July 26, 1949. J. B. PICTON 2,477,083

STRETCHING MACHINE FOR FLATTENING METAL STRIPS

Filed April 27, 1948 4 Sheets-Sheet 1

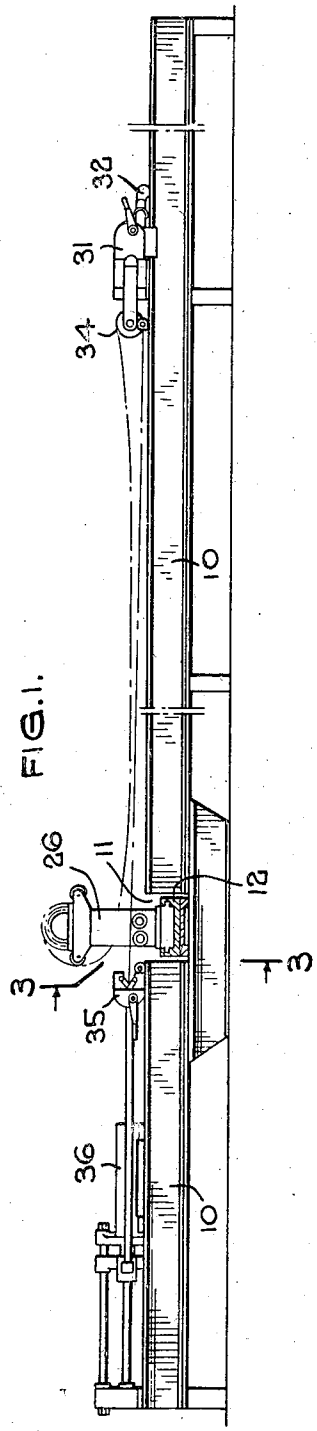


FIG. 1.

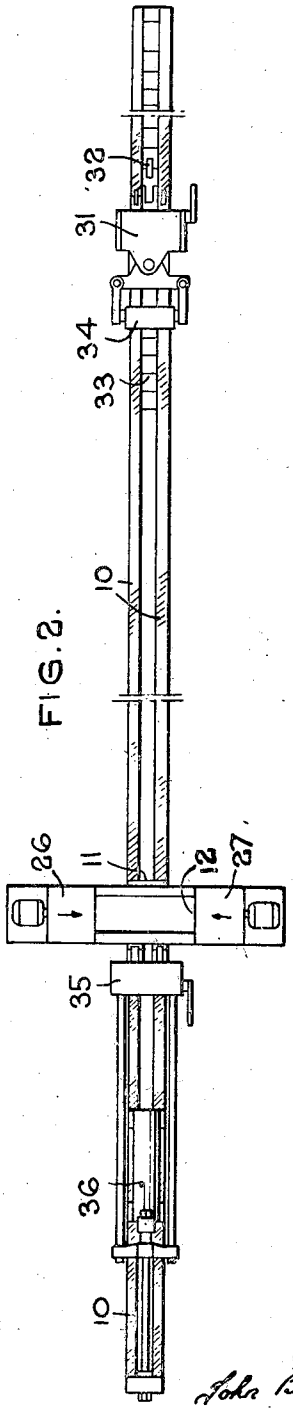


FIG. 2.

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AGENTS

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STRETCHING MACHINE FOR FLATTENING METAL STRIPS

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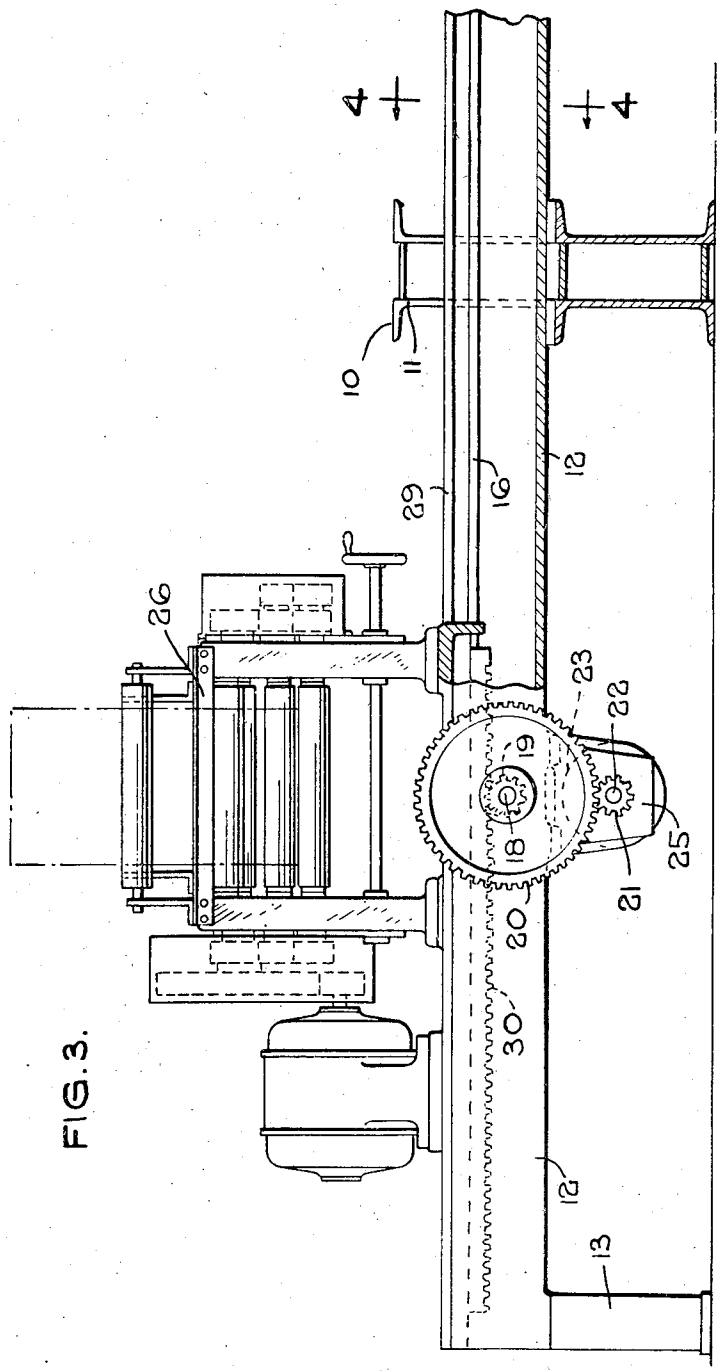


FIG. 3.

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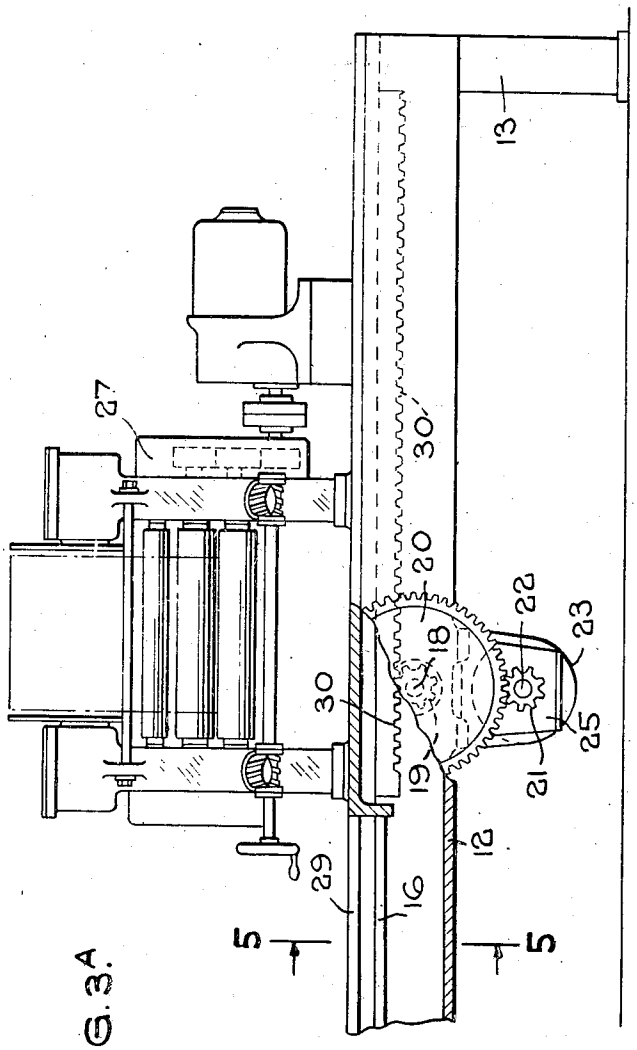


FIG. 3A.

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STRETCHING MACHINE FOR FLATTENING METAL STRIPS

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FIG.4.

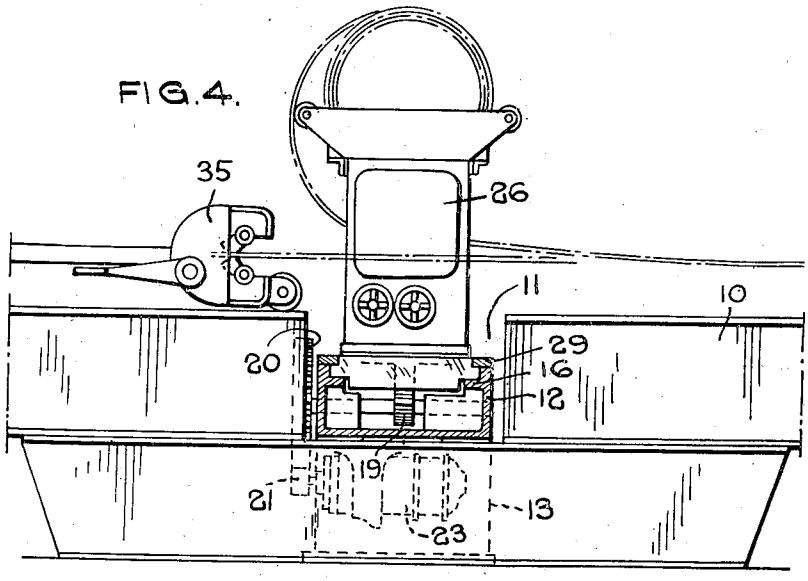
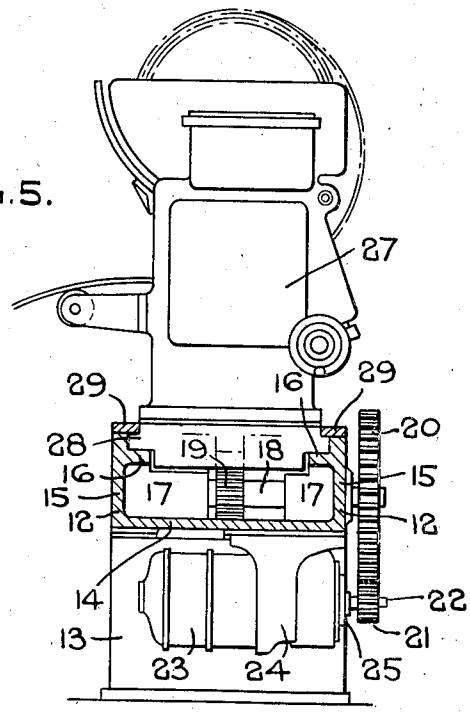


FIG.5.



INVENTOR
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Patented July 26, 1949

2,477,083

UNITED STATES PATENT OFFICE

2,477,083

STRETCHING MACHINE FOR FLATTENING METAL STRIPS

John Burley Picton, Wolverhampton, England, assignor to Joshua Bigwood & Son, Limited, Wolverhampton, England

Application April 27, 1948, Serial No. 23,456
In Great Britain April 28, 1947

1 Claim. (Cl. 153—35)

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This invention relates to stretching machines for flattening metal strips, the machine comprising an elongated bed in which is a gap, transverse guides in the gap, and an uncoiler device mounted to move in the guides, the bed of the machine being provided at a position spaced away from the gap with a device which may be adjustable along the length of the bed and which includes a drum mounted on a horizontal axis, or a gripper for one end of the strip, the bed of the machine having at the opposite side of the gap a gripping device, power-operated means being provided for increasing the distance between the drum and the gripping device, or between the two grippers. The arrangement is such that a coil of strip metal can be uncoiled from the uncoiler when situated in the gap, the end of the strip being taken over the drum and brought back along the bed, both ends of the strip being secured in the gripper, or opposite ends of the strip may be secured in the two grippers, and after the uncoiler has been moved along the guides away from the bed, stretching is effected by increasing the distance between the drum and the gripper, or between the two grippers. Such machines are disclosed in U. S. A. specifications, Serial Nos. 753,932, issued March 22, 1948, as Patent No. 2,464,888, and 570,107, the latter issued September 14, 1948, as Patent No. 2,449,507.

The object of the present invention is to provide an improved construction.

According to the present invention transverse guides are provided in the gap in the bed extending to both sides of the bed, and mounted to move on these guides at opposite sides of the bed I provide separate uncoiler and recoiler units, so that after the strip has been uncoiled from the uncoiler and passed over the drum, or secured to one of the grippers, the uncoiler can be moved out of the gap to one side of the bed, and both ends of the strip secured in the gripper, or the remaining end of the strip secured in the second gripper, and stretching can take place, after which the ends of the strip can be released from the gripper, or grippers, and the recoiler can be moved along the guides into the gap and the strip recoiled thereby while a fresh strip is being loaded onto the uncoiler at the opposite side of the gap ready for the next operation.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a view in side elevation;

Figure 2 is a plan;

Figure 3 is a view in section on line 3—3 of Figure 1;

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Figure 3A is a continuation of Figure 3;

Figure 4 is a section on line 4—4 of Figure 3; and

Figure 5 is a section on line 5—5 of Figure 3A.

Figures 3, 3A, 4 and 5 are shown to a larger scale than Figures 1 and 2.

In the construction illustrated the invention is shown as applied to the machine disclosed in specification No. 753,932, and the machine comprises an elongated bed formed by channel-section girders 10 arranged in parallel spaced relationship and suitably connected together. At a suitable position a gap 11 is provided in the bed and in this gap is mounted a transverse carrier 12, the carrier projecting at both sides of the gap. The carrier is supported at its ends upon legs 13, and the carrier is of channel section having a base 14 and sides 15 provided with inwardly-projecting flanges 16 which are placed somewhat below the tops of the sides. The carrier at opposite sides of the gap 11 is provided with two pairs of bearings 17, and mounted in each pair of bearings 17 is a shaft 18 carrying a pinion 19, the shaft 18 projecting through one side 15 of the carrier and having a reduced end on which is fixed a gearwheel 20. This gearwheel is engaged by another gearwheel 21 on a shaft 22 arranged parallel to the shaft 18 and extending below it. Each shaft 22 is the driving shaft of an electric motor 23 supported in a strap 24 secured to the underside of the carrier 12, and the shaft 22 also engages in a bearing plate 25 secured to the underside of the carrier. The motors 23 are thus adapted to drive the shafts 18 through the reduction gears 21, 20.

Mounted so as to slide on the flanges 16 of the carrier, one at each side of the gap 11, are an uncoiler unit 26 and a recoiler unit 27. Each of these units is provided with flanges 28 which slide on the flanges 16, and the flanges 28 are retained in position by strips 29 attached to the carrier.

The uncoiler unit 26 is constructed substantially as disclosed in specification No. 570,107, and it incorporates a drum for receiving the coil of metal and a number of flattening rollers between which the metal is passed, suitable means being provided for driving the drum and the rollers so as to uncoil the metal.

The recoiler unit 27 is constructed substantially as described in specification No. 570,107, and it incorporates a positively-driven drum onto which the metal can be recoiled. The lower part of the recoiler unit 27 is provided with flanges 28

which rest upon the flanges 16 of the carrier and are retained in position by the strips 29.

On the lower side of each of the units 26, 27 is fixed centrally a rack 30, and these racks are engaged by the pinions 19.

As in specification No. 753,932 the bed 10 is provided with an adjustable unit 31 having an anchor hook 32 which can engage with the teeth of a rack 33 mounted between the channel 10 forming the bed, and this unit carries a drum 34 over which the strip metal to be flattened is passed. The metal is passed over this drum and its two ends are mounted in a gripper 35 mounted on the bed at the other side of the gap 11. The gripper 35 has associated with it a hydraulic motor 36 whereby it can be moved towards and away from the drum 34.

In operation the uncoiler unit 26 is moved into the gap 11 by its motor 23, which rotates the pinion 19 and slides the unit 26 into the correct position. The strip is then uncoiled and passed over the drum 34 and back again and the two ends of the strips are mounted in the gripper 35. Before this is done the member 31 is adjusted along the bed and fixed by the anchor 32 to suit the length of the metal. When the metal strip has been uncoiled and passed over the drum 34 and the two ends secured in the gripper 35, the uncoiler unit 26 is moved back by its motor 23 into the position shown in Figure 2. Stretching is then effected by the hydraulic gear 36, and when stretching has been effected the two ends of the metal are released from the gripper 35 and the recoiler unit 27 is run into the gap 11 by operating its motor 23, which rotates its pinion 19 which engages its rack 30. When the recoiler unit is in the gap one end of the metal which has been flattened is taken to the recoiler unit and the recoiler unit is operated to recoil the strip, and at the same time a fresh coil of metal to be treated is mounted on the uncoiler unit 26, which is now at the side of the gap. When recoiling has been completed the recoiling unit is run out of the gap and the uncoiling unit 26 is run into the gap so that a fresh coil of metal can be treated.

What I claim then is:

A stretching machine for flattening metal strip comprising an elongated bed having a transverse gap a carrier in said gap projecting at both sides of the gap, said carrier providing guides, an uncoiler unit for the metal strip mounted to move along said guides, a recoiler unit for the metal strip mounted to move along said guides, means on the bed at a position remote from the gap including a drum over which the strip can be passed, means on the bed at the opposite side of the gap and near to the gap for gripping both ends of the strip, whereby the uncoiler can be moved into the gap and the leading end of the strip unwound and taken over the bed to the drum, passed over the drum and brought back over the bed to the gripper for both ends of the strip, stretching effected by moving the gripper and the drum apart, the uncoiler removed from the gap and the recoiler moved into the gap and one end of the strip placed in the recoiler and the strip coiled thereby while a new coil is being loaded on to the uncoiler.

JOHN BURLEY PICTON.

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