

(No Model.)

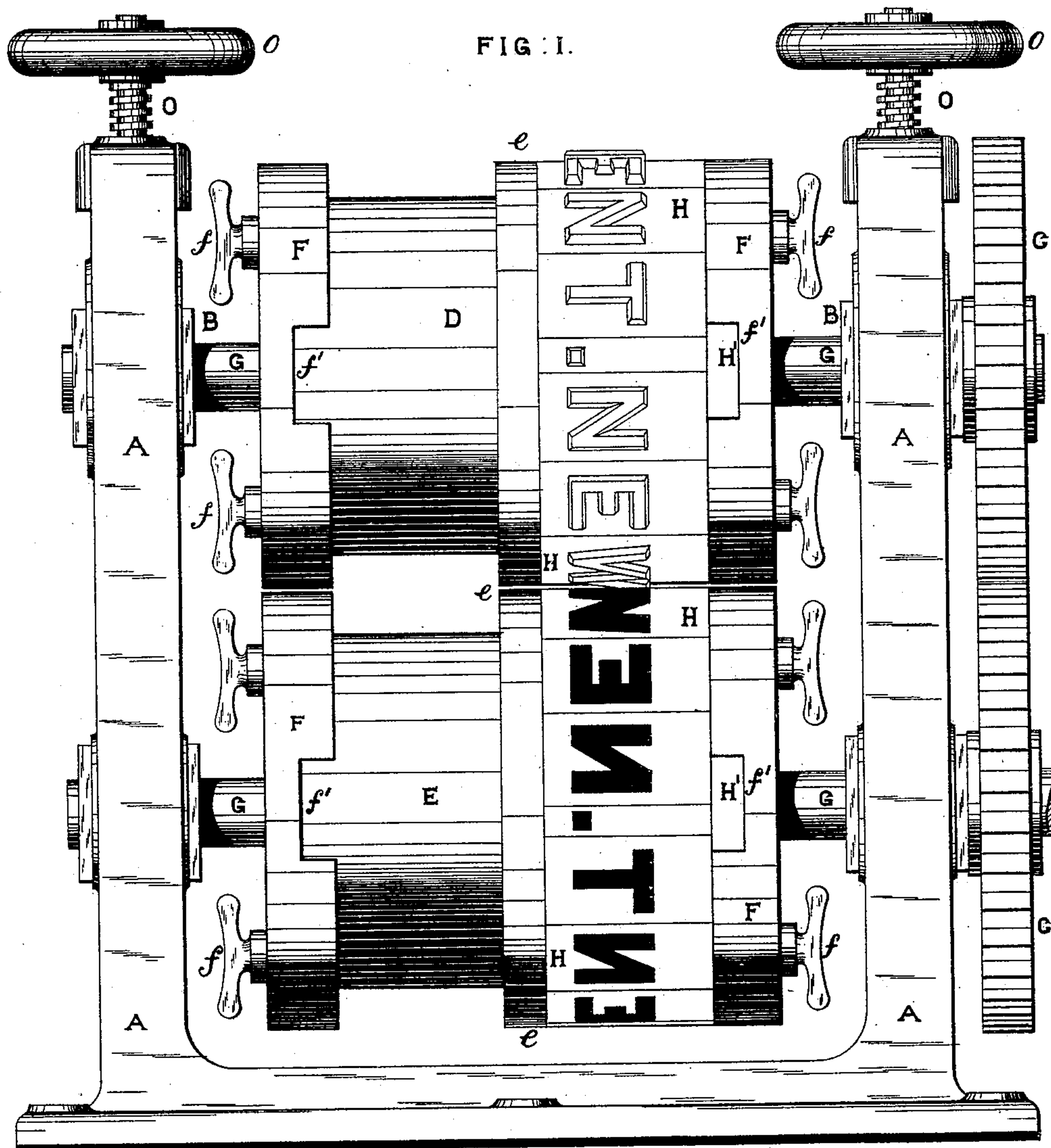
3 Sheets—Sheet 1.

J. M. NEWTON.

APPARATUS FOR PRODUCING LETTERING, &c., IN RELIEF ON SHEETS  
OF DUCTILE METAL.

No. 482,267.

Patented Sept. 6, 1892.



WITNESSES

*William H. Taylor*

*Chas. Orendale.*

INVENTOR

*John M. Newton*  
*Wm. F. Thompson*  
*attys*

(No Model.)

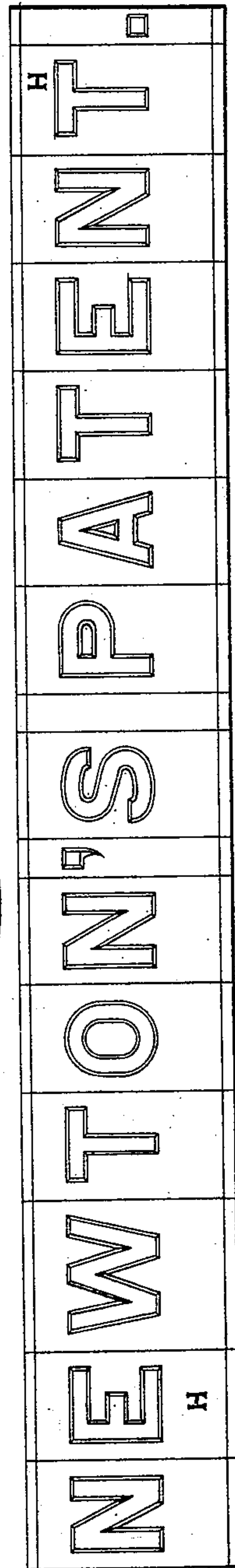
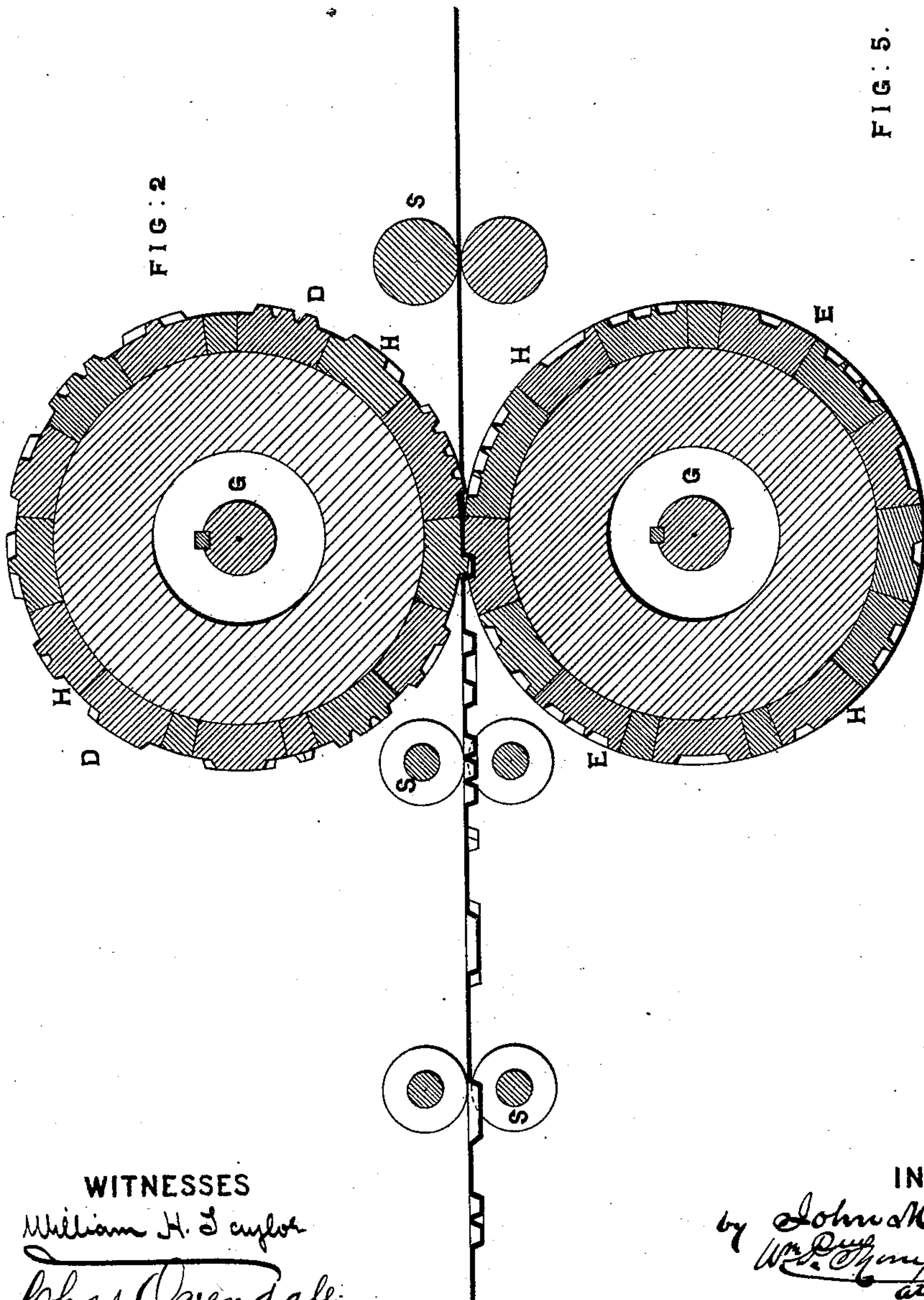
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WITNESSES  
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(No Model.)

3 Sheets—Sheet 3.

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FIG. 3.

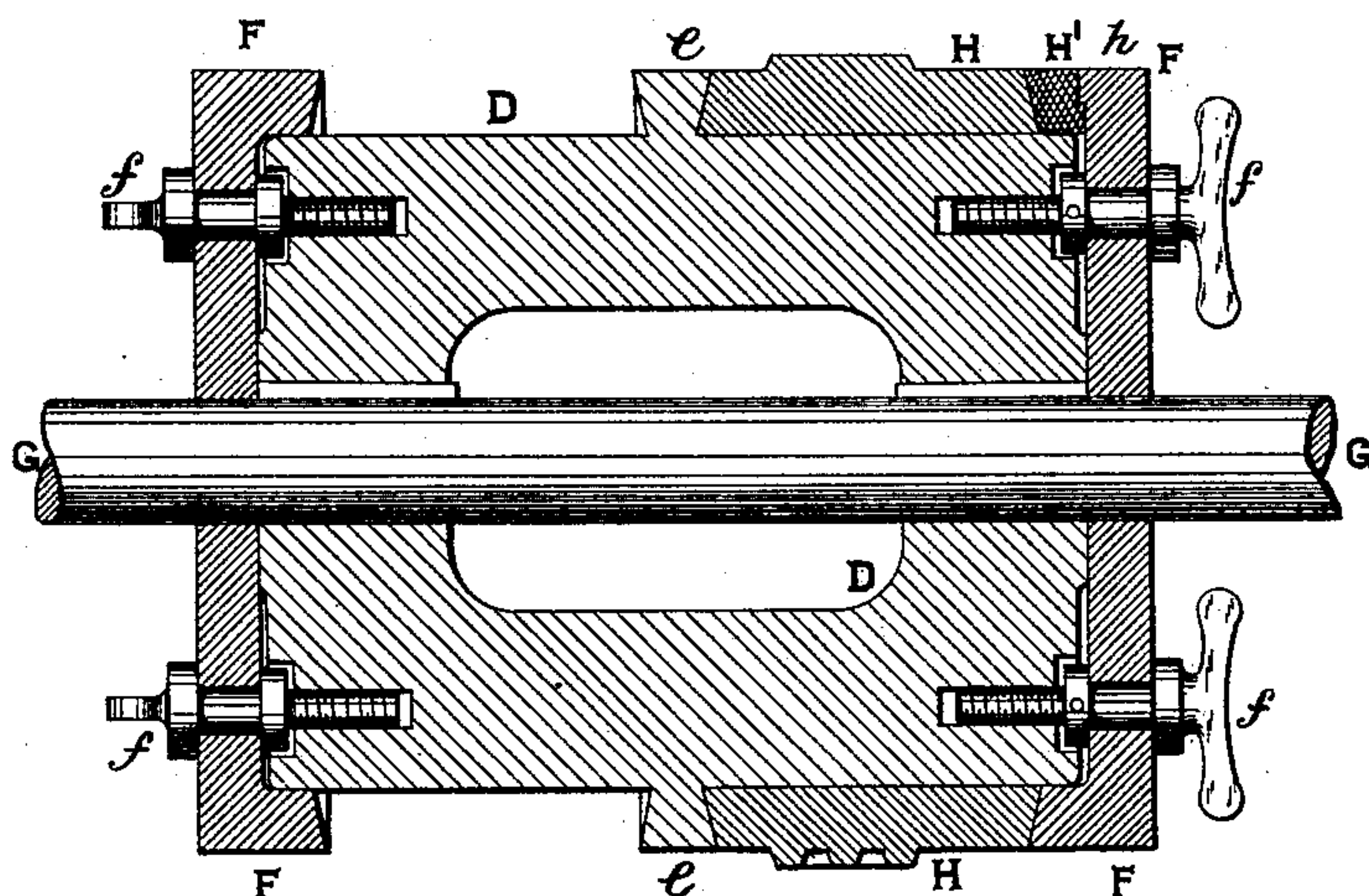
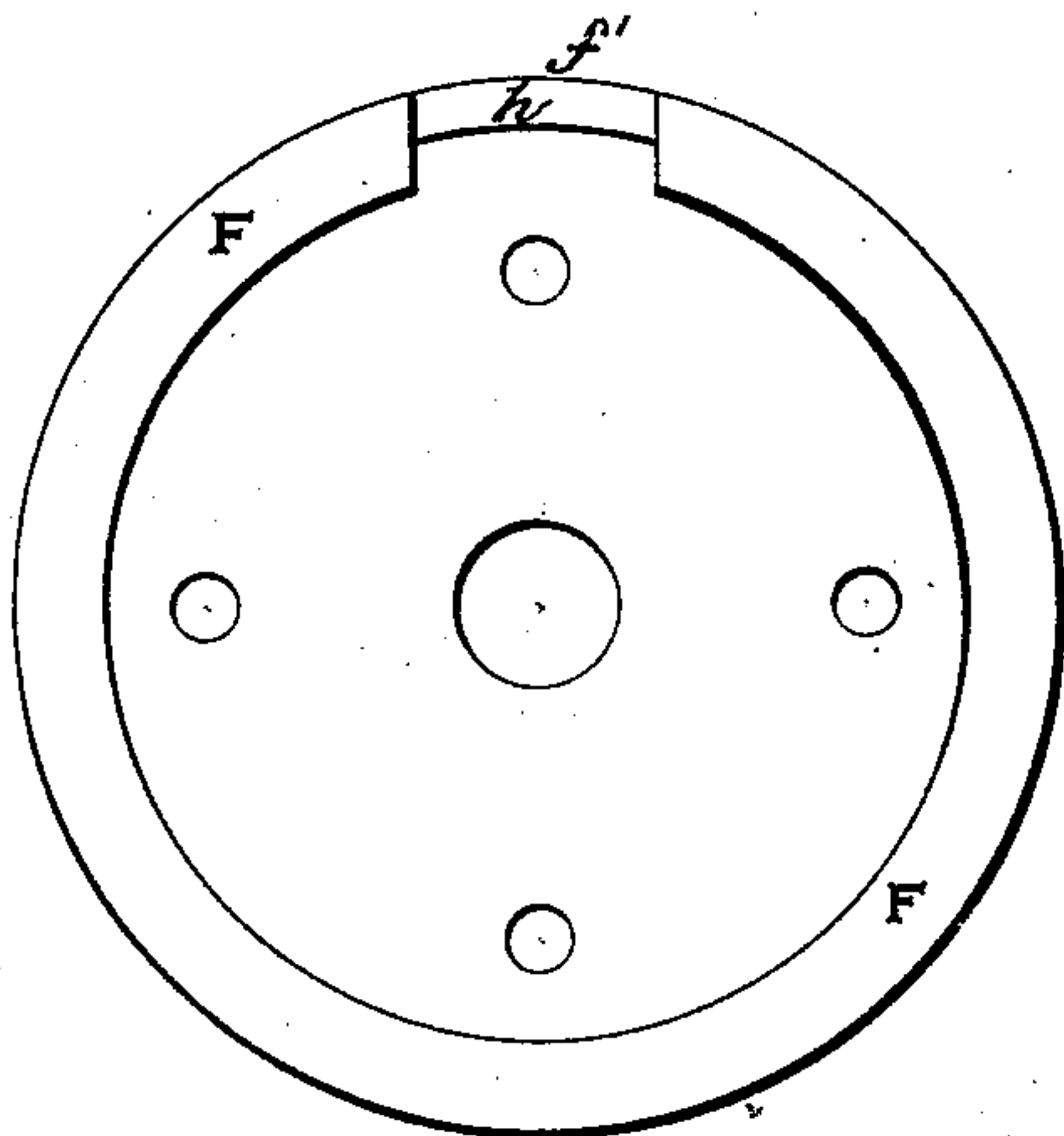


FIG. 4.



WITNESSES

*William H. Taylor*  
*Chas. Orendale.*

INVENTOR

*by John M. Newton*  
*Wm. P. Thompson*  
*attys*



# UNITED STATES PATENT OFFICE.

JOHN M. NEWTON, OF STALYBRIDGE, ENGLAND, ASSIGNOR OF FIVE-TWELFTHS TO JOHN EDWARD GIMSON AND ARTHUR NEWTON, OF SAME PLACE.

APPARATUS FOR PRODUCING LETTERING, &c., IN RELIEF ON SHEETS OF DUCTILE METAL.

SPECIFICATION forming part of Letters Patent No. 482,267, dated September 6, 1892.

Application filed November 3, 1891. Serial No. 410,766. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN MORRIS NEWTON, a subject of the Queen of England, residing at Stalybridge, in the county of Chester, Eng-

land, have invented certain new and useful Improvements in Apparatus for Producing Lettering, Figuring, and Designs in Relief upon Sheets of Ductile Metal, of which the following is a specification.

This invention is designed, chiefly, for application to the making of sign and notice plates, name-tablets, and the like—such as tradesmen's shop-signs, street-name tablets, large name-plates for warehouse or office doors and railway-stations, or other signs, nomenclature-plates, or advertising-tablets—its principal object being to produce in an expeditious manner tablets or plates on which the lettering will stand out in relief, though it is applicable and may be applied to the figuring or ornamenting of ductile metal plates with any suitable ornamental designs. Hitherto such sign-boards, plates, or tablets, with letters standing upon the surface, have been made by screwing or otherwise attaching separate letters to a wooden board or metal plate, by casting letters and plate in one piece, or the letters have been stamped out by a press or beaten out by hand, all of which methods of production are slow and consequently costly.

This invention consists, essentially, in apparatus for producing in relief upon sheets or strips of ductile metal lettering, figuring, or ornamental designs by rolling the sheets or strips between rolls carrying the dies upon their peripheries, the apparatus comprising rolls carrying male and female dies of the letters, figures, or designs to be produced, the rolls revolving synchronously, so that the complementary dies will always approach together and when under pressure exactly coincide.

The invention will be fully described with reference to the annexed drawings.

Figure 1 is a front elevation; Fig. 2, a transverse sectional elevation; Fig. 3, a longitudinal section of one roll with one ring of dies in position; Fig. 4, an end elevation of ring for securing the dies in position; Fig. 5, an extended

plan of male dies for the name "Newton's Patent."

The rolls D and E, which carry the dies, are mounted on shafts G, journaled in bearings on any suitable framing or housing A, the bearings B of the top roll being adjustable vertically in the housing or framing. The rolls D and E are geared together by toothed wheels C, and the dies H are fixed or attached to the rolls with the back of each die resting on the periphery of its roll. One set of dies, preferably the male dies, are carried by the top roll D and the complementary set, preferably the female dies, are carried by the other or lower roll E.

The lettering or figuring or design upon the face of the dies H may be of any convenient size, according to what is required to be produced. The dies H are each separate and are movable and readily interchangeable, so that any combination of them to produce a given word or name may be quickly assembled in position. The dies H are preferably made by being cast in the form of a cylinder and bored out internally to the diameter of the roll upon which they are to be placed and then cut up into separate pieces of the required number. The ends of the dies H are each made beveled, broader at the bottom than the top, to fit into a dovetail groove, by which they are secured in position on the periphery of the rolls.

The top and bottom rolls D and E are similar in construction and are preferably constructed to receive two rings or sets of dies side by side. Each roll is formed with a ring or abutment *e* in the center, with a beveled face on each side, against which one end of each die fits. On each end of the roll is a securing ring or cover F, which fits over the end like a cap, the inner face being beveled to engage with the ends of the dies. The securing-rings F are attached to the roll by the clamping-screws *f*, by which they can be tightly screwed up against the dies, and thus be firmly secured when in position.

In the face of each of the securing-rings F is formed a recess *f'*, wide enough to allow the dies H to enter, through which the dies are inserted one at a time into position on the



periphery of the roll. The recess  $f'$  is filled when the required number of dies have been inserted with a loose key-segment  $H'$ , beveled on the front face to correspond with the bevel on the face of the ring  $F$  and formed at the back with a narrow shoulder  $h$ , by which it is secured when the ring  $F$  is screwed up tight. The rolls are keyed or otherwise firmly secured to the shaft  $G$  and the rings  $F$  are loose thereon. The top roll is raised or lowered and set to any required distance from the bottom roll by the screws  $O$  and hand-wheels  $o$ .

It will be obvious that the rolls may be made to carry only a single set of dies by forming them with a fixed ring at one end and a movable ring at the other or to carry more than two sets of dies by providing one or more loose distance-rings similar to the ring  $e$ , but loose on the roll, which could be placed between the ends of the dies.

It will be obvious that the rolls may be made with a number of flats or sides, one for each die to rest upon, instead of cylindrical, in which case the back of the dies would be flat instead of curved and the face of the dies curved to such arc as to complete a given circle when all are in position, and also that the dies may be attached to the rolls in a variety of ways; but I prefer the arrangement shown.

At the back and front of the rolls guide-rollers  $S$  or other guides may be placed to give proper direction to the sheets or strips in passing in and out of the rolls and to prevent them buckling or curling. The guide-rollers at the delivery side of the rolls are preferably made to grip the edge of the plate as it passes out, so as not to press or flatten the lettering which has been impressed upon it. When the dies are secured in position on the rolls and the rolls set to the requisite gage, the sheet to receive the lettering or figuring is passed between the rolls in either a hot or cold state, as may be found most suitable. If desired, a molding or border may also be produced on the lettered signs or tablets simultaneously with the lettering by providing on the dies a bead and corresponding groove. It is also obvious that single letters or figures may be produced, as hereinbefore described, by first rolling them in a sheet or strip and then cutting or shearing them into lengths according to the size of the letter. Letters thus formed will have a flat margin all round, through which holes may be drilled or punched for the purpose of attaching them to boards or plates.

It is well known that letters, figures, and designs in relief have been produced upon ductile sheet metal by stamping or by beating or hammering by hand, and such forms no part of my invention, nor does printing with any prepared ink or color upon a surface from a type-carrying or engraved roller or cylinder.

What I claim, and desire to secure by Letters Patent, is—

1. In apparatus for producing or impress-

ing upon sheets of ductile metal lettering, figuring, or design in relief, the combination, with the rolls, of dies  $H$ , each in the form of a segment cut from a cylinder, having a letter or design formed thereon, and the securing-rings  $F$ , each cap shaped to fit over the end of the roll and provided with beveled faces which secure the dies on the roll, substantially as described.

2. In apparatus for producing or impressing upon sheets of ductile metal lettering, figuring, or design in relief, the combination, with a roll provided with a ring  $e$ , having beveled faces, of the dies  $H$ , having letters, figures, or designs thereon, substantially as and for the purpose described.

3. In apparatus for producing or impressing upon sheets of ductile metal lettering, figuring, or design in relief, the combination, with a roll provided with a ring  $e$ , of the movable cap-shaped rings  $F$ , which fit over the ends of the rolls, and the adjustable screws  $f$ , by which the rings are clamped, substantially as described.

4. In apparatus for impressing or producing upon sheets of ductile metal lettering, figuring, or design in relief, the combination, with the roll provided with a stationary ring  $e$  and dies  $H$ , of the movable rings  $F$ , provided with a recess  $f'$ , and the loose key-segment  $H'$ , substantially as described.

5. In apparatus for producing or impressing upon sheets of ductile metal lettering, figuring, or design in relief, the combination of the framing  $A$ , the shafts  $G$ , to which the rolls are affixed, the top and bottom rolls provided with a fixed ring  $e$ , which carry dies on their peripheries, the loose dies  $H$ , having a letter or design formed thereon, the securing-rings  $F$ , provided with beveled faces which hold the dies in position, and the adjusting-screws  $f$ , by which the securing-rings are held, substantially as described.

6. In apparatus for producing or impressing upon sheets of ductile metal lettering, figuring, or design in relief, the combination, with the framing  $A$ , the shafts  $G$ , which carry the rolls, and the top and bottom rolls  $D$  and  $E$ , upon the peripheries of which the dies are mounted and each provided with a ring  $e$ , with beveled faces, of the dies  $H$ , having a letter or design formed thereon, the loose movable securing-rings  $F$ , provided with beveled faces which hold the dies in position and formed with a recess  $f'$ , through which the dies are inserted, the loose key-segments  $H'$ , which fill the recesses  $f'$ , and the adjusting-screws  $f$ , which maintain the securing-rings in position, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 4th day of September, 1891.

JOHN M. NEWTON:

Witnesses:

WILLIAM H. TAYLOR,  
CHAS. OVENDALE.