

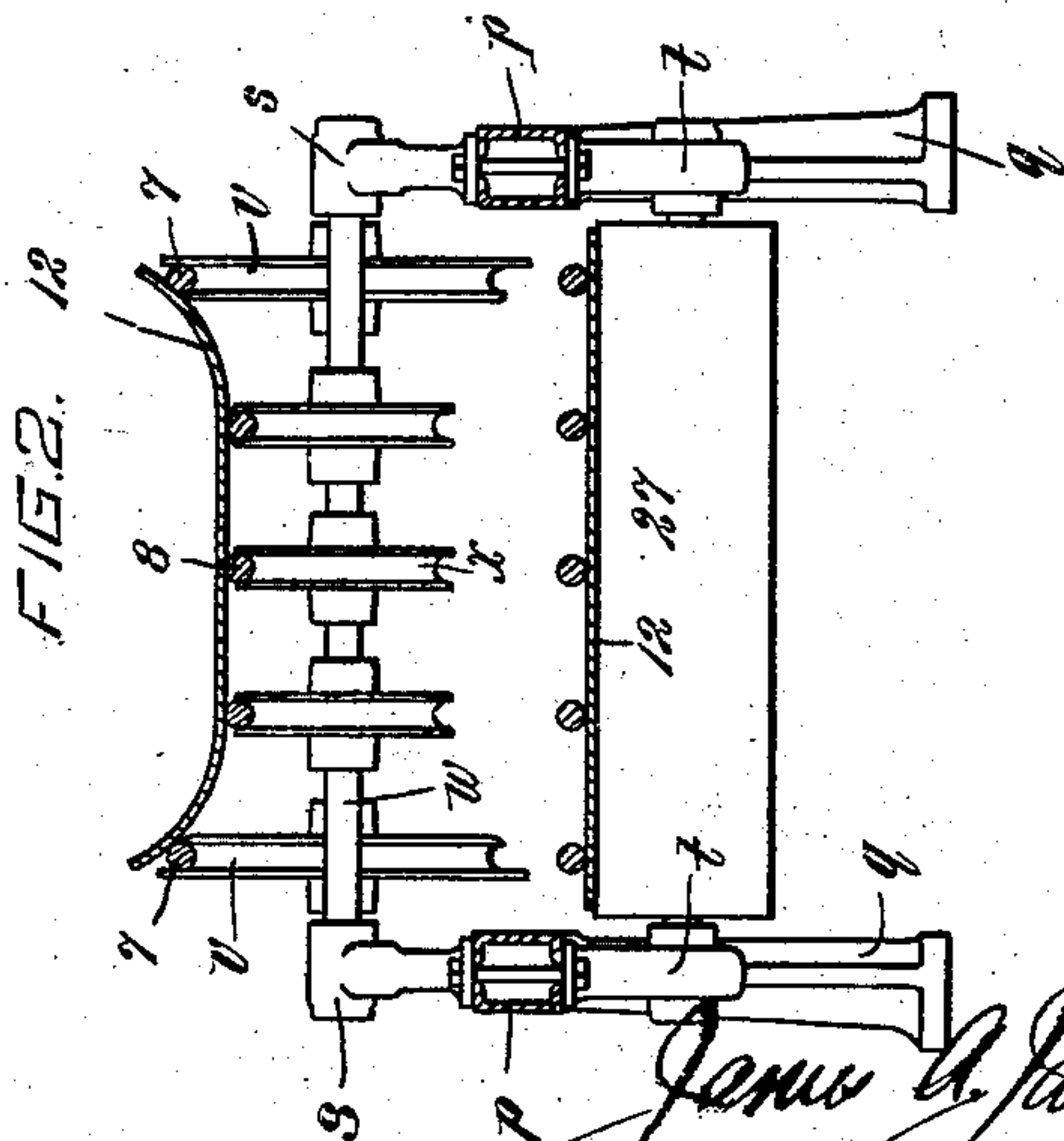
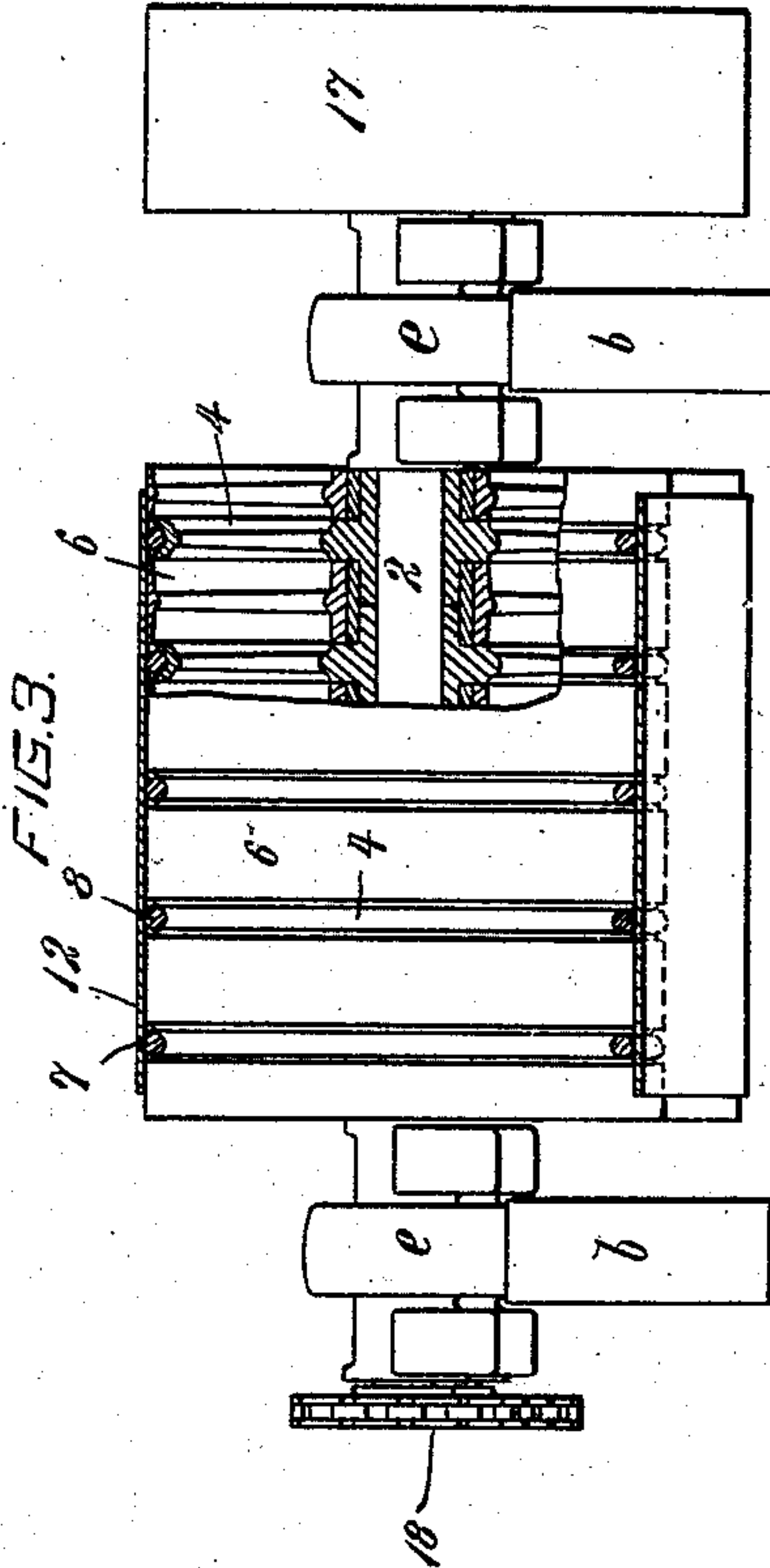
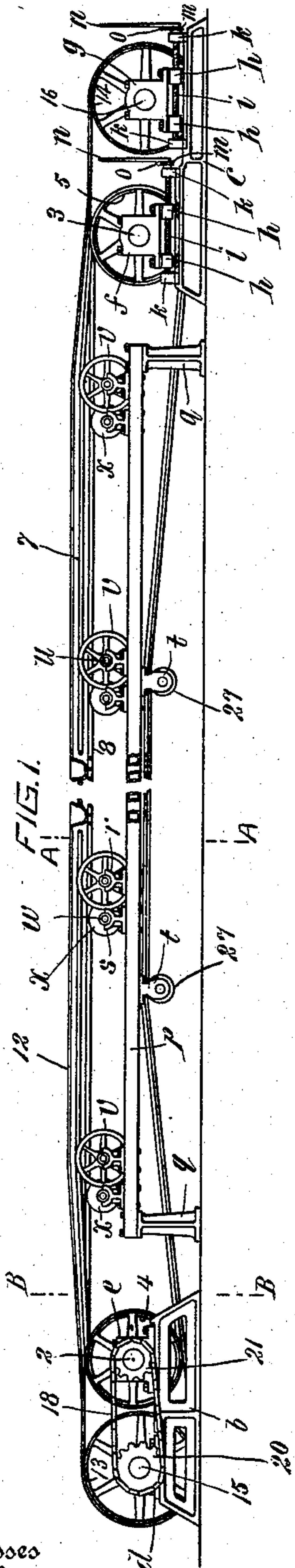
No. 843,018.

PATENTED FEB. 5, 1907.

J. A. JAMIESON.
CONVEYER.

APPLICATION FILED APR. 22, 1905.

4 SHEETS—SHEET 1.



Witnesses

Alex. G. ...
...

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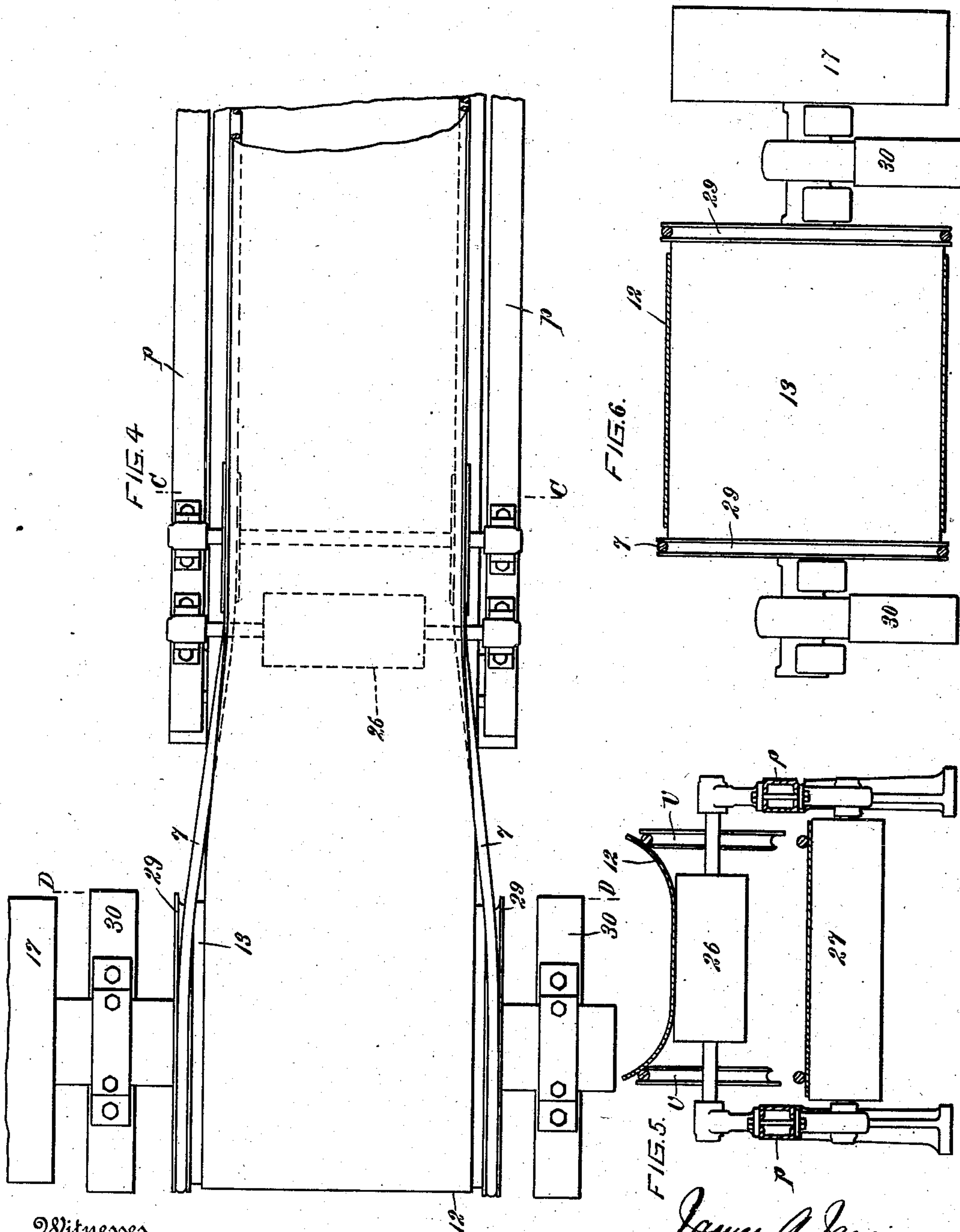
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4 SHEETS—SHEET 2.



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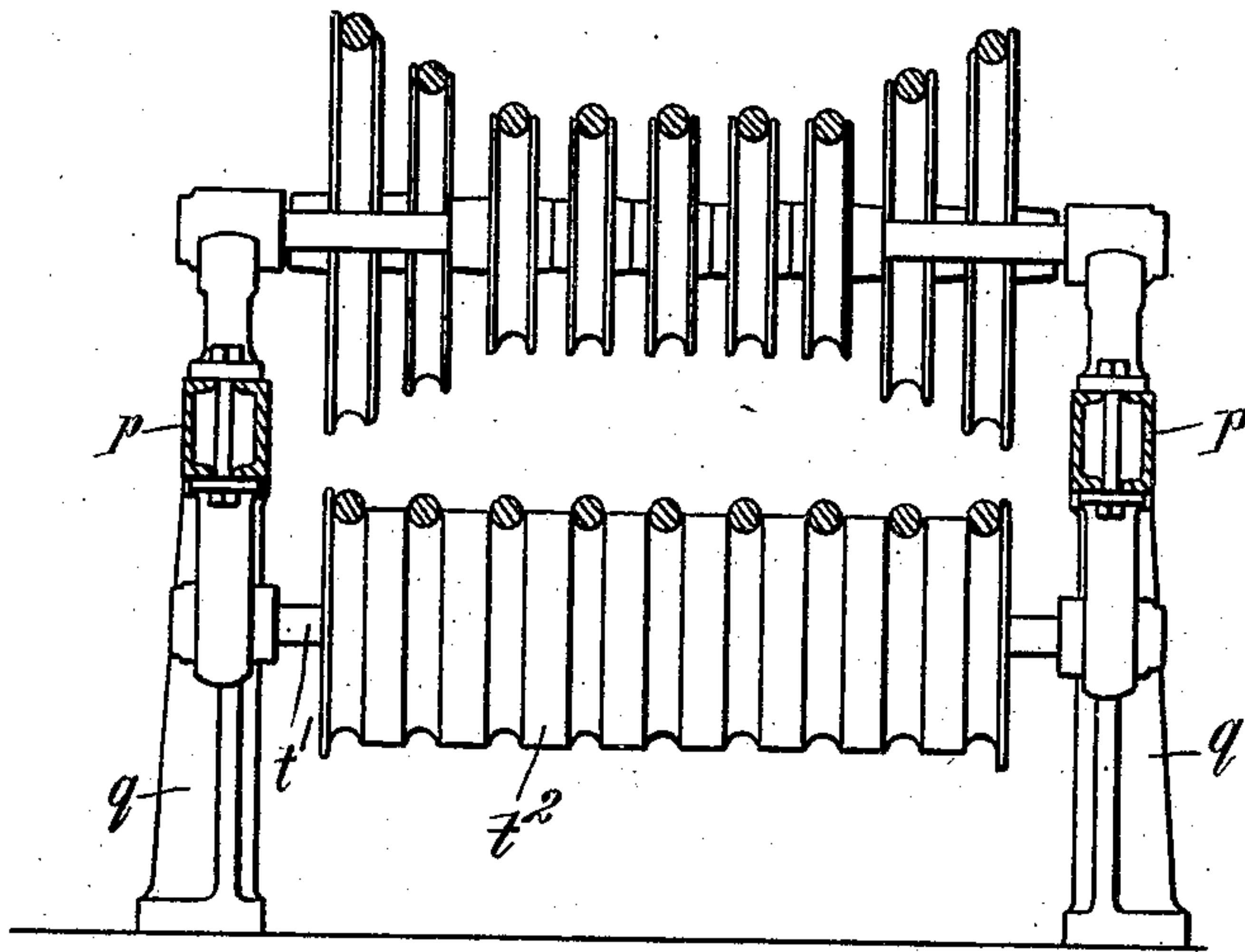
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4 SHEETS—SHEET 3.

FIG. 7.



Witnesses

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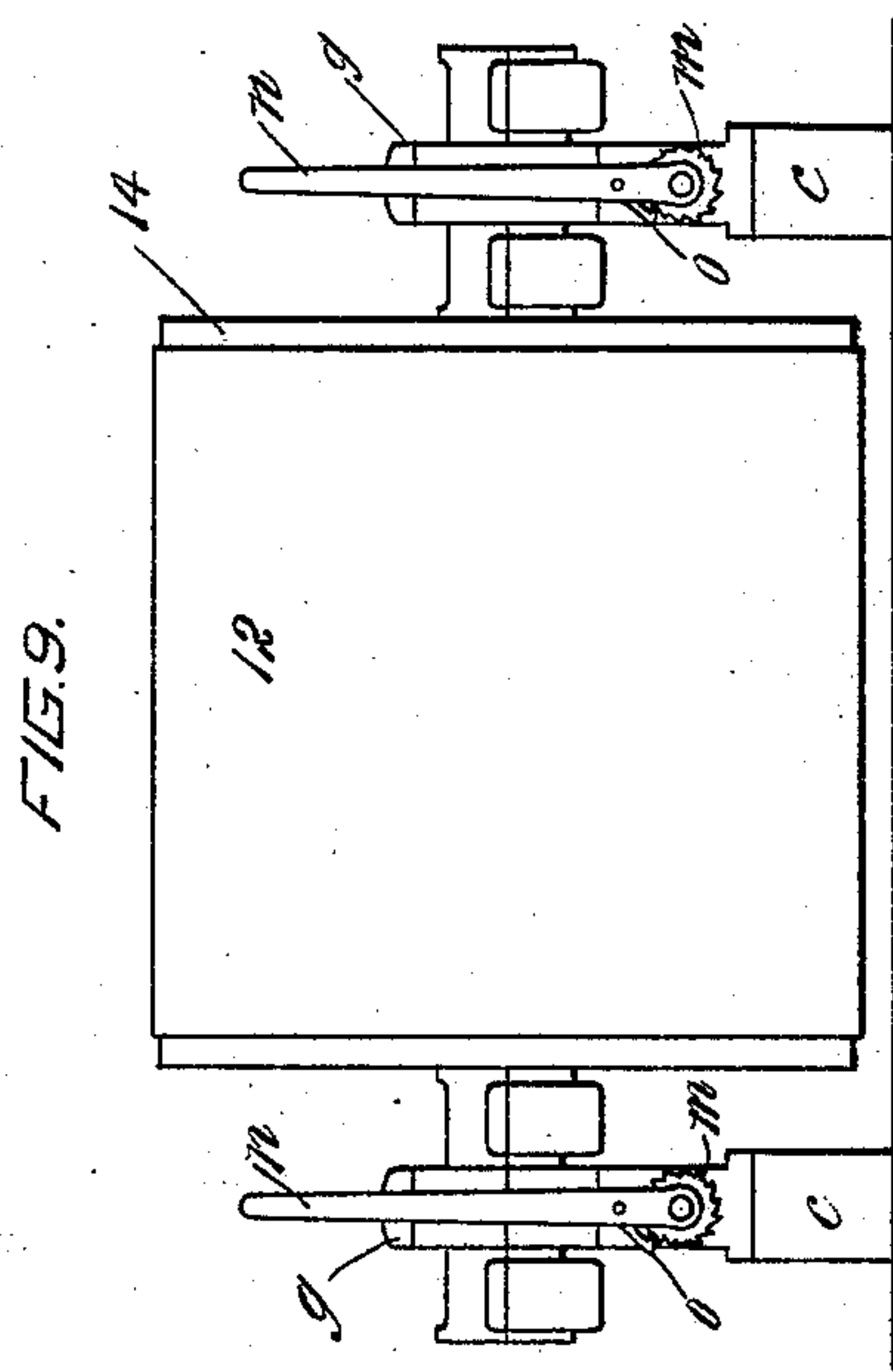
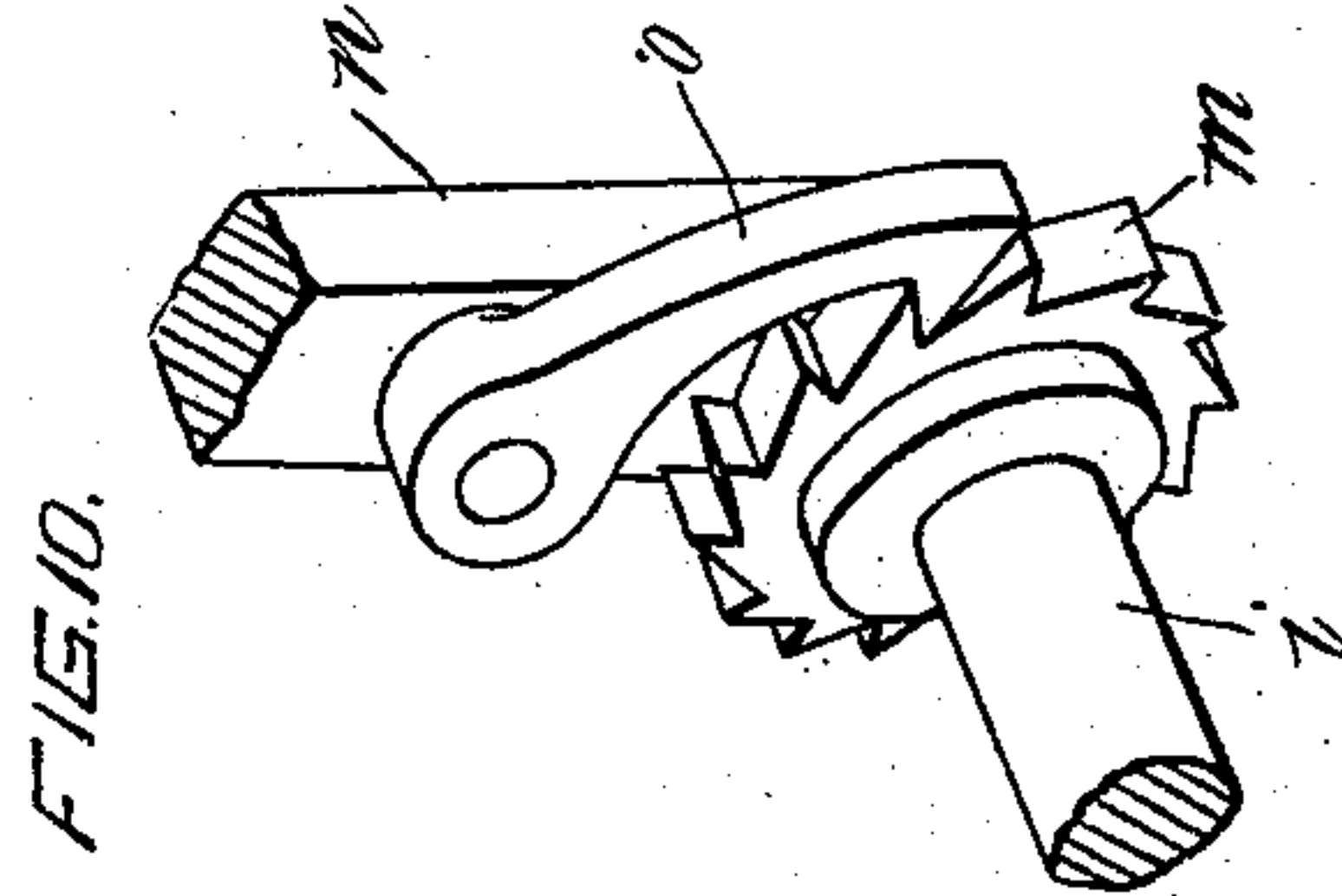
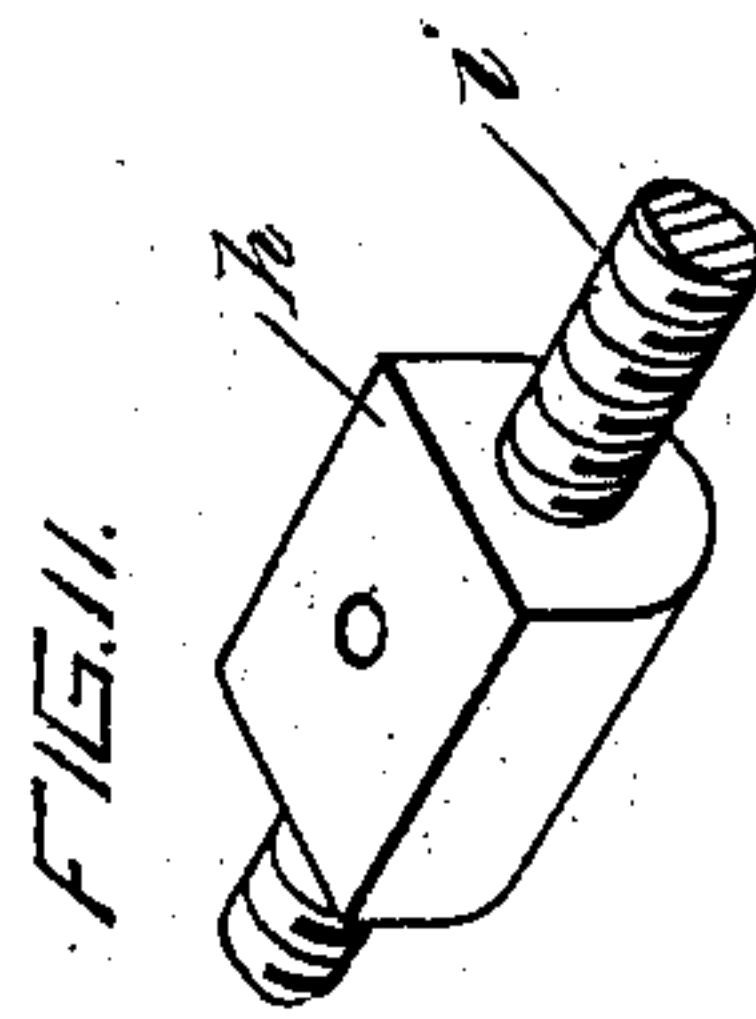
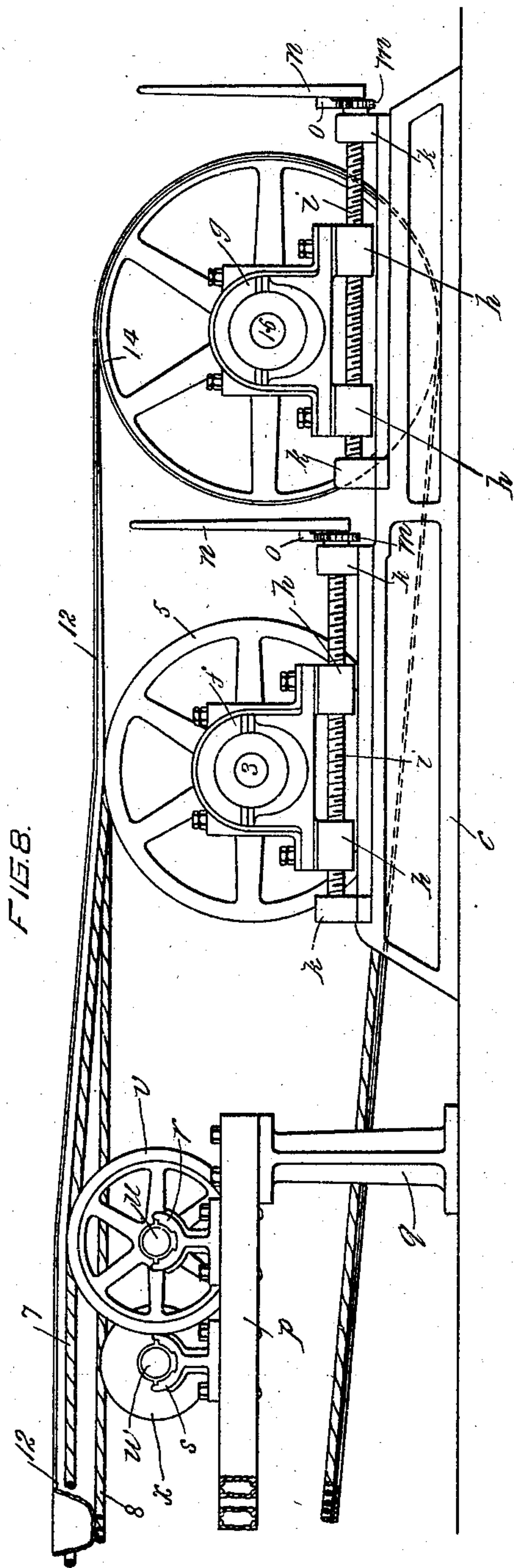
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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CONVEYER.

No. 843,018.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed April 22, 1905. Serial No. 256,869.

To all whom it may concern:

Be it known that I, JAMES ALEXANDER JAMIESON, of the city of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Conveyers; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates particularly to belt conveyers of the type known as "troughed" belt conveyers or concentrators; and it has for its object to provide a conveyer of this type which will not sag at any point, but present a uniform bearing-surface, and one which can serve as a conveyer alone or as a combined separator and conveyer.

The invention may be said briefly to consist of a plurality of loops and an apron resting loosely upon the loops, while the said loops run over sheaves of such diameters as will support them in the required form, either presenting a flat or troughed carrying-surface or a carrying-surface varying from flat to troughed, or vice versa.

For full comprehension, however, of my invention reference must be had to the accompanying drawings, forming a part of this specification, and in which similar reference characters indicate the same parts, and wherein—

Figure 1 is a side elevation of a concentrator or troughed belt conveyer constructed according to my invention. Figs. 2 and 3 are enlarged transverse vertical sectional views taken on lines A A and B B, respectively, Fig. 1. Fig. 4 is a plan view of a modification of my invention. Figs. 5 and 6 are sectional views thereof taken on lines C C and D D, Fig. 4. Fig. 7 shows a different arrangement of my improved loops, and Fig. 8 is an enlarged side elevation of one end of the conveyer; and Fig. 9 is an end view thereof, also enlarged. Fig. 10 is a detail perspective view of the pawl and ratchet for operatively connecting the adjusting-lever to the screw through which the tension of the conveyer is varied, and Fig. 11 is a similar view of one of the blocks carried by the adjustable bases and effecting an operative connection therebetween and the adjusting-screws.

In the embodiment of my invention illustrated in Figs. 1, 2, and 3 I utilize a pair of double supporting-beds *b* and *c*, supporting, respectively, two pairs of pillow-blocks *d* and *e* and *f* and *g*, the latter (*f* and *g*) being

mounted through the medium of tapped blocks *h* on screws *i*, rotatably supported in bearings *k*, the screws having ratchet-wheels *m* secured rigidly thereon, by which they are rotated by levers *n*, having pawls *o* thereon adapted to engage such ratchet-wheels, thereby enabling the pillow-blocks *f* and *g* to be adjusted for the purpose of increasing or decreasing the tension of the loops and aprons to be presently described.

The pillow-blocks *e* and *f* rotatably support a pair of shafts 2 and 3, respectively, upon which two series of sheaves 4 and 5, respectively, are mounted a short distance apart, and a series of idle pulleys 6 are mounted between them.

A pair of longitudinals *p*, supported on legs *q*, have a series of bearings *r* and *s* bolted to the top thereof and a pair of suspended bearings *t* bolted to the under side thereof. The bearings *t* support shafts *t'*, upon each of which a grooved roller *t''*, Fig. 7, or a pulley 27, Fig. 2, is mounted.

The bearings *r* rotatably support a series of shafts *u*, upon each of which and near its ends a pair of sheaves *v* are rigidly mounted, and the bearings *s* rotatably support a series of shafts *w*, upon each of which are rigidly mounted a series of sheaves *x*, spaced or disposed according to the work required to be done, the sheaves of each of the series *x* being each in tandem relation with the corresponding sheaves of the other series *x*.

If desired, the adjacent sheaves of different diameter can be mounted upon the same shaft, in which case those of smaller diameter mounted rigidly thereon and those of larger diameter loosely.

A pair of flexible loops, preferably endless ropes or cables 7, are looped over the end sheaves of the series 4 and 5, and a series of similar loops 8 are looped over the sheaves of the series 4 and 5 between the end ones and over the sheaves *x*.

When granular substance is to be conveyed, an endless apron 12 is supported by the ropes, and it is looped at its ends over a pair of pulleys or drums 13 and 14, mounted rigidly upon, respectively, shafts 15 and 16, supported in the pillow-blocks *d* and *g*, the shaft 15 also having a driving-pulley 17 mounted rigidly thereon, while such shaft 15 is rotatively connected to the shaft 2 by a pair of sprocket-wheels 20 and 21, secured rigidly upon the said shafts 15 and 2, and a chain 18, looped over these sprocket-wheels.

If desired, a pair of sheaves 29 and the loops 7 only, in connection with an endless apron, the pulleys or drum 13, and rollers 26, (substituted for the sheaves *x*,) may be used with advantage under certain conditions, the bearing circumferential line of the sheaves 29 and pulley or drum 13 is being the same in order to impart the same speed to the loops and apron. In this case a single base 30, Fig. 4, is used at one end of the conveyer instead of the double base, (shown in Fig. 1,) and the driving-sheaves 4, together with the parts for supporting the same, are dispensed with.

When bags, barrels, bales, or the like are to be conveyed, the sheaves are disposed closer, as shown in Fig. 7, or otherwise, according to the character of the material being conveyed, and the apron dispensed with.

The advantages of a conveyer constructed according to this invention is that a continuous support is provided for the edges of the apron, and such apron can be troughed without the necessity of setting the sheaves which support the edge loops in a different angular position to those which support the middle loops, thereby obviating the use of a lubricant at points from which it would be liable to drip upon the conveyer, and another advantage being that the substance conveyed is prevented from getting into the bearings of the loose idlers which otherwise would have to be used.

What I claim is as follows:

1. A conveyer consisting of a plurality of traveling flexible lengths and a flexible apron resting loosely thereon and the flexible lengths supporting the apron in the form of a trough.

2. A conveyer consisting of a plurality of series of sheaves, the sheaves of each series being arranged in tandem relation to the sheaves of the other series, a flexible length supported by each tandem series of sheaves and an endless apron looped over and resting loosely upon and supported in the form of a trough by such flexible lengths.

3. A conveyer comprising an apron resting upon a plurality of loops running over sheaves supporting different portions of the loops and apron in positions presenting a carrying-surface varying from flat to troughed.

4. A conveyer consisting of a plurality of sheaves arranged in two tandem series, a plurality of sheaves of smaller diameter arranged in tandem and located between the tandems first mentioned with their axes in the same plane as the said series, a loop supported by each tandem series and an endless apron resting upon the said loops and supporting the substance being conveyed.

5. A conveyer consisting of a plurality of sheaves arranged in two tandem series, a series of rollers located between the said two tandems with their axes in the same plane as the said series, a pair of endless cables sup-

ported by the sheaves and an endless apron supported by the cables and rollers.

6. A troughed conveyer consisting of a plurality of sheaves in two tandem series, a series of rotating devices of smaller diameter than the sheaves, and located between the said series with their axes located in the same horizontal plane as the said series, a pair of loops supported by the two tandem series of sheaves, and endless conveying means supported by the loops and rotating devices.

7. A troughed conveyer consisting of a plurality of sheaves arranged in two tandem series, a series of rollers of smaller diameter than the sheaves and located between the said series their axes located in the same horizontal plane as the said series, a pair of loops supported by the two tandem series of sheaves, and endless flexible conveying means supported by the loops and rollers.

8. A troughed conveyer consisting of a plurality of sheaves arranged in two tandem series, a series of rollers of smaller diameter than the sheaves and located between the said series with their axes disposed in the same horizontal plane as the said series, a pair of loops supported by the two tandem series of sheaves, and an endless apron supported by the loops and rollers.

9. The combination of a pair of separated bearing-bases each supporting a pair of shafts, a pair of pulleys one mounted rigidly on each of the opposite shafts, a series of sheaves mounted rigidly on each of the adjacent shafts, a pair of raised longitudinals extending between and in line with the bases, and each supporting a series of pairs of shafts, one shaft of each of the pairs last mentioned having a pair of sheaves mounted rigidly thereon near the ends thereof, the sheaves on each shaft being in tandem relation to the sheaves on the other shafts, the other shaft of each pair having a series of sheaves mounted rigidly thereon and the sheaves of each of such series being in tandem relation, a loop looped over each tandem series, and an endless apron looped over the first-mentioned pair of pulleys and lying upon the loops.

10. The combination of a pair of separated bearing-bases each supporting a pair of shafts, a pair of pulleys one mounted rigidly on each of the opposite shafts, a series of sheaves mounted rigidly on each of the adjacent shafts, a pair of raised longitudinals extending between and in line with the bases, and each supporting a series of pairs of shafts, one shaft of each of the pairs last mentioned having a pair of sheaves mounted rigidly thereon near the ends thereof, the other shaft of each pair having a series of sheaves mounted rigidly thereon and the sheaves of each series being in tandem relation and of smaller diameter than the sheaves last men-

tioned, a loop looped over each tandem series, and an endless apron looped over the first-mentioned pair of pulleys and lying upon the loops.

5 11. The combination of a pair of separated bearing-bases each supporting a pair of shafts, a pair of pulleys one mounted rigidly on each of the opposite shafts, a series of sheaves mounted rigidly on each of the ad-
10 jacent shafts, a pair of raised longitudinals extending between and in line with the bases, and each supporting a series of pairs of shafts, one shaft of each of the pairs last mentioned having a pair of sheaves mounted
15 rigidly thereon near the ends thereof, the other shaft of each pair having a roller mounted rigidly thereon, a loop looped over each tandem series, and an endless apron looped over the end pulleys and lying upon
20 the loops, and intermediate rollers.

12. The combination of a pair of separated bearing-bases each supporting a shaft, a series of pulleys and a series of sheaves alternating with one another and a pair of raised
25 longitudinals extending between and in line with the bases, and each supporting a series of pairs of shafts, one shaft of each of the pairs last mentioned having a pair of sheaves mounted rigidly thereon near the ends there-
30 of the sheaves on each shaft being in tandem relation to the sheaves on the other shafts, the other shaft of each pair having a series of sheaves mounted rigidly thereon and the sheaves of each of such series being in tan-
35 dem relation, a loop looped over each tandem series, and an endless apron looped over the pulleys and sheaves and lying upon the loops.

13. The combination of a pair of separated bearing-bases each supporting a shaft, one of
40 such shafts having mounted rigidly thereon a pulley and a pair of sheaves one at each end of the pulley, a series of sheaves intermediate the first-mentioned sheaves and in line with

the end portions of the perimeters of the pulleys, a series of deflecting-sheaves between 45 the end sheaves and the intermediate sheaves, a series of pulleys intermediate such first-mentioned pulleys, a pair of loops looped over the end sheaves, the deflecting-sheaves, and the intermediate sheaves, and 50 an endless apron looped over the end pulleys, the intermediate pulleys and supported at its edges by the portions of the loops running upon the intermediate sheaves.

14. The combination of a pair of separated 55 bearing-bases each supporting a shaft, one of such shafts having mounted rigidly thereon a pulley and a pair of sheaves one at each side of the pulley, a series of sheaves intermediate the first-mentioned sheaves and in line 60 with the end portions of the perimeters of the pulleys, a series of deflecting-sheaves between the end sheaves and the intermediate sheaves, a series of pulleys intermediate such first-mentioned pulleys and of smaller diam- 65 eter than the last-mentioned series of sheaves, a pair of loops looped over the end sheaves, the deflecting-sheaves, and the intermediate sheaves, and an endless apron looped over the end pulleys, the intermediate pulleys and 70 supported at its edges by the portions of the loops running upon the intermediate sheaves for the purpose of troughing the said apron.

15. A conveyer comprising an apron resting upon a plurality of loops running over 75 sheaves of differing diameters supporting different portions of the loops and apron in positions presenting a carrying-surface varying from flat to troughed.

In testimony whereof I have signed my 80 name to this specification in the presence of two subscribing witnesses.

JAMES ALEXANDER JAMIESON.

Witnesses:

WILLIAM P. McFEAT,
FRED. J. SEARS.