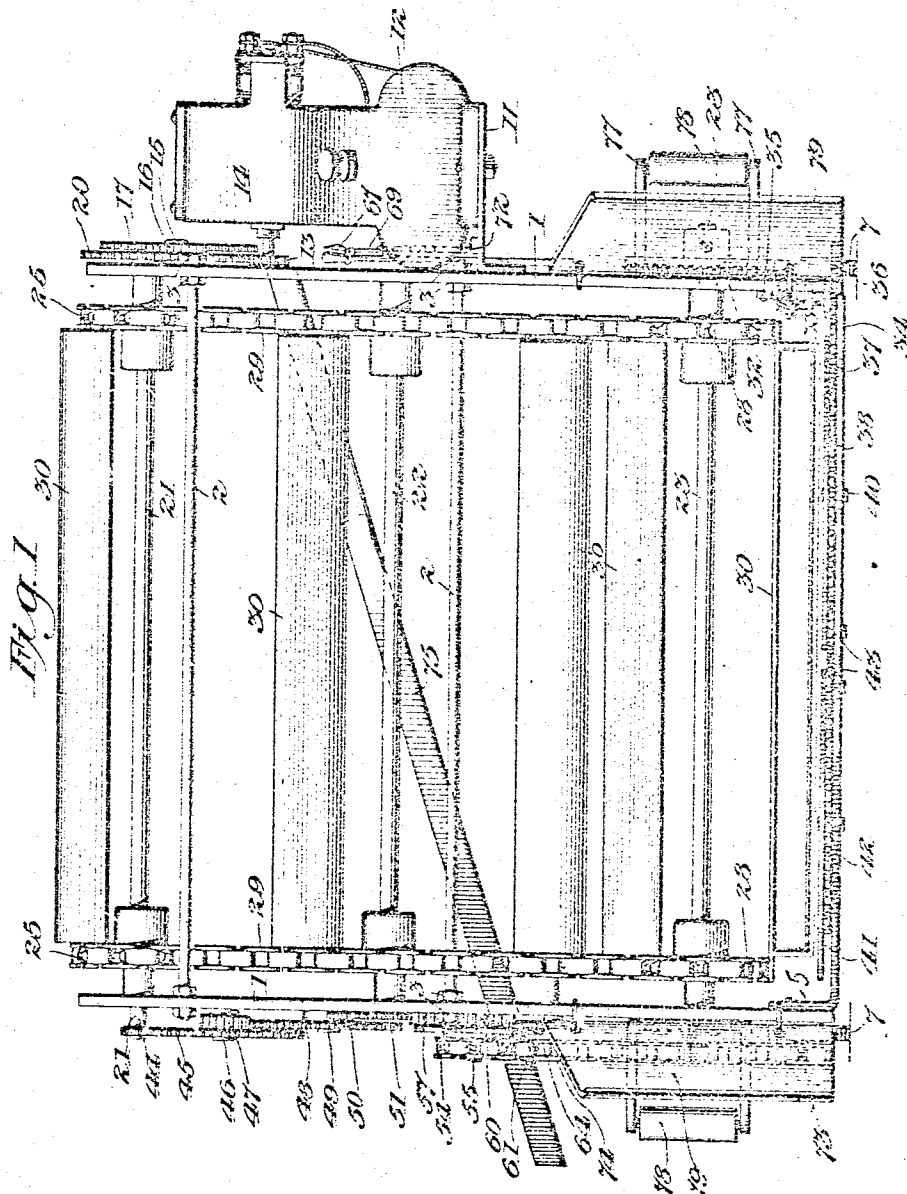


J. STEINER.
COAL CAR UNLOADING MACHINE.
APPLICATION FILED DEC. 15, 1909.

982,694

Patented Jan 24, 1911.

3 SHEETS-SHEET 1.



Witnesses:
J. L. Hah
Chas. L. Sullivan

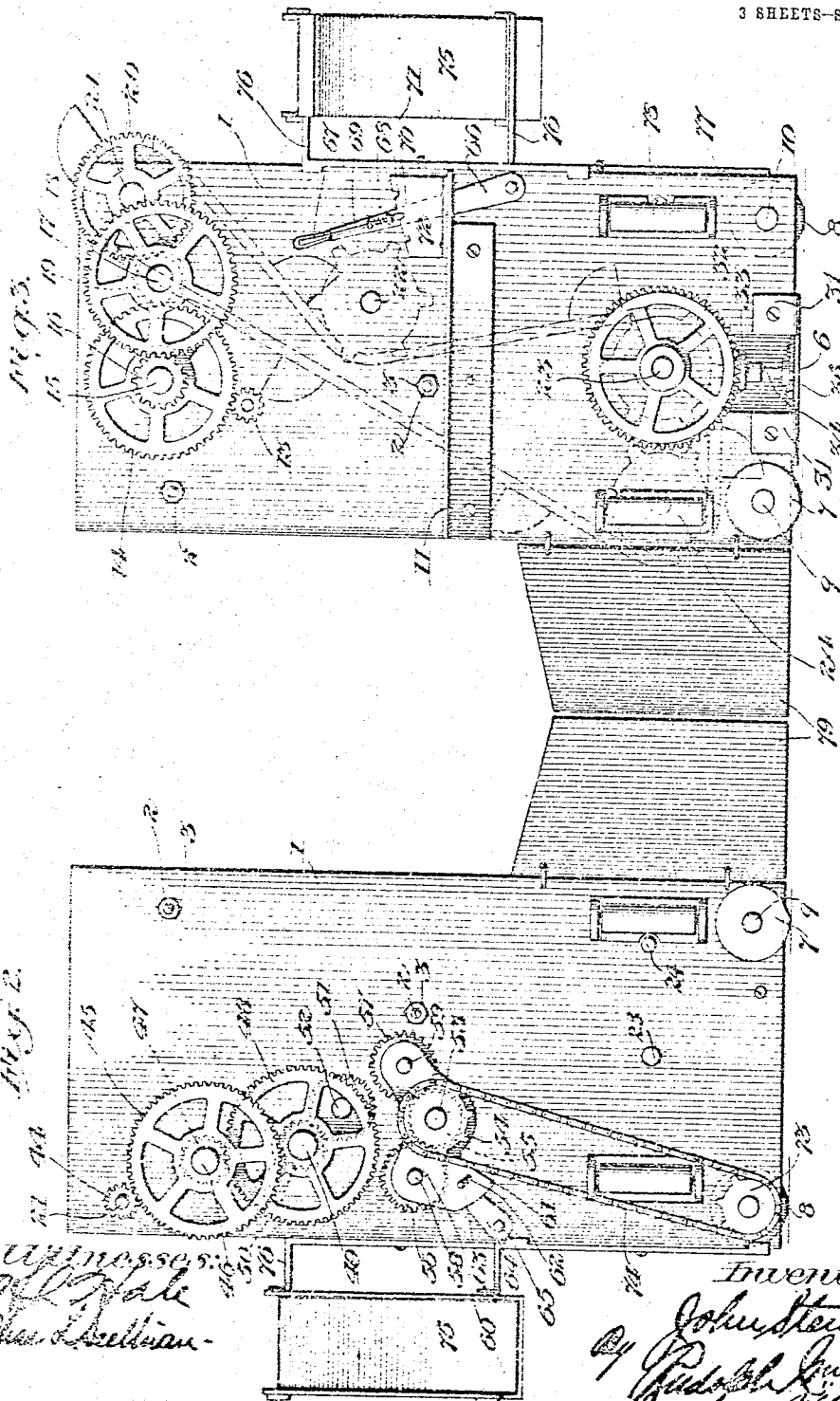
Inventor:
John Steiner
By *[Signature]*

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3 SHEETS-SHEET 2.

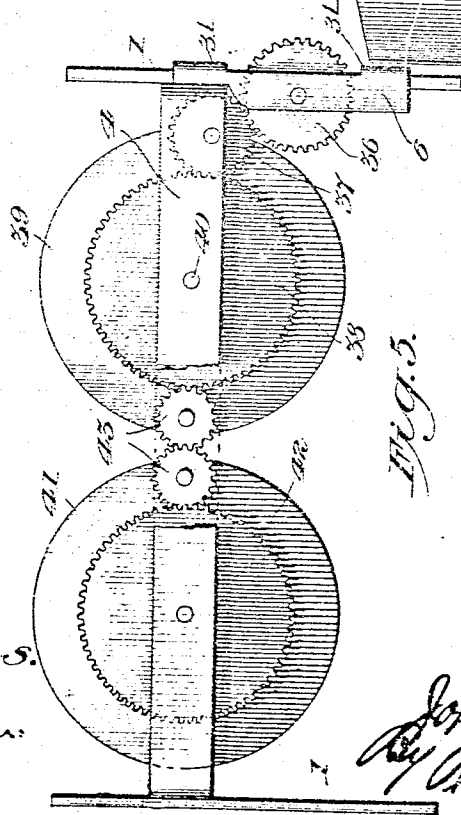
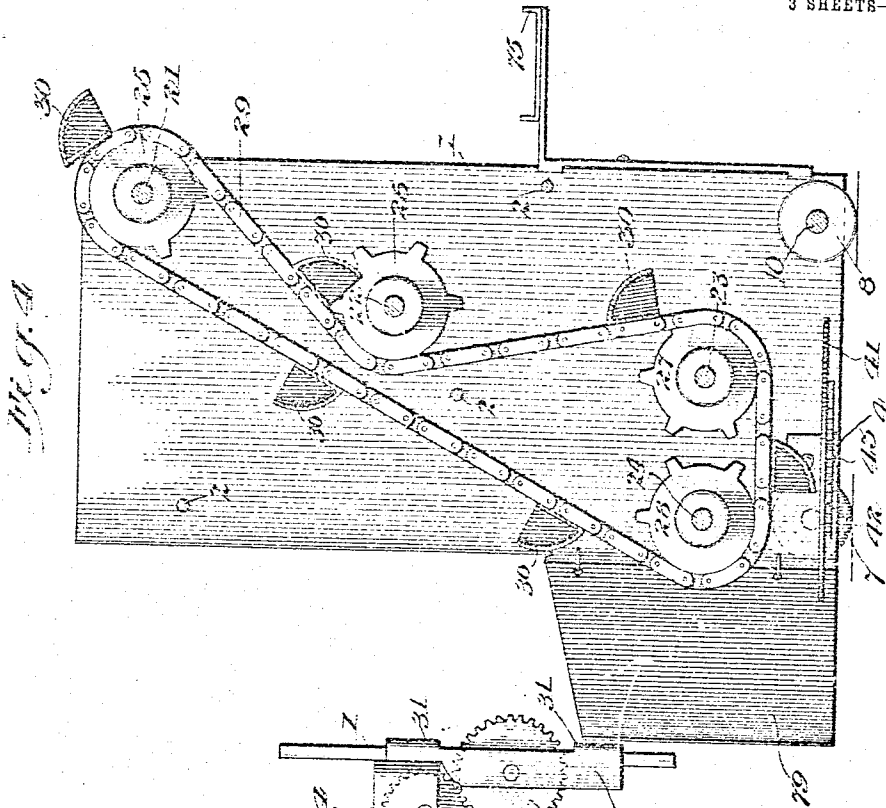


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3 SHEETS-SHEET 3.



Witnesses:
 J. H. Hale
 Chas. Sullivan.

Inventor:
 John Steiner
 By *Rudolph J. [Signature]*

UNITED STATES PATENT OFFICE.

JOHN STEINER, OF CHICAGO HEIGHTS, ILLINOIS.

COAL-CAR-UNLOADING MACHINE.

982,694.

Specification of Letters Patent.

Patented Jan. 24, 1911.

Application filed December 15, 1909. Serial No. 533,313.

To all whom it may concern:

Be it known that I, JOHN STEINER, a subject of Austria-Hungary, residing at Chicago Heights, in the county of Cook and State of Illinois, have invented a new and useful Coal-Car-Unloading Machine, of which the following is a specification.

This invention relates to a novel construction in a machine particularly adapted for unloading coal from cars, and has for its object to provide a simple and efficient machine of this character.

The invention consists in the novel features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings illustrating my invention: Figure —1— is a front elevation of a machine constructed in accordance with my invention. Figs. —2— and —3— are views in elevation of respectively opposite ends of the machine. Fig. —4— is a central vertical longitudinal section of the same. Fig. —5— is a detail inverted plan view showing the disks or saws employed and the gear train for actuating the same.

In unloading coal from cars it is necessary to provide means for penetrating the mass of coal as nearly as possible adjacent the floor of the car. Where large lumps and small pieces are intermingled as for example in mine run coal, or where block coal or in fact any of the larger sizes are to be unloaded, penetration is very difficult as will be obvious, and consequently it is necessary to exert considerable power in effecting the same.

My invention has for its principal object to provide a machine for unloading coal from cars which is equipped with power actuated means for penetrating the mass of coal adjacent the floor in a positive and reliable manner and which is further equipped with efficient means for removing the body of the coal after such penetration has been effected.

My said machine comprises a frame consisting of suitable side plates 1 secured together at a plurality of points and maintained parallel by means of cross rods 2 secured in said side plates at their ends by means of nuts 3 in any usual and well-known manner. The machine is further provided at the bottom thereof with a cross

plate 4 provided at its ends with flanges 5 secured to the inner faces of said side plates 1 by means of screws or other fastening devices.

The frame of the machine as constructed is supported upon the wheels 7 and 8 rotatably mounted on studs 9 and a shaft 10 respectively, the latter being journaled in suitable bearings in said side plates 1. Mounted upon one of said side plates is a bracket 11 upon which a motor 12 is supported, said motor being preferably electric. On the motor shaft there is mounted a spur pinion 13 which meshes with a spur gear 14 rigidly mounted upon a shaft 15 journaled in suitable bearings in the said side plates 1 of the machine. Said shaft 15 carries a spur pinion 16 rigid therewith and meshing with a spur gear 17 rotatably mounted upon a stud 18 on one of said side plates 1. Rigid with said spur gear 17 is a spur pinion 19 which meshes with a spur gear 20 on a countershaft 21 suitably journaled in bearings in said side plates 1. On said countershaft 21 and upon countershafts 22, 23 and 24 respectively, are mounted pairs of sprocket wheels 25, 26, 27 and 28 respectively, over which sprocket chains 29 are trained; the latter being equipped at regular intervals with buckets 30 for the reception and elevation of coal. The said sprockets 26 are idle as are also the sprockets 28 while the sprockets 27 serve to transmit movement to the countershaft 23. The latter is provided at one end with a bevel gear 32 rigid therewith and meshing with a bevel pinion 33 on a vertical shaft 34 suitably supported in a bearing formed in a bracket 6 having flanges 31 secured to the outer face of one of said side plates 1 and in a bearing 35 carried by said side plate, the latter being slotted at its lower end for the purpose of permitting the said spur pinion 33 to project into engaging relation with said bevel gear 32. On the lower end of said shaft 34 immediately above said cross plate 4 there is rigidly mounted a spur gear 36 which likewise projects through said slot in said side plate and which meshes with an idle gear 37 rotatably mounted on a stud carried by said cross plate 4 and which in turn meshes with a spur gear 38 rigid with the disk 39 which is preferably equipped with teeth similar to a saw on its periphery;

the said disk 39 and spur gear 38 being mounted on a stud 40 secured to said cross plate 4. A similar disk 41 rigid with a spur gear 42 is driven by means of the pair of idle spur pinions 43 from said gear 38, the said disks 39 and 41 being thus driven in respectively opposite directions. The said disks 39 and 41 are disposed very near the lowest point in the machine, said disks being adapted to force their way into the mass of coal to be loaded adjacent the bottom of said mass at the same time that the machine moves forward. Motion is transmitted to the frame of the machine from said motor 12 in the following manner, to-wit: The shaft 21 is equipped at its other end with a spur pinion 44 which meshes with a spur gear 45 on a stud 46 on the said plate 1 farthest removed from the motor 12. Rigid with said gear 45 is a spur pinion 47 which meshes with a spur gear 48 mounted upon the stud 49 and rigid with which is a spur pinion 50. The latter meshes with a spur gear 51 mounted on a stud 52 on said side plate, said gear 51 being maintained constantly slowly in rotation. On said last-named side plate 1 is a stud 53 on which there is rotatably mounted a sprocket wheel 54 and a spur gear 55 rigid with said sprocket. Said spur gear 55 meshes with two spur gears 56 and 57 respectively, both of which are rotatably mounted on studs 58 and 59 respectively, mounted on a rocking plate 60 pivotally mounted upon the said stud 53. Said plate 60 is provided with an arm or extension 61 provided with a slot 62 in which the crank pin 63 on a crank arm 64 engages; the said arm 64 being rigidly mounted upon one end of the shaft 65 journaled in suitable bearings in the side plates of the machine and upon the other end of which there is rigidly mounted a lever 66 equipped with an auxiliary lever 67 normally maintained at one limit of its movement by means of a spring 68 engaging a longitudinal movable plunger 69 pivotally engaged with said lever 67 and at its lower end carrying a dog 70 adapted to be engaged in notches 71 in a plate 72 mounted upon said bracket 11. Said lever 66 when in the position shown in Fig. —3— maintains said plate 6 in the position shown in Fig. —2—. By moving said lever 66 so that the dog 70 engages in one of the notches nearest adjacent the ends of said plates 72 it will serve to swing the said plate 60 so as to throw the gear 57 into mesh with the gear 51 or to throw the gear 56 into mesh with the gear 48. On the shaft 10 there is rigidly mounted a sprocket 73 over which and said sprocket 54 the sprocket chain 74 is trained so that when the gear 57 meshes with the gear 51 the frame of the machine will be moved slowly forward toward the

mass of coal to be penetrated and at the same time the buckets 30 will scoop up such coal and discharge the same upon a trough 75 extending transversely and at an incline over the rear end of the machine, the same being supported upon suitable brackets 76 secured to said side plates 1. When said lever 66 is turned to throw the gear 56 in mesh with the gear 48 the direction of travel of the machine will be reversed at a greater speed. In order to maintain the machine properly spaced from the respective sides of the car to be unloaded there are mounted upon said side plates 1 brackets 77 in which trunnions on the ends of vertical idle rolls 78 are journaled; said rolls being adapted to engage the side walls of the car and thus prevent lateral movement of the machine or deflection thereof from a true straight line of travel.

It will be obvious that the side plates 1 will be maintained spaced some distance from the side walls of the car and in order that the coal nearest adjacent said side walls shall be removed together with the body of coal I provide upon the forward edges of said side plates 1 hinged plates 79 which are adapted at their forward ends to contact with the side walls of the car and throw the coal nearest adjacent said side walls inwardly in position to be engaged by said scoops or buckets 30 and thus removed.

I claim as my invention:

1. A device of the class described comprising a frame having parallel side plates, a plurality of shafts journaled therein at different elevations, a pair of sprocket wheels on each of said shafts, a pair of sprocket chains trained over said sprocket wheels, elevator buckets carried by said sprocket chains, a cross plate secured at its ends to said side plates at the lower ends of the latter, a pair of horizontally disposed disks rotatably mounted on said cross plate, and means for causing said disks to rotate in unison in respectively opposite directions upon movement of said buckets.

2. A device of the class described comprising parallel side plates, a plurality of shafts journaled in said plates and disposed at different elevations, hinged extension members on the forward edges of said side plates adapted for providing an inlet for material to be elevated between said side plates, elevator buckets carried by said shafts, a pair of horizontally disposed disks rotatably mounted between said side plates and adjacent to the lowermost point in the device, and said disks adapted for rotation in respectively opposite directions upon movement of said shafts and buckets.

3. A machine of the class described comprising a frame having parallel side plates, a train of elevator buckets mounted for op-

erative movement within said frame, a cross plate secured at its ends to said side plates at the lower ends of the latter, a pair of horizontally disposed disks rotatably mounted upon said cross plate between said side plates and adjacent to the lowermost point within the machine, and said disks adapted for rotation in unison in respectively op-

posite directions upon movement of said buckets.

In testimony whereof I affix my signature¹⁰
in the presence of two witnesses.

JOHN STEINER.

Witnesses:

JULIUS H. HAUF,

CARL A. SUSSTRONG.