

H. E. MORTON.
 WORK HOLDER FOR SHAPING MACHINES.
 APPLICATION FILED OCT. 28, 1909.

982,979.

Patented Jan. 31, 1911.

4 SHEETS—SHEET 1.

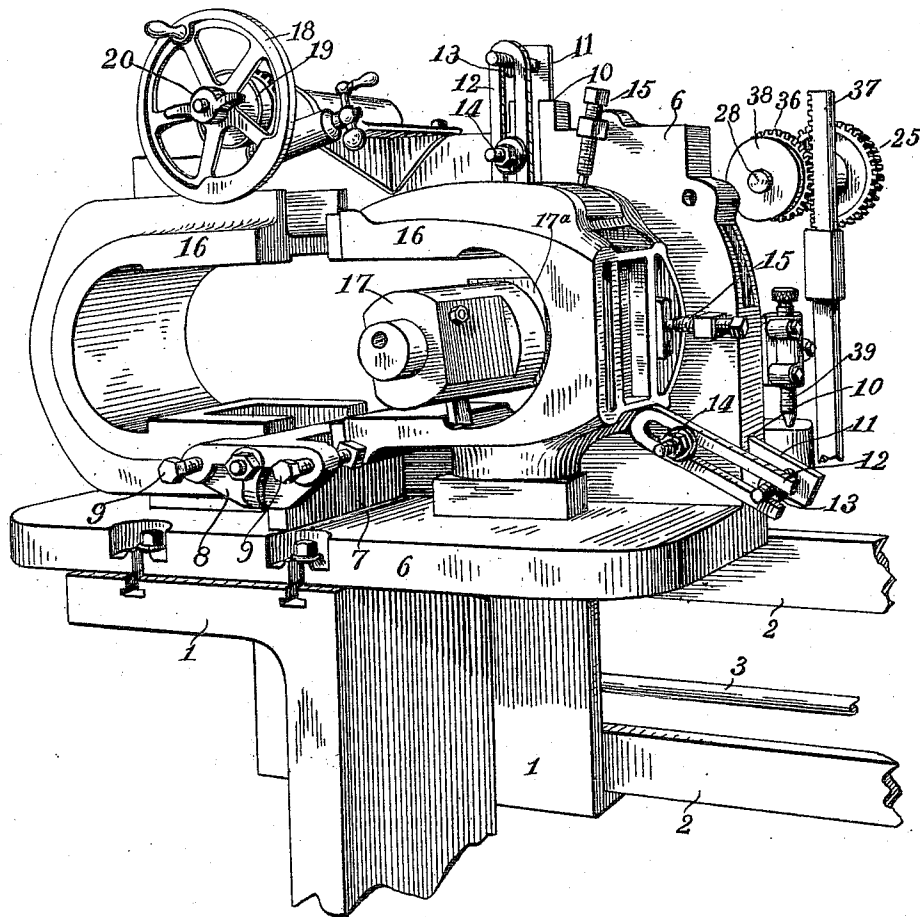


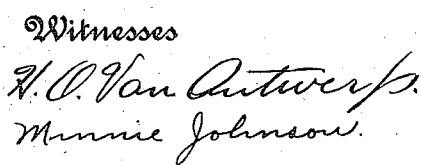
FIG. 1.

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4 SHEETS—SHEET 2.



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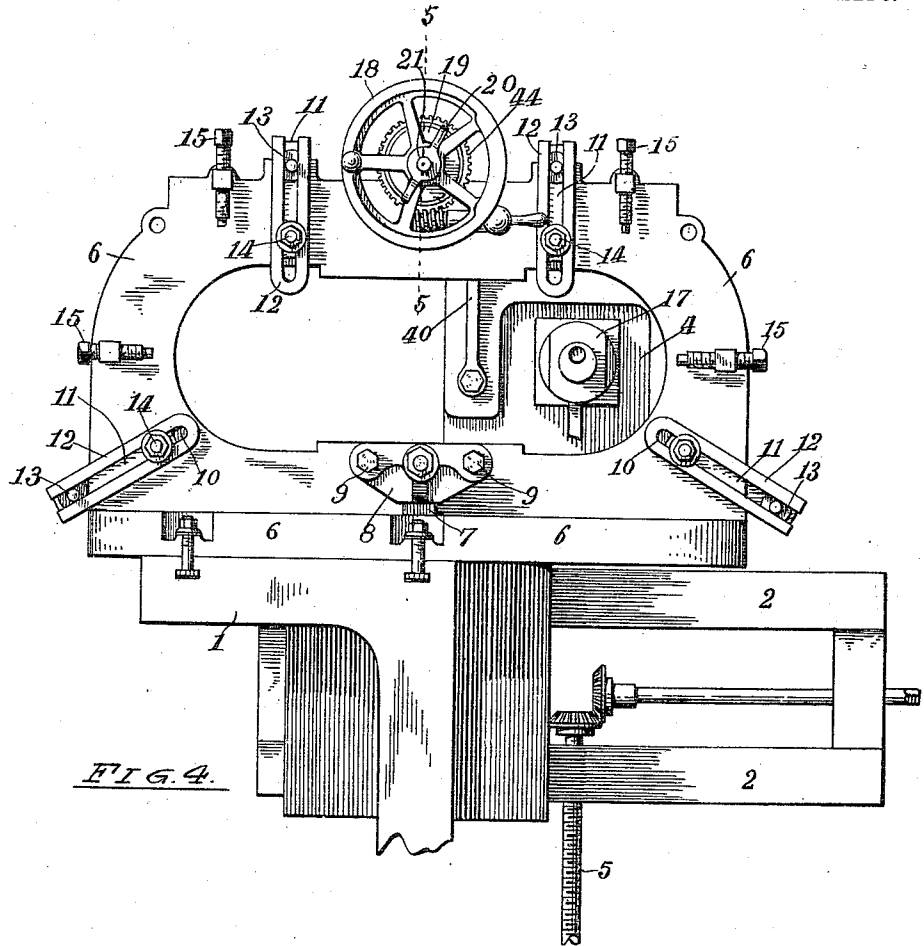


FIG. 4.

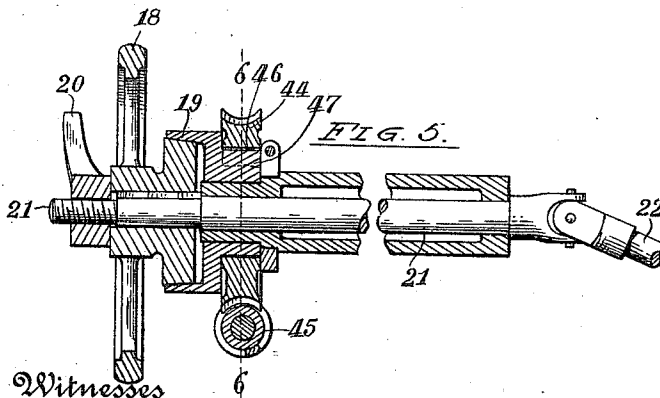


FIG. 5.

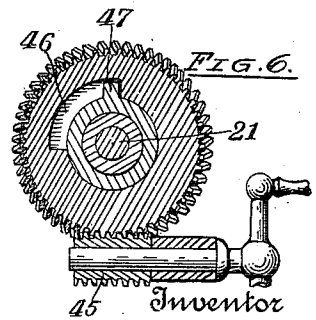


FIG. 6.

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SHEETS-SHEET 4.

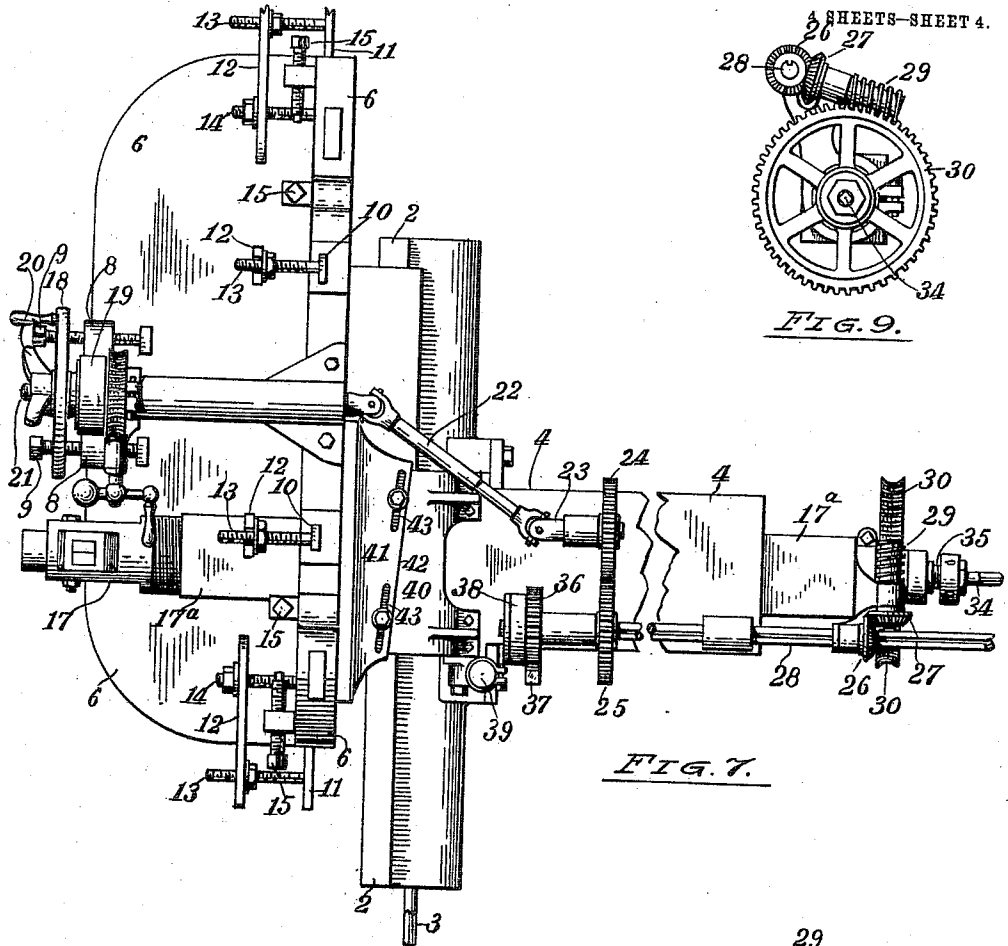


FIG. 7.

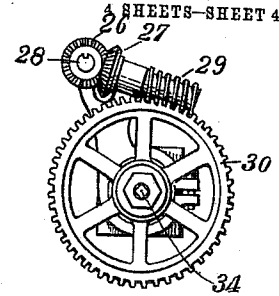


FIG. 9.

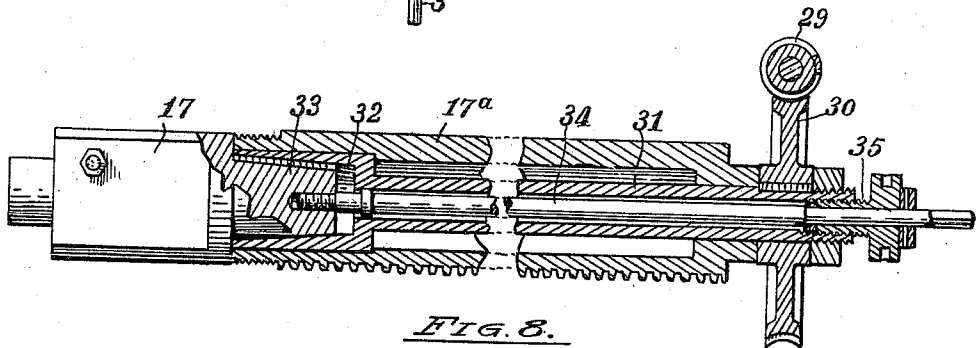


FIG. 8.

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UNITED STATES PATENT OFFICE.

HENRY E. MORTON, OF MUSKEGON, MICHIGAN.

WORK-HOLDER FOR SHAPING-MACHINES.

982,979.

Specification of Letters Patent.

Patented Jan. 31, 1911.

Application filed October 28, 1909. Serial No. 525,159.

To all whom it may concern:

Be it known that I, HENRY E. MORTON, a citizen of the United States of America, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Work-Holders for Shaping-Machines; 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.

My invention relates to improvements in work holders for shaping machines having a reciprocatory and rotative tool holder, and more particularly for such machines as shown in Patent No. 848190 dated March 26th, 1907, to myself and Matthew Morton jointly, and its object is to provide means whereby, when the machine is working upon one piece of work, another like piece of work may be placed in the machine ready to be operated upon, and that when one piece of work is finished, the other may be quickly adjusted in position to be operated upon, thus making the operation practically continuous; to provide the device with an improved work holder for the purpose specified, and to provide the same with various new and useful features, hereinafter more fully described and particularly pointed out in the claims.

My device consists mainly of an angle plate having an opening therethrough and made practically in duplicate at its respective ends, each end being provided in duplicate with mechanism for adjusting and holding the work, and more particularly adapted for adjusting and holding the driving boxes for locomotives and like articles, and in various features of construction and arrangement, as will more fully appear by reference to the accompanying drawings in which:

Figure 1 is a perspective of a device embodying my invention with two driving boxes mounted thereon, one of which is shown in position to be operated upon by the cutter; Fig. 2 an end elevation of the same with portions of the adjacent mechanism for operating the cutter; Fig. 3 a vertical sectional detail in the plane of the cutter head, and viewed from the same direction as Fig. 2; Fig. 4 is a front elevation of the device; Fig. 5 a vertical sectional detail on the line

5—5 of Fig. 4; Fig. 6 a transverse sectional detail on the line 6—6 of Fig. 5; Fig. 7 a plan view of the device and adjacent mechanism; Fig. 8 an enlarged section of the reciprocating member; and, Fig. 9 a rear end elevation of the same.

Like numbers refer to like parts in all of the figures.

1 represents the bed plate of the shaping machine mounted to adjust horizontally on ways 2 by any convenient means, the ways 2 being also vertically adjustable on the main frame 4 on vertical ways 4^a on the frame by means of a screw 5 geared to a manually operated shaft 3.

6 is a large angle plate mounted on the bed 1 with its horizontal member supported thereon, and having its vertical member provided with a large opening through which the ram 17^a extends, and is reciprocated by means of suitable mechanism comprising a rack and pinion, as usually constructed. This ram carries a rotative head 17 in which is mounted the cutting tool, said head being held and rotated as hereinafter described. This angle plate is made substantially double having a central rib 7 at the bottom with upwardly extending lugs 8 in which are mounted clamping screws 9 to respectively hold the work to be operated upon, which as herein shown, are driving boxes for locomotives. To further hold the work, each end of the vertical portion of the angle plate is provided at suitable intervals with T-slots 10 in which are inserted flat bars 11, having near their outer ends adjustable supports 13 for the ends of clamping links 12, and near their inner ends and projecting through the T-slots, clamping bolts 14, the members 12 being U-shaped and embracing the support 13 and bolt 14 and longitudinally adjustable thereon. The angle plate is also provided at proper intervals with adjusting and binding screws 15 extending parallel with its surface through studs projecting therefrom. Each half of this angle plate is adapted to hold a single sample of the work to be operated upon, and when the operation is being performed upon this sample, another like sample can be placed in position for operating upon on the other half of the angle plate, thus enabling the machine to operate substantially continuously.

To automatically rotate the head 17 for cutting concave cylindrical surfaces, the

same is provided with a tapered shank 33, which enters a rotative socket 32 in the outer end of the ram, said socket being provided with a tubular extension 31 extending through the ram and projecting from the rear thereof, and also rotative therein. On this stem 31 is fixed a worm wheel 30 engaged by a worm 29. This worm is actuated by a bevel gear 27, which in turn is engaged by another bevel gear 26, carried on the ram, and slidable on a shaft 28, being splined thereto to rotate the gear. The gear is thus free to traverse the shaft 28 longitudinally and is rotative therewith.

To rotate the shaft step by step, and thus shift the tool about the axis of the ram and head, the shaft 28 has fixed thereon a spur gear 25 engaged by a gear 24 mounted on a shaft 23, and to conveniently operate this shaft manually by means of a single device mounted on the angle plate and adjustable therewith, a telescopic and universally jointed connecting rod 22 extends therefrom and connects the same with a shaft 21, journaled in suitable bearings at the top of the angle plate, on which shaft is a clutch 19 fixed and released by a winged nut 20, the clutch member of which is provided with a hand wheel 18 and splined to the shaft. The other clutch member 19 is freely rotative and provided with a lug 47, which engages and traverses a segmental recess 46 in a worm gear 44, rotative on the member 19, and driven by the lug, and engaged by a worm 45 adapted to be manually operated. The shaft 28 can thus be manually rotated at pleasure to turn the head and cutting tool about the axis of the head by means of the wheel 18, or by the worm 45; the recess 46 providing for a limited quick adjustment by means of the hand wheel 18 independent of the adjustment by the worm and gear.

To automatically turn the head step by step, a gear 36 is loose on the shaft 28 and connected thereto by a pawl and ratchet clutch 38 of any convenient construction preferably as more fully shown in the patent referred to, and the gear 36 is oscillated at suitable intervals by a reciprocable rack 37 operated in any convenient manner, not shown.

To accurately adjust the work so that the axis of the head 17 will be coincident with the axis of the concave portion of the work, a suitable stop screw 39 is provided to engage the vertically adjustable ways 2. To strengthen and support the angle plate, the main frame 4 is provided with a forwardly projecting arm 40 carrying an adjustable head 41, the arm and head having oppositely inclined engaging surfaces 42, and the head adjustably held by bolts inserted in slots 43 parallel with the said surfaces. The head can thus be adjusted firmly

against the rear of the angle plate above the ram.

What I claim is:—

1. In combination with a shaper having a reciprocable and rotative tool holder, an angle plate constructed in duplicate at its respective ends, each end adapted to hold a sample of the work to be operated upon, said plate also being adjustable longitudinally to bring each end thereof to a like position relative to the tool holder, and means in duplicate on the angle plate for holding the work to be operated upon.

2. In combination with a shaper having a reciprocable and rotative tool holder and an adjustable bed, an angle plate mounted on the bed, said angle plate having its respective ends in duplicate and an elongated opening through which the tool holder projects, clamps and adjusting screws in duplicate on the respective ends of the angle plate, and means for adjusting the angle plate with its respective ends in similar relation to the tool holder.

3. In combination with a shaper having a reciprocable and rotative head and an adjustable bed, an angle plate having an elongated opening therein through which the tool holder projects, the respective ends of the angle plate being constructed in duplicate and provided with radial slots, clamps inserted in said slots, adjusting screws mounted on said angle plate, said clamps and screws being in duplicate at the respective ends of the plate, a middle rib in the plate having oppositely projecting lugs, and clamping screws mounted in said lugs.

4. A shaper having a reciprocable and rotative tool holder and an adjustable bed, an angle plate mounted on the bed, said angle plate having its respective ends constructed in duplicate and an elongated opening through which the tool holder projects, a main frame on which the bed plate is adjustably mounted, a supporting arm attached to the main frame and extending toward the vertical member of the angle plate, a head adjustably mounted on the arm, said head and arm having inclined opposing surfaces, and means for adjustably holding the head in contact with the angle plate.

5. In combination with a shaper having a main frame and an adjustable bed; an angle plate mounted on the bed, an arm attached to the main frame opposite the angle plate, a head adjustable on the arm and engaging the angle plate, said head and arm having slidably engaging surfaces inclined to the angle plate, and means for adjusting the head on the arm.

6. A shaper, comprising a reciprocable and rotative tool holder, a rotatable shaft connected to the tool holder to adjust the same about its axis, an adjustable bed, an angle plate on the bed, a hand wheel mounted on

the angle plate, a clutch to connect the wheel
with this shaft, a rotatable worm gear near
the clutch and having a segmental recess, a
lug on the clutch engaging the recess to
5 limit the movement of the gear relative to
the clutch and a manually operated worm
engaging the gear to rotate the same.

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

HENRY E. MORTON.

Witnesses:

PALMER A. JONES,
LUTHER V. MOULTON.