No. 706,550. Patented Aug. 12, 1902.

H. GOLLINGS.

GLASS MAKING MACHINE.

(Application filed Sept. 16, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 2.

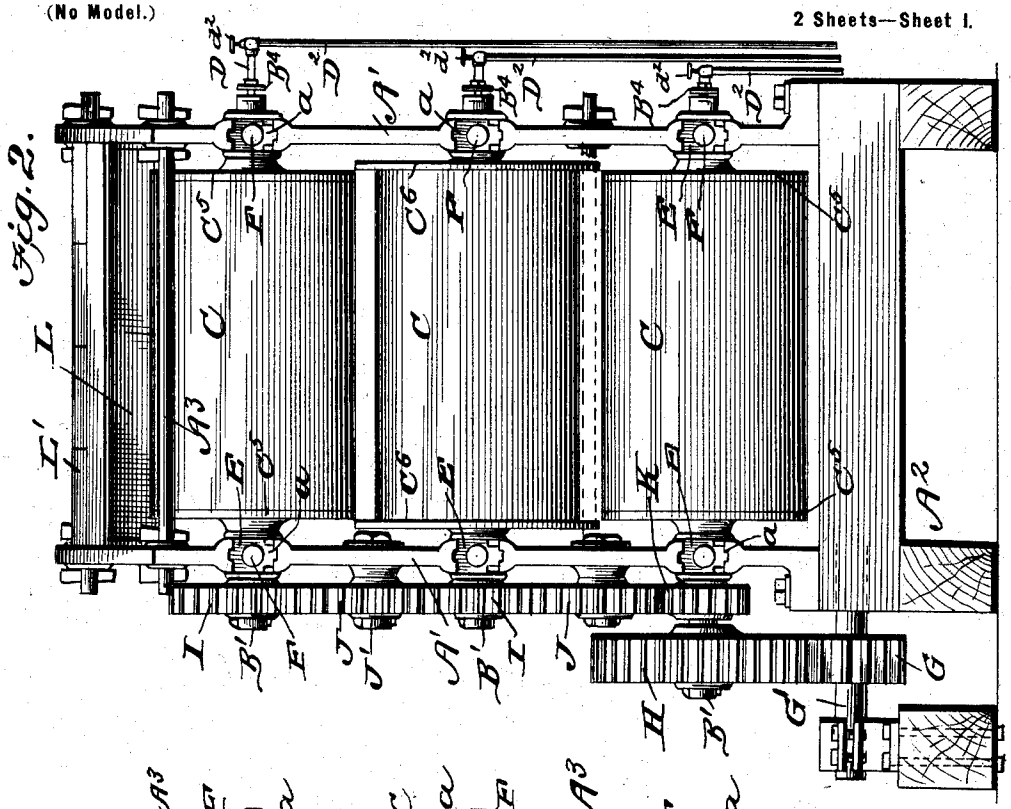
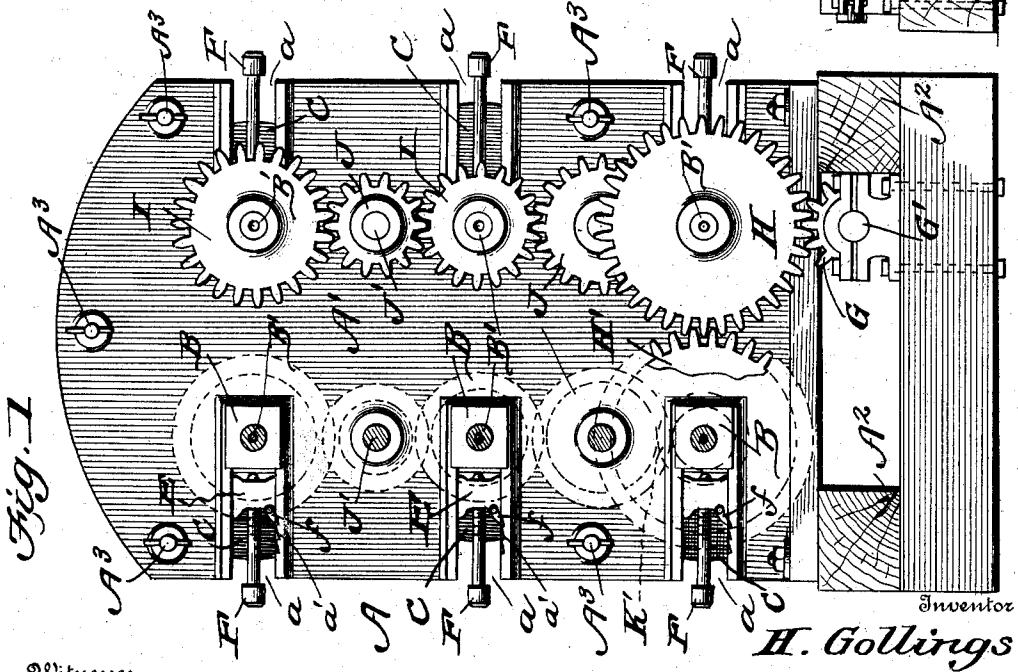


Fig. 1.



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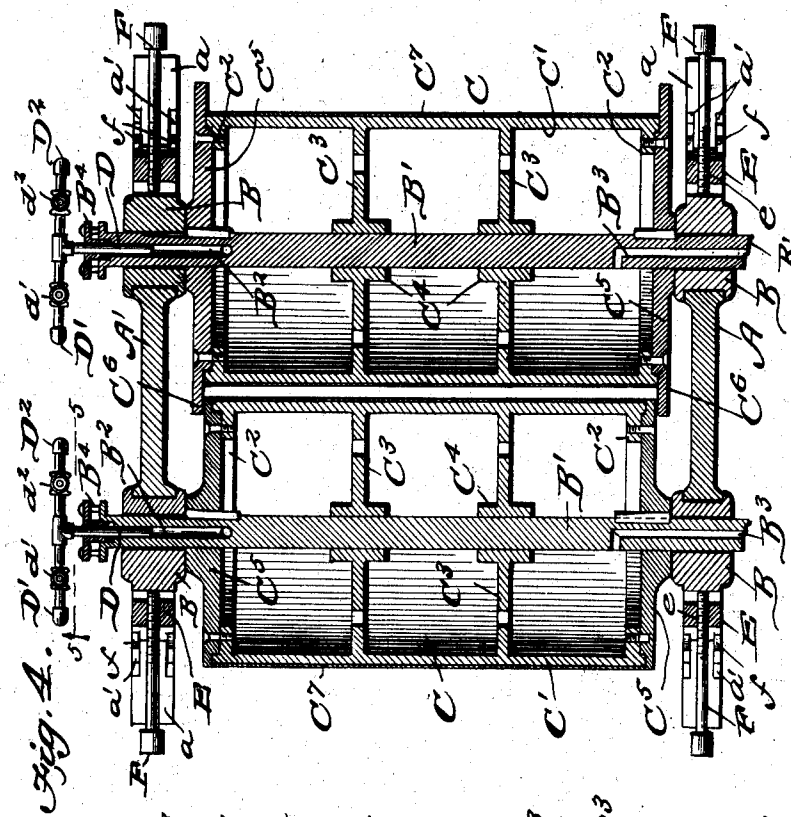


Fig. 4.

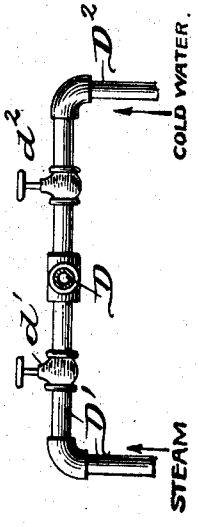


Fig. 5.

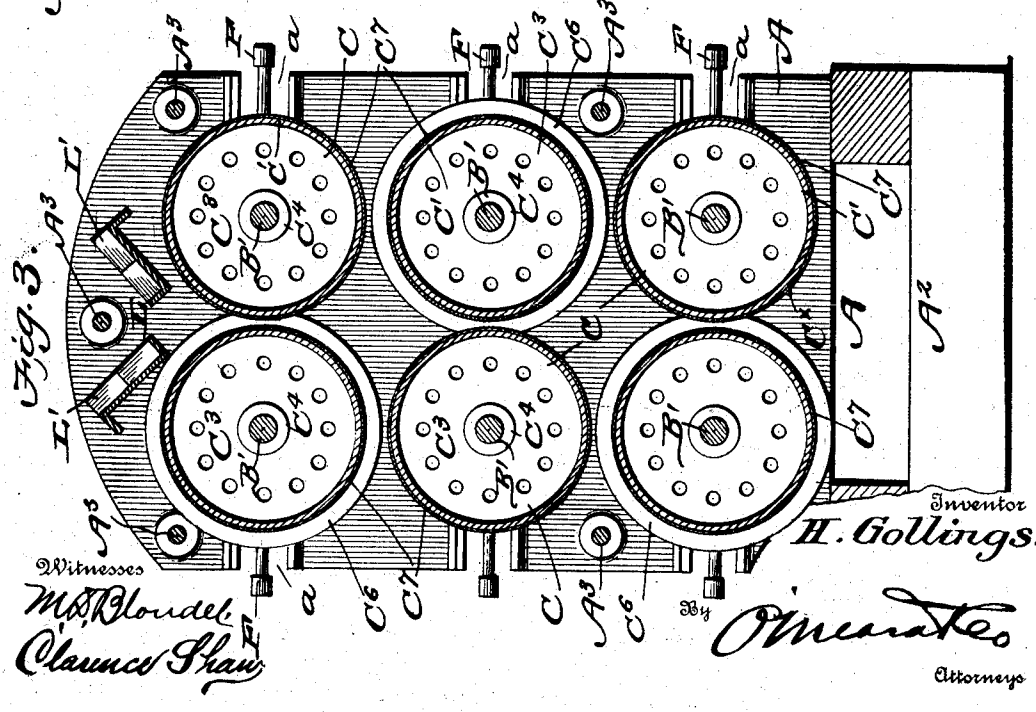


Fig. 3.

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UNITED STATES PATENT OFFICE.

HENRY GOLLINGS, OF OAK STATION, PENNSYLVANIA.

GLASS-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 706,550, dated August 12, 1902.

Application filed September 16, 1901. Serial No. 75,563. (No model.)

To all whom it may concern:

Be it known that I, HENRY GOLLINGS, a citizen of the United States, residing at Oak Station, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Glass-Making Machines, of which the following is a specification.

My invention is an improvement in glass-making machines, and relates particularly to that class for rolling the molten mass of material into flat plates of glass of any desired widths.

The object of my invention is to provide a machine by which the glass is flattened out by a series of rollers which are tempered and regulated to suit the condition and state of the molten glass; and another object is to provide the roller with a suitable covering that shall prevent to the smallest degree the roughness or defects of the glass so common to machines now generally used.

A further object of my invention is to provide an arrangement of pipe for feeding steam or hot or cold water to the cylinder for regulating the temperature thereof; and with these objects in view my invention consists in the peculiar construction and novel combination and arrangement of parts, as will be fully described in the following specification, reference being had to the drawings, in which—

Figure 1 is a side elevation of my improvement, one set of gear-wheels being removed and shown in dotted outlines for the purpose of showing the bearing-boxes. Fig. 2 is an end view of the machine. Fig. 3 is a vertical central section. Fig. 4 is a horizontal section taken through one pair of cylinders. Fig. 5 is a detail section taken about on the line 5 5 of Fig. 4.

In constructing a machine in accordance with my invention I employ a frame A, consisting of two side plates A′ A′, suitably mounted upon sills A^2 A^2 and held together by stay-bolts A^3 A^3, each plate having its opposite vertical edges provided with a series of raceways or slots *a a a*, in which are slidably held journal-boxes B, having shafts B′ held therein, upon each of which is mounted a hollow cylinder C. These cylinders form an important feature of my invention, each consisting of an outer shell C′, having flanges C^2 C^2 arranged at the ends thereof, and with a series of perforated webs C^3 C^3, whose central portions terminate in hubs C^4 C^4, through which the shafts pass. The ends of the cylinders are closed and made steam or water tight by means of end plates C^5 C^5, and as the cylinders are made in pairs—that is, two cylinders being arranged upon the same horizontal plane—the plates of one cylinder of each pair are extended past its periphery and overlap the sides of the opposite cylinder, as shown at C^6 C^6, and as the cylinders are arranged a slight distance apart it will be readily seen that the ends of the space are closed by the said overlapping portions C^6 C^6. Each cylinder also has its periphery covered with a thin layer of aluminium, as shown at C^7 C^7, for the purpose of preventing the collection of foreign matter, such as rust, &c.

The shaft of each cylinder is provided at its ends with a bore B^2 B^3, which communicates with its cylinder and forms an inlet and exhaust port, respectively, to and from the cylinders. The ends of the shafts having the bore B^2 are provided with stuffing-boxes B^4, through which is projected the end of an inlet pipe or nozzle D, whose outer end is connected to a T-joint having a steam and water pipe D′ D^2 connected thereto, each of which being provided with a valve d' d^2, as shown.

By connecting the cylinder with the water and steam pipes I am enabled to quickly regulate the temperature of the cylinder whenever required, and should they be too hot the valve d' in the steam-pipe is turned off, closing the inlet of steam, and the valve d^2 in the cold water opened, which allows a supply of cold water to enter the cylinders until the temperature is reduced. It will thus be seen that I provide a very simple and economical arrangement of pipes wherein I am utilizing one pipe for conducting the steam and hot water direct to the cylinders.

In order to adjust the cylinders laterally to regulate the width of the space between each pair, I arrange in each raceway a block E, having a threaded aperture *e* arranged centrally therein, in which is designed to operate the threaded end of a bolt F, that bears against the journal-box B, and in order to hold these blocks against lateral movement I provide each with pawls *f f*, that engage

ratchet-surfaces a' a', arranged in the lower face of the said raceways.

In order to operate the cylinders, I journal in the sills A^2 A^2, upon which the frame is mounted, a shaft G', carrying a pinion G, that meshes with a gear H, arranged upon the end of the lower cylinder-shaft and which imparts motion to the opposite shaft by meshing a gear H', arranged thereon. Each of the remaining cylinder-shafts is provided with gears I I I of smaller dimensions than the gear-wheels H H', which mesh with idlers J J, held upon stub-shafts J' J', secured to the frame-plate A', the lowermost idler meshing with pinions K K' on the lower shafts B'.

A hopper L is positioned in the upper end of the frame and has its inner face lined with fire-brick L', as shown.

From the foregoing description it will be readily seen that I provide a very simple and economical form of sheet-glass-forming machine, and by reason of having the steam and cold-water pipes terminating in one common pipe the rotation of the cylinders is not impaired and the temperature of the cylinders may be regulated by regulating either of the stop-cocks.

It may be stated here that I prefer to arrange the inlet end of the shafts with stuffing-boxes to prevent the escape of steam, and in practice I also intend to provide one of the lower cylinders with a cutting edge $C^{\times}$ for the purpose of severing the sheet of glass as it leaves the machine, and thus deliver it in plates or sheets of even length.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a glass-making machine, the combination of a frame composed of the side plates, each of which having slots or raceways arranged in the edges thereof, the said slots having ratchet-teeth formed therein, boxes arranged in the said slots and having shafts journaled therein, cylinders held upon said shafts, blocks carrying pawls that are adapted for engagement with the said ratchet-teeth, and a screw operating in the said blocks and adapted to engage the said boxes whereby the said cylinders may be adjusted laterally, and means for revolving the said cylinders, substantially as shown and described.

2. In a glass-making machine, the combination of a frame comprising the side plates and supports, a hopper fixedly arranged between the plates at the upper end thereof, the said plates having a series of slots arranged in their edges, the slots of one edge being arranged opposite and parallel with those of the opposite edge, and each having ratchet-teeth formed upon the inner and outer edges thereof, boxes arranged in the said slots, shafts journaled in the boxes, cylinders held upon the shafts and arranged in pairs in the frame, one cylinder of each pair having end plates that overlap the ends of the opposite cylinder, thereby producing a slot between the cylinders, blocks arranged in the grooves and having pawls for engagement with the ratchet-teeth, screws operating within the blocks and adapted to bear against the boxes, whereby the width of the slot between the cylinders may be increased or decreased, the said shafts of the cylinders having ports arranged therein, and one end provided with stuffing-boxes through which pass pipes, gears mounted upon the opposite ends of the shafts, and idlers journaled in the frame and adapted to mesh with the gears of the shafts, and means for revolving the cylinders, substantially as shown and for the purpose set forth.

HENRY GOLLINGS.

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