

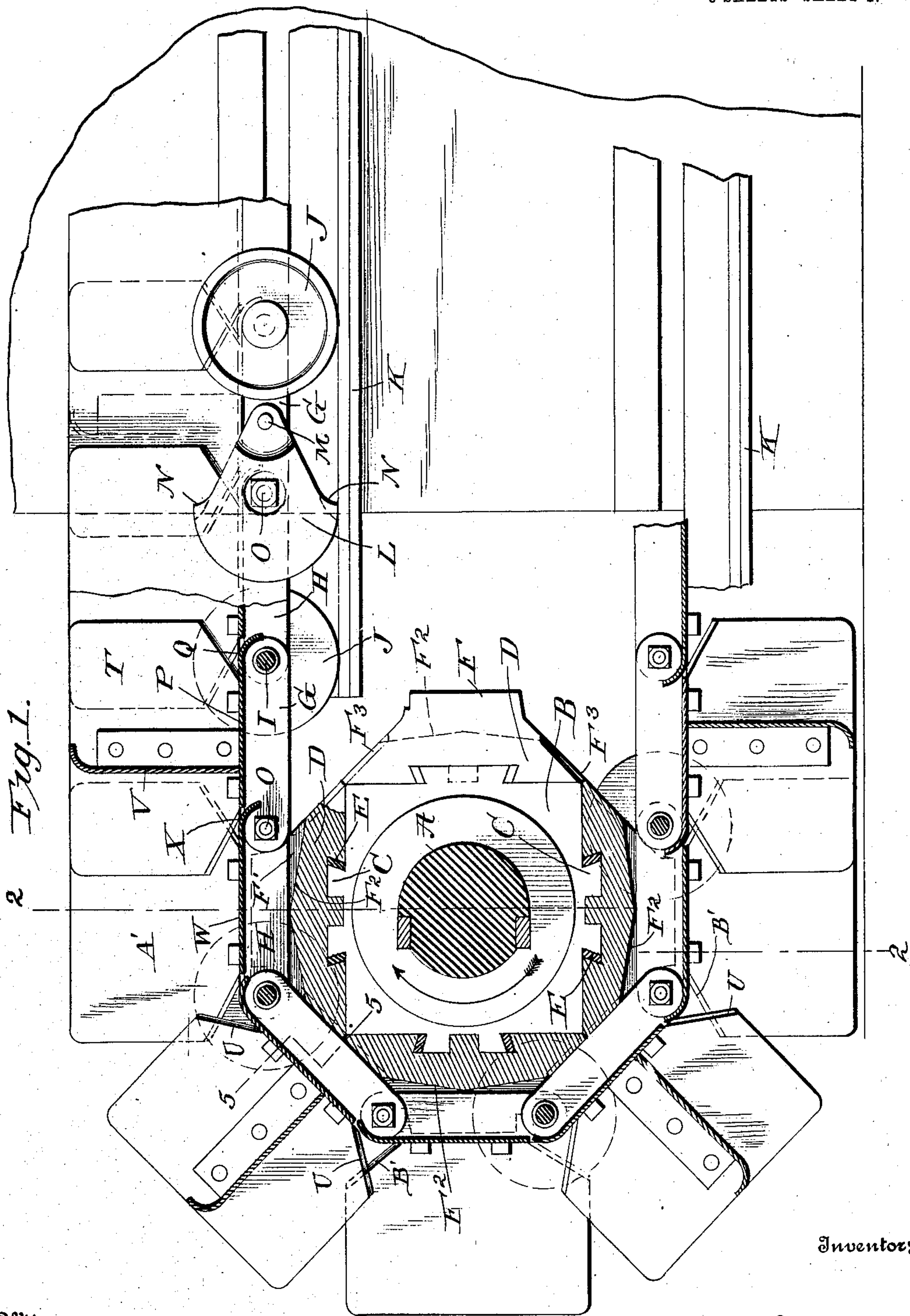
No. 850,684.

PATENTED APR. 16, 1907.

F. A. M. SMULDERS.  
ENDLESS CONVEYER.

APPLICATION FILED FEB. 5, 1907.

3 SHEETS—SHEET 1.



Inventor:

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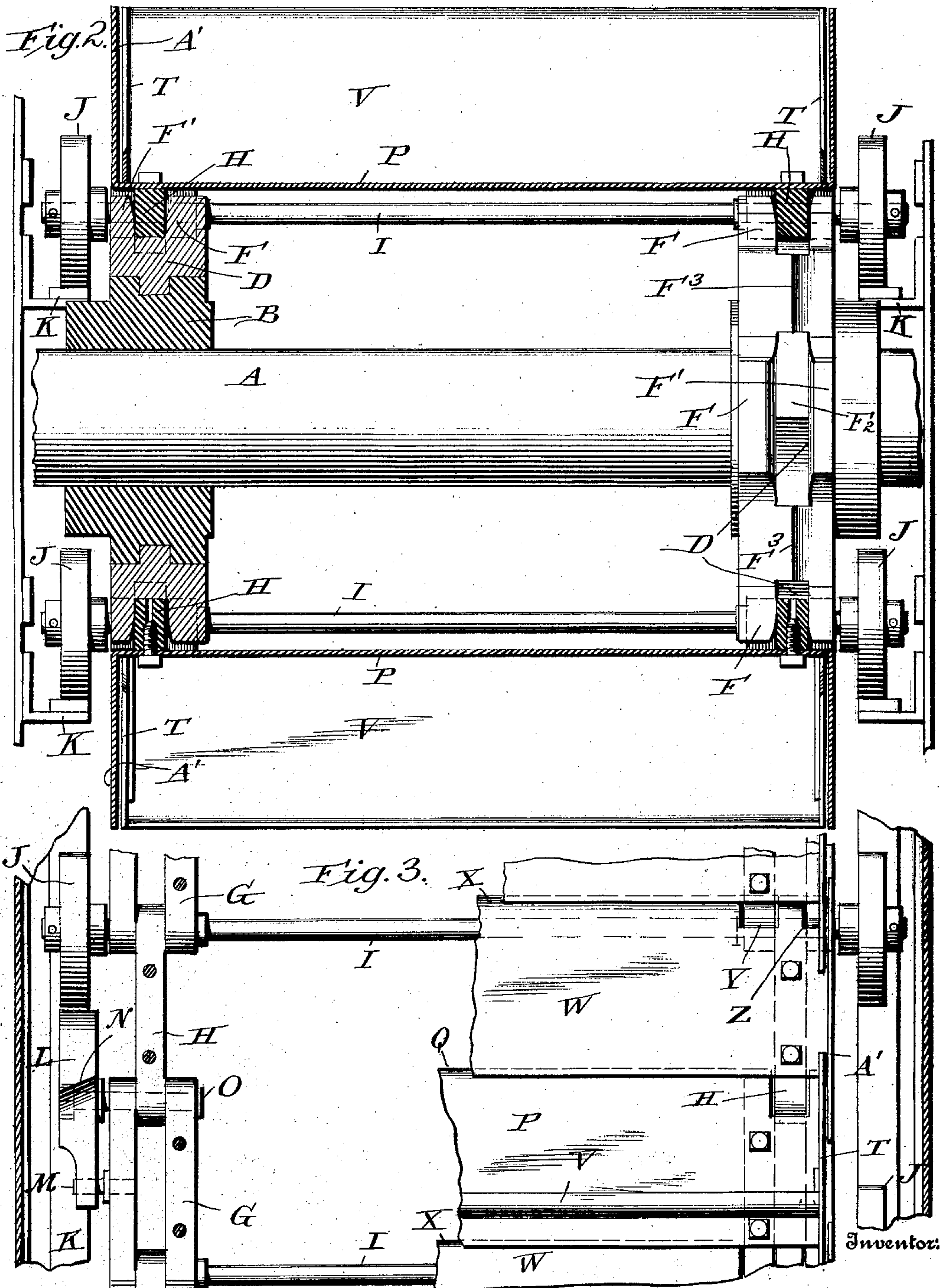
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3 SHEETS—SHEET 2.



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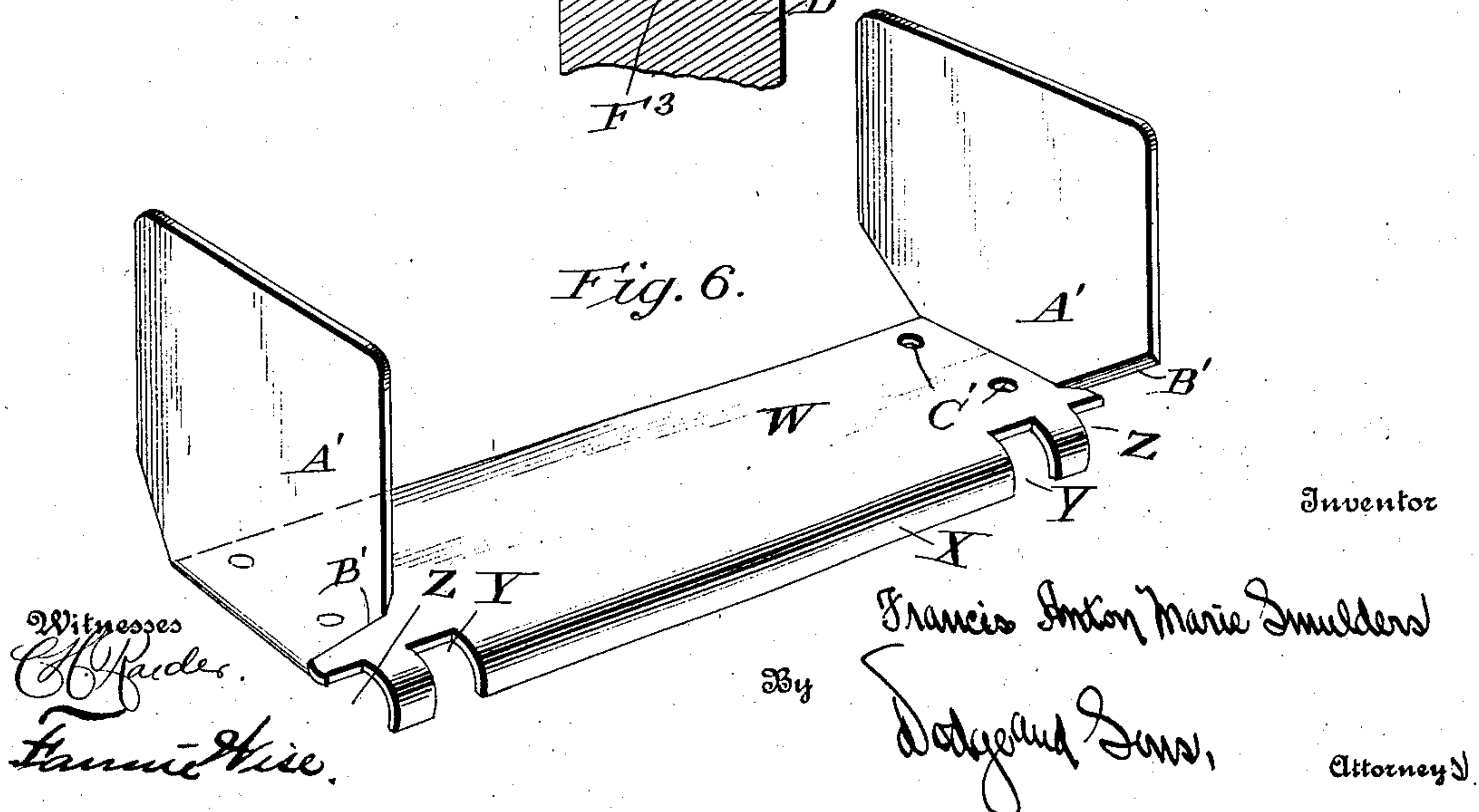
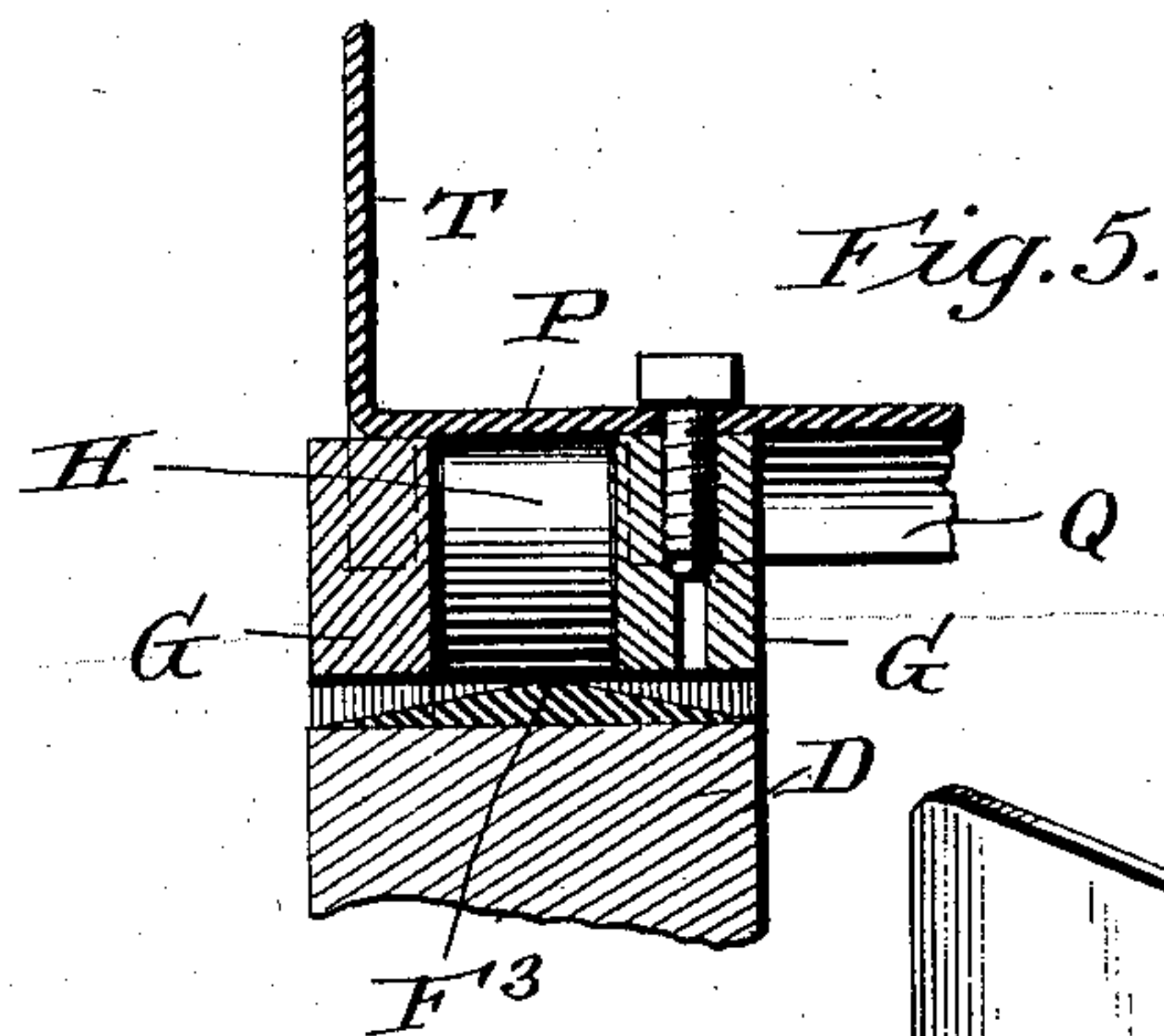
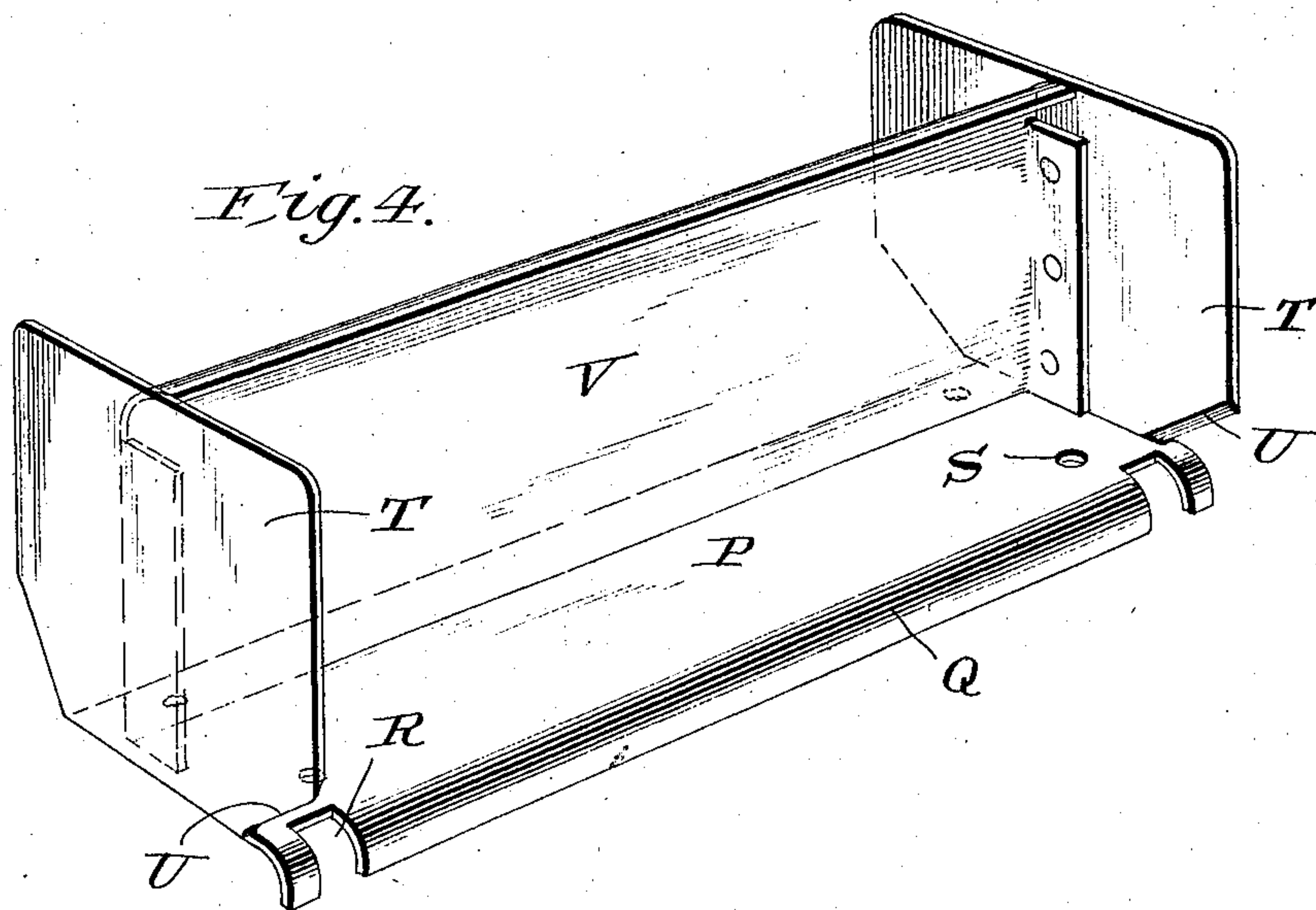
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

FRANCIS ANTON MARIE SMULDERS, OF ROTTERDAM, NETHERLANDS.

## ENDLESS CONVEYER.

N. J. 850,684.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed February 5, 1907. Serial No. 355,900.

*To all whom it may concern:*

Be it known that I, FRANCIS ANTON MARIE SMULDERS, a subject of the Queen of the Netherlands, residing at Rotterdam, in the Province of South Holland and Kingdom of the Netherlands, have invented certain new and useful Improvements in Endless Conveyers, of which the following is a specification.

My present invention pertains to improvements in endless conveyers, the construction and advantages of which will be hereinafter set forth in detail, reference being had to the annexed drawings, wherein—

Figure 1 is a side elevation of a part of the conveyer and one of the driving-wheels, the latter and a portion of the conveyer being shown in section; Fig. 2, a transverse vertical sectional view taken on the line 2 2, Fig. 1; Fig. 3, a top plan view, a portion of the buckets being broken away to show the chain and the track-clearer; Fig. 4, a perspective view of one of the bucket members; Fig. 5, a detail sectional view on the line 5 5 of Fig. 1; and Fig. 6 a perspective view of a second bucket member.

The object of the present invention is to provide a simple and efficient endless carrier, designed more particularly for use in transporting coal or other minerals and the like from one point to another.

The buckets for containing the material are mounted upon endless chains or belts, which pass about sprocket-wheels or drums located at the opposite ends of the run and at intermediate points, if so desired, the buckets being of peculiar construction, as will be hereinafter set forth in detail.

Referring to the drawings, A denotes one of the driving-shafts, adjacent to each end of which is mounted a block or casting B, secured to the shaft in any suitable manner, so as to rotate therewith. The block or casting is substantially rectangular in cross-section and is provided upon each side with outwardly-projecting lugs C, the adjacent faces of which are parallel, while the outer faces are inclined outwardly, so as to form a substantially dovetailed member. Mounted upon each face of the block B is a sprocket member D, said member being provided with slots or ways of substantially the same form as the lugs C and adapted to receive the same, said slots or ways being made slightly larger than the lugs, so as to provide for the reception of wedges or gibs E, which are

driven in between lugs C and the member D. Said member is provided with a pair of outwardly-extending teeth F F', which pass between the ends of the paired links G and embrace the single links H of the chain. The face of the member between said teeth or lugs is inclined outwardly in each direction from the center, as denoted at F<sup>2</sup>. The conjoining portions of the members D are provided with inclined faces F<sup>3</sup>, such faces and the faces F<sup>2</sup> preventing the accumulation of material on the wheel or drum. The pivotal connection between the link H and the paired links G is made by a rod I, which passes through the links and extends outwardly beyond the same to provide a support or axle for a roller or wheel J. Said wheels are adapted to rest and move upon rails or tracks K, and thus hold the chain out of contact with the tracks and properly position the paired links with reference to the sprocket-teeth F F' of the driving wheels or drums.

A clearer (best shown in Figs. 1 and 3) is secured to the chain and overlies the track, serving to remove therefrom any coal or other material which may overshoot the buckets as the same are filled or come upon the tracks in any other manner. The clearer in the form illustrated comprises a block L, the forward narrow end of which is fulcrumed upon a pin M, secured to one of the links G. The rear end of the clearer is of a height equal to that of the diameter of the wheels J, and both edges thereof are provided with beveled faces N, inclined inwardly or away from the supporting member upon which the track is mounted, so as to deflect any material from the track into the tunnel or other space through which the endless carrier travels.

In order to prevent the clearer from dropping down upon the sprocket-wheel or becoming entangled with any other portion of the mechanism, I provide a pivot-pin O, which connects the adjacent ends of the paired links G and link H (other than where they are connected by the cross-rods) and projects through said clearer.

The buckets are secured directly to the links of the chain and are composed of sections or members best illustrated in Figs. 4 and 6. Referring first to the member shown in Fig. 4, it will be seen that it comprises a cross-plate or floor-piece P, having one side edge Q curved downwardly and provided with a



notch R adjacent to each end. Said notches when the bucket member is secured to the paired links G by screws or bolts which pass through openings S, formed in line with said links at each end of the floor-piece P, will straddle the single links H, as clearly shown in Fig. 3. Extending upwardly from each of the floor-pieces P are wings or end pieces T, which are provided adjacent to the floor member with beveled faces U, the purpose of which will hereinafter appear.

A cross wall or partition V extends upwardly from the floor P to one side of the middle thereof, said partition being rigidly secured to the end walls or wings T. The upper portion of said wall V is preferably curved or turned over to a slight extent.

The other member forming a portion of the bucket is illustrated in Fig. 6. Said member comprises a bottom or floor W, provided with one curved edge X, in which are formed suitable notches Y and Z, that permit said curved portion to fit over and around the paired links G of the endless chain. The member is also provided with upstanding end walls or wings A', which are undercut, as are the wings or end pieces T of the other member, the lower undercut portion being beveled, as shown at B'. Openings C' are formed in the floor W, and bolts or screws passing therethrough secure the member to the links H. The floor W is made slightly longer than the floor P, so that when the parts are assembled the wings or end walls A' pass outside of the wings or walls T. (See Figs. 2 and 3.) The parts are so proportioned that when the chain or conveyer is passing along the tracks the walls or wings will overlap, as best indicated in dotted lines in Fig. 1, so as to form a series of buckets, which are defined by the vertical walls V, the end walls or wings T and A', and the floors P and W. By having the end walls undercut and beveled, as shown, the lodgment of any material between the ends is prevented as they close after passing around the sprocket-wheel or drum or as they shift their position in passing up through an inclined or curved conduit or trunk, as the beveled portions will tend to force the material from between the parts into the buckets or to break up the material so as to prevent injury to the structure.

It is manifest that in so far as the construction of the driving-drum is concerned this may be materially modified without departing from the spirit of the present invention, the essential feature of which resides in the particular construction and formation of the conveyer-buckets. By having the upper edge of the wall V provided with an overhanging portion the material will be prevented from passing out of the bucket as it travels in an upward direction. The curved portion also facilitates the passage of the material from the bucket when the conveyer reaches

the point of discharge and passes about the drum or sprocket-wheel located at such point.

The curved overhanging portions of the floors prevent any large openings being formed therein as they pass around the sprockets or driving-drums, (see Fig. 1,) the center of the curve of such portions being coincident with the center of the pivotal connections of the chain sections or links.

It is apparent that in so far as the particular construction of the buckets is concerned the same may be employed with an endless belt, as well as with endless chains. In such case, however, the rounded portion of the floors would have to be omitted.

Having thus described my invention, what I claim is—

1. In combination with an endless chain or belt, a series of buckets mounted thereon, each bucket comprising a series of sections secured to the chain or belt, said sections having overlapping end walls provided with undercut beveled portions.

2. A conveyer comprising a pair of endless chains, each chain being composed of a series of pivotally-connected links; a floor-piece secured to each pair of oppositely-disposed links, the forward edge of each floor-piece being curved downward and projecting under the straight edge of the adjacent floor-piece; a vertically-disposed wall extending upwardly from each alternate floor-piece; and a wing or end wall projecting upward from each end of each floor-piece, the wings being undercut at their lower portions and provided with beveled faces, substantially as and for the purpose described.

3. An endless conveyer comprising a chain; a series of buckets mounted thereon; a track; rolls for supporting said chain upon the track; and a clearer secured to the chain and movable in line with the track, said clearer serving to remove extraneous material therefrom.

4. In a conveyer, the combination of an endless chain; a series of buckets carried thereby; a supporting-track; rolls mounted upon the chain and resting upon the track; and a clearer secured to the chain and resting upon the track, said clearer being provided with an inclined deflecting-face, substantially as described.

5. An endless conveyer comprising a chain; a series of buckets mounted thereon; a series of rolls for supporting said chain; tracks located in the line of the upper and lower stretches of said chain; and a clearer secured to the chain, said clearer being provided with inclined faces at the upper and lower sides thereof, whereby it will serve to remove extraneous material from both the upper and lower tracks.

6. An endless conveyer comprising a chain; a series of buckets carried thereby;



rolls for supporting said chain; upper and lower tracks located in line with the upper and lower stretches of the chain; and a clearer carried by the chain, said clearer being of a height equal to the diameter of the rolls and provided with faces adapted to deflect material from the tracks, substantially as described.

7. In combination with an endless conveyor, and the supporting tracks or rails therefor; a clearer for the supporting rails or tracks carried by the conveyor.

8. In combination with a driving-shaft; a series of toothed members secured thereto, the face between the oppositely-disposed teeth being inclined outwardly to cause the discharge of any extraneous matter, substantially as described.

9. In combination with a driving-shaft; a series of members secured thereto, each member being provided with a pair of outwardly-extending teeth spaced apart in line with the shaft; and inclined faces formed between the teeth, to cause the discharge of extraneous matter from between the teeth.

10. In combination with a driving-shaft,

a series of members secured thereto, each member being provided with a pair of outwardly-extending teeth, the face of the member between the teeth being inclined downwardly from the center toward each side, and the outer edge of the body at each side of the teeth being beveled or inclined so as to prevent accumulation of any matter thereon.

11. In combination with a driving-shaft, a block or casting secured thereto, said block being polygonal in cross-section and provided with a pair of undercut or beveled faces; lugs extending outwardly from each face thereof; a toothed member arranged to be secured upon each face of the block, each of said members being provided on its under surface with bevel-faced recesses adapted to receive the corresponding lugs; and keys or wedges for securing the lugs in the recesses.

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

FRANCIS ANTON MARIE SMULDERS.

Witnesses:

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C. Y. DENT.