

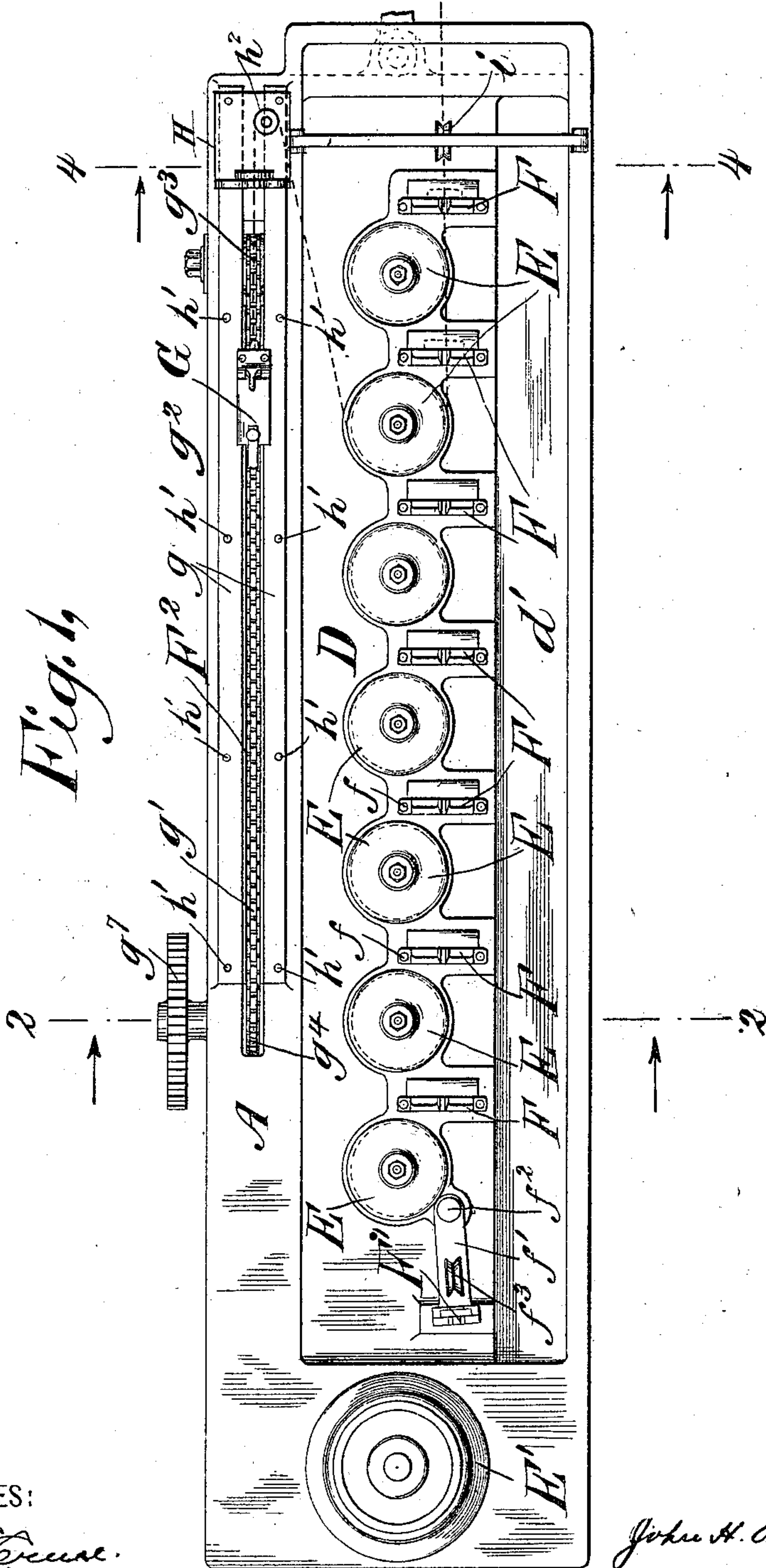
No. 725,472.

PATENTED APR. 14, 1903.

J. H. O'DONNELL.
WIRE DRAWING MACHINE.
APPLICATION FILED SEPT. 23, 1901.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

Geo. E. Cress.

R. A. E. Stary.

INVENTOR

John H. O'Donnell

BY

Dickerson, Brown & Raegner

HIS ATTORNEYS

No. 725,472.

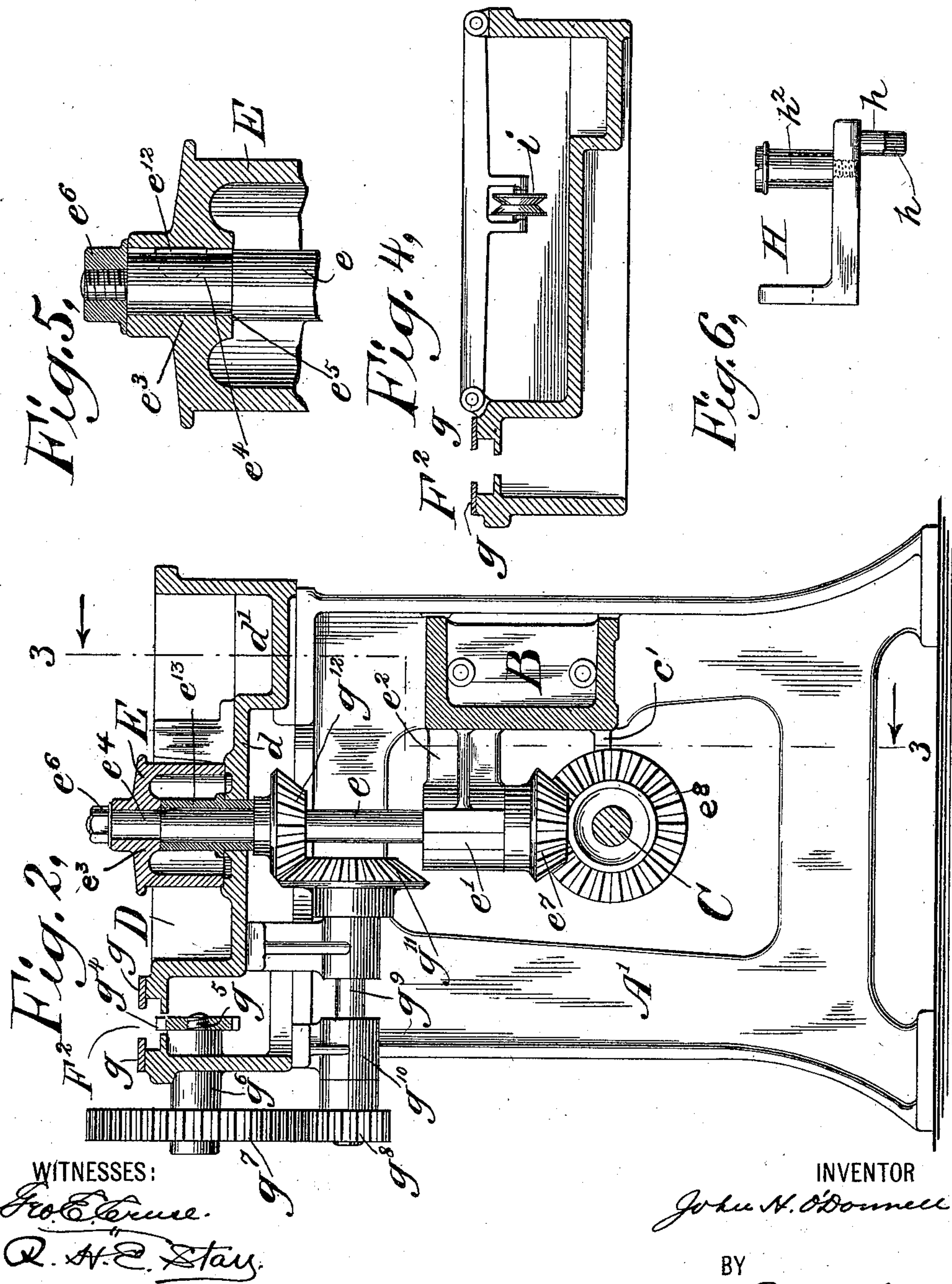
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3 SHEETS—SHEET 2.



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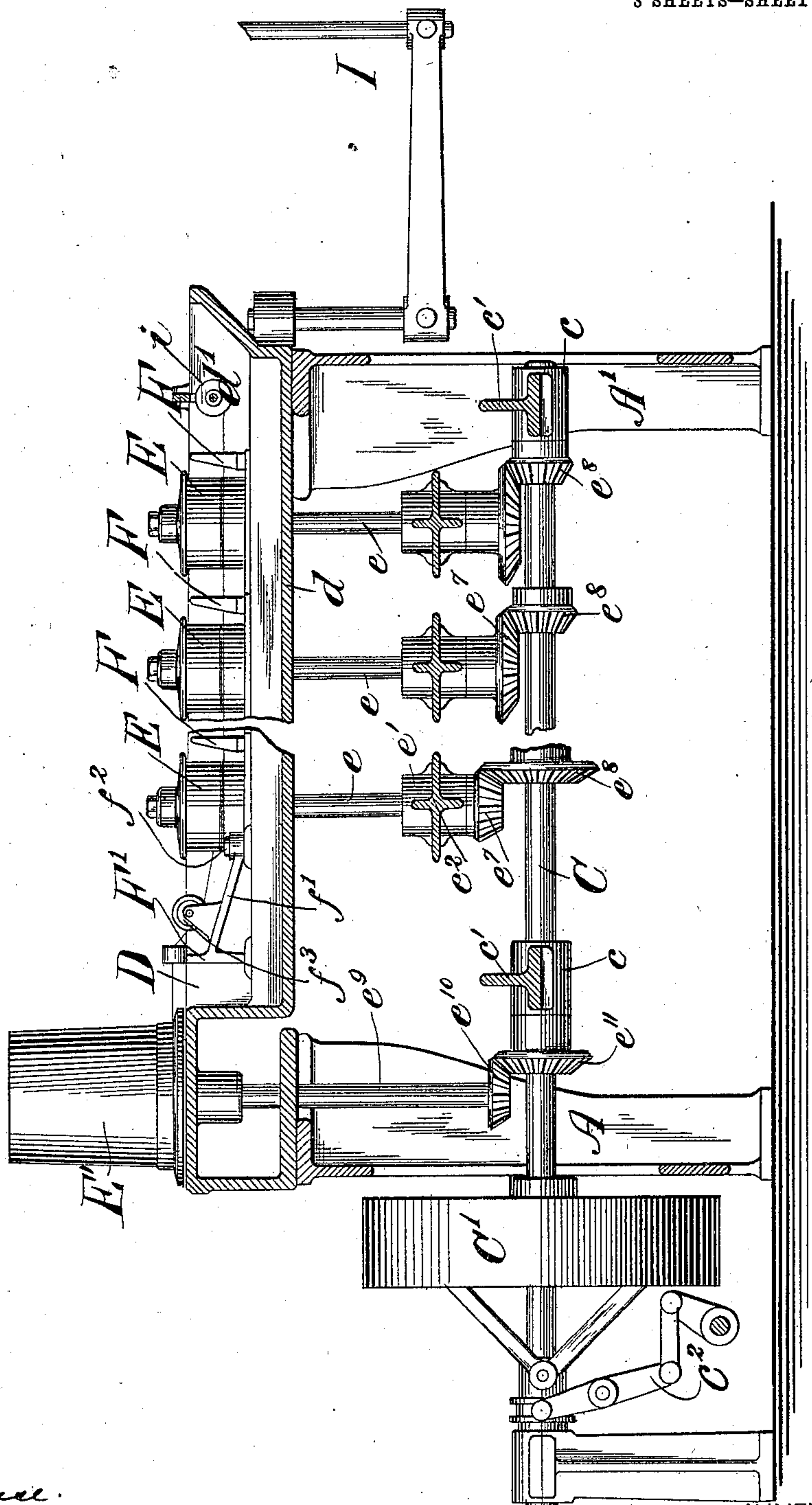
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NO MODEL.

3 SHEETS—SHEET 3.

Fig. 3,



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UNITED STATES PATENT OFFICE.

JOHN H. O'DONNELL, OF WATERBURY, CONNECTICUT.

WIRE-DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 725,472, dated April 14, 1903.

Application filed September 23, 1901. Serial No. 76,165. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. O'DONNELL, a citizen of the United States, residing in the city of Waterbury, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Wire-Drawing Machines, of which the following is a specification.

My invention relates to wire-drawing machines.

I will describe a wire-drawing machine embodying my invention and then point out the novel features thereof in the claims.

In the accompanying drawings, Figure 1 is a top plan view of a wire-drawing machine embodying my invention. Fig. 2 is a transverse sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is a longitudinal sectional view, broken away, taken on the line 3 3 of Fig. 2. Fig. 4 is a detail transverse sectional view taken on the line 4 4 of Fig. 3. Fig. 5 is a detail sectional view. Fig. 6 is a detail view.

Similar letters of reference designate corresponding parts in all of the figures.

A represents a table, and A' A² end legs for supporting the table. These parts constitute the main portions of the framework of the machine.

B represents a base part extending longitudinally of the table and having its ends fastened to the legs A' A².

C represents the main driving-shaft of the machine, which is mounted in suitable bearings *c*, carried by brackets *c'*, which are suitably attached to or formed integral with the base B. The shaft C is provided with the usual driving-pulley C', loosely mounted thereon, and a clutch, operated by a mechanism C² or some other mechanism the equivalent thereof, is provided to connect and disconnect the shaft and pulley.

The table A is provided with a longitudinal depressed portion D, forming a tank, which contains a liquid. The tank D is provided with an irregular bottom *d*, the irregularity being such as to provide for different depths in the tank. The purpose of having the tank D formed in this manner is to provide a receptacle for the dirt or other foreign matter in the liquid, and thus have it out of the way

of the wire passing through the dies. The dirt and other matter will settle in the deepest portion *d'* of the tank and will not be affected by the circulation of the liquid due to the rotation of the drawing heads or rolls.

E represents the drawing heads or rolls, a detail of one being shown in Fig. 5. Each head is mounted and held by a key *e*¹² upon a vertical shaft *e*, which is mounted and held in a suitable bearing *e'*, carried by a bracket *e*², which is integral with or suitably attached to the brace part B. Each head is provided with a sleeve portion *e*³ to receive a reduced portion *e*⁴ of a shaft *e*, and the head or roll is held on the shoulder *e*⁵ of the shaft by means of a nut *e*⁶. Each shaft where it passes through the bottom *d* of the tank D is surrounded by a bushing *e*¹³, which bushing extends up to the sleeve portion *e*³ to make a tight joint. All of the heads or rolls are submerged in the liquid in the tank, the purpose of which is to better lubricate the heads and wire passing around the heads or rolls. Also by having the heads or rolls arranged in a vertical manner and submerged in the liquid they do not throw the liquid beyond the limits of the tank D. Each shaft *e* is provided on its lower end with a bevel-gear *e*⁷, and for each bevel-gear *e*⁷ there is a gear *e*⁸ on the shaft C. The gears *e*⁷, as well as the gears *e*⁸, are of different sizes to produce different speeds of the heads or rolls, thereby compensating for the elongation of the wire. A vertical shaft *e*⁹ is also provided for the block E', and this shaft is rotated by means of gears *e*¹⁰ and *e*¹¹. The gear *e*¹⁰ is removably held on the shaft *e*⁹ in order that another gear of a different diameter may be substituted. The gear *e*¹¹ is also adjustable along the shaft C to compensate for the different-size gears *e*¹⁰ that may be put on the shaft *e*⁹. The purpose of this construction is to obtain different speeds for the block E'.

In advance of each head or roll E is a die-holder F, suitably secured within the tank D and to the bottom thereof by means of screws *f*. Each die-holder E is of such a height as to have the die carried thereby submerged. The die-holder F' in advance of the block E' is carried in a bracket *f'*, which is hinged or

pivoted at f^2 to the bottom of the tank D. The purpose of this is to have the die accommodate itself to the increasing diameter of the block E'. The wire before entering the die carried by the bracket f' passes about a pulley or roller f^3 , journaled on the bracket.

Extending longitudinally of the table A is an opening F^2 , forming a runway for a gripping device G, employed in stringing dies on a wire. The gripping device G may be of any desired construction, and it is provided with grooves or slots in its sides in which flanges g , carried by the table A, project. Traveling also in this runway is a sprocket-chain g' , with which a hook g^2 , carried by the gripping device G, engages. When this hook is in engagement with the chain and the chain is moving, the gripping device will be drawn along the runway. The chain g' passes around an idler-sprocket g^3 and around a driving-sprocket g^4 . The latter is fixed on a shaft g^5 , suitably journaled in a bearing g^6 , carried by the table A. The shaft g^5 is also provided with a gear g^7 , which meshes with a gear g^8 , carried by a shaft g^9 , suitably journaled in bearings g^{10} . The shaft g^9 is provided with a bevel-gear g^{11} , which meshes with a bevel-gear g^{12} , carried by one of the vertical shafts e .

In stringing the machine a sufficient length of wire is drawn through the coarsest die, and this die is preferably supported on a movable die-holder H, having pins h , which fit in openings h' , provided in the flanges g . Several openings arranged in pairs are shown in the flanges g , which permit of the holder H being placed in different positions along the flanges g . The holder H is also provided with a roll h^2 , about which the wire is passed to be in line for drawing through a die carried by the die-holder H.

I represents a hinged bracket for supporting a roll of wire which is to be drawn.

The operation of the machine, briefly stated, is as follows: The chain g' is started and the block H placed in a position on the flanges g . (See Fig. 1.) The coarsest die is then placed on the block H and a sufficient length of wire drawn through it to be wrapped or wound about the first head or roll, or the first and second heads or rolls, a number of times. The coarsest die is then placed in its holder in the tank D and the wire passed under a roll or pulley i and wrapped or wound about the first head or first and second heads, as the case may be. The wire is then passed around the roll h^2 of the block H, from the last head or roll about which the wire has been wound or wrapped, and drawn through the next coarsest die by the gripping device G. (See dotted lines, Fig. 1.) This operation is continued until all the dies have been strung on the wire, after which the hook of the gripping device is disengaged from the chain. The machine then draws the wire through the dies in the ordinary way. When

stringing the dies on the wire it is preferable that after each die is strung on the wire the wire is wrapped about as many heads or rolls as possible, in order that they may assist in drawing the necessary length of wire for stringing other dies. For instance, if two dies had been strung on the wire that portion of the wire on which the dies were strung would be wrapped around the first two heads and the end of the wire wrapped around the third head and carried back to and around the roll h^2 on the block H. The die next in order is then placed on the block H and the end of the wire gripped by the device G. The gripping device G and the three rolls will then operate to draw enough wire to string the next or remaining dies on the wire. By reason of the openings h' the block H may be conveniently adjusted to accommodate itself to different lengths of wire projecting upon the last die. The roll i and the roll f^3 act to guide and retain the wire on the lower portions of the drawing heads or rolls in order that the wire will be submerged at all times during its reduction.

By reason of the head or rolls being submerged, as well as the dies, I am enabled to operate the machine at a high rate of speed. The submerged head or rolls or dies will always be well lubricated, and by reason of the arrangement of the bottom of the tank dirt in the lubricating liquid will be kept out of contact with the dies and heads or rolls.

What I claim as my invention is—

1. In a wire-drawing machine, the combination of a suitable framework, a tank carried thereby and having an irregular bottom to produce different depths therein, said tank adapted to contain a liquid and a plurality of drawing heads or rolls arranged vertically in the shallower portions of said tank, the deeper portions thereof being adapted to receive and retain the dirt unaffected by the circulation of liquid, due to the rotation of the drawing heads or rolls.

2. In a wire-drawing machine, a tank adapted to contain a lubricating liquid and wire-drawing heads submerged therein, said tank being formed with a portion of its bottom of one depth to support the wire-drawing heads, and with another, distinct portion of its bottom of a greater depth to receive and retain the dirt unaffected by the circulation of the liquid due to the rotation of the drawing heads or rolls.

3. In combination with a wire-drawing machine, a stringing mechanism comprising a gripping device movable along the framework of the machine, and a block serving as a die-holder and having a roll about which wire is adapted to pass adjustable along the path of travel of the gripping device.

4. In combination with a wire-drawing machine, having a runway along the edges of which a plurality of pairs of openings are

provided, a stringing mechanism, comprising
a gripping device movable along the frame-
work of the machine in said runway and a
block serving as a die-holder having a roll
5 about which wire is adapted to pass, and a
pair of pins which fit in any of said plurality
of pairs of openings.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

JOHN H. O'DONNELL.

Witnesses:

ETTA YOUNG,
R. S. WOTKYNs.