

Feb. 3, 1931.

A. C. THOMAS

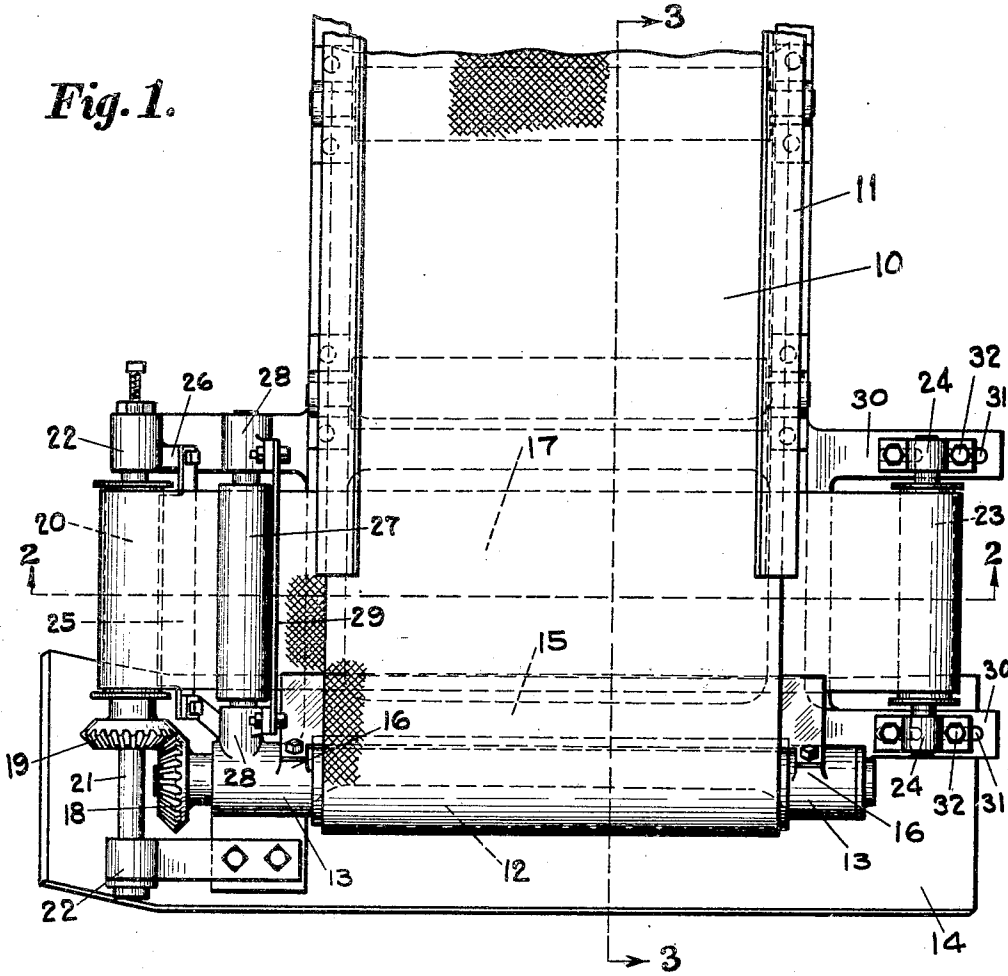
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BELT CLEANING MECHANISM

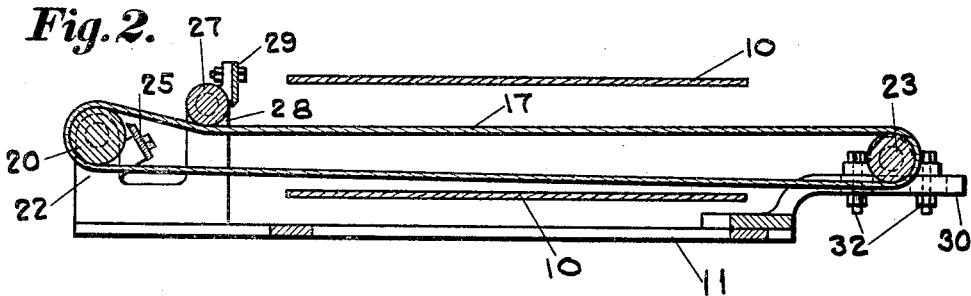
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*Fig. 1.*



*Fig. 2.*



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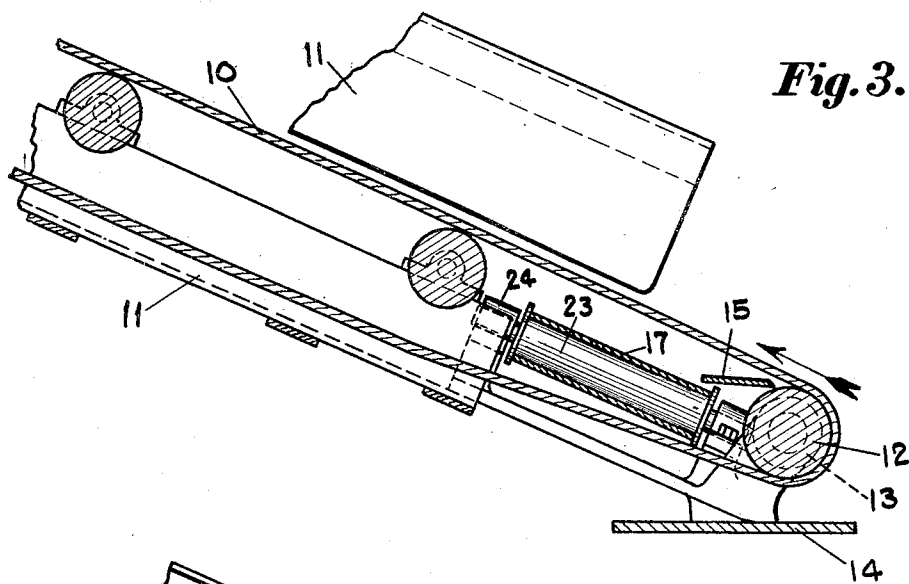
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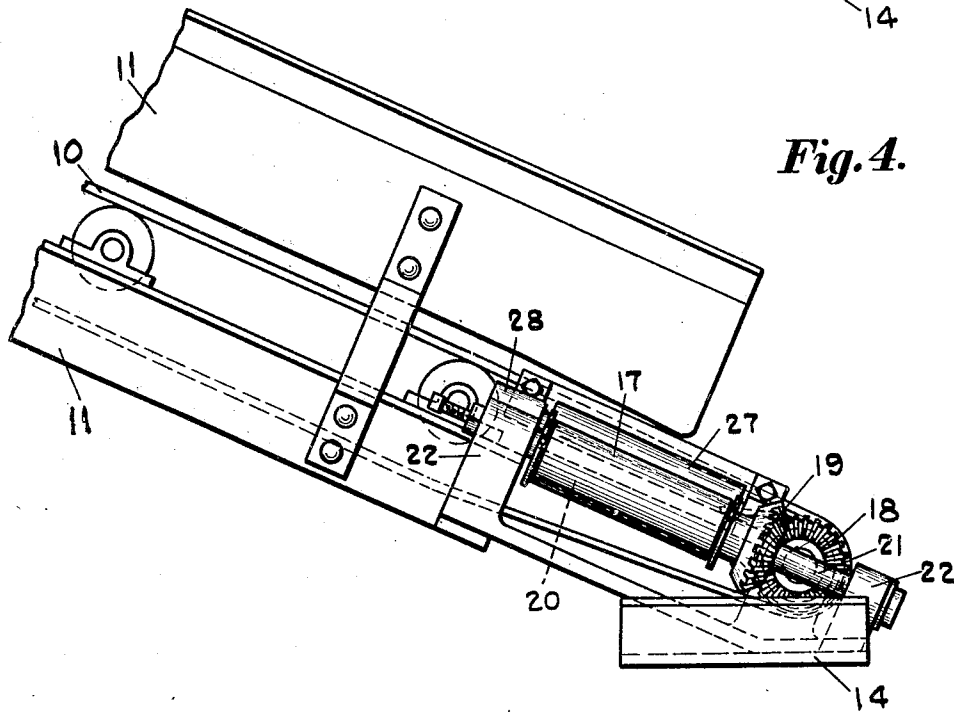
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*Fig. 3.*



*Fig. 4.*

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# UNITED STATES PATENT OFFICE

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## BELT-CLEANING MECHANISM

Application filed October 15, 1928. Serial No. 312,705.

This invention relates to belt cleaning mechanism for use in connection with elevating graders, ditch-digging machines, and conveyors. It may also be used in other instances where belts are used for conducting earth or adhesive substances.

One of the objects of the invention is to eliminate the upper pan usually employed for elevating grading machines and dispensing with the work of cleaning the same by substituting therefore a rotating traveling pan.

Another object is to provide mechanism which will cause cleaning of the belt without ceasing operation of the machine.

It is an object of the invention to provide mechanism which will constantly operate while the machine is running so that the belt will be kept normally in a clean condition to thereby effect a saving in the power required for operation.

Another object is to provide mechanism which will operate to prevent injury and undue wear of the elevator-belt.

The invention includes simple mechanism which will require no attention of an operator, and which may be installed for use upon elevating graders already in use or may be built as a part of the original machine.

In the operation of an elevating grader, the carrier belt is often over-loaded with earth, and whether wet, dry or moist, a part of its contents is often spilled and becomes deposited on the inner surface of that part of the belt which is moving downwardly and becomes packed upon the lower roller, and by said roller becomes distributed to the inner surface of the belt and adheres thereto.

By use of the present invention the roller will be kept clean and all adhesions carried to the roller will be removed, and the lowermost part of the carrier belt and all parts between the inner surfaces of the inclined belt at its lowermost parts, and generally called the "cat hole" will be kept clean and free from adhesions.

In the operation of the present invention, no attempt is made to remove adhesions from the outer surface of the main belt.

The earthy substances are carried to the roller by the inner surface of the carrier belt, and is deposited on said roller.

With the foregoing objects in view, and others to be mentioned, the invention presents a new and useful construction, combination, and arrangement of parts as described herein and claimed and as illustrated in the accompanying drawings, it being understood that changes may be made in form, size, proportions and minor details, said changes being determined by the scope of the invention as claimed.

In the drawings, Figure 1 is a plan view of the belt cleaning mechanism, the carrier belt and carrier frame being broken away.

Figure 2 is a transverse section on line 2—2 showing a second belt and its mounting.

Figure 3 is a view in longitudinal section on line 3—3 of Figure 1.

Figure 4 is a view in side elevation of the parts shown in Figure 1.

Referring now to the drawing for a more particular description, the invention is shown and described in connection with an inclined, movable carrier belt 10 and its frame 11, these parts being in general use for elevating earth and associated with grading machines or ditch or trench digging machines.

Numeral 12 indicates a roller having bearings for its trunnions at its ends in boxes 13, which are mounted in a support 14, said roller being rotated by its engagement of the main carrier belt 10.

The belt 10 may be moved by any suitable means in the direction of the arrow shown in Figure 3 of the drawing, and in operation when the earth is thrown, dumped or loaded upon said belt 10. Some of it, regardless of care in handling, will be deposited upon the upper surface of the lower half-portion of the belt and will be carried to the roller 12.

This earthy substance or a part thereof becomes packed upon the surface of this roller, and, in operation, it often becomes necessary to scrape the roller and belt for removing the deposits.

In order to provide means which will be automatic in operation for cleaning these parts I provide a scraper-blade 15 having a

length approximately equal to the width of the carrier belt 10 and mount its ends upon supports 16, said blade being disposed below the upper half-portion of the belt 10 with its edge in engagement with the roller 12 as best shown in Figure 3 of the drawings, and since this roller and belt moves in the direction indicated by the arrow, the roller will be kept clean.

I provide a second belt 17 adapted to be moved by the movement of the roller 12 for conducting the earth which has been scraped from said roller 12. This second belt is disposed approximately at right angles to the belt 10 between the upper and lower half-portions thereof, and in operation the earth scraped from the roller 12 will fall upon the belt 17 and will be conducted outwardly to any suitable spill-way.

By referring to Figure 1 it will be seen that the roller 12 is provided with a miter gear wheel 18 which engages a similar gear wheel 19 of a roller 20, upon which the belt 17 is mounted, the shaft 21 of said roller having bearings in brackets 22. Numeral 23 indicates a second roller, upon which the belt 17 is mounted, the shaft of said last named roller having bearings in boxes 24.

As thus described the rotation of the roller 12 will cause actuation of the roller 20 for moving the belt 17.

In operation, the earth which is removed from the roller 12 will for the most part, be carried away, as mentioned, upon the belt 17, but since a part of said earth may be deposited upon the inner surface of the lower half-portion of said belt 17 a second scraper blade 25 is employed, and is disposed between the upper and lower half-portions of said belt 17, and is supported upon a bar 26, and since the belt 17 has a transverse inclination the earth may slide therefrom.

In order to maintain the belt 17 in a taut condition I provide a third roller 27 having bearings for its shaft in boxes 28, and at 29 is indicated a third scraper-blade normally in engagement with said roller 27.

It will be noted by referring to Figures 3 and 4 of the drawing that the rollers 23 and 27 and the transversely disposed belt 17 have an inclination corresponding to the main carrier belt 10, and in operation the earth scraped from the rollers will be carried beyond the edge of the belt 10, and on account of the inclination of said belt 17 will be discharged therefrom.

As an aid in maintaining the belt 17 in a taut condition the boxes 30 for bearings of the shaft or trunnions of roller 23 are provided with slots 31 which receive bolts 32, and adjustments may be made for this purpose.

I claim as my invention:

1. In cleaning mechanism for a movable belt, a roller rotated by the belt, a scraper blade normally engaging the roller, a sec-

ond roller, a second scraper blade engaging the second roller, a second belt on the second roller extending between the upper and lower parts of the first-named belt below the first-named scraper blade, a third roller on the second belt, and a third scraper blade engaging said third roller.

2. In combination with a conveyor belt, and a roller therefor, a scraper for the roller, a transversely-inclined belt conveyor mounted cross-wise through the first conveyor beneath said roller, an inclined roller for the second conveyor, and a scraper for the inclined roller.

3. In combination with a conveyor belt, and a roller therefor, a scraper for the roller, a second belt conveyor inclined transversely and placed cross-wise of the first conveyor with both runs of the second conveyor between the two runs of the first conveyor, said second conveyor being located below the scraper, an inclined roller for the second conveyor, a scraper for the inclined roller, an inclined tension roller for the second conveyor, and a scraper for the tension roller.

4. In combination with a conveyor belt, and a roller for said belt, a scraper for the roller, a transversely inclined belt conveyor disposed crosswise the first named conveyor belt and through the latter beneath the scraper, a roller for the second conveyor, and a scraper for the last mentioned roller.

5. In combination with a conveyor belt inclined in a longitudinal direction and having its upper run moving upwardly, and a roller in the lower portion of the belt rotated by said belt, a second endless belt conveyor disposed cross-wise the first belt and having both runs thereof lying through the upper and lower runs of the first belt and extending outwardly beyond the edges of the first belt, said second belt being inclined transversely, a scraper for said roller positioned above said second belt, and means whereby the second belt is driven from said roller.

In testimony whereof, I have affixed my signature.

ARTHUR C. THOMAS.

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