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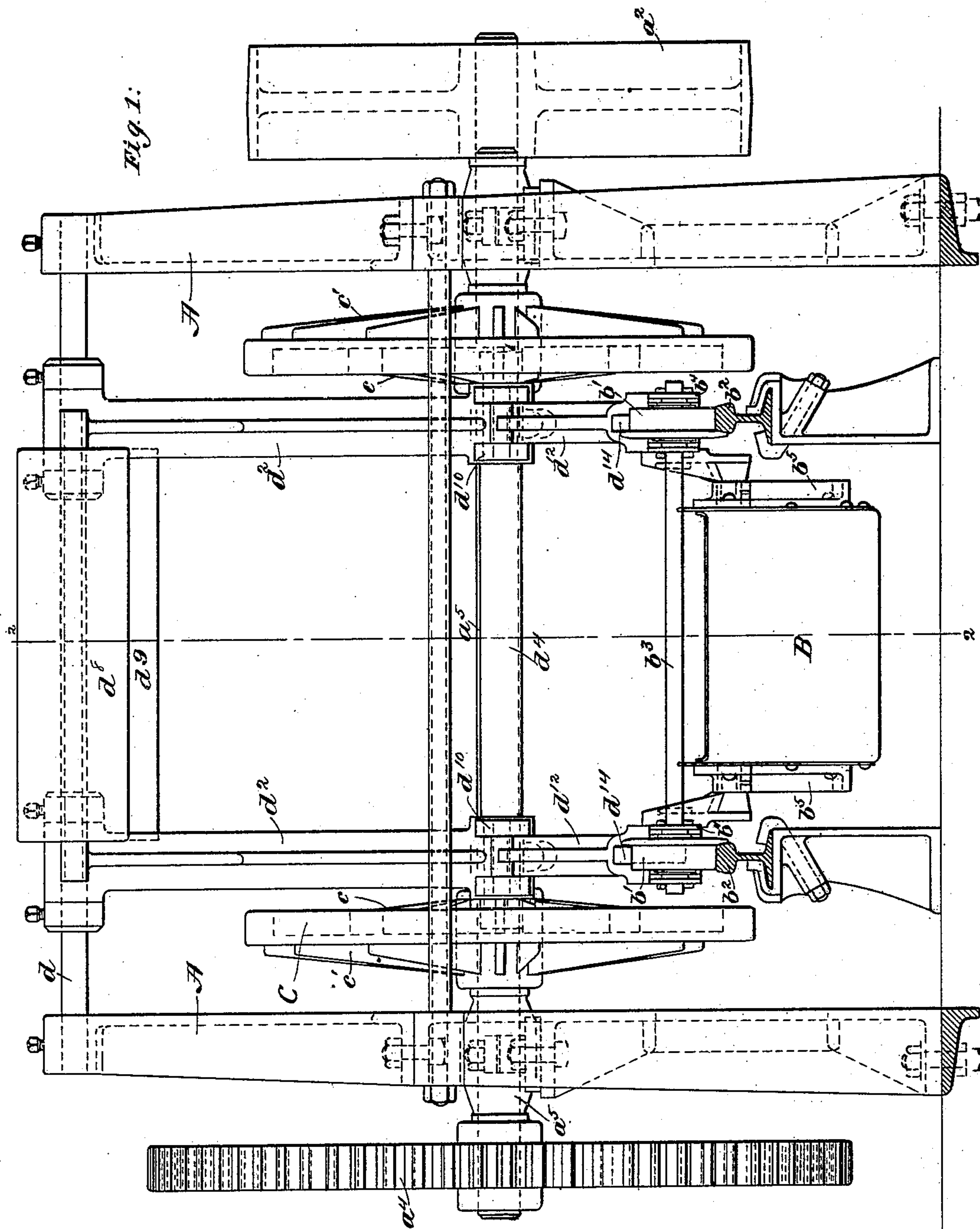
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DRIVING MECHANISM FOR CONVEYERS.

(Application filed July 24, 1902.)

(No Model.)

2 Sheets—Sheet 1.



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UNITED STATES PATENT OFFICE.

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DRIVING MECHANISM FOR CONVEYERS.

SPECIFICATION forming part of Letters Patent No. 711,913, dated October 21, 1902.

Application filed July 24, 1902. Serial No. 116,829. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. SWEETSER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Driving Mechanism for Conveyers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention in conveyers, usually endless, relates particularly to the means for propelling or driving the conveyer.

Prior to my invention, so far as I am aware, conveyers have been uniformly driven by rotating driving devices, usually in the form of wheels provided with teeth which engage the conveyer or with pawls which have been rotated by carrier wheels or disks to engage during their rotative movement some part of the conveyer to drive the latter.

My invention aims, primarily, to provide reciprocable means or devices for driving a conveyer, as distinguished from the toothed wheels or disks carrying pawls herein above referred to, which, together with the teeth or pawls carried by the same, undergo a distinctive rotary movement in performing their driving functions, and the various features of my invention will be best understood from a description of one form of mechanism illustrating the same.

In the accompanying drawings, Figure 1, in end elevation, shows a driving mechanism illustrating my invention; and Fig. 2, a vertical longitudinal section on the dotted line 2 2, Fig. 1.

In the embodiment of my invention selected for illustration herein and shown in the drawings the conveyer is of well-known endless type, composed of buckets B, pivotally suspended at b from the conveyer-wheels b' , mounted to travel upon a usual guide-track b^2 . As herein shown, the wheels b' are mounted upon axles b^3 , connected by links or members b^4 , constituting the endless chain of the conveyer, there being in the present instance two of these chains arranged at opposite sides of the conveyer-buckets and adjacent the wheels thereof. The buckets are

provided with means, as the hook-shaped castings b^5 , adapted to engage suitable tipping means to tip the buckets at the required points for the deposit of the contents thereof. At a suitable point in the travel of the conveyer, preferably at some point in the top run thereof, is arranged the driving mechanism made in accordance with my invention. This driving mechanism comprises suitable side frames A A, Fig. 1, mounted upon a suitable support and provided with suitable bearings for the driving-shaft a , Fig. 2, which may be driven in suitable or desired manner from any electric or other form of motor. The driving-shaft a is provided, as here shown, at one end with belt-pulley a^2 , adapted to be belted to the motor, and at its opposite end said shaft is provided with a driving pinion or gear a^3 , in mesh with a driving or other gear a^4 , fast on the cam-shaft a^5 , Fig. 2, mounted in the frame. This cam-shaft outside of the guides or rails b^2 , upon which the conveyer travels, is provided with the rotatable disks or wheels C, the same, as here shown, being provided at their adjacent inner faces with the two cams c and c' . The cam c has an outer cam-surface, while the cam c' has an inner cam-surface, the same being formed, respectively, by inwardly-projecting ribs upon the cam-wheels C. The cams c c' are formed in any suitable manner and may be secured to and upon the face of their carrying-wheels C C in any desired way.

Suspended from two shafts d d' , arranged near the top of the driving mechanism and mounted in the side frames, are the pairs of gravity-arms d^2 d^3 , in the lower ends of which are journaled the rotatable shafts d^4 d^5 , fitted at their ends with contact or roller sleeves $d^{4\times}$ $d^{5\times}$, the latter adapted to be acted upon by the cams c and c' . The depending arms d^2 d^3 are provided, respectively, at their upper ends with laterally-extended portions d^6 d^7 , carrying at or near their outer ends the gravity-weights d^8 d^9 , which by their gravity action maintain the rollers $d^{4\times}$ $d^{5\times}$ at the lower ends of said arms in operative contact with their respective cams. The depending arms d^2 d^3 at their lower ends adjacent the cam-rollers $d^{4\times}$ $d^{5\times}$ are provided, respectively, with

laterally-extended ears d^{10} d^{11} , between which are pivoted the driving arms or devices d^{12} d^{13} , provided, respectively, at their free ends with driving-rollers d^{14} d^{15} . Rotation of the driving cam-wheels C in the direction of the arrow thereon by the driving-motor will cause the driving devices or pawls d^{12} d^{13} to be reciprocated and their rollers d^{14} d^{15} to engage the wheels b' of the conveyer and impart to the latter a movement in the direction of the arrow thereon, Fig. 2. Since the driving devices d^{12} d^{13} are arranged at opposite sides of the axis of rotation of the cams, it is evident the driving devices d^{12} will move to the left and impart driving movement to the conveyer, while the other devices d^{13} are moving to the right preparatory to imparting driving movement to the conveyer. Thus the devices d^{12} are driving while the devices d^{13} are returning, and vice versa, so that there is imparted to the conveyer a substantially continuous movement always in one direction, and the cams c c' are so shaped, as shown, that the driving devices d^{13} commence their driving movement and reach the proper driving speed before the driving movement of the devices d^{12} commences to slow down preparatory to the return movement of said devices, and vice versa. Thus while it is necessary, practically speaking, for the driving devices to be gradually raised from a state of rest to the normal driving speed and to gradually slow down therefrom to a state of rest preparatory to reversal of direction of movement thereof the arrangement of a plurality of these devices with properly-shaped cams, as herein shown, permits the said driving devices to be brought into action one relative to another in such a manner that one picks up the conveyer to continue the driving movement of the latter before another, which has previously driven the conveyer, commences to slow down its driving movement, resulting in a practically continuous and uniform speed of movement for the conveyer.

By providing the driving devices d^{12} d^{13} with driving-rollers at their ends, which act also upon the chain or conveyer rollers or wheels, the return movements of the driving devices take place without unnecessary friction, since the driving-rollers drag freely over and upon the conveyer rollers or wheels, yet during the driving action the driving-rollers by engaging the conveyer rollers or wheels below the driving centers thereof tend to maintain themselves in operative or driving engagement therewith throughout the driving action, so that there is no danger of the driving device losing engagement with the conveyer during driving movements thereof.

My invention provides in a driving mechanism of this type a substantially continuous movement with a minimum of driving devices and associated parts, so that the mechanism is simple and economical in its construction and operation.

I have illustrated my invention in connec-

tion with a typical chain conveyer; but obviously my invention is restricted to no particular type of conveyer so long as it is so constructed as to permit of the engagement therewith of the driving device or devices; neither is my invention restricted to the particular embodiment of the driving mechanism itself here shown and described, for obviously the same may be varied within the spirit and scope of my invention.

Having described my invention and without limiting myself to details, what I claim, and desire to secure by Letters Patent, is—

1. Driving mechanism for a conveyer, the same containing one or more reciprocable driving devices adapted to engage and move said conveyer, and means to reciprocate said driving device or devices.

2. Driving mechanism for a conveyer, the same containing a plurality of reciprocable driving devices adapted to engage and move said conveyer and means to reciprocate said devices.

3. Driving mechanism for a conveyer, the same containing a plurality of reciprocable driving devices adapted to engage and move said conveyer, and means to reciprocate said devices one relative to another to impart substantially continuous movement to said conveyer.

4. Driving mechanism for a conveyer, the same containing one or more reciprocable devices to move said conveyer, and a rotatable cam surface or surfaces to engage and reciprocate said driving device or devices.

5. Driving mechanism for a conveyer, the same containing one or more driving devices mounted upon fixed supports, and means to reciprocate said driving device or devices relative to said support to impart driving movement to said conveyer.

6. Driving mechanism for a conveyer, the same comprising one or more reciprocable drive devices provided with driving-rollers adapted to engage and drive said conveyer and means to reciprocate said device or devices.

7. Driving mechanism for a conveyer, the same comprising one or more driving-rollers adapted to engage and drive the conveyer, swinging arms or pawls upon which said rollers are mounted and means to impart movement to said arms or pawls to cause their said rollers to intermittently engage said conveyer to drive the same.

8. Driving mechanism for a conveyer, the same comprising one or more driving-rollers adapted to engage and drive the conveyer, swinging arms or pawls upon which said rollers are mounted and means to impart movement to said arms or pawls to cause their said rollers to successively engage said conveyer to drive the same.

9. Driving mechanism for a conveyer, the same comprising one or more reciprocable gravity-controlled driving devices, and means to reciprocate the same.

10. Driving mechanism for a conveyer, the same comprising one or more reciprocable driving devices adapted to engage and drive the conveyer, means including one or more
5 cams to engage and move said driving device or devices, and gravity means to maintain said driving device or devices in operative contact with said cam or cams.

11. The combination with a conveyer provided with rollers or wheels, of driving mechanism therefor, containing one or more reciprocable driving devices adapted to engage said conveyer rollers or wheels for driving the same.

12. The combination with a conveyer provided with rollers or wheels, of driving mechanism therefor, provided with one or more reciprocable devices provided respectively with driving-rollers adapted to engage the
20 conveyer rollers or wheels to drive the latter.

13. Driving mechanism for a conveyer, the same comprising one or more cams and a plurality of driving devices mounted respectively at opposite sides of the axle of said cams and

engaged and reciprocated by the latter, whereby to cause one driving device to operate during the return movement of another. 25

14. Driving mechanism for a conveyer containing an operating-cam, a gravity-controlled arm acted upon by said cam, and a gravity-controlled driving device carried by said arm and reciprocated thereby to impart driving movement to said conveyer. 30

15. Driving mechanism for a conveyer, the same containing a plurality of reciprocable driving devices adapted to engage and drive said conveyer, and means to reciprocate said devices one relative to another to impart substantially uniform movement to said conveyer. 40

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

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