March 25, 1924. 1,488,210

C. W. LEWIS

TIE HANDLING MACHINE

Filed April 21, 1923 2 Sheets-Sheet 1

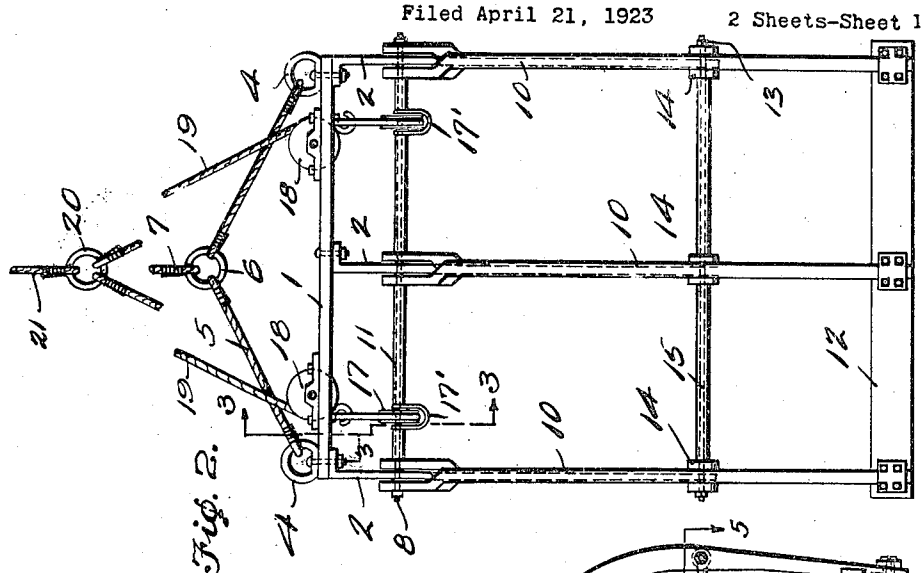


Fig. 2.

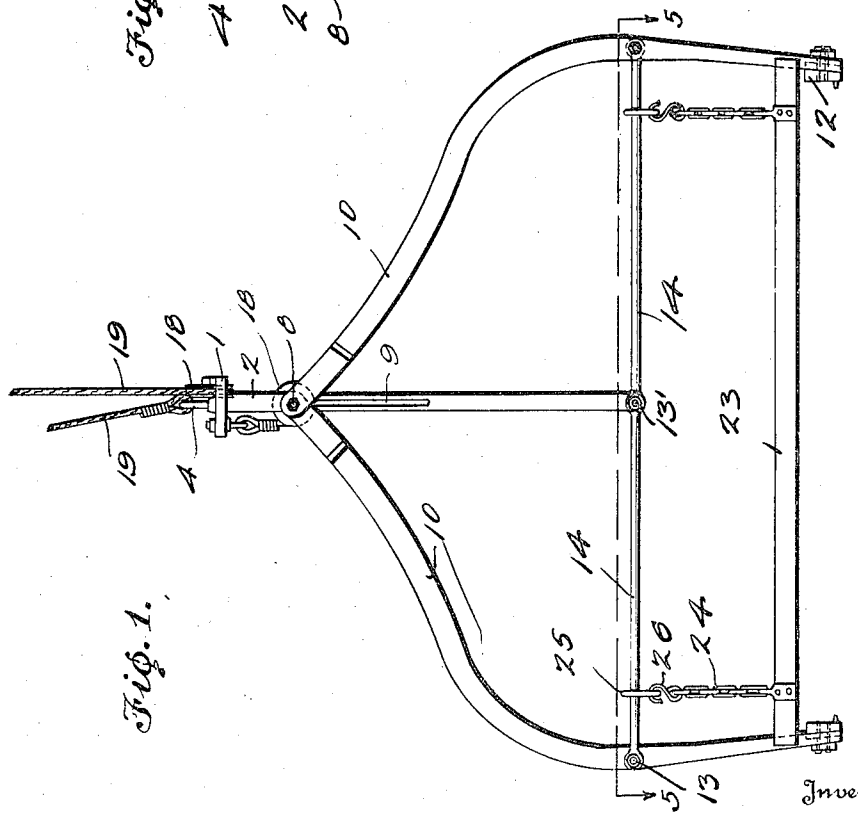


Fig. 1.

Inventor
C. W. Lewis

By Richard B. Owen.
Attorney

Witness,

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C. W. LEWIS

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Fig. 3.

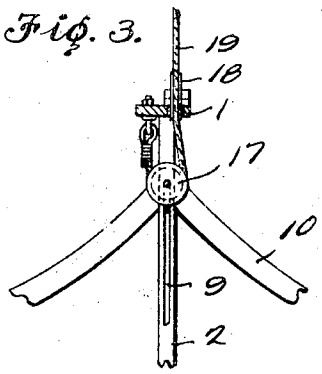


Fig. 4.

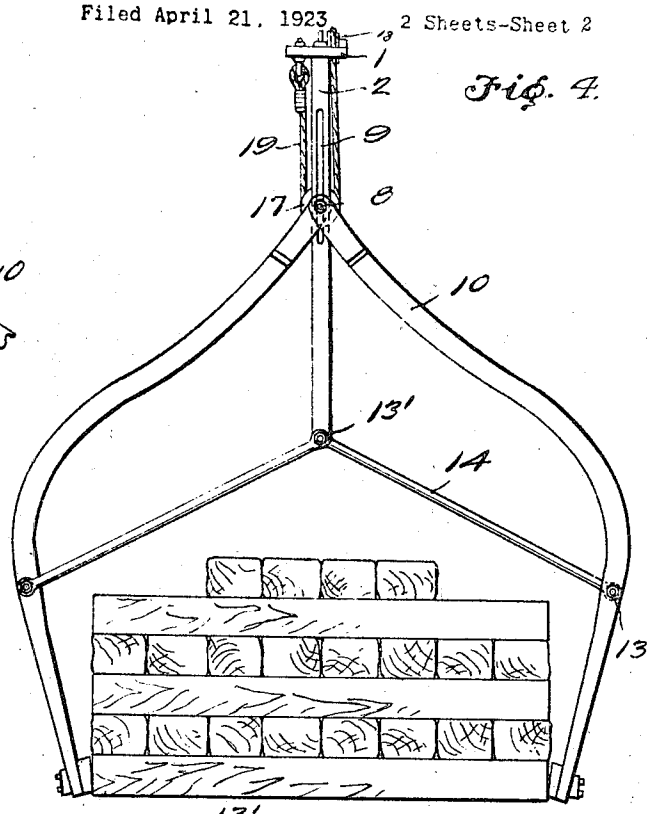
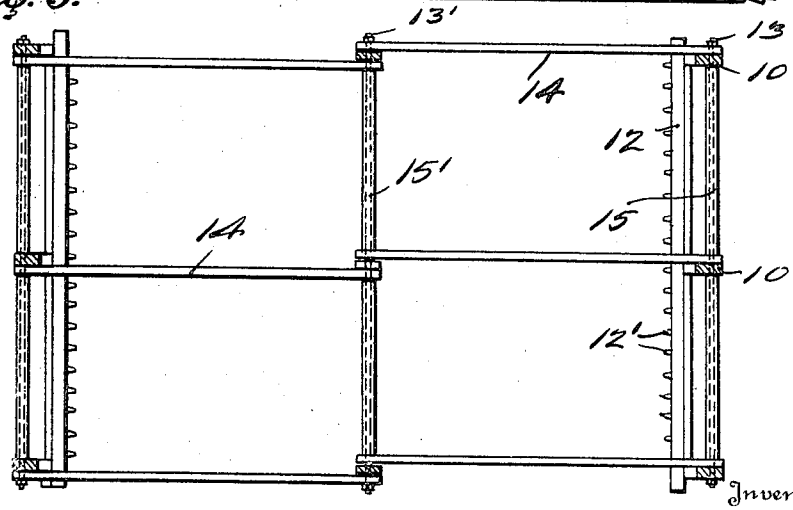


Fig. 5.



Inventor

C. W. Lewis

By Richard B. Owen.

Attorney

Witness.

Chas. H. Smith

Patented Mar. 25, 1924. 1,488,210

UNITED STATES PATENT OFFICE.

CHARLES W. LEWIS, OF PORTSMOUTH, NEW HAMPSHIRE.

TIE-HANDLING MACHINE.

Application filed April 21, 1923. Serial No. 633,674.

To all whom it may concern:

Be it known that I, CHARLES W. LEWIS, a citizen of the United States, residing at Portsmouth, in the county of Rockingham and State of New Hampshire, have invented certain new and useful Improvements in a Tie-Handling Machine, of which the following is a specification.

The present invention relates to a tie handling machine and has for its principal object to provide a mechanism whereby a pile of ties or like timber may be raised and deposited as may be desired such as loading and unloading ties from flat freight cars.

Another important object of the invention is to provide a device of this nature which will engage a pile of timber so that the arrangement thereof will not be disturbed in order that the pile may be deposited intact wherever desired.

Another important object of the invention is to provide a mechanism of this nature provided with a simple and efficient structure, one which is reliable in operation, inexpensive to manufacture, durable, and well adapted to the purpose for which it is designed.

With the above and numerous other objects in view as will appear as the description progresses, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

For the purpose of illustrating my invention, I have shown in the accompanying drawing that form thereof which is at present preferred by me since the same will give in practice satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities or to the particular use which is hereinafter shown and described.

In the drawing—

Figure 1 is an end elevation of the mechanism in an open position,

Figure 2 is a side elevation thereof,

Figure 3 is a detail section taken substantially on the line 3—3 of Figure 2,

Figure 4 is an end elevation of the mechanism showing the same in a closed position engaged with a pile of ties, and

Figure 5 is a horizontal section through the mechanism taken substantially on the line 5—5 of Figure 1, looking downwardly.

Referring to the drawing in detail it will be seen that a beam 1 is provided with a plurality of depending slotted guide rods 2 attached thereto by means of bolts 3. The bolts 3 which are disposed at the end of the beam 1 secure to the beam rings 4 which are engaged by cables 5 at one end and the other ends of these cables engage a ring 6 which is supported by a cable 7. A shaft 8 is disposed in slots 9 of the guide rods 2.

A plurality of grapple arms 10 are fulcrumed on the shaft 8 at their upper ends. The upper ends of these grapple arms 10 are offset as is indicated to advantage in Figure 2 so that the arms may be arranged in pairs and the arms of each pair move in the same plane. Suitable spacing sleeves 11 are disposed on the shaft 8 and hold the pairs of grapple arms 10 separated. A pair of engaging members 12 are attached to the lower ends of the grapple arms 10 and are provided on their inner faces with projections 12′ which will bite into the ties when the mechanism is engaged therewith. Two rods 13 pass through the grapple arms 10 above the engaging members 12 and spacing sleeves 15 are disposed thereon to hold the arms apart. These rods 13 and sleeves 15 also brace the arms in respect to each other.

The rods 2 extend between the offset portions of the grapple arms 10 as is disclosed to advantage in Figure 2 and are pivoted to the ends of link rods 14 as at 13′. There are two link rods 14 pivoted to each link rod 2. The other ends of these rods 14 are pivotally engaged with the rods 13 and thus by moving the rods 2 up and down the engaging members 12 of the grapple arms may be moved toward and away from one another.

A pair of pulleys 17 are journaled on the shaft 8 and a similar pair of pulleys 18 are journaled on the beam 1. The pulleys 18 are disposed at right angles to the pulleys 17. Cables 19 are trained over the pulleys 17 and 18 and attached to the beam 1 as is shown in Figures 3 and 4. The cables 19 are secured to a ring 20 which is supported

by a cable 21. The cables 7 and 21, in practice, will be wound about separate drums of a hoisting machine. It will be seen that by pulling upon the cable 21 the mechanism will be moved to a closed position so as to engage the bottom row of a pile of ties as is shown in Figure 4. When thus engaged both cables may be operated and the mechanism lifted and moved to a desired location and then by pulling upon the cable 7 alone the mechanism will be moved to an open position and released from the pile of ties.

In Figure 4 I have shown the device engaged with ties which are cross piled. If the ties, however, are piled so as to all be in parallelism with one another it is desirable that a drop bar 23 be used at each end of the mechanism. These drop bars 23 are supported on chains 24 which are engaged with rings 25 disposed on link rods 14. It will be noted that the top links 26 of the chains 24 are in the form of hooks whereby the draw bar may be readily removed when not needed.

The construction and operation of the mechanism should now be understood without a further detailed description. I have, in the present instance, shown and described the preferred embodiment of the invention which will give in practice satisfactory and reliable results, and it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention what I claim as new is:—

1. A device of the class described including a beam, a plurality of slotted rods depending from the beam, a shaft movable in the slotted rods, a plurality of grapple arms pivoted on the shaft at their upper ends and arranged in spaced pairs, one pair being disposed adjacent each slotted rod, a plurality of link rods, a pair of said link rods being pivoted to each slotted rod and to the intermediate portions of each pair of grapple arms, a pulley journaled on the shaft, a hoisting cable attached to the beam, a second hoisting cable trained over said pulley and attached to said beam whereby the grapple arms may be moved to an open position by pulling upon the first mentioned cable and to a closed position by pulling upon the second mentioned cable.

2. A device of the class described including in combination a beam, a plurality of slotted rods depending from the beam in spaced relation to one another, a shaft movable in the slotted rods, a plurality of grapple arms including offset upper ends journaled on the shaft so that the grapple arms are arranged in pairs, the slotted rods extending between the offset portions of the pairs, the arms of each pair moving in the same plane, a pair of engaging members supported on the lower ends of the grapple arms so as to be movable toward and away from each other upon operation of the grapple arms, a plurality of link rods arranged in pairs, each pair being pivoted to one slotted rod and the adjacent pair of grapple arms intermediate their ends, a pair of bracing and supporting members associated with the grapple arms intermediate their ends, and means for moving the shaft in relation to the beam whereby the grapple arms may be opened and closed in the manner and for the purpose specified.

3. In combination, a grappling mechanism including a pair of grappling arms movable toward and away from each other, and a drop bar detachably associated with the grappling mechanism so as to extend in a plane parallel to the path of the movement of the grappling arms.

4. In combination, a grappling mechanism including a pair of pivotally associated grappling arms, a pair of link rods pivoted together and each pivoted to one of the grappling arms, means associated with the link rods for moving the grappling arms toward and away from each other, a drop bar, and chains supported on the link rods for holding the drop bar in a plane parallel to the path of the movement of the grappling arms.

5. A device of the class described including in combination a beam, a plurality of slotted rods depending from the beam, a shaft movable in the slotted rods, a plurality of grapple arms pivoted on the shaft at their upper ends and arranged in spaced pairs, one pair being disposed adjacent each slotted rod, a plurality of link rods, a pair of said link rods being pivoted to each slotted rod and to the intermediate portions of each pair of grapple arms, a pulley journaled on the shaft, a hoisting cable attached to the beam, a second hoisting cable trained over said pulley and attached to said beam whereby the grapple arms may be moved toward or away from each other by pulling the proper cable, a drop bar associated with the grapple arms so as to be disposed parallel to the path of their movement, and flexible means for supporting said grapple bar, said means being attached to the link rods.

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

CHARLES W. LEWIS.

Witnesses:
WM. M. SANBORN,
A. M. MUCLIMORE.