

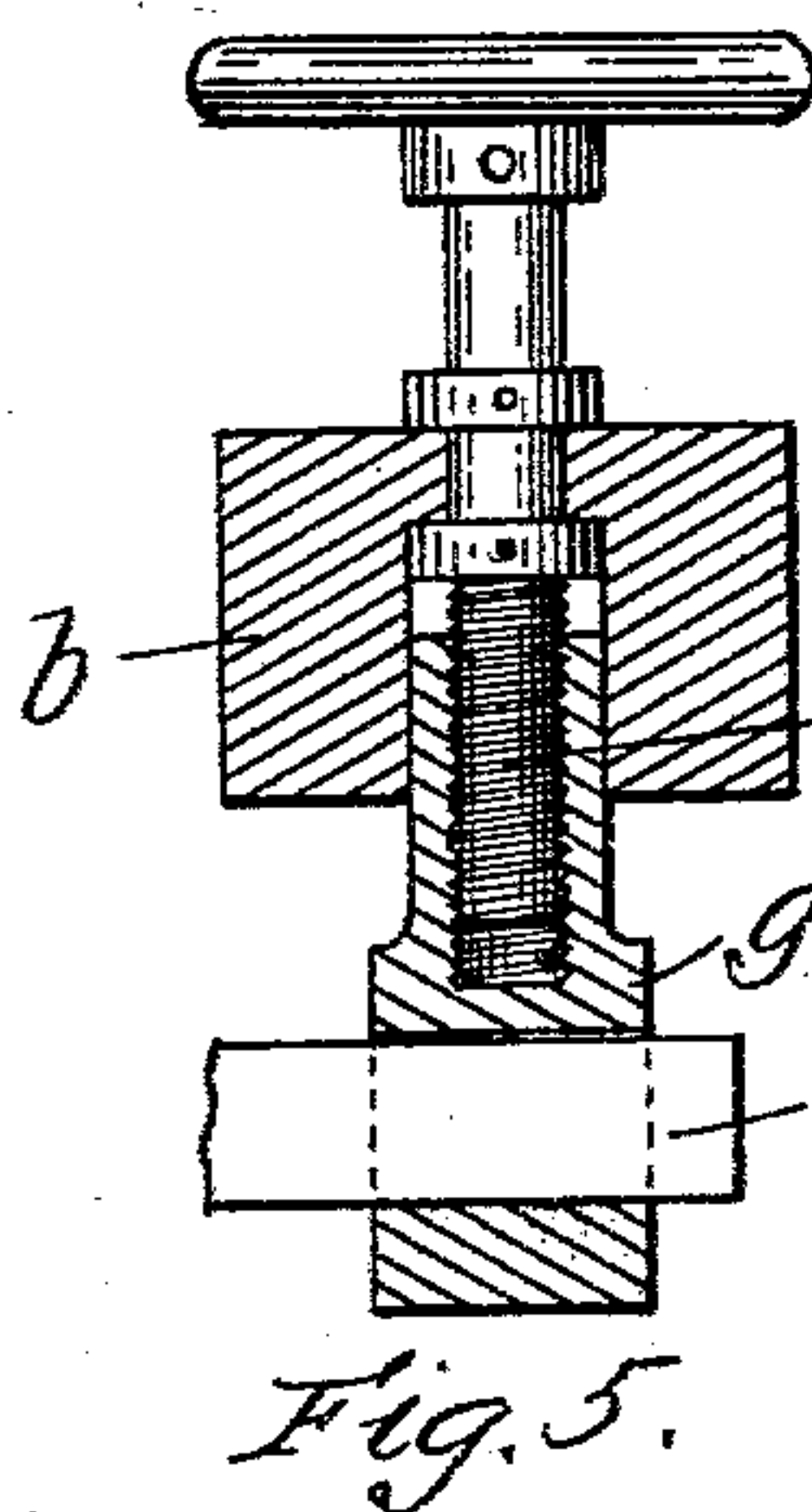
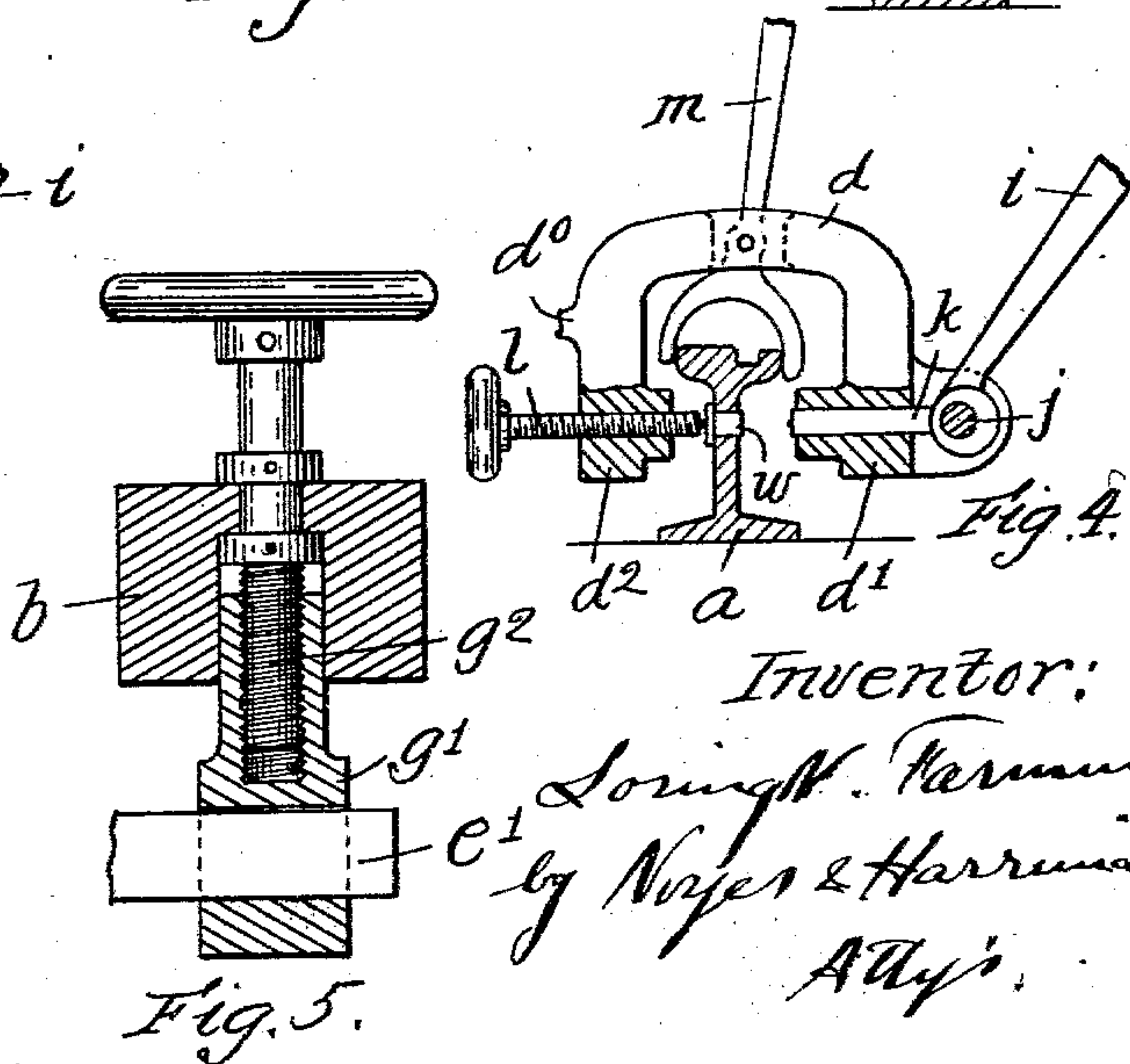
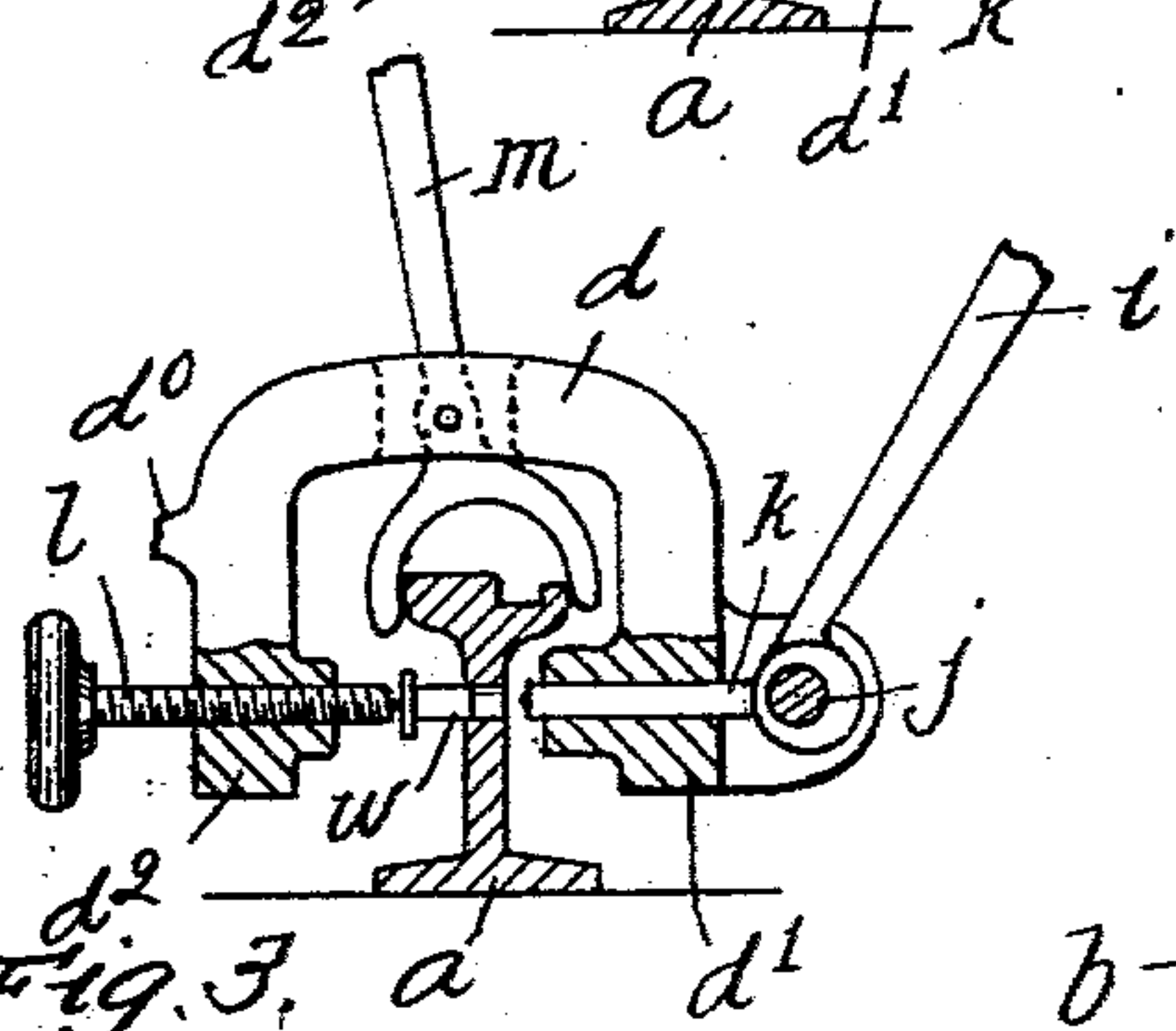
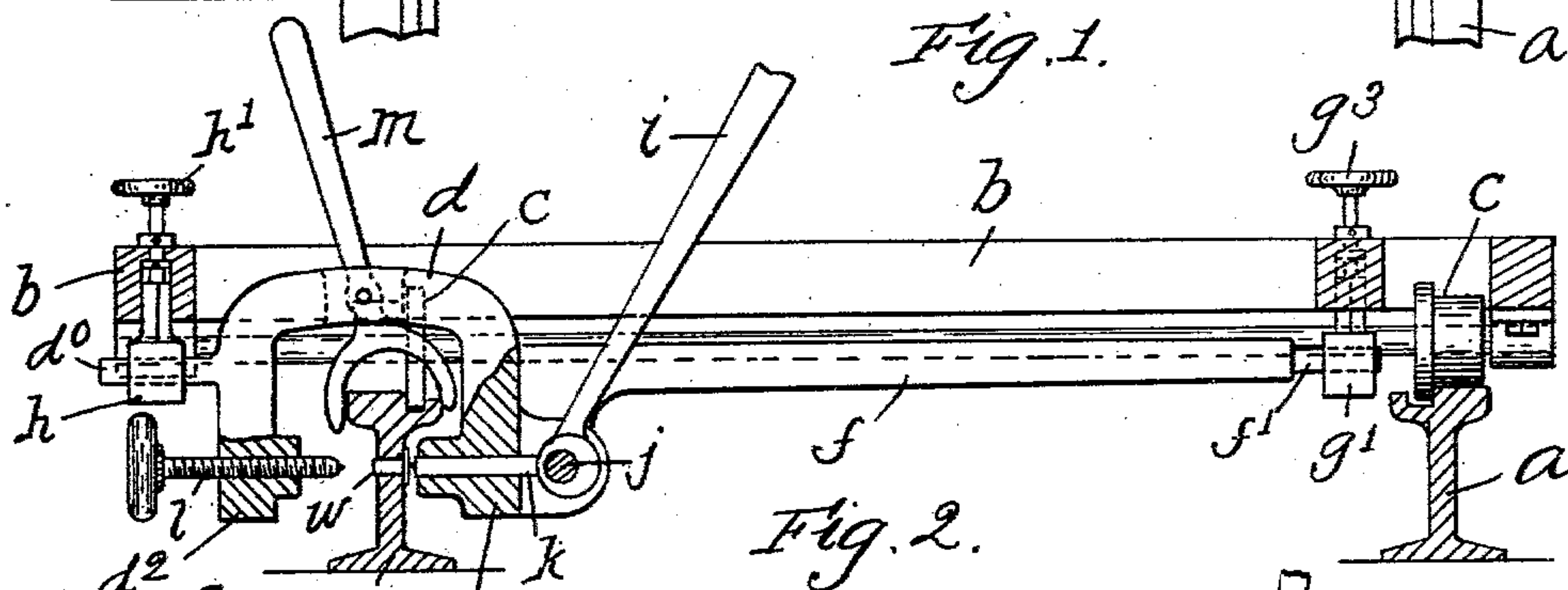
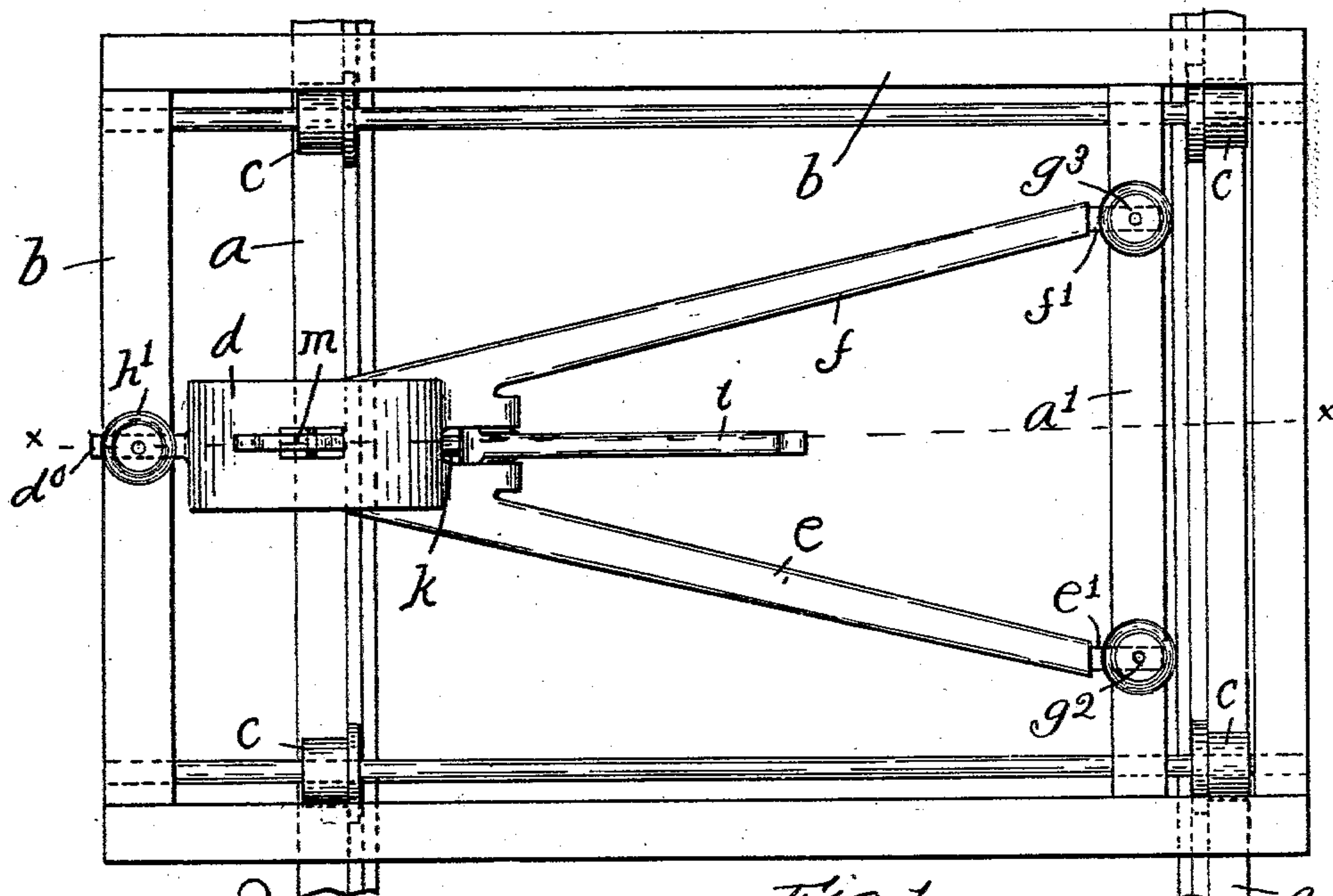
No. 715,363.

Patented Dec. 9, 1902.

L. N. FARNUM.
RAIL BONDING MACHINE.

(Application filed Sept. 8, 1902.)

(No Model.)



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UNITED STATES PATENT OFFICE.

LORING N. FARNUM, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
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RAIL-BONDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 715,363, dated December 9, 1902.

Application filed September 8, 1902. Serial No. 122,455. (No model.)

To all whom it may concern:

Be it known that I, LORING N. FARNUM, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Rail-Bonding Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

10 This invention relates to a machine for connecting the ends of certain kinds of rail-bonds of an electric railway to adjacent rails by inserting said ends in previously-drilled holes in the rails and then upsetting said
15 ends. In connecting rail-bonds of this form in this manner it has been customary to force the bond end completely through the hole which has been drilled therefor in the rail, after which said end is upset by a clamp
20 having an upsetting or riveting plunger, which is forced against the bond by means of a screw operated by a wrench swinging longitudinally of the rails. This process is not only very slow on account of the time
25 taken to adjust the clamp in its proper position and to force in the plunger by means of the wrench, but it is also objectionable for the reason that the clamp is often twisted to an oblique position with respect to the rail
30 by the wrench, so that the upsetting-plunger will not engage the end of the bond in line therewith, with the result that an imperfect connection is made.

Two bonds of the above character are usually employed between the adjacent ends of each pair of rails and are arranged on opposite sides of the rails. For this reason the clamp or device for forcing in and upsetting the bonds must be turned end for end each
40 time a bond is to be secured on the opposite side of the rail from that on which the previously-applied bond was secured, resulting in loss of time and inconvenience.

The object of my invention is to produce
45 an upsetting device which may be quickly adjusted and moved to the proper position with respect to the hole into which the bond is to be forced and which enables the bond to be quickly forced into the hole in the rail and
50 then be upset therein in practically one op-

eration whichever side of the rail the bond is on with respect to the machine, the operating means being so arranged that practically all tendency to move the upsetting gear out of its proper position or alinement is avoided. 55 I accomplish this object by providing a rigid truck or car, which is adapted to run on the rails or track and on which a frame carrying a clamping-bracket is movably mounted, said bracket being provided with upsetting
60 devices, which are adapted to engage opposite ends of the bent end portion on the bond, two levers being provided which swing transversely of the rails and which act to force the bond into position and then upset it, so
65 as to secure a proper electric connection.

For a complete understanding of my invention reference is made to the accompanying drawings, in which—

Figure 1 is a plan view of my invention. 70 Fig. 2 is a central cross-section thereof on the line $x x$ of Fig. 1, showing a bond which has just been set in from the inner side of one of the rails. Figs. 3 and 4 are similar views showing two positions when the bond is set
75 in from the outer side of the rail, and Fig. 5 is an enlarged detail view of one of the hangers.

$a a'$ indicate the rails of an electric railway upon which a truck or car-body b , having
80 four flanged car-wheels c of ordinary form, is supported. Each pair of wheels are the standard gage apart, so that the car may run on the rails. Said body b is provided with a bond forcing and upsetting device, which
85 comprises a frame having a rigid yoke or casting d . Rigidly connected with said yoke are two obliquely-extending arms $e f$, the end portions $e' f'$ of which are parallel and pass through hangers $g g'$. Said hangers are fitted
90 to slide in vertical apertures in said body and are vertically adjusted by means of screws $g^2 g^3$, which are threaded into said hangers and have a swiveled connection with the
body b , as shown in Fig. 5. The opposite
95 end of said yoke d is provided with a horizontal projection d^0 , which passes through a hanger h , constructed and arranged to be vertically adjusted by means of a screw h' in the same manner as the hangers $g g'$. By this 100

means the yoke d may be vertically adjusted and may also be moved horizontally with respect to the body b transversely of the rails.

The arm d' of the yoke d is provided with ears, between which a lever i , having a circular head, is pivoted eccentrically on a pin j , said pin extending parallel to the rails, so that said lever i swings in a plane perpendicular to the rails. A plunger k is adapted to slide horizontally in the lower end of arm d' in a direction which is normal to the rails, the end thereof next the rail being blunt or flat, with the exception of a small centering projection at its center. The opposite end of the plunger is curved to correspond to the curve of the head of lever i . The opposite arm d'' of casting d is provided with a back screw l , having its end formed substantially the same as the adjacent end of plunger k . The yoke d is also provided with a hand-lever m , said lever being pivoted in the middle thereof and having a forked lower end, the arms of the forked portion being adapted to engage opposite sides of the rail over which the yoke d is placed.

The manner in which this device is used to secure the bonds to the rails is as follows: The truck or car is placed on the track, so that it may be readily moved to any position thereon. The device is operated to the best advantage by two workmen. Assuming first that a bond is to be secured on the outer side of the rail, the projecting end w of the bond is placed in line with the hole in the rail, which has been bored therefor, as shown in Fig. 3. The car is moved and the frame d is adjusted vertically, so that the plunger k and stop-screw l are in alinement with the end of the bond, and said screw is turned by hand, so that its end engages the bond. One workman then throws lever m to the right, so that the stop-screw l is forced against the outer side of the bond, forcing its end portion w completely through the hole in the rail, so that its end protrudes on the opposite side of the rail. The screw is again taken up, so that its end and the working end of the plunger k engage opposite sides of the bond while lever i is in its raised position, and then the lever i is forced downwardly by the other workman, so that the end portion of the bond is longitudinally compressed, upsetting said portion and expanding it firmly against the sides of the hole, completely filling the same, and preferably spreading the protruding end of the bond to a certain extent, so that a complete electric contact is made throughout the entire length of the hole and the bond cannot become loosened or detached from the rail. When the bond is to be inserted or secured on the inner side of the rail after the bond is placed in position, one workman bears down on the lever i and at the same time another workman swings the lever m to the left, so that pressure will be thrown on the bond solely through the plunger k until the bond end has been forced through the rail, as shown

in Fig. 2, and then lever m is released, lever i is raised to its limit, and screw l is turned up, so that the plunger k is brought into engagement with the bond, and then the lever i is forced down and the bond end is upset, as before described. It will thus be seen that the bonds may be connected on either side of the rail without changing the relative position of the machine with respect to the rail by simply forcing lever m in the proper direction.

After one rail of a section of track has been bonded the whole car is turned end for end and the other rail is then bonded in like manner.

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

1. A rail-bonding machine comprising a body having flanged wheels engaging the rails, an upsetting device carried by said body, and a lever for operating said upsetting device pivotally mounted on said body and arranged to swing transversely of the rails, substantially as described.

2. A rail-bonding machine comprising a body adapted to be supported in a fixed position on the rails, a frame carried by said body and movable with respect thereto transversely of the rails, an upsetting device carried by said frame adapted to engage the bond at opposite sides of the rail, and means for moving said frame bodily in either direction to set in the bond, substantially as described.

3. A rail-bonding machine comprising a body adapted to be supported in a fixed position on the rails, a frame carried by said body having arms extending on opposite sides of one rail and movable transversely thereof independently of the body, a plunger in one of said arms movable transversely of the rail, a back-stop on the other arm in line with said plunger and means for moving said plunger and said frame independently, substantially as described.

4. A rail-bonding machine comprising a body adapted to be supported in a fixed position on the rails, a frame carried by said body having arms extending on opposite sides of one rail, and movable transversely thereof independently of the body, a plunger in one of said arms, movable transversely of the rail, a back-stop on the other arm in line with said plunger, a pair of levers swinging transversely of the rail and adapted to move said plunger and frame independently, substantially as described.

5. A rail-bonding machine comprising a body adapted to be held in a fixed position on the rails, a frame carried by said body extending on opposite sides of one of the rails and movable transversely thereof, a plunger carried by said frame at one side of one rail and movable transversely with respect thereto, a back-stop carried by said frame and arranged in the line of movement of said plunger, means for forcing said plunger toward

the back-stop, a lever pivoted on said frame having a forked end adapted to engage opposite sides of the rail, substantially as described.

- 5 6. A rail-bonding machine comprising a body having flanged wheels which engage the rails, a lever pivotally supported by said body and arranged to swing transversely of the rails, a bond-engaging plunger operated by
10 said lever and arranged to be forced thereby toward one side of one of the rails, and an

adjustable back screw carried by said body on the opposite side of the rail and in line with said plunger, substantially as described.

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

LORING N. FARNUM.

Witnesses:

LOUIS H. HARRIMAN,
H. B. DAVIS.