

No. 745,538.

PATENTED DEC. 1, 1903.

J. WADSWORTH.
SWIVEL LOOM.

APPLICATION FILED JAN. 17, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

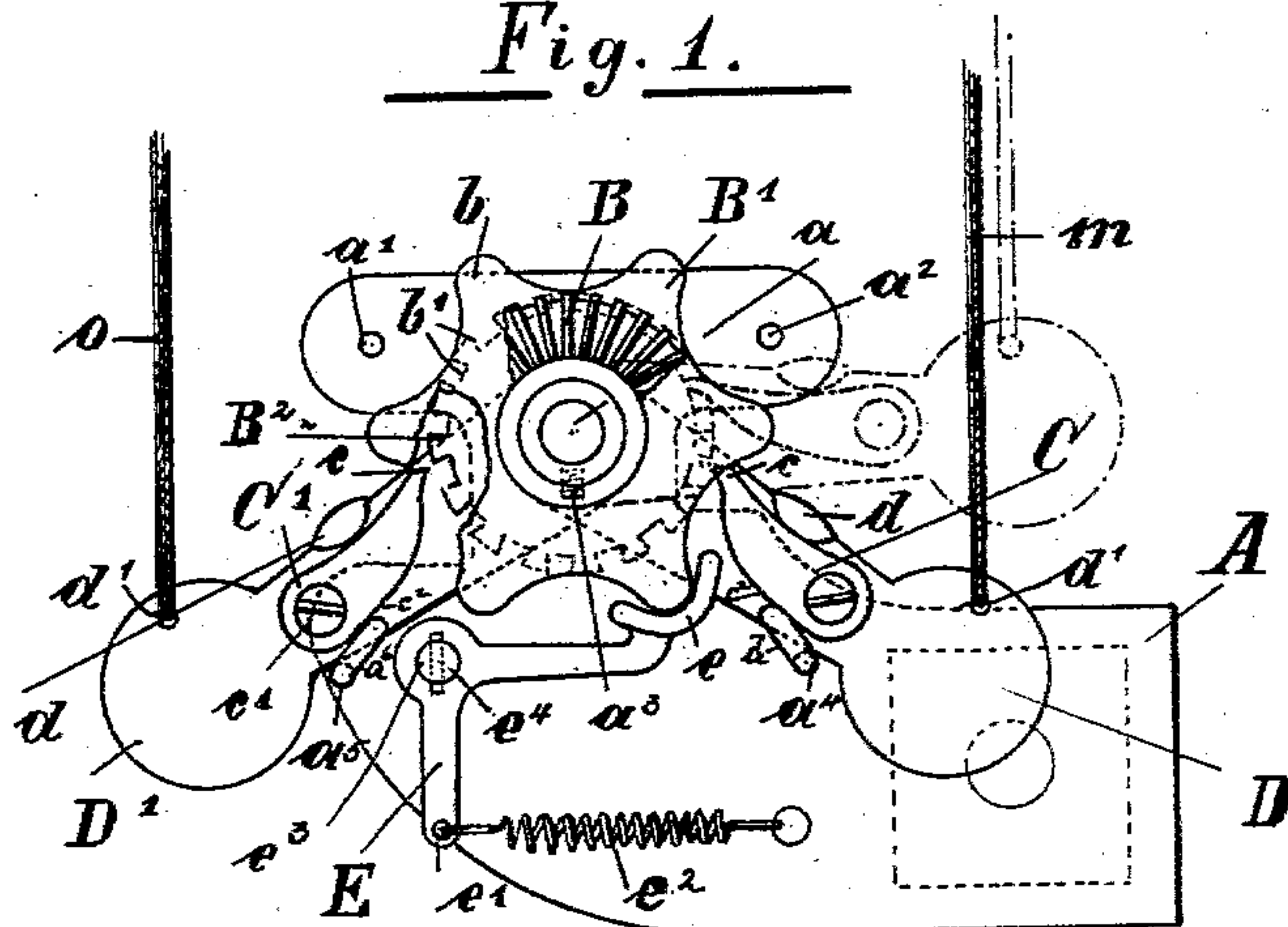
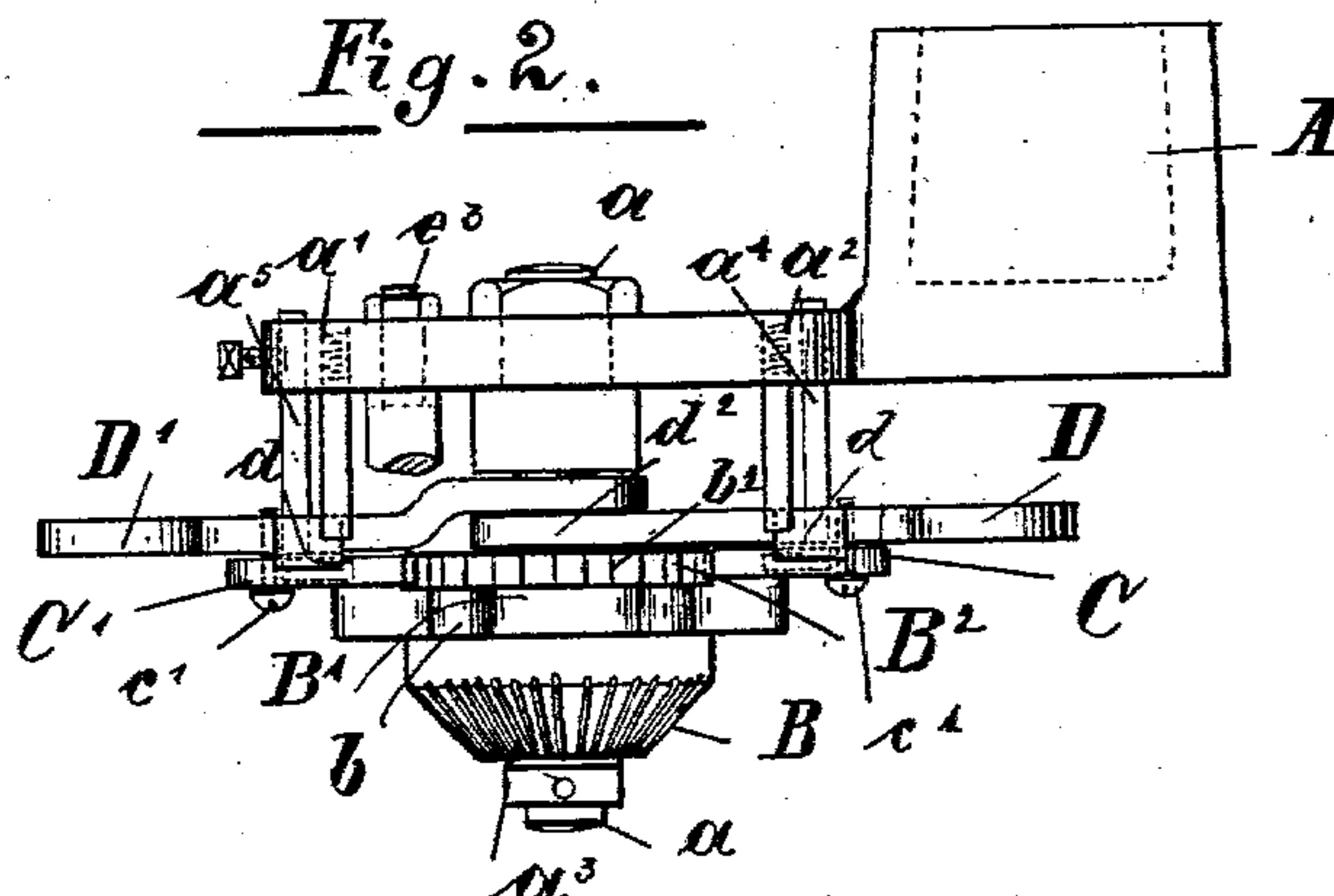


Fig. 2.



WITNESSES:

WITNESSES:
William O. Mickel
Geo. Lang

INVENTOR.

BY Joseph Wadsworth
John F. Kerr
ATTORNEY.

No. 745,538.

PATENTED DEC. 1, 1903.

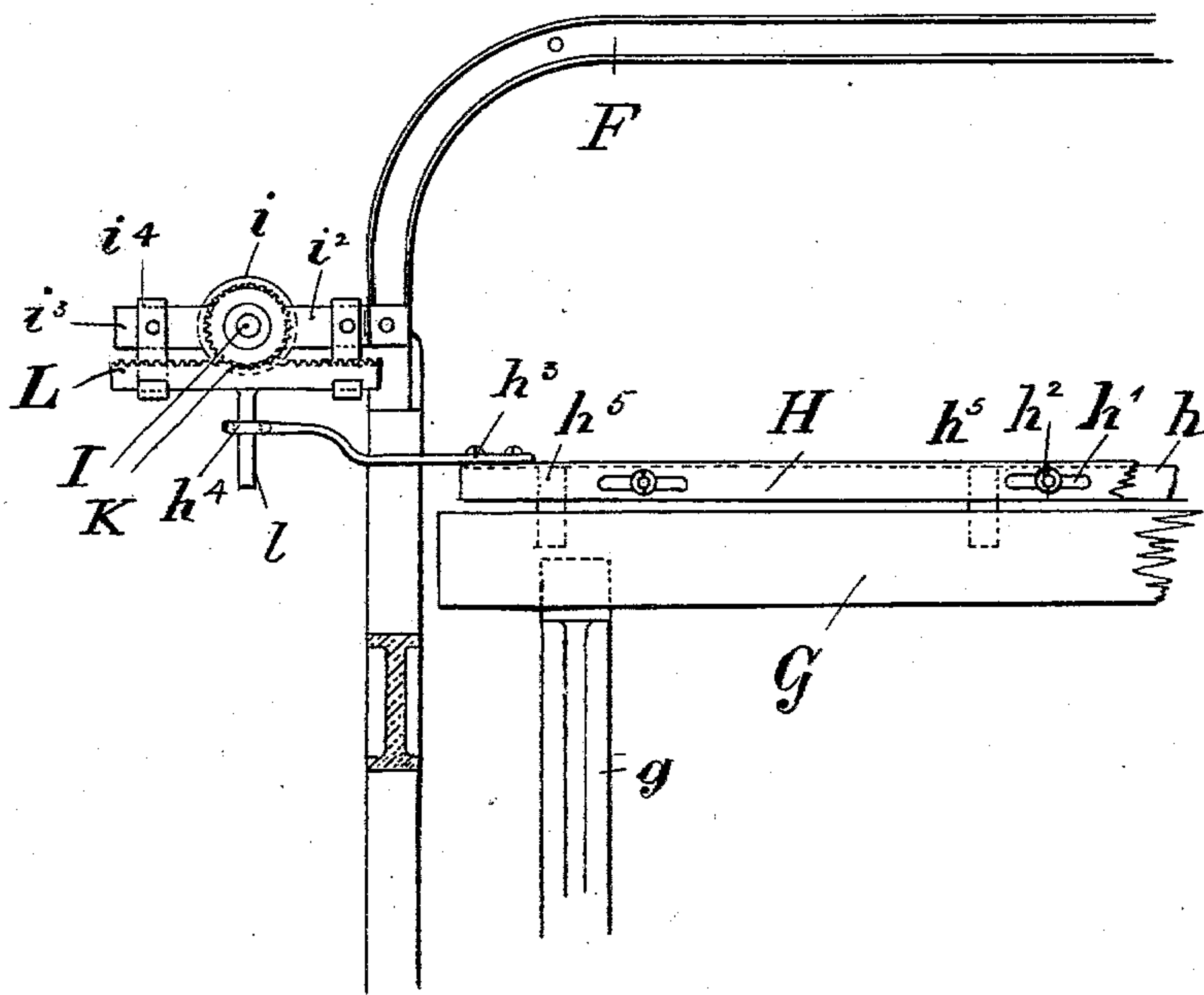
J. WADSWORTH.
SWIVEL LOOM.

APPLICATION FILED JAN. 17, 1902.

NO MODEL.

3 SHEETS—SHEET 2.

Fig. 3.



WITNESSES:

William O. Mickel
Gus. Lang

INVENTOR.

Joseph Wadsworth
BY John F. Kerr
ATTORNEY.

No. 745,538.

PATENTED DEC. 1, 1903.

J. WADSWORTH.
SWIVEL LOOM.

APPLICATION FILED JAN. 17, 1902.

NO MODEL.

3 SHEETS—SHEET 3.

Fig. 4.

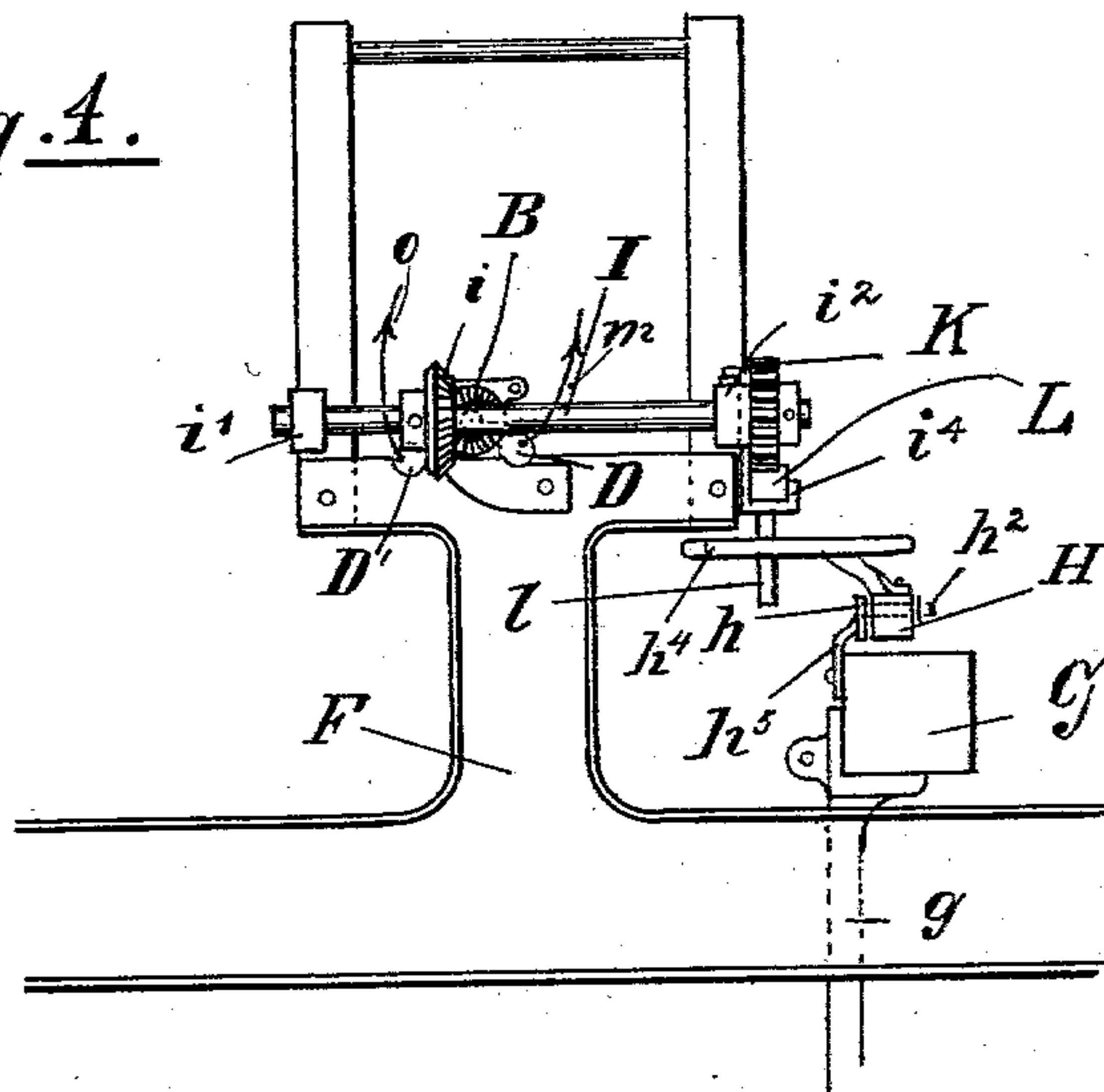
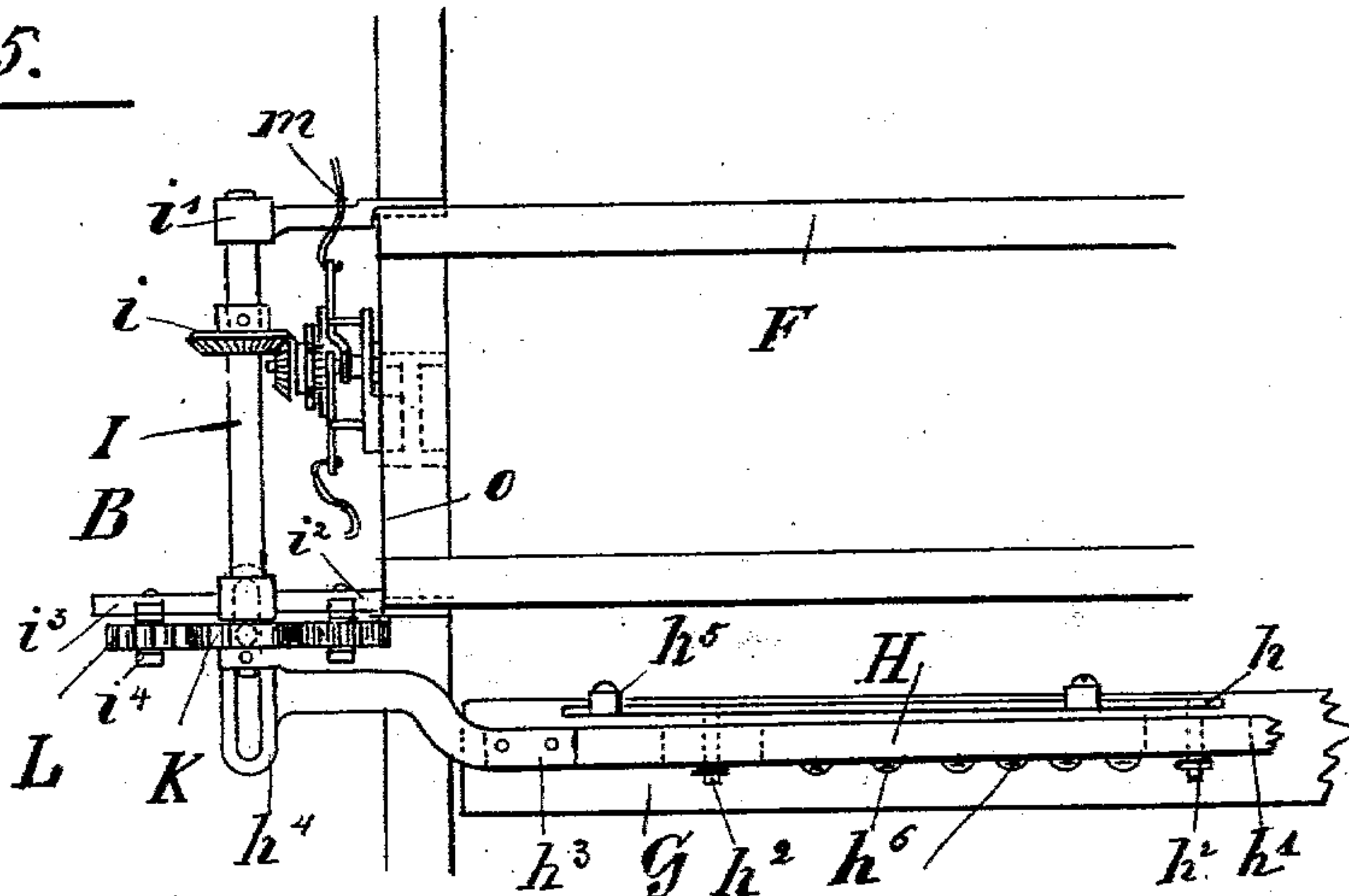


Fig. 5.



WITNESSES:
William O. Mickel.
Gus. Lang.

INVENTOR.
Joseph Wadsworth.
BY John F. Kerr
ATTORNEY.

UNITED STATES PATENT OFFICE.

JOSEPH WADSWORTH, OF PATERSON, NEW JERSEY.

SWIVEL-LOOM.

SPECIFICATION forming part of Letters Patent No. 745,538, dated December 1, 1903.

Application filed January 17, 1902. Serial No. 90,134. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH WADSWORTH, a citizen of the United States, residing at 221 Hamilton avenue, in the city of Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Swivel-Looms, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to swivel-loom, and particularly to means in connection therewith for spreading the figures forming the pattern of woven fabrics, disposing of the same, throughout the surface of the goods being woven when and where desired and while the loom is in operation.

It is not new, of course, for either plain swivel or box looms to weave a figure or pattern at regular intervals or continuously; but said figure or pattern appears in the goods in a straight line or in perfect alinement, the successive figures made by any particular swivel-shuttle occupying alternately the same relative position in the cloth as the preceding figures made by said shuttle.

The object of my invention is to provide a means for automatically scattering said figures throughout the cloth whenever and wherever it is desired to do so—in other words, to provide a swivel-loom that will weave a continuous pattern in an oblique or zigzag direction in a wavy manner or scatter separate and distinct figures throughout the face of the goods when and where desired, to do it automatically without interfering with the operation of the loom without regard to the number of ground-shuttles being used, and to enable any given swivel-shuttle to repeat the figure it is weaving wherever desired at irregular or regular intervals, so that it will not appear twice in succession in the same relative position in the cloth. For instance, a certain swivel-shuttle may be weaving a diamond (white) on a blue ground, the second diamond may be to the left of and above the first, the third to the left of and above the second, the fourth to the right of and above the third, the fifth to the right of and above the fourth, the sixth to the left of and above the fifth, and the seventh to the left of and above the sixth. The diamonds may be separate and distinct, or they may be connect-

ed by a pattern or thread which may run in a straight or a broken line, as desired. So with each of the various swivel-shuttles, with the result that my improved swivel-loom can weave a piece of silk with a white ground so studded with blue stars that they will appear to be scattered at random.

The invention consists in various constructions and combination of parts and details, that will be fully described and set forth hereinafter and finally pointed out in the claims.

When the swivel-shuttle support is moved in either direction in its traverse, the position of the swivel-rack independently of its own traverse movements otherwise imparted to it, and hence the position of every swivel-shuttle in the swivel-rack, is changed in relation to the cloth being woven.

The swivel-shuttle support is operated from the jacquard, the card being punched, so that when the time arrives to weave the figures in a new position in the cloth a traverse motion is communicated to the shuttle-support, and it moves to the point required, and the figure is repeated.

In the accompanying drawings a means of communicating the necessary traverse motion to the swivel-shuttle support is shown; but I do not wish to limit myself to any particular means, as other means may be employed without departing from the broad scope or spirit of my invention.

Similar letters of reference indicate like parts in the various figures of the drawings, in which—

Figure 1 is a front view of the device for communicating a traverse movement to the swivel-shuttle support, the operation thereof being indicated in dotted lines. Fig. 2 is a plan view of the same; and Figs. 3, 4, and 5 are respectively front, side, and plan views of a portion of a loom with my invention embodied therein and showing the cords (broken off) which connect with the jacquard.

To the shuttle-support shifter-frame A is secured a stud *a* and stop-pins *a'*, *a²*, *a⁴*, and *a⁵* to limit the upward and downward movements, respectively, of the levers D and D', which are pivotally mounted on the stud *a*. Said levers D and D' carry the pawls C and C', which engage the peculiarly-shaped teeth *b'* of the ratchet-wheel B², according to which

of the levers is lifted by the jacquard by their cords *m* or *o*. The said cords are secured to the openings or holes *d'* *d'* in the heavy ends of said levers, and each of the said levers is
 5 provided with a nose *d* to control the upward movement of the pawls C and C', which turn on the screw *c' c'*. The pointed ends *c c* of the said pawls are adapted to engage the ratchet-wheel B² as follows: The lower stops
 10 *a*⁴ and *a*⁵ have offset portions *a*⁶ and *a*⁷, respectively, which take against the lower edges *c*² *c*² of the pawls C and C', which serve to throw the said pawls upwardly when the levers D and D' are lowered, as shown in Fig. 1.
 15 The levers D and D' when lowered rest on the straight portion of the lower stops *a*⁴ and *a*⁵, respectively.

When the jacquard lifts the cord *m*, the lever D is raised, and with it its pawl C, which
 20 engages a tooth of the ratchet-wheel B², causing it to turn on the stud *a*. The outer ends of the teeth of the ratchet-wheel are broader than they are at the base that the pawls may the better engage them. When the jacquard
 25 lifts the cord *o*, the lever D' and its pawl C' are raised, engaging the ratchet-wheel B² and turns it on the stud *a*, but in the opposite direction. To the ratchet-wheel B² is secured the stop-wheel B' and the bevel-gear B, so
 30 that when the ratchet-wheel is turned in either direction the said sprocket-wheel and the bevel-gear B are also turned in that direction.

The ratchet-wheel, stop-wheel, and bevel-gear are held on the stud *a* by the set-screw
 35 *a*³ and collar *a*⁸.

An angle-lever E is mounted on a stud *e*³, which is secured to the body of the swivel-shuttle-support-shifting device and is held in position by the pin *e*⁴. One end of the angle-
 40 lever has a curved pocket or rest *e* to support and keep in place the sprocket-wheel B' when not turning. The said angle-lever is held in engagement with the sprocket-wheel by the spring *e*², which is secured to the lower end
 45 of said lever at *e*'. F represents a part of a loom-frame, G the lay, *g* the lay-sword, and H the swivel-shuttle support.

The bar *h* is secured to the lay G by the brackets *h*⁵ and is provided with the studs *h*²,
 50 on which the swivel-shuttle support H hangs and slides laterally. Said studs *h*² pass through the elongated openings *h*' in the said shuttle-support and are provided with means for holding the swivel-shuttle support
 55 thereon.

The swivel-rack and pinions which operate the swivel-shuttles are not shown in the drawings, it being deemed unnecessary, as the swivel-shuttle support H is shown and is
 60 adapted to carry the rack and pinions in any suitable manner, and it is therefore obvious that when the swivel-shuttle support H is automatically moved intermittently in the direction and for the distance predetermined by
 65 the cards on the jacquard the field of operation of the swivel-rack is correspondingly changed without interfering in any way with

the independent traverse motion of the swivel-rack, which is communicated from another source.

An arm *h*³, provided with an elongated opening *h*⁴, is secured to the swivel-shuttle support. Through this opening passes the downwardly-projecting pin *l* of a supplementary rack L, which is adapted to slide in the guides *i*⁴, se-
 70 cured to the bracket *i*². The bracket *i*² and bracket *i*' form the bearings in which the shaft I is journaled. Keyed to said shaft is the bevel-gear *i*, which meshes with the bevel-gear B and is turned by it in either direction,
 75 thus turning the shaft I and the gear K, secured thereto. The gear K engages the teeth of the supplementary rack L, moving it, and through it communicates a traverse motion to the swivel-shuttle support H, causing it to
 80 move in either direction, according to which of the levers is lifted by the jacquard and the distance decided by the card, which may be cut to make one or more lifts, as required.

It is obvious that the speed of the traverse
 85 motion may be regulated by changing the gearing and substituting ones of different sizes.

The elongated slot *h*⁴ in the arm *h*³ permits the swivel-shuttle support to reciprocate with the lay, so that I have a swivel-shuttle sup-
 90 port with both a reciprocatory and a traverse motion and can thus change when desired the position of the swivels *h*⁶ and weave the figures or patterns in any direction, practically, using many ground-shuttles, and the
 95 whole operation is automatically performed without interfering with any of the other operations of the loom.

With this description of my invention, what I claim, and desire to secure by Letters Pat-
 100 ent, is—

1. In a swivel-loom, the lay, a swivel-shuttle support mounted to slide thereon and to participate in the reciprocating movement thereof, and having an angle-arm provided with an
 105 elongated slot running at right angles with the lay, in combination with a supplementary rack adapted to move in a course parallel with the lay, and having a downwardly-extending arm passing through the slot in said
 110 angle-arm, and means for communicating a traverse motion to said supplementary rack, and through it a traverse motion to the swivel-shuttle support, substantially as set forth.

2. In a swivel-loom, a stud and a support
 115 therefor, two levers, fulcrumed on said stud, each carrying a pawl, and operating independently of the other, a ratchet-wheel on said stud adapted to be engaged and turned in one di-
 120 rection by one of said pawls, and in the opposite direction by the other pawl, a stop-wheel and a bevel-gear secured together and mounted to turn in unison upon said stud, upper and lower stops on said support to limit the
 125 upward and downward movements of the levers, and means to limit the movements of the pawls, in combination with a swivel-shuttle support and operative connections between the bevel-gear and the swivel-shuttle

support to communicate to the latter, a traverse movement, the actuating mechanism being operated by a jacquard, substantially as set forth.

5 3. In a swivel-loom, the lay, a swivel-shuttle support mounted to slide thereon, mechanism adapted to impart to said support an intermittent traverse movement in either direction, consisting of a single ratchet-wheel
10 operatively connected to said support, levers on opposite sides operated by jacquard mechanism, pawls on said levers and means to limit the downward movement of said levers and simultaneously throw said pawls out of operation,
15 tion, substantially as set forth.

4. In a swivel-loom, the lay, a swivel-shuttle support mounted to slide thereon, mechanism adapted to impart to said support an intermittent traverse movement in either direction, consisting of a single ratchet-wheel
20 operatively connected with the swivel-shuttle support, levers on opposite sides operated by jacquard mechanism, pawls on said levers and means to limit the movement of said levers
25 and to simultaneously throw said pawls into or out of operation, with the upward and downward movement respectively of said levers, substantially as set forth.

5. In a swivel-loom, a swivel-shuttle support and means operated by the jacquard and operatively connected to said support to impart thereto an intermittent traverse movement in the direction and for the distance predetermined by the jacquard, said means consisting of a single ratchet-wheel, oppositely-
35 disposed levers, pawls on said levers, and means to limit the movement of said levers and to throw either of said pawls into or out of

engagement with said ratchet-wheel upon the upward or downward movement, respectively, 40 of its lever, substantially as set forth.

6. In a swivel-loom, means adapted to impart to a swivel-shuttle support an intermittent traverse movement in either direction for a predetermined distance, consisting of a single ratchet-wheel operatively connected to
45 said support, levers on opposite sides operated by jacquard mechanism, pawls on said levers, means to limit the movement of said levers and to simultaneously throw said pawls into
50 and out of operation respectively upon the upward and downward movement of the levers and means for locking said ratchet-wheel to prevent the rotation thereof when the levers
and pawls are out of operation in combination with such a support substantially as set
55 forth.

7. The combination, in a swivel-loom, of the frame, the batten structure, a swivel-batten
60 arranged to move rectilineally in said batten structure, a pinion, a rack adapted to partake of the rectilineal movement of said batten and engaging said pinion, a ratchet, operative connecting means between said pinion and the
ratchet, a lever, a pawl carried by said lever 65 and engageable with said ratchet, and a stop for the lever, said stop being adapted to engage the pawl to disengage the same from said ratchet.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH WADSWORTH.

Witnesses:

JOHN F. KERR,
DAVID LINTON.