

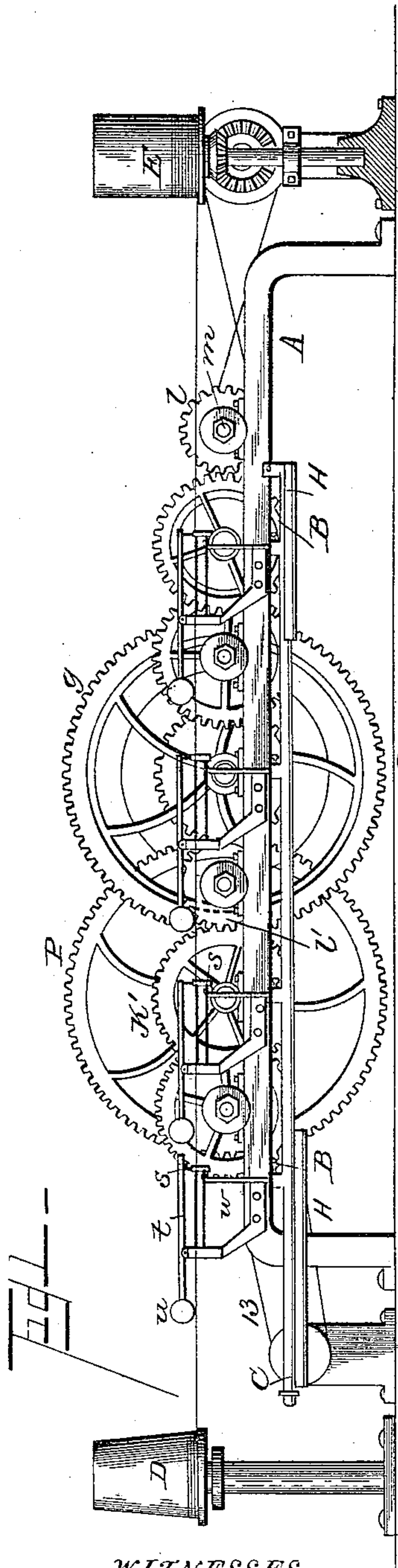
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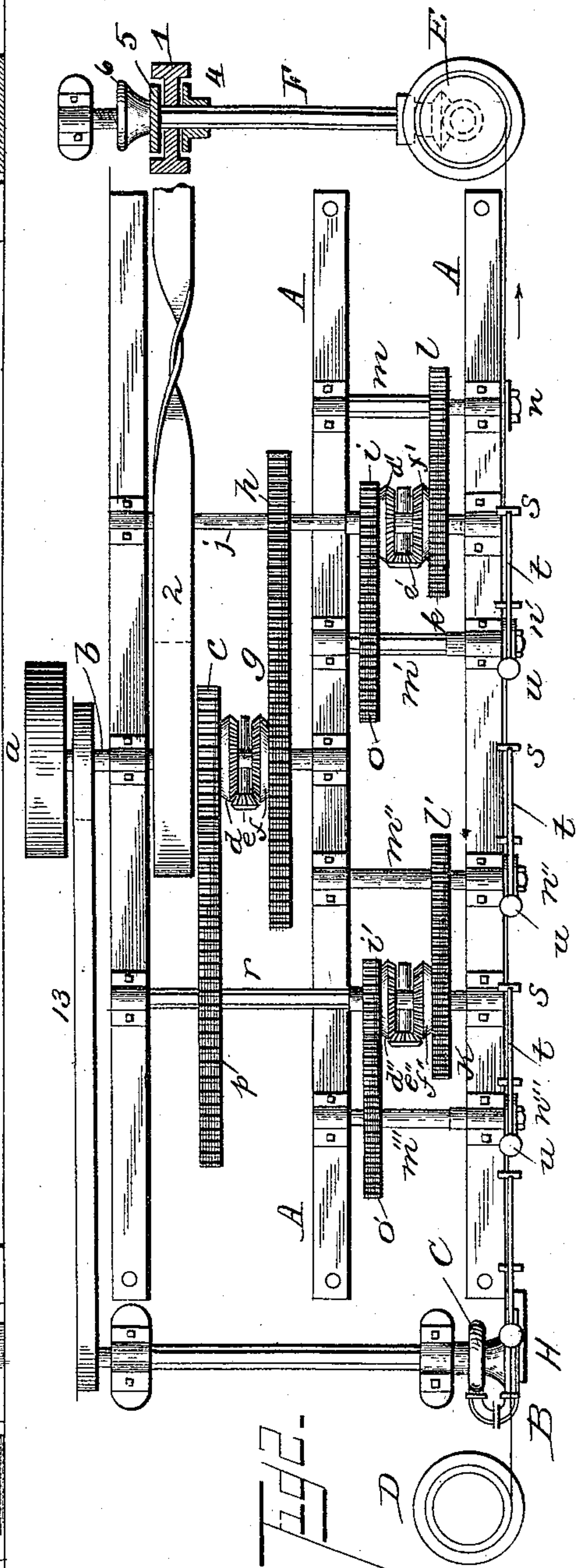
J. & W. JOLLY.
WIRE DRAWING MACHINE.

No. 451,936.

Patented May 12, 1891.



WITNESSES
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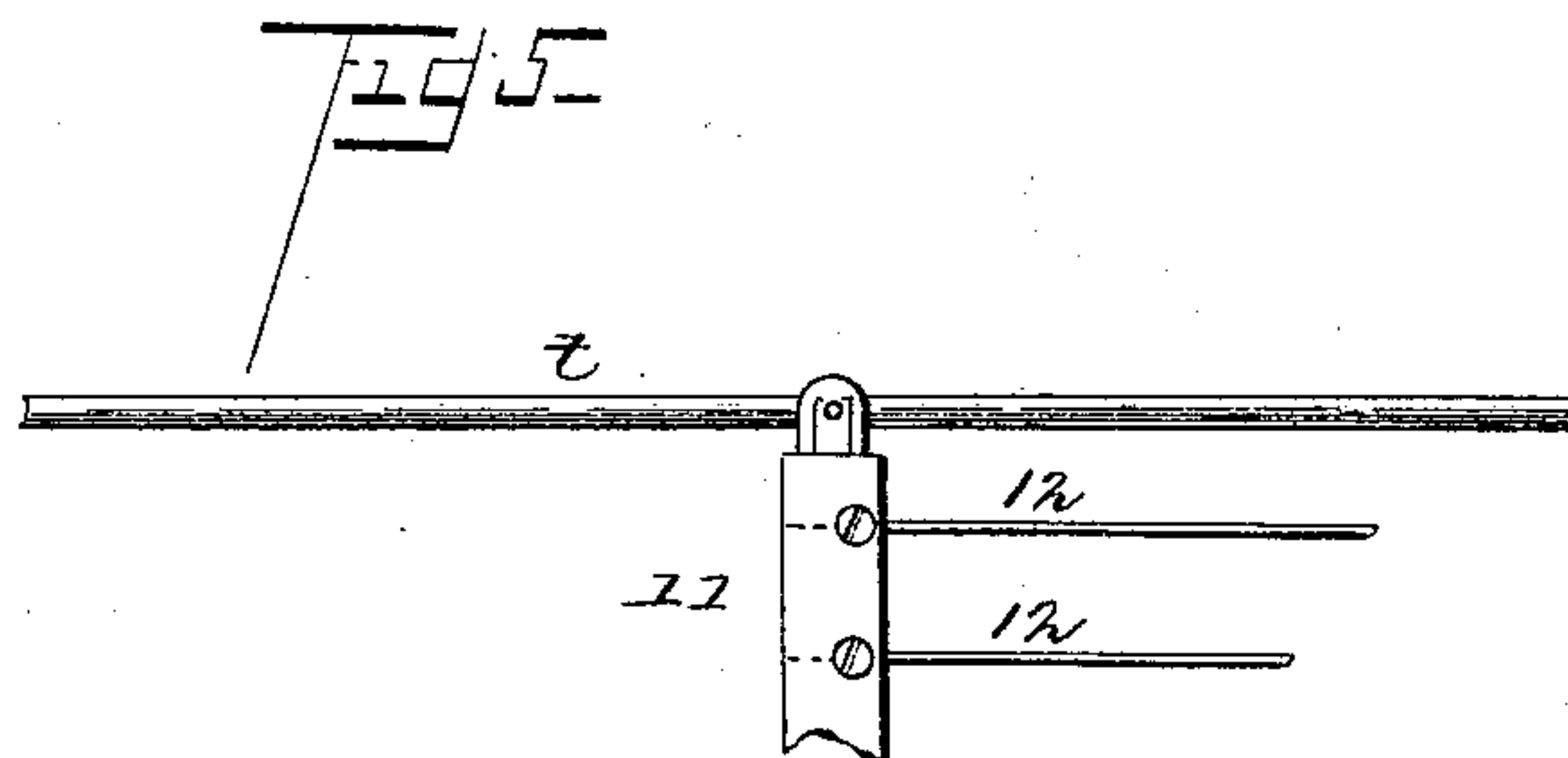
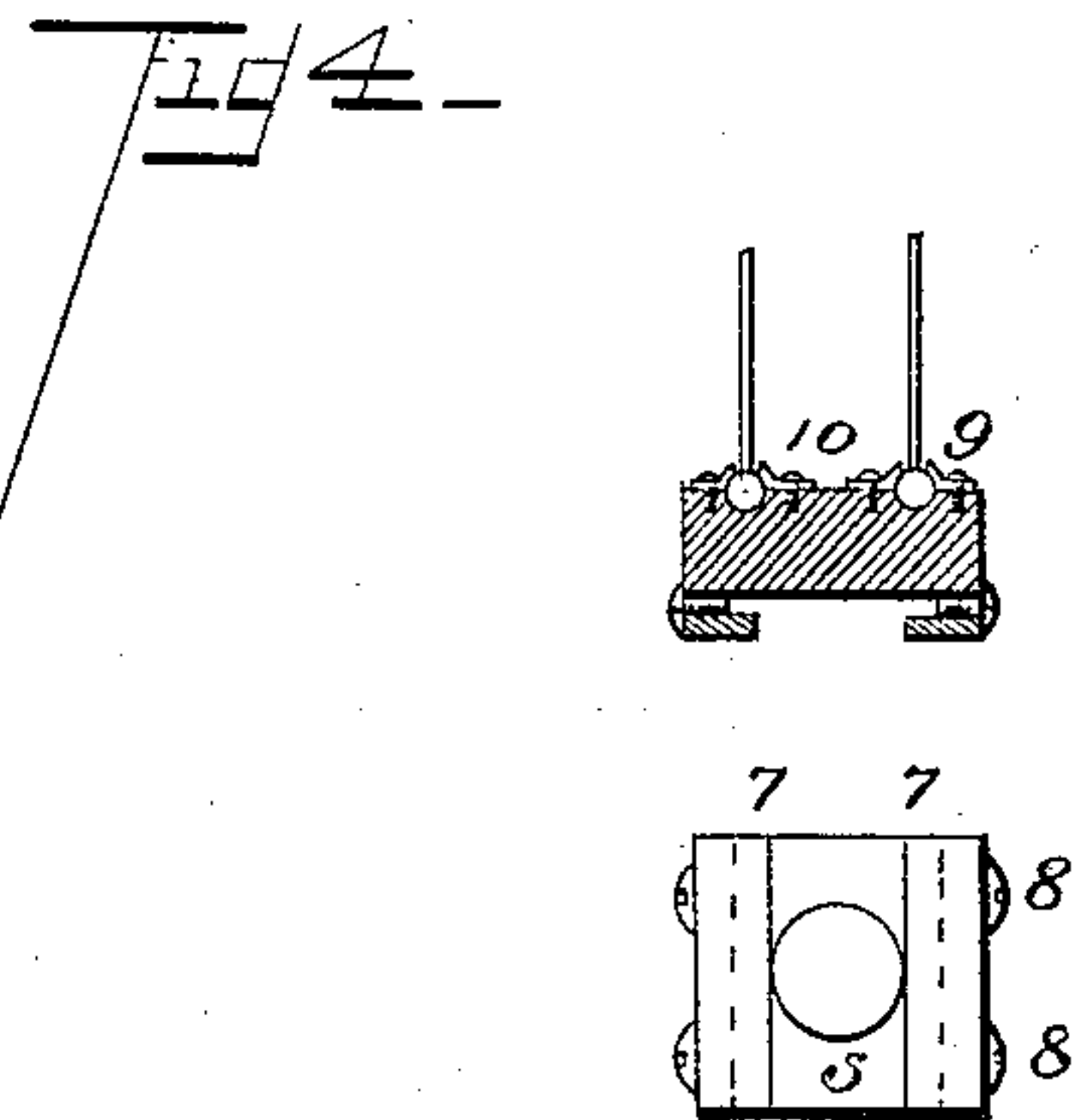
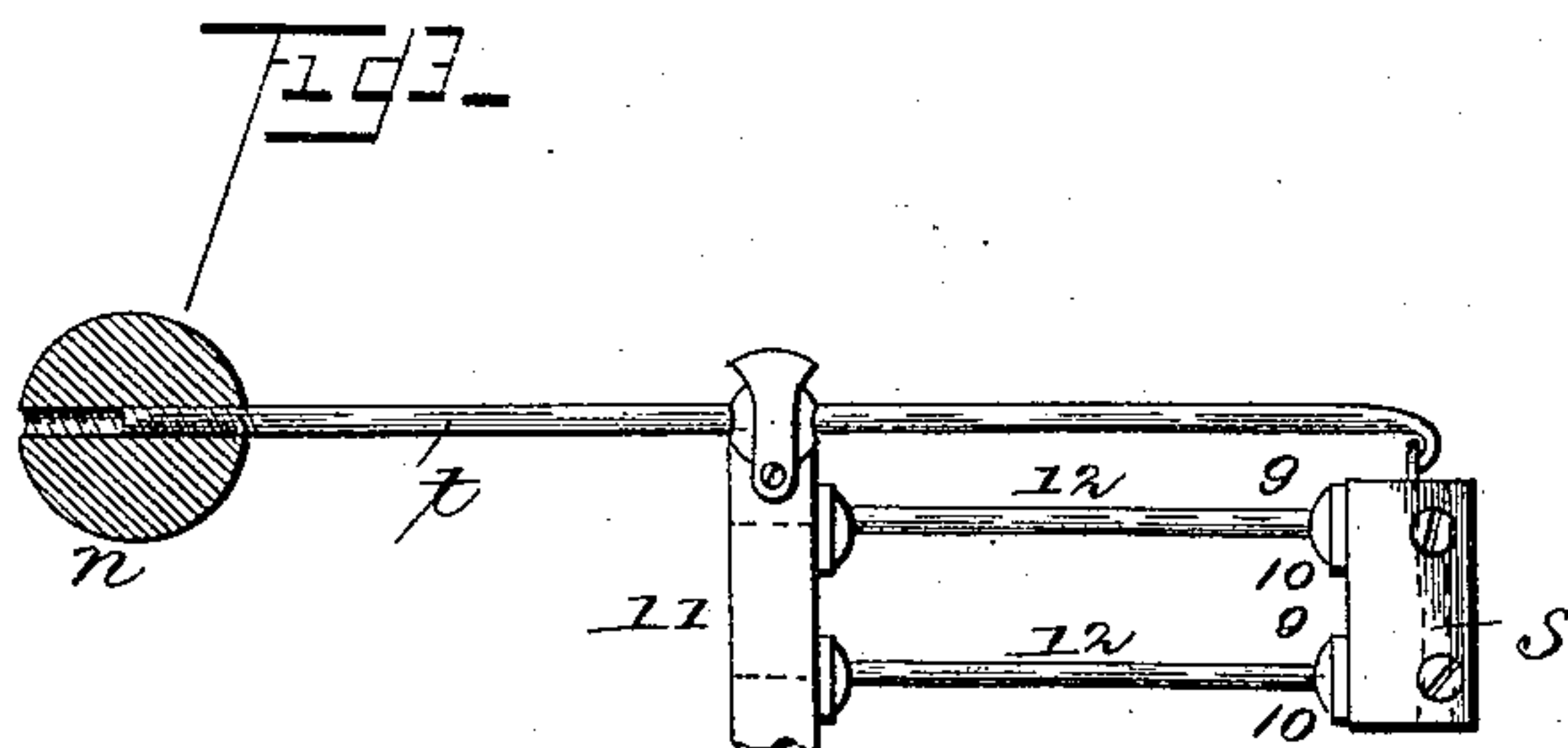
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JAMES JOLLY AND WILLIAM JOLLY, OF HOLYOKE, MASSACHUSETTS.

WIRE-DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 451,936, dated May 12, 1891.

Application filed February 6, 1889. Serial No. 298,918. (No model.)

To all whom it may concern:

Be it known that we, JAMES JOLLY and WILLIAM JOLLY, both citizens of Great Britain, and residents of Holyoke, in the county of Hampden and State of Massachusetts, United States of America, have invented certain new and useful Improvements in Wire-Drawing Machines, of which the following is a specification, reference being had to the accompanying drawings and letters and figures of reference marked thereon.

Our invention relates to a wire-drawing machine, the object being to provide a machine of this character in which the tension on the spools will be uniform, the dies maintained in proper position for effective work, and the necessary lubrication of the wire conveniently accomplished.

With these ends in view the invention consists in the combinations of devices and features of construction hereinafter fully described, and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a plan view of the same, and Figs. 3, 4, and 5 illustrate parts in detail.

A indicates the frame of the machine provided with bearings to receive transverse shafts b , r , m , m' , m^2 , and m^3 . The shaft b , which is the main shaft of the machine, extends beyond the frame A, and upon its outer end is mounted a pulley a to receive a power-belt. (Not shown.)

c is a gear-wheel loosely mounted on the shaft b and meshing with a gear-wheel p on the shaft r . g is another gear-wheel also arranged upon the shaft b and meshing with a gear-wheel h on the shaft j .

d and f are bevel gear-wheels fixed to the wheels c and g , respectively, and between said bevel-gears is an idle bevel gear-wheel e , mounted upon a stud supported upon the shaft b .

The gear-wheels c and g , with their concentric bevel-gears and the idler e , constitute what may be termed a set of "gearing," and as the three sets shown in the drawings are of substantially the same construction a specific description of the construction of one set will suffice for all. The second set of gearing consists of the wheels i and k , bevel-gears d' f' , and idle bevel-gear e' , supported

on a stud on the shaft j . The wheels i and k mesh, respectively, with wheels o and l , mounted on the shafts m' and m . The third set of gearing consists of the gear-wheels c' and k' and their bevel-gears d^2 f^2 and the idler bevel-gear e^2 , supported on a stud on the shaft r . The wheels i' and k' mesh, respectively, with gear-wheels o' and l' , arranged on the shafts m^3 and m^2 , respectively.

n n' n^2 n^3 are spools fixed respectively on the ends of the shafts m m' m^2 and m^3 .

The dies (four in number in the machine shown in the drawings) are arranged about equidistant between the spools n n' n^2 n^3 , and are each supported in a holder S, Figs. 3 and 4, provided with overhanging lips 7 and set-screws 8, to secure the die. The holder is provided on one side with sockets to receive balls 9, held in place by plates 10. The supports 11 are similarly provided with sockets and balls, and the latter are connected by rods 12 with the balls 9 of the die-holder S. This construction permits the necessary play or yielding of the die-holder. As shown in Fig. 5, the balls and sockets may be omitted and spring-rods used, secured directly to the support 11 and the die-holder.

Each die-holder S is suspended from the end of a lever t , fulcrumed above the support 11 and provided with an adjustable weight u . We prefer to secure this lever t at its fulcrum-point by a ball-and-socket connection to insure a free yielding movement thereof.

D represents the feed-spool, arranged in line with the dies and drawing-spools, and E is the receiving-spool, located at the opposite end of the machine, upon an upright shaft a^4 , provided with a bevel gear-wheel a^5 , meshing with a bevel-gear a^6 of the shaft F, which latter derives motion through a belt 2, from a pulley on the shaft b . The pulley 1 on the shaft F is provided with friction-plates 4 or 5, (one on either side of the pulley,) one of which is adapted to be moved toward the other to clamp the pulley by means of the set-screw 6 and cause the plates and shaft F to revolve with the pulley 1. In case of undue strain on the spool E the pulley 1 will revolve on the shaft F and avoid breaking of the wire.

C is a pump for supplying liquid to the wire through the pipe B and jets w , which

latter project upwardly and discharge near the entrance side of the dies. A drip-trough H is arranged below the pipe B to collect the drip from the pipes.

5 The operation of the mechanism thus described is as follows: The wire is fed from the spool D through the dies and over the drawing-spools to the receiving-spool E. The relative arrangement and proportions of the
10 several gearings are such as to give to each drawing-spool a rotation faster than the spool next preceding it in the direction of the feed of the wire. This variance in the speed of the spools is accomplished without affecting
15 the uniformity in the tension of the wire, inasmuch as the beveled gearing operates to maintain a uniform strain or pull on the wire. These several shafts carrying the drawing-spools are rotated by the meshing of their respective
20 fixed gears $l, o, l',$ and o' , with the gear-wheels $k, i, k',$ and i' , all of which are loosely mounted upon their shafts and derive movement from the beveled pinions e' and e'' , fixed to the shafts j and r , said pinions meshing with the
25 bevel-gears arranged concentric with and fixed to said wheels $k, i, k',$ and i' . A uniformity of tension of the wire is maintained, for the reason that if the strain on any one of the spool-shafts is increased or lessened a
30 corresponding acceleration or decrease of speed is communicated to the other shafts through the medium of the loose gearing and the beveled idlers.

Having therefore described our invention,
35 what we claim, and desire to secure by Letters Patent, is—

1. In a wire-drawing machine, the combination, with the dies and the feed and receiving spools, of shafts each carrying a drawing-
40 spool and a fixed gear-wheel, and gearing arranged upon shafts adjacent to the spool-shafts, said gearing comprising loose gears, as $d', f', d'',$ and f'' , and bevel-faced idlers supported on studs and in gear with the loose
45 gears, substantially as described.

2. In a wire-drawing machine, the combination, with shafts carrying wire-drawing spools and fixed gear-wheels on said shafts, of loosely-mounted gears having bevel-gears
50 on their inner faces and transverse bevel-gears operated from the shaft carrying the loose gears and meshing with said loose gears, substantially as set forth.

3. In a wire-drawing machine, the combination of the loosely-mounted gear-wheels c

g , having bevel-faced gears d, f on their inner faces, a shaft b , provided with a fixed stud having a bevel-gear e journaled on its end to engage the gears d, f , and drawing-spools and intermediate gearing connecting said
50 spool-shafts with the shaft b and its gearing, substantially as set forth.

4. In a wire-drawing machine, the combination of a shaft having two gears loosely mounted thereon, one of which engages a driving-gear and the other a driven gear, and a stud mounted and fixed on said shaft between the loosely-mounted gears and having gearing mounted thereon through which motion
70 is communicated from one of said loosely-mounted gears to the other in reverse direction, substantially as described.

5. In a wire-drawing machine, the combination, with the delivery-spool, the wire-drawing spools, and the winding-spool, of the loose
75 pulley 1, mounted on the shaft of the winding-spool, and the fixed and adjustable clamping-plates 5 4, substantially as and for the purpose specified.

6. In a wire-drawing machine, the combination of a die-supporting rod, a die suspended at one end of the supporting-rod, and an adjustable weight on the rod to balance the
80 die, substantially as described.

7. In a wire-drawing machine, the combination of a die-supporting rod having a tilting and a lateral movement in its support, a die hung to one end of the rod, and an adjustable weight to balance the die, substantially
85 as described.

8. In a wire-drawing machine, the combination of the fulcrumed supporting-rod t , provided with an adjustable weight u and mounted on a vertical support, the die s , hung
90 from one end of the supporting-rod, and the rods 12 between the die and the support of the supporting-rod, substantially as described.

9. In a wire-drawing machine, the combination of a swinging and tilting supporting-rod mounted on a support and provided with
100 an adjustable weight, a die hung from one end of the supporting-rod, and a loosely-arranged connecting-rod disposed between the die and the supporting-rod support, substantially as described.

JAMES JOLLY.
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Witnesses:

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