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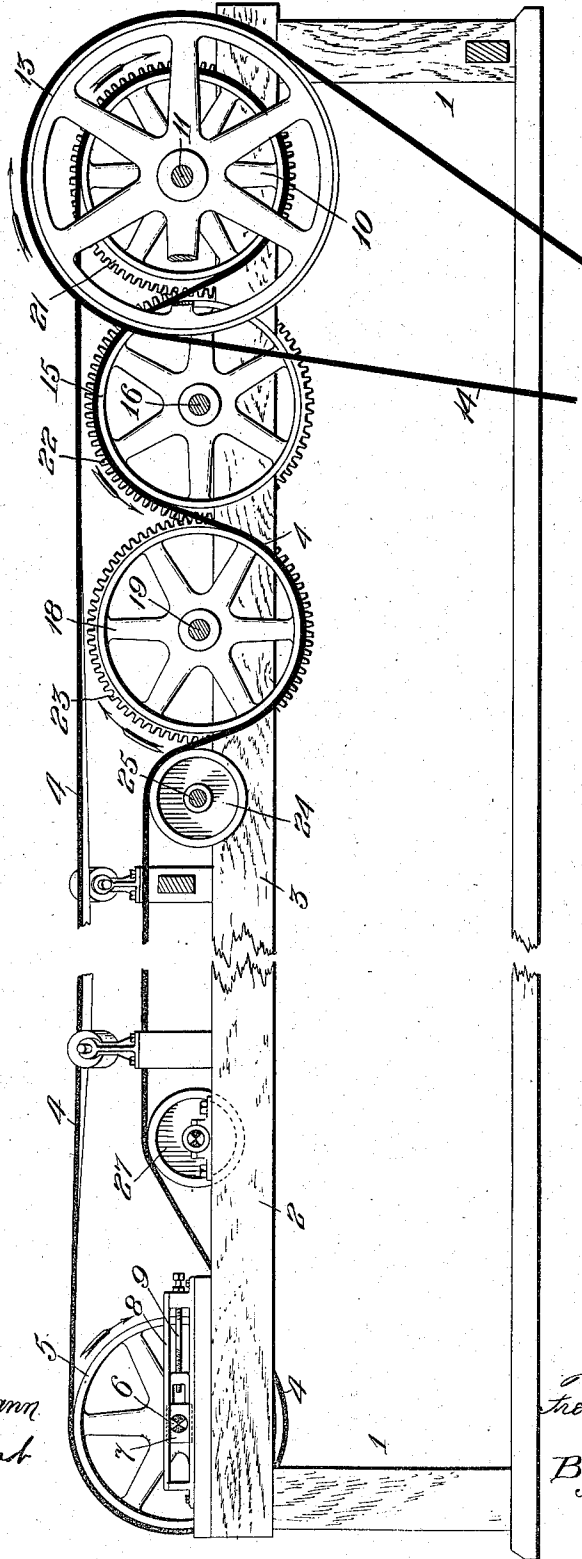
F. R. WILLSON, JR.

PATENTED JAN. 8, 1907.

CONVEYER.

APPLICATION FILED MAY 4, 1906.

4 SHEETS—SHEET 1.



Witnesses:  
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Inventor:  
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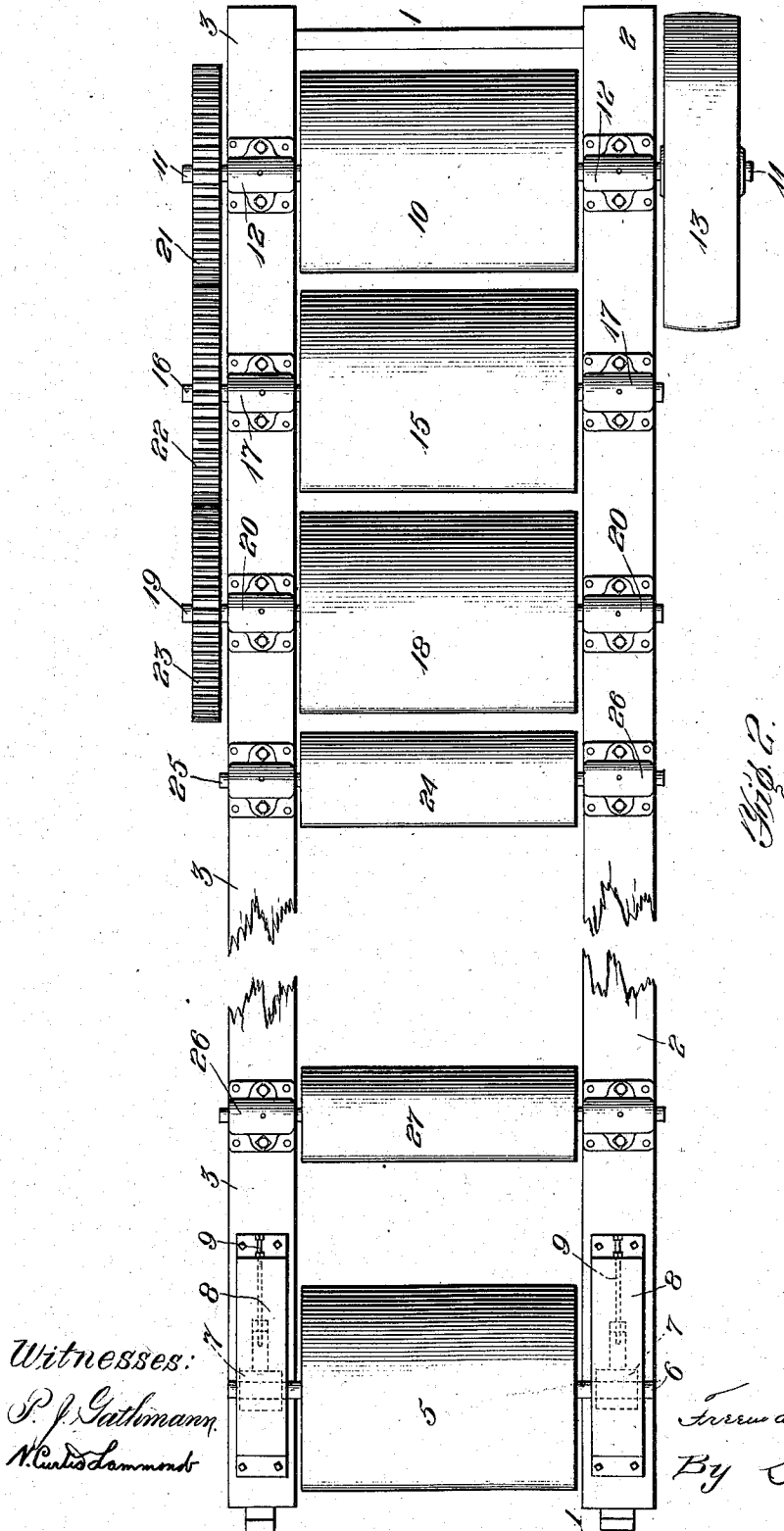
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4 SHEETS—SHEET 2.



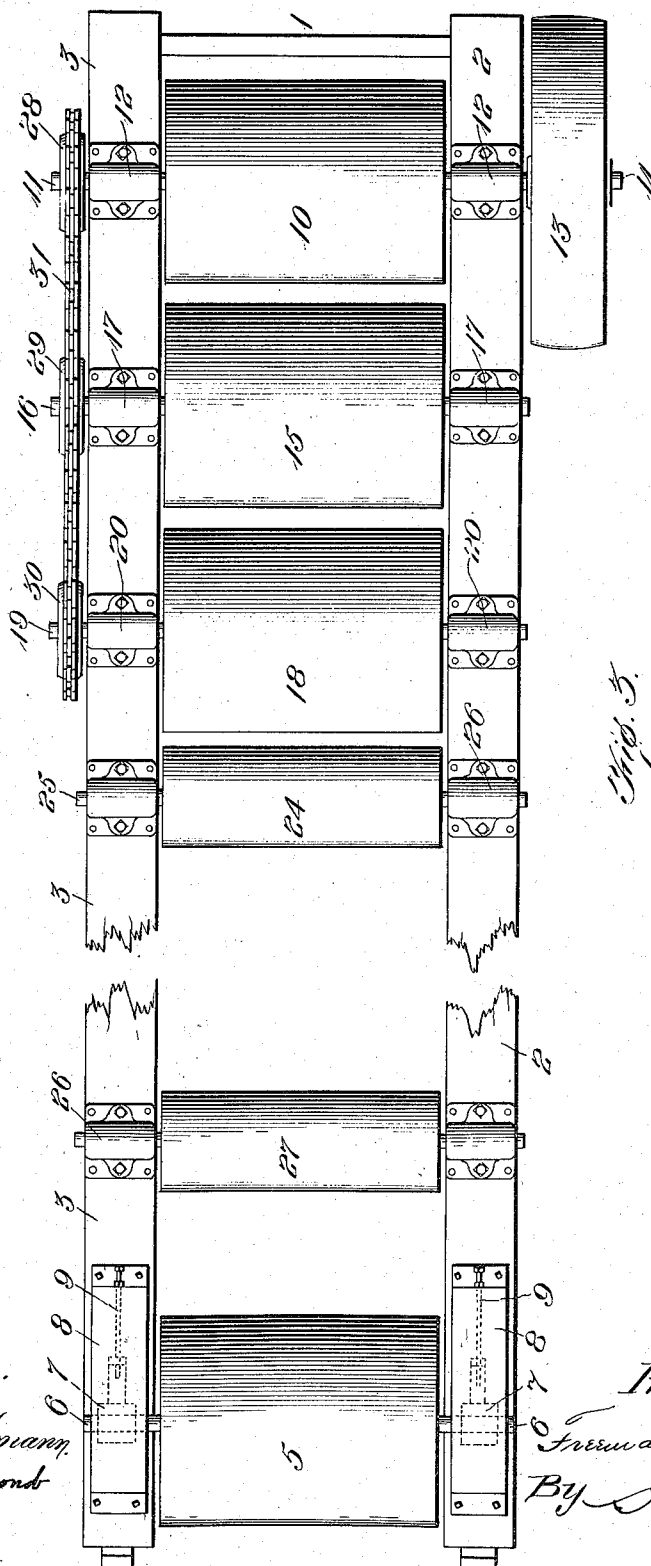
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4 SHEETS—SHEET 3.



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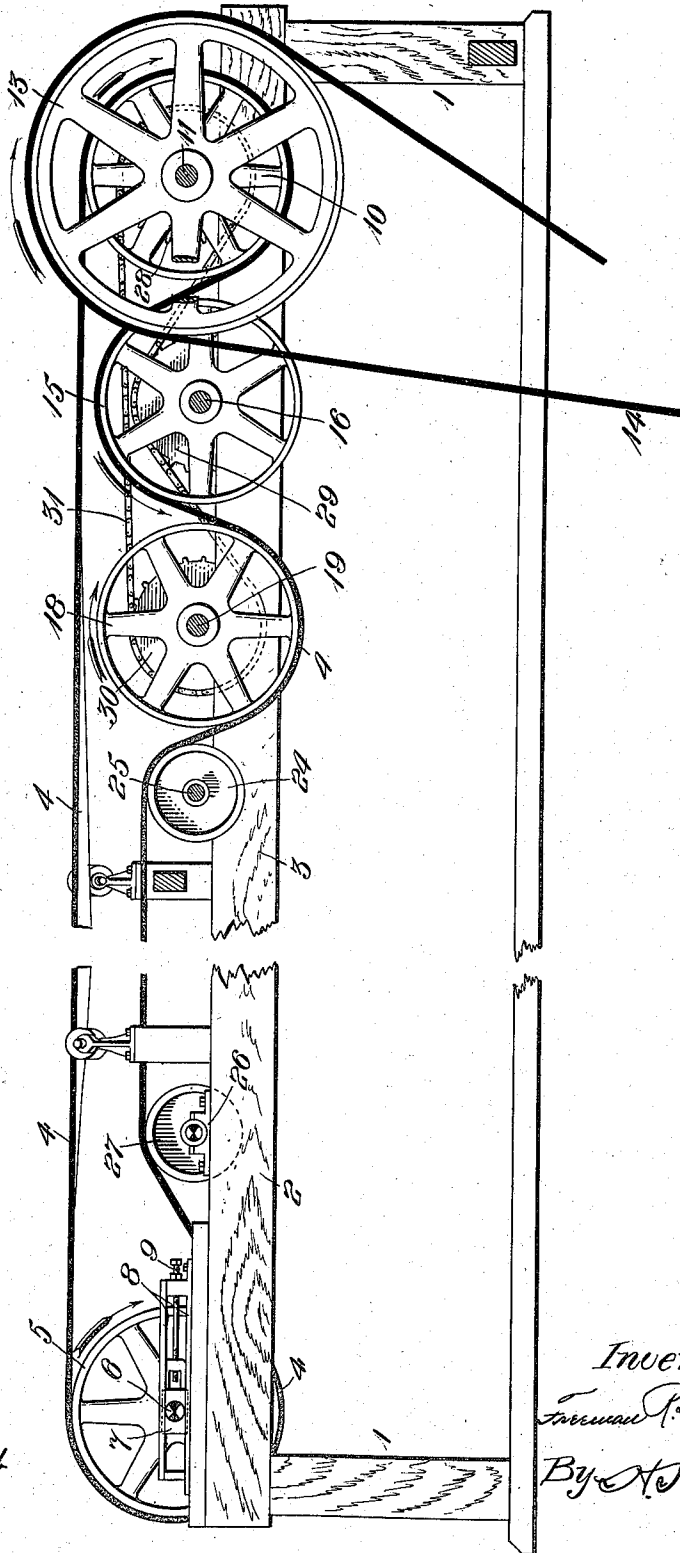
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4 SHEETS—SHEET 4.

*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

FREEMAN R. WILLSON, JR., OF WORTHINGTON, OHIO, ASSIGNOR TO  
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## CONVEYER.

No. 840,729.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed May 4, 1906. Serial No. 315,253.

*To all whom it may concern:*

Be it known that I, FREEMAN R. WILLSON, Jr., a citizen of the United States, residing at Worthington, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Conveyers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improvement in driving mechanism for endless-conveyer systems.

It pertains particularly to means for increasing the area of contact over which power is applied to an endless conveyer in such manner that the conveyer will be satisfactorily driven irrespective of the load which it throws on the driving mechanism and slippage between the carrying element of the conveyer and the driving mechanism will be prevented.

The objects of the invention will be manifest from the description of a conveyer system embodying my improvements which I have herein employed for the purposes of illustration.

Figure 1 is a side elevation of a mechanism embodying my improvement. Fig. 2 is a plan view of the same. Fig. 3 is a plan view showing a slight modification in the driving mechanism. Fig. 4 is a side view of the same.

In the drawings, 1 indicates as an entirety a suitable framework for an endless conveyer. Of this framework, 2 and 3 represent longitudinally-arranged beams upon which the conveyer guiding and driving mechanisms are mounted.

4 indicates an endless belt for the system. At one end it is carried around or deflected and guided by a pulley or drum 5, mounted on a transversely-arranged shaft 6, which at either end is mounted in bearing-boxes 7 7, fitted in longitudinally-arranged guides 8 and adjustable therein by means of threaded rods 9 9, suitably secured to the bearing-boxes and operable in the well-known manner to adjust the said boxes in order to take up slack and regulate the tension on the belt 4.

10 is a pulley or drum arranged at the opposite end of the conveyer system from the idle pulley or drum 5 and rigidly secured to a

drive-shaft 11, mounted in suitable stationary bearings 12 12, carried by the frame.

13 is a belt-wheel rigidly secured to one end of the shaft 11, and 14 is a belt for driving said wheel, which may be connected with any suitable source of power. (Not shown.)

15 is a pulley or drum rigidly secured to a shaft 16, arranged parallel to the shaft 11 and suitably mounted at either end in bearings 17 17 on the framework.

18 is a pulley or drum rigidly secured to a shaft 19, arranged parallel to the shaft 16 and in the same horizontal plane therewith, it being suitably mounted in bearings 20 20, carried by the framework.

21 is a gear-wheel rigidly secured to the shaft 11 at the opposite end thereof from the belt-wheel 13.

22 is a gear-wheel similar in size and number of teeth to gear-wheel 21, with which it is arranged to mesh and by which it is driven.

23 is a gear-wheel rigidly secured to the shaft 19, similar in size and number of teeth to the gear-wheels 21 and 22 and arranged to mesh with and to be driven by the latter. Power is applied to the belt-wheel 13 so as to rotate it, and consequently the drum 10, and the gearing between the drum or pulleys 10, 15, and 18 is such as to cause all of the pulleys to rotate at the same peripheral speed and in the direction indicated by the arrows in Fig. 1.

The belt 4 is carried around the pulley 10, then up over the pulley 15, then down around the pulley 18, and then up over an idle pulley or guide-wheel 24, carried by a shaft 25, arranged parallel to the shaft 19 and suitably mounted in bearings 26 26 on the frame. This pulley 24 serves to cause the belt 4 to contact with substantially one hundred and eighty degrees of the periphery of the immediately-adjacent driving-pulley 18.

27 is an idle pulley or drum similar in size to the pulley 24 and similarly mounted, except that it is arranged at the opposite end of the conveyer system therefrom and relatively near to the pulley 5.

It will be seen that by employing driving-pulleys of the same diameter, driving them at the same peripheral speed, and effecting the contact of the belt therewith in the manner shown that I have succeeded in constructing a driving mechanism for endless conveyer-

belts which will transmit power thereto over a large surface of the belt and will also tend to prevent the slipping of the belt relative to the driving mechanism where heavy loads are encountered.

I have found my invention particularly well adapted for use in driving endless conveyers of great length where extremely heavy loads must be dealt with and where the contact of the belt with a single pulley is not sufficient to provide a satisfactory drive.

In my preferred construction the driving-pulleys are all arranged beneath the upper run of the conveyer-belt and substantially in the same horizontal plane, so as to allow a very simple framework structure and to insure that the parts can be readily and easily assembled. In the modified construction shown in Figs. 3 and 4 instead of employing a spur-gear drive between the belt-driving pulleys I have substituted a chain drive.

28, 29, and 30 are sprocket-wheels of equal pitch diameter and number of teeth rigidly secured to the shafts 11, 16, and 19, respectively.

31 is a chain suitably connecting these sprockets so as to drive the pulleys 15 and 18 in the direction indicated by the arrows in Fig. 4.

What I claim is—

1. In a conveyer, the combination with an endless belt, of a driving mechanism therefor comprising a plurality of driving-pulleys arranged substantially in line with each other and geared together to have their peripheries travel at the same speed, the said belt being carried around the endmost pulley and then alternately over and under the remaining pulleys so as to contact with opposite sections of adjacent pulleys, and means for driving the said pulleys.

2. In a conveyer, the combination with an endless belt, of a driving mechanism therefor comprising a series of driving-pulleys of uni-

form diameter arranged substantially in line with each other and geared together to have their peripheries travel at the same speed, the said belt being carried around the endmost pulley of the series and then alternately over and under the remaining pulleys of the series so as to contact with opposite sections of adjacent pulleys, and means for driving the said pulleys.

3. In a conveyer, the combination with an endless belt, of a driving mechanism therefor comprising a series of driving-pulleys of uniform diameter arranged substantially in line with each other and flexibly geared together to have their peripheries travel at the same speed, the said belt being carried around the endmost pulley of the series and then alternately over and under the remaining pulleys of the series so as to contact with opposite sections of adjacent pulleys, and means for driving said pulleys.

4. In a conveyer, the combination with an endless belt, of a driving mechanism therefor comprising a series of driving-pulleys arranged substantially in line with each other beneath the upper run of said belt and geared together to have their peripheries travel at the same speed, an idle guide-pulley arranged adjacent to the innermost pulley of said series, the said belt being carried around the endmost driving-pulley of said series, then alternately over and under the remaining driving-pulleys of the series so as to contact with opposite sections of adjacent driving-pulleys and then over the said idle pulley so as to cause the belt to contact with substantially one hundred and eighty degrees of the innermost driving-pulley, and means for driving said driving-pulleys.

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

FREEMAN R. WILLSON, JR.

Witnesses:

J. E. McDONALD,

J. WEBSTER.