Nov. 25, 1947. W. J. ASHER 2,431,448

COOLING DEVICE FOR IRONING MACHINES

Original Filed Feb. 23, 1938 2 Sheets-Sheet 1

FIG. 1.

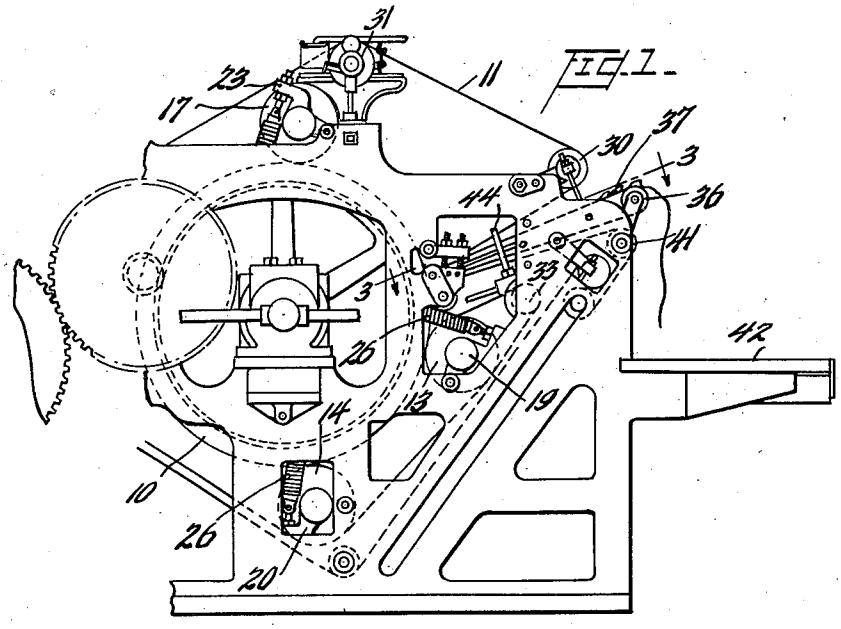
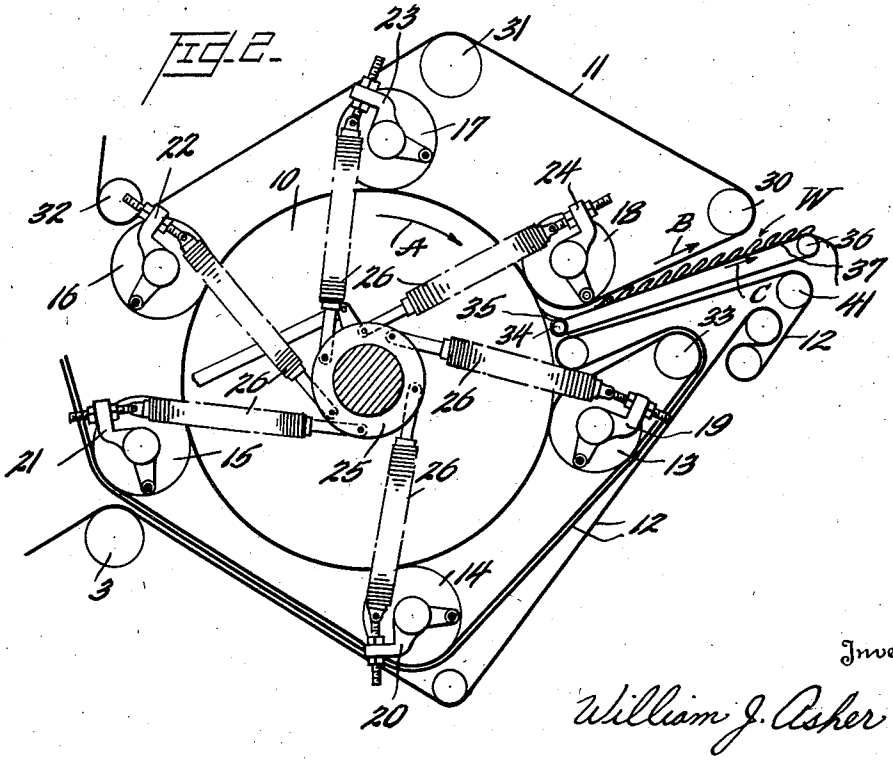


FIG. 2.



Inventor

William J. Asher

By Watson, Cole, Grindle & Watson

Attorney

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FIG. 3.

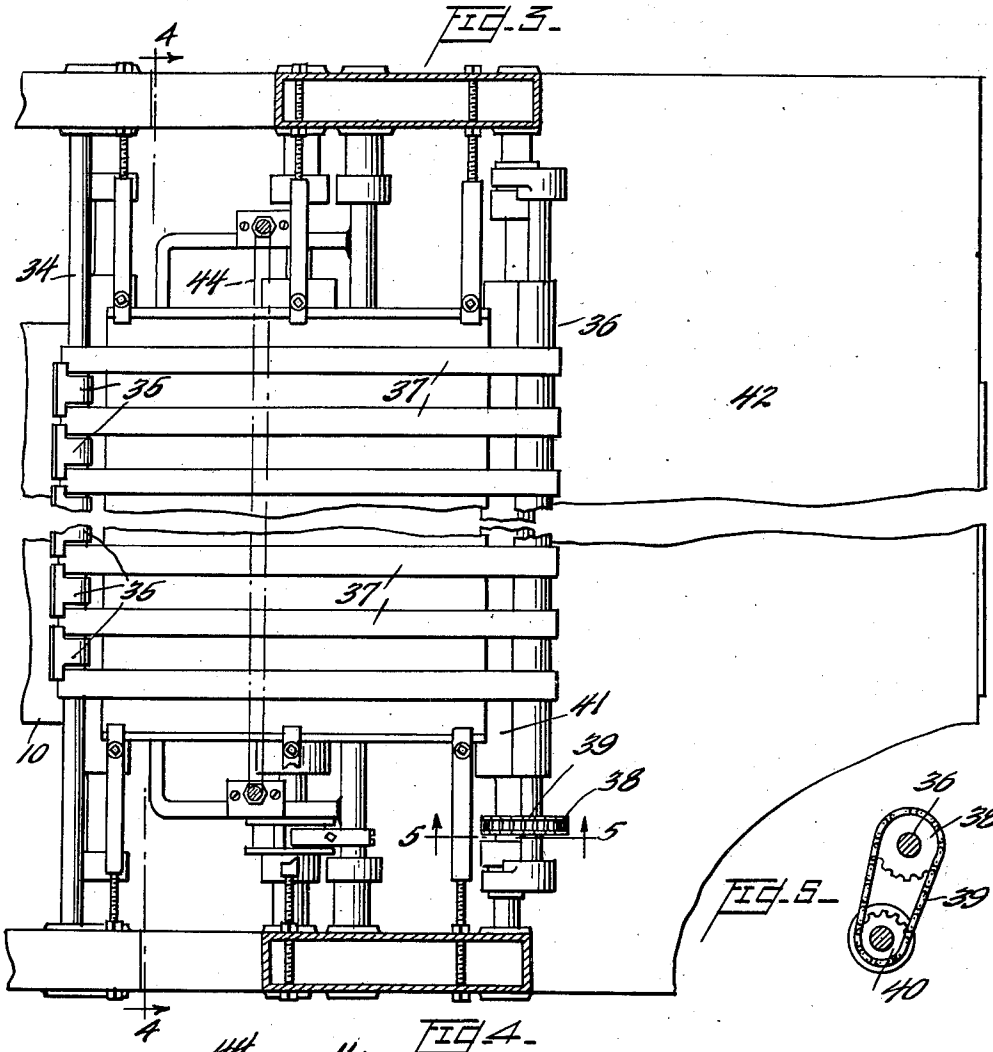
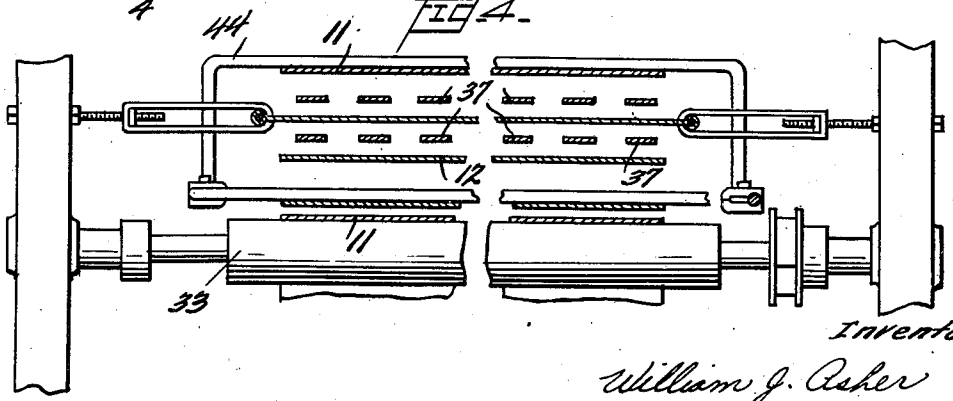


FIG. 5.

FIG. 4.



Inventor

William J. Asher

By Watson, Cole, Grindle & Watson

Attorneys

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UNITED STATES PATENT OFFICE

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COOLING DEVICE FOR IRONING MACHINES

William J. Asher, Colorado Springs, Colo.

Original application February 23, 1938, Serial No. 192,155. Divided and this application June 30, 1944, Serial No. 542,890

4 Claims. (Cl. 38—144)

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The present invention relates to ironing machines and has for its object the provision of an ironing machine having an improved work delivery mechanism by means of which cooling of the freshly completed work is facilitated.

In ironing machines of types heretofore designed, suggested and actually used difficulty has frequently been experienced in handling the work as it is delivered due to its high temperature and considerable volume. This is particularly true of ironing machines of the apron and cylinder type having large capacity. In accordance with the present invention a delivery mechanism is provided which receives the work immediately upon the completion of the ironing operation and eventually delivers it on to a work-receiving table, the arrangement being such, however, that each article of work as it is doffed from the ironing cylinder or emerges from the ironing zone, is caused to fall in folds or to assume a serpentine form so that the circulation of air in and over all of its surfaces is facilitated and its speed of movement is decreased, thus providing an increased time interval between the ironing cylinder and receiving table during which much of the heat of the work is lost by convection and radiation. While the novel and improved delivery mechanism is particularly useful with ironing machines of the cylinder and apron type, it may nevertheless be employed, as will be apparent to one skilled in the art, in association with ironing machines which differ widely in design. This application is a division of my prior application, Serial No. 192,155, filed February 23, 1938, now Patent Number 2,394,421, granted February 5, 1946.

In the accompanying drawings one embodiment of the invention is disclosed by way of example, the machine illustrated being of the cylinder and apron type and primarily designed for pieces of work of large size such as sheets and the like.

In the drawings:

Figure 1 shows in side elevation one end of the ironing machine, the end shown being the delivery end;

Figure 2 is a generally similar view on a slightly larger scale, the supporting frame of the machine having been omitted in order that the cylinder, apron, and pressure and guide rolls may be more clearly perceived;

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

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

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

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The cylinder of the ironing machine is indicated at 10 in the drawings and, in the particular machine shown, this is the second cylinder of a two-cylinder machine, the first cylinder not having been illustrated. It is mounted for rotation about a horizontal axis and the apron which functions to hold the work being subjected to the ironing operation in contact with its cylindrical surface, as the cylinder is revolved in the direction of the arrow A, is indicated at 11. Portion of the endless apron which is associated with the first ironing cylinder, and which cooperates with the apron 11 in the transmission of goods from the first cylinder to the second cylinder, is indicated at 12. A series of guide and pressure rollers are indicated at 13, 14, 15, 16, 17 and 18, respectively, the ends of these rollers being supported for free rotation upon bearings mounted in pairs of transversely spaced pivotally supported bracket members of which those indicated at 19, 20, 21, 22, 23, and 24, respectively are illustrated in the drawings. Each set of bracket members just mentioned is connected to a ring member 25 by connecting elements 26 which include helical springs, so that the force applied to each guide and pressure roller, and tending to draw the same toward the axis of the cylinder 10, may be varied by rotating the rings 25 about the axis of the drum. Apron 11 moves in the direction of the arrow B and additional guide rollers for this apron are indicated at 30, 31, 32 and 33. A doffing bar is indicated at 34 and doffing blades for removing from the surface of the cylinder any pieces of work which may tend to cling thereto are indicated at 35.

It will be observed that the apron 11 leaves the cylinder 10 as it passes around the pressure and guide roller 18 and that, as it moves from roller 18 to guide roller 30, it passes along a generally horizontal reach. Immediately below and to the right of the guide roller 30 is a shaft 36 which comprises a guiding and driving shaft. This shaft, together with the doffing bar 34, supporting a plurality of parallel tapes 37, these tapes alternating with the doffing knives 35 as most clearly shown in Figure 3. Shaft 36 has mounted on one end thereof a sprocket 38, most clearly perceived in Figure 5, and sprocket 38 is operatively connected by means of a chain 39 with a smaller sprocket 40 on the end of a guide roller 41 for the apron 12. Guide roller 41 is driven by the apron 12 and, as aprons 11 and 12 move at substantially the same linear velocity, the angular velocity of roller 41, and hence the

angular velocity of tape driving shaft **36**, bears at all times a definite relationship to the linear velocity of apron **11**.

The driving means is so designed that the series of tapes **37** are driven in the direction of the arrow C (Figure 2) but at less linear velocity than the apron **11** is driven, for instance, at one-third of the velocity of apron **11**. As a result of this the work, in the form of sheets or the like which is either delivered onto the upper reaches of the endless tapes **37** by the doffing blades **35**, or falls downwardly from the lower surface of the generally horizontal reach of apron **11** between pressure roller **18** and guide roller **30**, moves forwardly at much less velocity than that at which it has moved around the cylinder **10** during the ironing operation. Instead of lying flat on the tapes, therefore, it is caused to assume a serpentine or folded form, as indicated at W in Figure 2, approximately one-third of the length of each piece of work being in contact with the upper surfaces of the delivery tapes **37** and two-thirds being piled up as shown, in the event that the tapes move at one-third of the speed of the apron **11**. The velocity of movement of the work toward the delivery table **42** is, therefore, considerably retarded and the work is caused to assume a form which facilitates access of cooling air to all of its surfaces and thus speeds up the rate of cooling. When it reaches the delivery table, therefore, it is relatively cool and may be handled by an operator without difficulty.

As previously explained, the improved delivery means may be utilized with machines which do not embody rotating cylinders, an arrangement of delivery tapes or the equivalents thereof, operating at comparatively low speed or linear velocity, being applicable to various other types of ironing mechanisms. To facilitate dislodgment from the apron **11** of any goods tending to adhere thereto so as not to fall on the tapes **37** a tapping bar **44** is provided, together with means for periodically causing this bar to strike the upper surface of the apron **11**, just after it reaches the guiding and pressure roller **18**. This bar **44** comprises portion of a tapping or vibrating apparatus which is more particularly described, and is claimed, in my companion application, Serial Number 542,891, filed June 30, 1944.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In an ironing machine, in combination, mechanism for subjecting goods to be ironed to heat and pressure while advancing such goods to a point of discharge at a desired velocity, and means for receiving such ironed goods discharged from the machine, said means comprising a conveyor having a movable goods-receiving surface and a device for advancing such surface in the direction of movement of the goods being delivered thereon but at less linear velocity, whereby the goods are folded as they are deposited upon such surface, to facilitate cooling.

2. In an ironing machine, in combination, mechanism for subjecting goods to be ironed to heat and pressure while advancing such goods to a point of discharge, and means for receiving such ironed goods discharged from the machine, said means comprising a plurality of spaced parallel endless tapes the upper reaches of which constitute goods-receiving members, and a tape-advancing device for moving the upper reaches of such tapes in the direction of movement of the goods being delivered thereon, but at less linear velocity, whereby the goods are folded as they are deposited upon such members, to facilitate cooling.

3. The method of cooling freshly ironed goods which comprises discharging such goods in sheet form edgewise upon a surface moving in approximately the same direction as the goods delivered but at less velocity, whereby each such delivered article is loosely folded, the folds extending normally to the direction of movement of such surface, circulation of air over the surfaces of the goods being facilitated.

4. In an ironing machine, in combination, a cylinder, an apron associated with the cylinder, means guiding the apron as it leaves the cylinder in such manner that it moves along a generally horizontal path with its work-engaging face turned downwardly, an endless conveyor having a generally horizontal reach directly underlying the generally horizontal reach of the apron referred to, and means for advancing the apron and conveyor so that the horizontal reaches thereof move in the same direction but at different velocities, the conveyor speed being less than that of the apron so that goods falling from the apron onto the conveyor are folded.

WILLIAM J. ASHER.

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