(No Model.) 2 Sheets—Sheet 1.

D. B. OLIVER.

FEED TABLE FOR ROLLING MILLS.

No. 386,412. Patented July 17, 1888.

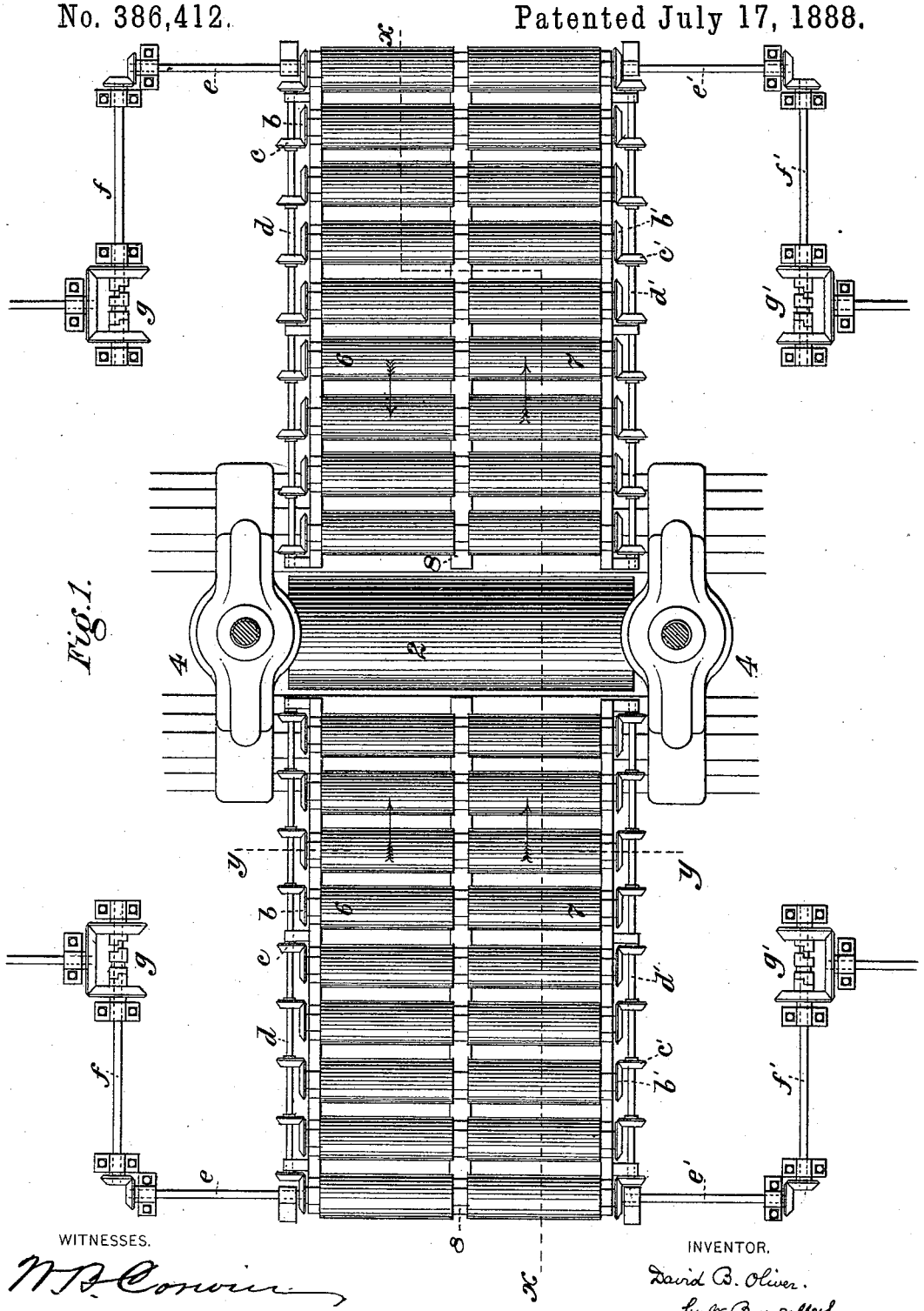

Fig. 1.

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Fig. 2.

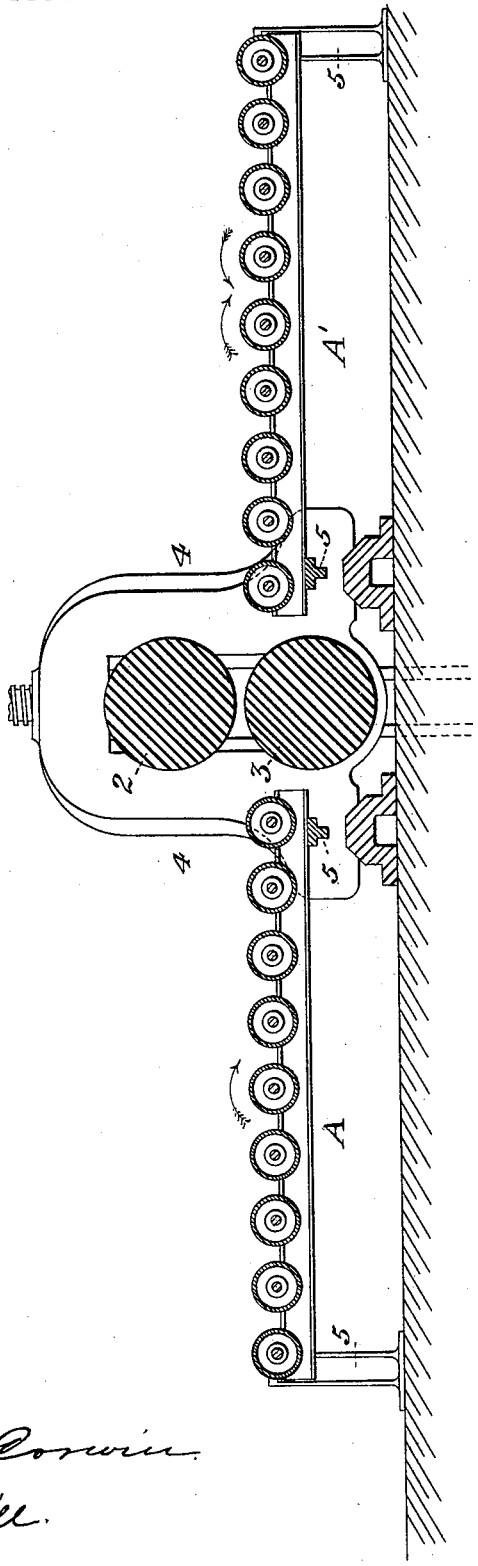
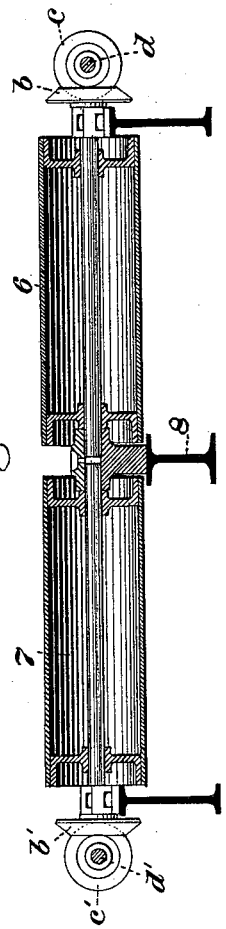


Fig. 3.



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UNITED STATES PATENT OFFICE.

DAVID B. OLIVER, OF ALLEGHENY CITY, PENNSYLVANIA.

FEED-TABLE FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 386,412, dated July 17, 1888.

Application filed May 17, 1888. Serial No. 274,200. (No model.)

To all whom it may concern:

Be it known that I, DAVID B. OLIVER, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Feed-Tables for Rolling-Mills; and I do hereby declare the following to be a full, clear and exact description thereof.

In rolling iron or steel plates the metal slab or pile from which it is to be made is usually first passed lengthwise through the rolls once or twice, then turned at right angles to its first position and passed crosswise through the rolls a sufficient number of times to bring it nearly to the desired width for the finished plate. It is then "cornered" and passed through the rolls diagonally, and then cornered again and passed again through diagonally. This is done to square the corners of the sheet and prevent waste in shearing. It is then turned so that the intended longitudinal middle line of the plate shall be at right angles to the rolls, and in this position it is passed through the rolls a sufficient number of times to reduce it to the desired thickness. The metal is thus turned while on the feed-table of the rolls and the work has heretofore been done by manual labor of roll-hands. My invention is designed to provide means for doing this work mechanically. I believe that by the use of the apparatus which I have devised the metal can be shifted on the table very rapidly and with a minimum of labor. The apparatus is also simple and inexpensive in its construction, and is correspondingly easy and effective in its operation.

The invention is based on the principle that when an object—such as a billet—is subject to the action of moving supporting-surfaces—such as rollers—acting on it with the same velocity at all points, the billet will be carried forward in the same position as when placed on the rollers; but that if these rollers are caused to act unequally on the billet, as if one side of the supporting-surfaces be stationary while the other side be driven, or if one side be driven in one direction and the other driven in a contrary direction, the billet will be turned horizontally in a direction away from the side on which the driving force is applied in one case and in the other case in a direction dependent upon the motions of the supporting-surfaces.

My invention consists in a practical embodiment of this principle in a feed-table composed of a series of feed rollers arranged side by side, so as together to support the piece, and so geared that they may be driven at the same rate of speed in the same direction, and may also be driven in contrary directions or at different rates of speed.

I will describe my invention with reference to the accompanying drawings, in which—

Figure 1 is a plan view of a set of rolls provided with my improved feed-table. Fig. 2 is a vertical longitudinal section thereof on the line *x x* of Fig. 1. Fig. 3 is a vertical cross-section through the feed-table on the line *y y* of Fig. 1.

Like symbols of reference indicate like parts in each.

In the drawings I have shown my invention applied to a set of two-high rolls, and the feed-tables are therefore not movable vertically, as they would be were they used in connection with a set of three-high rolls. I desire to premise, however, that with obvious mechanical changes in gearing, such as will suggest themselves to those skilled in the art, the invention may be applied to feed-tables which are movable up and down for the purpose of transferring the metal from one pass to another.

So far as the essential features of the invention are concerned they are clearly illustrated in the drawings, and the apparatus may be variously modified to suit the needs of the particular work for which it is intended.

In the drawings, 2 3 are the rolls, which are mounted in the usual way in housings 4. On each side of the rolls are the feed-tables A A′, the side frames of which, when not designed to be movable upwardly, are permanently supported by pedestals or supports 5. As shown in Fig. 1, each feed-table is composed of two sets of feed-rollers, 6 and 7, which are arranged side by side, the rollers being journaled at the ends in the side rails of the table-frame and in a central rail, 8. The two sets of rollers of which each table is composed are driven independently, or by separate gearings. Thus the outer ends of the rollers of the sets 6 are provided with pinions *b*, which are in gear with pinions *c* on a shaft, *d*, driven from counter-shafts *e* and *f*. By means of suitable clutch-

gearing, *g*, of the well-known sort, these shafts and pinions may be caused to rotate in either direction, or may be stopped at the will of the operator. In like manner the outer ends of the other sets of rollers, 7, are connected by pinions *b' c'* and shafts *d' e' f'* with a second clutch, *g'*, by the operation of which gearing and clutches the two sets 6 and 7 of rollers of the tables may be driven in the same direction, or may be reversed to cause the sets to move in contrary directions, or one set may be stopped and the other driven. The gearings of both sets of rollers are preferably driven from the same engine or primary motive power, so that when the sets of rollers are driven in the same direction they may rotate at the same rate of speed.

The operation is as follows: In feeding the slab or pile to the rolls it is placed upon the table at the receiving side of the rolls, so that it shall rest upon both sets of rollers 6 and 7, and both these sets are then caused by action of the clutches to rotate in the same direction. The effect of this is to move the billet forward in right lines into the bite of the rolls, and when it is received by the table on the opposite side of the rolls it can be passed back between the rolls (if they be reversible) by reversing the direction of both sets of feed-rollers. If it be desired, for any reason, to turn or quarter the slab or pile horizontally on the feed-table, this may be done by causing the sets of rollers composing the feed-tables to rotate in opposite directions, in which case the slab or pile will be turned very rapidly, or by checking one set of rollers and allowing the other set to rotate, in which case the slab or pile will be turned in the direction of the stationary set. By thus operating the feed-rollers the slab or pile may be shifted on the table or moved forward or backward thereon, as occasion may require. The device is especially applicable to mills for rolling plates or slabs of metal which do not have to be turned over, though it may be used for rolling other sorts of iron, and, if desired, the tables may be supplied with suitable shifting devices or manipulators for tipping the piece or moving it laterally on the feed-tables, as will be readily understood.

I claim—

1. A rolling-mill feed-table composed of two independently-driven sets of feed-rollers, substantially as and for the purposes described.

2. A rolling-mill feed-table composed of two independently-driven reversible sets of feed-rollers, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 11th day of May, A. D. 1888.

DAVID P. OLIVER.

Witnesses:

W. B. CORWIN,

THOMAS W. BAKEWELL.