

No. 641,102.

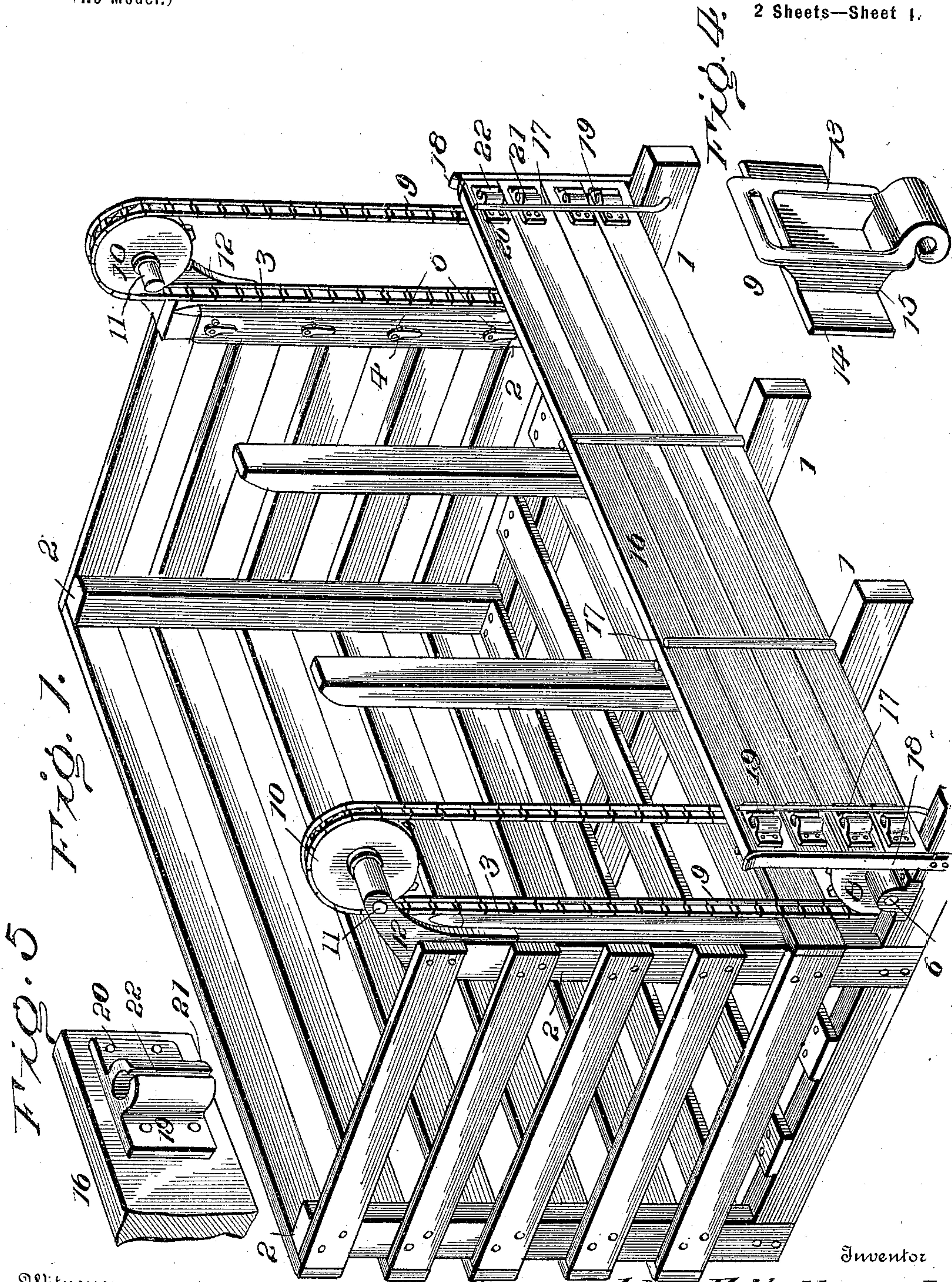
Patented Jan. 9, 1900.

J. F. HALLORAN, JR.  
HAY RACK.

(Application filed Sept. 7, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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2 Sheets—Sheet 2.

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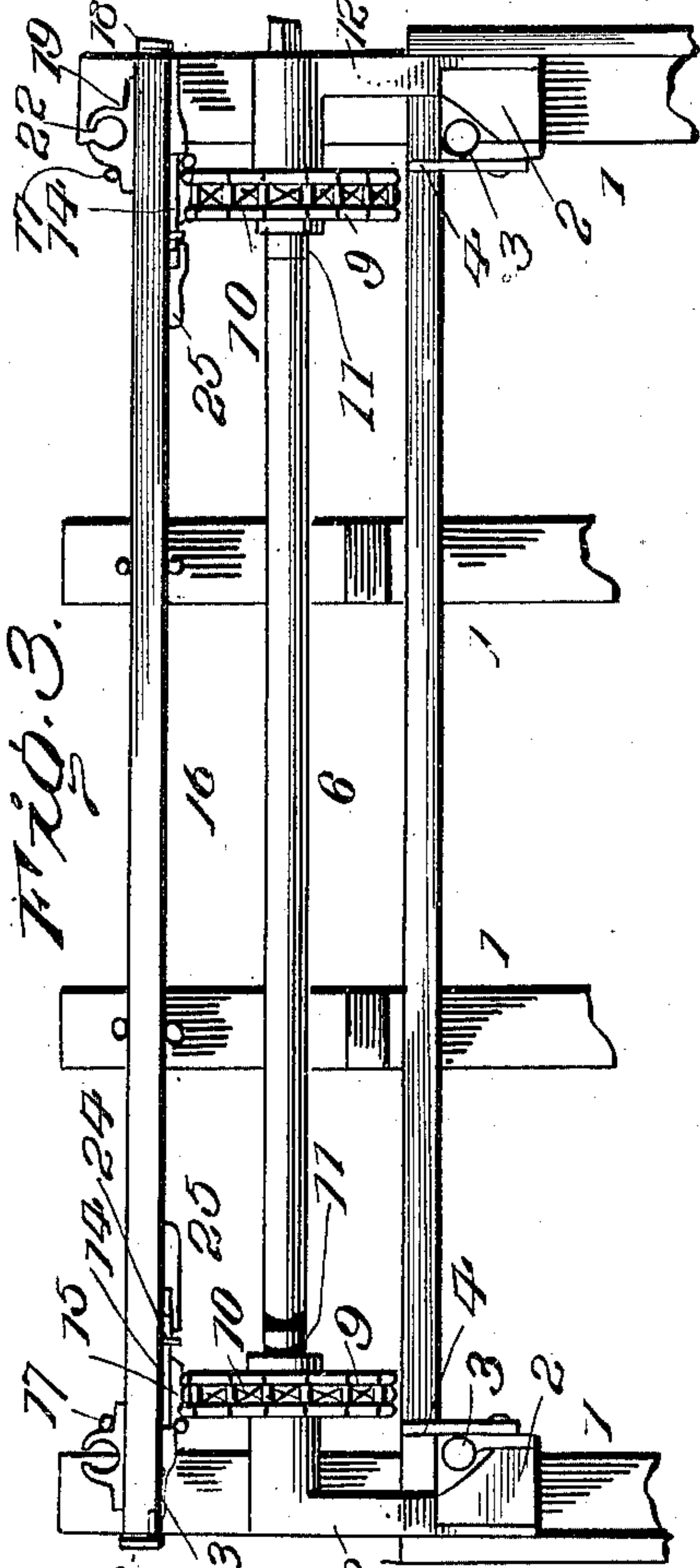


Fig. 3.

Fig. 6.

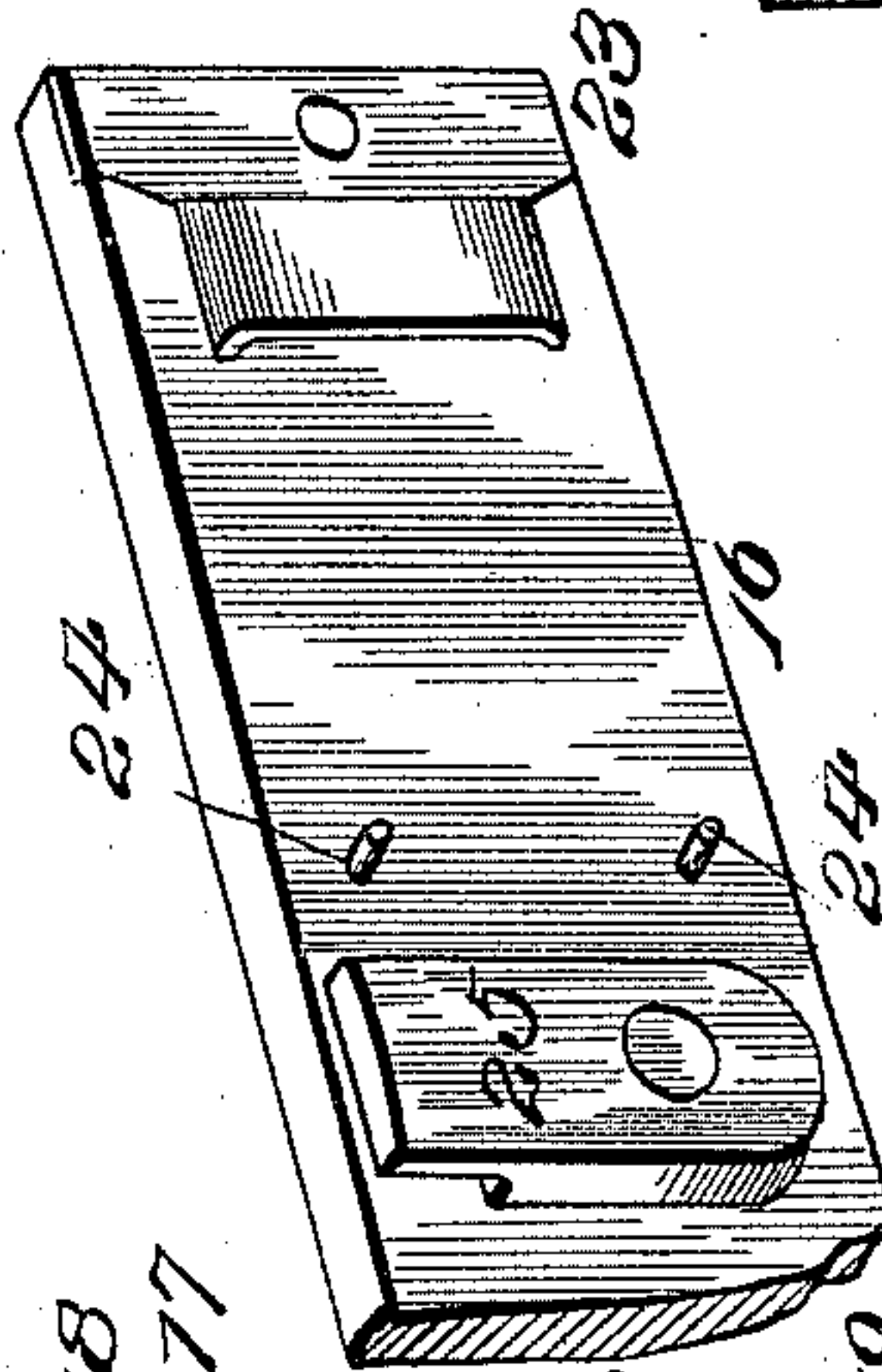


Fig. 7.

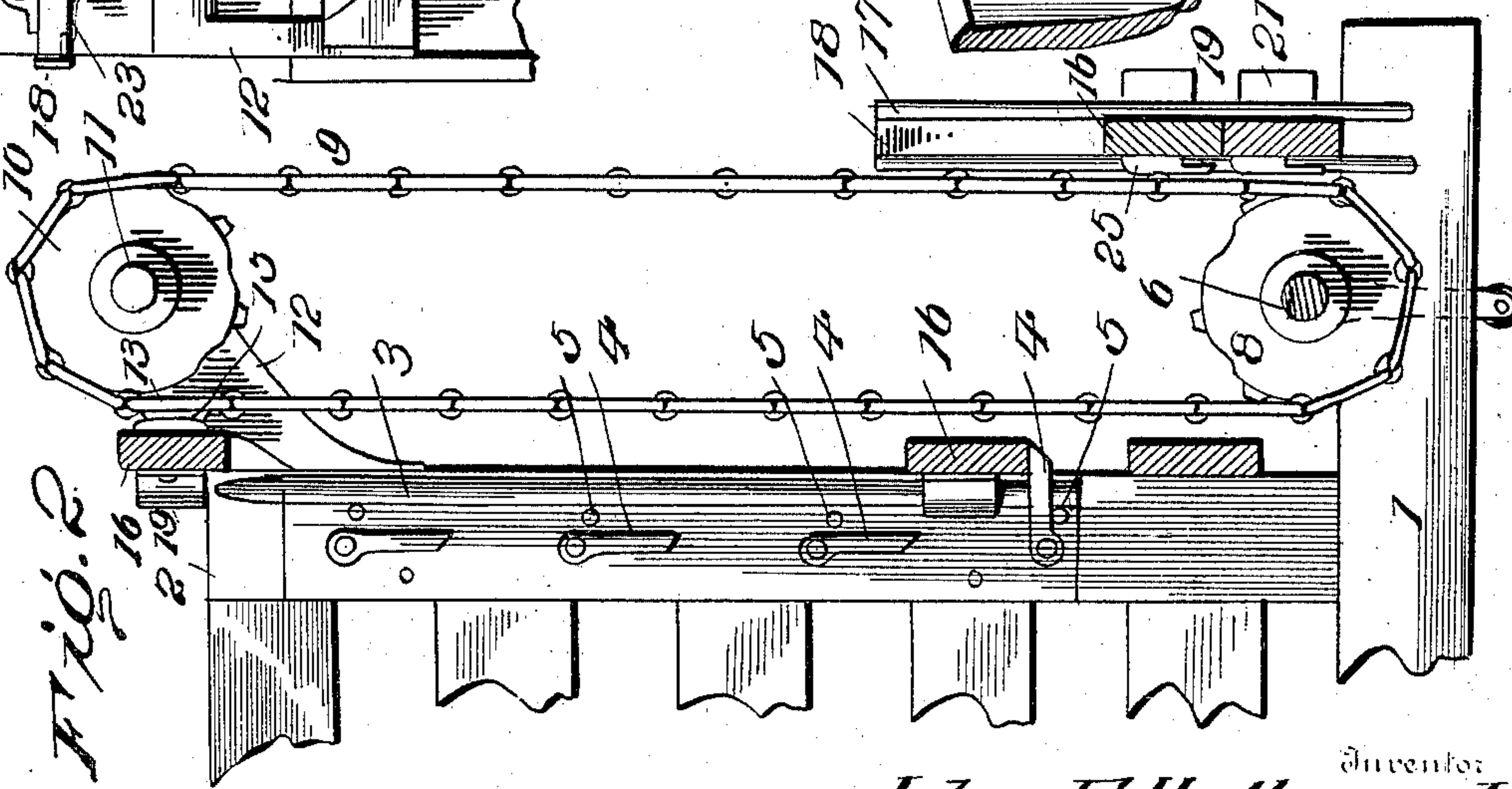
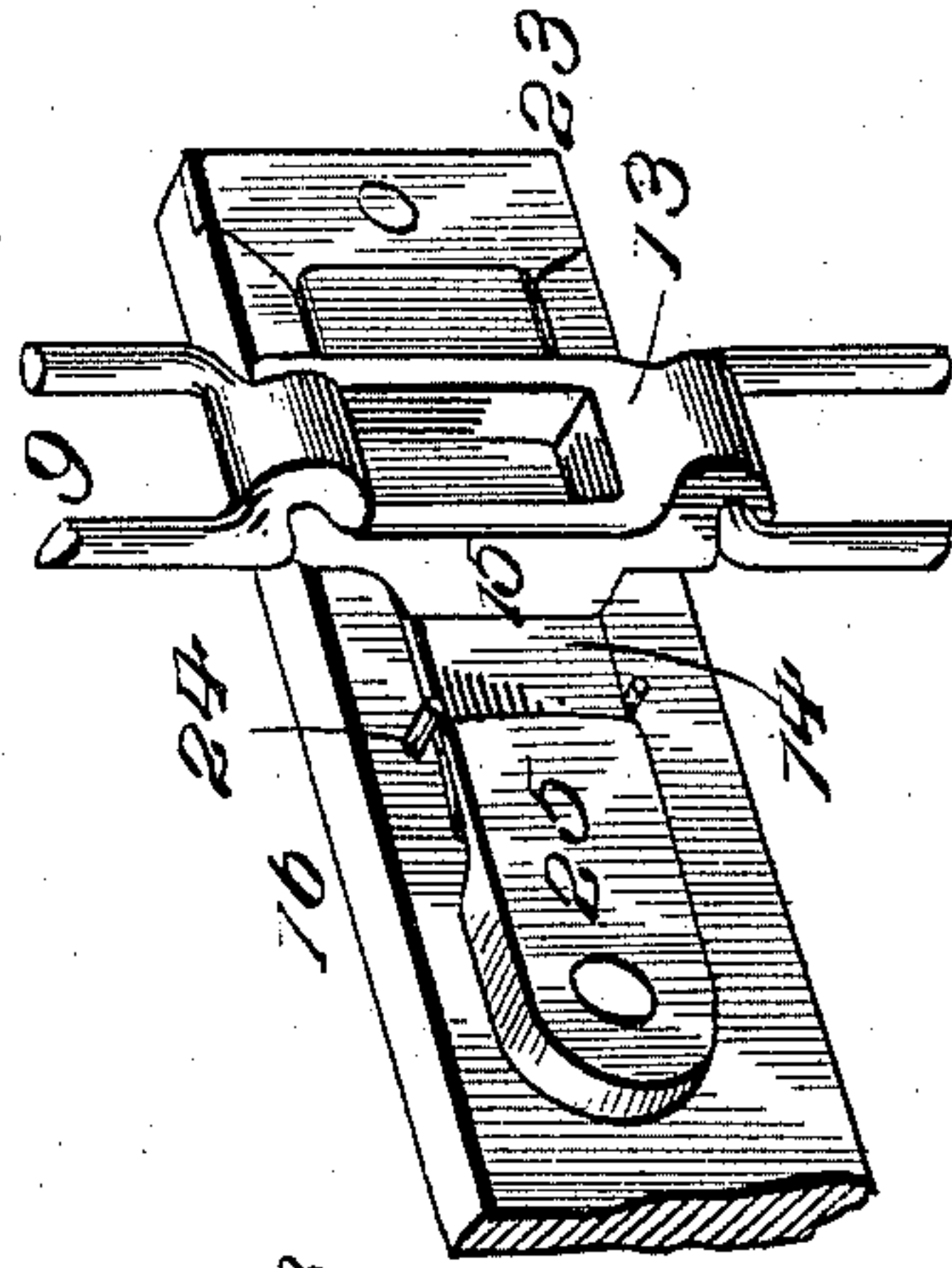


Fig. 2.

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# UNITED STATES PATENT OFFICE

JOHN F. HALLORAN, JR., OF CHATFIELD, MINNESOTA.

## HAY-RACK.

SPECIFICATION forming part of Letters Patent No. 641,102, dated January 9, 1900.

Application filed September 7, 1899. Serial No. 729,753. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. HALLORAN, JR., a citizen of the United States, residing at Chatfield, in the county of Fillmore and State of Minnesota, have invented certain new and useful Improvements in Hay-Racks; 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.

This invention has for its object to facilitate the loading and unloading of hay, straw, grain, and other product or commodity usually transported in a rack. It is the common practice to pitch the load over the topmost slat in the operation of loading and unloading. This procedure requires time and a useless expenditure of manual energy and precludes the proper arrangement of the bundles within the rack by the pitcher, so as to secure a maximum load. If the bundles are packed and placed in order in the rack, a second hand or helper is required, thereby adding to the cost of handling. The purpose of this invention is to enable the pitcher to properly arrange the load within the rack and to avoid the high lift when commencing to load, whereby the task is considerably lightened and the pitcher enabled to accomplish more work in a given time with less fatigue.

The invention consists chiefly of a rack having a side open and closed by removable slats, and mechanical appliances for properly positioning the slats and closing the open side of the rack as the load increases or removing the slats as the load diminishes, as when unloading, said appliances being under the control of the pitcher or attendant.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result, reference is to be had to the following description and the drawings hereto attached.

While the essential and characteristic features of the invention are necessarily susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a rack constructed in accordance with and embodying

the novel features of the invention. Fig. 2 is a cross-section of the open side portion of the rack, showing some of the slats in position and others in the holder. Fig. 3 is a top plan view of the parts illustrated in Fig. 2. Fig. 4 is a detail perspective view of a link to which the slats are detachably connected. Fig. 5 is a detail perspective view of the end portion of the slat, showing the runner or shoe connecting it with the guide or track. Fig. 6 is a detail perspective view of the end portion of the slat, showing the means for detachably connecting it with the carrier or chain. Fig. 7 is a detail view showing the relation of the slat, the carrier, and the connecting devices between them.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The rack is of the basket type and is closed at its bottom and three sides, the fourth side being open and adapted to be closed by slats movably placed in position. The cross bed-timbers 1, upon which the superstructure is mounted, are extended at one end beyond the plane of the open side of the rack, so as to receive the parts of the operating mechanism hereinafter to be more particularly described. The rack is of ordinary construction, comprising uprights and slats, the latter being secured to the uprights and constituting the inclosing sides. This rack, like others of its type, is adapted to be fitted to the running-gear of an ordinary farm-wagon after the body has been removed and is intended to receive hay, straw, or like bulky product or commodity.

The corner-posts 2 of the rack bordering upon the open side are provided with vertical guides or tracks 3, which may be of any desired formation and secured to said posts in substantial manner. In the preferred construction the guides or tracks consist of metal plates secured to the posts 2 and having their longitudinal edge portions projecting beyond the outer sides of said posts and rolled or reinforced by rods, which constitute the guides or tracks proper. The upper ends of the guides or tracks are made tapering to facilitate the entrance of the runners or shoes



thereon when the slats are about to be placed in position. At proper intervals in the vertical length of the guides or tracks 3 pivoted supports 4 are provided, and consist of short bars pivoted at one end and adapted to have the opposite end projected beyond the guides or tracks and cross the path of the slats, so as to form a support therefor. These supports 4 are adapted to be turned into a vertical position, so as to be out of the way and enable the lowermost slat passing freely by the upper supports when being placed in position. A stop 5 is provided for each pivotal support 4 and is located in advance of and in a lower plane than the pivotal fastening of the supports and is adapted to receive and hold said supports in horizontal position when turned to project across the path of and hold the slats in proper position. These supports 4 are adapted to swing upward and rearward from a horizontal position. Hence they are automatically thrown out of the path of a relatively lower slat when the latter is moving upward as the load in the rack decreases during the operation of unloading.

A shaft 6 is journaled in bearings applied to the projecting ends of the bed-timbers 1, and one end is extended and provided with a crank 7, by means of which rotary movement is imparted to the shaft when it is required to place the slats in position or disengage them from the guides or tracks. Sprocket-wheels 8 are secured to the end portions of the shaft 6 and receive endless carriers or chains 9, by means of which the slats are positioned. Companion sprocket-wheels 10 are mounted upon stub-shafts 11, projecting laterally from the upper ends of brackets 12, applied to the upper ends of the posts 2, and these sprocket-wheels 10 receive and support the upper ends of the chains 9 and are located in a relatively higher plane than the upper ends of the guides or tracks 3. Each of the endless carriers or chains has one or more links, as 13, formed with a plate 14 and an extension 15, the latter constituting a filling for connection between the link and plate, whereby the latter is offset from the plane or path of the links of the chain. The end portions of the plate 15 project beyond the sides of the link and are adapted to make detachable connection with the removable slats in the manner presently to be described. While it is preferred to form the link, plate 14, and extension 15 in one piece, it is obvious that said parts may be separately constructed and secured together in any convenient and preferred way.

The removable slats 16, when not in position for closing the open side of the rack, are placed in a temporary holder applied to the outer or projecting end portions of the bed-timbers 1, where they are readily accessible and can be conveniently grasped when it is required to attach them to the plates 14 of the longitudinally-alined links 13 of the companion chains 9. The slat-holder consists of

vertically-arranged spaced rods 17, secured at their lower ends to the projecting portions of the bed-timbers 1, and the end guards 18, the latter being secured to the extreme timbers 1, opposite and in longitudinal alinement with the spaced frame, between the corresponding rods 17, so as to engage with the extremities of the slats 16 and prevent longitudinal displacement thereof. The holder is located adjacent to the outer portions of the endless chain 9, so as to enable the slats to be readily and conveniently attached to the links 13 of said chains when it is required to place the slats in position.

A runner or shoe 19 is secured to the end portion of each of the slats 16, and consists of a base 20, apertured to receive the fastenings by means of which the part 19 is secured to the slat, and a clip 21, the latter projecting from the base 20 and having its outer portion slotted, as shown at 22, to receive the plate or connecting portion of the guides or tracks 3, said clips embracing the sides of the tracks and directing and holding the slats in position when moving to and from an operative position. These runners or shoes may be castings or constructed in any desired way so long as they serve to hold the slats in position to direct them in conjunction with the tracks when in transit.

Keepers 23 are applied to the terminals of the slats 16, and their inner ends are open and are adapted to receive one end of the plates 14, a pair of stops 24 being applied to the same side of the slat a short distance from the keepers to receive between them the opposite end portion of said plates 14, said plates being held in position by means of pivoted catches 25, likewise applied to the same side of the slat provided with the keepers and pairs of stops. The parts 23, 24, and 25 act jointly to connect the slats with the plates 14 of the carrier-chains 9, and when the catches 25 are turned upon their pivot-fastenings said chains can be readily disengaged from the slats by an endwise-sliding movement of the plates 14, which withdraws the outer ends of said plates from engagement with the keepers 23. The slat-connecting means and the runners are located upon opposite sides of the slats, which is essential in order to avoid interference of the different parts with one another and with the load.

The loading and unloading of the rack are effected at the open side, and when loading the rack all the slats of the open side are removed and for convenience are placed in the holder provided at the outer ends of the bed-timbers 1. The pitcher or person loading the rack throws the bundles therein through the open side and can properly arrange the bundles or load in a compact form, whereby a full load may be received. As the load increases in height and it becomes necessary to place a slat in position in order to prevent the load from falling out through the open side the



attendant attaches a slat 16 to the chains 9 in the manner set forth and rotates the shaft 6 either by means of the crank 7 or by grasping one of the chains 9 and pulling thereon.

5 This operation carries the slat upward and over the sprocket-wheels 10 and causes the runners or shoes 19 to engage with the guides or tracks 3. The lowermost supports 4 of the series are turned into a horizontal position and are supported by the stops 5 in the manner set forth, and their projecting ends extend across the path of the slat, receive and support the latter, and prevent downward displacement thereof. After the lowermost slat 15 has been properly positioned it is disengaged from the chains 9 in the manner set forth and the rack is loaded until it becomes necessary to place another slat in position, when the chains 9 are rotated to bring the links 13 in position for attachment thereto of a second slat, when the operation hereinbefore stated is repeated.

From the foregoing it will be readily understood that the construction is of such a nature as not to require the person loading the rack to pitch the grain or other commodity over the topmost edge of the rack, as commonly practiced. Hence the work of loading is facilitated and the task lightened and made less irksome. When unloading the rack, the slats are removed in an inverse order—that is, from the top downward as the level of the load lowers—thereby enabling the grain or commodity to be thrown from the rack at a minimum elevation.

The removable slats 16 are braced at points intermediate of their extremities by stakes or uprights 26, rising from the projecting ends of the intermediate bed-timbers 1 and rigidly and firmly attached at their lower ends thereto. These stakes or uprights 26 are arranged beyond the plane of the outer sides of the posts 2 a distance corresponding to the thickness of the slats 16 and are adapted to sustain the latter against internal pressure and to relieve the tracks and runners of a greater part of the outward strain, which they would otherwise have to sustain.

Having thus described the invention, what is claimed as new is—

1. A rack provided with an open side, vertical guides at the ends of the open side, corresponding supports located at different heights in the length of the vertical guides and movably mounted, and a series of individual slats for closing said open side, each detachably fitted to the guides, and supported and held spaced apart by means of the aforesaid supports, substantially as set forth.

2. A rack provided with an open side, vertical guides at the ends of the open side, corresponding supports pivoted at one side of the vertical guides and located at different levels and adapted to be turned aside or across the plane of the said vertical guides, and a series of individual slats for closing said open side,

each detachably fitted to the guides, and supported and held apart by means of the aforesaid supports, substantially as specified.

3. A rack having an open side, slats for closing said open side detachably fitted thereto, supports located at different relative levels and pivoted to parts of the rack and adapted to be turned into a vertical and a horizontal position, and stops for holding the supports in a horizontal position, as and for the purpose set forth.

4. A rack having an open side, a series of individual slats for closing the open side, each detachably fitted thereto, means for automatically and separately placing the slats in position and removing them when required, and cooperating engaging means between the said slats and their carrier mechanism, substantially as set forth.

5. A rack having an open side, a series of slats for closing the open side and detachably fitted thereto, an endless carrier, and cooperating means between the slats and the carrier for detachably connecting the slats thereto, substantially as described.

6. A rack having an open side, a series of slats for closing said open side and detachably fitted thereto, an endless carrier, and means applied to the slats for detachably connecting them to the said carrier, as and for the purpose set forth.

7. A rack having an open side, slats for closing said open side detachably fitted thereto, an endless carrier having offstanding plates, keepers applied to the slats for receiving one end of said plates, means applied to the slats for engagement with the opposite ends of said plates, and catches provided on the slats to engage with the ends of the plates from said keepers, as and for the purpose set forth.

8. A rack having an open side, a series of slats for closing said open side and detachably fitted thereto, an endless carrier having plates, keepers applied to the slats for engagement with one end of the plates, pairs of stops applied to the slats for engagement with the opposite ends of the plates, and pivoted catches to cooperate with the stops and keepers, as and for the purpose set forth.

9. A rack having an open side, individual slats for closing said open side and adapted to be separately and detachably fitted thereto, and a holder for the slats when not in position, the same consisting of spaced rods and end guards, substantially as set forth.

10. A rack having an open side and having its bed-timbers projecting beyond the plane of the open side, vertically-disposed tracks applied to the ends of the rack bordering upon said open side and having their upper extremities tapering, pivoted supports located at intervals in the vertical length of the rack and adapted to be projected beyond the plane of the open side, a series of slats provided with runners to make positive engagement with the said tracks, endless chains having longitudi-



nally-alined links provided with plates, upper  
and lower rotary supports for the endless  
chains, means applied to the slats for detach-  
able engagement with the plates of the chains,  
5 and a holder applied to the projecting ends of  
the bed-timbers for receiving the slats when  
not in service, substantially as set forth.

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

JOHN F. HALLORAN, JR. [L. S.]

Witnesses:

A. L. OBER,  
S. BURNAP.