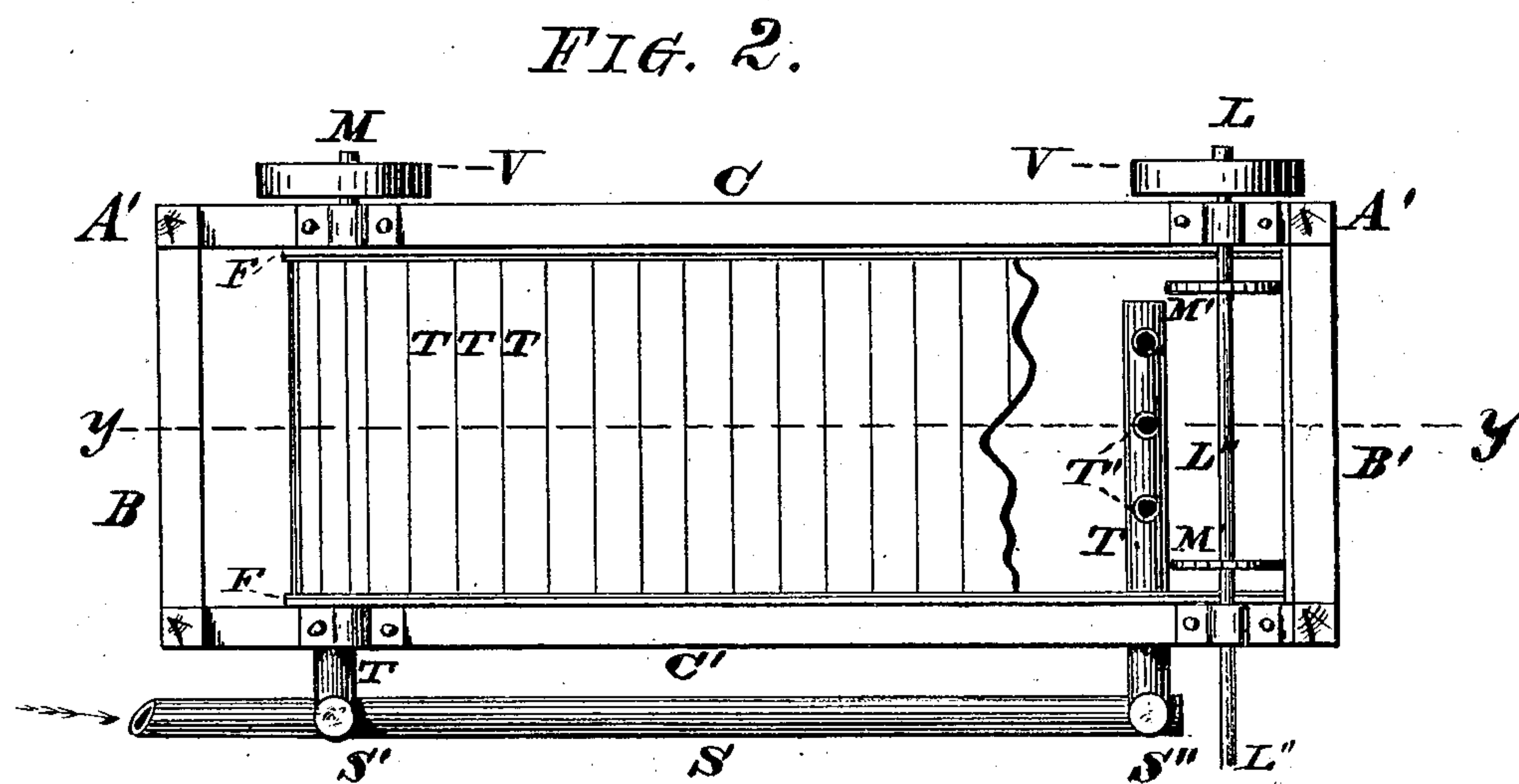
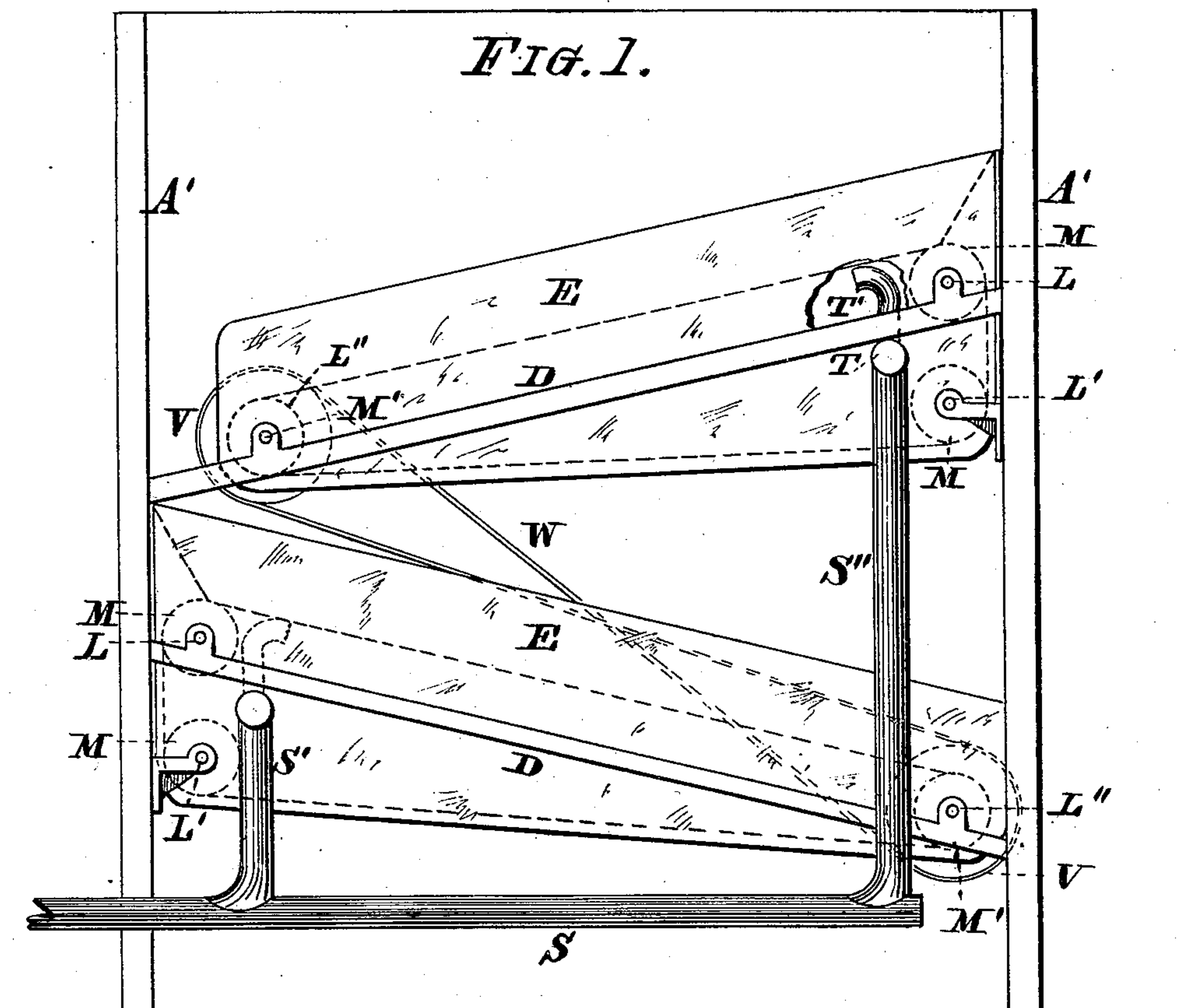


F. H. C. MEY.
DRIER AND COOLER.

No. 261,018.

Patented July 11, 1882.



Witnesses:
Willie O. Stark
Al Stark

Inventor:
Fred H. C. Mey
by Michael J. Stark,
Attorney.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 3.

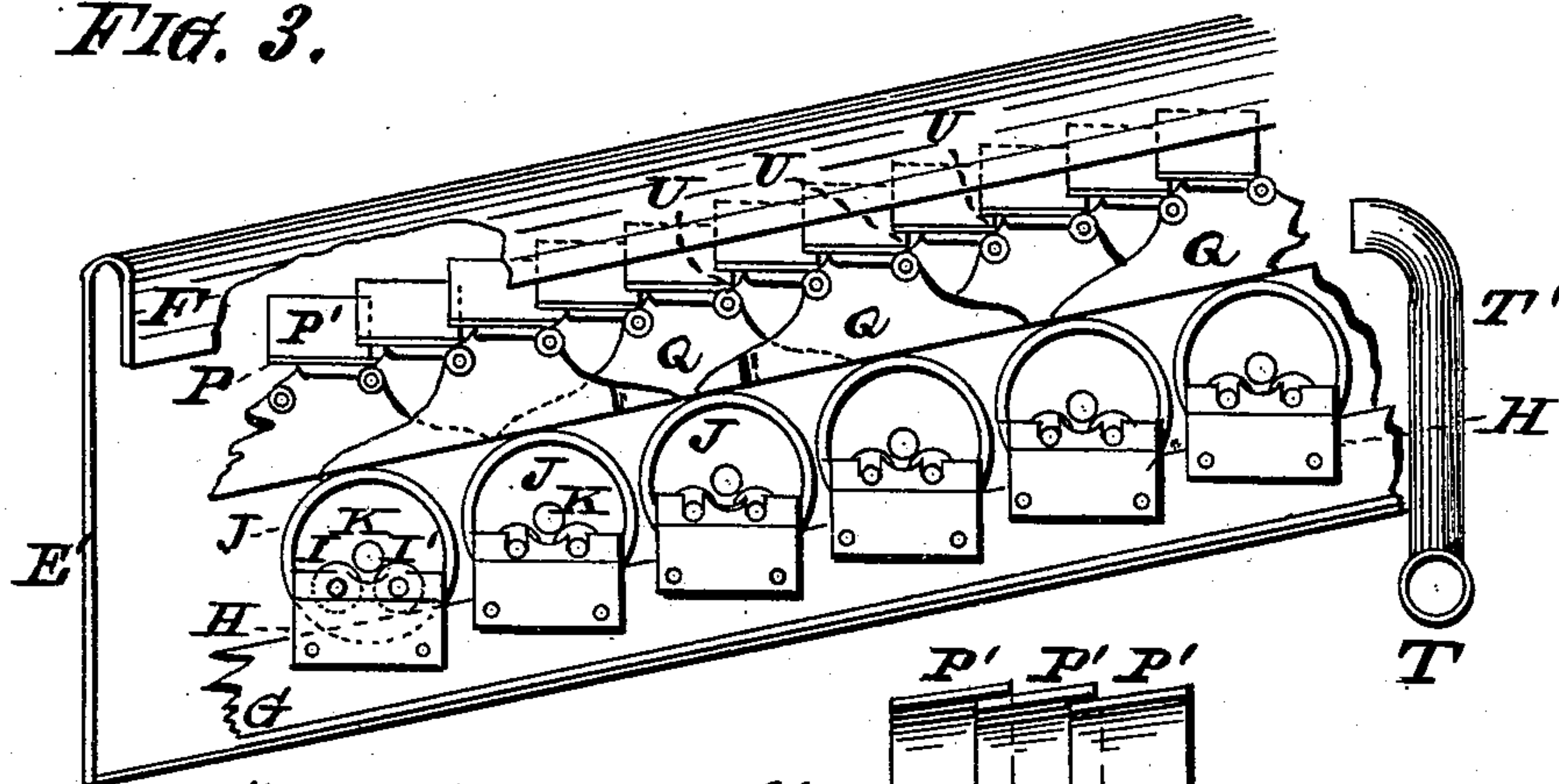


FIG. 4.

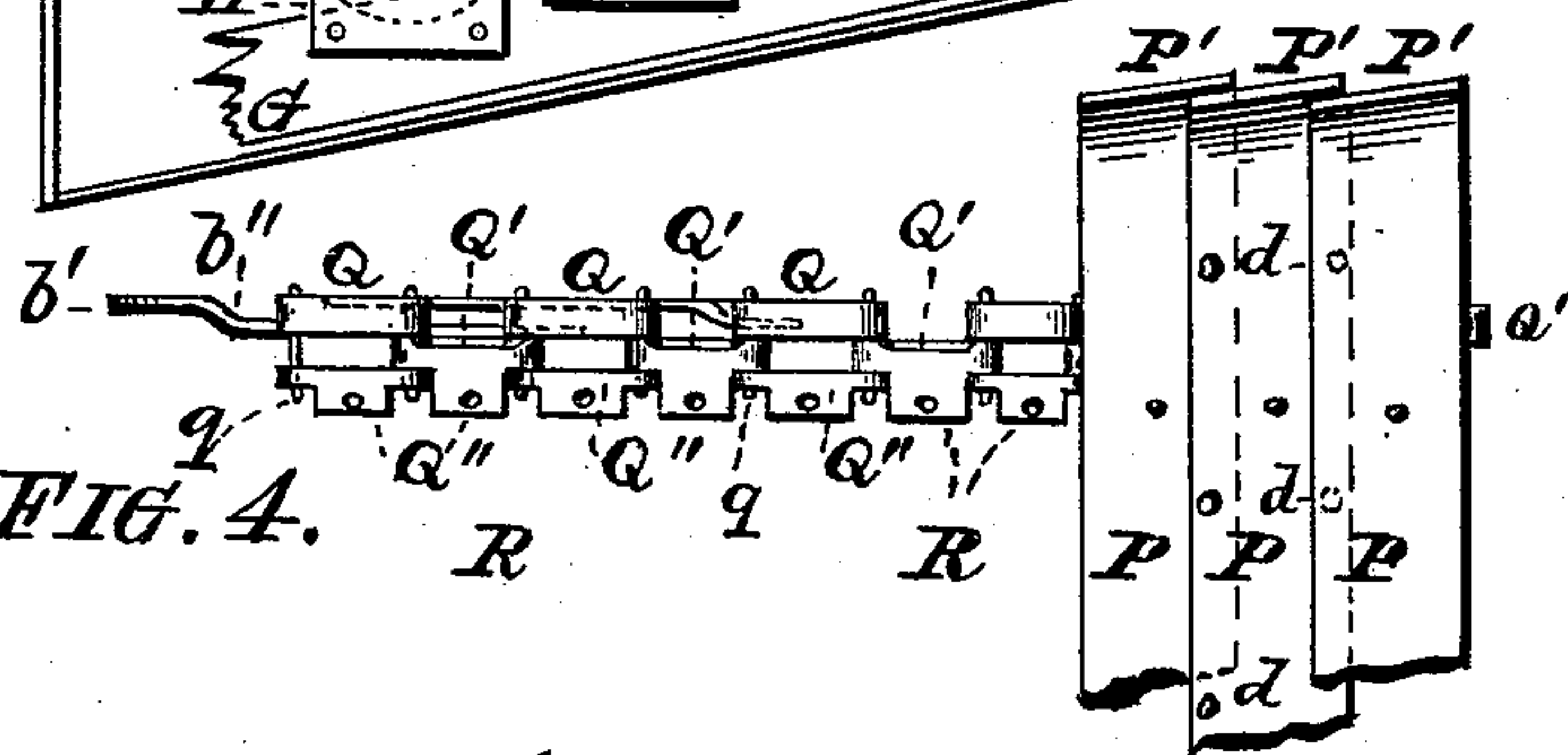


FIG. 5.

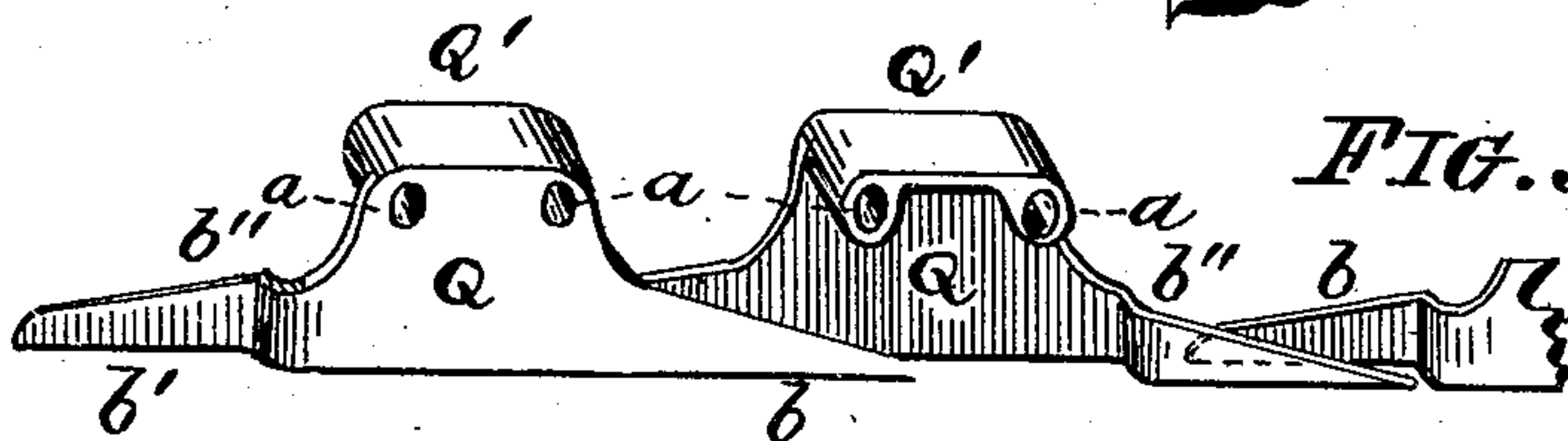
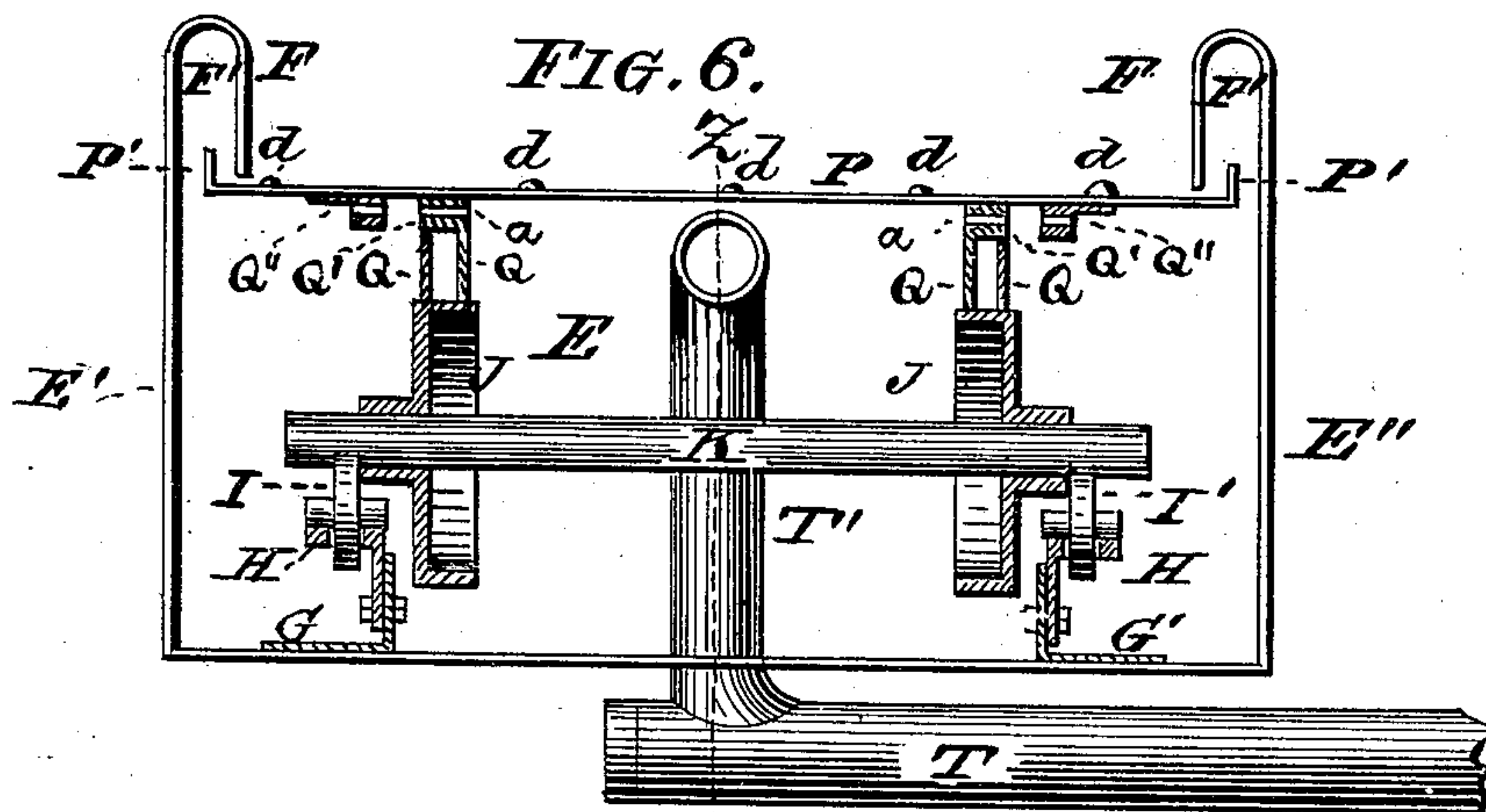


FIG. 6.



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UNITED STATES PATENT OFFICE.

FREDRICK H. C. MEY, OF BUFFALO, NEW YORK.

DRIER AND COOLER.

SPECIFICATION forming part of Letters Patent No. 261,018, dated July 11, 1882.

Application filed April 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK H. C. MEY, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements on a Drier and Cooler; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheets of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to grain, &c., driers and coolers; and it consists essentially in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings, already mentioned, which serve to illustrate my said invention more fully, Figure 1 is a front elevation, and Fig. 2 a plan, of my improved grain, &c., drier and cooler. Fig. 3 is a sectional elevation of a portion of the drying device and conveyer. Fig. 4 is a plan of the same. Fig. 5 is a perspective view of a few of the conveyer-links. Fig. 6 is a transverse sectional elevation through Fig. 3.

Like parts are designated by corresponding letters of reference in all the figures.

A in these drawings represents a suitable frame-work for my improved drier or cooler, consisting of properly-arranged uprights A', cross-pieces B B', longitudinal beams C C', and diagonals D, all as indicated in Figs. 1 and 2, or any other convenient and approved construction. Within this frame-work I provide for a series of fixed box-shaped compartments, E, Figs. 1, 3, and 6, the number of which depends upon the capacity which the drier, &c., is to possess, said compartments E having side walls, E' E'', the upper extremity of which is bent into the shape of the letter U, as indicated in Figs. 3 and 6 at F. The top side of these compartments is left open, said side being subsequently closed by a traveling or moving platform or apron, as hereinafter to be referred to.

Within the compartments E, I place a suitable number of angle-pieces or other supporting members, (rails, &c.,) G G', to which in turn

are secured a series of gudgeons, H, each of which carries two rollers or sheaves, I I', which again support shafts K, carrying supporting-sheaves J, upon which an endless conveyer is carried. In the higher part of these compartments, which are suitably inclined in alternately-opposite directions, as shown in Fig. 1, are arranged two shafts, L L', having sprocket or other guide or driving wheels M, while in the lower part of these compartments there is also a shaft, M', carrying wheels L''. Over these wheels M M' L'' passes an endless apron consisting of a series of slats, P, secured to an endless chain or belt consisting of a series of links, Q, connecting-links Q', and another series of connecting-links, Q'', the links being hinged together by means of pins or bolts q, all as clearly shown in Fig. 4.

On the connecting-links Q' and Q'' are formed plates R, upon which the slats P are fastened in any convenient and desirable manner. The extremities of the slats P are upwardly bent at P', which part P' passes through the space F', formed by the U-shaped sides E'.

Into the compartments E hot or cold air is forced by any suitable blowing-engine (not shown) through the pipes S, S', and T, which air escapes through the nozzles T' into the upper part of said compartments and escapes through the interstices or spaces U between the slats P, as shown in Fig. 3.

On the shafts L'' and M' are pulleys V, Fig. 1, connected by a chain or other belt, W, in such manner that two of the endless belts in the compartments E are always operated together, motion being given to the shaft L by suitable gearing (not shown) from any prime or secondary motor, and transferred from that shaft to the shafts M' and L'' through the endless apron and the belt W in a manner readily comprehended.

In operation grain, malt, refuse of distilleries and sugar-factories, or any other substance or material to be either heated or cooled is carried to the endless apron in the uppermost compartment E by any proper elevating mechanism and evenly distributed upon said apron. Hot or cold air (as the case may be) is now forced into said compartments E and the endless aprons caused to slowly move, when the

grain, &c., distributed and carried upon the endless apron in the upper compartment is slowly carried downward, falling from the tail of one compartment to the head of the next succeeding lower compartment until it finally reaches the lowest compartment, from which it falls into a bin, (not shown,) and from which it is removed in any convenient manner.

In practice it will be found to require several sets of compartments to expose the grain, &c., to the action of the heated air for a sufficiently long time to thoroughly dry the same; or the grain may have to be passed several times through the drier before it is in a fit state for the market or for use, in which case an elevator may be provided to remove the grain from the bin heretofore mentioned and to deposit the same upon the apron of the uppermost compartment.

It will now be readily observed that the heated (or cold) air escapes from the compartments E through the spaces or interstices between the slats P, thereby not only sufficiently agitating the grain, &c., upon the apron to expose every particle thereof to the action of the air, but also to enter the layer of grain at many places through comparatively large openings, thus presenting the smallest possible frictional resistance to the escaping air, and thereby greatly increasing the capacity of the machine.

It will be further observed that the sides of the compartments are downwardly bent at F to resemble the inverted letter U, and that the ends of the slats P are upwardly bent at P' to enter the open space F' in the bent portion. This construction, which is an essential feature in grain-driers, &c., having an endless apron, prevents the grain on the apron from working its way into the interior of the compartments, where it might seriously interfere with the proper action of the interior mechanism, and where it would produce other obvious obstacles and drawbacks to the correct operation and performance of the apparatus.

To attain the properly-regulated speed of the endless apron, I may drive the shafts L by means of worm-gearing or any other suitable mechanism the speed of which is such as to produce the comparatively slow speed of the aprons, and at the same time be powerful enough to keep the entire mechanism in motion.

In the drying of grain large lumps are very often formed, owing to the adhesive nature of the starch and gluten contained in the cereal, which lumps seriously interfere with the proper performance of the drier. This drawback is to the greatest extent, if not entirely, overcome in my drier, owing to the fact that such lumps, when forming, are continually broken up when passing over the tail of the aprons, where the polygonal shape assumed by the slats when passing around the sprocket-wheels L', M', &c., causes these slats to act as disintegrators, and thereby to break up all lumps

that might have formed during the movement of the grain from the head to the tail end of the machine.

I will here call attention to the fact that the links Q, which may properly be called "carriers," are composed of a head-piece, Q', Fig. 5, having apertures *a* for the passage of the bolts *q*, the body proper, Q, and the tails *b b'*, one of which, *b'*, is bent at *b''*, so as to pass the tail *b* of the next succeeding link, the distance from end to end of the tails *b b'* being such that the base of the links Q always rests upon at least two of the carrying-sheaves J, as shown in Fig. 3, whereby the parallelism of the slats P is preserved and the load upon the apron best distributed upon the said carrying-sheaves.

In case the width of the platform or apron is not exceedingly large, two lines of links and carrying-sheaves properly distributed, as shown in Fig. 6, may be found sufficient; but if a greater width of the apron is desired additional supporting-lines may be found necessary.

Since the weight of the grain, &c., upon the slats P may have a tendency to deflect them, and thereby to close the interstices between the several slats, I place near the forward edge of each slat a series of buttons, *d*, Figs. 4 and 5, which will prevent the slats from ever meeting, and thereby to contract or even close the exit-openings of the air.

Having now fully described my invention, I claim as new and desire to secure to me by Letters Patent of the United States—

1. A drier or cooler having a drying-surface consisting of an endless apron composed of properly-disposed connected links and a series of transverse horizontal slats, said apron being constructed to operate within a closed compartment into which the drying or cooling medium is forced by suitable mechanism, substantially as and for the object specified.

2. An endless apron for a drier and cooler, consisting of a series of carrying-links, a series of links connecting said carrying-links, and a series of slats, substantially as described, said carrying-links being supported upon an anti-friction device, substantially in the manner as and for the purpose mentioned.

3. In driers and coolers, a compartment having its side walls downwardly bent into the shape of the letter U inverted, in combination with an endless drying-surface composed of a series of slats having upturned ends entering the space formed by the downwardly-bent sides, substantially as and for the purpose stated.

4. In drying-aprons for grain and the like, the carrying-links Q, consisting of the perforated head Q', body proper, and the tails *b b'*, said links being adapted for operation upon a carrier substantially in the manner as and for the object specified.

5. In drying apparatus, an endless apron consisting essentially of a series of carrier-links, Q, a series of connecting-links, Q', having

plates R, another series of connecting-links, Q'', also provided with plates R, and a series of slats, P, fixed to the plates of the links Q' Q'', substantially as and for the object stated.

5 6. The combination, with the compartment E, of the supports G, having the gudgeons H and carrying-wheels J, of the endless apron having carrying-links the bases of which pass over the carrying-wheels, as described, and
10 the sprocket-wheels, as stated, the whole being

constructed and combined for operation substantially in the manner as and for the object specified.

In testimony that I claim the foregoing as my invention I have hereto set my hand in 15 the presence of two subscribing witnesses.

FREDRICK H. C. MEY.

Attest:

MICHAEL J. STARK,
JOHN C. DUERR.