

No. 804,525.

PATENTED NOV. 14, 1905.

W. H. ERICSSON.

LOADER.

APPLICATION FILED APR. 3, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

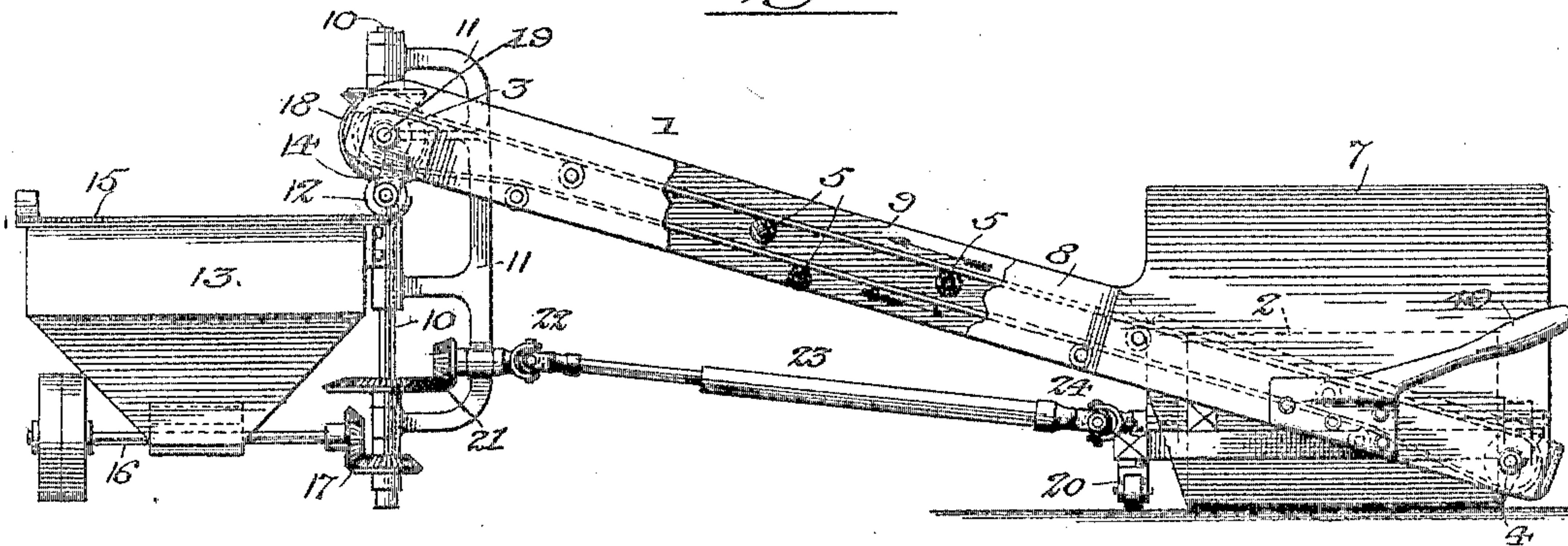


Fig. 2.

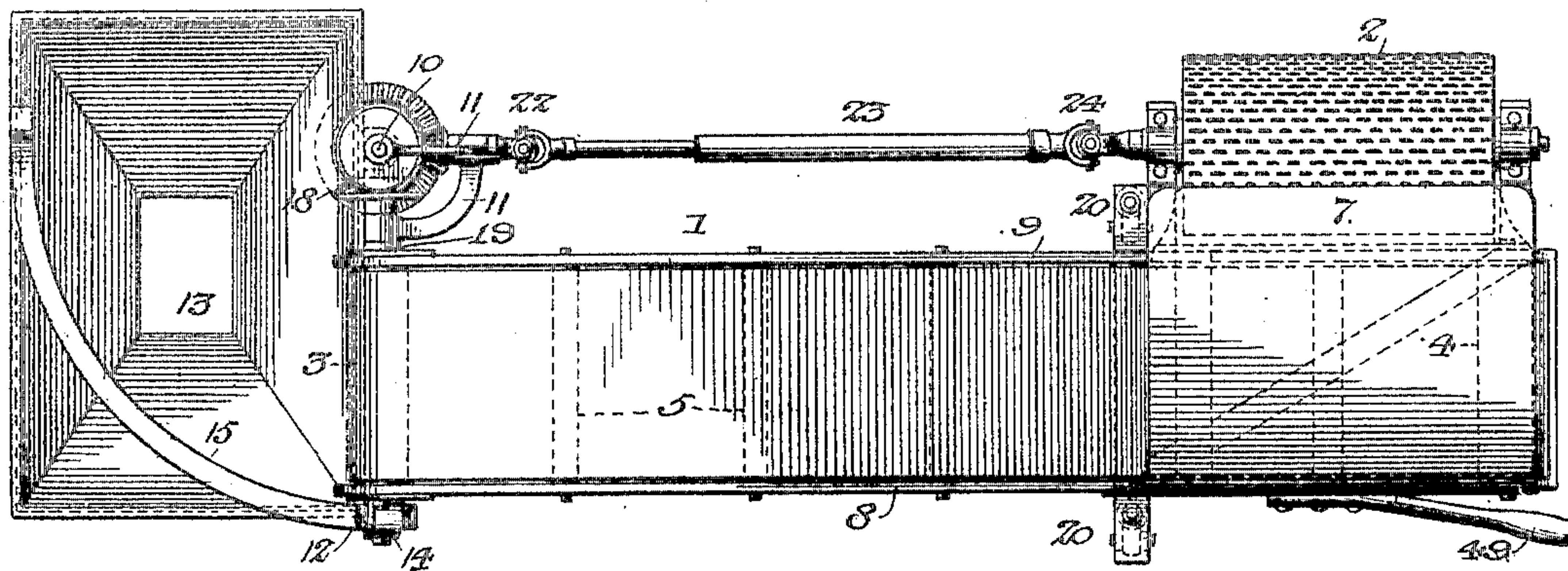
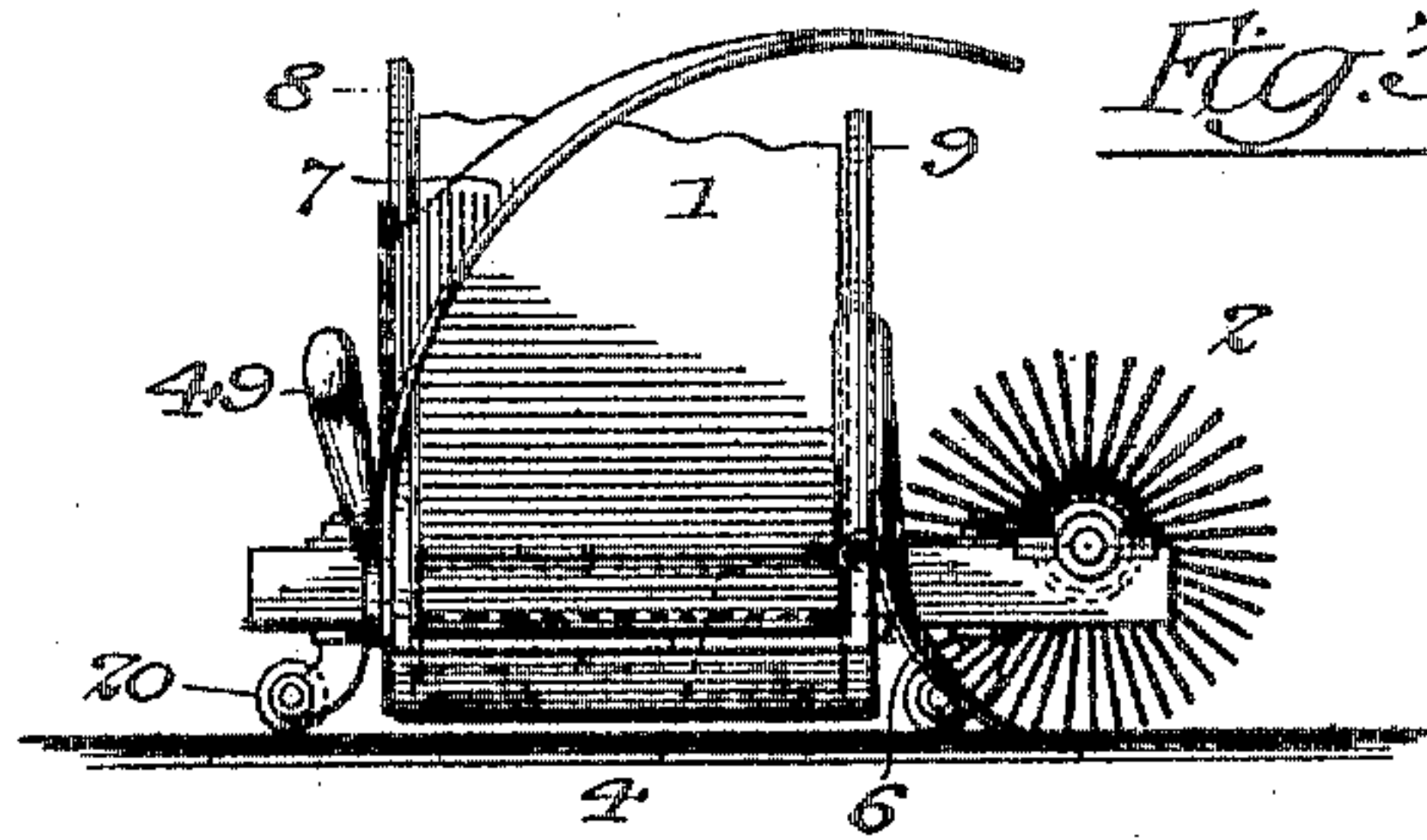


Fig. 3.



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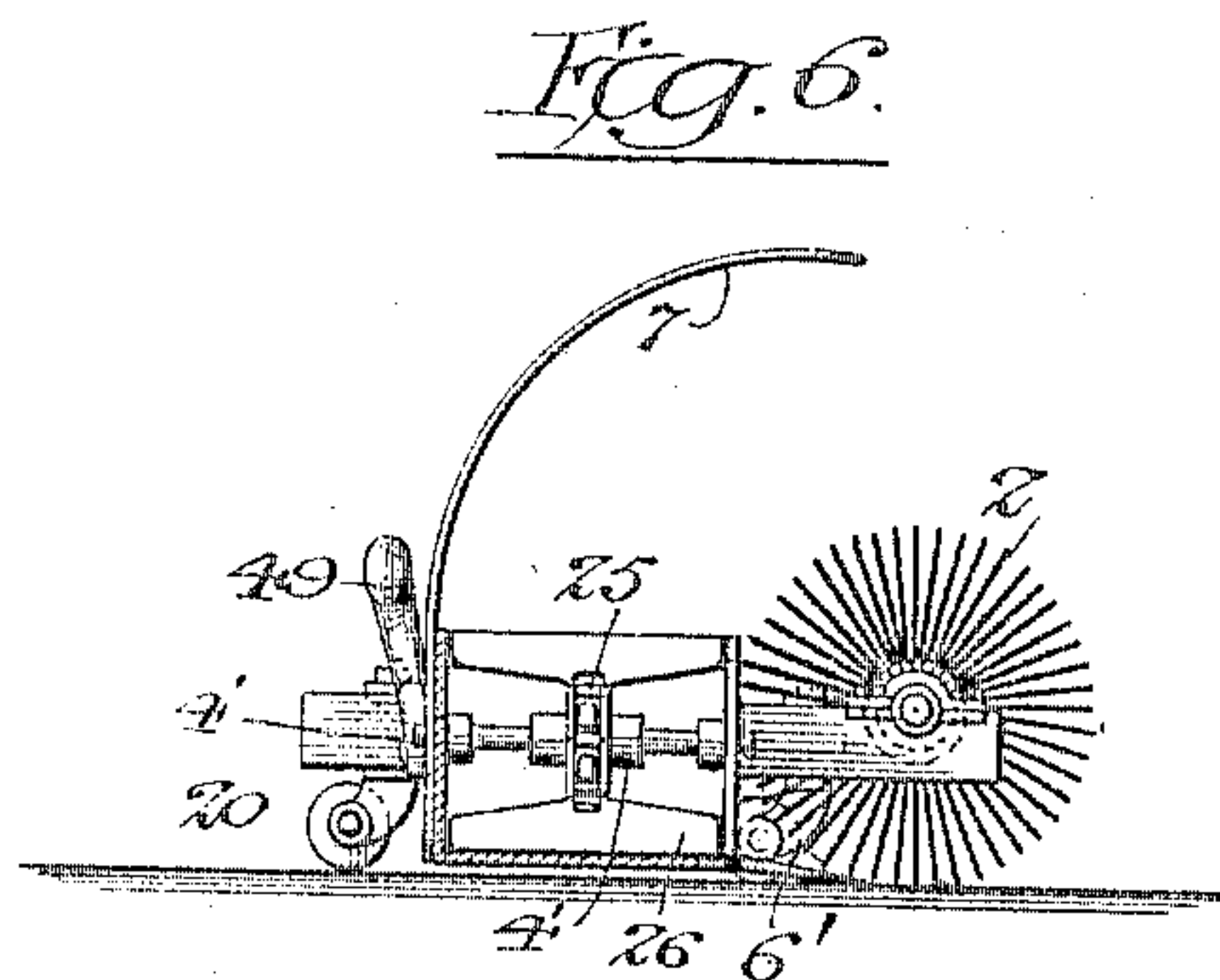
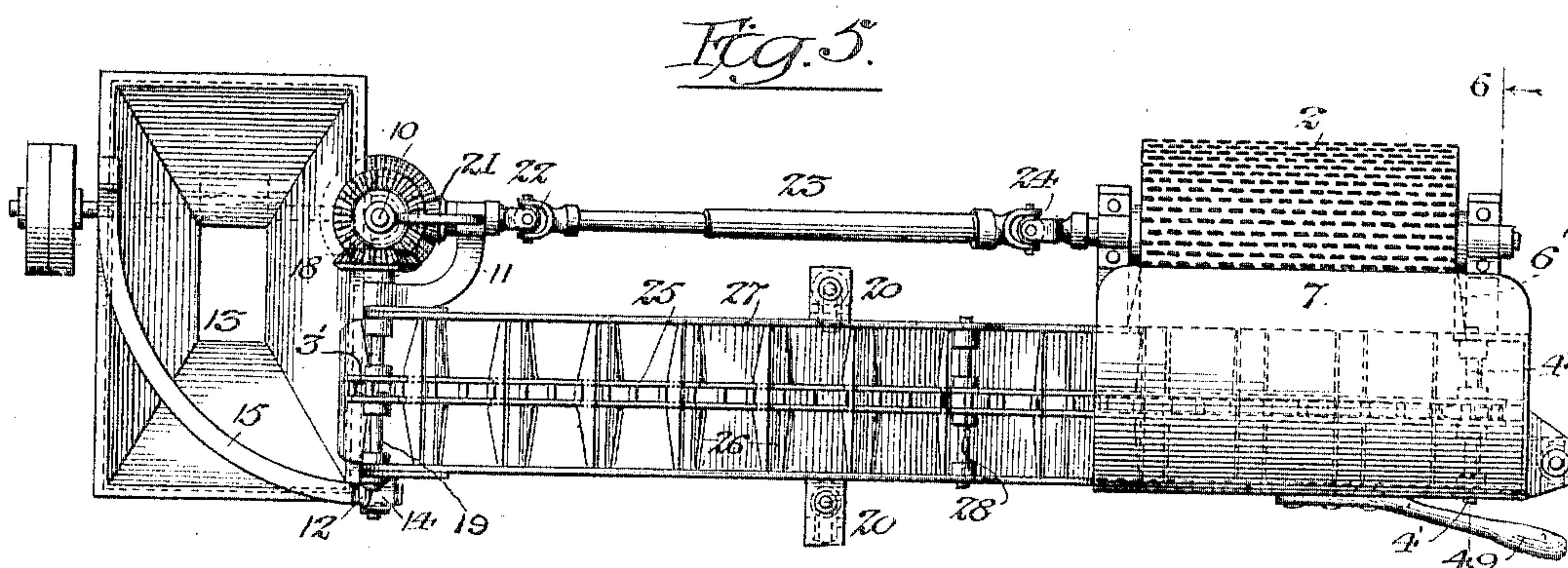
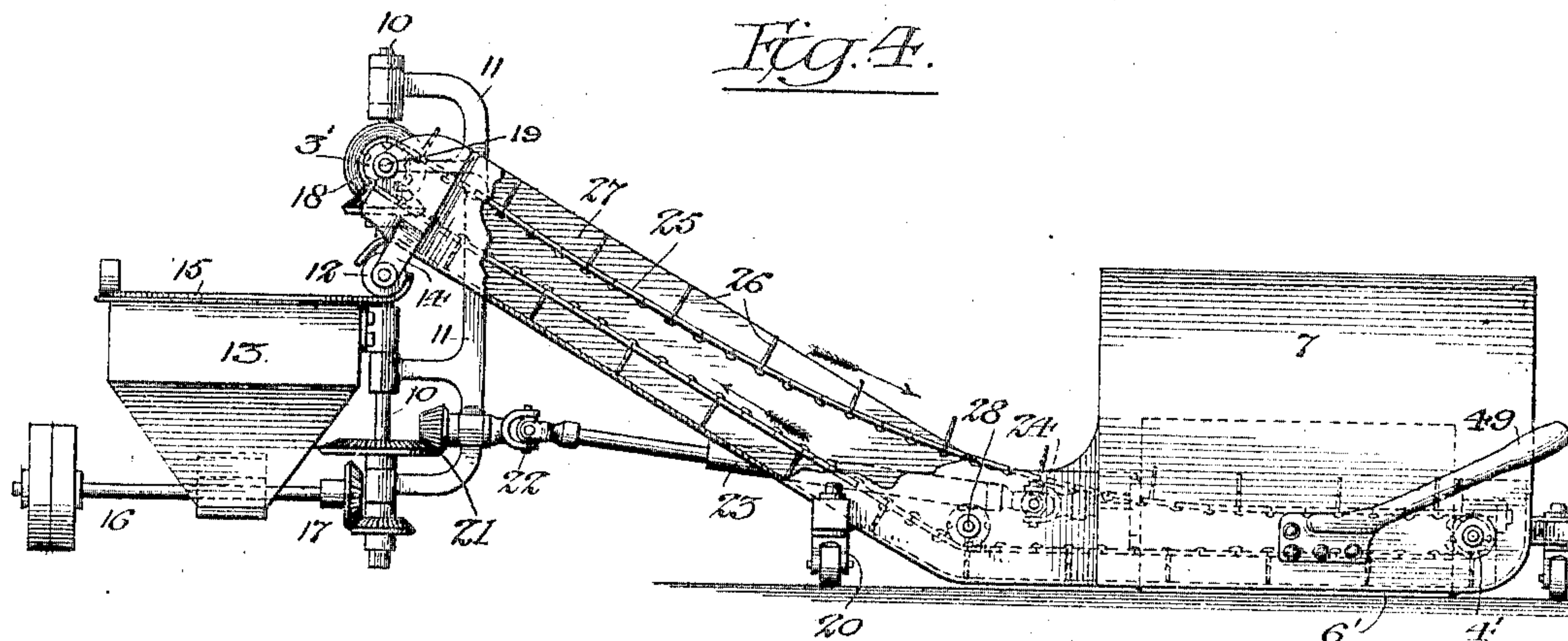
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3 SHEETS—SHEET 2.



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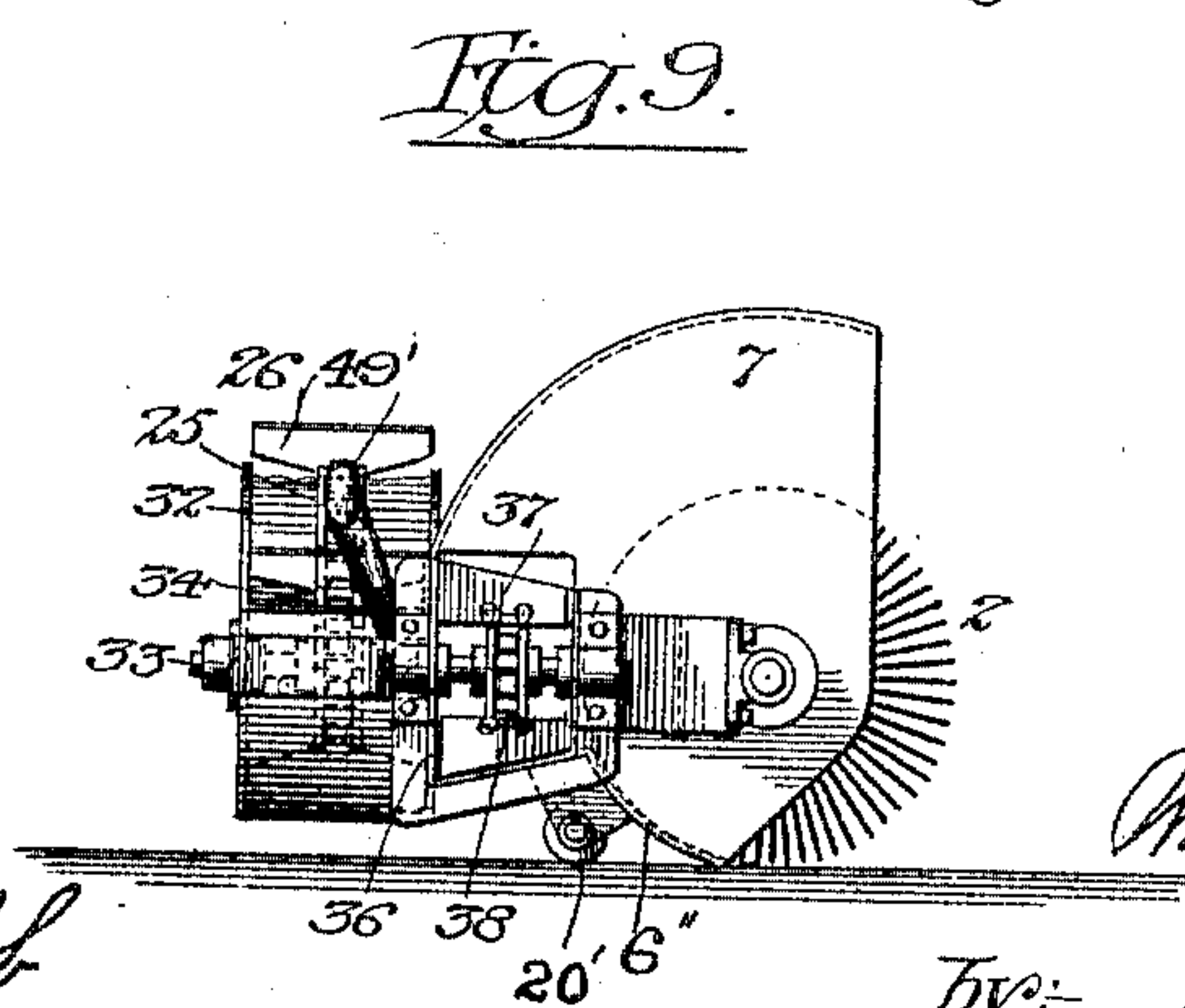
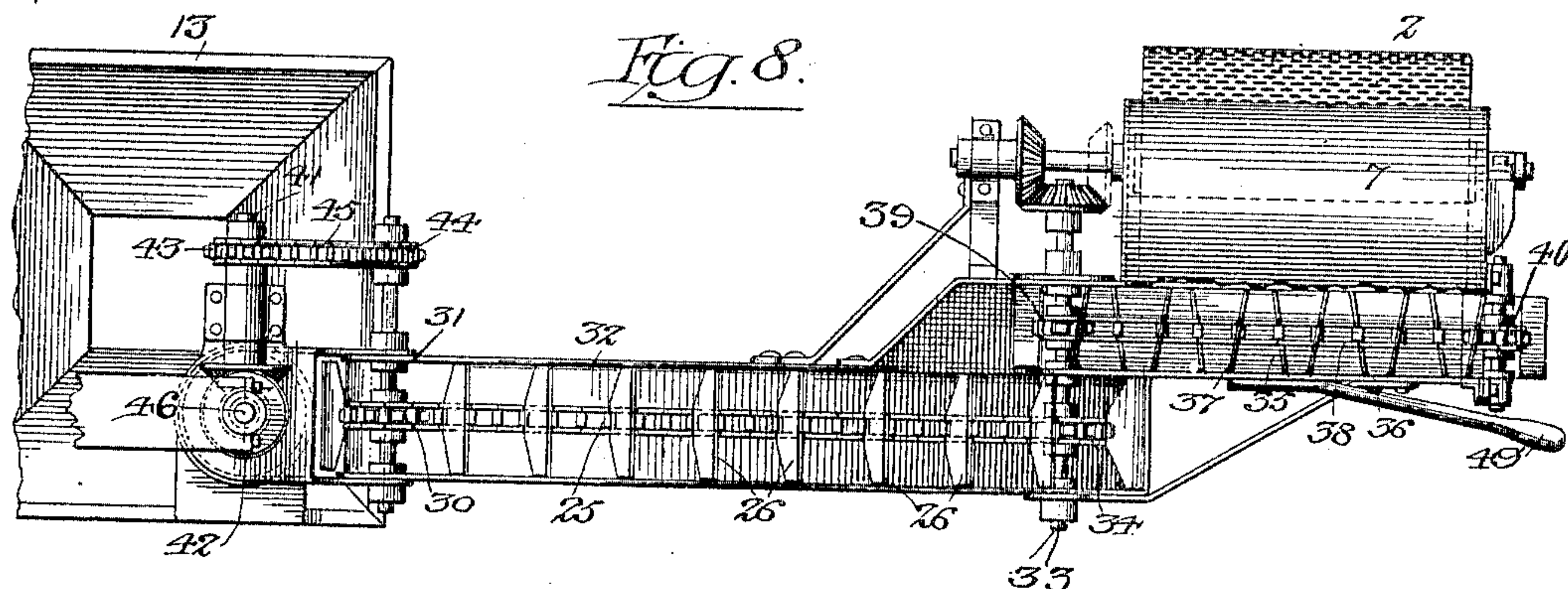
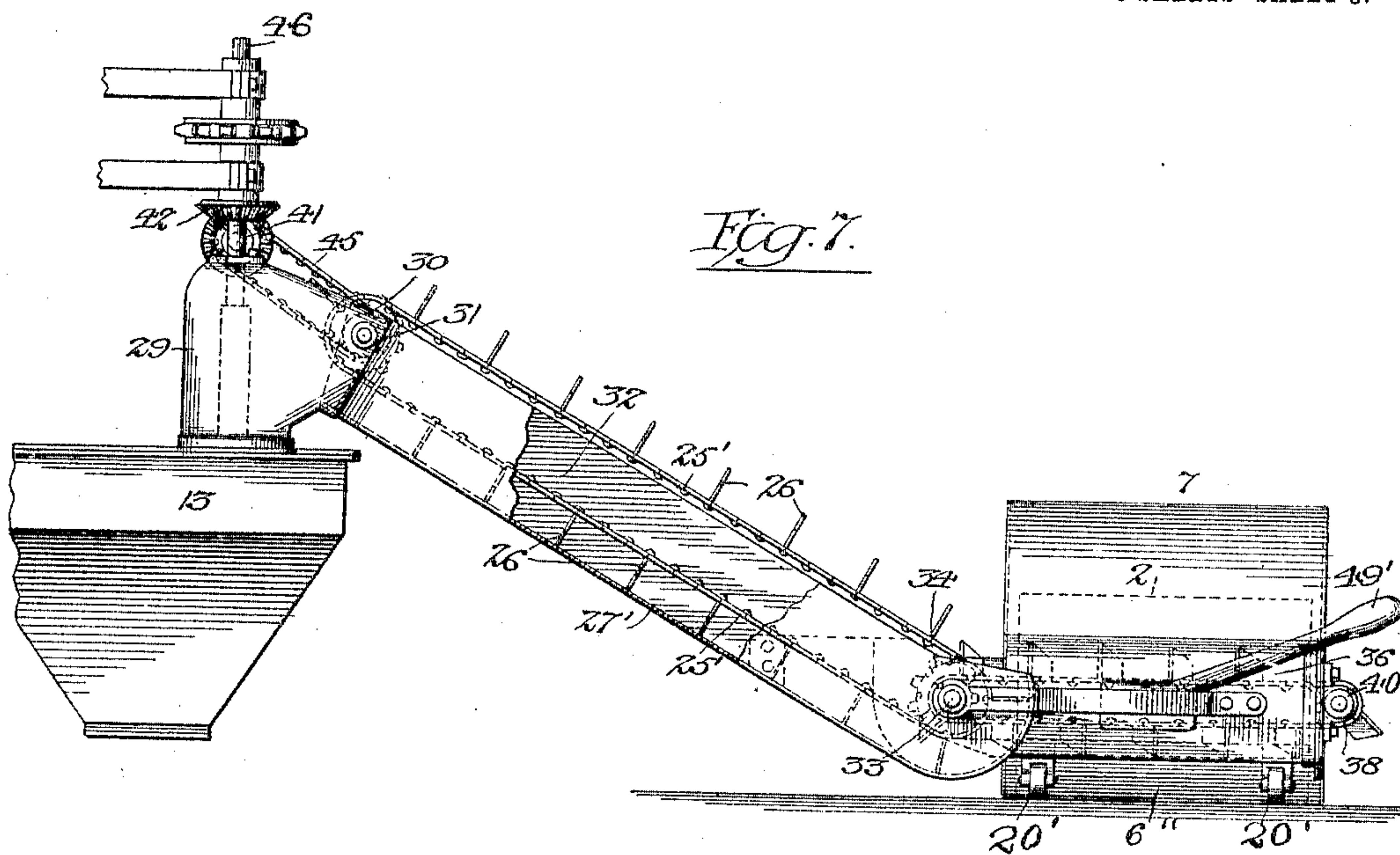
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

WALTER H. ERICSSON, OF CHICAGO, ILLINOIS.

## LOADER.

No. 804,525.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed April 3, 1905. Serial No. 253,618.

*To all whom it may concern:*

Be it known that I, WALTER H. ERICSSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Loaders, of which the following is a description.

My invention relates to that class of devices known as "loaders," adapted to gather material—such as coal, gravel, sand, or like substances—piled upon a reasonably-smooth surface, as in a suitably-prepared yard or on a street or pavement, and deposit the same in suitable receptacles from which it may be discharged when required.

The object of my invention is to produce a simple, convenient, and practical device of the kind described, which may be conveniently employed in coal-yards, sand or gravel pits, or for delivering material to a concrete-mixer.

To this end my device consists in the novel construction, arrangement, and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the accompanying drawings, wherein like or similar reference characters indicate like or corresponding parts, Figure 1 is a side elevation of my device. Fig. 2 is a plan view. Fig. 3 is a partial end view. Fig. 4 is a side elevation of a modified form of my device. Fig. 5 is a plan view of the form shown in Fig. 4. Fig. 6 is a section taken substantially on line 6-6 of Fig. 5. Fig. 7 is a side elevation of a modified form of my device. Fig. 8 is a plan view of the form shown in Fig. 7, and Fig. 9 is a partial end view of the form shown in Figs. 7 and 8.

My device consists, essentially, of a conveyor or elevator 1, a rotatable brush 2, and means for driving both the conveyor and the brush. As shown in the drawings, a hopper 13 is also shown, into which the material thrown into the conveyor 1 by the brush 2 is discharged. The conveyor 1 may be of any preferred form or construction suitable for receiving the material gathered by the brush 2. In the form shown in Figs. 1, 2, and 3 an endless belt is employed extending from the head or driving pulley 3 to the foot or tail pulley 4 and intermediately supported in the usual manner by means of the carrying-rollers 5. These rollers and pulleys may be of any of the usual forms commonly employed in belt conveyers and may be arranged to slightly elevate the edges of the carrying side

of the belt in any of the usual and well-known ways employed in conveyers of this kind, and a further description of this mechanism is deemed unnecessary.

The brush 2 is preferably positioned near the lower or receiving end of the conveyor 1 with the lower side of the brush rotating toward the conveyor. Any suitable means may be employed to direct the material gathered by the brush onto the conveyor 1. As shown, a scraper or guide 6 is arranged in an inclined position between the brush and the conveyor with its lower edge next the brush and near the surface upon which the material to be moved is piled, and its upper edge arranged in such a manner above the surface of the conveyor-belt that the material gathered by the brush is first carried against the scraper and then upward between the brush and scraper and finally thrown upon the belt. If desired, to prevent part of the material being thrown beyond the belt by the above-described action, a shield 7 may be positioned upon the opposite side of the belt and so formed that any material thrown against the shield will be returned to the conveyor.

The rotary brush 2 may be of any preferred construction and form, in which the brush members are of suitable strength and rigidity to handle the material operated upon.

In the preferred constructions the pulleys 3 and 4 and the rollers 5 are supported between the side pieces 8 and 9, and the brush 2, scraper 6, and shield 7, as well as a handle 49, are attached to the lower ends of the side pieces, as shown, so that these parts and the adjacent portion of the conveyor are permanently held in the same relation to each other, as it is obvious that it is desirable that the operating parts of my device should be movable both horizontally and vertically independently of the hopper 3. Any desired construction may be employed to permit these movements. As shown, the head of the conveyor 1 is pivotally supported upon one side by the vertical rotatable shaft 10 or a bracket or frame 11, in which said shaft is journaled, and upon the opposite side by a wheel 12, attached, by means of a suitable bracket 14, to the side piece 8 and arranged to run upon the circular track 15.

The hopper 13, track 15, and frame 11 are preferably so formed and positioned that the conveyor 1 and attached parts may be horizontally rotated through an arc, of at least ninety degrees and at all points discharge



perfectly into the hopper 13. Any suitable means may be employed to drive the conveyer 1 and brush 2, and the power may be transmitted to these parts by means of any  
 5 suitable mechanism. As shown in the drawings, the brush 2 and conveyer 1 are driven from the shaft 10, which is in turn driven from the shaft 16 by suitable gearing or equivalent means 17. The conveyer 1 is driven from  
 10 the shaft 10 by bevel-gears or equivalent means 18, transmitting motion from the shaft 10 to the shaft 19, upon which the head or driving pulley 3 of the conveyer is fixed.

The upper end of the side piece 9 is preferably pivotally mounted upon the shaft 19 or upon a part of the frame 11 concentric with the same, so that the lower end of the conveyer 1 and the brush 2 may be moved vertically, as desired, without in any manner interfering with the driving mechanism or operation of the conveyer. The opposite or  
 20 lower end of the conveyer and the parts attached thereto may be supported in any suitable manner. As shown, a pair of trucks or  
 25 wheels 20 are attached to the frame for this purpose, so arranged that the end of the conveyer, brush, and associated parts may be elevated a suitable distance from the surface upon which they are operating, the wheels  
 30 20 being preferably so mounted with swivel-supports as to readily adapt themselves to the direction in which the conveyer end is being moved.

The brush 2 is preferably driven by the  
 35 bevel-gears or equivalent means 21, driving a comparatively short shaft journaled in the frame 11 and connected, by means of a universal joint or equivalent means 22, to a telescoping section of shafting 23. This telescoping shaft may be constructed in any of  
 40 the usual and well-known ways for permitting variations in the length of a shaft while the same is transmitting rotary motion, and a further description is for that reason unnecessary. The opposite end of the telescoping  
 45 shaft 23 is connected to the axle of the brush 2 by a universal joint or equivalent means 24, so that vertical movements of the brush and conveyer end will not interfere with the  
 50 continuous rotation of the brush or affect the same.

In the form of my device shown in Figs. 4, 5, and 6 a chain-carrier or equivalent means 25, provided with projecting flights or scrapers  
 55 26 at convenient intervals, and a trough 27, in which said scrapers operate, is substituted for the belt conveyer shown in Figs. 1, 2, and 3 and heretofore described. In this form the carrier 25 is arranged to move in the  
 60 opposite direction to that of the belt in the belt conveyer previously described and is so positioned that the scrapers upon the ascending side of the carrier engage any material in the trough 27 and push the same along to the  
 65 end of the trough and there deliver it to the

hopper. To enable the material to be more readily delivered into the trough, the receiving side thereof, or the side adjacent the brush 2, may be made open and, if desired, may be constructed to lie in substantially  
 70 the same plane with the bottom of the brush, thus reducing the size and altering the shape of the scraper 6', as shown in Fig. 6. When constructed in this manner, an idler 28 may be provided to keep the carrier 25 at all  
 75 points in proper relation to the bottom of the trough, so that the scrapers will keep the trough clean at all points.

In the forms of my device above described it is evident that as the horizontal axis of the  
 80 brush is attached at a fixed angle to the conveyer the device may not always operate satisfactorily upon an uneven surface nor in positions where the receiving end of the conveyer is elevated or depressed to any considerable  
 85 extent from the mean angle at which the device is arranged to operate. Where my device is designed to be operated under the above-described conditions, the form shown in Figs. 7, 8, and 9 may be employed. In  
 90 this form a revoluble receiving-head 29 is mounted above the hopper 13 and provided with suitable bearings to support a shaft 30, upon which the head-pulley 31 of the elevator 32 is mounted. One end of the trough  
 95 27' of the elevator 32 is pivotally connected concentrically with the shaft 30, and the trough and the head 29 are so formed that all material will be directed by the head 29 into the hopper 13. The opposite end of the  
 100 trough 27' carries a shaft 33, upon which the tail or foot pulley 34 is mounted, the carrier 25' being preferably of the chain type and arranged to transmit power from the shaft 30 to the shaft 33. In the form shown a con-  
 105 veyer 35 is provided to receive the material gathered by the brush 2 and discharge the same into the elevator 32. Preferably this conveyer is provided with a trough or box 36, along the bottom of which material being  
 110 operated upon is moved by the flights 37, attached to the carrier 38. As shown, one end of the box 36 is pivotally connected to the box 27' concentrically with the shaft 33, and the bottom of the box 36 is laterally upwardly  
 115 inclined toward the brush 2, which is mounted substantially parallel with the conveyer and with its bearings rigidly attached to the box 36 by means of suitable supports at either end of the brush. The head-pulley 39  
 120 for the conveyer 35 is preferably mounted upon the shaft 33 and the tail or foot pulley 40 upon a suitable shaft near the opposite end of the box. The adjacent sides of the box 36 and trough 27' are preferably substan-  
 125 tially in contact near their ends and the side of each is partially removed to permit the material in the conveyer being discharged freely into the elevator. Preferably the end of the box 36 is flared toward the trough 27',  
 130



and, if desired, the parts of the conveyer may be so proportioned that the bottom of the box 36 at the elevator is slightly higher than the bottom of the trough 27' to aid in securing a perfectly free discharge from the conveyer into the elevator. In the form shown the brush 2 is rotated by means of suitable bevel-gears mounted, respectively, upon the shaft 33 and the axle of the brush, the whole mechanism being driven by the carrier 25' from the shaft 30, which may be driven in any convenient manner. As shown, a vertical shaft 46 is mounted concentrically with the head 29 and supported in suitable bearings, and a horizontal shaft 41 is mounted in suitable bearings upon the head and rotatably connected with the shaft 46 by the bevel-gears 42 or equivalent means. Any suitable means may be employed to transmit power from the shaft 41 to the shaft 30. As shown, sprocket-wheels 43 44 are mounted upon the shafts 41 and 30 and connected, by means of a suitable chain 45, for this purpose. The scraper 6'', the shield 7, the handle 49', and the trucks or wheels 20' are substantially the same and employed for the same purposes as heretofore described and a further description is deemed unnecessary.

Obviously in the foregoing only the preferred forms of my device have been described; but it is evident that various modifications may be made to suit special conditions without departing from the spirit of my invention. Hence I do not wish to be understood as limiting myself to the exact forms and construction shown.

What I claim as new, and desire to secure by Letters Patent, is—

1. A device of the kind described, comprising a hopper, a revoluble head mounted above said hopper inclosing a portion of said elevator, an inclined elevator extending into and pivotally attached to said head, and means for driving said elevator, in combination with means for engaging finely-divided material and delivering the same to said elevator.

2. A device of the kind described, comprising an inclined elevator, and means for operating the same, in combination with a brush and a scraper positioned at the side of said elevator and arranged to cooperate for engaging finely-divided material and delivering the same to said elevator, and means for operating said brush.

3. A device of the kind described, comprising an inclined conveyer pivotally mounted both vertically and horizontally, and means for driving said conveyer, in combination with a brush cooperating with a scraper for engaging finely-divided material and delivering the same to said elevator, and means for operating said brush.

4. A device of the kind described, comprising an inclined elevator, and means for operating the same, in combination with a rotary

brush and a stationary scraper positioned at one side of said elevator and adapted to cooperate for engaging finely-divided material and delivering the same to said elevator, and means for rotating said brush.

5. A device of the kind described, comprising an inclined conveyer pivotally mounted both vertically and horizontally, and means for driving said conveyer, in combination with a rotary brush adapted to cooperate with a stationary scraper for engaging finely-divided material and delivering the same to said elevator, and means for rotating said brush.

6. A device of the kind described, comprising a pivotally-mounted inclined elevator, and means for operating the same, in combination with a conveyer arranged to deliver material to said elevator, and pivotally connected to the free end thereof, means for driving said conveyer, and means for engaging finely-divided material and delivering the same to said conveyer.

7. A device of the kind described, comprising a hopper, a revoluble head mounted above said hopper, an inclined elevator pivotally attached to said head, and means for driving said elevator, in combination with a conveyer arranged to deliver material to said elevator, and pivotally connected to the free end thereof, means for driving said conveyer, and means for engaging finely-divided material and delivering the same to said conveyer.

8. A device of the kind described, comprising a pivotally-mounted inclined elevator, and means for operating the same, in combination with a conveyer arranged to deliver material to said elevator, and pivotally connected to the free end thereof, means for driving said conveyer, a rotary brush adapted to cooperate with a scraper for engaging finely-divided material and delivering the same to said elevator, and means to rotate said brush.

9. A device of the kind described, comprising a hopper, an inclined elevator arranged to deliver into said hopper, and means for driving said elevator, in combination with a conveyer arranged to deliver material to said elevator, and pivotally connected to the free end thereof, means for driving said conveyer, a rotary brush and a scraper positioned at the side of said conveyer and adapted to cooperate for engaging finely-divided material and delivering the same to said conveyer, and means to rotate said brush.

10. A device of the kind described, comprising a pivotally-mounted inclined elevator, and means for operating the same, in combination with a conveyer arranged to deliver material to said elevator, and pivotally connected to the free end thereof, means for driving said conveyer, a rotary brush adapted to cooperate with scraper to engage finely-divided material and deliver the same to said conveyer, means to support said conveyer



and cooperating parts and means to rotate said brush.

11. A device of the kind described, comprising a hopper, a revoluble head mounted above  
5 said hopper, an inclined elevator pivotally attached to said head, and means for driving said elevator, in combination with a conveyer arranged to deliver material to said elevator, and pivotally connected to the free end there-  
10 of, means for driving said conveyer, a rotary brush adapted to cooperate with a scraper to

engage finely-divided material and deliver the same to said conveyer, means to support said conveyer and cooperating parts and means to rotate said brush.

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

WALTER H. ERICSSON.

Witnesses:

BURTON U. HILLS,  
CHARLES I. COBB.