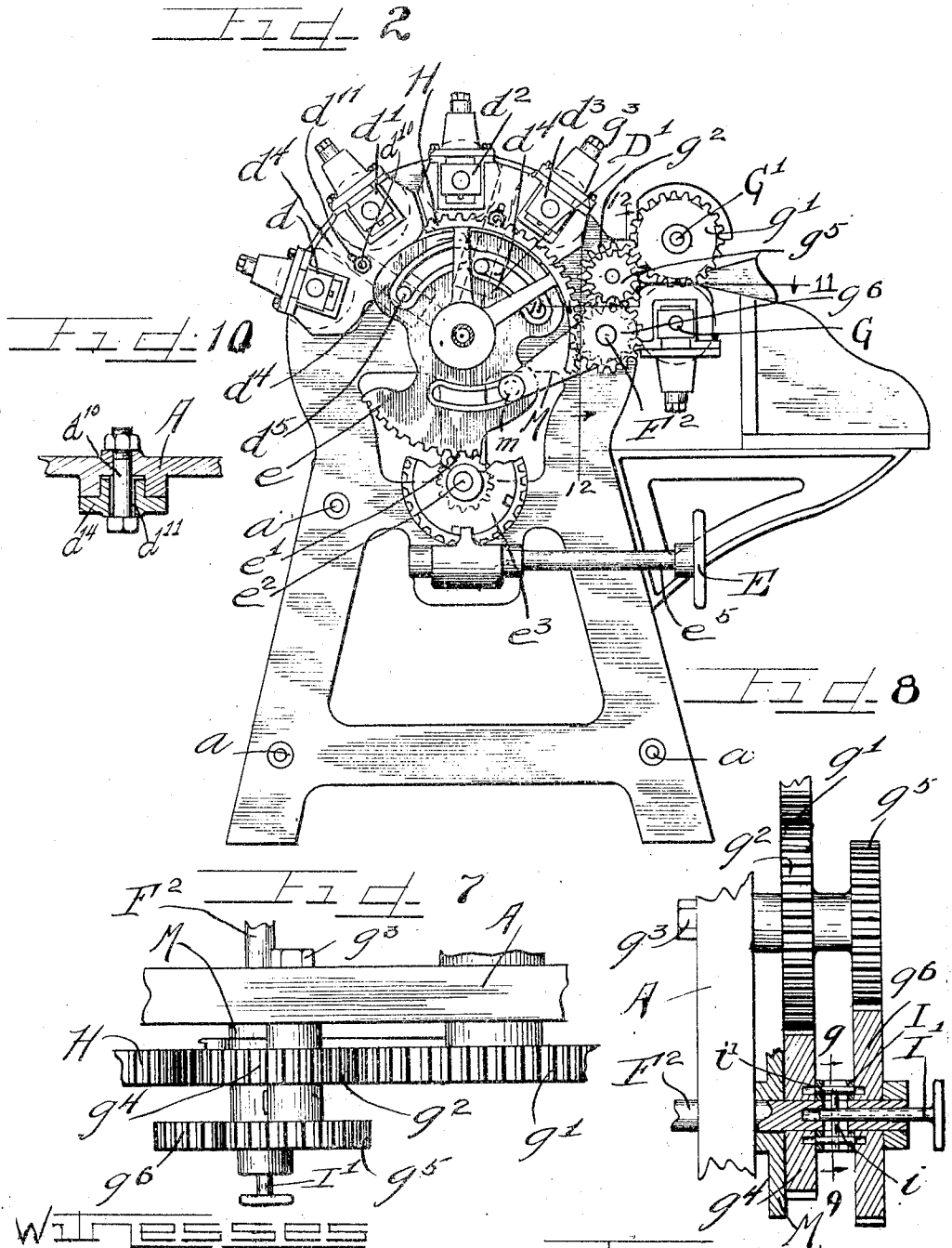


S. MOE.
 IRONING MACHINE.
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1,063,573.

Patented June 3, 1913.

4 SHEETS—SHEET 2.



WITNESSES

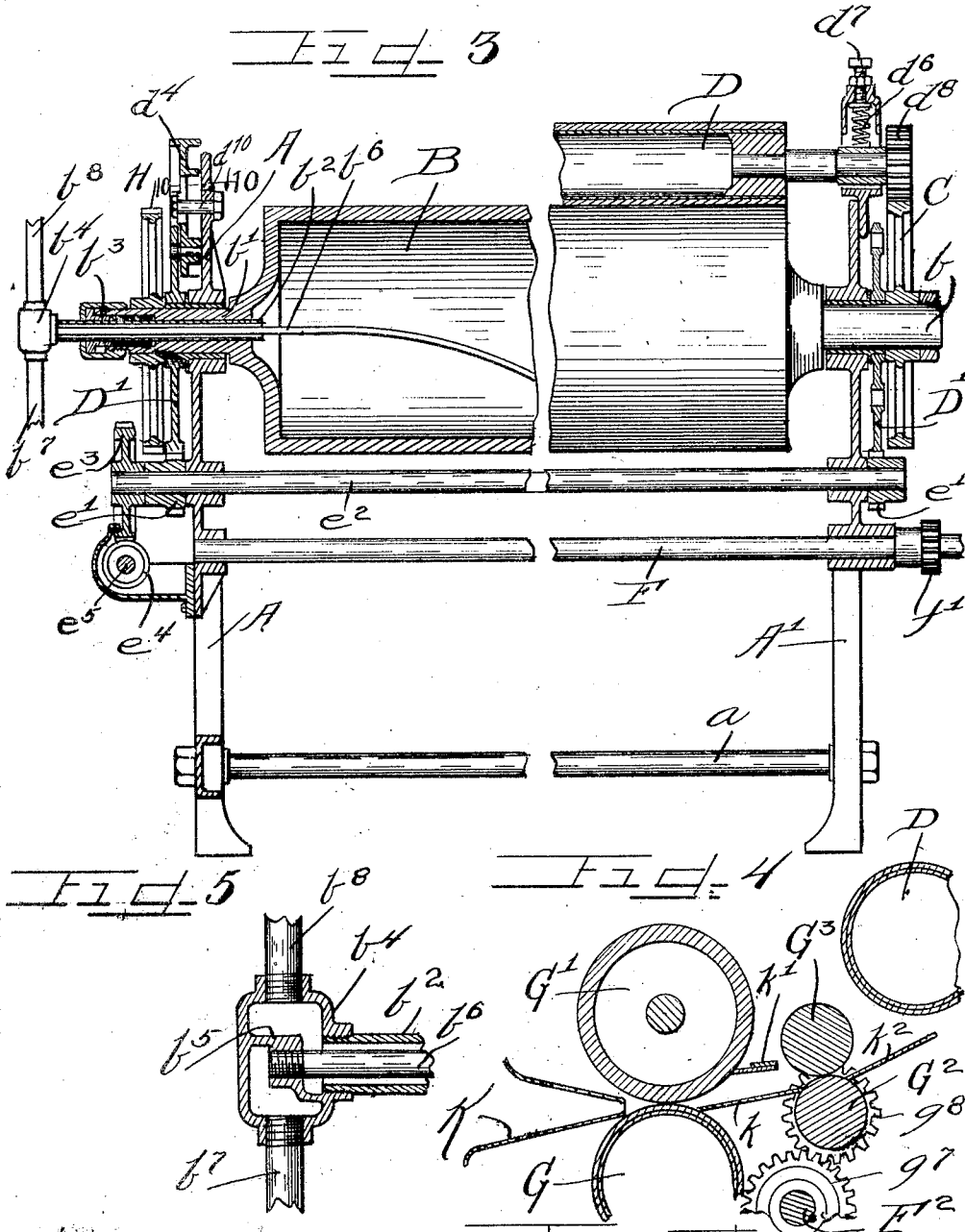
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4 SHEETS-SHEET 3.



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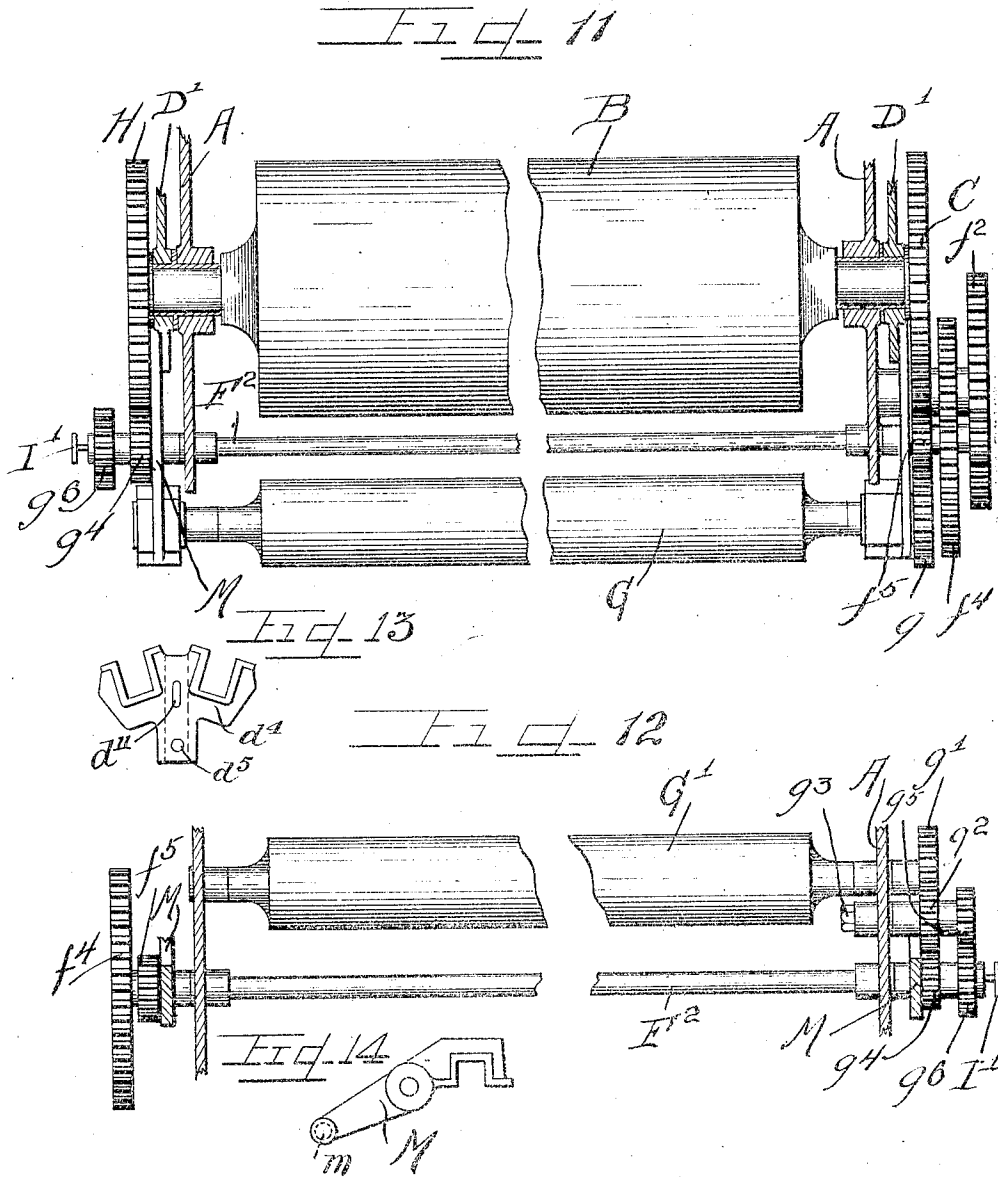
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IRONING-MACHINE.

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To all whom it may concern:

Be it known that I, SIVERT MOE, a citizen of the United States, and a resident of the city of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Ironing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

With ironing machines for use in affording certain kinds of finish for starched articles, the rolls are driven at approximately the same peripheral rate of speed. For another type of finish, for starched articles, the main or heated roll or cylinder is driven at a rate of speed different from the peripherally arranged roll or rolls, thereby necessitating slipping of the heated rollers on the article being ironed to afford a luster or polish. Various mechanisms have been provided to enable a single machine to impart either kind of finish. As a rule, however, the mechanisms whereby the adjustment is effected are so complex as to entail considerable loss of time in making the change of adjustment and furthermore, in but a very few ironing machines has it been attempted to afford two or more driving rates for the heated roll as compared to the constant rate for the smaller roll.

The object of this invention is to afford an ironing machine of exceedingly strong, simple and durable construction, and in which adjusting mechanism is provided whereby the larger or main cylinder may be driven at any of a plurality of rates of speed as compared with the smaller peripherally arranged rolls.

It is also an important object of the invention to afford a shifting mechanism whereby the drive of the main or heated roll may be varied to the peripherally arranged rolls without stopping the operation of the machine, thus enabling the ironing machine to be run continuously and to impart either a dull or a polished finish on any article by quickly adjusting the machine as the fabric is fed therinto.

It is also an object of the invention to afford an exceedingly simple shifting mechanism, positive in action and capable of use in any position of the rolls and capable of actuation to change the driving rate for one

set of rolls while the machine is in operation without endangering the mechanism.

It is also and finally an important object of the invention to afford means whereby the peripherally arranged rolls may be instantaneously thrown away from the central roll to release any articles passing through the machine should a stoppage be necessary.

The invention embraces many novel features and consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

As shown in the drawings: Figure 1 is a view in end elevation of a device embodying my invention. Fig. 2 is a similar view of the opposite end of the machine with parts broken away. Fig. 3 is a fragmentary longitudinal section. Fig. 4 is an enlarged fragmentary detail of a part of the feed mechanism showing the same in section. Fig. 5 is an enlarged vertical section of the steam connection. Fig. 6 is an enlarged detail of the gland therefor. Fig. 7 is a fragmentary detail view of the shifting mechanism for varying the drive of the rolls. Fig. 8 is a similar view partly in section and illustrating the construction of the clutch. Fig. 9 is a section taken on line 9-9 of Fig. 8. Fig. 10 is an enlarged fragmentary section taken on line 10-10 of Fig. 3. Fig. 11 is a section taken on line 11 of Fig. 2, with parts omitted. Fig. 12 is a fragmentary section taken on line 12-12 of Fig. 2, with parts omitted. Fig. 13 is an enlarged detail of the adjusting member for the rollers. Fig. 14, is an enlarged detail of the shifting lever for lowering the lower feed roll away from the upper feed roll.

As shown in the drawings: Said ironing machine comprises a suitable frame consisting of end members A-A', each of which may be constructed in a single casting and which are rigidly secured or stayed together by means of bolts *a*, any number of which may be used, and which serve to rigidly hold said end frame members in parallel and unvarying relation. Journaled in said frame near the top thereof is the hollow main cylinder or roll B. This, as shown, is provided at its ends with axial gudgeons *b-b'*, which extend through suitable bearings in the frame and of which the gudgeon *b'* is provided with an axial bore extending therethrough and into the cylinder and in which is inserted steam pipe *b*², secured in

place by means of a suitable gland b^3 , which affords a steam tight connection between said pipe and the inner walls of the gudgeon. Said pipe at its outer end is threaded into a fitting b^4 , provided with a central partition b^5 , as shown in Fig. 5, in which is threaded a pipe b^6 , which extends axially through the pipe b^2 , and into the cylinder to near the opposite end thereof. Said pipe b^6 , is materially smaller in diameter than the inner bore of the outer pipe b^2 , and serves as an inlet pipe for hot steam, which enters the fitting b^4 , from a steam pipe b^7 , and exhausts from the fitting by means of an exhaust pipe b^8 , the steam entering the cylinder through the smaller inlet pipe b^6 , and exhausting therefrom from the relatively larger pipe b^2 , and smaller pipe b^8 .

The main frame members A—A', as shown, are provided with seats in the top thereof adapted to receive the radially adjustable bearing boxes $d-d'-d^2-d^3$, of the peripherally adjustable smoothing rolls D, which, as shown, are four in number and extend parallel the main cylinder B, and bear upon the periphery thereof normally, as shown in Fig. 3.

As shown, an adjusting member d^4 , is provided at each side of the machine for each pair of rollers, which supports the bearing boxes and the lower end of the members are extended to form a thrust rod as shown in Fig. 2. For the purpose of guiding each member d^4 , bolts d^{10} , are secured to the respective frame member A or A', one for each adjusting member, and extends through a slot d^{11} , in the adjusting member. Said thrust rods extend radially inward at each end of the main cylinder and are provided with outwardly directed, cylindric bosses d^5 , adapted to enter the eccentrically arranged slots in the cams D' which are pivoted on the gudgeon b and b' , so that when swung in one direction they act to draw the rollers D, firmly down upon the main cylinder and when swung in the opposite direction, owing to the eccentricity of the cam slots, they act to move said rollers D, away from the periphery of the main roll. As shown also, in Fig. 3, each of said bearing boxes is provided with a tension device embracing a spring d^6 , adapted to bear upon the journal boxes for the shaft of each of said rollers, and as shown, adapted to be adjusted inwardly by means of a set screw d^7 , to regulate the pressure of the roll upon the main cylinder. As shown, means are provided for swinging said eccentrics in either direction embracing, as shown, a mutilated gear on the lower end thereof indicated by e , and adapted to be engaged by a pinion e' secured in a shaft e^2 , which extends beneath and longitudinally of the main cylinder, and is journaled in the end frame members, on the outer end of which is pro-

vided a worm gear e^3 , adapted to be actuated by a worm e^4 on the end of a shaft e^5 , and actuated by a hand wheel E, from the operating position, so that by rotating the hand wheel in one direction the smaller rolls are quickly adjusted from the main cylinder, and by turning in the opposite direction, are drawn firmly into operative bearing thereon.

The shaft or gudgeon for each of the smaller rolls D, is provided upon one end with a pinion d^8 , adapted to mesh with a spur gear C, journaled upon the gudgeon b , of the main cylinder and from whence said smaller rolls are driven. To impart the drive to said rolls a shaft F, is journaled in the main frame members beneath the main cylinder, and is provided with a belt pulley f , to enable the machine to be connected with a source of power. Secured on said shaft also, is a pinion f' , which meshes with a spur gear f^2 , on a stud shaft F', and rigidly secured thereto is a pinion f^3 , (shown in dotted lines in Fig. 1), and which meshes with a spur gear f^4 , on a shaft F². As shown also, a pinion f^5 , is provided on said shaft, which meshes with the gear C, to drive the same, so that said gear C, is at all times driven by the directly connected train of gears through the main driving pulley f . Journaled on said frame are feed rolls indicated by G—G', which coact to deliver the fabrics to be treated inwardly to the cylinder and between said rolls and the main cylinder are smaller coacting rolls G²—G³, as shown in Fig. 4. As shown, the feed roll G, is driven from the pinion f^5 , which meshes with a gear g , on the end of said roll.

The shaft F², extends through the frame members, and is provided on its opposite end from the gear f^4 , with gears g^4 — g^6 , of different sizes, each of which is rotatably secured on the shaft, but either of which is adapted to be rigidly engaged on the shaft by means of a suitable clutch, embracing, as shown in Fig. 9, a collar I, secured between the gears and through which and through the shaft extends a longitudinal slot, in which is seated a pin i , extending transversely the shaft and collar having threaded engagement at both ends with the pins i' , which extend through the collar parallel to the shaft and are adapted to engage in suitable apertures or notches in the respective gears, as shown in Fig. 8, and as shown, a push pin I' extends through an axial aperture in the end of the shaft F², and engages said pin or rod i , so that either of said gears g^4 — g^6 may be rigidly engaged on the shaft to afford the drive for the main cylinder, which is accomplished as follows: A stud shaft g^3 is rigidly secured on the main frame member A, and rotatably secured thereon are the axially connected gears g^2 — g^5 , of

which the gear g^2 meshes with the gear g^4 , and the smaller gear g^5 meshes with the gear g^6 , which, as shown, is larger than the gear g^4 . The main driving gear H, for the main cylinder B, is rigidly secured on the gudgeon b' , and meshes with the gear g^4 , and as shown, also the gear g^2 meshes with the gear g^5 , on the end of the upper feed roll G' . In consequence, the main driving gear H, for the main cylinder may be either driven positively from the shaft F^2 , by means of a gear g^4 when engaged by the clutch, or may be driven through a transmission consisting of the positively driven gear g^6 , when engaged by the clutch, to the smaller gear g^5 , on said shaft g^3 , the larger gear g^2 , secured to the gear g^3 and driving back to the gear g^4 , then rotatable on the shaft F^2 , and which in turn drives the gear H, in consequence enabling the larger cylinder to be driven at a higher speed than when it is driven directly from the gear g^4 . As shown also, the upper feed roll is driven at a different rate of speed from the lower with such transmission. The smaller feed rolls G^2 — G^3 may be driven by means of a gear g^7 on the shaft F^2 , driving to a gear g^8 , as shown in Fig. 4. As shown in Fig. 4, a feed chute K, is provided to direct the fabrics to be ironed, as for instance collars or cuffs, between the feed rolls G — G' , and between the lower feed rolls G and G^2 is an inclined bed k , to prevent the articles falling between the feed rolls and as shown also, an upper guide plate k' is provided to prevent the same turning over the upper feed roll G^3 . Between the feed roll G^2 , and the main cylinder is also an inclined bed or table K^2 , so that when the articles are fed between the rolls, the same are delivered continuously through the machine.

The operation is as follows: The cylinders and rolls are driven at a rate preferably to afford the desired finish for the articles being ironed or laundried. In one finish the large or main cylinder (heated of course, by the steam admitted therein), is driven at a very slightly different rate from the driving rate of the smaller rolls, in consequence, a high polish or luster is not afforded to the starched articles ironed thereby, and this is desirable for many articles of apparel. In others, as in the case of collars and cuffs, and shirt bosoms, it is desired to afford as high a luster or polish as possible, and for this purpose, it is desired to afford a considerable difference between the peripheral rate of the main cylinder and the smaller rolls. This, of course, is accomplished by means of the transmission before described. For instance, when driving the main cylinder direct through the medium of a gear g^4 , when rigidly secured on the shaft by means of the clutch, it is obvious that the rate of speed of the main cylinder is very much less than is the case when the gear g^4 be permitted to

rotate freely on the shaft F^2 , and the gear g^6 being rigidly engaged to the shaft, when engaged by the clutch drives to a smaller gear g^5 , rigidly connected to the large gear g^2 , and drives back to the smaller, and that again to a larger. In consequence, affording a marked increase in the rate of drive of the main cylinder as compared with the smaller cylinders, or rollers, the rate of which is practically uniform at all times. Owing to this difference in the peripheral rate of the rolls, it is, of course, necessary for one or the other of the rolls to slip upon the article being ironed, and this slipping action produces the desired friction to afford the requisite polish. Should it occur at any time that it is necessary to stop the machine by the use of the hand wheel E, the smaller cylinders may be instantly elevated away from the main cylinder, thereby preventing burning and may as quickly be put into operative position when it is desired to again start the operation. As shown, means are also provided for throwing the lower feed roll G downwardly away from the upper feed roll G' , should it be necessary to stop the machine. For this purpose, a cam slot is provided at the lower side of the disk on each of the gudgeons b — b' , and engaged therein is a pin m , of a lever M, which is fulcrumed on the shaft, F^2 , and at the outer end of which is supported bearings for said lower roll. When the cam is swung by means of the hand wheel E, so as to elevate the smaller cylinders D, the inner end of said lever M, is thrown upwardly, thus in consequence carrying the outer end downwardly and moving the lower feed roll away from the upper, as shown in Fig. 2.

Of course, I am aware that variations in detail may be effected without departing from the principles of this invention, and I have shown but one of several arrangements whereby the desired effects may be accomplished. I therefore do not purpose limiting this application for patent otherwise than necessitated by the prior art.

I claim as my invention:

1. An ironing machine embracing a frame, a main cylinder, smaller cylinders peripherally engaging the same, a plurality of feed rolls, a gear train connecting one of said feed rolls and the peripheral rolls, a gear train connecting said main cylinder and another of said feed rolls, alternately tight and loose gears of different diameters adapted to connect the said gear trains affording different speed relations between the main roller and a feed roller relative to the smaller cylinders.

2. A machine of the class described embracing a main rotative cylinder, smaller cylinders bearing peripherally thereon, relatively large feed rolls coacting to deliver fabrics to be treated inwardly toward the

cylinder, smaller feed rolls positioned between the large rolls and the main cylinder, means driving the smaller cylinders at uniform rate, and means adapted to be operated without stopping the machine for varying the rate of the drive of one of the feed rolls and the main cylinder with reference to the rate of drive of the smaller cylinders and smaller feed rolls.

10 3. A machine of the class described embracing a frame, a main cylinder, gudgeons on the ends of said cylinder adapted to extend through said frame, a driving gear secured of one of said gudgeons, a plurality
15 of small cylinders bearing peripherally upon the main cylinder, a plurality of pairs of feed rollers, a drive shaft for the main cylinder, a relatively large gear rotatably secured on the outer end thereof, a smaller
20 gear rotatably secured upon said shaft between the main frame and the large gear and in engagement with said driving gear, a stud shaft secured upon said frame, large and small axially connected
25 gears rotatably secured upon said stud shaft, the smaller of which meshes with the larger gear upon the driving shaft and the larger of which acts to actuate one of the feed rollers and mesh with the smaller
30 gear upon the driving shaft, and means on the driving shaft adapted to engage either of said gears to vary the peripheral rate of drive of one of the feed rollers and main cylinder with respect to the smaller cylinders.
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4. A machine of the class described embracing a frame, a main cylinder, gudgeons on the ends of said cylinder adapted to extend through said frame, a driving gear secured on one of said gudgeons, small cylinders adapted to bear peripherally upon the main cylinder, feed rollers, a drive shaft for the main cylinder, a relatively large gear rotatably secured thereon, a smaller gear rotatably secured upon said shaft between the main frame and the large gear and in engagement with the driving gear on said gudgeon, a stud shaft, gears rotatably secured upon said stud shaft, one of which

meshes with the larger gear upon the driving shaft and the other of which acts to actuate one of the feed rollers and mesh with the smaller gear upon the driving shaft, and means on the driving shaft adapted to engage either of said gears to vary the peripheral rate of drive of one of the feed rollers and main cylinder with respect to the smaller cylinders.

5. A machine of the class described embracing a frame, a main cylinder, a plurality of peripheral rollers adapted to engage the same, a plurality of pairs of feed rollers, means acting to simultaneously separate a pair of said feed rollers one from another and also said peripheral rollers from said main cylinder, and means simultaneously affording different speed relations between two feed rollers, and also the main cylinder and the peripheral rollers.

6. A machine of the class described embracing a frame, a main cylinder, a driving gear adapted to rotate said main cylinder, smaller cylinders peripherally engaging upon the same, feed rollers, a drive shaft, a relatively large gear rotatably secured thereon, a smaller gear rotatably secured upon said shaft between the main frame and the large gear and in engagement with the driving gear on the main cylinder, a stud shaft secured upon said frame, axially connected gears rotatably secured upon said stud shaft, one of which meshes with the larger gear upon the driving shaft and the other of which acts to actuate one of the feed rollers and mesh with the smaller gear upon the driving shaft, and a clutch on the driving shaft adapted to engage either of said gears to vary the peripheral rate of drive of one of the feed rollers and main cylinder with respect to the smaller cylinders.
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In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

SIVERT MOE.

Witnesses:

K. E. HANNAH,
J. W. ANGELL.