

(No Model.)

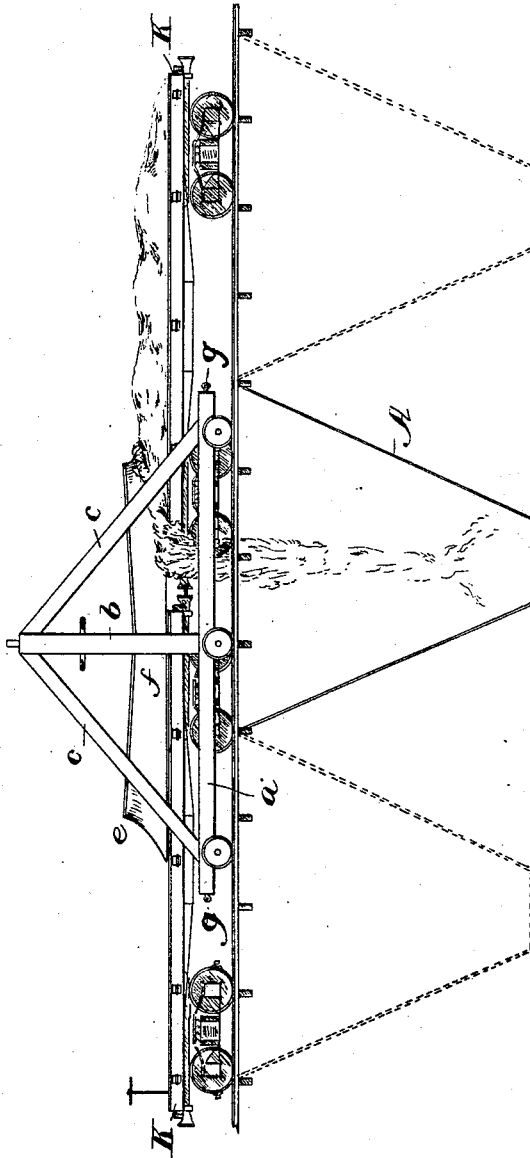
2 Sheets—Sheet 1.

A. McDOUGALL.
UNLOADING APPARATUS.

No. 523,940.

Patented July 31, 1894.

Fig. 1.



WITNESSES:

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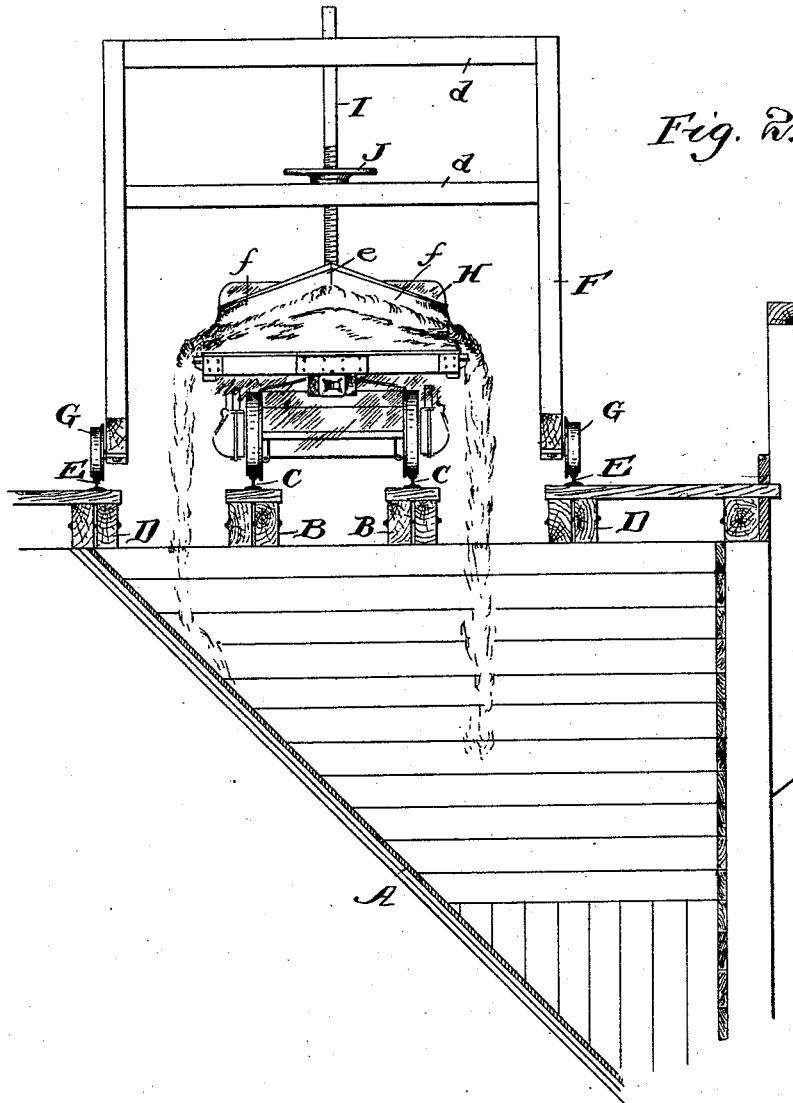
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ALEXANDER McDOUGALL, OF DULUTH, MINNESOTA.

UNLOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 523,940, dated July 31, 1894.

Application filed November 18, 1893. Serial No. 491,339. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER McDOUGALL, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Unloading Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improved apparatus for unloading cars of heavy freight, such as ore, coal, sand and earth. Such freight, when being transported by rail, is at present loaded in hopper cars which dump either at the sides or ends, or through the bottom, so that it may be quickly unloaded when perfectly dry; but I have found that when such freight is damp, and particularly when iron ore is damp, it does not unload readily, but clogs into a compact mass, which has to be started, and in some cases entirely removed by shovels and by hand.

Hopper cars, or dump cars, are comparatively expensive and are liable to breakage, particularly with the dumping or discharging mechanism; moreover, such cars carry the load too high for safety, even under ordinary conditions, and require, for this reason also, that the freight must be elevated too high for easy loading. In addition to these objections, such cars can be used only for this one purpose, and therefore when such cars cannot be put into use for carrying heavy freight, they must remain idle.

By making use of my improved unloading apparatus, I am enabled to transport ore, coal, sand, earth and similar heavy freight on ordinary flat-cars, which can be unloaded by such apparatus in less time and more economically than hopper cars or dump cars. Flat-cars are cheaply constructed and being comparatively low, are easily loaded, and carry the load sufficiently low for absolute safety, besides being capable of being put to other uses when necessary.

I believe the reason flat cars have never been extensively used heretofore, for the transportation of heavy freight, is that a convenient and practical manner of unloading

them has never been suggested; and therefore having invented such an unloading apparatus, I believe that I am the first to suggest the use of such flat cars for carrying heavy freight in so economical a manner as to be put into practical use.

For a better comprehension of my invention, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation, partly in section, of my improvement, showing the same in use, and, Fig. 2, a cross sectional view thereof partly in elevation.

In both the above views corresponding parts are designated by the same letters of reference.

A, represents one of the pockets of an ordinary ore dock, its lower end being provided with a chute adapted to be passed through the hatch of the vessel which is to be loaded. This pocket may, however, be dispensed with and the cars may be unloaded directly onto the stock piles at the storage yards or elsewhere, this being the general custom with coal.

B, B, are heavy beams supported on a suitable superstructure directly above the pockets A, said beams carrying the tracks C, on which are the cars which are to be unloaded.

D, D, are other beams arranged on the outside of the beams B, and parallel therewith, and carrying tracks E, which support my improved apparatus for unloading the cars. This unloading apparatus consists generally of a frame-work F, mounted on wheels G, which bear on the tracks E, and carrying a plow H, adapted to be adjusted vertically on said frame work F. As a convenient form of frame-work for supporting said plow, I can make use of that shown in the drawings. This frame-work consists of longitudinal beams *a*, arranged parallel with the track and offering bearings for the wheels G. Said wheels are mounted on short axles rigidly secured to the said beams *a*, so as to leave a perfectly clear space between said beams, through which space may pass the cars which are to be unloaded. Extending up from about the central part of said beams *a*, are vertical beams *b*, which beams are braced by the in-

clined beams *c*, extending up from the horizontal beams *a*. Cross beams *d*, arranged in any desired manner, connect the beams *a*, *b*, and *c*, at each side, so as to form a very strong and rigid but light frame-work. On such a frame-work I mount a plow *H*, which is to be of any suitable construction, but preferably of metal, or of wood sheathed with metal. For convenience I make said plow double ended, as shown, whereby its field of usefulness will be increased, as I shall presently point out, and I prefer also to make the plow with its entering edge *e*, at the apex of the sides *f*, *f*, which are equal, so that the freight will be discharged equally toward each side without torsional strains. To prevent any of the ore, coal, or any other heavy freight from being forced over the top of the plow, the edge *e*, is made somewhat higher than the sides, which are inclined downward toward the center. The said plow *H*, is capable of vertical adjustment with respect to the frame-work *F*, in any suitable way, that shown being merely for the purpose of illustration. In the figures, I have shown the plow *G*, supported by a heavy vertical rod *I*, screw threaded as shown, and provided with a hand wheel *J*, bearing upon one of the cross beams *d*, and by means of such hand wheel, the plow may be raised or lowered vertically, to be adjusted to the height of the loaded cars.

To further strengthen the connections between the plow and the frame-work *F*, said plow may work in vertical guides in said frame, as will be understood, or it may be connected therewith in any other suitable and desirable manner so as to be capable of resisting the heavy strains imposed thereon.

In unloading cars with my improved process I proceed substantially as follows:—The unloading apparatus, consisting of the frame-work *F*, and the plow *H*, is placed over the pocket *A*, into which the material is to be unloaded and is to be secured in place in any suitable manner. To effect this, the wheels *G*, may be chocked or bolted to the tracks, or the unloading apparatus may be held firmly in place by means of ropes engaging with the eyes *g*, at each end of the horizontal frames *a*, and anchored to the main superstructure. The train of flat-cars *K*, is now moved down the tracks *C*, the locomotive being preferably reversed for this purpose and being at the back of the train, and the plow *H*, being so adjusted as to just clear the tops of the said cars *K*. When the said cars are moved with respect to the stationary plow *H*, the said plow will engage with the ore, coal, sand, earth or other material thereon, and it will be thrown toward each side of the car and over the same into the hopper *A*. As soon as the hopper *A*, has been filled and it is desired to fill another hopper, the means by which the unloading apparatus is secured to the tracks are released, and the unloading apparatus is moved to the next hopper either

by the movement of the train of cars, as will be understood, or by hand. The unloading apparatus is then again firmly fastened in its place and the operation of unloading the cars is repeated until all the cars are entirely unloaded.

By making the plow double ended, as shown, it can work either way, as will be understood, but it will be obvious that such a construction is not absolutely necessary. It will also be evident that instead of a plow, such as that shown in the figures, having its entrance point over the central part of the car, any other kind of plow may be used such, for example, as one consisting of a single inclined mold board adapted to move the material entirely to one side. I do not consider such an arrangement as that just referred to as being advantageous, as such a plow will be subjected to great torsional strains, and the cars themselves will also be severely strained thereby.

An obvious addition to my improved process is to make use of a brush or sweep in connection with the plow, so as to entirely remove all of the freight from the cars. Such a brush or sweep may be an independent device, either in the front or in the rear of the plow *H*, or it may be placed within the plow, as will be understood.

The cars *K*, shown in the drawings, are ordinary flat-cars, such as are now used, for example, for carrying lumber. Large quantities of heavy freight can be loaded on such cars without danger of loss, but if it is deemed necessary, small temporary sides may be used for such cars which may be removed during the operation of unloading, or which may be hinged to the cars and moved down at each side during the unloading. Instead of such arrangements permanent sides may be used, the plow being so constructed as to elevate the freight over such sides.

Having now described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. An apparatus for unloading cars, comprising the tracks *C*, for the cars which are to be unloaded; the tracks *E*, extending parallel with the tracks *C*, the frame *F*, carried on the tracks *E*, a plow *H* mounted on said frame, and means for holding said sustaining frame stationary while the cars are moved with respect to the same substantially as described.

2. An apparatus for unloading cars, comprising the tracks *C*, for the cars which are to be unloaded; the tracks *E*, outside of the tracks *C*; the frame *F*, carried on wheels bearing upon said tracks *E*, a plow *H*, adjustably mounted on said frame, and means for anchoring said frame *F*, to said tracks *E*, substantially as described.

3. The combination with an ore dock provided with a series of pockets *A*, tracks *C*, above said pockets for loaded flat cars and

tracks E, parallel with the tracks C, of a sustaining frame F, carried by the tracks E, a plow H, mounted upon said sustaining frame, and means for holding said sustaining frame
5 and plow stationary while the cars are moved with respect to the same, substantially as described.

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

ALEXANDER McDOUGALL.

Witnesses:

D. W. STOCKING,
CHAS. W. LELAND.