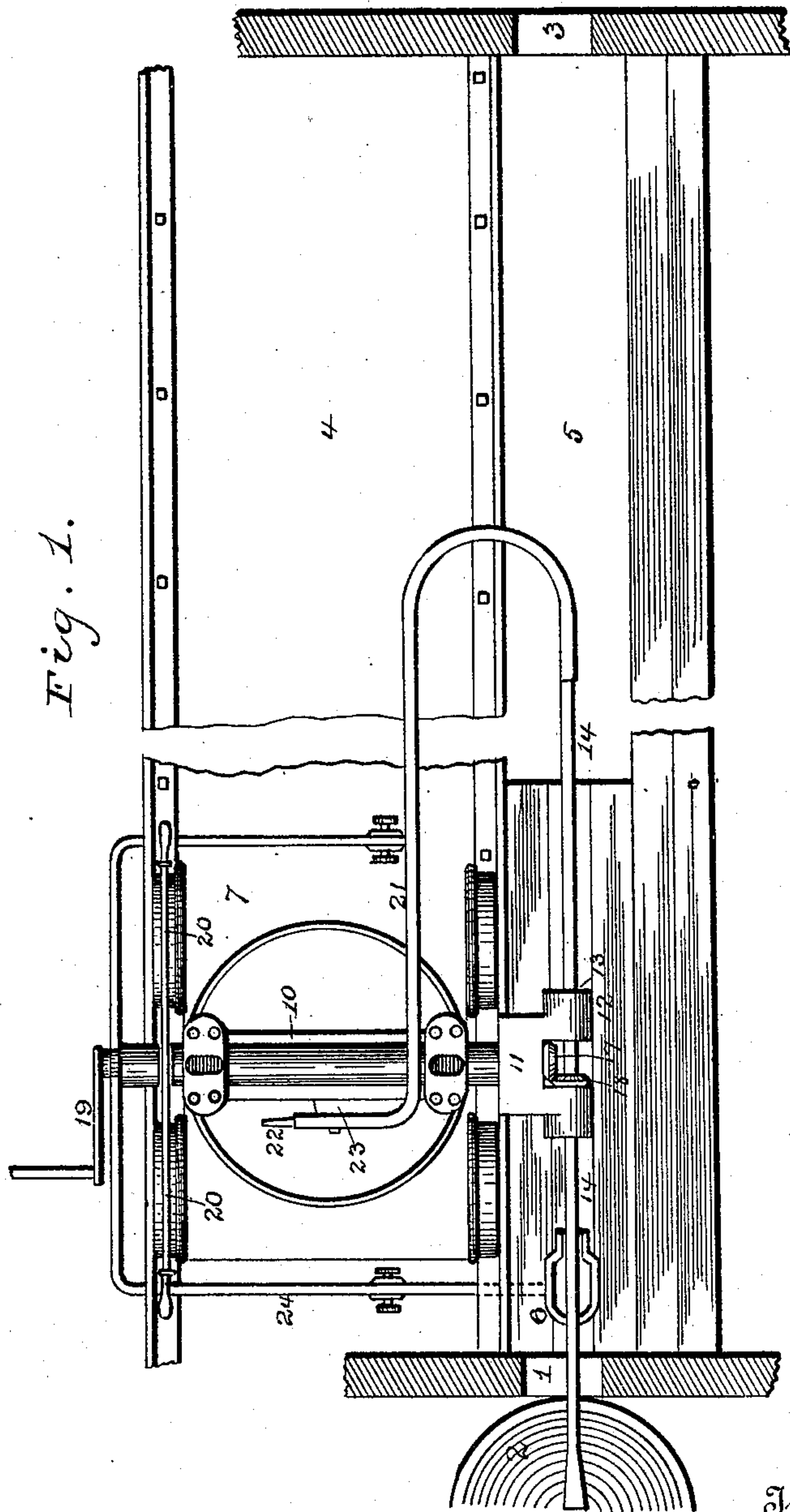
(No Model.)

3 Sheets—Sheet 1.

M. J. OWENS.
MECHANICAL GLASS BLOWER.

No. 570,879.

Patented Nov. 3, 1896.



Witnesses
James Graham
Bryan Oline

Inventor
M. J. Owens.
By Attorneys *Chapin & Co.*

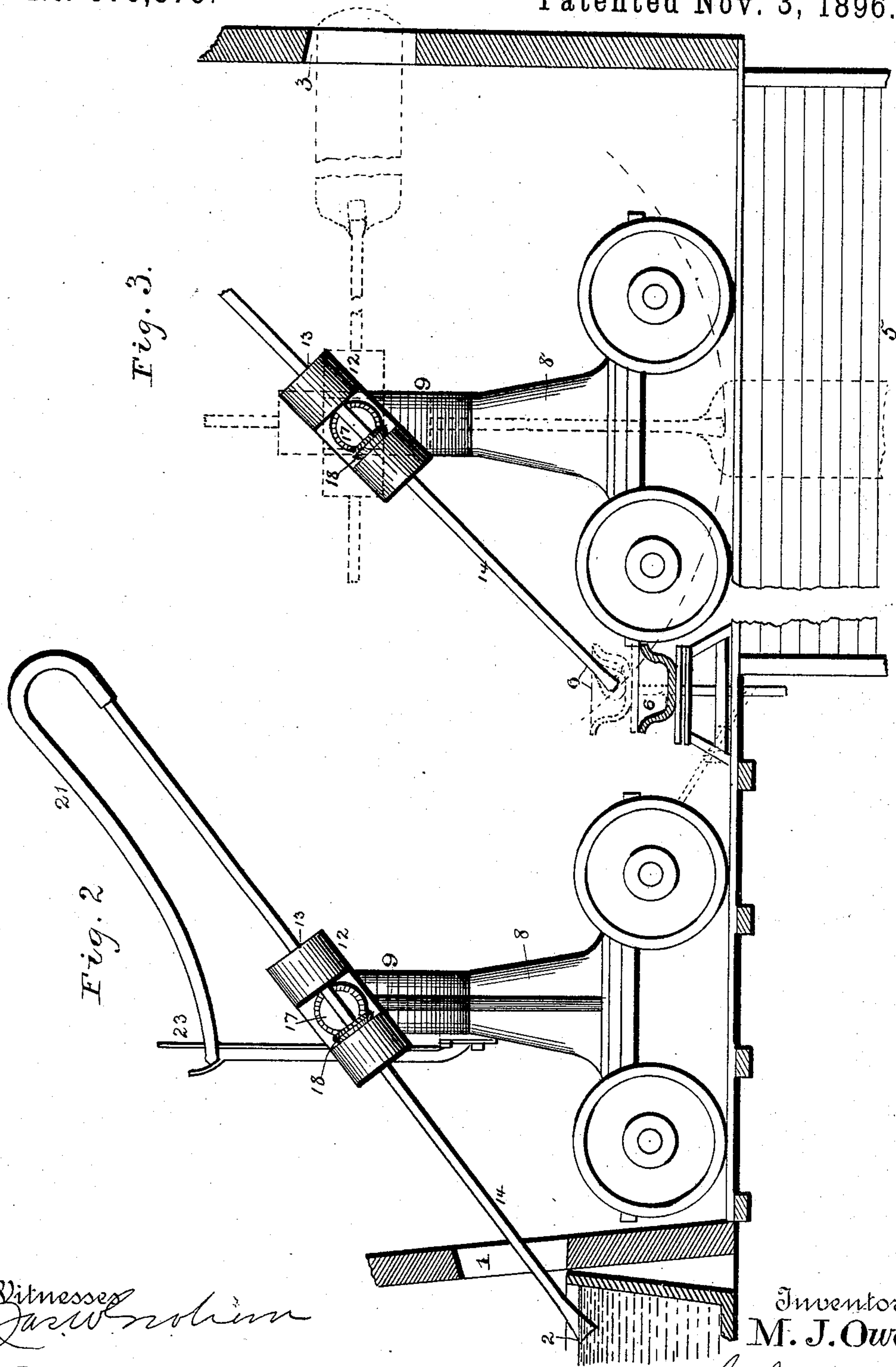
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Witnesses
Jas. W. Robinson
Bryan Owen

Inventor
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By Attorneys *Chapin & Co.*

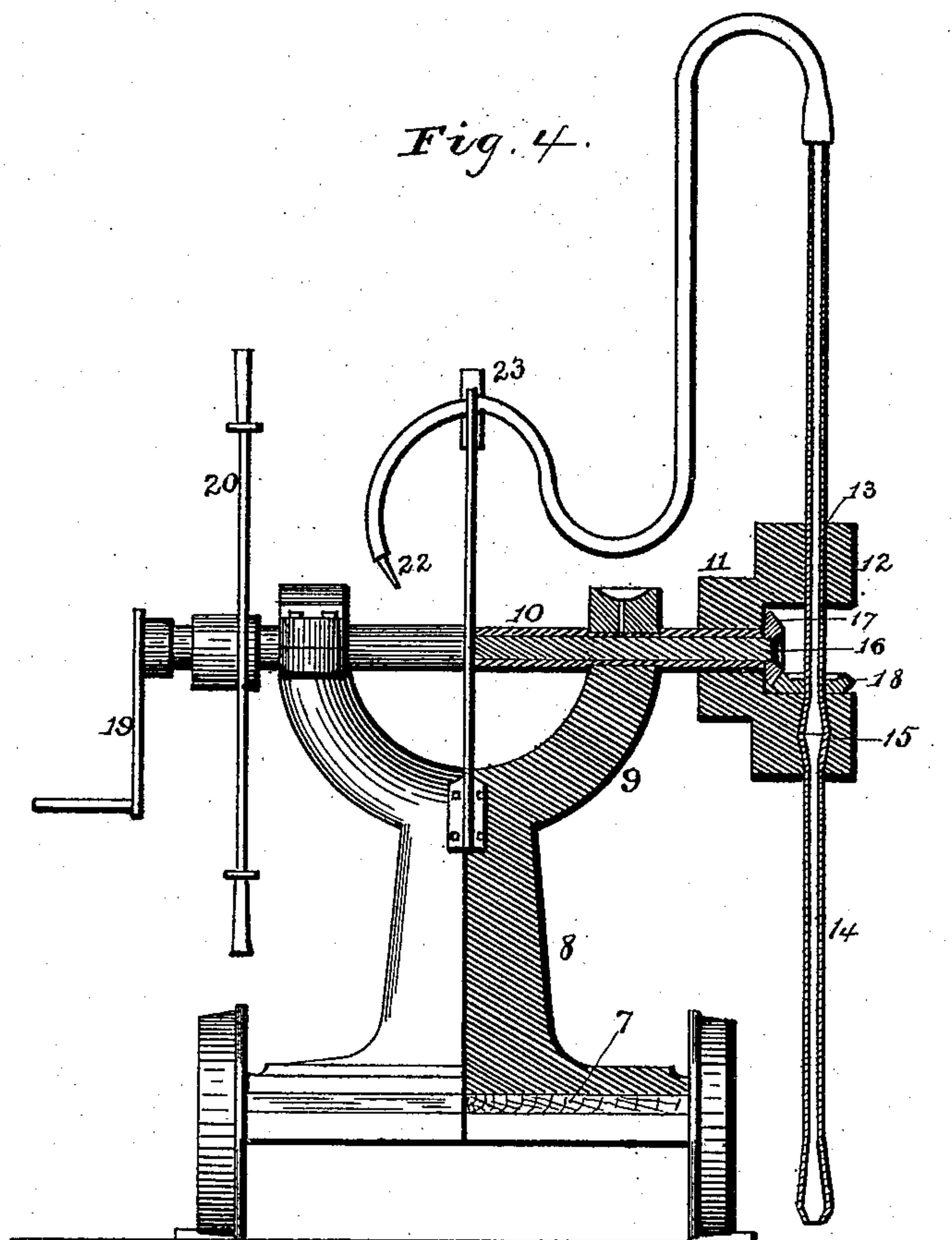
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WITNESSES:

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UNITED STATES PATENT OFFICE.

MICHAEL J. OWENS, OF TOLEDO, OHIO.

MECHANICAL GLASS-BLOWER.

SPECIFICATION forming part of Letters Patent No. 570,879, dated November 3, 1896.

Application filed June 11, 1894. Serial No. 514,194. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL J. OWENS, of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in Mechanical Glass-Blowers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

My invention relates to mechanical glass-blowers, having for its object to perform the work of manipulating the blowpipe and vitreous material adhering thereto for the particular object to be made mechanically as contradistinguished from the present manual manipulation by the operator, thereby reducing the labor and affording a more effective and positive movement of the blowpipe during the several stages of "gathering," forming, heating, and finishing the article than heretofore.

A further object is to carry out the several stages of manipulation and formation of the vitreous material and article to be formed mechanically, thereby dispensing with the present high-priced skilled labor necessarily employed and rendering it possible to effect the desired result in the employment of ordinarily-skilled labor, thereby reducing the cost of the manufactured article materially.

Heretofore in the art of glass-blowing the blowpipe has been manipulated manually in the several operations incident to forming the desired article.

In illustration of the process the operation of forming window-glass will be referred to, although by my process of manipulating the blowpipe mechanically the several articles heretofore produced by the manual manipulation of the blowpipe can be formed with greater ease and facility and at much less expense.

The several stages or operations comprise, first, the insertion of the lower end of the blowpipe through the pot-hole of the furnace into the molten vitreous mass contained in the pot, by which the first accumulation of the vitreous material is deposited upon the pipe.

The pipe is now removed and the accumulation allowed to cool somewhat, when the operation is repeated a second, and usually a third, time, or until there is a sufficient accumulation or gathering to form the desired article, when the vitrescent bulb is expanded by blowing into the blowpipe while the bulb is revolved upon a shaping-block. This latter operation in the manual manipulation requires the assistance of a helper who blows into the pipe while the operator revolves the pipe. After the operations described the bulb is swung in an arc of a circle in a "pit," while the operator blows into the blowpipe until a cylinder is formed having a closed lower end, when the cylinder is inserted into a "heating-furnace" and the lower end heated to a degree to cause the same to fracture, when the cylinder is again swung into the pit and air blowed into the pipe, until by the swinging movement and revolution of the pipe the lower end of the cylinder is expanded to the diameter of the body portion of the cylinder.

During the several operations described the operator is compelled to sustain the weight of the blowpipe, as well as the gathering or accumulation of the vitreous material, rendering the same very laborious.

In the process of forming the article mechanically the several steps described are performed by simply turning a crank to revolve the pipe and moving a lever to swing the pipe and bulb, the pipe and mechanism for operating the same being movable to and from the pot, heating-furnace, shaping-block, and pit, respectively, and during this time the weight of the pipe and gathering of vitreous material are sustained by the mechanism, thereby relieving the operator of the necessity of sustaining the same.

In the drawings I have illustrated one form of mechanism for carrying out my process, but I wish this mechanical feature to be considered as simply diagrammatic of one means, as it will be apparent that other mechanical means may be employed without departing from the spirit of my invention.

Figure 1 is a plan view of a trackway from the melting-furnace to the heating-furnace, showing also the pit and shaping-block and a car mounted upon the track, also the mech-

anism upon the car for holding and manipulating the blowpipe, the latter being shown as inserted into the pot-hole of the melting-furnace and gathering the vitreous material from the pot, the pot and melting and heating furnaces being shown in section. Fig. 2 is a side elevation of the machine, the end of the blowpipe being inserted in the pot-hole to gather glass. Fig. 3 is a similar view, the machine being moved back so as to form and manipulate the article of glassware, the lever for elevating the shaping-block being shown in a different position for the sake of clearness. Fig. 4 is an elevation, partly in section, of the car and mechanism for operating the blowpipe.

1 designates the pot-hole; 2, the pot; 3, the opening of the heating-furnace, and 4 a trackway connecting the two furnaces.

5 is the pit, and 6 the shaping-block, the pit and block being in parallel alinement with the trackway.

Mounted upon the trackway 4 is a car or truck 7, upon which is mounted a pedestal 8, having oppositely-disposed arms 9, into which is journaled a tubular shaft 10, upon one end of which is secured a block 11, having two horizontally-projecting arms 12, having coincident perforations 13, in which the blowpipe 14 is journaled and held from longitudinal movement by a duplex inverse conical bearing 15. Journaled within shaft 10 is a shaft 16, of greater length than shaft 10 and having a miter-gear 17 upon the outer end, which meshes with a like gear 18 upon the blowpipe, the shaft being revolved by means of a crank 19, secured upon the inner end of the same, whereby the revolution of the crank and shaft 16 revolves the blowpipe, and by means of a lever 20, secured centrally of its length to shaft 10, the block 11 and blowpipe are given a rotative movement at right angles to the revolution of the blowpipe just described.

21 designates a flexible tube swiveled upon the upper end of the blowpipe and having a mouthpiece 22, through which the operator blows to inflate the vitreous bulb upon the end of the same, at which time both hands are free to swing the bulb or cylinder into the pit and revolve the blowpipe at the same time. The flexible tube is preferably supported upon a forked rest 23, projecting upwardly from the pedestal.

In operation the car is moved upon the track to allow of inserting the end of the blowpipe into the pot to gather a quantity of the vitreous material thereon, when the car is run back to allow the material to cool and again run forward, and the operation repeated until there is a sufficient quantity gathered to form the article, when the car is run back a distance to allow of placing the vitrescent bulb upon the shaping-block, when the mouthpiece is inserted into the mouth of the operator who blows into the tube and pipe and at the same time turns the crank and revolves

the bulb. When the bulb has been shaped satisfactorily, it is reheated and the car is further retracted to a point opposite the pit, when the operator gives the blowpipe and bulb a swinging motion by means of lever 20, and at the same time revolves the blowpipe by means of a crank 19, shaft 16, and gears 17 and 18, and when the bulb has assumed its proper form by further retracting the car the bulb or cylinder is inserted into the heating-furnace to be properly heated, when by advancing the truck the cylinder or bulb is again swung in the pit and the cylinder or other article properly formed.

It will be seen by the foregoing that in the use of mechanical means for carrying out the process of blowing glass the necessity of skilled labor is dispensed with, the work greatly facilitated, and the labor materially lightened by reason of the weight being sustained by the apparatus, and the use of one operator dispensed with.

If desired, the shaping-block may be connected with a fulcrumed lever 24, as shown in Fig. 1, whereby the operator may elevate or depress the same by pressure of the foot.

What I claim is—

1. In a mechanical glass-blower, a base or pedestal, a tubular shaft journaled therein, a block secured on this shaft, and having coincident openings, a blowpipe loosely mounted in these openings, a shaft fitting in the tubular shaft, and means for operating the two shafts whereby to impart a rotary or a vibratory motion to the blowpipe.

2. In a mechanical glass-blower, a base or pedestal, a shaft journaled therein having a block secured upon one end having coincident perforations, one of which is recessed with an inverse double cone, and a blowpipe journaled therein having a double inverse conical bearing.

3. In a mechanical glass-blower, a movable base or pedestal, a mechanically-operated blowpipe, and a vertically-movable shaping-block.

4. In a mechanical glass-blower, a car, a pedestal mounted thereon, the hollow shaft 10, projecting beyond the car on one side and having the block 12 secured to its projecting end; the blowpipe 14, secured in the block, and a tube 21 connected to one end of the blowpipe, combined with the shaft which extends through the hollow one, and is provided at one end with the crank 19, and at the other with a gear 17; the gear 18 secured to the blowpipe; and suitable handles or levers 20, secured to the hollow shaft, substantially as shown.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

MICHAEL J. OWENS.

Witnesses:

WILLIAM WEBSTER,
EDWIN H. JEWETT.