

H. D. COOK.
 FEED DEVICE FOR ROLLING MILLS.
 APPLICATION FILED SEPT. 5, 1912.

1,054,748.

Patented Mar. 4, 1913.

2 SHEETS-SHEET 1.

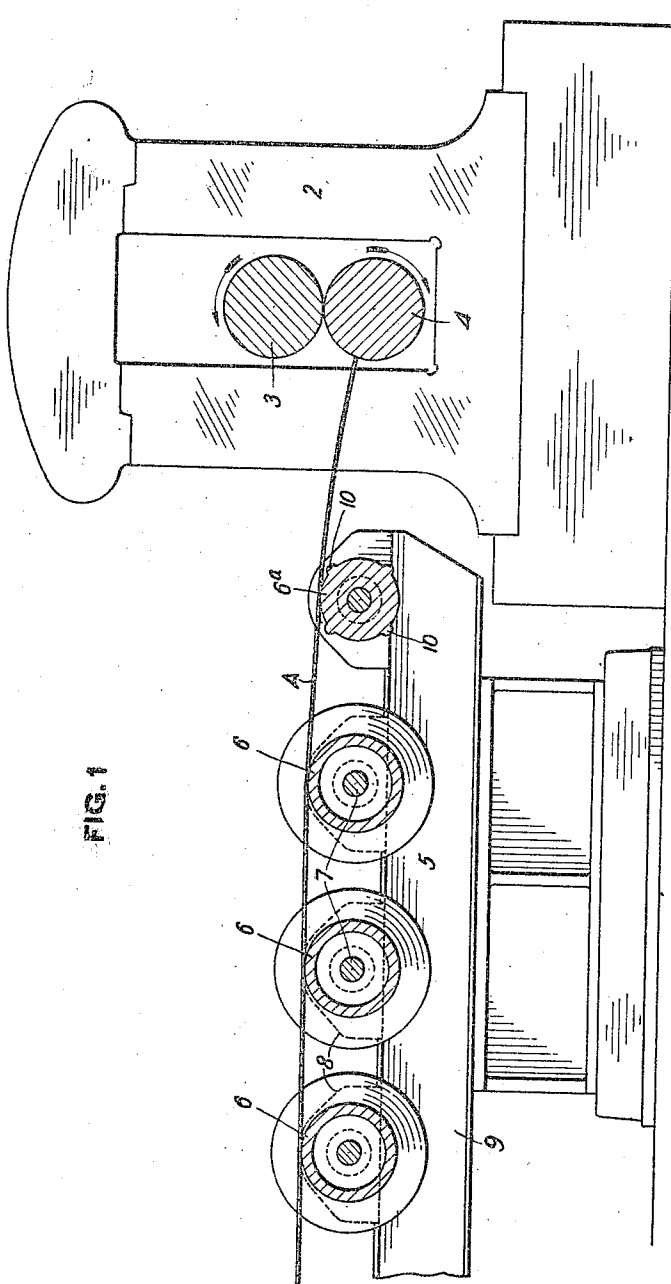


FIG. 1

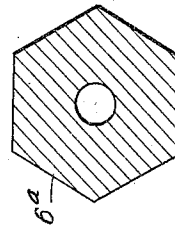


FIG. 4

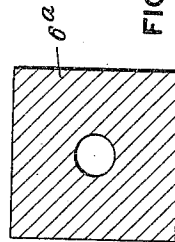


FIG. 3

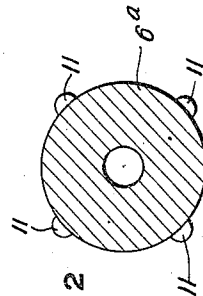


FIG. 2

WITNESSES

R. Little
Chas. L. Osterman

INVENTOR

H. D. Cook
by Lincoln B. Fuller
his Attorneys

H. D. COOK.
 FEED DEVICE FOR ROLLING MILLS.
 APPLICATION FILED SEPT. 5, 1912.

1,054,748.

Patented Mar. 4, 1913.

2 SHEETS-SHEET 2.

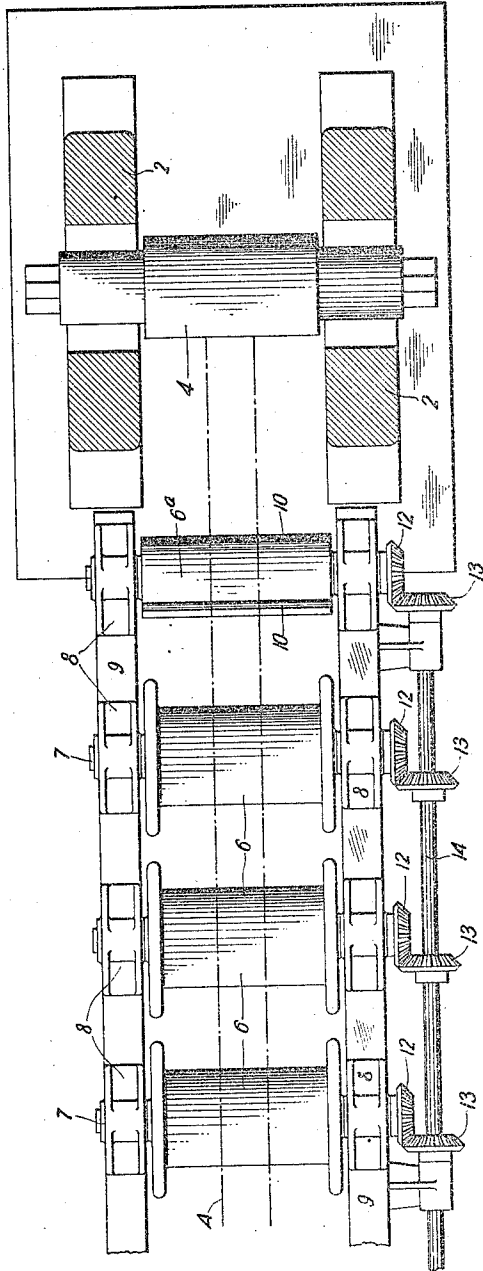


FIG. 5

WITNESSES

Chas. Foxterman
R. D. Little

INVENTOR

H. D. Cook
by Lucius B. Fuller
his Attorney

UNITED STATES PATENT OFFICE.

HOWARD D. COOK, OF ELYRIA, OHIO.

FEED DEVICE FOR ROLLING-MILLS.

1,054,748.

Specification of Letters Patent.

Patented Mar. 4, 1913.

Application filed September 5, 1912. Serial No. 718,685.

To all whom it may concern:

Be it known that I, HOWARD D. COOK, a citizen of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have invented a new and useful Feed Device for Rolling-Mills, of which the following is a specification.

My invention relates to apparatus used in handling and conveying metal between the successive passes of the rolling mills in which the material being rolled is elongated and reduced in thickness, and the invention more particularly relates to the apparatus used in handling and conveying the material in manufacturing long and relatively thin metal strips such as pipe skelp. In rolling such materials with the apparatus used heretofore it is frequently necessary for an operative to use a bar to lift or pry the forward or entering end of the material being rolled into a position in which the end of the material will enter the bite of the reducing rolls, this being effected by an expenditure of labor and at the cost of an expensive interruption or delay in the rolling operations.

One object of my invention is to provide apparatus for handling such materials having novel means whereby the advancing or forward end of the material being rolled is moved in such manner as will automatically bring it into position to enter between the reducing rolls without the necessity of manual assistance or interruptions and delays in the rolling operations.

Referring to the accompanying drawings forming part of this specification, Figure 1 is a sectional elevation showing a stand of reducing rolls and a delivery table by which the materials are handled and conducted to the rolls constructed and arranged in accordance with my invention. Figs. 2, 3 and 4 are detail sectional end elevations, on a larger scale, showing modifications in the construction of the agitator forming part of this invention. Fig. 5 is a plan partly in section of the apparatus shown in Fig. 1.

In the drawings 2 designates the roll housings of the usual construction having a two-high stand of reducing rolls 3 and 4 mounted in the windows thereof in the usual manner. The rolls 3 and 4, which form one of the stands of rolls in a continuous mill, rotate at all times in the direction indicated by the arrows and a feed table 5 is provided

in the rear thereof on which the materials being rolled are moved lengthwise to the entering side of the reducing rolls 3 and 4.

The feed table 5 may be of the old and well known construction in which a series of feed rollers 6 have shafts 7 on the opposite ends of which the rollers are mounted in bearings 8 carried on the side frames 9 of the feed table. One end of each of the shafts 7 is provided with a bevel driving gear 12 which meshes with a bevel driving gear 13 on a line shaft 14 extending lengthwise alongside one side of the roller table, the line shaft being driven through slow-down gears by a suitable motor in the usual and well known manner. The motor and slow down gears being old and well known, and not forming part of this invention, are not shown.

The feed rollers 6 may be grooved or provided with annular flanges to assist in maintaining the materials being rolled in alignment with the several passes in the reducing rolls when the rolls are provided with a series of grooved passes or may have plain, cylindrical faces as shown.

The end roller 6^a of the feed table or the feed roller nearest to the reducing rolls 3 and 4, is provided with a series of ribs 10 which extend lengthwise parallel with the axis of the feed rollers as shown in Fig. 1.

Instead of having the series of four ribs 10 as shown in Fig. 1, a plurality of projecting knobs or pins 11 may be employed, as shown in Fig. 2, or a roller which is rectangular as shown in Fig. 3, or polygonal in cross section as shown in Fig. 4, may be employed to effect the same result.

In the operation of my improved apparatus the materials are reduced between the rolls 3 and 4 in the usual manner and are caused to travel lengthwise to the rolls on the rollers 6 of the feed table as heretofore. When the forward end of the thin, heated and very flexible blank A being rolled passes the end roller 6^a in traveling lengthwise to the rolls 3 and 4 its outer end will sag downwardly or in some cases be bent upwardly so that it oftentimes becomes necessary to lift or lower the forward end of the metal blank A into position to enter the bite of the rolls. With my improved apparatus, as the feed rollers 6 are rotated to deliver materials lengthwise, the forward end of each blank A, after passing the corrugated

or ribbed end roller 6^a on the roller feed table, will be alternately raised and lowered by this feed roller so that the extreme end of the material will be caused to move vertically across the bite of the reducing rolls 3, 4. As the other feed rollers 6 in the feed table are constantly acting to feed the material forwardly, such action together with the raising and lowering movement of the end feed roller 6^a will mechanically introduce the end of the material being rolled into the bite of the rolls 3, 4 and in this way prevent interruption in the forward movement of the materials on the roller feed table, and avoid the necessity of delays in the rolling operation otherwise necessary to permit of the movement manually of the end of the material into position to enter between the rolls.

The advantages of my invention will be apparent to those skilled in the art. The apparatus is simple and is easily kept in repair. By its use delays heretofore caused in effecting the entrance of the material between the reducing rolls are prevented and overcome and a continuous rolling operation is thereby assured.

My improved apparatus, while primarily intended for use on small mills in which the smaller sizes of skelp are rolled, is equally applicable to mills rolling the larger sizes of skelp, to plate mills, and to all mills rolling long, thin flexible materials.

Modifications in the construction and arrangement of the parts may be made without departing from my invention. The number of longitudinal ribs on the agitator roller on the end of the feed table and its location in the length of the feed table may be changed. The cross sectional contour of the agitator roller may be modified in vari-

ous ways, and other changes may be made within the scope of the appended claims.

While the invention is particularly adapted for use on rolling mills, it may be employed wherever it is desired to feed materials into the grasp of rotating members, such as rolls of various kinds, cutting or abrading cylinders, and the like.

I claim:

1. In a rolling mill the combination with the reducing rolls and a roller feed table for delivering material to said rolls, of a roller on said feed table having means whereby the end of the materials carried thereon is moved vertically in presenting said materials to the bite of said reducing rolls.

2. In a rolling mill the combination with the reducing rolls and a roller feed table for delivering material to said rolls, of a roller on said feed table having projections on the surface thereof whereby the end of the materials carried thereon is moved vertically in presenting said materials to the bite of said reducing rolls.

3. In a rolling mill the combination with the reducing rolls and a roller feed table for delivering material to said rolls, of a roller on said feed table having longitudinal ribs at intervals on the surface thereof whereby the end of the materials carried thereon is moved vertically in presenting said materials to the bite of said reducing rolls.

In testimony whereof, I have hereunto set my hand.

HOWARD D. COOK.

Witnesses:

E. P. SHOUP,
A. BISTRUP.