

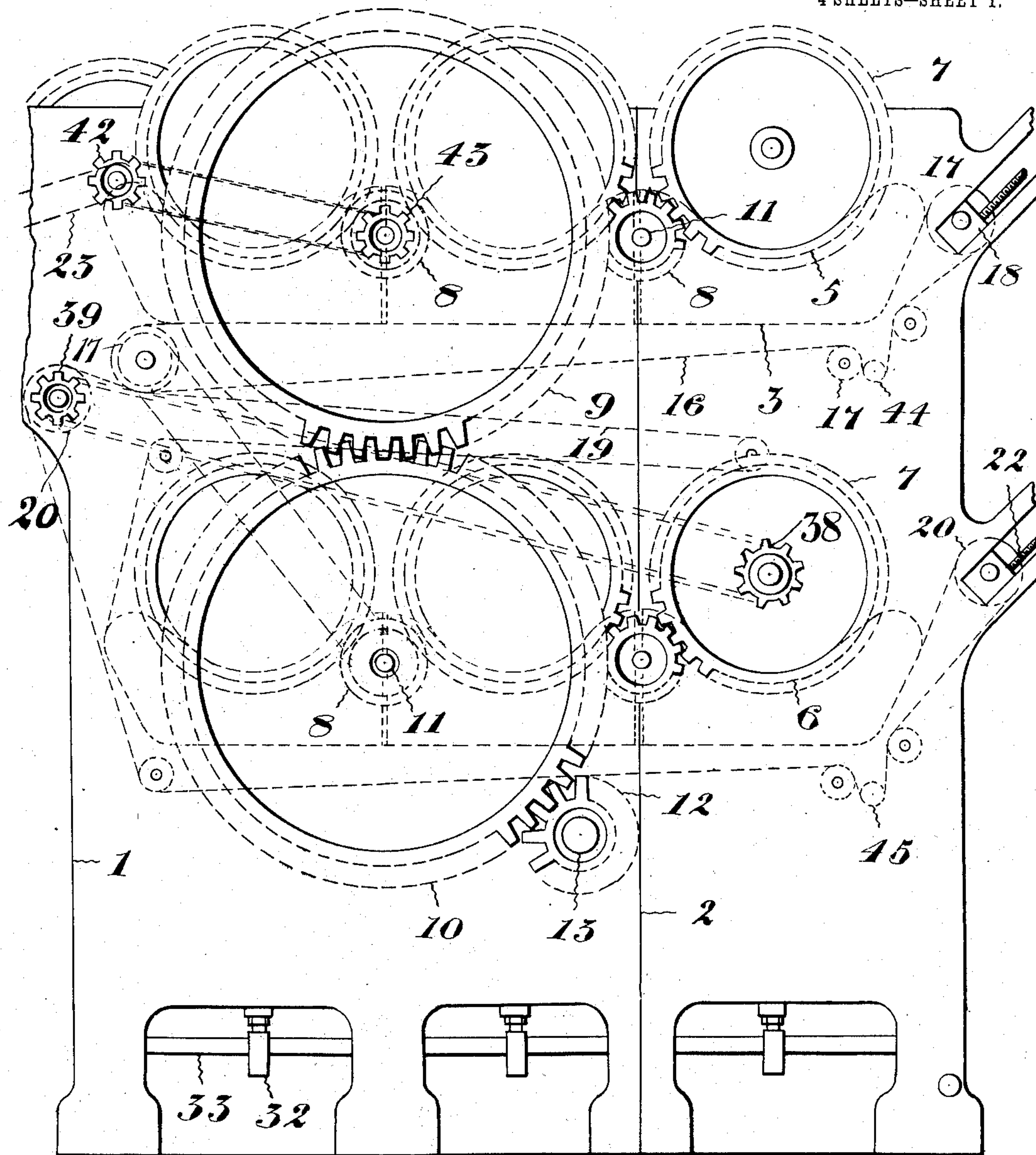
No. 883,497.

PATENTED MAR. 31, 1908.

L. H. SLAGHT.  
MANGLE.

APPLICATION FILED APR. 29, 1907.

4 SHEETS—SHEET 1.



*Fig. 1.*

*WITNESSES:*

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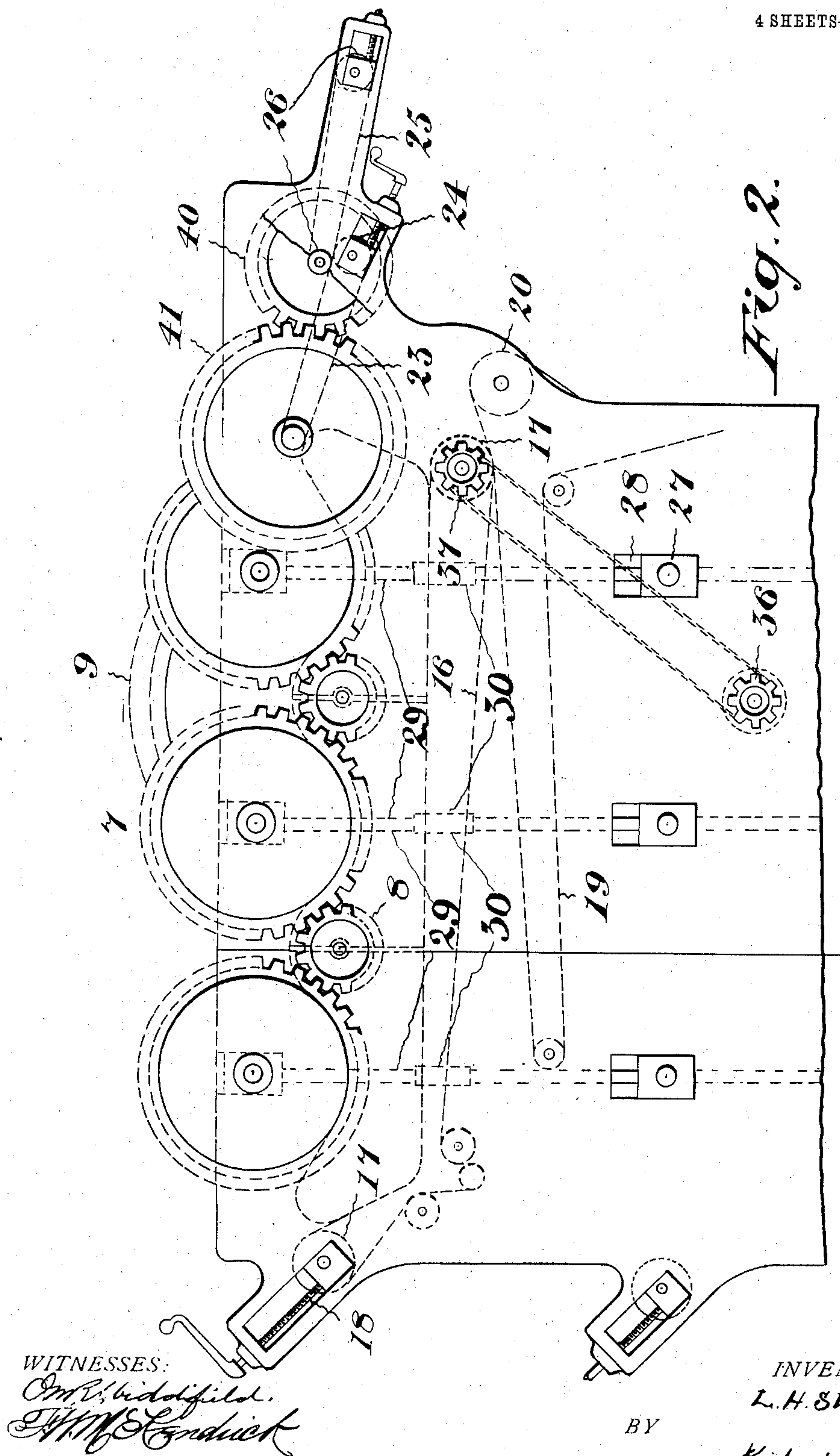
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4 SHEETS—SHEET 2.





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4 SHEETS—SHEET 3.

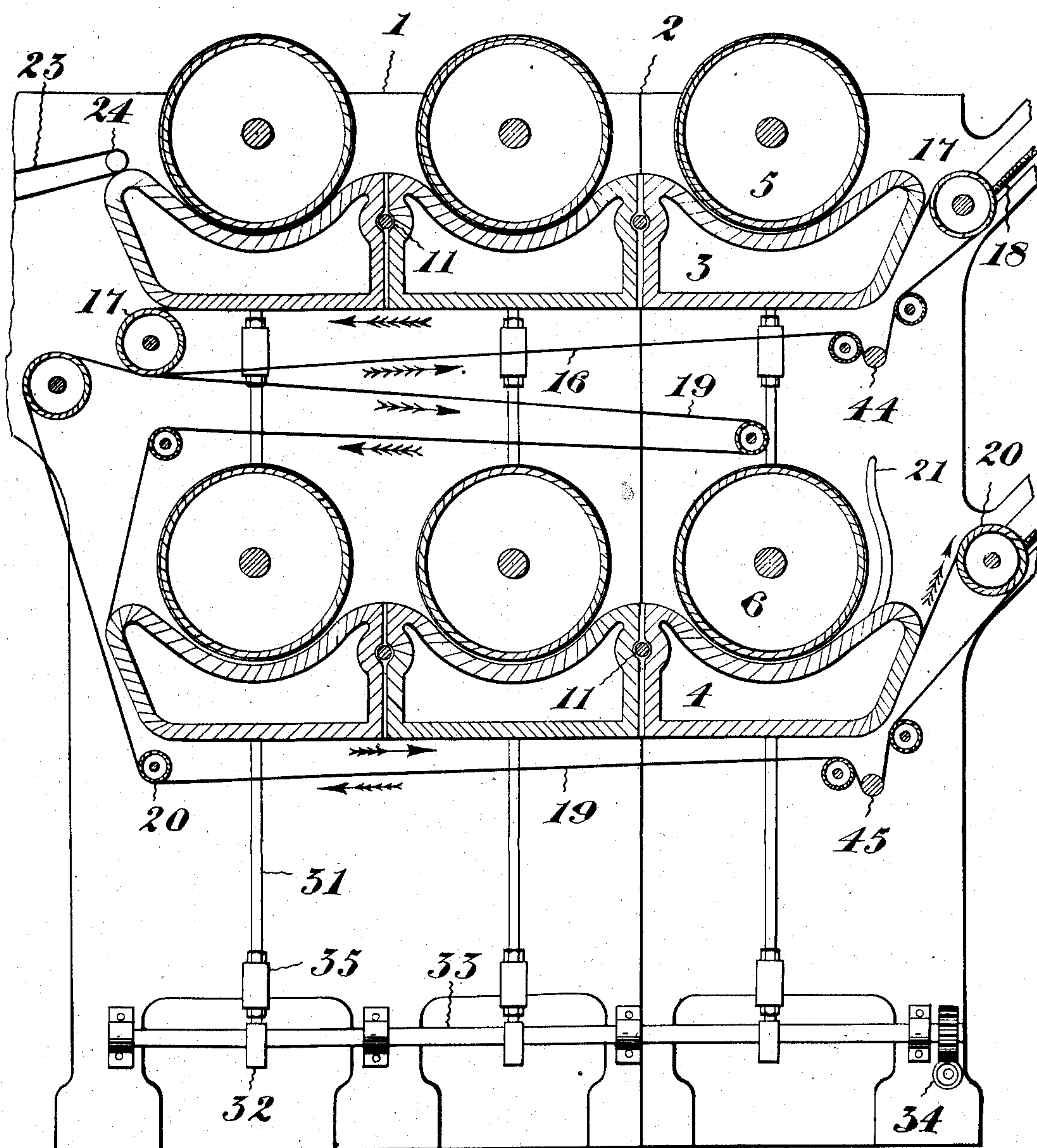


Fig. 3.

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4 SHEETS—SHEET 4.

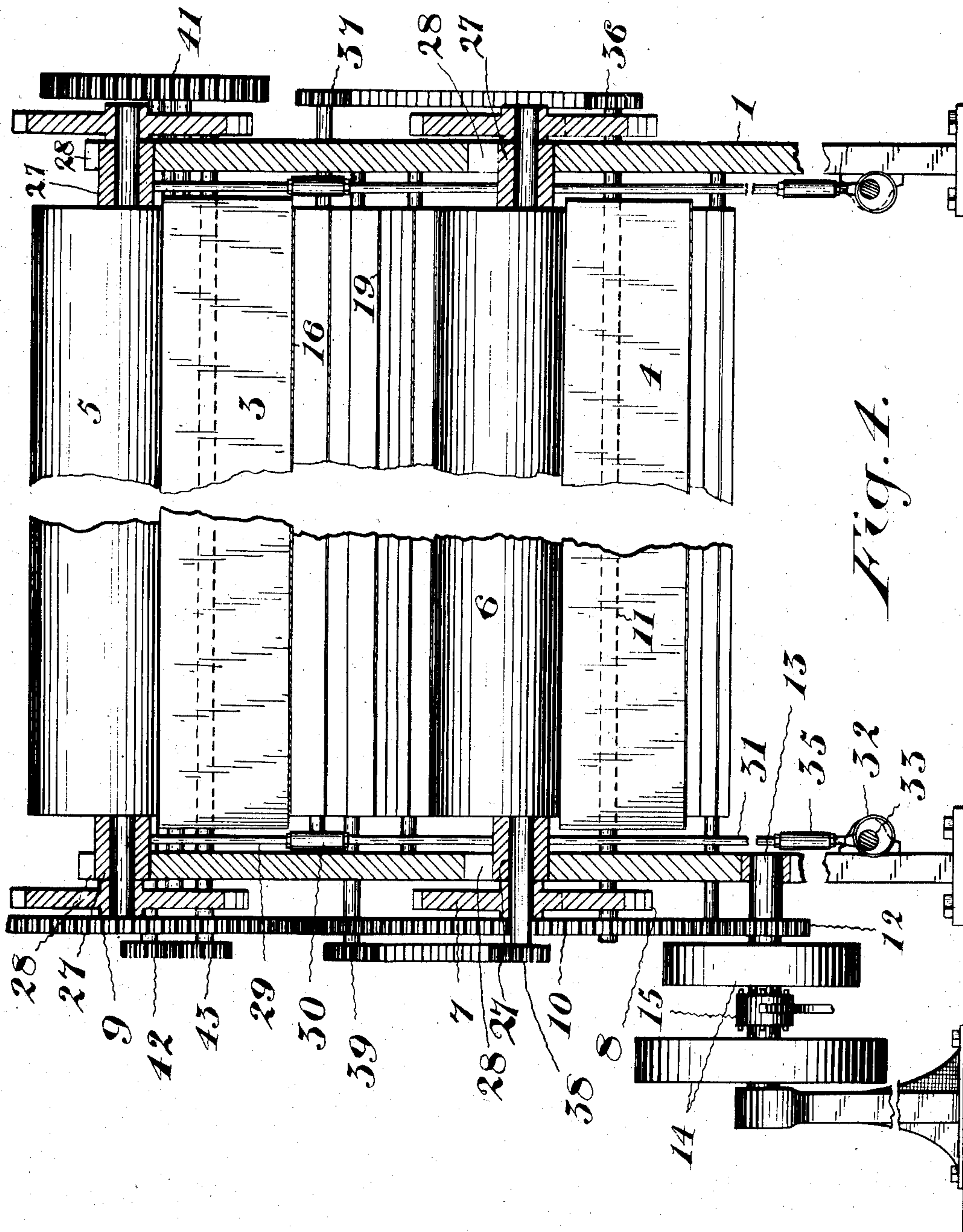


Fig. 4.

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# UNITED STATES PATENT OFFICE.

LEWIS H. SLAGHT, OF TORONTO, ONTARIO, CANADA.

## MANGLE.

No. 883,497.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed April 29, 1907. Serial No. 370,792.

*To all whom it may concern:*

Be it known that I, LEWIS H. SLAGHT, of the city of Toronto, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Mangles, of which the following is a specification.

This invention relates to improvements in mangles of the type in which the goods are first ironed between padded rolls and concave steam chests and then re-ironed on the same side by being drawn over the smooth bottoms of the steam chests.

My object is to devise a mangle of this type which will have a great capacity for work; that will iron the clothes equally on both sides; that will consume a minimum of steam for heating; that will occupy a small amount of floor space; and that will be cheap to construct.

I achieve my object by using two sets of rollers and steam chests one above the other. The clothes after being passed between the first set of rolls and chests are carried back in contact with the under side of the chests. Thence the clothes are carried through the hot space between the two sets and are treated by the second set, being finally discharged from the machine at the opposite end to that at which they were fed in.

The extra evaporation obtained by running the goods through the open space between the sets enables the machine to be run at a faster rate of speed than the ordinary mangle, but as operators cannot feed on to an apron traveling at a speed above a certain maximum, say sixty feet a minute, I provide an improved feed comprising a feed apron traveling at about the speed of the machine, and a second apron traveling at a much lower speed, on which the goods are spread, and which presents the goods to the faster moving apron. Other constructional novelties will be found in my machine as hereinafter more specifically described and as illustrated in the drawings.

Figure 1 is a side elevation of my improved mangle showing also, in dotted lines, the rollers, steam chests and aprons. Fig. 2 is a side elevation of part of the other side of the same. Fig. 3 is a longitudinal section of the same. Fig. 4 is a cross section partly broken away.

In the drawings like letters of reference indicate corresponding parts in the different figures.

Referring particularly to Figs. 1 and 3, 1 are the end frames of the machine. Each end frame is preferably sectional, that is divided on the line 2 so that further sections may be inserted for the purpose of introducing a larger number of rolls and steam chests into the machine.

Between the end frames are supported two sets of mangling rollers and steam chests, arranged one over the other. In the drawings I illustrate three upper steam chests 3; three lower steam chests 4; three upper rollers 5, and three lower rollers 6. These steam chests are of the ordinary type, concave above to fit the rollers, and flat below, and are set side by side to form practically a continuous lower surface from end to end of the machine.

The rollers may be driven in any suitable manner. I show each roller provided with a gear wheel 7 secured to the end of its spindle. The three gear wheels of each set of rollers are geared together by means of the intermediate gear pinions 8. Thus the rollers in each set may be caused to revolve in the same direction. On the spindle of one of the upper pinions 8 is secured a gear wheel 9, which meshes with a similar gear wheel 10, secured to the spindle of one of the lower pinions 8. Thus the lower rollers may be caused to revolve in the opposite direction to the upper rollers. This gear wheel 10 meshes with a gear pinion 12 fast on the driving shaft 13. It will be understood, of course, that the gears 7 and 8 are duplicated on the opposite side of the machine, the spindles 11 of the pinions 8 extending from side to side.

The driving shaft may be provided with any suitable driving means. I show two driving pulleys 14 thereon of different diameters to give different speeds. These pulleys, as is usual, will be loose on the shaft, and either may be given a driving connection therewith by means of a clutch 15, which, being of ordinary construction, is not illustrated in detail.

Beneath the upper series of steam chests is located an endless apron 16. This apron passes around the rollers 17, so arranged that the upper surface of the belt is in close contact with the under surface of the series of steam chests, and also in contact with the end of the right end steam chest, as seen particularly in Figs. 1 and 3. One of the rollers 17 may be provided with screw adjustments



on the frame, as indicated at 18, whereby the tension on the apron may be adjusted as necessary, but I may employ in addition, or as a substitute, the loose roller 44 which lies in a bight of the apron and automatically takes up all slack.

When the machine is in operation the goods operated on are first ironed between the rollers and the concave upper surfaces of the steam chests, and are then caught by the apron 16 and carried back to the end of the machine at which they entered beneath the under surfaces of the steam chests against which they are given a second ironing on the same side of the goods. The apron 16 delivers the goods on to the endless apron 19 which passes around the rollers 20. This apron is caused to travel in the opposite direction to the endless apron 16, consequently its upper part is traveling in the same direction as the lower part of the apron 16. The goods are thus caught between the two aprons 16 and 19 at the left hand side of the machine Fig. 3—which is the feeding side—and caused to travel back towards the right hand side of the machine—which is the delivery side—on top of the upper part of the apron 19, and after the beginning of their travel out of contact with the apron 16. The apron 19, it will be seen, is led to a point suitable to deliver the goods upon the right hand lower roller 6. A guide 21 is preferably provided to guide the goods properly between the roller and its cooperating steam chest.

It will be noted that the goods have been carried from the feed to the delivery end of the machine by means of the apron 19 through the highly heated space between the two sets of mangling rollers and steam chests after treatment by the first set of apparatus and before treatment by the second. As the goods on the apron are out of contact with any solid part of the apparatus during this part of their course evaporation takes place entirely unchecked owing to the free escape thus provided for the water vapor, and owing to the fact that it is the unironed surface of the goods which is uppermost and it is to this surface the remaining moisture has been driven by the contact of the goods with the heated steam chests of the upper set. This arrangement permits of the machine being speeded up to a point not permissible with machines of the ordinary type containing the same number of rolls.

It will be noted that the apron 19 is carried around under the lower surfaces of the lower steam chests in a manner similar to that in which the apron 16 is carried under the upper steam chests 3. The apron is, however, in contact with the outer side of each end steam chest. This secures for me a very great increase in the available heating surface of the steam chests, and I am enabled

to gain this extra heating surface by the arrangement of the mangling rollers and steam chests in two tiers, as described.

The goods fed to the right hand lower roller pass back to the feed end of the machine between the lower rollers and their steam chests and are caught again by the apron 19, and are treated to a second ironing on the same side between the apron and lower surfaces of the lower steam chests. The goods are then carried out of the machine at the right hand or delivery end of the machine. Although this apron 19 is formed as a single apron it is in fact equivalent to two aprons, one above the lower rollers conveying the goods received from the apron 16 to the lower right hand roller 6, and a second apron receiving the goods from the lower left hand roller 6 and conveying them back to the delivery end of the machine.

It will be noted that it is desirable to provide one of the rollers 20 with a screw adjustment 22 on the frame of the machine for adjusting the tension of the apron 19, and also to provide the apron with a loose roller 45 operating in the same manner as the roller 44.

I have already stated that my machine may be operated at a higher rate of speed than ordinary machines containing the same number of rollers. It is, however, found in practice that operators cannot feed goods to or on to surfaces traveling at a speed greater than, say for example, sixty feet per minute. As my machine is adapted to operate at a considerably greater speed I have found it necessary to devise means whereby the operator can successfully feed the machine. For this purpose I provide a feeding apron 23 which is carried by the rollers 24, and is suitably located to deliver between the left hand upper roller 5 and its steam chest 3. This feeding apron will be driven at the same rate of speed as the mangling rollers. (See Fig. 2). A second feeding apron 25 is carried by the rollers 26, and is adapted to deliver on to the feeding apron 23. This apron may be driven at a considerably lower rate of speed than the apron 23. On this apron the goods may be fed by the operator without any difficulty owing to its comparatively slow rate of movement. As soon, however, as the goods reach the faster traveling feeding apron 23 they are carried rapidly away into the machine leaving the slower moving feeding apron clear for the operator. The endless aprons 16, 19, 23 and 25 are driven in the manner I will now describe.

To the spindle of one of the lower pinions 8 I secure a sprocket wheel 36 which is connected by means of a sprocket chain with a sprocket wheel 37 fast on the spindle of the upper left hand roller 17 of the apron 16. (Fig. 1). The lower apron 19 may be simi-



larly driven from a sprocket wheel 38 on the spindle of one of the lower rollers 6 which sprocket wheel is connected, by means of a sprocket chain, with the sprocket wheel 39 on the spindle of the upper left hand roller 20 of the apron 19.

The rollers carrying the feed aprons 23 and 25 may be geared together by means of the gear wheels 40, 41 of a suitable proportion to give the outer apron 25 the desired speed. On the same spindle as the gear wheel 41, but preferably at the other side of the machine, is a sprocket wheel 42, driven by a sprocket chain from the sprocket wheel 43 on the spindle of one of the upper pinions 8. All sprocket wheels will, of course, be suitably proportioned to drive the aprons 16, 19 and 23 at or about the speed of the surfaces of the rollers.

When the mangle has finished its work it is desirable that the rollers shall be lifted from their steam chests to avoid scorching the textile coverings which are usually applied to and wrapped around them when the machine is in use. Each roller therefore is provided at each end with a journal block 27 slidable in a vertical slot 28. Vertical rods 29 connect the journal blocks of the upper and lower sets of rollers. Each rod is also preferably provided with a turn-buckle 30 for suitably adjusting the length. (See Fig. 4). The lower blocks 27 are engaged by vertical rods 31 longitudinally movable, and adapted at their lower ends to engage the straps of eccentrics 32, secured to the shaft 33, suitably journaled on the frame of the machine. This shaft is preferably operated by worm gearing 34, which may be operated in any suitable manner to rotate the shaft 33 to cause the eccentrics 32 to lift the rods 31, and thus through the connections already described raise the rollers of each set away from their steam chests. Sufficient scope of movement is provided to enable the rollers to be raised sufficiently far to draw the gear wheels 7 out of mesh with the pinions 8. Each roller may thus easily be rotated to strip its textile covering from it. Each of the vertical rods 31 should be provided with a turn-buckle 35, or other means of adjusting its length, to properly engage the eccentrics 32.

A machine constructed as I have described possesses many important advantages. It will be seen that each side of the goods is twice ironed, and as the sides are thus treated alike it is unnecessary for the operator to lose time in placing the goods right side up at the feed. As the goods are given a drying between the two steps in the process the machine may be speeded considerably above machines of the ordinary type.

By the arrangement of the mangling apparatus in two tiers I secure increased ironing

surface over other mangles containing a similar number of rollers. This construction also considerably shortens the length of the machine, and this results in the shortening of the aprons, and short aprons will hold the goods much tighter against the bottom surface of the steam chests than long aprons, thereby obtaining better results in ironing, as well as eliminating the trouble experienced by long aprons sagging and running out of line. The steam chests being arranged in two tiers economizes the heat, and the steam chests may thus be maintained at a suitable ironing temperature with a lower steam pressure thereby economizing fuel and rendering the chests less liable to leak.

What I claim as my invention is:

1. In a mangle the combination of a steam chest and a cooperating roller; an apron adapted to take goods from the roller and draw them back to the feed end of the apparatus against the underside of the steam chest; an apron adapted to receive the goods from the aforesaid apron and carry them back to the delivery end of the apparatus out of contact with the aforesaid steam chest; a second steam chest and cooperating roller adapted to receive the goods from the last mentioned apron and deliver them at the feed end of the machine; and an apron adapted to take the goods from the roller and draw them back to the delivery end of the apparatus against the underside of the steam chest.

2. In a mangle two sets of heated mangling apparatus arranged the one over the other and through which the goods are moved in opposite directions in combination with means for carrying goods from one set to the other through the heated spaces between the two sets of apparatus.

3. In a mangle two sets of heated mangling apparatus arranged the one over the other and through which the goods are moved in opposite directions in combination with means for carrying goods from one set to the other through the heated space between the two sets of apparatus, one set being adapted to iron one side of the goods and the other set the other side of the goods.

4. In a mangle two sets of heated mangling apparatus arranged the one over the other and through which the goods are moved in opposite directions in combination with means for carrying goods from one set to the other through the heated space between the two sets of apparatus, one set being adapted to twice iron one side of the goods and the other to similarly treat the other side of the goods.

Toronto, Ont., 17th April, 1907.

LEWIS H. SLAGHT.

Signed in presence of—

J. EDW. MAYBEE,

F. W. MCKENDRICK.