(No Model.) 2 Sheets—Sheet 1.

J. S. WORTH.

PLATE TURNER FOR ROLLING MILLS.

No. 591,712. Patented Oct. 12, 1897.

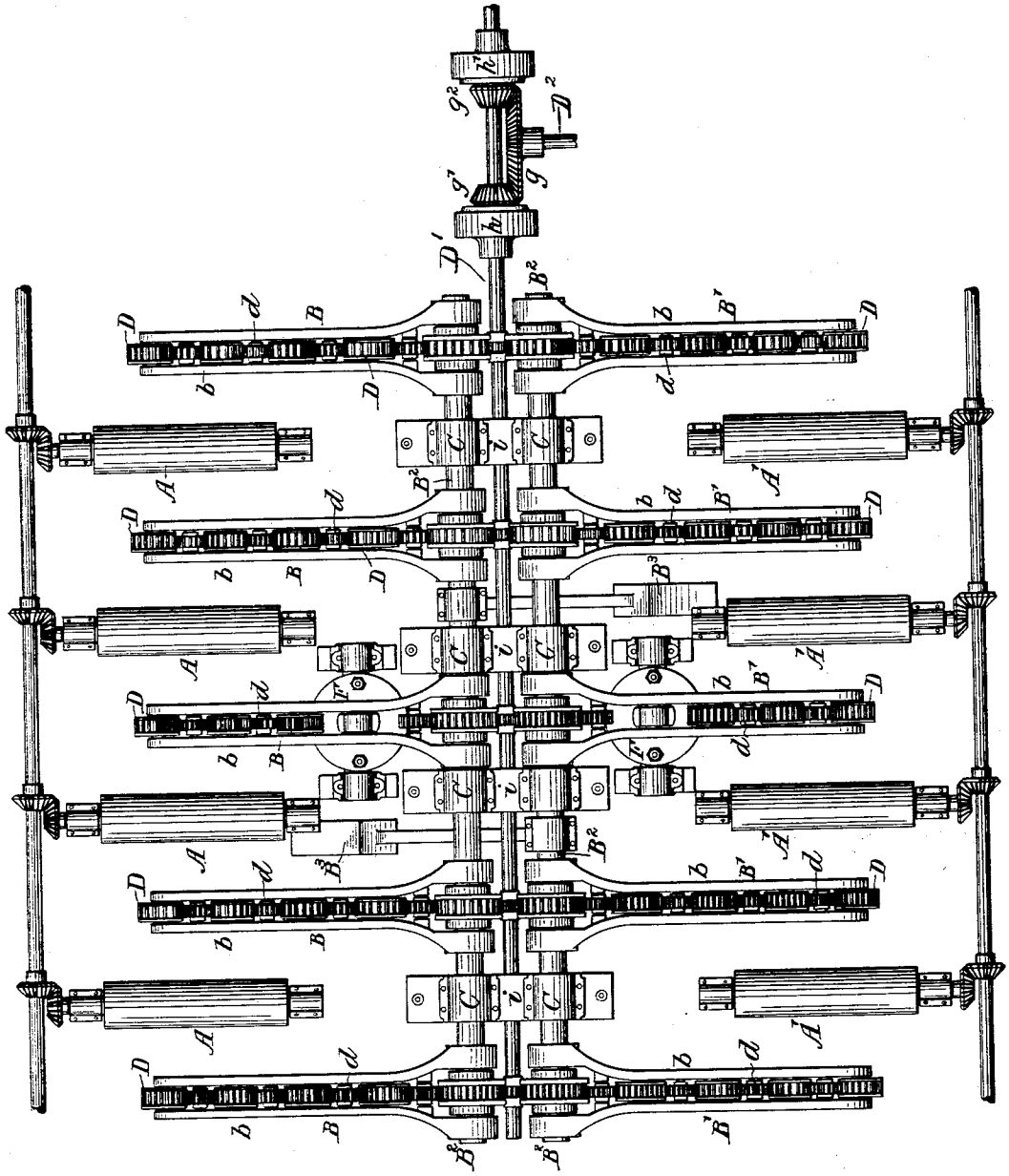


FIG. 1.

Witnesses:
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C. D. Goodwin

Inventor:
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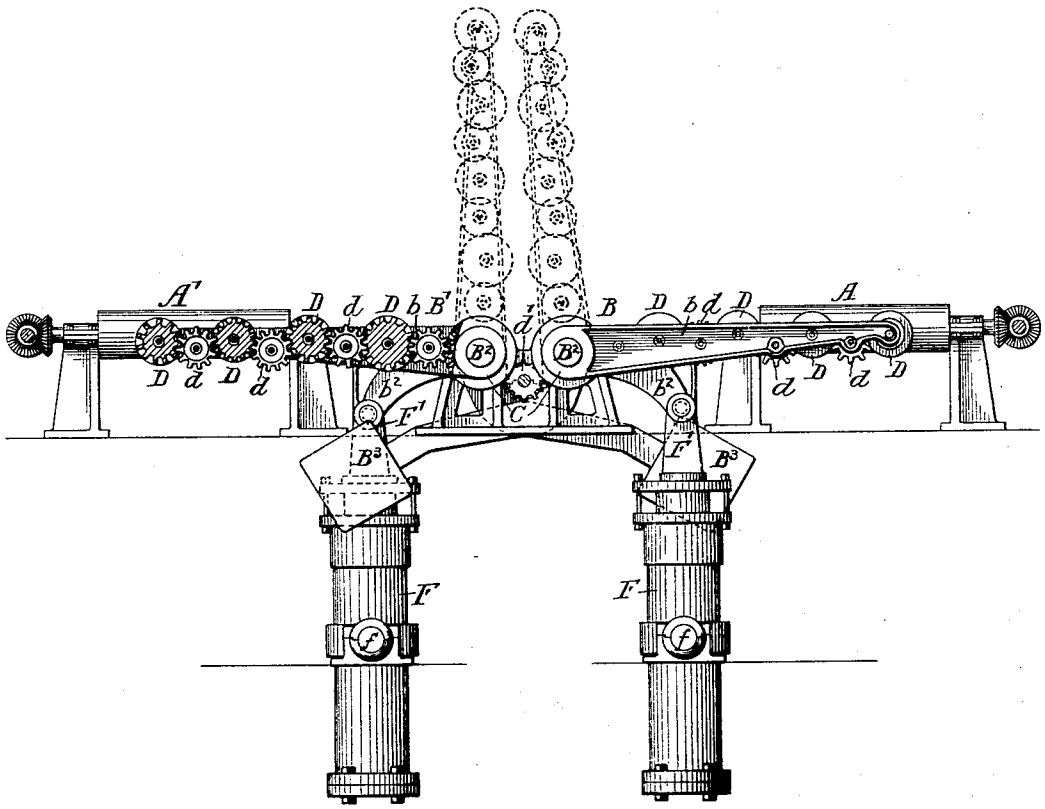
(No Model.) 2 Sheets—Sheet 2.

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No. 591,712. Patented Oct. 12, 1897.

FIG. 2.



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UNITED STATES PATENT OFFICE.

JOHN S. WORTH, OF COATESVILLE, PENNSYLVANIA.

PLATE-TURNER FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 591,712, dated October 12, 1897.

Application filed September 1, 1896. Serial No. 604,554. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. WORTH, a citizen of the United States, and a resident of Coatesville, Pennsylvania, have invented certain Improvements in Plate-Turners for Rolling-Mills, of which the following is a specification.

The object of my invention is to construct an apparatus by which rolled plates can be turned and inspected after they leave the rolls, and preferably while in transit on the tables, and can also be transferred from one table to another.

In the accompanying drawings, Figure 1 is a plan view of my improved plate-turning apparatus, and Fig. 2 is an end view, partly in section.

A are the rollers of the table extending from the rolling-mill, and A′ are rolls of a continuation of the table. My apparatus is mounted between these two sets of rolls and so arranged that the plate can be turned over from the rollers A onto the rollers A′, so that both sides of the plate can be inspected or the plate can be shifted from one set of rolls to the other without turning, as fully described hereinafter.

B B′ are two platforms, in the present instance made up of a series of arms *b*, mounted on rock-shafts B^2, adapted to bearings C. These rock-shafts are arranged parallel to one another and are adjacent to each other, so that when the platforms are turned up, the rock-shafts acting as a pivot, the two platforms will assume the position shown by dotted lines in Fig. 2, so that a plate carried by one can be readily transferred to the other when the platforms are in the vertical position. In operating the platforms I so elevate the one to receive the plate that it will be a little off the vertical line, so that when the plate is carried by the other table it will fall onto the receiving-platform without the aid of the operator, and when the platforms assume the position shown by full lines in Fig. 2 the plate will be on the platform B′ and inverted, so that the under side of the plate can be examined as well as the top side.

F F are two cylinders trunnioned at *f* in bearings *f′*. In the cylinders are the plungers F′, connected to brackets b^2, projecting from the under side of the platforms. These cylinders are provided with suitable valve mechanism and fluid, (either steam, compressed air, or gas,) which under pressure will turn the platforms on their pivots.

I preferably counterbalance the table by weighted arms B^3. (Shown clearly in Figs. 1 and 2.)

When it is wished to use the apparatus only for turning plates, plain arms may be used, but where it is wished to transfer the plates from one platform to the other or move the plate laterally on either platform without turning then I provide each arm with a train of rollers D, each roller having gear-teeth, and in between the rolls are intermediate pinions *d*. The arms of the platform may be set wider apart and the rollers D lengthened to any desired limit, so that one set of rollers may form a platform when preferred. The trains of gears are driven from a central shaft D′, provided with pinions *d′*, which mesh with the first wheels of the train on each arm. The shaft D′ is geared to a driving-shaft D^2 through the medium of clutches *h h′* and gears *g g′* g^2. The clutches *h h′* are fast on the shaft D′, while the bevel-gears *g′* g^2 are loose on the shaft. By this construction the shaft can be driven in either direction, so that a plate on one platform can be shifted without turning onto the other platform.

The platforms when in the normal position, as shown in Fig. 2, are slightly below the rollers of the table, so that a plate can be rolled in position over the arms of the platform, and when in position the platform can be raised, as described above, to turn the plate, or when it is wished to shift the plate from one platform to the other each platform is slightly elevated, so that the plate will be carried by the rollers of the arms and not by the rollers of the table. The gear-train is then set in motion and the plate is shifted from one platform to the other, or a single platform with the driven rollers may be used in connection with a single-roller table for transferring plates laterally from the table to any desired place.

i are center bearings which support the plate on edge when it is being shifted from one platform to the other. These bearings in the present instance form part of the main bearings for the rock-shafts, although they

may, in some instances, be formed on independent standards without departing from my invention, and may be made concave in shape, to better steady the lower edge of the plate, instead of flat, as shown.

I claim as my invention—

1. In an apparatus for turning or transferring plates, the combination of a platform pivoted at one side, with means for elevating the platform on the pivots, and one or more rows of driven rollers on said platform, substantially as described.

2. The combination in apparatus for turning plates, of the two platforms, a pivot at one side of each platform, and means for turning the platforms on their pivots so as to bring them up face to face, with a space between them when in a vertical position and for turning the platform carrying the plate past the center, whereby a plate carried by one platform can be transferred to the other platform, substantially as set forth.

3. The combination of the two platforms, pivots therefor, said pivots being arranged at the adjacent edges, independent mechanism for turning the platforms, a center bearing on which the plate rests, when turned from one platform to the other, substantially as described.

4. The combination in apparatus for turning plates, of the two platforms, a pivot at one side of each platform, the platforms being so arranged that when turned to a vertical position they will be face to face with a space between them, and independent means for raising and lowering each platform, so that the one carrying the plate can be turned past the center to transfer the plate to the other platform, substantially as described.

5. The combination of the delivery-table of a rolling-mill, rollers thereon, a platform consisting of a rock-shaft and a series of arms projected between the rolls of the delivery-table, means for elevating the platform on the pivots, a pivoted platform arranged adjacent to the aforementioned platform, and consisting of a rock-shaft and arms, rollers between the arms forming continuation of the delivery-table of the rolls, and means for operating the said platform, so that a plate can be turned from one portion of the delivery-table to the other, substantially as described.

6. The combination of the pivoted platform, means for turning the same on its pivots, a train of rollers on the platform, a second platform adjacent to the aforementioned platform, pivots therefor, and means for turning it on the pivot, a train of rollers on the platform, and means for operating the trains of both platforms, so that a plate can be shifted from one platform to the other, without turning, substantially as described.

7. The combination in an apparatus for turning or shifting plates, the same consisting of two platforms pivoted adjacent to each other, each platform made up of a series of arms mounted on a rock-shaft, rollers on each arm, geared entrain, a central shaft, gears on said shaft meshing with the trains on the several arms, and means for turning the platforms on their pivots, so that a plate can be either shifted from one platform to the other by setting the rollers in motion, or turned and shifted by turning the platforms on their pivots, substantially as described.

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

JOHN S. WORTH.

Witnesses:
W. T. JAMES,
J. L. HUGHES.