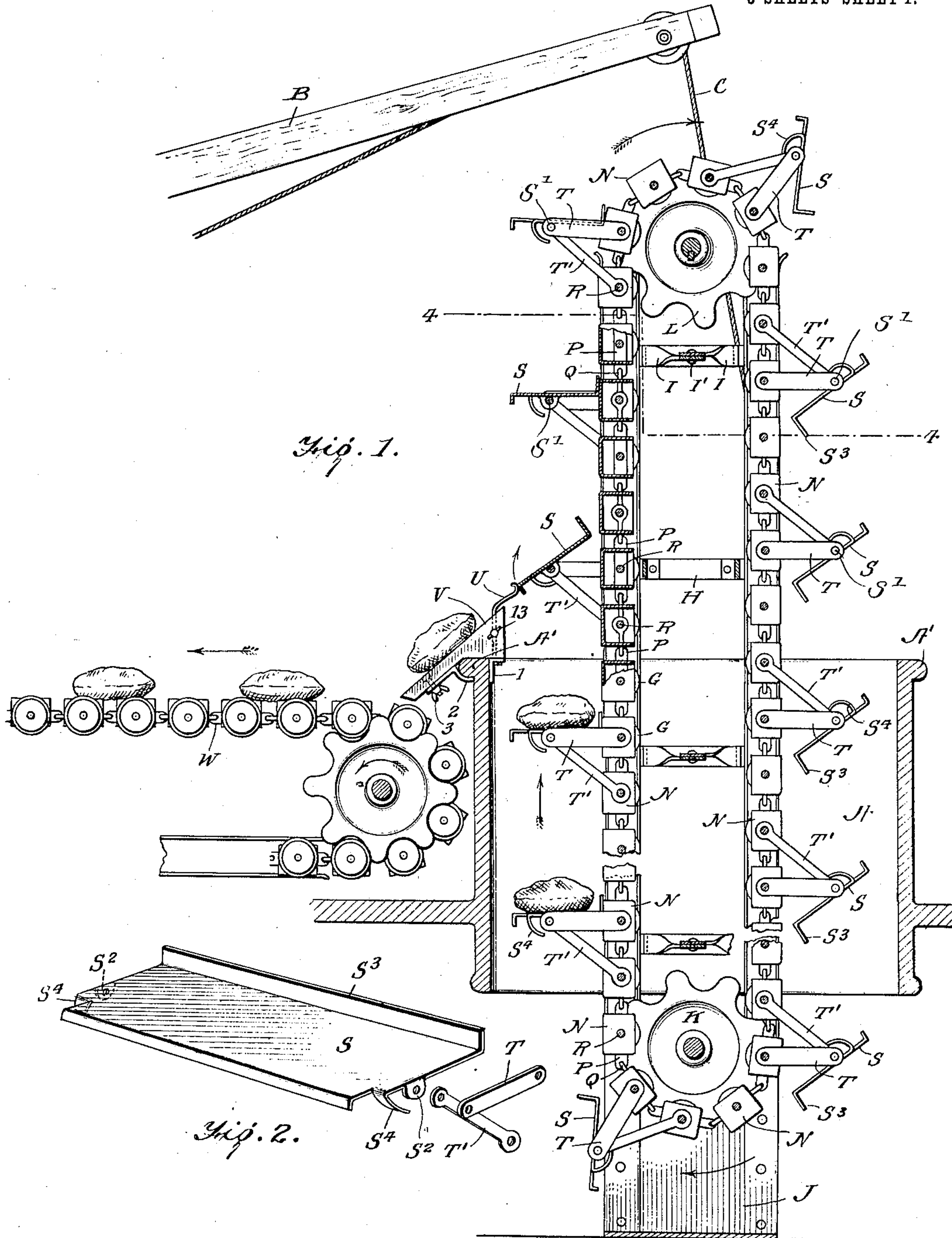


W. J. TURNBULL.
CONVEYER.
APPLICATION FILED MAR. 4, 1910.

975,181.

Patented Nov. 8, 1910.

3 SHEETS—SHEET 1.



WITNESSES:

L. H. Schmidt.
Perry B. Surpin

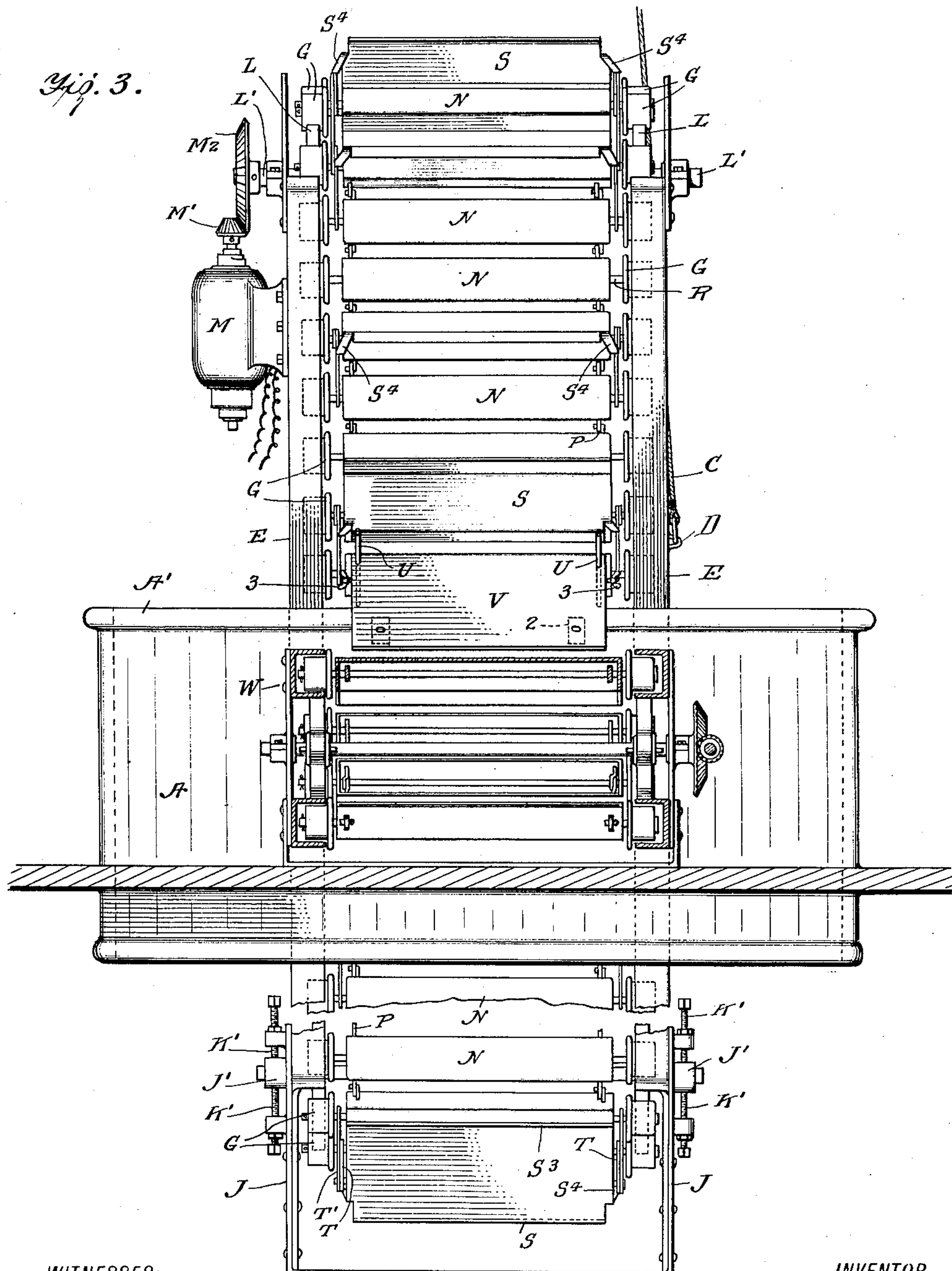
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 4.

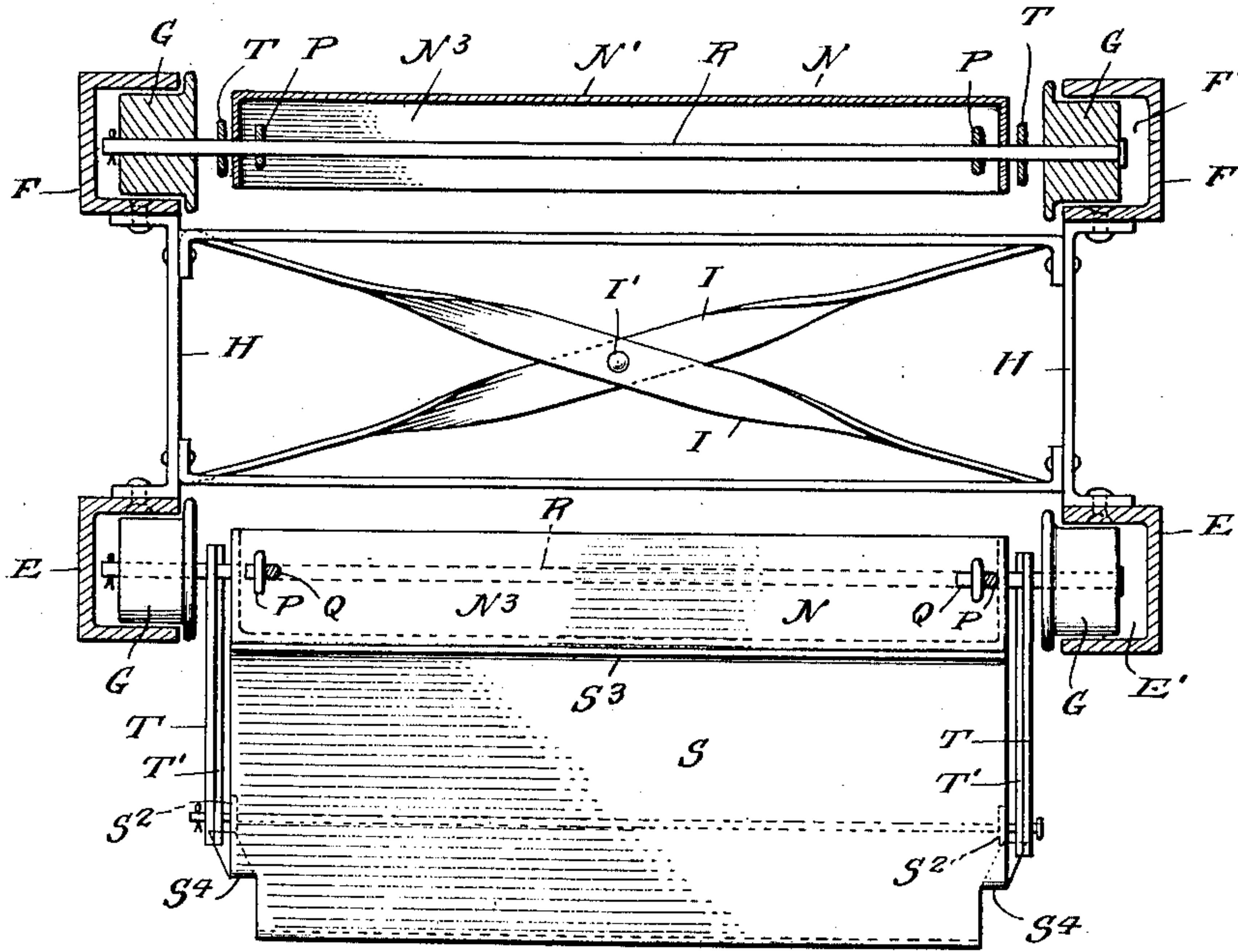


Fig. 5.

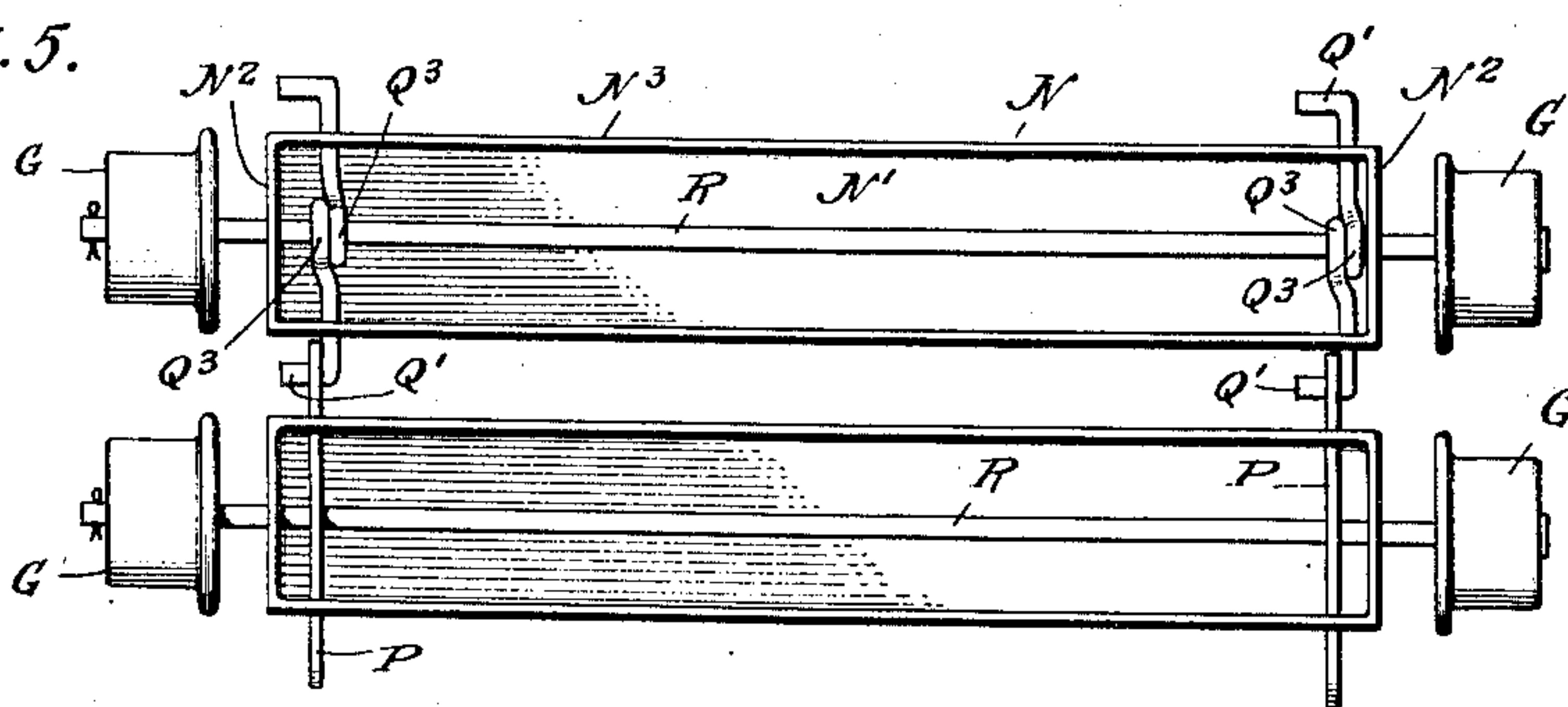


Fig. 6.

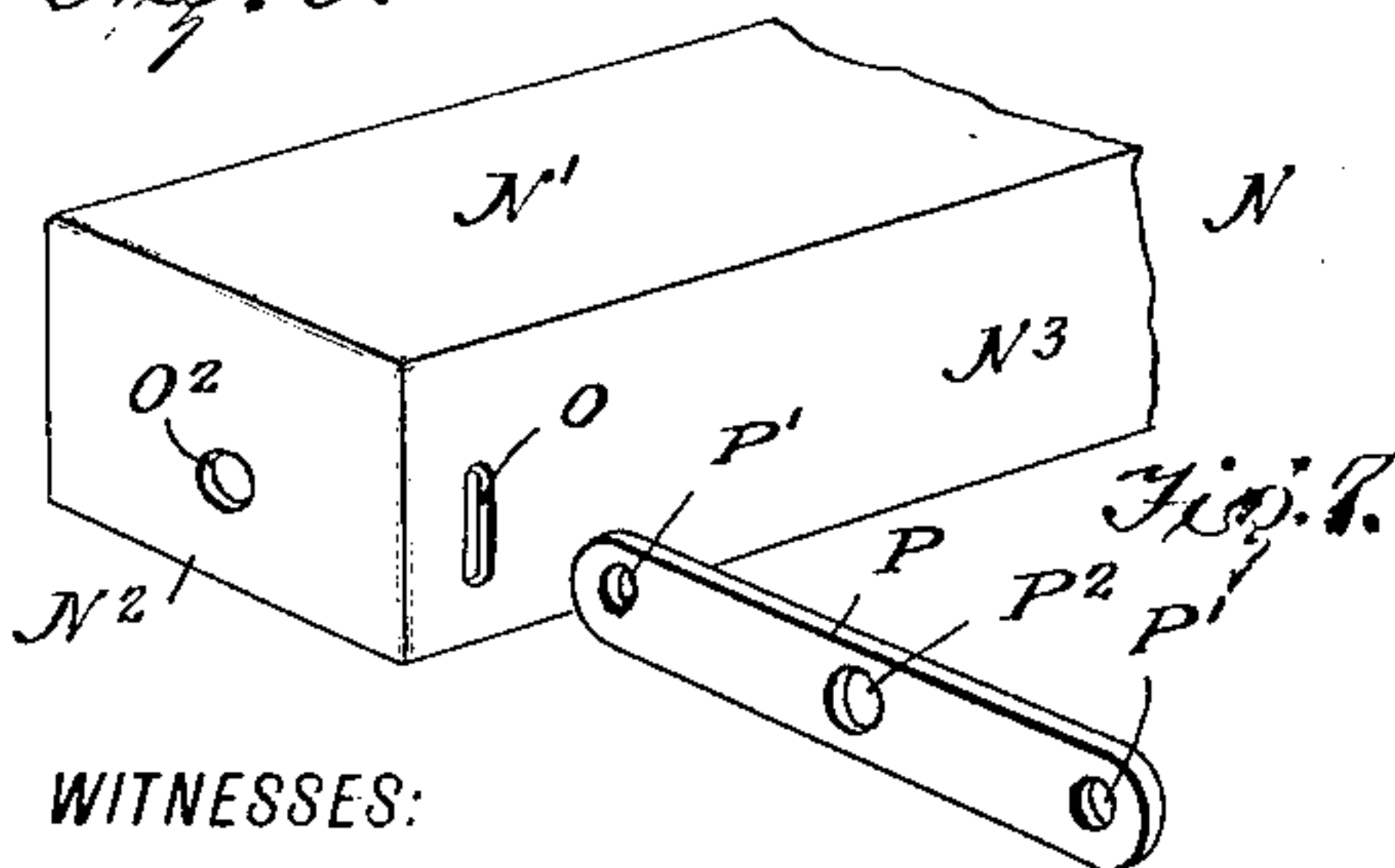


Fig. 7.

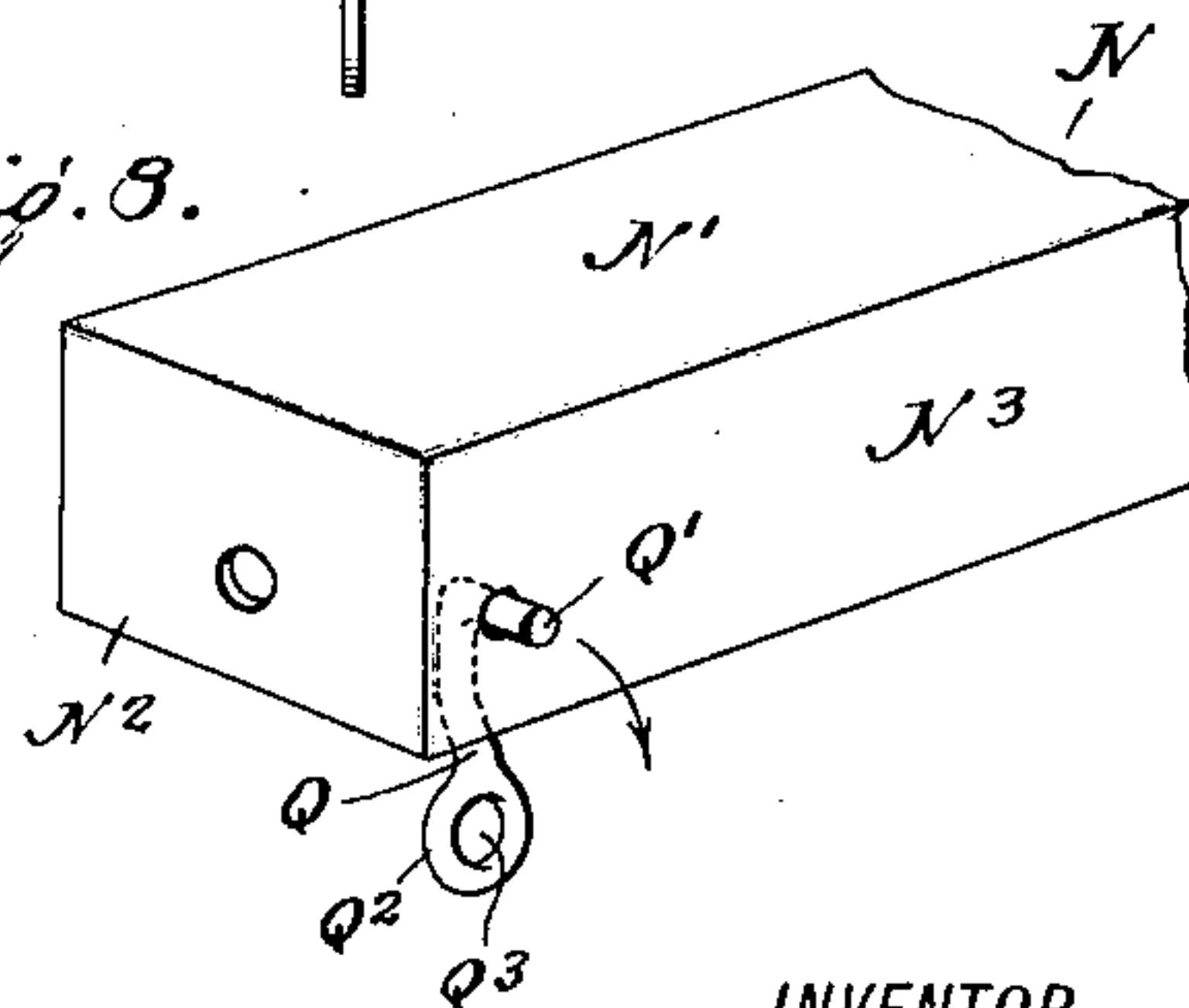
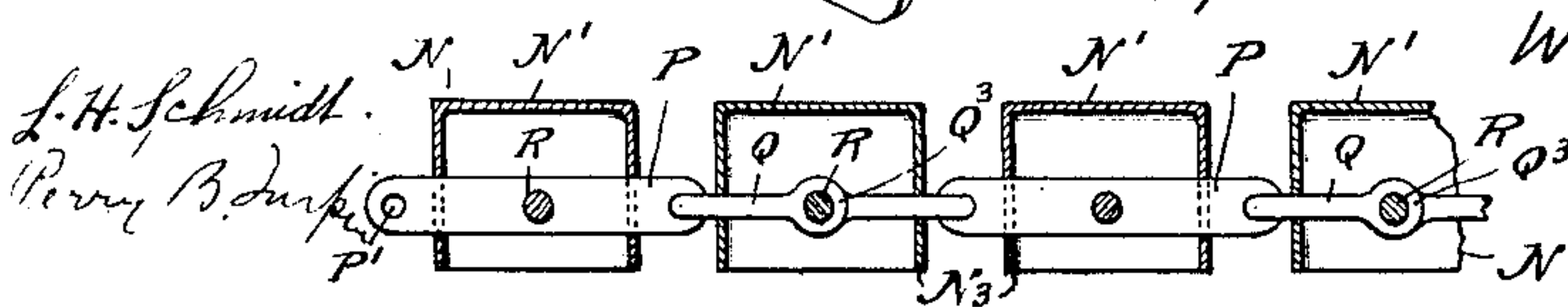


Fig. 8.

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UNITED STATES PATENT OFFICE.

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CONVEYER.

975,181.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed March 4, 1910. Serial No. 547,279.

To all whom it may concern:

Be it known that I, WALTER J. TURNBULL, a citizen of the United States, and a resident of New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Conveyers, of which the following is a specification.

This invention is an improvement in conveyers and has for an object, among others, to provide a novel construction of perpendicular conveyer which can be operated efficiently for discharging cargoes from the hulls of vessels and which can be lowered from time to time as the cargo is discharged in order that the conveyer may be supported by the cargo as the latter is lowered during the operation of unloading; and the invention consists in certain novel constructions and combination of parts as will be hereinafter described and claimed.

In the drawing Figure 1 is a sectional elevation of a conveyer embodying my invention as in use. Fig. 2 is a detail perspective view of one of the tilting shelves and the bracket bars for supporting the same. Fig. 3 is a front elevation of the vertical conveyer, the horizontal conveyer being shown in section. Fig. 4 is a cross section on about line 4-4 of Fig. 1. Fig. 5 is an elevation from the inner side of a portion of the conveyer chain showing the slats, the connecting links and the shafts carrying the wheels to operate in the track ways of the conveyer frame. Fig. 6 is a detail perspective view of one of the slats. Fig. 7 is a detail perspective view of one of the solid links used in connecting the slats. Fig. 8 is a detail perspective view of one of the slats with one of the link sections illustrating the manner of introducing the sections of the sectional link into connection with the slat and Fig. 9 is a detail sectional view of a portion of the conveyer chain.

The invention is especially designed for use in discharging ship cargoes, such for instance as are put up in bags, and the apparatus as shown, includes a conveyer frame having track ways and sprocket wheels and an endless conveyer chain operating in connection with said frame and provided with tilting shelves which on the ascending run of the chain carry the bags up from below and are tilted at a proper point to discharge the bags from the conveyer, preferably onto

a laterally extending conveyer by which the bags may be carried to any desired point. It is proposed in practice to lower the perpendicular conveyer down in the hatch way A of the vessel by means of the hoisting mechanism ordinarily employed on ship-board and which may include a boom B connected in suitable manner, as for instance by a cable C with the conveyer frame, the latter having a bull link at D or other means for facilitating the connection therewith of the hoisting means so the conveyer can be lowered from time to time as the cargo is discharged in order that its lower end may be at all times approximately at the level of the cargo in the hull so that as the unloading proceeds the conveyer may be lowered from time to time as will be readily understood by those familiar with the operation of unloading ships cargoes.

The conveyer frame is provided with the front and rear track ways E and F which may be alike and are preferably in the form of channeled beams whose channels E' and F' operate as track ways for the rollers G of the conveyer chain and these front and rear track ways are connected by the bars H extending between the front and rear track ways on the same sides of the machine and also by the diagonal or strut brace bars I which connect the front track ways respectively with the rear track ways at the opposite sides of the machine, the said diagonal brace bars I being connected at their middle portions at I' and the said rods H and I operating between the upper and lower ends of the frame to brace the track ways firmly in position. As best shown in Fig. 4 the track ways all have their channels opening inwardly to receive the conveyer chain which operates within the conveyer frame and between the opposite track ways. At their lower ends the track ways at the same side of the machine are connected by side plates J which provide bearings at J' for the shaft of the lower sprockets K and screws K' operating upon the bearings J' provide for adjusting the tension of the conveyer belt as may be necessary in the operation of the apparatus. The lower sprocket wheels K are idlers and serve to guide the conveyer chain at the lower end of the apparatus.

At the upper end of the conveyer frame, I provide the drive sprocket wheels L whose

shaft L' may be suitably driven by any desired form of motor mechanism. In Fig. 3, I illustrate an electric motor M whose shaft is geared by bevel gears M' and M² with the shaft L' so the said electric motor may be operated to drive the sprocket wheels L and the conveyer chain as may be desired in the operation of the invention. The conveyer chain has, as before described, the rollers or flanged wheels G which operate in the track ways of the frame and these rollers are also formed to fit the sprocket wheels K and L so that the same rollers operate to reduce friction in the track ways of the frame and in the engagement of the chain with the sprocket wheels with which the said chain coöperates.

An important feature of my invention is the construction of the conveyer chain whereby I secure at a minimum cost the maximum simplicity and strength of structure and at the same time furnish a structure in which the several units are duplicates of each other and the parts can be conveniently detached at any point to enable convenient repairs in an inexpensive way. In carrying out such feature of my invention, I form the chain with slats N having back plates N', end plates N² and side plates N³ and the slats are arranged in operation with their plates N' at their outer sides, thus providing a series of closed slats on the outer side of the conveyer chain throughout the length of said chain. The slats N are alike except that being made in pairs, one slat of each pair is provided in its side plates N³ near its ends with slots O to receive the solid links P while the other slat of each pair has in its side plates N³ near its ends openings O' adapted to permit the passage from the inner side of the said plates N³ of the hooked ends Q' of the sectional links Q so the sectional hooked links may be inserted through the side plates N³ from the inner sides thereof and these links Q are provided at one end with the hooks Q' to engage in the openings P' at the ends of the links P and at their other ends the sections Q of the sectional link are provided with eyes Q² which lap alongside each other as best shown in Fig. 5 of the drawing and receive the axle rod R which extends through the slat and through the openings O² in the ends thereof and provide journal bearings for the rollers G as will be understood from Fig. 5 of the drawings. In assembling the parts, it will be noticed that by engaging the hooks Q' of the sections Q in the openings P' of the links P, which links P have central openings at P² for the passage of the axle rod R, the adjacent slats are connected in a simple manner so they can be conveniently detached whenever desired. The slats N being preferably of metal and pressed into

the desired form, furnish at the outer side of the chain a broad flat bearing surface at the outer side of the back plate N' against which rests the rear edge of the shelf S which shelf is supported and operated in the manner more fully described hereinafter.

In supporting the shelf S I pivot it at a point S' slightly nearer its front than its rear edge in order that the back of the shelf may overbalance the front and normally hold the shelf in the horizontal position shown above and below the tripping rod U in Fig. 1 on the upward run of the conveyer and the shelf is pivoted at S' to a bracket carried by the conveyer chain and preferably by two adjoining slats. In doing this, I form the brackets with lateral bars T and strut bars T' pivoted at their inner ends on the axle bars of adjoining slats as will be understood from Figs. 1 and 4 of the drawings and having at their outer ends coincident openings through which a pivot rod is passed and carried through perforated lugs S² on the shelf S as will be understood from Figs. 1 and 2 to pivot the shelves as desired. At their rear edges the shelves S are provided with upturned flanges S³ which in the horizontal position of the shelf S, as in use, rests flat against the back plate of the slat carrying the horizontal bracket arm T and holds the shelf firmly in its horizontal position as when supporting a bag as shown in Fig. 1. At its outer edge the shelf is flanged downwardly to increase its strength and rigidity and in advance of the pivot lugs S² I provide the shelf S with downwardly and rearwardly deflected ears S⁴ which by engagement with the bracket bars T' limit the tilting movement of the shelves as best shown in Fig. 1 of the drawings.

In operating, the cargo bags placed on the shelves, see Fig. 1, will be carried upwardly by the conveyer until the outer edges of the shelves engage with the tripping rod U suitably arranged and adapted to tilt the shelves as shown in Fig. 1 to discharge the bag therefrom on to an inclined platform V by which they will be directed to the horizontal conveyer W whose chain may be of the construction heretofore described in connection with the vertical conveyer. The platform V is clamped to the hatch by the construction shown at 1 and 2 in Fig. 1 and including a clamp plate 1 and held to the platform V and arranged to bear against the inner side of the hatch while the sliding clamp section 2 is curved to engage with the flange A' of the hatch and may be secured in position by the screw 3 and thumb nut as shown in Fig. 1. The tripping rod U may be adjustably secured by the clamping screw 13 so it may be raised and lowered into the desired position.

I claim:

1. A conveyer substantially as herein described, comprising a conveyer frame having track ways, sprocket wheels supported in said frame, a conveyer chain comprising a series of channeled slats having back plates arranged on the outer side of the chain and provided in their side plates with openings for the passage of links and in their end plates with openings for axle bars, rollers on said bars alongside the ends of the slats and adapted to operate in the track ways of the frame and in connection with the sprocket wheels, solid links passed through the side plates of the alternated slats and having openings at their middles for their corresponding axle bars and also having at their ends beyond the slats lateral openings and the intervening slats having their side plates provided with openings for link sections and link sections having their outer ends hooked to engage with the solid links of the adjoining slats and having at their inner ends eyes lapping alongside each other and receiving their respective axle bars, brackets having lateral and strut bars carried by the axle bars of the adjoining slats, shelves pivoted to said brackets and having their rear portions overbalancing in weight their front portions and provided at their rear edges with up-turned flanges abutting the back plates of their respective slats, means on the shelves in advance of their pivots to engage with their brackets for limiting the tilting movement of the shelves and means for automatically tilting the shelves to discharge the load therefrom, substantially as and for the purposes set forth.

2. The combination of a series of channeled slats having side plates, solid links passed through the side plates of the alternate slats and having openings at their middles for axle bars and having their ends projecting beyond their respective slats, the intervening slats having their side plates provided with openings for link sections, and link sections having means at their outer ends for connection with the solid links of the adjoining slats and having at their inner ends eyes lapping alongside each other, within their respective slats for the reception of axle bars, substantially as set forth.

3. A chain comprising a series of hollow metallic slats open at one edge and closed at the other edge and links extending through their respective slats and connecting the adjacent slats, the links being composed of sections with the meeting ends thereof connected together within their respective slats, substantially as set forth.

4. The combination in a conveyer with the conveyer proper, of brackets having lateral and strut bars carried at their inner ends by the conveyer proper, shelves piv-

oted to said brackets and having in advance of their pivots downwardly projecting portions arranged to engage their respective strut bars and limit the tilting movement of the shelves, substantially as set forth.

5. A conveyer comprising a frame having channeled track ways, a chain having hollow pressed steel slats having spaced apart side plates and links extending through the spaced apart side plates of and connecting the said slats and provided with rollers operating in the channeled track ways of the frame, substantially as set forth.

6. A chain comprising hollow metallic slats, links extending through their respective slats and connecting the adjacent slats, and bars extending longitudinally through their slats and through the links of said slats, substantially as set forth.

7. A chain comprising hollow metallic slats, links extending transversely through their respective slats and connecting the adjacent slats, axle bars extending longitudinally through their slats and through the links thereof and projecting at their ends beyond the ends of the slats and rollers on the ends of the axle bars, substantially as set forth.

8. A chain comprising a series of hollow metallic slats, links extending transversely through their respective slats and connecting the adjacent slats, bars extending longitudinally through the slats and through the links thereof and projecting beyond the ends of the slats, bracket bars connected with the projecting portions of the bars and shelves carried by the brackets, substantially as set forth.

9. A chain comprising hollow metallic slats having their side plates provided with openings, solid links extending through the alternate slats and sectional links extending through the complementary slats and made in sections and having at their ends hooked portions for engaging with the solid links of the alternate slats, substantially as set forth.

10. The combination with a hollow metallic slat, of a sectional link having its sections extending through the sides of the slat and provided at their inner ends with eyes and a bar extending longitudinally through the slat and through the eyes of the link sections, substantially as set forth.

11. A chain comprising hollow metallic slats and sectional links extending transversely through the slats with the link sections of the same slat connected together therein and with the links of the adjacent slats connected together, substantially as set forth.

12. The combination in a chain of a series of hollow metallic slats, solid links extending transversely through the alternate slats and having openings at their middle portions, sectional links arranged transversely

in the complementary slats and having their
outer ends hooked to engage the links of the
alternate slats, the inner ends of the sections
of the sectional link being provided with
5 eyes lapping alongside each other, bars ex-
tending longitudinally through the alternate
slats and through the links thereof and bars
extending longitudinally through the comple-

mentary slats and through the lapping eyes
of the link sections thereof, substantially as 10
set forth.

WALTER J. TURNBULL.

Witnesses:

SOLON C. KEMON,
PERRY B. TURPIN.