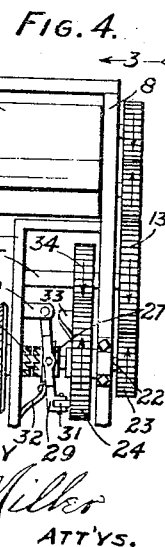
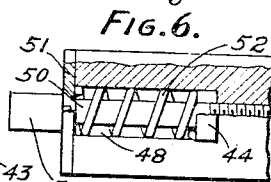
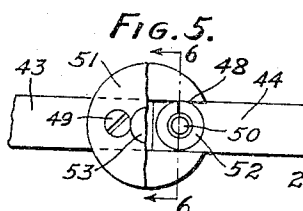
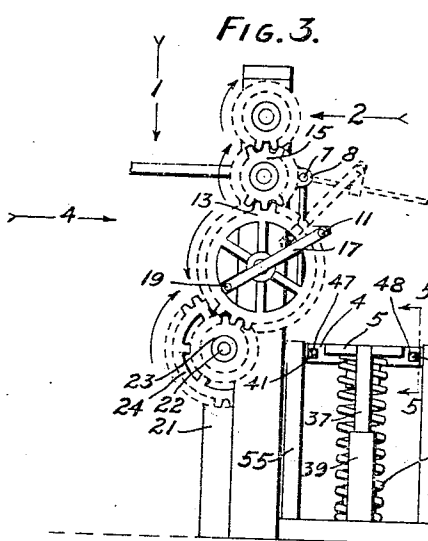
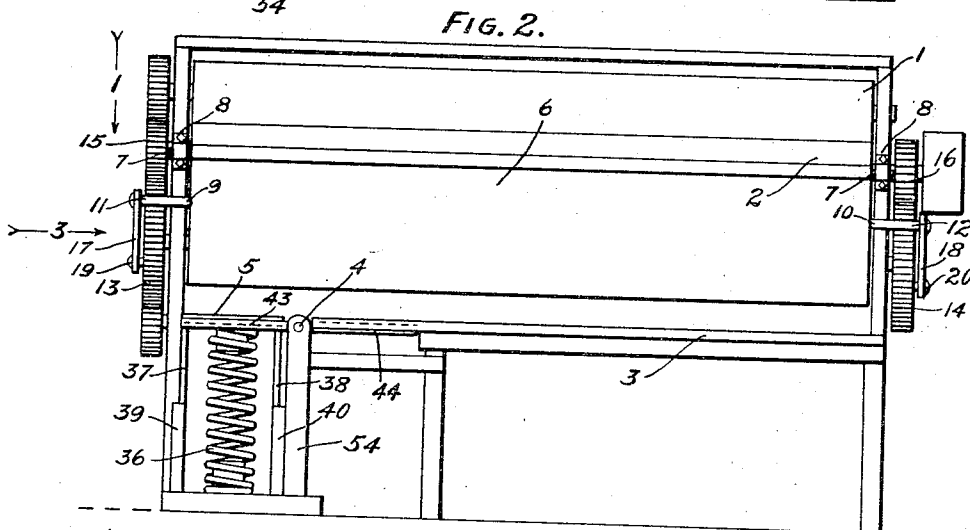
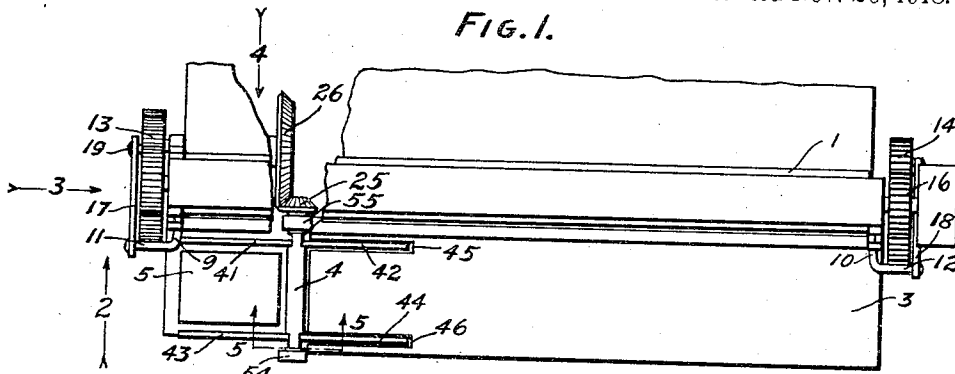


M. KELLEY.
FOLDING MACHINE FOR FLAT WORK.
APPLICATION FILED DEC. 4, 1917.

1,285,731.

Patented Nov. 26, 1918.



INVENTOR
MARGARET KELLEY
BY *Hazard & Miller*
ATT'YS.

UNITED STATES PATENT OFFICE.

MARGARET KELLEY, OF LOS ANGELES, CALIFORNIA.

FOLDING-MACHINE FOR FLAT WORK.

1,285,731.

Specification of Letters Patent.

Patented Nov. 26, 1918.

Application filed December 4, 1917. Serial No. 205,453.

To all whom it may concern:

Be it known that I, MARGARET KELLEY, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Folding-Machines for Flat Work, of which the following is a specification.

My object is to make a machine as an attachment to a mangle or to be built as a part of the mangle for folding flat work, such as sheets, table cloths, and the like, longitudinally and transversely as it comes from the finishing rolls of the mangle, and my invention consists in the novel features herein shown, described and claimed.

Figure 1 is a top plan view of a mangle provided with a folding machine in accordance with the principles of my invention, the view being taken in the direction indicated by the arrows 1 in Figs. 2 and 3.

Fig. 2 is a front elevation as seen looking in the direction indicated by the arrows 2 in Figs. 1 and 3.

Fig. 3 is a side elevation looking in the direction indicated by the arrows 3 in Figs. 1, 2 and 4.

Fig. 4 is a fragmentary rear elevation looking in the direction indicated by the arrows 4 in Figs. 1 and 3.

Fig. 5 is a fragmentary sectional detail on the lines 5—5 of Figs. 1 and 3.

Fig. 6 is a vertical sectional detail on the line 6—6 of Fig. 5.

The rolls 1 and 2 are the finishing or ironing rolls of a mangle for ironing flat work such as bed sheets, table cloths, and the like. The table 3 is rigidly mounted in a horizontal position to receive the flat work as it comes from between the rolls 1 and 2. A shaft 4 is mounted transversely at the left-hand end of the table 3, said table 3 being shown as substantially three-quarters of the length of the rollers 1 and 2. An extension table 5 is mounted normally on a level with the table 3 at the opposite side of the shaft 4, said extension table 5 completing the length of table for receiving the longest pieces of flat work.

An apron 6 is mounted upon pintles 7 extending into the frame 8 so that the apron will receive the flat work as it comes from between the rolls 1 and 2. The pintles 7 are substantially on a level with the center of the roll 2 and as close as practical to the surface of the roll so that the cloth coming be-

tween the rolls will pass over the upper edge of the apron 6 and downwardly. The apron 6 is of considerable width and swings freely from a vertical position, as shown in full lines in Fig. 3, to the substantially horizontal position shown in dotted lines. The lower edge of the apron 6 is a considerable distance above the table 3 so that as the sheet comes from the rolls and passes downwardly over the apron and the apron is vibrated over the table 3 the sheet will be piled upon the table and the apron may pass over the pile. Operating arms 9 and 10 extend forwardly from the ends of the apron 6 some distance from the pintles 7 and pintles 11 and 12 extend outwardly from the ends of the arms 9 and 10. Gears 13 and 14 are mounted at the ends of the frame in mesh with the gears 15 and 16 upon the ends of the spindle of the roll 2 and pitman rods 17 and 18 connect crank pins 19 and 20 carried by the gears 13 and 14 to the pintles 11 and 12, so that the apron 6 is vibrated from its vertical position to its horizontal position and back to its vertical position at each revolution of the gears 13 and 14.

The width of the pile formed by the sheet upon the table 3 depends upon the ratio between the diameter of the gears 13 and 14 and the diameter of the roll 2. Each revolution of the gears 13 and 14 makes a back and forth fold of the sheet.

A frame 21 extends backwardly from the frame 8 behind the gear 13, and a shaft 22 is mounted in this frame 21 parallel with the shaft of the rollers 1 and 2. A gear 23 fixed upon the shaft 22 meshes with the gear 13, and a large gear 24 is loosely mounted upon the shaft 22 inside of the frame 8. A bevel gear 25 is fixed upon the rear end of the shaft 4 and meshes with a large bevel gear 26 loosely mounted upon the inner end of the shaft 22. A clutch member 27 is slidably splined upon the shaft 22 and engages a corresponding clutch member 28 rigidly connected with the bevel gear 26 and loosely mounted upon the shaft 22. A clutch lever 29 is pivotally connected to a bracket 30 and embraces the clutch 27 and carries the roller 31 at its end, said roller pressing against the inner face of the gear 24. A spring 32 fixed to the lever 29 presses against the frame 21, the tension of the spring being exerted to throw the clutch 27 out of mesh with the clutch 28 and to hold the roller 31 against the face of the gear 24.

A cam 33 extends inwardly from the face of the gear 24 in position to engage the roller 31 and overcome the tension of the spring 32 and force the clutch 27 against the clutch 28 to operate the shaft 4. A gear 34 is fixed upon the shaft 35 carrying the gear 13, said gear 34 meshing with the gear 24 and said gear 34 being substantially one-quarter the size of the gear 24 so as to operate the cam 33 slowly in comparison with the speed of the shaft 22.

The table 5 is yieldingly mounted upon a spring 36 and attached to arms 37 and 38 operating in slide-ways 39 and 40, so that as the sheet piles upon the table 5 the table may be depressed, said table normally being level with the table 3. Arms 41, 42, 43 and 44 are carried by the shaft 4, the arms 41 and 42 being directly opposite each other and the arms 43 and 44 being parallel with the arms 41 and 42. Slots 45 and 46 are formed in the left-hand end of the table 3 to provide free passage upwardly for the arms as the shaft 4 rotates, and the arms are spaced apart relative to the table 5 so that they will pass freely downwardly upon opposite sides of the table. The details of the mounting of one arm are shown in Figs. 5 and 6. The shaft 4 has transverse slots 47 and 48 and the inner ends of the arms 41, 42, 43 and 44 fit slidingly in these slots, the arms 41 and 42 being mounted end to end in the slot 47 and the arms 43 and 44 being mounted end to end in the slot 48. Screws 49 and 50 are inserted through a plate 51 fitting against the outer end of the shaft 4 and through springs 52 in the slot 48 and through the ends of the arms 43 and 44 and are screw-seated in the body of the shaft, so that the arms 43 and 44 may spring outwardly against the tension of the springs 52 as the sheet piles upon the table 5 so as to allow the arms to pass freely. A pintle 53 extends outwardly from the plate 51 into the standard 54 supporting the outer end of the shaft 4. The arms 41 and 42 are similarly mounted and the inner end of the shaft is supported by a standard 55.

The parts thus assembled will run continuously, the apron 6 vibrating to pile the sheet as it comes from the rolls 1 and 2 upon the table 3, and at the proper time the cam 33 will engage the roller 31 to start the shaft 4 and this mechanism runs at a comparatively high rate of speed so that one and a half revolutions of the shaft 4 will fold the sheet transversely upon the table 5

and this operation takes place while the apron 6 is in an upper position, that is, high enough to allow the arms 41, 42, 43 and 44 to swing. The rolls 1 and 2 move slowly and the apron 6 moves correspondingly slow, while the transverse folding is done very quickly. As the sheet comes from the rolls 1 and 2 over the apron 6 it will be piled longitudinally upon the table consisting of the rigid portion 3, the yielding portion 5, the shaft 4 and the diametrically extending arms 41, 42, 43 and 44. If the sheet is shorter than the rolls, it should be fed to the left-hand end of the table so that it will be within reach of the transversely folding mechanism. When the sheet has been piled upon this table with the parts in position as shown in Figs. 1 and 2, the arms 42 and 44 will swing upwardly and engage under the pile about one-third of the distance from the left-hand end, causing a transverse fold on this line and carrying the pile over and folding it upon the table 5. Then the arms 41 and 43 will repeat the operation.

Various changes may be made in the details of construction without departing from the spirit of my invention as set up in the following claims.

I claim:

1. The combination with mangle rolls, of a rigid table mounted horizontally in position to receive a sheet from the rolls, an apron in position to have the sheet pass over the apron to the table, means for vibrating the apron to fold and pile the sheet on the table, and means for folding the piled sheet transversely.

2. In a folding machine, a rigid table, a shaft mounted transversely at one end of the table, a yielding table on the opposite side of the shaft, arms projecting diametrically from the shaft; said arms being spaced apart to pass the yielding table and there being slots in the rigid table for the passage of the arms; means for piling a sheet on the table and arms, and means for rotating the shaft to fold the piled sheet onto the yielding table.

3. Means for folding a longitudinally folded sheet transversely comprising a rigid table, a shaft at one end of the rigid table, a yielding table on the opposite side of the shaft from the rigid table, and arms carried by the shaft to lift the sheet from the rigid table and pile it on the yielding table.

In testimony whereof I have signed my name to this specification.

MARGARET KELLEY.