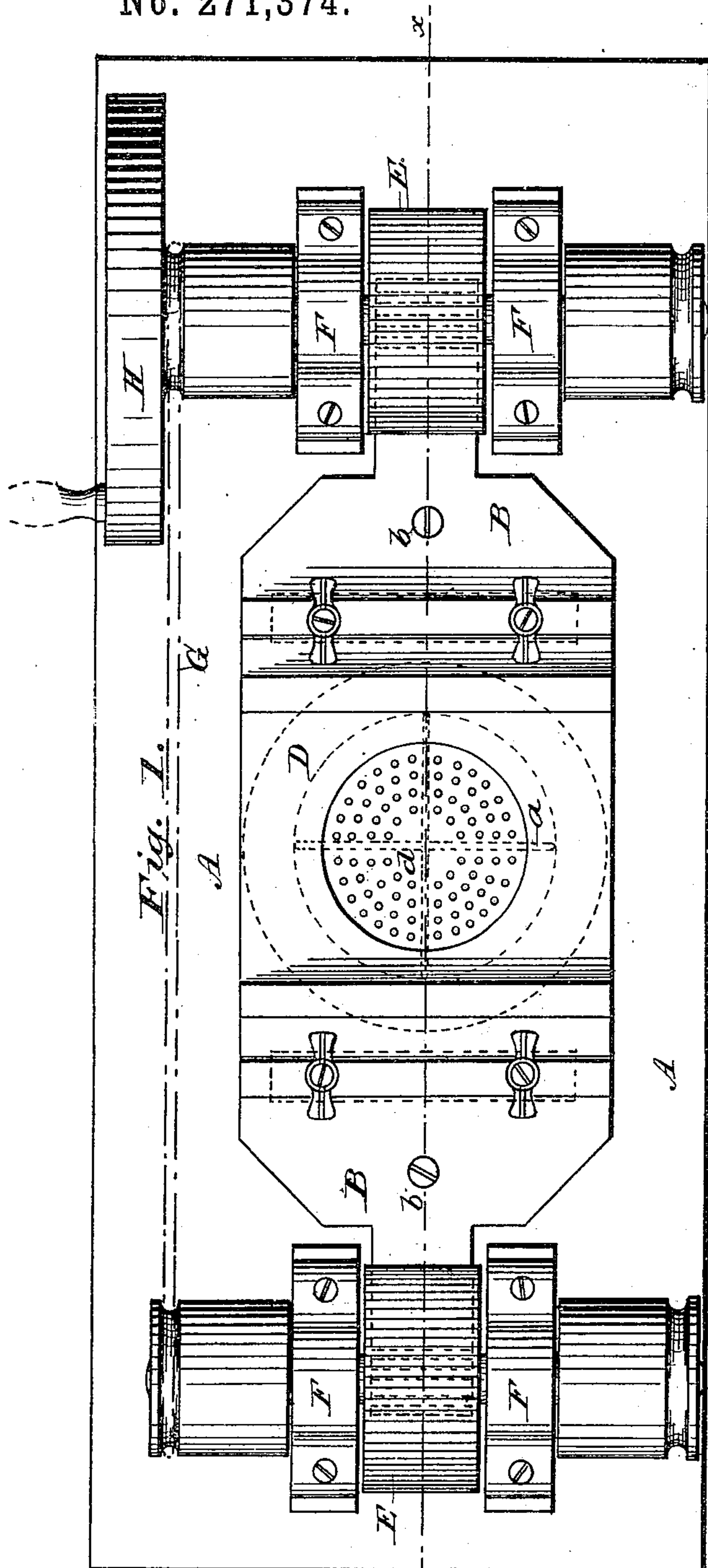


(No Model.)

E. SHIVER.
SHOT MACHINE.

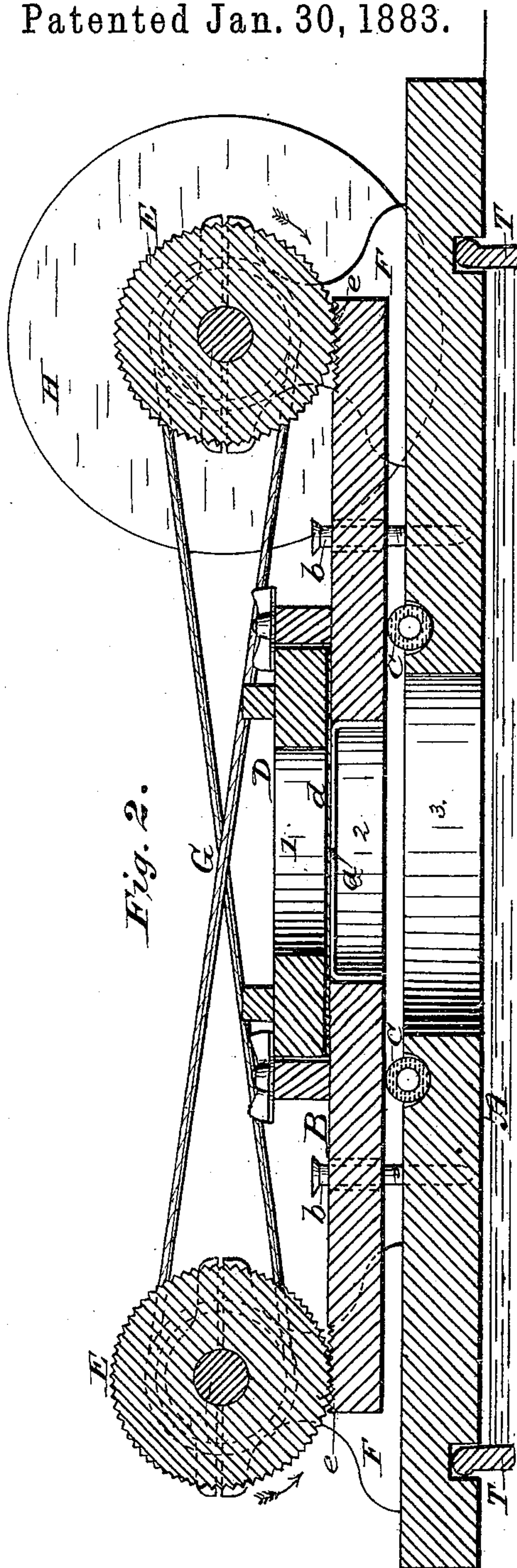
No. 271,374.

Patented Jan. 30, 1883.



Witnesses:
S. F. Kelleher.

Alex. Simon.



Inventor:

Elisha Shiver

By J. C. Brecht.
Attorney.

UNITED STATES PATENT OFFICE.

ELISHA SHIVER, OF WASHINGTON, D. C., ASSIGNOR TO ROBERT B. DONALDSON AND WILLIAM T. KEENAN, BOTH OF SAME PLACE.

SHOT-MACHINE.

SPECIFICATION forming part of Letters Patent No. 271,374, dated January 30, 1883.

Application filed November 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, ELISHA SHIVER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Shot-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in the apparatus for the manufacture of what is termed "drop-shot" without the use and expense of a shot-tower; and the object is to produce a better quality and more uniform-shaped shot, and to do this in an expeditious and economical manner.

My invention consists in certain new and useful improvements upon the invention patented to me June 8, 1880, No. 228,481, and it is mainly in the improved manner of imparting a vibratory motion to the sieve-frame by means of laterally-arranged rubber springs instead of spiral or elliptic springs, which give an uneven motion.

It also consists in certain details of construction, all of which will be more fully described hereinafter, and more specifically pointed out in the claims, reference being had to the accompanying drawings and the letters of reference marked thereon.

Like letters refer to like parts in the different figures of the drawings, in which—

Figure 1 represents a plan view of my machine. Fig. 2 is a longitudinal section on line *x x*.

In the drawings, A is a frame, to be placed or adjusted upon the water-tank in which the shot are to be cooled. Upon this frame is suspended the sieve-frame B by means of two springs, C, made of rubber and preferably of tube form, so as to impart greater elasticity to them. It is loosely secured to the frame by screws *b*, so that it can loosely vibrate around them. A sieve-box, D, similar to that shown in my former patent, is attached to the sieve-frame, and between them is placed the bottom *d*, made preferably of mica. In these

parts are arranged a series of holes, 1, 2, and 3, through which the metal and the shot pass into the water-tank T. On each end of the sieve-frame are arranged a series of corrugations or serrations, *e*, with which the wheels or rollers E E engage. These wheels are corrugated or fluted, and are journaled in suitable bearings, F, and are arranged so as to revolve toward each other by means of a cross-belt, G, so that the shot are shaken toward each other instead of from each other, as in my former patent. The bottom is provided with holes of different sizes to suit the size of shot it is desired to make.

The machine may be operated by means of a hand-wheel, H, or by steam or other power.

I prefer to place two cross-bars, *a*, under the central part of the sieve to strengthen it.

Any suitable metal may be employed for the purpose of making the shot.

The operation is as follows: Molten metal (lead, &c.) is poured upon the central part of the sieve-box, and flows around over the surface thereof, when the drops or pellets of metal drop through the perforations and fall immediately into the water, and are retained in the suspended sieve. At the same time a vibrating motion is imparted to the sieve-frame by means of the fluted rollers and the serrations *e* on said frame and the rubber springs C, whereby the molten metal in the sieve-box is kept in a constant agitation or vibration, thus insuring its proper discharge through the sieve. The shot are then placed in a polishing-machine, where they receive a constant rolling motion, and are made perfectly round while being polished at the same time, thus forming a very superior quality of shot.

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

1. In a shot-machine, the combination of the cylindrical rubber springs with the vibratory frame and sieve-box with a perforated bottom, *d*, arranged substantially as specified.

2. The combination, in a shot-machine, of the vibratory frame B and sieve-box D, having mica bottom *d*, perforated as shown, with

the cylindrical rubber springs C and the fluted rollers E, substantially as and for the purpose herein set forth.

5 3. The combination of the vibratory frame supported at each end upon cylindrical rubber springs, and operated by means of fluted rollers acting upon serrated portions on the vibratory frame, and said rollers operated by a cross-

belt, G, substantially as and for the purpose specified. 10

In testimony whereof I hereby affix my signature in presence of two witnesses.

ELISHA SHIVER.

Witnesses:

W. T. KEENAN,

ALEX. SIMON.