(No Model.) 2 Sheets—Sheet 1.

E. H. JOHNSTON.

MACHINE FOR MAKING POINT RAILS.

No. 454,274. Patented June 16, 1891.

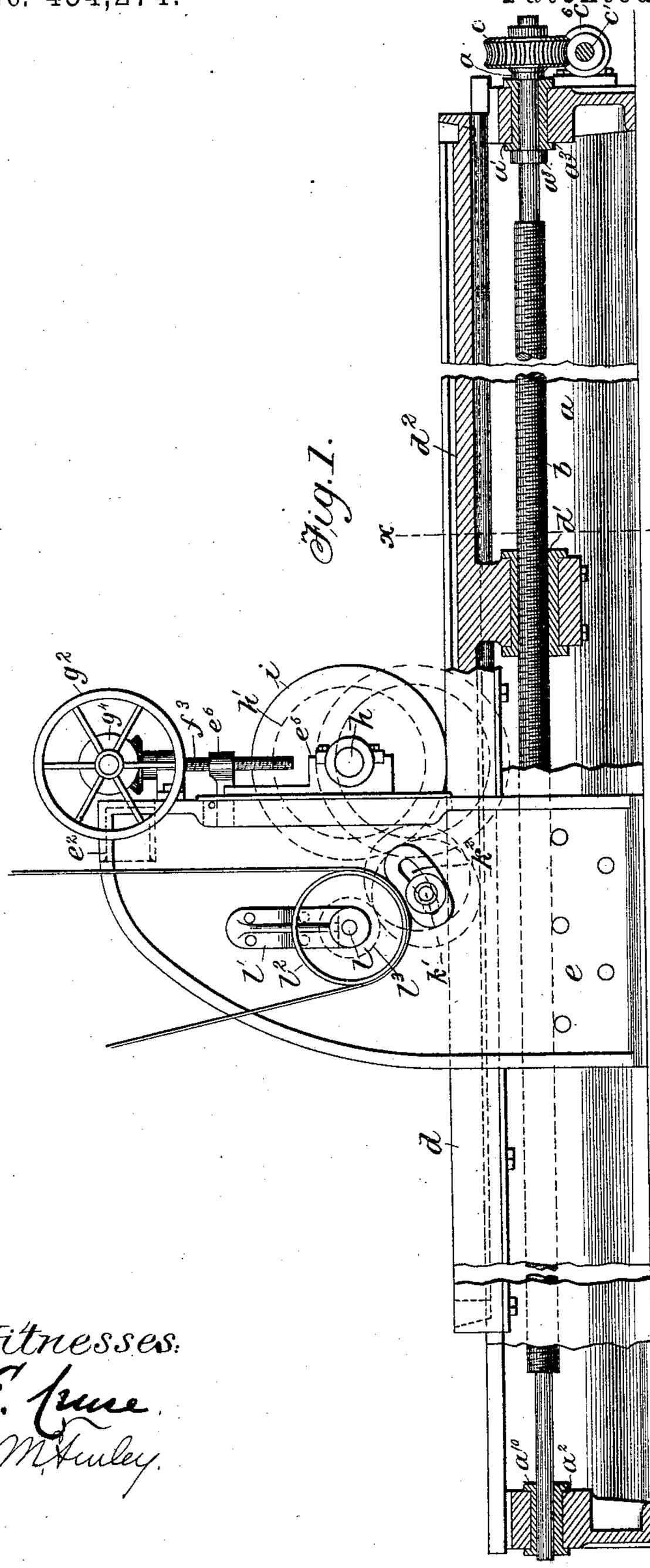

Fig. 1.

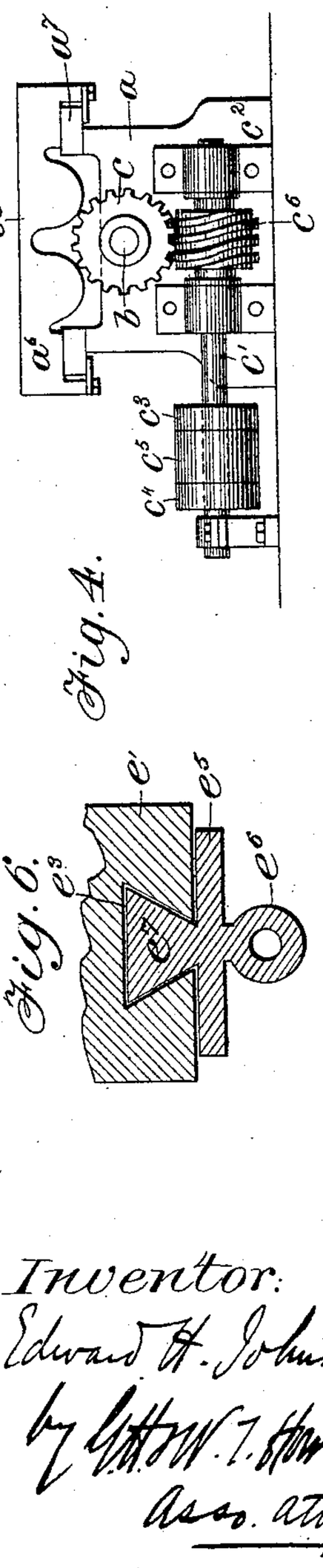

Fig. 4.

Fig. 6.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

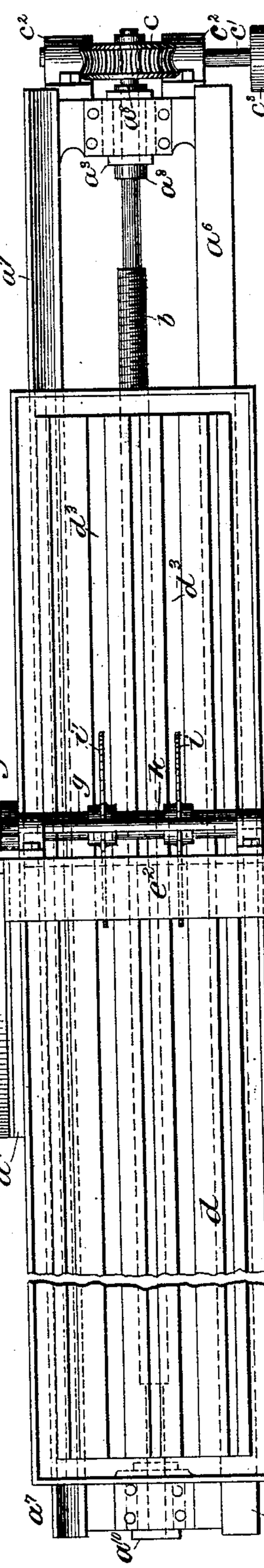

Fig. 3.

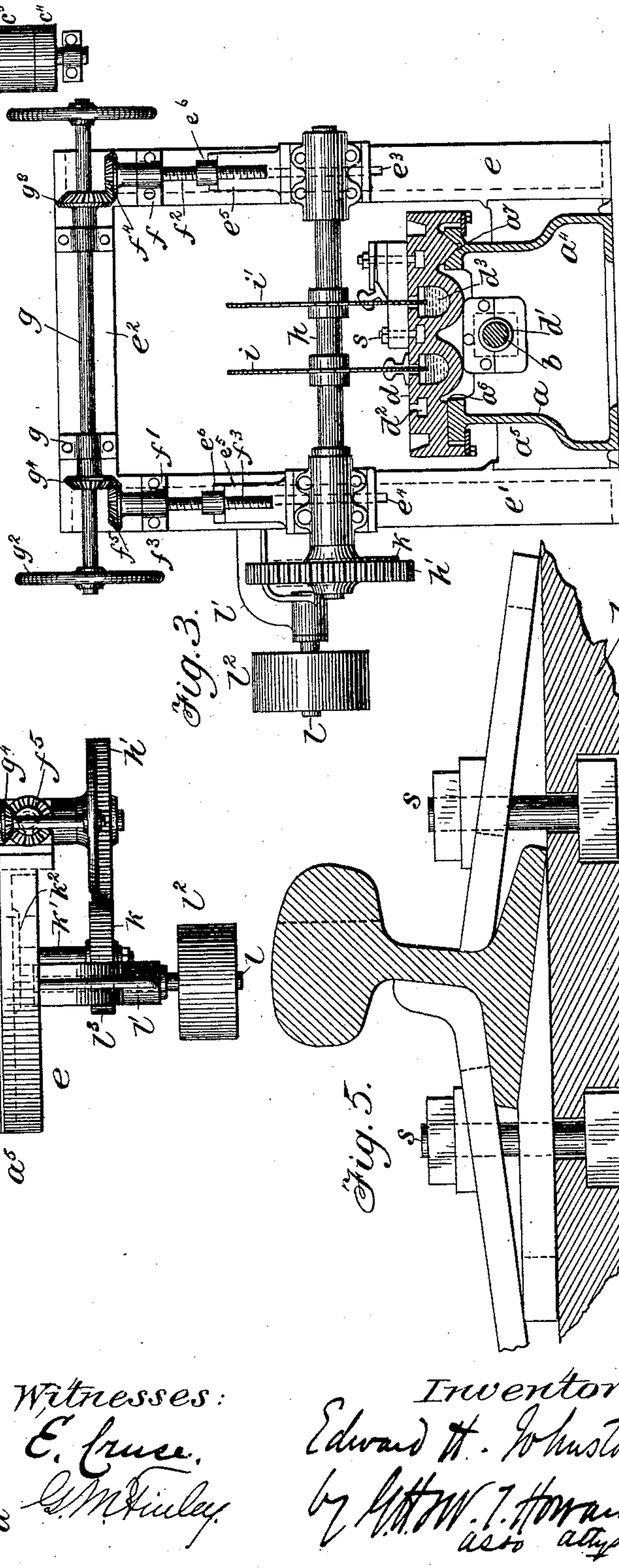

Fig. 5.

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UNITED STATES PATENT OFFICE.

EDWARD H. JOHNSTON, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR MAKING POINT-RAILS.

SPECIFICATION forming part of Letters Patent No. 454,274, dated June 16, 1891.

Application filed May 8, 1890. Serial No. 350,971. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. JOHNSTON, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Making Point-Rails, of which the following is a specification.

In the construction of point-switches it is the usual and best practice to form the point-rail from an ordinary T-rail by subjecting the latter to several operations. First, the side of the T-rail which is to lie adjacent to the stock-rail in the finished switch is beveled off for a distance of fifteen feet (more or less) by removing portions of the base, head, and web of the T-rail, so that when the switch is closed the point-rails form a mitered point with the stock-rails; second, the top of the head of the rail is cut down from a point some five feet (more or less) from the extremity thereof, so that the point-rail will, when the switch is closed, lie snugly up against the stock-rail; third, the side of the head of the rail farthest from the stock-rail is beveled off for eight feet (more or less) from its extremity, so as to properly engage the flanges of the wheels traversing the tracks, and, fourth, the bottom of the base of the rail is beveled upward for a short distance from the extremity thereof, so that it may fit over the base of the stock-rail. In some instances the rail is bent at one or more points before the above operations are performed in order to insure its proper disposition with reference to the stock-rail in the finished switch.

The nature and characteristic features of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is an elevation, partly in section and partly broken away, of a machine embodying my invention. Fig. 2 is a top or plan view, partly broken away, of the same. Fig. 3 is an end elevation, partly in section on the line $x\,x$ of Fig. 1. Fig. 4 is an end elevation of Fig. 2, showing portions of the machine removed. Fig. 5 is a view of the clamping devices for the rail detached. Fig. 6 is a detail.

In the drawings, a is a rectangular-shaped frame, which forms the bed-plate of the entire machine. The ends of this frame a are provided with horizontal apertures a' and a^2 for the reception of the bushings a^{10} and a^3, and the sides of this frame are provided with lateral extensions a^4 and a^5, for a purpose to be presently described. Upon the upper surface of the sides of the bed-plate a are formed parallel ways a^6 and a^7, upon which a reciprocating table travels. Good results have been attained in practice by making one of these ways a^6 of rectangular-shaped cross-section and the other of them a^7 of V-shaped cross-section; but other preferred forms of ways may be employed, if desired.

b is a screw-shaft supported in the bushings a^{10} and a^3 and projecting at one extremity thereof beyond the end of the bed-plate a. Upon the projecting extremity of the shaft b is keyed a worm-wheel c for imparting motion thereto.

a^8 are collars located on the respective sides of the bushing a^3, and keyed or otherwise attached to the shaft b for preventing end play thereof.

c' is a shaft supported in bearings c^2 and provided with two fast pulleys c^3 and c^4, an idle-pulley c^5, and a worm c^6, meshing with the worm-wheel c.

d is a work-table provided upon the under side thereof with runners adapted to slide in the ways a^6 and a^7, and with the nut d' for engaging the screw-shaft b, so that when the worm-shaft b is rotated alternately in opposite directions the work-table d is caused to reciprocate back and forth upon the bed-plate a. The upper surface of the table d is provided with internally flanged or expanded grooves d^2 for the reception of bolts s for securing the chairs and T-rails to the table, and with longitudinal recesses d^3 for the reception of the saws and for containing a supply of oil or other suitable lubricant.

e and e' are vertical standards bolted or otherwise secured to the extensions a^4 and a^5 of the bed-plate a and to a transverse brace e^2. These standards e and e' are respectively provided with internally-expanded slots e^3 and e^4.

e^5 are hangers provided, respectively, with internally-threaded eyes e^6 and with wedge-shaped lugs e^7, engaging in the slots e^3 and e^4.

f and f' are bearings connected with the standards e and e' and adapted for the recep-

tion of screws f^2 and f^3. These screws f^2 and f^3 pass through the internally-threaded eyes e^6, and are provided at their upper extremities with miter-wheels f^4 and f^5. When said screws are rotated, the hangers e^5 are raised or lowered, as will be readily understood.

g is a shaft supported in bearings g', bolted or otherwise secured to the transverse brace e^2. This shaft g is provided at or near the respective extremities thereof with hand-wheels g^2 and with miter-wheels g^3 and g^4, meshing with the miter-wheels f^4 and f^5, so that the hangers e^5 may be raised or lowered by turning the hand-wheels g^2.

h is a shaft supported in the hangers e^5 and provided with a spur-wheel h'.

i and i' are saws keyed or otherwise attached to the shaft h and adapted to dip into oil or other lubricant contained in the recesses d^3, as illustrated in Fig. 3.

k is an idle spur-wheel meshing with the spur-wheel h', the idle-wheel k being mounted on a stud k'. This stud k' slides freely in the slot k^2, formed in the vertical standard e, so that its position with reference to the spur-wheel h' may be adjusted, whereupon it is bolted or otherwise secured to place therein.

l is a shaft supported in bearings l', attached to the vertical standard e, and said shaft being shouldered to prevent end play. This shaft l is provided with a fast pulley l^2 and with a spur-wheel l^3, meshing with the spur-wheel k, so that when the pulley l^2 is rotated its motion is transmitted to the saws i and i' by means of the spur-wheels l^3, k, and h', as will be readily understood.

In use the bed-plate of the machine is supported upon a suitable foundation in any preferred manner, and a belt is passed around the pulley l^2 and around a pulley located on a counter-shaft (not shown) in order to transmit power to the saws i and i'. Motion is imparted to either of the two fast pulleys c^3 c^4 or to the loose pulleys c^5 by means of a crossed or an open belt in the usual manner, so that the direction of rotation of the shaft c', and consequently the direction of motion of the table d, may be changed and controlled by shifting the open or crossed belt onto the loose pulley c^5 or onto either of the fast pulleys c^3 c^4, as will be readily understood by those skilled in machine-shop practice.

In order that the invention may be fully understood, a brief description of the operation of making a point-rail will now be given.

The table d is run out so that it occupies the position illustrated in Fig. 1, and a T-rail supported in suitable chairs is attached to the table by means of bolts engaging in the grooves d^2, care being exercised to so place the T-rail with reference to the saw i as that the latter will bevel the rail in the usual or in any other preferred manner. The table d, having the rail firmly attached to its upper surface, is then caused to travel toward the saw by means of the screw-shaft b, in the manner above described, so that the saw i, cutting entirely through the head and through a portion of the base of the rail, properly shapes one side of the point-rail. The saw i, dipping into the oil or other lubricant contained in the recess d^3, prevents undue heating of the saw and of the rail during the above-described operation. Inasmuch as the saw i passes entirely through the rail and dips into the recess d^3, it is necessary during the operation of cutting the point-rail to remove the chairs in advance of the saw and to replace them in rear thereof, so as to avoid sawing or otherwise injuring them. The table d is then run out, as in the first instance, and the position of the partially-finished point-rail is shifted, so that when it is again presented to the saw the remaining portion of the head of the rail is cut off. If required, the saw i may be elevated during this operation by means of the hand-wheels g^2, so as to escape the base of the rail; but preference is given to the former method. The point-rail may then be removed and placed in an ordinary milling-machine, in order to remove a portion of the under side of the base of the rail; or a milling-tool may be substituted for the saw, and the milling operation performed upon the above-described machine.

It may be remarked that in practice two saws i and i' are usually employed, thus permitting of the manufacture of two point-rails at one and the same time upon the machine.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for making point-rails, the combination, with the bed-plate having lateral extensions a^4 a^5 and a table reciprocating on the bed-plate, of standards bolted to said extensions, each standard having a longitudinal recess e^3, hangers having projections to fit in the recesses in the standards, a shaft journaled in said hangers, a saw on the shaft, and screws connecting the hangers to a fixed bearing on the standards, whereby the saw may be adjusted vertically, substantially as specified.

2. In a machine for making point-rails, the combination, with the bed-plate and vertical standards secured thereto, of a table adapted to reciprocate on the bed-plate between the standards, said table having a recess d^3 extending longitudinally thereof to hold a lubricant, a shaft journaled in bearings on the standards above the table, and a saw carried by said shaft and adapted to dip in the recess, substantially as and for the purposes specified.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

EDWARD H. JOHNSTON.

Witnesses:
GEO. W. REED,
CHAS. C. COLLIER.