

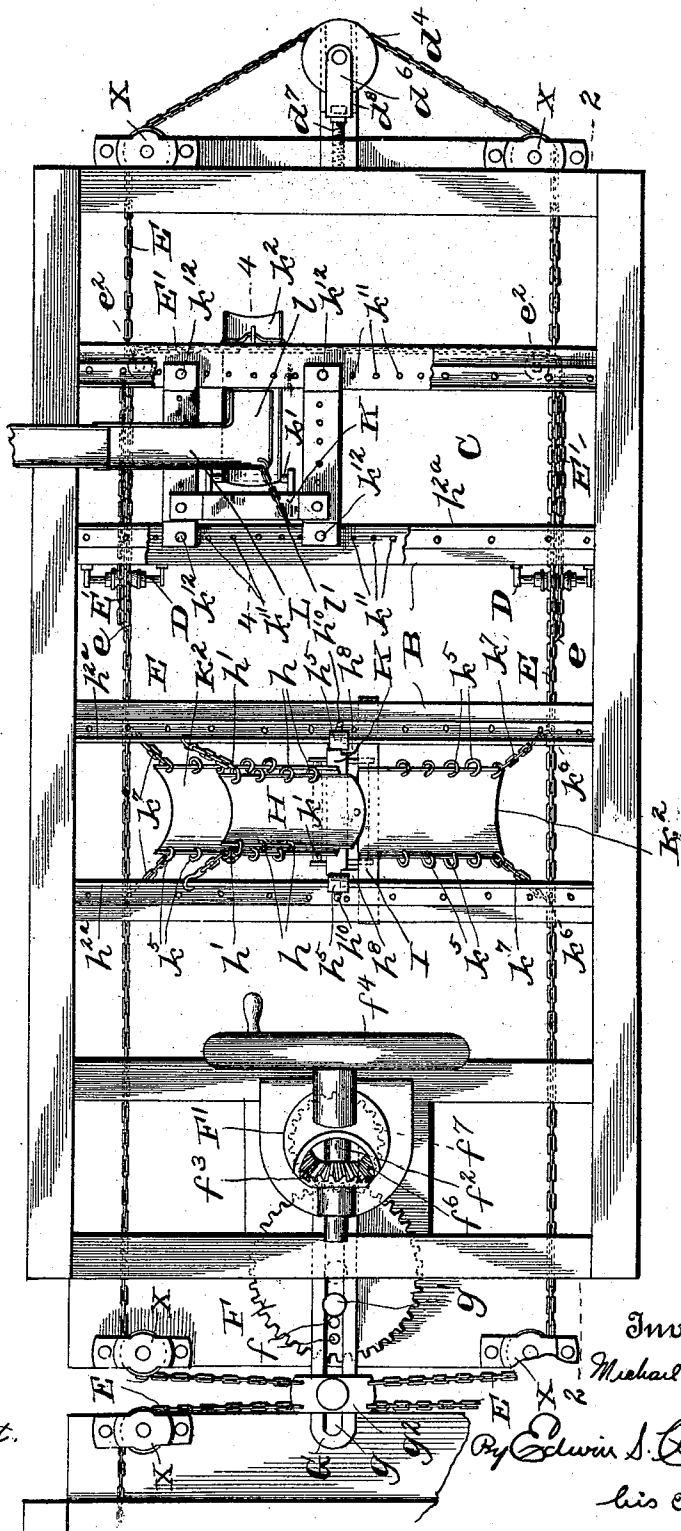
(No Model.)

4 Sheets—Sheet 1.

M. H. O'BRIEN.
TRIMMER.

No. 552,139.

Patented Dec. 31, 1895.



Witnesses

G. A. Pauberschmidt.
August Donath.

Inventor

Michael H. O'Brien

By Edwin S. Clarkson
his Attorney

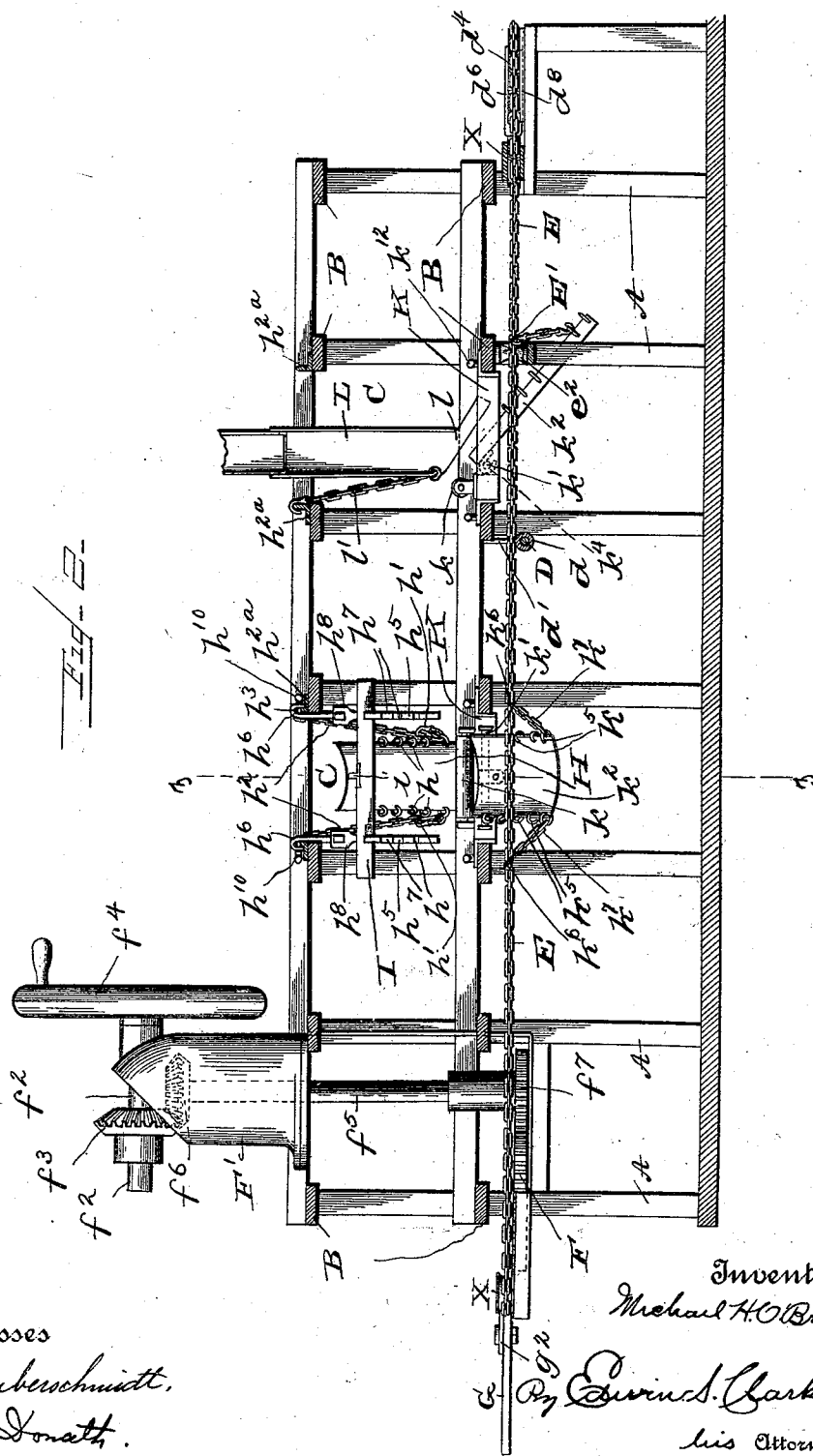
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M. H. O'BRIEN.
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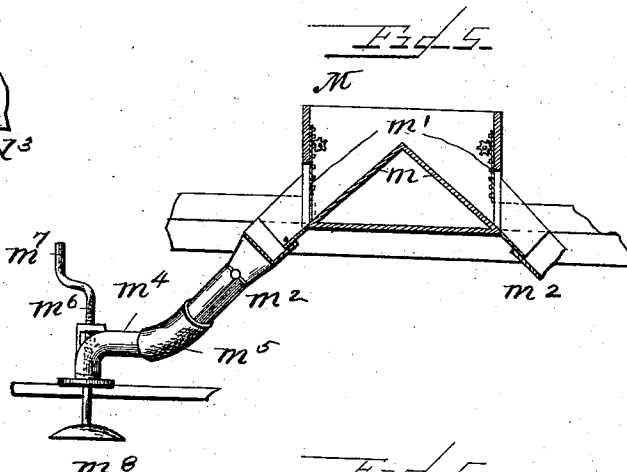
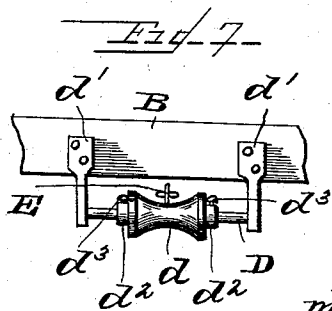


Fig. 5

Fig. 10

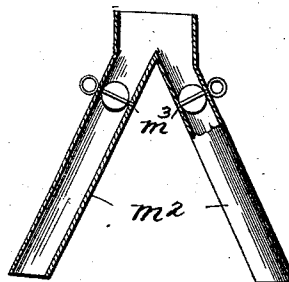
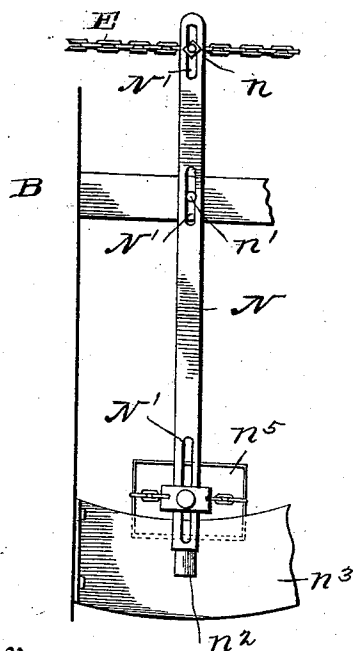


Fig. 12

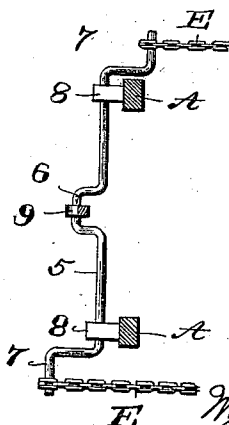
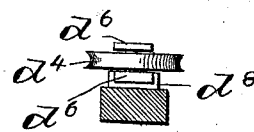


Fig. 9



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UNITED STATES PATENT OFFICE.

MICHAEL H. O'BRIEN, OF ESCANABA, MICHIGAN.

TRIMMER.

SPECIFICATION forming part of Letters Patent No. 552,139, dated December 31, 1895.

Application filed April 1, 1895. Serial No. 544,060. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL H. O'BRIEN, a citizen of the United States, residing at Escanaba, in the county of Delta and State of Michigan, have invented certain new and useful Improvements in Trimmers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in an apparatus known to the trade as "trimmers" for distributing ore, grain, &c., in vessels as the ore, grain, &c., enters the vessel from the spout or chute of the ore or grain box from which vessels are usually loaded.

While I have stated that this invention is designed for loading vessels, it is, of course, obvious that it may be used for loading vehicles other than vessels.

The invention consists of one or a series of chutes or spouts properly arranged in a vessel, in the hatchways, which are suitably connected to a chain, such chain being connected with a source of power, the object being to give the spouts or chutes a movement from side to side, thereby throwing or "trimming" the ore, grain, &c., even throughout the length and breadth of the vessel; and with this object in view my invention consists of the parts and combination of parts, as will be hereinafter pointed out.

In the drawings, Figure 1 is a top plan view of my invention applied to the timbers of a vessel. Fig. 2 is a longitudinal section of the same on the line 2 2. Fig. 3 is a cross-section on the line 3 3, Fig. 2. Fig. 4 is a longitudinal section on the line 4 4, Fig. 1, a grain-hopper being shown in elevation attached. Fig. 5 is a detail view of the grain chute or spout. Fig. 6 is a top plan view of the grain-spout, partly in section. Fig. 7 is a detail view of a sheave and its bearing. Fig. 8 is detail perspective of a hook. Fig. 9 is an end view of a sheave and its guide. Fig. 10 is a top plan view of mechanism for trimming the ore, &c., in the forward and rear portions of the vessel. Fig. 11 is a detail section of a reinforced chute or spout. Fig. 12 is a top plan view of a modified mechanism for operating the chain and spouts.

A represents the side and end timbers of a

vessel, B the deck-timbers, and C the hatchways. These, of course, may be of any approved construction.

D are journals or bearings upon which are journaled suitable sheaves *d*, the journals D being suspended from the deck-timbers B by means of the hangers *d'*. On each side of the sheave *d* I secure a sleeve *d*² on the journal D, each of which is provided with a set-screw *d*³. It will be noticed that the journal D is considerably longer than the sheave *d*. The object of this is to permit the sheave being adjusted toward or away from the sides of the vessel as found necessary. The sheaves *d* are always in a horizontal position.

*d*⁴ is a sheave at one end of the vessel and is mounted in a frame *d*⁶, to which is connected by a swivel-joint a jack-screw *d*⁷.

*d*⁸ is a guideway substantially U-shaped.

E is a chain or other cable working on these sheaves, and E' is a supplemental cable, the ends of which are secured to the cable E at *e*, as best shown in Figs. 1 and 2.

*e*² are vertical sheaves suitably secured to the deck-timbers for guiding the supplemental cable E'.

F is a gear-wheel suitably journaled below the deck-timbers, in which are a series of screw-threaded "pitch-holes" *f*.

F' is a suitable bearing mounted on the deck-timbers, in which is journaled a shaft *f*², on one end of which is secured a bevel cog-wheel *f*³, while on the other end is secured an operating-wheel or belt-pulley *f*⁴.

*f*⁵ is a shaft suitably journaled, on the upper end of which is a bevel cog-wheel *f*⁶, which meshes with the bevel cog-wheel *f*³, while on the lower end of said shaft is secured a cog-wheel *f*⁷.

G is a flat lever provided at one end with an opening through which the shaft *f*⁵ passes.

g is a slot through said lever.

*g*¹ is a wrist-pin adapted to engage the pitch-holes *f* and work in the slot *g* in lever G. A suitable friction-collar may, if desired, be loosely secured around the wrist-pin *g*¹ to overcome friction between said screw and the sides of the slot *g*. This, of course, is well understood to those skilled in the art; and it is not deemed necessary to illustrate it in the drawings.

*g*² is a sliding block secured in the slot *g* of

the lever G, and is provided with four apertures or openings at its corners. Each end of the cable E is securely connected to either end of the sliding block, as clearly shown in Fig. 1.

X are sheaves for the cable E.

H are spouts or chutes provided with rings h along each side.

h' are grab-hooks connected by a chain h^2 , one of said hooks being connected with one of the rings h on the chute H, while the other hook is adapted to engage the hatch-rail h^{2a} .

h^3 are openings or holes through the hatch-rail.

h^5 is a bar, the upper end of which is turned back to form a hook h^6 adapted to engage the hatch-rail h^{2a} , as best seen in Fig. 2.

h^7 are notches formed in the bar h^5 .

h^8 are hooks adapted to engage said notches and provided with an eye h^9 , said eye being at an angle to the hook, as best seen in Fig. 8.

I is a rod, the ends of which rest in the hooks h^8 . In the center of the rod I is secured a double hook i , which is adapted to engage an opening in one end of the spout or chute H. The slotted bar h^5 is provided with a pin-opening h^{10} , through which, when it registers with the openings h^3 on the hatch-bar, a pin is passed, thereby holding it firmly in a given position in the hatchway.

K is a rod or beam provided at each end with angle-irons, by means of which it is secured between the deck-timbers in the hatchway, immediately below the rod I.

k is a roller journaled on top of the beam K, and k' are rods secured to the sides of said beam. (See Fig. 3.)

k^2 is a chute or spout which is provided with a hook k^4 underneath at one end which is adapted to engage the rod k' .

k^5 are rings secured to the edges of the spout k^2 , and k^6 are grab-hooks on the ends of a chain k^7 , one of said hooks on each of the chains engaging the cable E, while the other engages one of the rings k^5 on the spout, thereby suspending the lower end of said spout from the cable E, while the other end of the spout is suspended from the rod k' .

In Figs. 1, 2 and 4 I have illustrated a beam similar to the beam K, Fig. 3, with the single exception of one of the rods k' . This beam is located near the stern of the vessel and is designed to support a chute or spout, similar to the spout k^2 , which is designed to trim the "ore," &c., in the stern of the vessel. This spout or chute is connected to the supplemental cable in the same manner as is the spout k^2 to the main cable E and therefore needs no further explanation. L is a spout or chute having a right-angled portion l to register with the spout designed to trim the stern of the vessel. Of course, it will be understood that the spout L at its juncture with the portion l is given a twist, so that it will throw the ore on the portion l . l' is a chain by means of which the spout L is suspended from the

deck-planks. k^{11} are pin-holes in the deck-planks, and there are similar holes in the beams K through which a pin k^{12} passes to hold the beams in a predetermined position. The upper spouts or chutes H and L overlap the lower spouts or chutes k^2 . In case the ore is very heavy and it is desired to strengthen the spouts H to withstand the pounding of the ore as it falls from the ore-pockets, I place a supplemental spout S over the spouts H and L, as seen in Fig. 11.

In Fig. 5 I have shown a grain-hopper M, provided with a bottom m that slopes toward each side from the center. m' are gates on which are rack-bars which are engaged by pinions that are operated by a crank. m^2 are double converging spouts, detachably connected with the hopper M, each of which is provided with a gate or valve m^3 . m^4 is an extension connected to the spout m^2 by means of flexible material m^5 , whereby the spouts may be moved about. The extension m^4 is detachably secured to the deck-beams and is provided with a long screw-threaded rod m^6 having a handle m^7 . m^8 is a disk secured to the rod m^6 , the upper face of which is convex. The object of this convex face is that, as soon as the grain strikes it, it (the grain) will "shoot" or "fly" off a considerable distance, thereby obviating shoveling.

In some vessels, particularly old ones, it will be found that the "hold" runs back under the boilers, thus making it very hard to throw the coal back except by shovelers. In such contingency I use the construction shown in Fig. 10, which consists of a lever N provided with elongated slots N' . n is a clamp, by means of which one end of the lever N is clamped to the cable E. n' is the pivot and n^2 is a roller journaled on the end of said lever which travels on the track n^3 . n^5 is a bucket or other receptacle which when in its normal position is immediately under the chute or spout K^2 in the stern. As soon as the bucket is filled the cable E is operated, thereby swinging the lever N and its bucket to extreme points in the hold of the vessel.

In Fig. 12 I have shown a slightly-modified mechanism for operating the cable, in which 5 represents a rod, in the center of which is a link 6. 7 are crank-arms on the ends of and integral with the rod 5. 8 are bearings (secured to the end timbers A) in which the rod 5 revolves. 9 is a pitman-rod working in the link 6 and connected with a suitable source of power.

The operation of the machine is as follows: The ore, &c., from the ore-pockets on the dock (not shown) falls upon the spout or chute H and slides off the same onto the spout or chute k^2 , from which it is "shot" first on one side of the hatch then on the other as the cable is being operated, and the connection between the cable and spout k^2 imparts a side-wise motion to the spout k^2 . The spout H, having a loose connection with the hook i ,

moves with the spout k^2 . This motion is also imparted to the supplemental cable. Thus the ore, &c., is trimmed even throughout the hold of the vessel without the aid of shovellers.

5 If found desirable, a bell-crank lever may be pivoted to the side beams in the line of the hatch-opening and the cable attached to the ends of said lever. In this case the grab-hooks of the spouts may also be attached to
10 the ends of said lever. Of course it is understood that the cable never makes a complete revolution. It is simply pulled back and forth. The length of the stroke of the lever G, which operates the cable, is dependent
15 upon the position of its wrist-pin g' . For instance, if the wrist-pin g' is placed near the edge of the gear-wheel F the lever will make a very long stroke, thereby giving the chutes a long "swing."

20 After one side of the vessel is trimmed the chutes are placed on the opposite side, and to facilitate moving the chute k^2 I have journaled a roller k on the beam K, over which the chute may be rolled.

25 It is obvious that many slight changes may be made in the relative construction of the parts, and hence I would have it understood that I do not strictly confine myself to the constructions shown.

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

1. In a trimmer for vessels, a cable secured in said vessel, vibratory spouts or chutes suspended in the hatch-ways, and connected to
35 said cable, means to operate the cable whereby a continuous vibratory motion is imparted to the chute.

2. In a trimmer for vessels, the cable, having a continuous movement, chutes suspended
40 at different points in the hatch-ways of the vessel, means connecting the cable and chutes for operating the latter, and means connected with the cable whereby the swing of the chutes is regulated.

45 3. In a trimmer for vessels, the cable, vibratory chutes suspended in the hatch-ways of the vessel, means connecting the cable and chutes for operating the latter, a gear wheel, a slotted lever adapted to slide on said gear
50 wheel, an adjustable fulcrum on said gear wheel on which the slotted lever works to regulate the throw of the chutes, means con-

necting the ends of the cable with the slotted lever, and means for operating the same.

4. In a trimmer for vessels, the cable, a
55 chute, one end of which is connected to the cable, a beam hung from the deck beams of a vessel, a roller on top of said beam, rods secured to the sides of said beam from which
60 one end of the chute is hung, a notched bar suspended from the hatch rail, a hook having an eye at an angle adapted to engage said notched bar, a beam hung in said hooks, a double
65 hook secured to said beam another chute one end of which is hung from said double hook while the other end is hung from the
60 hatch rail by suitable means, the latter chute being hung directly over the first named chute.

5. In a trimmer, of the character described, the combination with the cable of a lever,
70 having a series of slots in the same, and a roller journaled on one end of the lever, a track on which said roller works, and a bucket suspended from said lever near said track, one
75 end of the lever being connected to the cable, substantially as and for the purposes specified.

6. In a trimmer of the character described the combination with the cable and chutes, of
80 a supplemental cable connected to the first named cable, a chute connected to the supplemental cable and a right angle chute suspended over said last named chute as and for
85 the purpose specified and means to operate the cable.

7. In a trimmer for vessels a hopper mounted
over the hatch way, a chute extending from
said hopper in the hold of the vessel, a valve
secured in said chute, an extension connected
90 with the first named chute by means of flexible material a screw threaded rod working in the extension and provided with a crank on
its upper end, a disk, the upper surface of
which is convex, said disk being secured to
95 the lower end of said rod whereby the disk may be raised or lowered to regulate the fall of the material.

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

MICHAEL H. O'BRIEN.

Witnesses:

EDWIN S. CLARKSON,
AUGUST DONATH.