

(No Model.)

4 Sheets—Sheet 1.

J. E. HINDS.
VARNISHING MACHINE.

No. 325,176.

Patented Aug. 25, 1885.

Fig. 1.

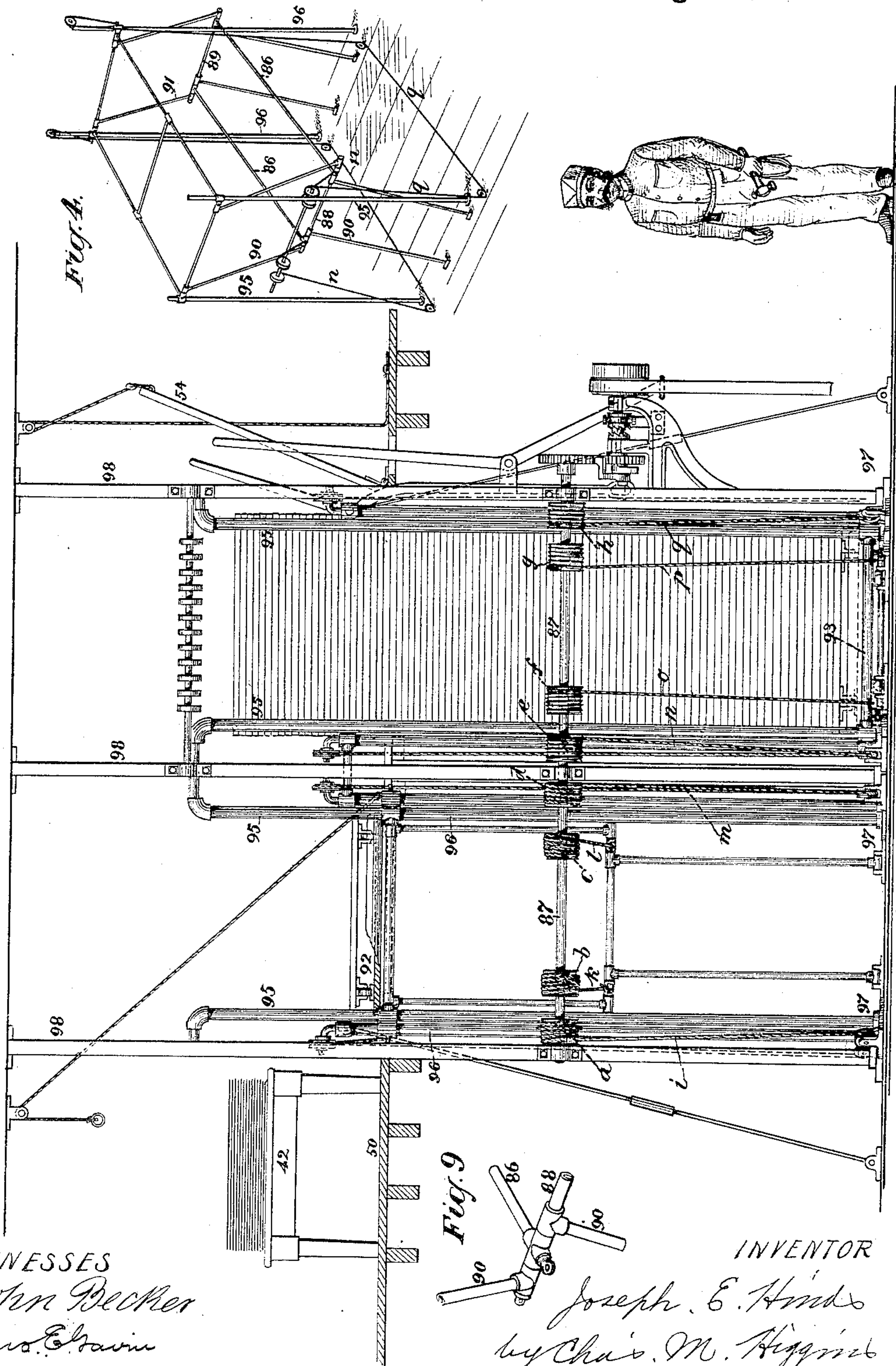
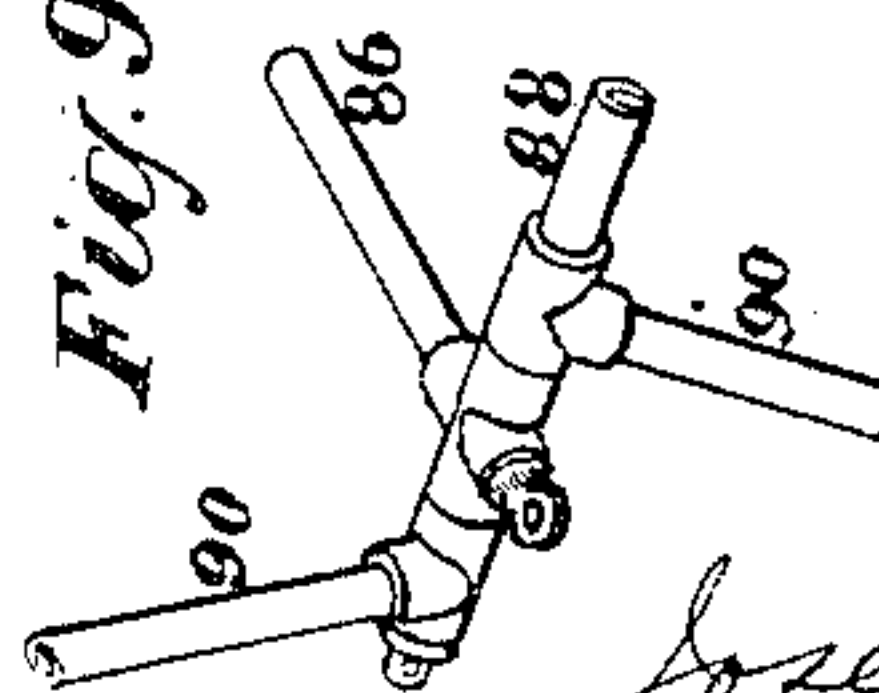


Fig. A.

Fig. 9



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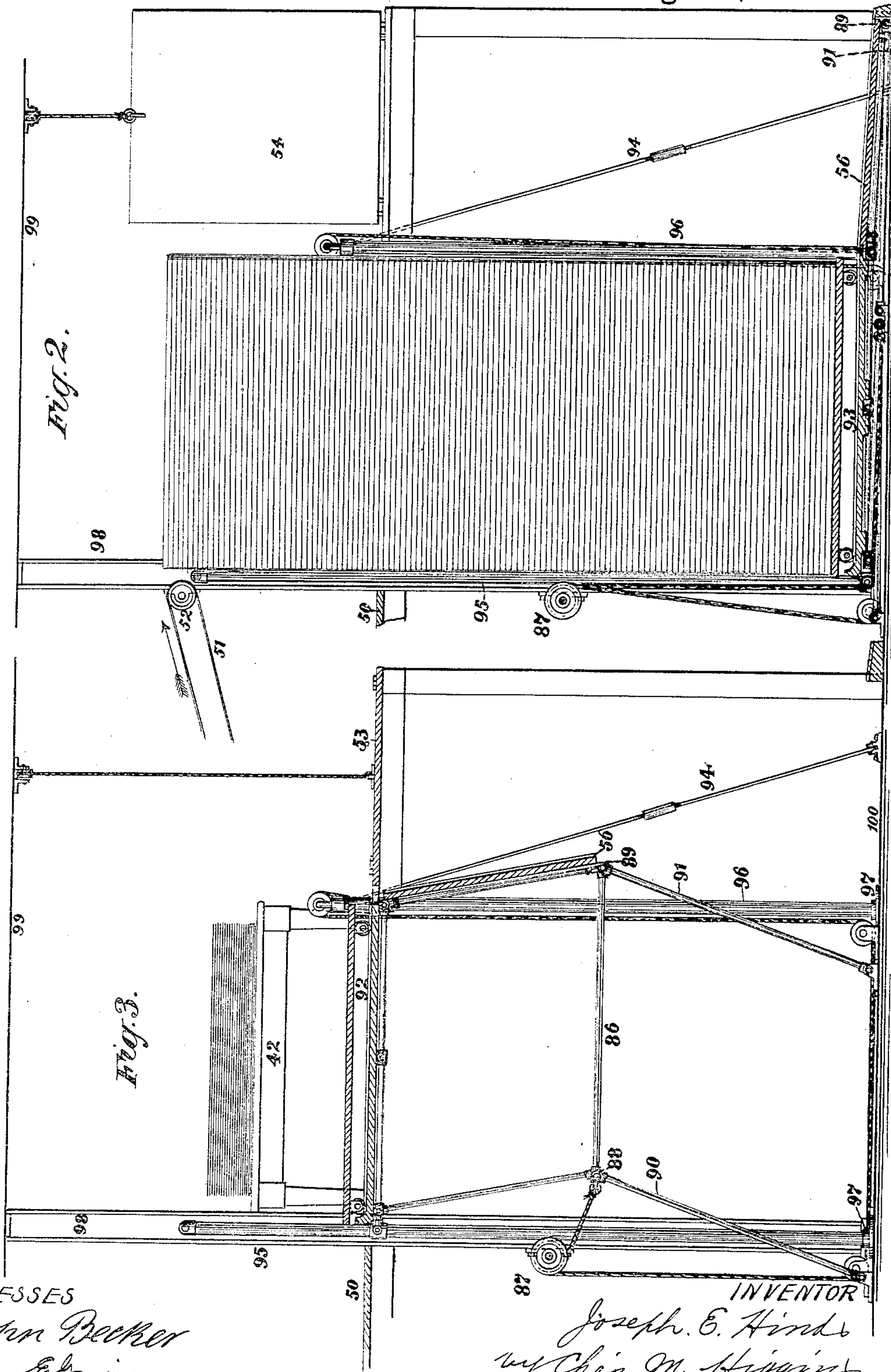
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4 Sheets—Sheet 2.

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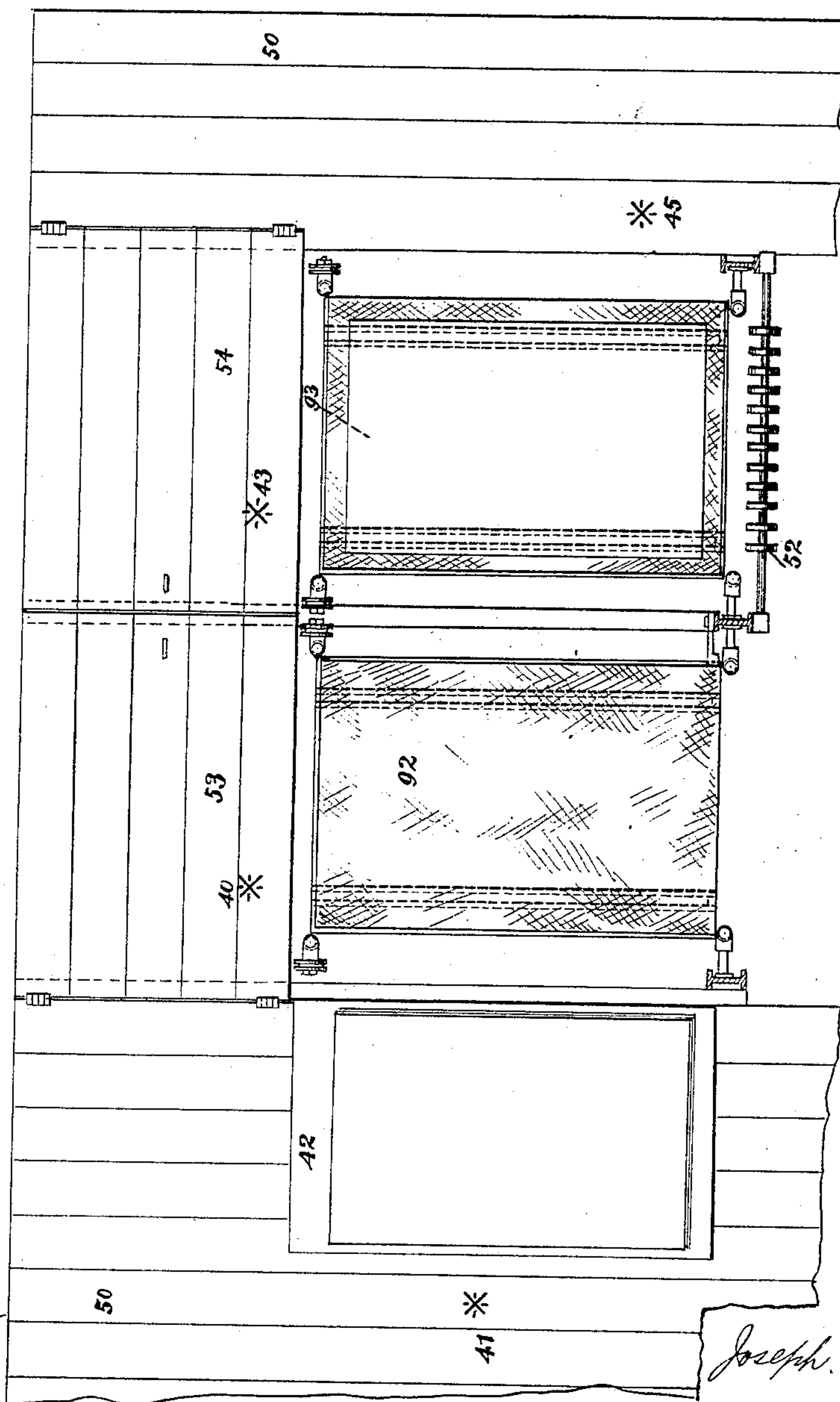
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Fig. 5.



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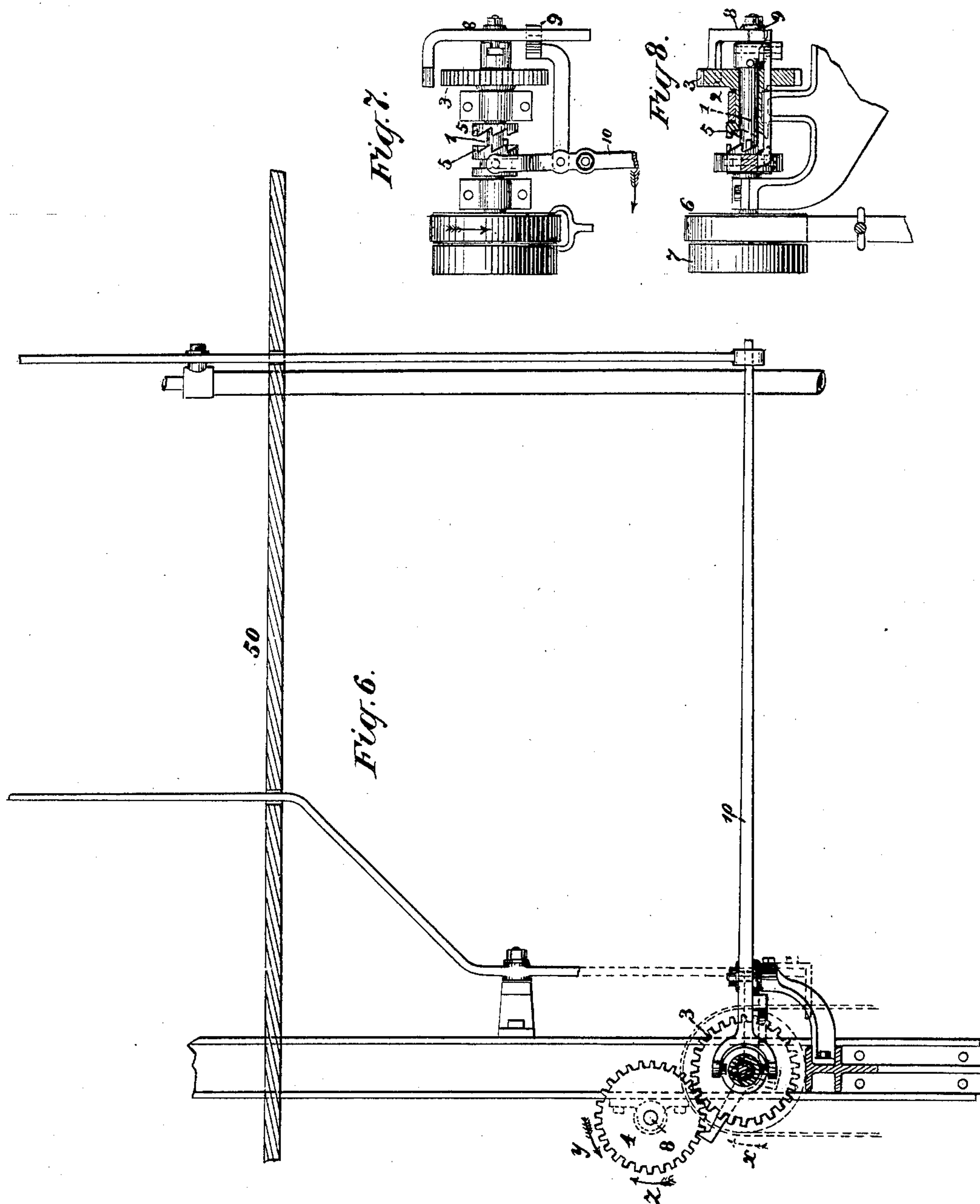
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4 Sheets—Sheet 4.

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UNITED STATES PATENT OFFICE.

JOSEPH E. HINDS, OF BROOKLYN, NEW YORK.

VARNISHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 325,176, dated August 25, 1885.

Application filed June 15, 1885. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. HINDS, a citizen of the United States, residing at Brooklyn, Kings county, New York, have invented
5 a new and useful Improvement in Varnishing-Machines, of which the following is a specification.

Colored prints and labels are almost always coated with varnish before they are delivered
10 for use, as the varnish adds brilliancy to the design and renders the prints or labels much more durable. After the varnish has been applied the sheets are placed face up on coarse muslin that is stretched upon a rectangular
15 frame, to each corner of which there is secured a block, so that as the frames are piled one on top of another there will be a free circulation of air over the varnished surface of the sheets, and such sheets will not be injured by coming
20 in contact with any foreign substance.

Prior to my invention it was customary for the operator to have a pile of empty frames at hand, and as these frames were filled and piled to the height of eighteen or twenty inches
25 they were lifted and removed bodily by hand by two attendants and carried to or placed upon a truck to be conveyed to the drying-room. After being dried the frames were taken from the drying-room, and in order to
30 remove the sheets the frames again had to be handled in small lots, all of which involved great labor and danger of breaking the frames and injuring the sheets.

My invention aims to overcome the defects
35 of the old system by so arranging two elevator-platforms that one can receive a truck loaded with drying-frames containing sheets that have been dried and are in condition to be piled in direct contact, while the other platform carries an empty truck. These plat-
40 forms are placed side by side, and are arranged to move in inverse directions, one being elevated when the other is depressed. As the dried sheets are taken from the frames the
45 empty frames are placed on the unloaded truck and a freshly-varnished sheet inserted into each empty frame as it is so placed, the operation being continued until all of the frames have been emptied, transferred, and
50 filled with fresh sheets. During this operation the platforms have been gradually moved and the tops of the two piles kept in substan-

tially the same plane. This method saves a great deal of labor and breakage, besides being a very much quicker way of handling the
55 sheets.

In the accompanying drawings I have illustrated such a pair of platforms as I have described, together with a mechanism for operating the said platforms.

Figure 1 is a view of my apparatus for handling varnished sheets, as seen from the varnishing-machine. Fig. 2 is a side view of one of the elevators and its operating mechanism, showing the position of the parts when the
60 loaded truck is rolled in. Fig. 3 is a view of the other elevator, showing the position of the parts when the platform is raised. Fig. 4 is a perspective view showing the arrangement of the toggle bars or levers employed to sustain
70 and operate the elevator-platforms. Fig. 5 is a plan of my apparatus. Figs. 6, 7, and 8 illustrate the mechanism employed to raise and lower the platforms when power is used. Fig. 9 is a detail view illustrating the manner
75 in which the central joints of the toggle-levers are constructed.

Similar reference-figures denote like parts throughout the several views.

Between the floor 100 and the ceiling 99 of
80 the room in which my apparatus is to be erected there are secured the H-irons 98, three of such irons being placed in the positions shown in Figs. 1 and 5. Threaded sockets 97 are screwed down to the floor in posi-
85 tions to receive the lower ends of the uprights 95 96, which serve as guide-rods for the elevator-platforms, there being four such rods for either platform, the rods being placed at each of the corners, as shown in the drawings. 90 These uprights are made of gas-pipe, as, in fact, is all the frame-work of my apparatus, as I find such pipe well adapted to the purpose in hand. By proper connections the upper ends of the guide rods 95 are made fast
95 to the H-irons 98, and are thus supported in rigid perpendicular positions, while the guide-rods 96 are held in position by the brace-rods 94.

The frame-work of the elevator-platforms 100 92 and 93 is made by fitting together four lengths of pipe to form a rectangle, the corner joints of which consist of pipe T's placed perpendicularly and adapted to fit over the

guide-rods 95 and 96. To each of the end lengths of pipe used in the frame-work of the platform there are pivoted the upper links of double toggle-levers, as 90 and 91, the lower links of these levers being pivoted to the floor. The central pivotal point of the levers 90 and 91 consists of a rod or length of pipe, as 88 and 89. Connecting-links, as 86, are secured upon and reach between the rods 88 and 89.

A shaft, 87, which carries eight drums, *a b c d e f g h*, is mounted in bearings upon the H-irons 98 at a point slightly above the center of the extreme lift of the toggle-levers. The drums named all carry ropes, as *i k l m n o p q*, but the ropes *i k l m*, which operate the toggles of the platform 92, and the ropes *n o p q*, which operate the toggles of the platform 93, are passed over the drums in opposite directions, so that as the shaft 87 is rotated one elevator is raised and the other lowered. The ropes *i, n, m*, and *q* pass from their drums directly down to pulleys secured to the floor at the foot of the uprights 95. They then pass along the floor to another series of pulleys adjacent to the uprights 96, thence up to and over pulleys carried by overhanging arms secured to the tops of the uprights 96, and finally down to the corners of the frame-work of the platforms, where they are made fast. The ropes *k l o p* pass from their drums to the rods 88, which constitute the central pivotal points of the toggle-levers 90.

When either of the elevator-platforms is lowered to the position in which the platform 93 is depicted in Fig. 1, it will be seen that the ropes *k l o p* on their way to the rods 88 will pass beneath the adjacent end of the lowered platform, so that when the shaft 87 is started forward the ropes named will act to bodily lift their end of the platform, the other end of the platform being lifted by the direct upward pull of the other series of ropes. The lifting by the ropes *k l o p* is continued until the platforms are about on a level with the drums, after which the ropes act directly upon the rods 88, the effect being to straighten the toggle-levers and continue the raising of the platform. As the ropes connected with either elevator platform pass around the drums in opposite directions, it follows that when one platform is raised the ropes used to operate the other will be unwound and slackened, so that the platform will descend by its own weight. The shaft 87 can be operated by hand by studding a hand-wheel carrying a pinion to the H-iron in position to have the pinion engage with a gear-wheel carried by the shaft 87, or it can be operated by power in a manner to be hereinafter described.

Eight or nine feet above the floor 100, I construct an intermediate floor or staging, 50, which is about on a level with the platforms 92 and 93 when they are raised to their extreme limit. The operators stand on this raised floor in the positions shown by the stars in Fig. 5. The varnishing-machine is also raised from the floor, so as to deliver sheets

to the tapes 51, which run over pulleys 52 and also over a series of pulleys carried by the varnishing-machine.

Trap-doors 53 and 54 are made in the floor of the staging 50 in positions to be raised to allow the loaded trucks to be moved in and out, as will be clearly seen in Fig. 5.

The operation of my apparatus is as follows: The elevator-platform 92 having been lowered to the floor 100 and the trap-door 53 thrown open, a truck, carrying drying frames filled with dried sheets and piled to the height of eleven feet or thereabout, is run in onto the platform over an inclined way, 56, which is carried by the upper links of the toggle 91. It will be remembered that when the platform 92 is lowered to the floor 100, the platform 93 will be raised so as to be on a level with the staging 50. As soon as the loaded truck has been put in position on the platform 92 the trap-door 53 is closed and the varnishing-machine started. The attendant, standing at 40, then takes the top drying-frame in his left hand and the dried sheet in his right hand. The sheet he hands to the attendant standing at 41, who places it on the table 42, the empty frame being passed to the attendant 43, who places it on a truck which has previously been placed on the elevator-platform 93. A boy, standing at 45, now receives a freshly-varnished sheet from the machine, which he places face up on the frame just thrown in front of him. This operation goes on until all of the frames carried by the elevator 92 have been emptied and transferred to elevator 93 and there filled with freshly-varnished sheets. During all the operation just described the platform 92 has been gradually raised and the platform 93 gradually lowered by the turning of the shaft 87, and during all the time the tops of the two piles carried by the elevators have been kept in substantially the same horizontal plane. When the last frame is removed from the truck carried by the elevator 92, the traps 53 and 54 are raised and the empty truck taken by an attendant. The truck on elevator 93, now filled with freshly-varnished sheets, is rolled from the platform 93 and taken to the drying-room, when the shaft 87 is immediately started in a direction opposite to that in which it was revolving while the fresh sheets were being fed in, and the elevator 93 is thereby raised to a level with the staging 50, the elevator 92 at the same time descending to the floor 100, there to receive another truck-load of dried sheets. The traps are now closed, and the attendant who took the empty truck from elevator 92 places it on elevator 93, the varnishing-machine is again started, and the operation repeated.

When power is used to operate my apparatus, it may be applied by such a mechanism as is shown in detail in Figs. 6, 7, and 8, wherein 1 is a short driving-shaft mounted in bearings carried by a bracket projecting from one of the H-irons 98. Loosely mounted on shaft 1 is a sleeve, 2, made integral with a gear, 3,

which runs in engagement with the gear 4, carried by the drum-shaft 87. The sleeve 2 is also formed with one half of a clutch, 5, the other half of the clutch riding on a feather 5 projecting from shaft 1. The shaft 1 carries fast and loose pulleys 6 and 7, the driving-belt always being on the fast pulley 6 when the apparatus is in use, as will be more fully explained.

10 When it is desired to reverse the positions of the platforms after a freshly-loaded truck has been taken away, the two parts of the clutch 5 are brought into engagement by means of the lever-arm 10. As soon as the clutch is in en- 15 gagement the gear 3 will be started forward in the direction of the arrow *x*, Fig. 6, thus moving the gear 4 and the drum-shaft 87 in the direction indicated by the arrow *y*, thereby winding up the ropes *n o p q* and loosening the ropes 20 *i k l m*, which movement will change the positions of the elevator-platforms, raising 93 and lowering 92. Care must be taken to throw the clutch 5 out of engagement at the proper time to prevent the continued rotation of the shaft 25 87 from breaking the ropes.

The inner end of the shaft 1 carries an eccentric, on which there is mounted a dog, as 8, provided with a weighted arm, 9, which holds the dog in engagement with the teeth of the 30 gear 4. The catch-tooth of the dog 8 is constructed so as to have a pushing-surface adapted to impinge squarely against the teeth of the gear 4, while the opposite surface of said catch-tooth is beveled off, so that it will easily ride 35 out from between the gear-teeth. Now, as the shaft 1 revolves in the direction of the arrow *x* the action of the eccentric, which carries the dog 8, will impart a reciprocating motion to said dog, so that the gear 4, and with it the 40 drum-shaft 87, will be advanced step by step in the direction of the arrow *z*. This movement will gradually reverse the positions of the platforms, and is the movement employed while the frames are being filled.

45 The free arm 9 of the dog 8 rests upon the inclined end of an arm projecting from the clutch-lever 10, so that when the clutch is brought together by the moving of said lever 10 the arm 9 will be lifted and the dog 8 lowered from engagement with the gear 4, which 50 will therefore be left free to revolve in the direction of the arrow *y*.

What I claim as my invention is—

55 1. In an apparatus for handling varnished sheets, the combination, with the varnishing-machine, of elevators arranged substantially as described, and for the purpose specified.

2. In an apparatus for handling varnished sheets, the combination, with the varnishing-machine, of two elevators arranged to be actuated in opposite directions, substantially as described, and for the purpose specified. 60

3. In an apparatus for handling varnished sheets, the combination, with the varnishing-machine, of two elevators and their toggle-levers, all arranged and combined substantially as described, and for the purpose specified. 65

4. In an apparatus for handling varnished sheets, the combination, with the varnishing-machine, of two elevator-platforms, toggle-levers, ropes, and a drum-shaft, all arranged and combined substantially as described, and for the purpose specified. 70

5. In an apparatus for handling varnished sheets, the combination, with the elevator-platforms, of toggle-levers, ropes, and a drum-shaft arranged to be operated in either direction, substantially as described, and for the purpose specified. 75

6. In an apparatus for handling varnished sheets, the combination, with the varnishing-machine, of two elevator-platforms, two series of toggle-levers, ropes, and a drum-shaft carrying drums, over which the ropes from either series of levers pass in opposite directions, 80 substantially as described, and for the purpose specified. 85

7. In an apparatus for handling varnished sheets, the combination, with an elevator-platform, of toggles operated by two series of ropes, as *n q* and *o p*, said ropes, and a drum-shaft, as 87, together with a mechanism for operating said shaft, substantially as described. 90

8. In an apparatus for handling varnished sheets, the combination, with two elevators and their operating mechanism, of a floor or staging, 50, substantially as described, and for the purpose specified. 95

9. In an apparatus for handling varnished sheets, the combination, with two elevators and their operating mechanism, of a floor or staging, 50, provided with trap-doors, as 53 and 54, all substantially as described, and for the purpose specified. 100

10. In an apparatus for handling varnished sheets, the combination, with an elevator-platform, of toggle-levers, as 90 and 91, an operating mechanism for said toggle-levers, and a flooring, as 56, adapted to act as an inclined way, substantially as described. 105

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