Feb. 24, 1953

R. E. ERICKSON

2,629,422

INSULATION CUFFER

Filed May 11, 1950

2 SHEETS—SHEET 1

Fig. 1

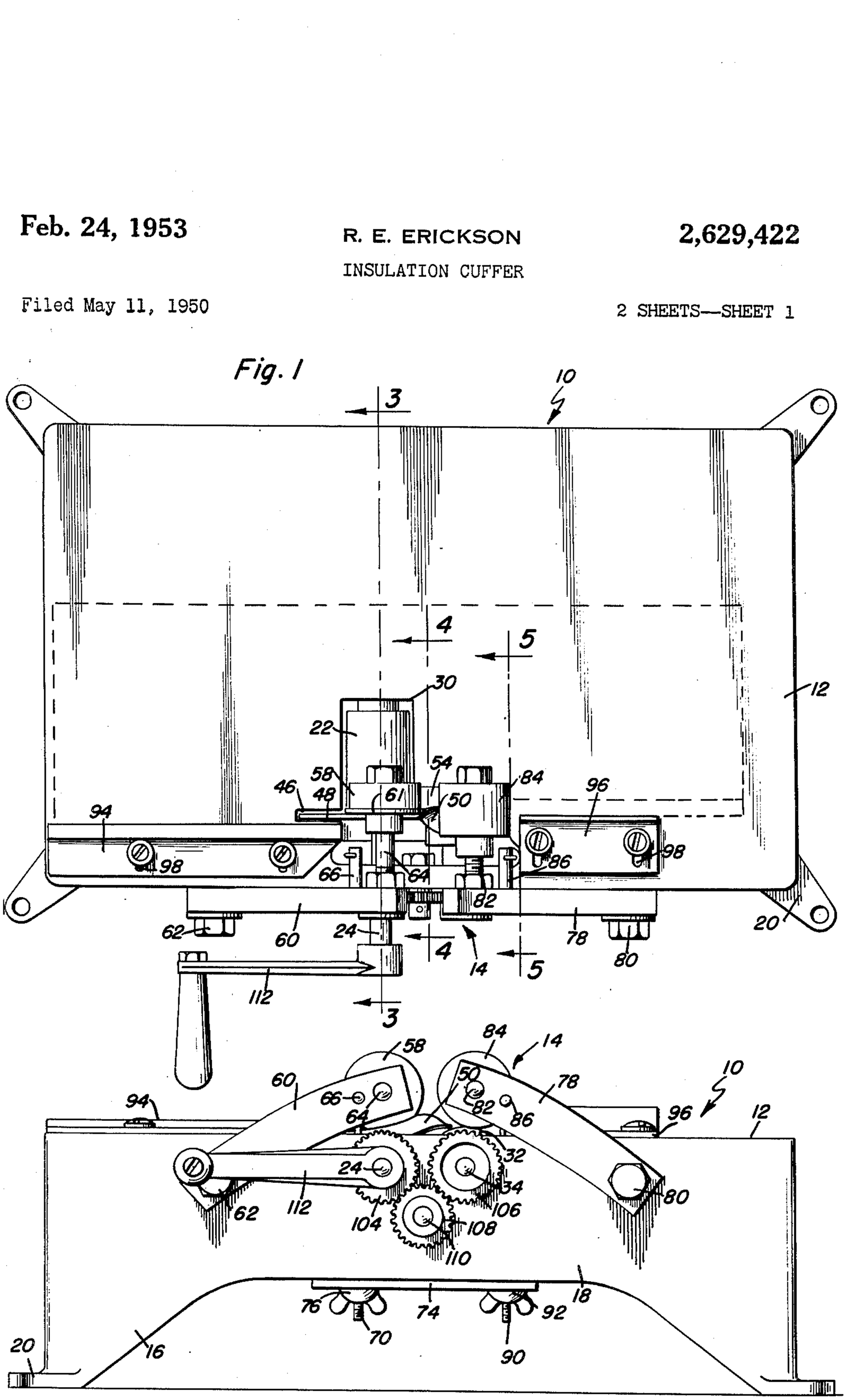

Fig. 2

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2 SHEETS—SHEET 2

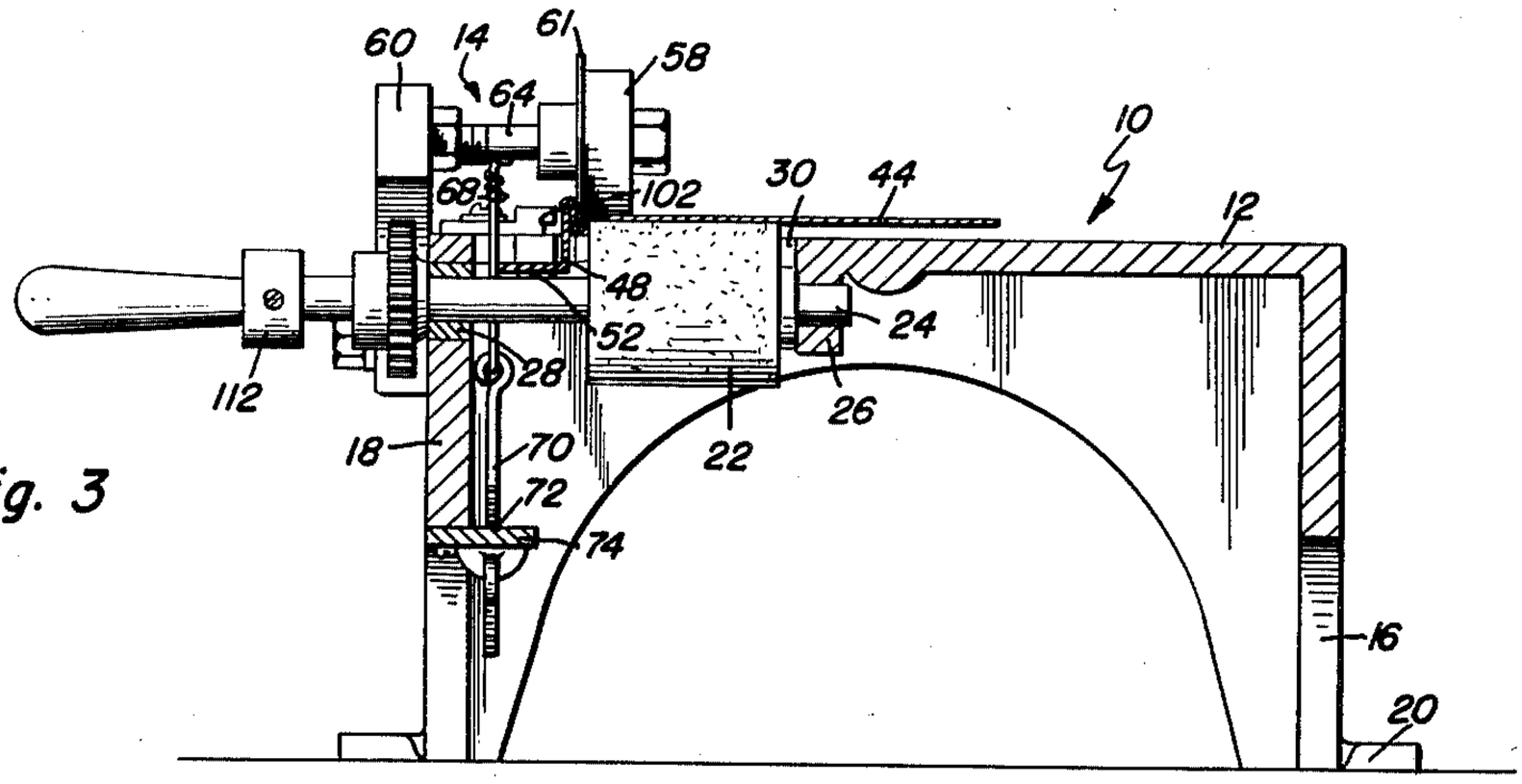

Fig. 3

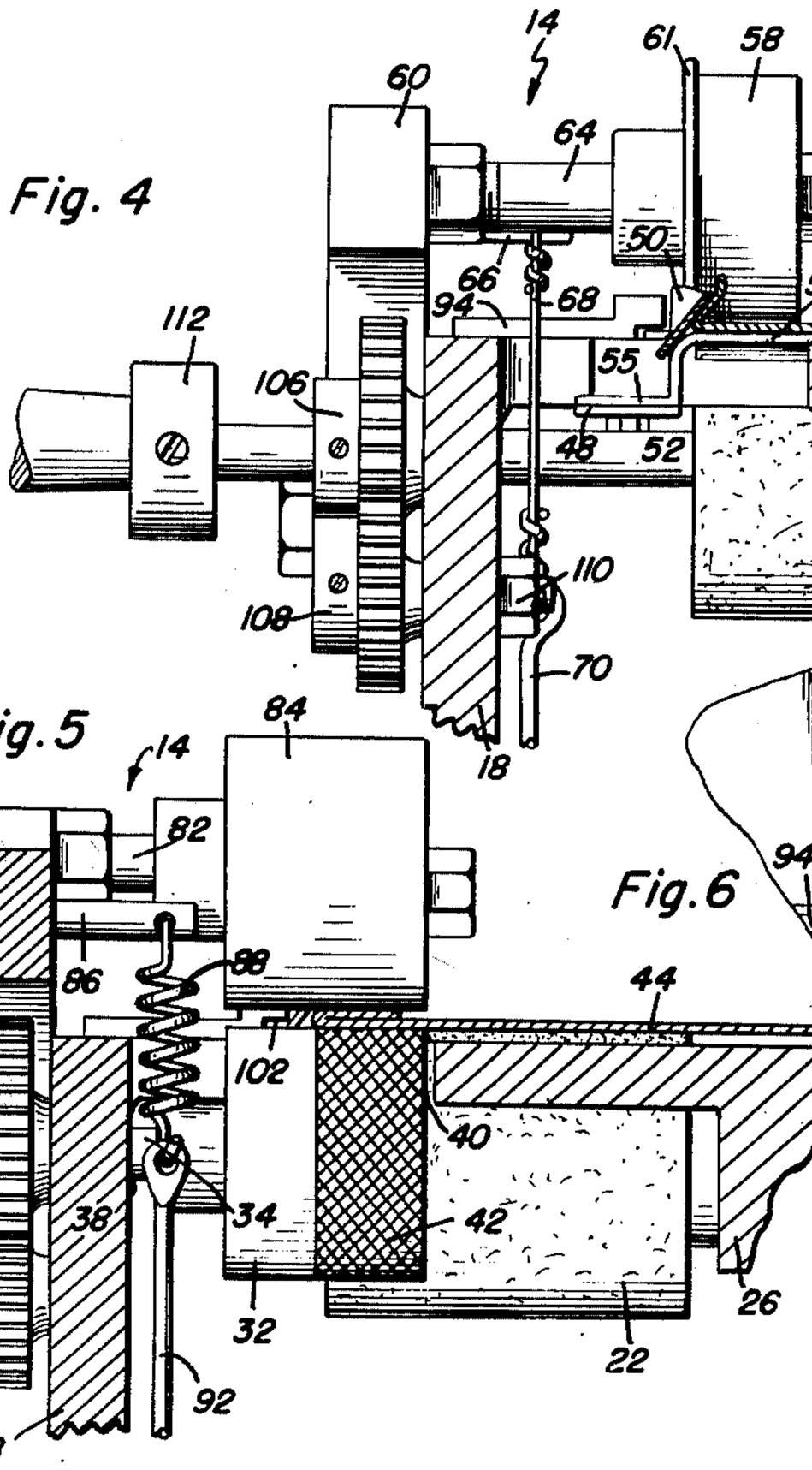

Fig. 4

Fig. 5

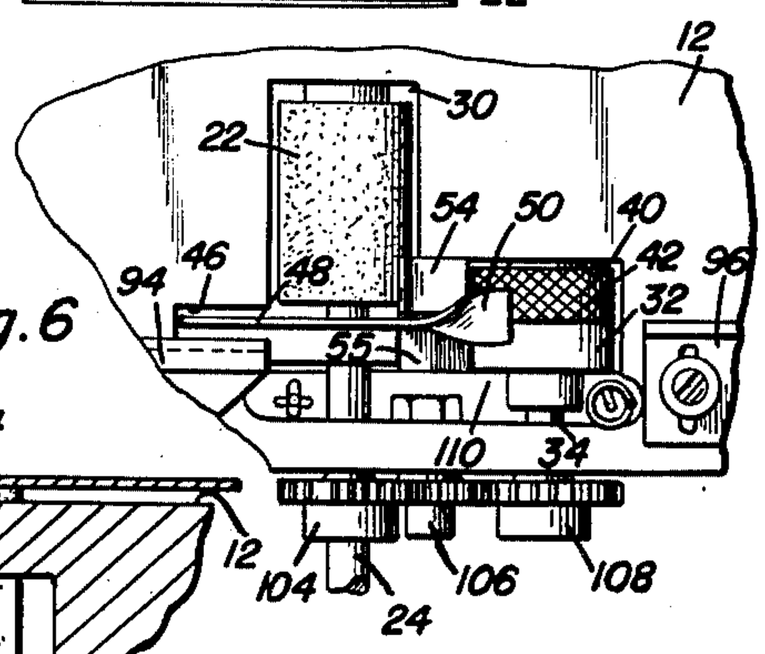

Fig. 6

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UNITED STATES PATENT OFFICE

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INSULATION CUFFER

Reynold E. Erickson, Chico, Calif.

Application May 11, 1950, Serial No. 161,365

6 Claims. (Cl. 153—28)

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This invention comprises novel and useful improvements in folding machines, and more particularly pertains to a device for infolding the edge of a strip.

An important object of this invention is to provide a strip infolding machine which can be used to infold strips of varying thickness and grades of material.

Another important object of this invention is to provide an infolding machine in accordance with the foregoing object in which the width of the infold can be readily varied.

Yet another object of this invention is to provide an infolding machine in accordance with the foregoing objects which is of simple construction yet durable and highly efficient for the purposes intended.

An important feature of this invention resides in the provision for upper and lower feed rolls and upper and lower pressing rolls which are laterally shiftable relative to each other, together with means yieldingly urging the upper and lower rolls of each set together.

An important feature of this invention resides in the provision for means for adjusting the pressure exerted by the means for urging the upper and lower rolls of each set together.

Another feature of this invention resides in the provision for an adjustable guide for a strip so that the width of infold on the strip can be varied.

These, together with various ancillary objects and features, are attained by this device, a preferred embodiment of which has been illustrated by way of example only in the accompanying drawings wherein:

Figure 1 is a top plan view of the device;

Figure 2 is a side elevational view of the infolding machine;

Figure 3 is a vertical sectional view taken substantially on the plane 3—3 of Figure 1 showing the scoring roll engaging a strip;

Figure 4 is a fragmentary vertical sectional view of the device taken substantially on the plane 4—4 of Figure 1 showing the edge of the strip being folded over after it is scored;

Figure 5 is a fragmentary vertical sectional view of the device taken on the plane 5—5 of Figure 1 showing the infolded edge of the strip being pressed; and

Figure 6 is a fragmentary top detail view with the upper folding and pressing rollers removed.

Referring now more specifically to the accompanying drawings wherein like numerals designate similar parts throughout the various views,

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it can be seen that the infolding machine, indicated generally by the numeral 10 consists of a platform 12 to which is attached an infolding mechanism 14.

The platform 12 may conveniently be provided with legs 16 and a downwardly depending side wall 18, which legs may be provided with laterally extending flanges 20 or the like by which the platform may be secured to a firm base.

The infolding mechanism consists of a feed roll 22 which preferably is formed of resilient material, the feed roll having an axle 24, which axle is journaled at its inner end in the bearing 26, which bearing is secured to or formed as part of the undersurface of the platform 12. The outer end of the axle 24 being journaled in, and projecting through the side wall 18 as at 28. A slot 30 is provided in the platform 12 so as to permit the upper surface of the feed roll 22 to project slightly above the platform.

A lower pressing roll 32 is also rotatably mounted on said platform, as by shaft 34. The shaft 34 is journaled, at its inner end in the bearing 36, not shown, the outer end being journaled in the side wall 18 as at 38 and projecting therethrough. A slot 40, similar to that prescribed for the feed roll 22 is also provided so that the pressing roll 32 may project slightly above the platform 12. The lower pressing roll may be knurled as at 42 so that the pressing roll will also aid in feeding a strip material 44, the knurls positively engaging the strip.

If the platform 12 is to be of moulded or cast material, a single longitudinal slot 46 in the platform 12 may be provided in order to simplify the molding process, the slot 46 providing a common aperture for purposes which will later become apparent. As can be ascertained from a consideration of Figure 6, the slot 46 communicates the outer ends of the slots 30 and 40 and terminates adjacent the side wall 18.

A substantially L-shaped rail 48 having a twisted portion 50 adjacent its rear end is secured to the platform 12 longitudinally of the slot 46, the portion 50 being formed by twisting the vertical leg of the rail 48 one quarter turn clockwise. This rail 48 may be secured to the undersurface of the platform 12 adjacent the forward end of the slot 46 as by bolts 52 which are received in threaded bores in the platform. In order to prevent the strip of material from underpassing the lower feed roll 32, a plate 54 is provided which plate has its opposite edges adjacent the periphery of the feed roll 22 and the pressing roll 32. For convenience in mounting, this plate may be

provided with a laterally offset portion 55 which is welded or otherwise secured to the horizontal leg of the L-shaped rail 48, the other end resting on the platform 12 as at 56.

Adjustably mounted relative to the feed roll 22, is an upper feed idler roll 58, a bending flange 61 being secured to or formed as part thereof. An arm 60, which is pivotally secured at one end as by bolt 62 to the side wall 18, is provided with a stub shaft 64 at its other end, which stub shaft rotatably receives the flanged idler roll 58, the arm 60 being so positioned as to support the idler roll 58 in vertical alignment with the feed roll 22. A pin 66 is secured to, and extends laterally of the arm 60, a wire 68 being secured to the free end of the pin 66. An eye bolt 70, or the like is attached to the other end of the spring 68, the eye bolt 70 extending through an aperture 72 in an anchor plate 74, which plate is secured to the side wall 18. A thumb screw 76 is provided for adjusting the tension of the wire 68 and consequently varying the pressure exerted by the roll 58 on the roll 22.

An arm 78, similar to the arm 60, is also pivoted as by bolt 80 to the side wall 18. The other end of the arm 78 is provided with a stub shaft 82 on which is rotatably journaled an idler pressing roll 84. A pin, 86, having one end secured to the arm 78, the other end having a spring 88 attached thereto, is provided. The other end of the spring 88 is attached to an eye bolt 90 similar to the bolt 76, which bolt is secured to the plate 74 by a wing nut 92.

Forward and rear strip guides 94 and 96 respectively are attached to the platform 12 longitudinally thereof. Transverse slots 98, which receive the guide securing bolts 100, are provided to permit lateral adjustment of the guides. The guides 94 and 96 preferably have a strip receiving recess 102 so that the strip will be laterally guided and at the same time be constrained from vertical movement relative to the guide.

A common driving means is provided for the feed and pressing rolls, which means may conveniently comprise preferably identical gears 104 and 106 which are respectively attached to the external projections of the axle 24 and the shaft 34. An idler gear 108 is rotatably secured to a stub shaft 110, so as to be constantly in mesh with the gears 104 and 106. A driving means such as a crank 112 is secured to one of the shafts. Obviously placement of the crank on the stub shaft 110 will cause the rolls to rotate reversely of the direction of rotation of the crank, attachment of the crank to the axle 24 or the shaft 34 causing rotation of the rolls in the same direction as the rotation of the crank.

In operation a strip of material 44 is placed in the forward guide 94 and fed to the feed roll 22. As can be readily ascertained from Figure 3, the bending flange 61 depresses the strip between the edge of the roll 22 and the rail 48, the rail 48 causing the edge of the strip to be bent substantially at right angles to the strip 44. The twisted portion 50 completes the infolding of the edge and as can be seen from Figure 4, the presser roll 42 and the idler roll 84 press the infolded edge of the strip 44.

Obviously the width of the infolded edge can be readily varied by adjustment of the guide 94. It is also believed apparent that the infolding device 10 will accommodate materials of varying grades and thickness in that the rolls are resiliently urged together to thereby automatically accommodate minor variations in the thickness.

From the foregoing the construction and operation of the device will be readily understood, and further discussion is accordingly believed to be unnecessary. However, since numerous modifications will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not desired to limit the invention to that shown and described, but all suitable modifications may be resorted to falling within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A folding machine comprising a support substantially vertically spaced, upper and lower feed rolls rotatably mounted on said support and having forward ends terminating in a common plane, one of said feed rolls having a bending flange on the forward end thereof intersecting the path of rotation of the other of said feed rolls, substantially vertically aligned upper and lower pressing rolls rotatably mounted on said support and spaced horizontally from said feed rolls, said pressing rolls being longitudinally offset from said feed rolls, the bending flange being disposed intermediate the ends of the pressing rolls, infolding means attached to said support, said infolding means comprising an elongated rail mounted on said support in front of the forward ends of said feed rolls and extending adjacent and parallel to the bending flange, said rail terminating short of said pressing rolls and including a twisted portion between the feed and pressing rolls intersecting the plane of the bending flange, guide means on said support being laterally offset from said elongated rail, the elongated rail being disposed between the guide means and the bending flange and the feed rolls being disposed between the guide means and the pressing rolls and driving means for said feed and pressing rolls.

2. The combination of claim 1 wherein said guide means is laterally adjustable relative to said support and said infolding means.

3. The combination of claim 1 wherein said bending flange is secured to said upper feed roll so as to lie between said lower feed roll and said rail-like portion and have its lower edge lie below the upper surfaces of said rail-like portion and said lower feed roll.

4. The combination of claim 1 wherein said upper feed roll and said upper pressing roll are pivotally attached to said support.

5. The combination of claim 4 including resilient means yieldingly urging said upper feed roll and said upper pressing roll into engagement with said lower feed roll and said lower pressing roll respectively.

6. The combination of claim 5 including means for adjusting said resilient means.

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