

(No Model.)

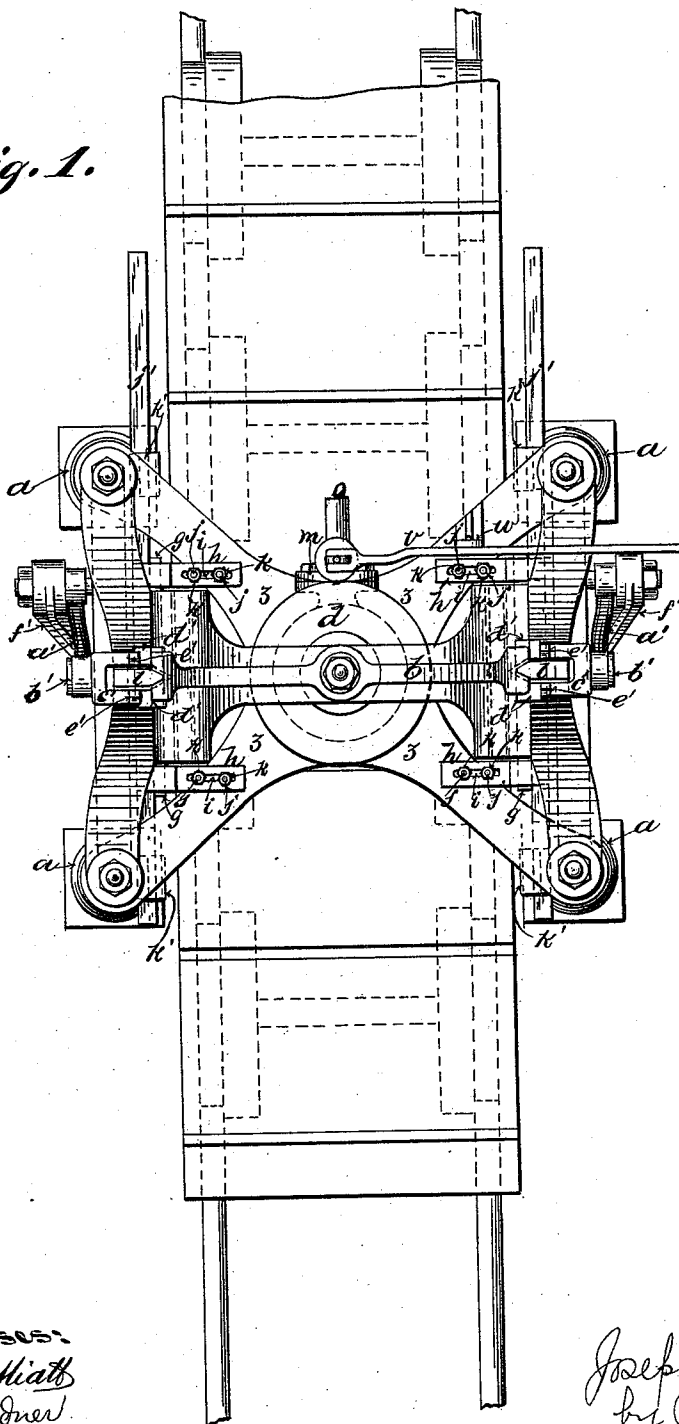
4 Sheets—Sheet 1.

J. H. SWIFT.
BOX NAILING MACHINE.

No. 408,765.

Patented Aug. 13, 1889.

Fig. 1.



Witnesses:

Geo. H. Miatt
D. W. Gardner.

Inventor:

Joseph H. Swift,
by Paul H. Bates
His Attorney.

(No Model.)

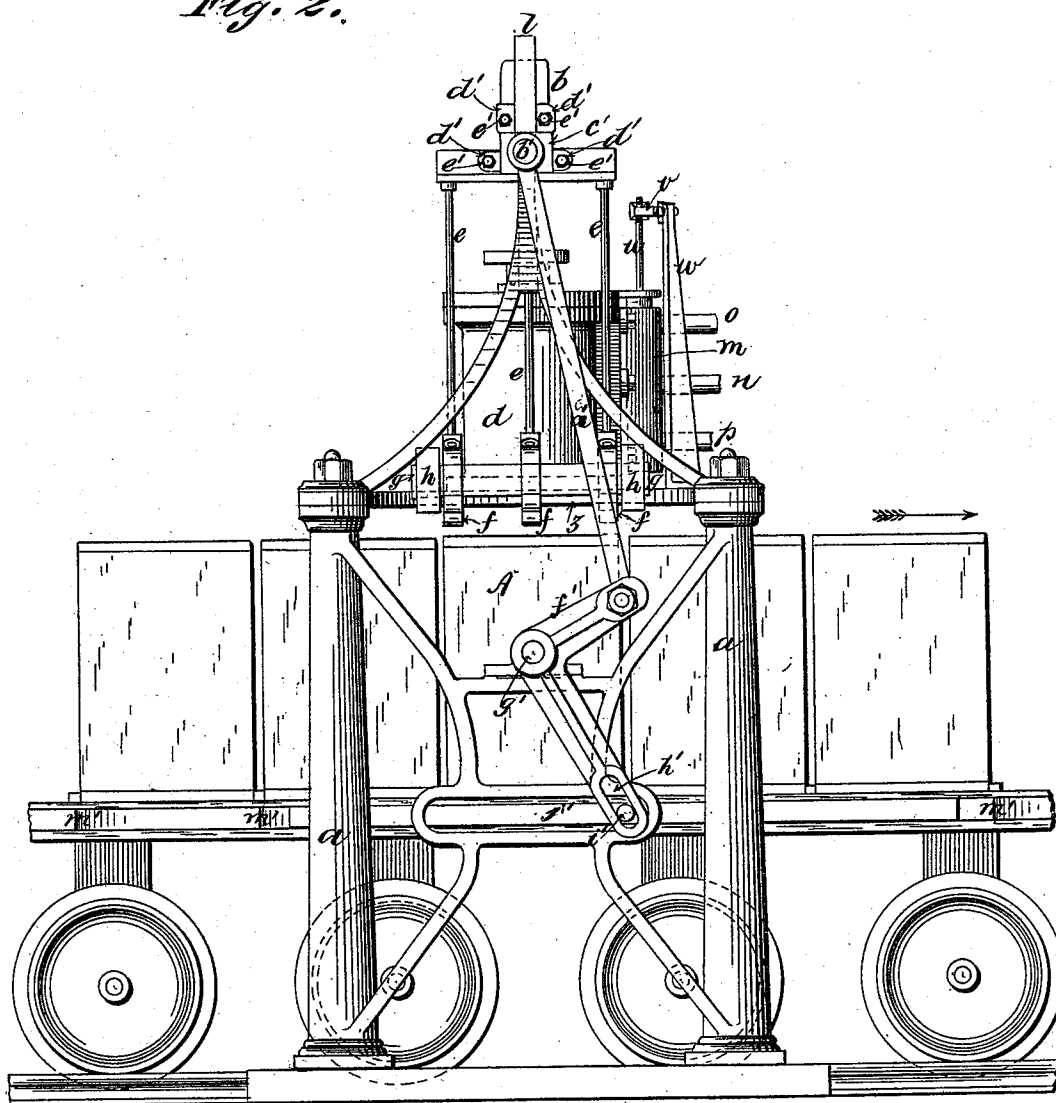
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BOX NAILING MACHINE.

No. 408,765.

Patented Aug. 13, 1889.

Fig. 2.



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(No Model.)

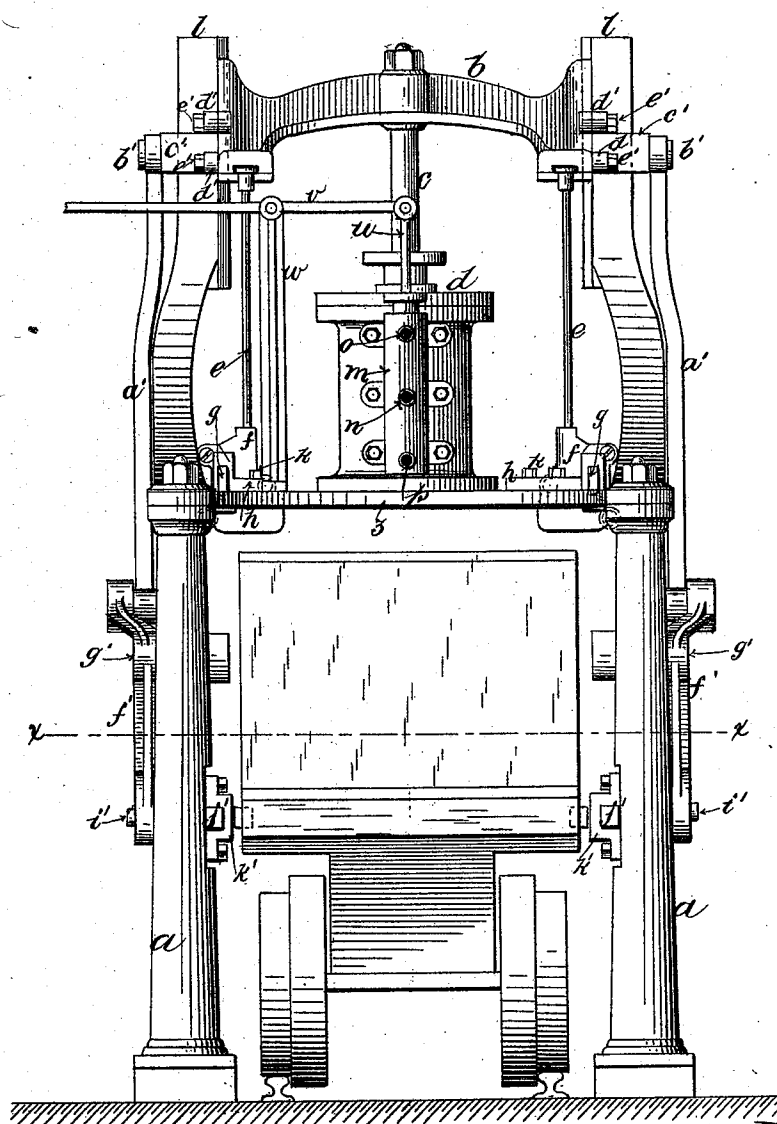
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Fig. 3.



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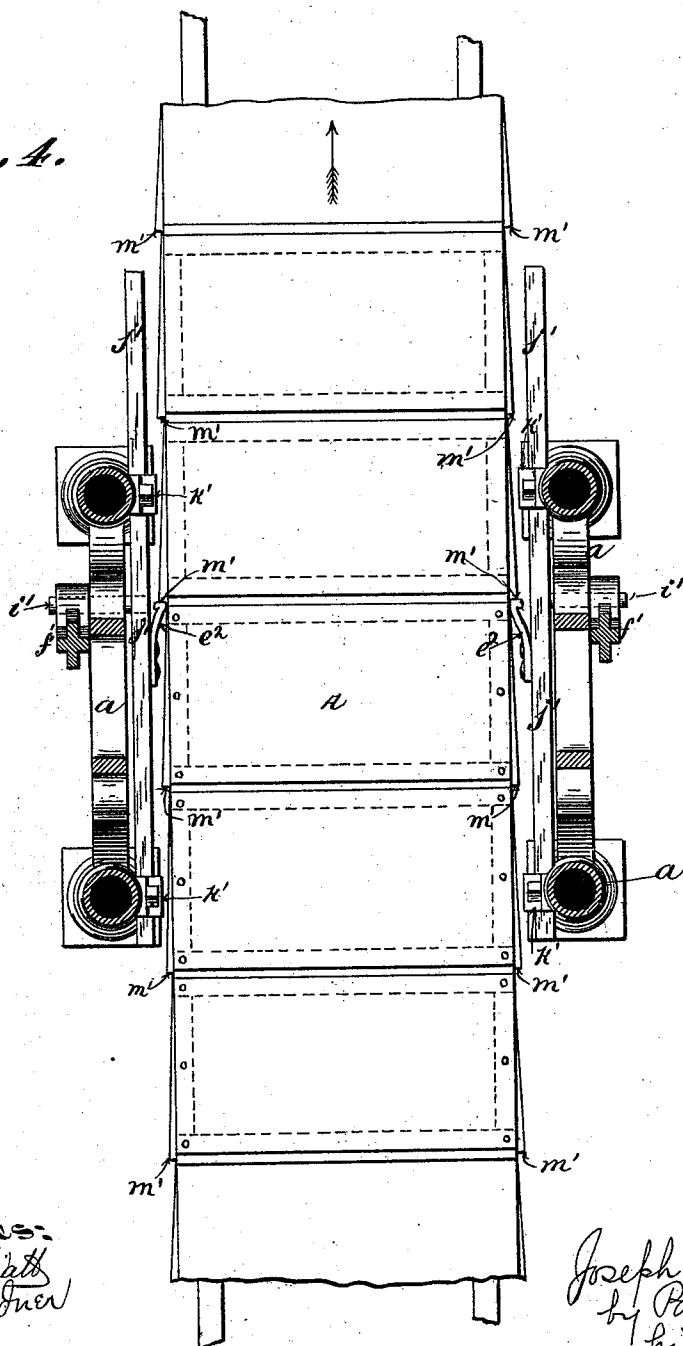
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Patented Aug. 13, 1889.

Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSEPH H. SWIFT, OF BROOKLYN, NEW YORK.

BOX-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 408,765, dated August 13, 1889.

Application filed July 1, 1887. Serial No. 243,107. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. SWIFT, a citizen of the United States, residing at the city of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Box-Nailing Machines, of which the following is a specification, reference being had to the accompanying drawings.

In operating box-nailing machines, or such, for instance, as were patented to me by Letters Patent of the United States numbered 289,941, 302,054, and 344,419, respectively, it is the practice to employ an independent engine (operating through intermediate gearing) in connection with each box-nailing machine, or to operate a number of box-nailing machines from shafting connected with an independent engine.

My invention consists in so constructing a box-nailing machine as that it shall be operated by an engine directly connected with the nail-driving mechanism, or shall itself contain all necessary mechanical means for imparting motion to itself.

Sundry other improvements are also hereinafter pointed out and specifically claimed.

In the accompanying drawings, Figure 1 is intended to represent a top view of the machine; Fig. 2, a side elevation; Fig. 3, a rear elevation, and Fig. 4 a view in horizontal section on the plane of line *x x* in Fig. 3.

Similar letters of reference are intended to refer to similar parts in the different figures.

The required nail-feeder and nail-tubes are not shown in the drawings, there being several well-known forms of the same and several well-known ways of applying the same to box-nailing machines.

In the operation of my improved machine a suitable frame *a* is provided, near the top of which is supported a reciprocating cross-head *b*, Figs. 1, 2, and 3. Such cross-head is properly secured at its central portion, as shown, to the piston-rod *c* of a steam-cylinder *d*. The cross-head *b* is provided at each end with a set or series of nail-punches *e*, which co-operate with a set or series of nail-boxes *f* on each side of the frame of the machine, substantially as shown in Figs. 2 and 3, and as patented to me in one of my aforesaid Let-

ters Patent, No. 344,419. The bars *g*, Figs. 1, 2, and 3, on which the nail-boxes are supported, as shown, are held in position by means of the brackets *h*, the inner ends of which are provided with the slots *i*, through which project the bolts *j*, Fig. 1. The position of the bars *g* may be adjusted by loosening the nuts *k* and changing the position of the brackets *h*. The ends of the cross-head are so formed as to slide on ways *l*, with which the frame of the machine is provided. The steam-cylinder *d*, Figs. 2 and 3, is provided on its side with a valve-chamber *m* of the usual form, the latter having suitable supply and exhaust ports, to which the necessary steam supply and exhaust pipes *n o p* are respectively attached.

Steam is supplied to the valve-chamber *m* through the pipe *n*, and thence to the cylinder *d* through suitable connecting-ports, the supply and exhaust being regulated in the usual way by means of a valve-motion controlled by the rod *u*. The rod *u* is pivoted at its upper end to the rod *v*, which latter rod is pivoted at or about its central portion to the standard *w*, Figs. 2 and 3. The cylinder *d* is upheld or sustained on a suitable frame *z*, Figs. 1, 2, and 3. In the form of machine shown the boxes to be nailed are placed on a car, and there held in proper position, substantially as set forth in one of my aforesaid prior patents, No. 302,054. The machine is also provided on each side with mechanism for automatically moving the car into proper position for nailing in turn the respective boxes supported on it.

On each side of the frame is a rod *a'*, the upper end of which is properly pivoted to a wrist-pin *b'*, Figs. 1, 2, and 3. The wrist-pin *b'* forms part of a metal casting *c'*, which straddles the way *l*, and is secured by means of lugs *d'* and bolts *e'* to the end of the cross-head, Fig. 1. The lower end of the rod *a'* is suitably pivoted to the short arm of a bell-crank *f'*, the latter being itself suitably pivoted to the frame of the machine at *g'*, Fig. 2. The long arm of the bell-crank is formed with a slot *h'* at its lower end, which is adapted to receive a metal pin or stud *i'*, attached to the bar *j'*, Figs. 2 and 4. The bar *j'* is supported in suitable strap-bearings *k'*,

(formed as shown and bolted to the frame, Figs. 3 and 4,) and is intended to slide back and forth as motion may be imparted to it by means of the bell-crank f' and stud i' .

5 Each of the bars j' is provided on its inner side, Fig. 4, with a pawl e^2 . The longitudinal sides of the car-frame are provided with shoulders m' , adapted to receive the heads of the pawls e^2 when the latter in the operation
10 of the machine are brought opposite thereto.

The operation of my improved machine is as follows: The boxes to be nailed are placed in position on the car, and the latter is then drawn or pushed along the track in the direction of the arrows shown in Figs. 2 and 4 until the heads of the pawls e^2 press or force themselves into the recesses behind the first shoulders m' in the opposite sides of the car-frame, the car being at such time in proper
15 position for the first box to be nailed. The machine being at rest and the cross-head elevated, as shown in Fig. 3, the operator pulls or forces down the outer end of the rod v , thereby, through the action of the ordinary valve-motion in the valve-chamber m , admitting steam to the cylinder d above the piston-head, and so depressing the latter. Upon the descent of the piston-head the cross-head b is likewise forced down with its supported nail-punches, which latter, passing through the channels in the nail-boxes, drive the nails supplied thereto. As soon as the operator
20 pushes or forces back the outer end of the rod v the supply of steam will, through the action of the valve in the valve-chamber m , be cut off from the cylinder above the piston-head and be admitted below instead. Provision being made in the usual way for the exhaust at the same time of the steam above the piston-head, the piston, together with the connecting cross-head, will be elevated. Provision is of course made in the usual way for the exhaust of the steam below the piston-head, as required in the operation
25 of the machine. As shown in Fig. 2, the cross-head is in an elevated position.

Upon the descent of the cross-head the box A will be nailed, and the bars j' , with their supported pawls e^2 , will be forced back (without moving the car) through the action of the rod a' , bell-crank f' , and the projecting pin or stud i' until the heads of the pawls e^2 fall or press into the recesses behind the two second and opposite shoulders m' in the sides of
30 the car-frame. Upon the elevation of the cross-head the car will be drawn forward by the pawls e^2 , to which a forward motion will be imparted through the bars j' , pins or studs i' , bell-cranks f' , and rods a' . By such action
35 the car will be drawn forward sufficiently to bring another box into position to be nailed.

The operation of the machine as above described may of course be kept up indefinitely.

The engine employed need not necessarily be a steam-engine.

In the practice of my invention I do not limit myself to the exact construction of box-nailing machine herein shown and described, nor to the exact forms of the special devices herein shown and described.

In another application filed by me for Letters Patent of the United States, Serial No. 243,106, on July 1, 1887, I have described and claimed a machine in which the nail-driving mechanism, consisting of the reciprocating cross-head with its supported nail-punches, is operated by the piston-rod of the cylinder acting through intermediate parts. In the present application the nail-driving mechanism is shown to be operated directly by the piston-rod of the cylinder.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a box-nailing machine, of a support for the box or a box-frame to be nailed and a reciprocating cross-head provided with the necessary nail-punches and operated directly by the piston-rod of a cylinder d , supported on the frame of the machine, together with nail-boxes adapted to co-operate with the nail-punches, substantially as set forth.

2. The combination, in a box-nailing machine, of a car for the support of the box or box-frame to be nailed and a reciprocating cross-head provided with the necessary nail-punches and operated directly by the piston-rod of a cylinder d , supported on the frame of the machine, together with nail-boxes adapted to co-operate with the nail-punches, substantially as set forth.

3. The combination, in a box-nailing machine, substantially as set forth, of a car for the support of the box or box-frame to be nailed, and having shoulders m' on its opposite longitudinal sides, a vertically-reciprocating cross-head provided at or near each end with a set or series of nail-punches, sets or series of nail-boxes adapted to co-operate with the nail-punches, and mechanism, consisting of the castings c' , wrist-pins b' , rods a' , bell-cranks f' , studs i' , bars j' , and pawls e^2 , for automatically moving the car into proper position for the respective boxes to be nailed in turn.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH H. SWIFT.

Witnesses:

WM. GARDNER,

WM. A. POLLOCK.