J. G. OLIVER.

APPARATUS FOR MOLDING CLAY TOBACCO PIPES.

No. 182,951. Patented Oct. 3, 1876.

Fig. 1.

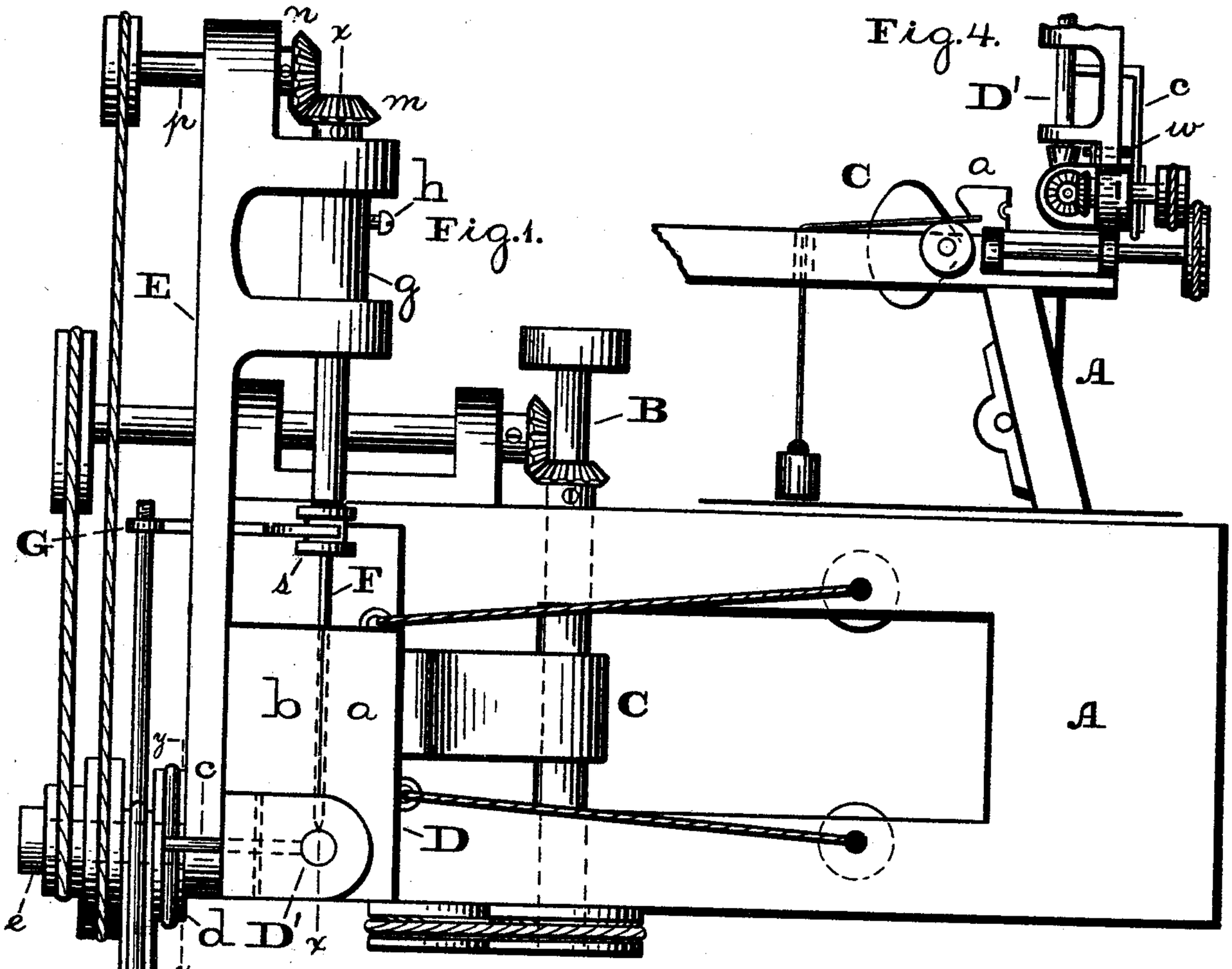


Fig. 4.

Fig. 2.

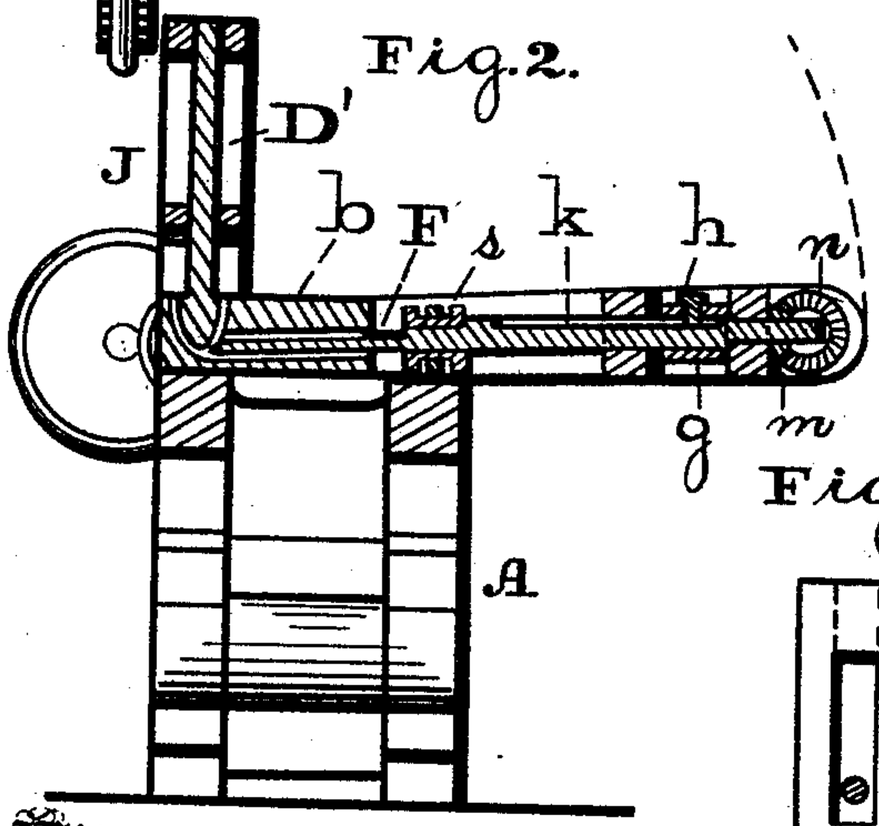


Fig. 5.

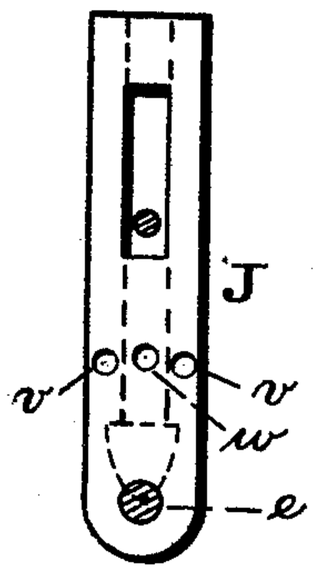
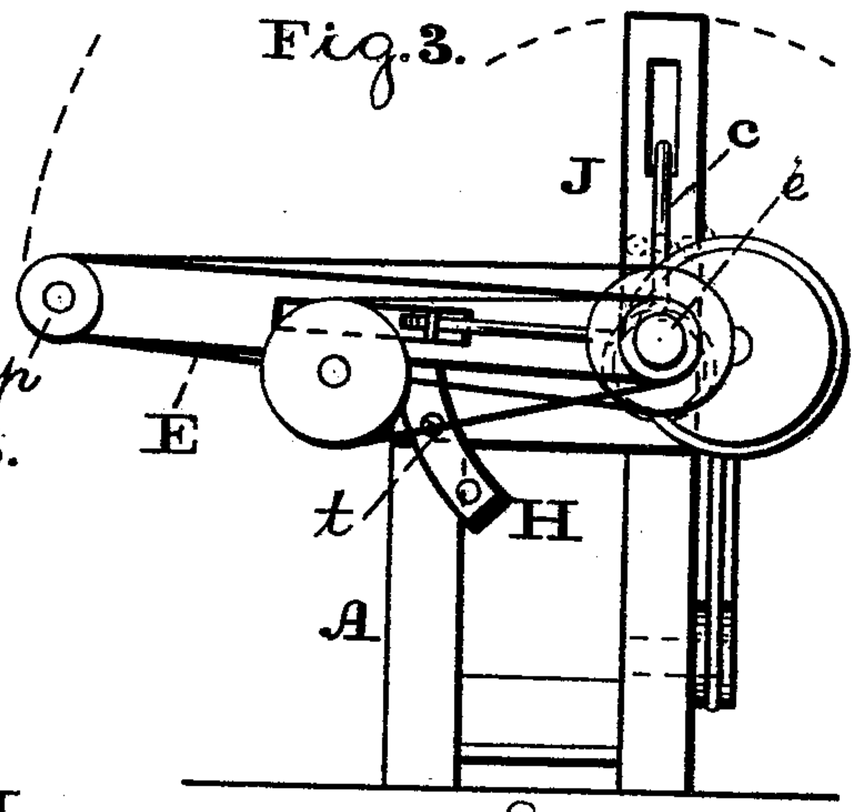


Fig. 3.



Witnesses:

Lewis F. Brous,

A. P. Grant.

Inventor:

Joseph G. Oliver.

by John A. Diedersheim.

Attorney.

UNITED STATES PATENT OFFICE.

JOSEPH G. OLIVER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN APPARATUS FOR MOLDING CLAY TOBACCO-PIPES.

Specification forming part of Letters Patent No. **182,951**, dated October 3, 1876; application filed March 29, 1876.

To all whom it may concern:

Be it known that I, JOSEPH G. OLIVER, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Apparatus for Molding Clay Tobacco-Pipes; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a top or plan view of the apparatus embodying my invention. Fig. 2 is a transverse section in line *x x*, Fig. 1. Figs. 3 and 4 are views of opposite ends thereof. Fig. 5 is a view of a detached portion in the section *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

My invention has for its object the molding of clay tobacco or smoking pipes; and it consists of a plunger, which is mounted on an axial frame, so that it may be set at various angles relatively to the set or angle of the pipe-bowl to be molded.

It also consists of a borer having rotary and sliding motions for piercing the stem of the pipe, so as to form the bore thereof, the borer being mounted on an axial frame, so that it may be set at various angles relatively to the set or angle of the pipe-stem to be molded.

It also consists of the combination of an adjustable bowl-plunger and an adjustable stem-borer, whereby the two parts may be adjusted relatively to each other, so as to form both a bowl and its stem of any desired set or angle.

Referring to the drawings, A represents a frame or support, on which is mounted the main shaft B, to which power will be communicated in any well-known manner. On the shaft B there is secured a cam, C, which is adapted to come in contact with a sliding portion or section *a* of the mold D, which section, with the fixed section *b*, is supported on the frame A, the said sliding section receiving closing motion from the cam C, and opening motion by means of springs or weights suitably applied, although the cam may be so constructed and connected to the said section as to impart motions thereto in both directions. On each inner face of the sections of the mold there will be impressed the shape of half of the bowl and stem of a pipe of the order known as smoking or tobacco. D′ represents a plunger, whose head is of the contour of the inner face or opening of the bowl of the pipe to be molded. Motions will be imparted to the plunger in the present case by means of an arm or rod, *c*, connected to a yoke which encircles an eccentric, *d*, mounted on a shaft, *e*, which receives rotary motiou from the main shaft or otherwise by suitable intermediate gearing. To the frame A, at the end at which the plunger is located, there is pivoted a frame, E, which extends at a right angle to the longitudinal direction of the frame A, and ou said frame E there is mounted a borer or wire, F, which extends transversely and toward the mold D. A portion of the borer passes through a sleeve, *g*, which is mounted on the frame, and carries a screw, feather, or key, *h*, which projects into a longitudinally-extending groove, *k*, in the borer, as more clearly shown in Fig. 2. The borer also passes loosely through a bevel-gear wheel, *m*, which gears with a similar wheel, *n*, whose shaft *p* is mounted on the outer end of the arm E, and receives motion from an eccentric on the shaft *e* by means of a belt, band, or otherwise. To the borer there is secured a collar, *s*, to which is connected an arm, G, which receives reciprocating motions from an eccentric mounted on the shaft *e*. By these means rotary and reciprocating sliding motions will be imparted to the borer.

As has been stated, the frame E is pivoted or has an axis at one end, whereby the frame may be raised and lowered, so as to impart different angles to the borer F.

In order to hold the frame in its adjusted position it has secured to it a segmental arm, H, formed with a series of openings, in which is fitted a screw, *t*, passing into the adjacent portion of the frame A. The standard or upright J has a pivotal connection to the frame A, so that it may be moved laterally, and thus set the plunger at various angles. A series of openings, *v*, will be formed in the standard, so that by a pin or screw, *w*, passed through one of the same into an adjacent plate

the plunger will be held in its adjusted position.

In order that the gearing for the borer and plunger operate the same, regardless of the various adjustments thereof, the frame E and standard J will be mounted at a common axis or point to the frame A, which axis or point in the present case is the shaft *e*.

The operation is as follows: The mold will be opened and the clay fed thereto in any proper manner, care being taken to oil the clay or mold in order to prevent subsequent sticking of the clay to the mold. Power being applied to the main shaft, the sliding section of the mold is closed against the fixed section, thus molding the outside shape of the pipe. Then the plunger descends, thus forming the cavity of the howl, and the borer enters the stem of the pipe, so as to pierce the bore therein.

It will be seen that the borer has rotary and sliding motions, so as to properly bore into or penetrate the stem of the pipe, and produce a perfect bore. The mold now opens, the plunger ascends from the bowl, and the borer withdraws from the stem. The molded pipe may then be withdrawn. A fresh supply of clay will be passed to the mold, the latter then closes, the plunger descends, and the borer advances, the operations being the same as has been stated.

When the set of the bowl is to be at an acute or obtuse angle to the stem, the standard of the plunger will be adjusted, so that when the plunger descends it will form the cavity of the bowl relatively to the angle at which the bowl is set. The stem may also be made at various angles to the bowl. For this purpose the frame E will be adjusted so that the borer F will advance or bore into the stem relatively to the angular direction of the latter.

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

1. In a tobacco-pipe molding apparatus, the plunger, mounted on an axial frame, so as to be adjustable to the angle of the bowl to be molded, substantially as and for the purpose set forth.

2. The borer F, having rotary and sliding motions, and mounted on the axial frame E, substantially as and for the purpose set forth.

3. In a tobacco-pipe molding apparatus, an adjustable bowl-plunger and adjustable stem borer or wire, combined and operating substantially as and for the purpose set forth.

JOSEPH G. OLIVER.

Witnesses:

JOHN A. WIEDERSHEIM,

H. E. HINDMARSH.