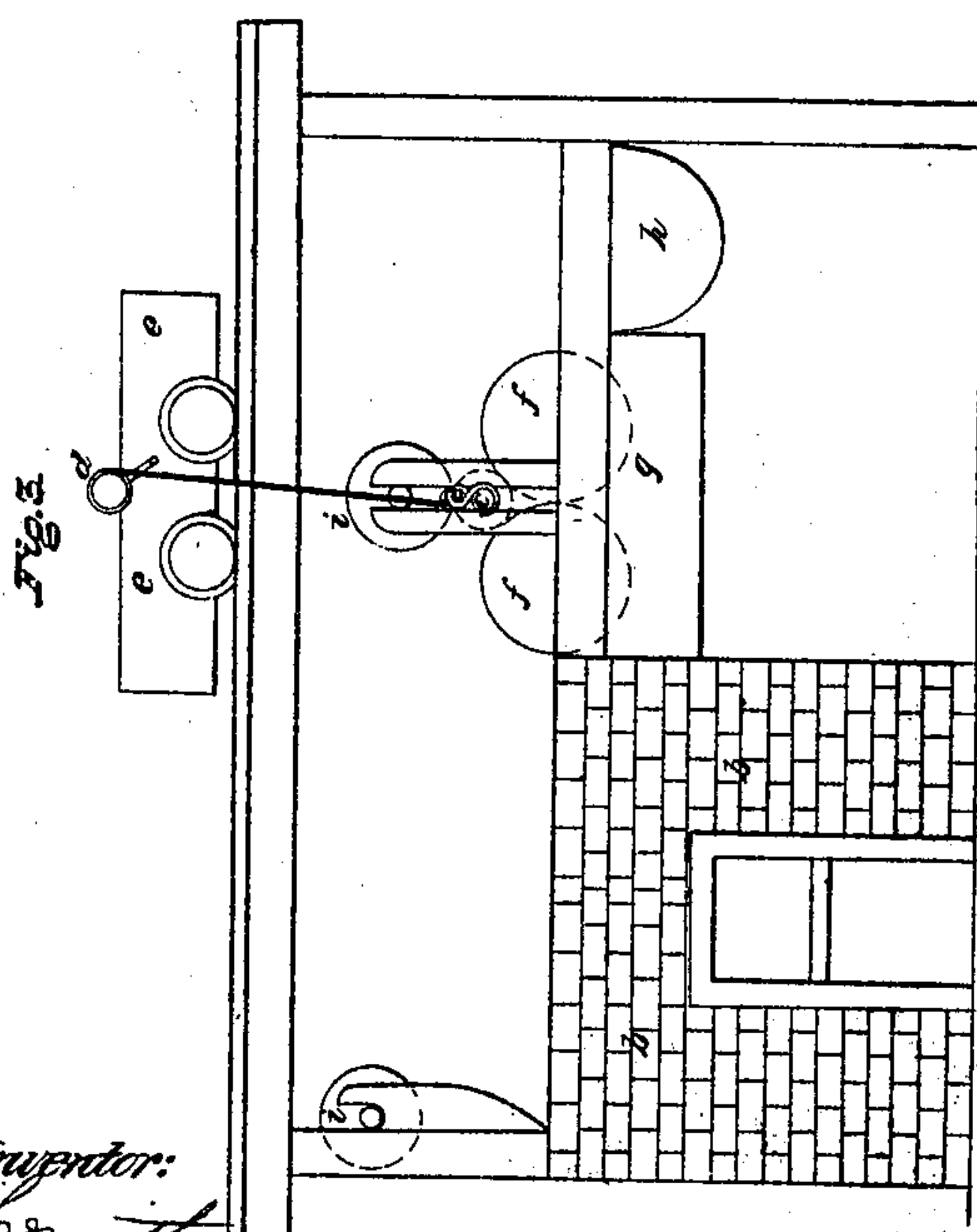
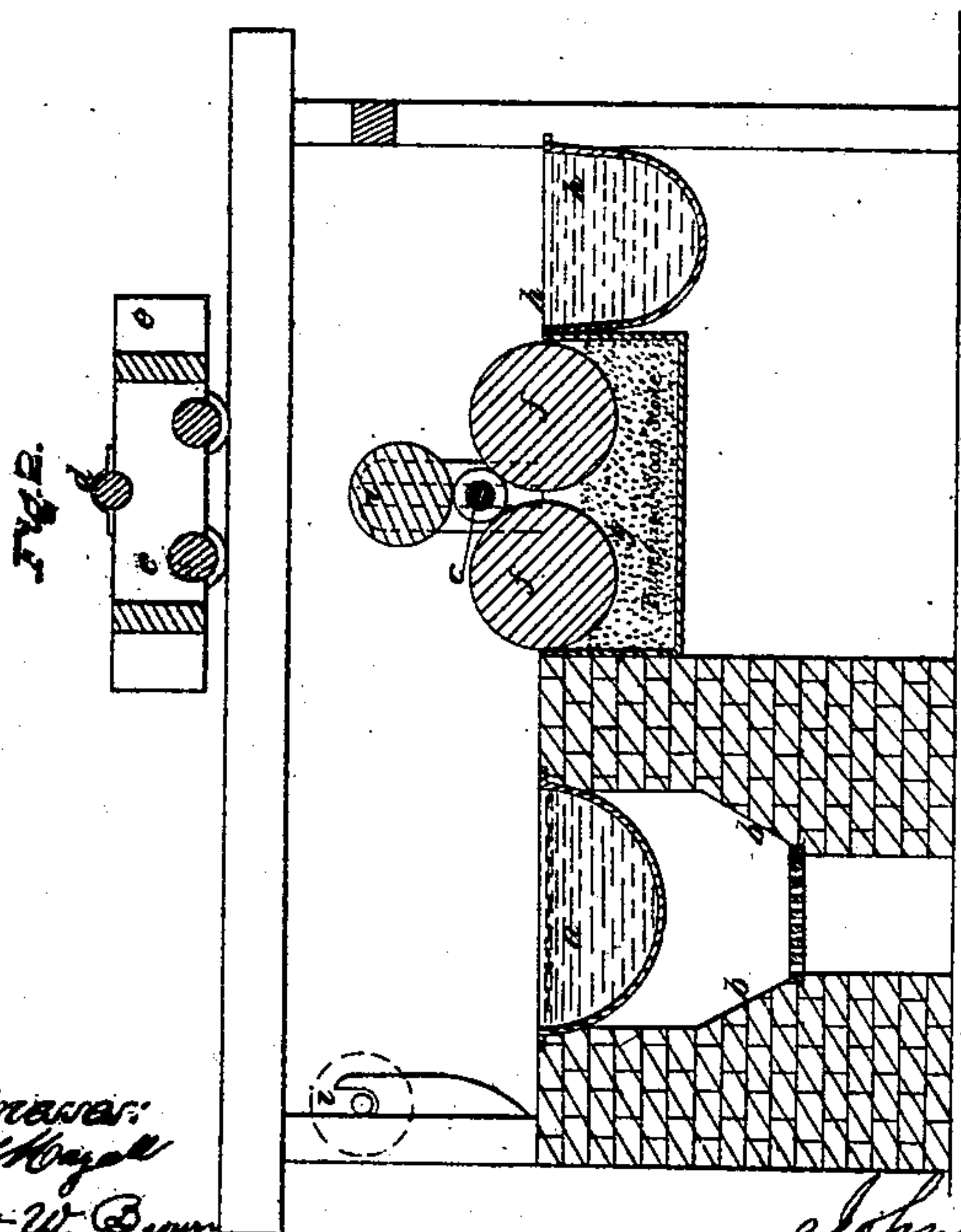
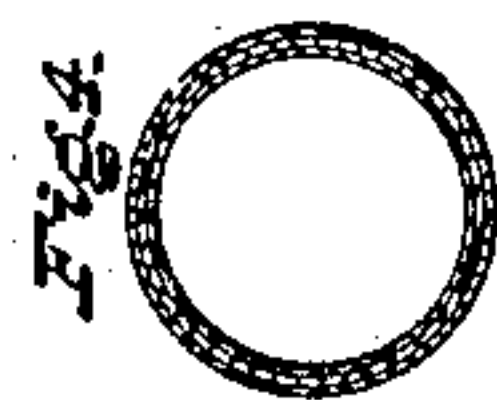
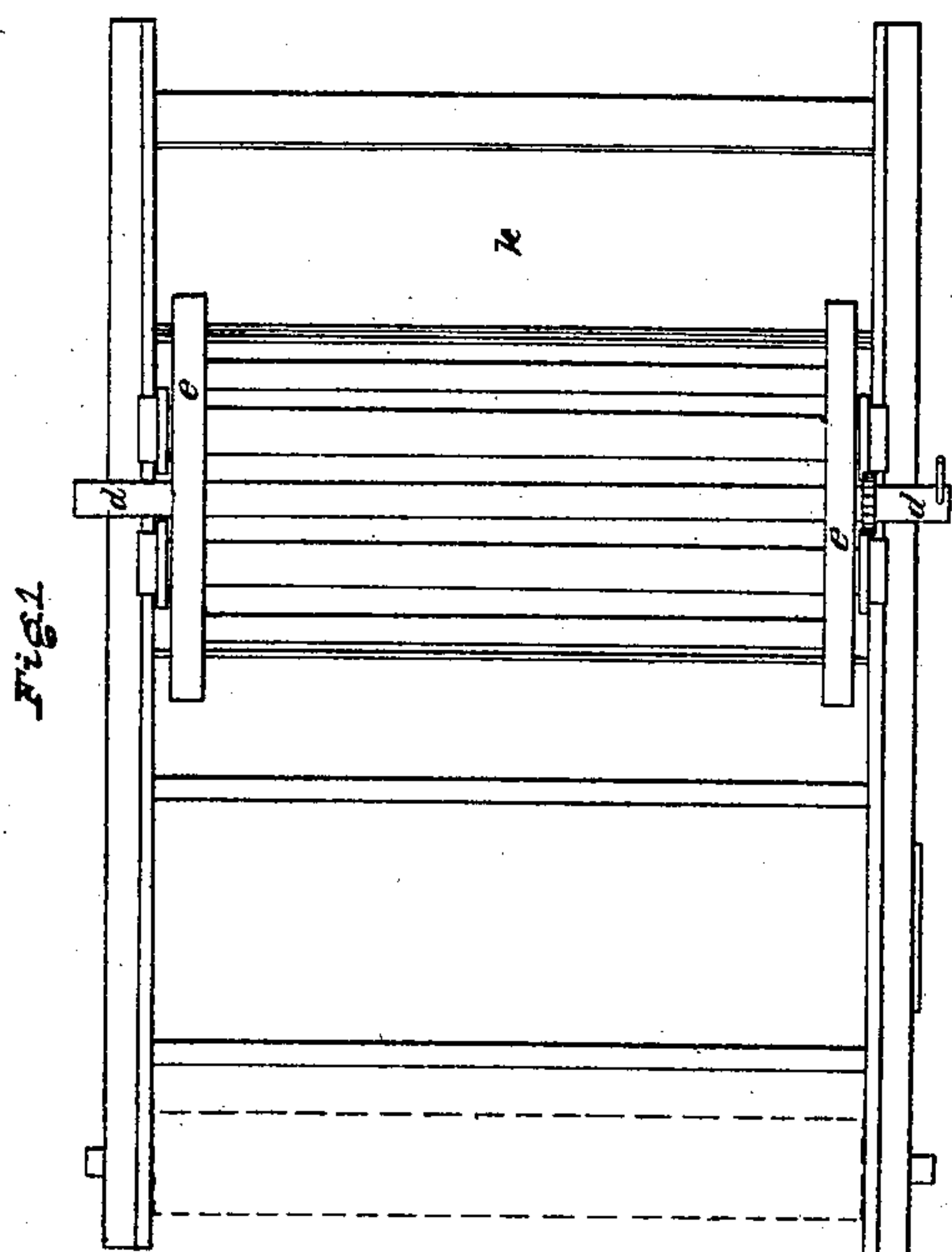


J. HOWARTH.
MACHINE FOR MAKING CEMENT PIPES.

No. 39,233.

Patented July 14, 1863.



Witness:
H. H. Knappe
Albert W. Brown

Inventor:
John Howarth

UNITED STATES PATENT OFFICE.

JOHN HOWARTH, OF SALEM, MASSACHUSETTS.

IMPROVED MACHINE FOR MAKING CEMENT PIPES.

Specification forming part of Letters Patent No. 39,233, dated July 14, 1863.

To all whom it may concern:

Be it known that I, JOHN HOWARTH, of Salem, in the county of Essex and State of Massachusetts, have invented a new and useful apparatus for manufacturing air-tight and water-proof tubes or pipes; and I do hereby declare that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The present invention consists in a new arrangement of mechanical devices for the formation of such gas pipes, water-pipes, &c., as are composed largely of bituminous cement, its object being to render their manufacture more perfect than those heretofore used, and to increase the rapidity of their production by improved machinery.

No apparatus has heretofore been devised by which long pipes of this character of small bore could be successfully made, and one part of my improvements is especially designed to render feasible the manufacture of such pipes.

The figures of the accompanying plate of drawings represent my improvements.

Figure 1 is a plan or top view of my apparatus. Fig. 2 is a longitudinal central vertical section of the same. Fig. 3 is a side elevation. Fig. 4 is a sectional view of a finished pipe.

I form the various-sized pipes from sheet-metal by lapping the sheet around a former, and making what is called a "lock-joint." I also take pipes of wood or of pasteboard, or I form pipes of paper by passing paper through a solution of flour paste and gum or glue, and then winding it around a smooth polished roller until the required thickness is attained. These pipes of sheet-metal, wood, or paper are then immersed in a hot bituminous cement in a vessel, *a a*, placed over a furnace, *b b*, and then held in a vertical position until the surplus material runs off, leaving the inner and outer surface of the pipes coated with the compound. When the pipes are sufficiently cool, I take two of them of slightly different bores and dip one end of each into the hot cement,

and then slip the small end of one into the large end of the other. When these have become set additional sections of pipe are added to them until the required length is obtained. One of these lengths of pipe then has passed through it a rod or shaft, *c c*, and is revolved in the cement in the vessel *a a*. It is then lifted out by a windlass, *d*, on a traveling carriage, *e e*, carried forward and let down between two polished metal rollers, *f f*. These rollers *f f* revolve in a trough, *g*, containing soapstone dust, which prevents the bituminous cement from adhering to them. They are placed side by side, and not only sustain the pipe placed on the rod *c c*, and keep it always in position, but, by their revolution, form the outer periphery thereof, so as to make it smooth, firm, and uniform. The rollers *f f* are kept rotating until the cement is sufficiently formed and hardened upon the pipe, when the latter is again raised by the windlass *d*, passed over the vessel *a a*, and another coating of cement applied. The pipe thus coated is then again submitted to the lateral rollers *f f*. This operation is continued until the pipe obtains the requisite external thickness, when it is lifted from the rollers *f f*, carried to a trough, *h h*, containing cold water, and revolved therein until it becomes cool, when it is completed.

The forming of small-bore pipe has heretofore proved impracticable, owing to its springing and warping. To obviate this difficulty, I employ a roller, *i i*, in combination with the rollers *f f*. The roller *i i* is placed directly over, and rests upon, the pipe to be formed and holds it down upon the said rollers in such a manner that it is firmly kept in position between the three rollers *f f* and *i i*, and thus prevented from springing or warping, whatever its length, or however small its bore may be. The degree of pressure exerted upon the pipe by the roller *i i* may be adjusted by means of a pawl and ratchet upon the windlass *d*.

The bituminous cement used may be made as follows: To one hundred pounds of gas-tar evaporated to the state used for roofing, or so that it will become hard, but not brittle, when cold, I add from twenty to fifty pounds of sifted anthracite or bituminous coal-ashes, according to the different sizes of pipes, the smaller pipes requiring less ashes than the larger ones.

Having thus described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. Forming the exterior of the pipe, and holding and sustaining it while being so formed upon its rod or shaft, by means of two lateral rollers operating therewith, substantially as described.

2. In combination with the two lateral rollers operating upon the pipe, as described, the top or third roller, *i i*, for the purpose specified

JOHN HOWARTH.

Witnesses:

THOS. J. MAYALL,
JOSEPH GAVETT.