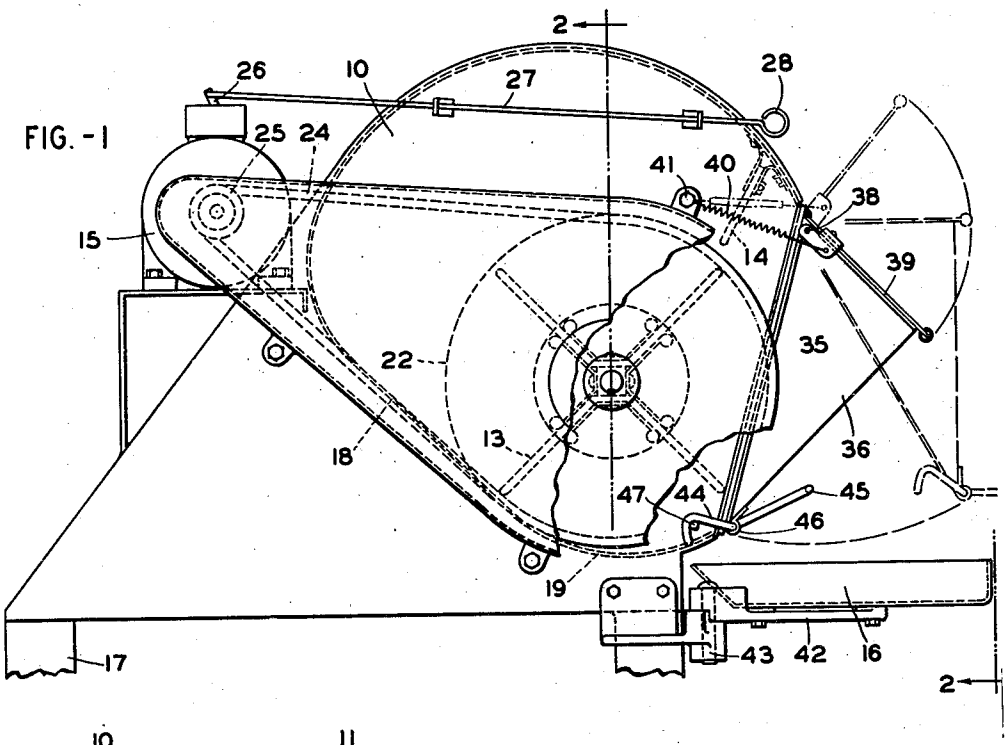
Feb. 23, 1943. L. C. FREY 2,311,938

HANDKERCHIEF FLUFFER

Filed March 7, 1941

FIG. - 1



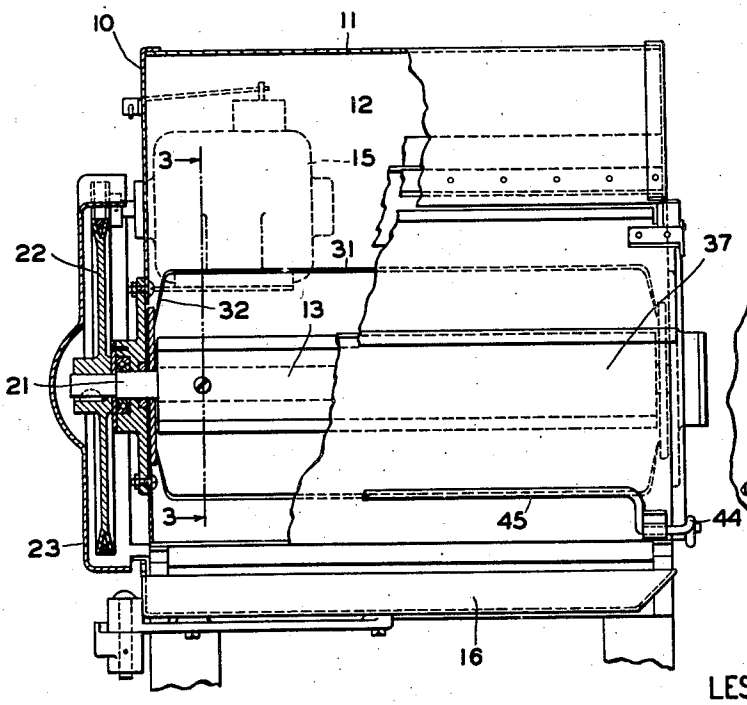


FIG. - 2

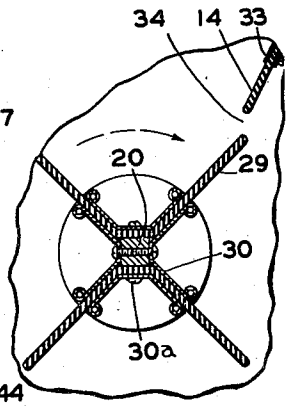


FIG. - 3

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HANDKERCHIEF FLUFFER

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Application March 7, 1941, Serial No. 382,133

7 Claims. (Cl. 38—143)

This invention relates to handkerchief fluffers, such as are used for fluffing or conditioning small articles, such as handkerchiefs, napkins or the like, usually in a more or less slightly moist condition, prior to an ironing or other finishing operation.

One object of the invention is to provide a machine of this kind, embodying a rapidly rotating paddle wheel cooperating with a baffle within a hollow casing, the machine as a whole being of simple construction capable of being manufactured, sold and maintained at low cost, and in which the hollow casing is suitably formed to provide all necessary storage space for the articles being operated upon, which is curved and has the necessary sloping portions to guide the work into engagement with the fluffing wheel and to return it thereto after it has passed through, and in which all parts are conveniently disposed for manipulation by the operator in supplying the work to and removing it from the machine.

A further object is to provide a machine of this kind which includes an adjustable closure member of simple form, capable of convenient manipulation, and which is adjustable to two positions, in one of which it serves as a hopper for introducing the work to the machine, and in the other of which it permits discharge of the work from the machine and assists in guiding it to a receiver.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

In the drawing, which represents one suitable embodiment of the invention, Fig. 1 is an end elevation, partly broken out to expose interior parts, and illustrating two positions of the hopper closure; Fig. 2 is a front elevation, partly broken out and in section to expose interior parts; and Fig. 3 is a detail sectional elevation on the line 3—3, Fig. 2.

In the laundering of small articles of flatwork, such as handkerchiefs and napkins, such articles, after washing, are extracted in a centrifugal extractor prior to ironing. They usually come from the extractor in a more or less matted, compacted and tangled condition, requiring the operator, before introducing them into the ironing machine, to separate a single piece from the mass and untangle and straighten it out, a tedious task at best, requiring considerable time and special effort, especially if the finished product is to be truly square, smooth and flat.

The present machine is designed to receive the tangled mass of such articles, as they come from the extractor, and automatically to separate and fluff them, so as to straighten out the rolled and creased edges, so that an operator readily can select an individual piece and dress or arrange it for the ironing operation with minimum effort and with minimum expenditure of time, resulting in a higher quality product with straight edges and square corners.

The fluffing machine, generally speaking, includes a hollow casing in which rotates a paddle wheel, together with driving means for the wheel, and a tray or other support upon which the work is discharged, at the conclusion of the fluffing operation, in a position convenient to the operator for introducing the work into the ironing or finishing machine.

The apparatus shown in the drawing comprises a suitable frame structure including parallel sheet metal end panels 10 connected by a curved metal sheet or plate 11 to form and enclose a chamber 12 open at its front, as will later appear. In said chamber rotates a paddle wheel 13 cooperating with a baffle 14 and driven by an electric motor 15. The finished work is discharged upon a tray 16.

The foregoing parts, assembled as a unit, may be designed especially for cooperation with a particular form or style of finishing machine, such as a handkerchief press, in which case the fluffing machine may be mounted directly on the top of the chest of that machine. The drawing, however, shows the machine in a form adapted for use anywhere, its frame being provided with legs or standards 17 by which it may be mounted either directly upon the ironing machine or press, or on a table or other support, or even upon the floor.

The curved plate 11 of the hollow casing is so shaped that the chamber 12 therein is more or generally cylindrical in form. The bottom wall 18 of said plate 11 is more or less flat and inclined, with its lower portion curved, as at 19, about an axis at the center of rotation of the paddle wheel 13, the edges of the blades of which travel fairly closely to this curved casing wall.

The paddle wheel may be of any suitable form for the purpose. As illustrated it comprises a central shaft 20 of square cross section having its end portions reduced and of cylindrical form to form gudgeons 21 rotating in bearings in the casing, one thereof having secured thereto suitable driving means, such as a pulley 22, housed in a frame extension or guard 23 and connected by a belt 24 to a driving pulley 25 on the motor shaft. A switch 26 controls the motor, and for convenience said switch may be provided with an extension rod 27, on eye 28 of which is located for convenient access at the front of the machine.

Any suitable number of paddle blades **29** may be employed, four being shown. Each two thereof are parts of the same sheet of fairly stiff but flexible material, such as rubber or a reinforced rubber or other similar composition, the sheet being bent to angle form with the intermediate portions of the two sheets held to the squared portion of the shaft by V-shaped metal clamping strips **30** secured to the shaft by screws or bolts **30a**. The outer longitudinal edges **31** of the paddle blades are straight and their end edges are slightly bevelled, as at **32**.

The blades of the paddle cooperate with the baffle **14**, before referred to, which is a sheet or strip of the same rubber or like material having its outer edge firmly secured in bracket members **33** fastened on the inside of the casing wall. A narrow space or gap **34** is left between the edges of the blades of the paddle and the edge of the baffle **14**, as will be apparent from Fig. 3. As before stated, the front portion of the casing (that at the right in Fig. 1) has an opening through which the work is introduced into and removed from the machine. This opening is closed by a cover, marked generally **35**, Fig. 1. The cover **35**, generally speaking, is of hopper form, including two triangular end wall members **36** connected by a front wall **37**, the cover as a whole being hinged to the case on pins **38** so located that the gravity effect of the depending cover exerts a slight tendency to move it toward and hold it in closed position. The inner portion of the hopper cover is open to the interior chamber **12**. Its upper portion may be open to the atmosphere, no closure being necessary for the top opening. But a closure may be used and one is illustrated in the drawing at **39**, the closure being pivoted on the same pins **38** and being sensitive to tension springs **40** extending from brackets on the closure to fixed points **41** on the casing.

The full lines, Fig. 1, illustrate the closed position of the cover **35** and its closure or, in other words, its position while the machine is fluffing a batch of work. With the cover in this position its closure **39** may be lifted to the dot-dash position in Fig. 1, enabling work to be introduced into the machine by dropping it into the opening, the inclined wall **37** directing the work to the lower portion of the rotating paddle wheel.

When the fluffing operation is completed, the cover **35** may be moved to the dotted line position, Fig. 1, whereupon continued rotation of the paddle wheel will forcibly discharge the work over the top of the wheel and past the baffle **14** outwardly from the chamber either directly upon a table or other support, or, as shown, into the tray **16**. Said tray, for convenience, may be mounted upon an arm **42** pivoted on a vertical axis at **43** to a suitable support, enabling the tray to be moved to one side if the operator desires.

Suitable means may be provided for latching the cover in its closed position, such as the hooked end portions **44** of a bent handle bar **45** rotatably mounted in brackets **46** of the cover, the hooked latches cooperating with fixed pins **47** on the casing.

The springs **40**, to which the closure **39** is sensitive, are of the over-center variety, working on opposite sides of the pivot pins **38**, so that when the cover **35** is in its closed position, shown in full lines, Fig. 1, the springs **40** tend to hold the closure **39** down upon the cover and further exert a tendency to hold the cover sealed against the casing. But with the cover closed, its closure **39** may be raised to an upper position in which the springs **40** are now above the pins **38**, whereupon said springs exert a tendency to hold the closure **39** open. The closure **39** is of a light, transparent material, such as one of the colorless plastics, which requires only a light spring **40** to hold it in position. When the hopper cover **35** is in the closed position and the closure **39** is in the full line position of Fig. 1 the operator is able to see inside the tumbler to observe the condition of the load. It will be noted also that when the hopper cover **35** is raised for an unloading operation as indicated in dash lines in Fig. 1, the right-hand end of spring **40** is raised above the pivotal center **38**, thus automatically opening the closure **39**, and when the hopper cover **35** is again closed, the closure **39** remains in its open position for a subsequent loading operation without extra attention of the operator.

In the use of the apparatus, assuming the paddle wheel is rotating in the clockwise direction, Fig. 1, and that the hopper cover **36** is latched in the closed position, the closure **39** is raised and a batch of goods is dropped into the hopper-shaped cover. This batch is conveyed by the chute action of the hopper into engagement with the paddle wheel. The wheel action on the goods separates and fluffs the pieces as they are dragged along the casing wall by the edges of the blades. The resulting stripping action tends to separate the individual pieces from each other and to unroll and straighten out their rolled and creased edges. After a suitable period of time, without stopping the motor, the handle **45** is depressed to release the latches **44** from the pins **47**, and with the handle **45** the hopper is drawn forward. Thereupon continued rotation of the paddle wheel carries the articles over its top and ejects them from the casing to be deposited in the tray. After closing the casing the machine may be again loaded and the fluffed articles may be introduced into the ironing or other finishing machine.

What I claim is:

1. Apparatus of the character described, comprising a hollow casing provided with end panels connected by a body wall provided with a front opening, a paddle wheel provided with flexible blades rotatable in said casing, a fixed flexible blade above the paddle wheel adjacent the front opening of the casing, the body wall having its lower portion curved and lying close to the edges of the wheel blades and beyond said wheel being inclined upwardly and rearwardly away from the blade edges to provide storage space behind said wheel and fixed blade for the work being operated upon, and means for rotating said wheel.

2. Apparatus of the character described, comprising a hollow casing provided with end panels connected by a body wall provided with a front opening, a paddle wheel provided with flexible blades rotatable in said casing, the body wall having its lower portion curved and lying close to the edges of the wheel blades and beyond said wheel being inclined upwardly and rearwardly to provide open storage space for the work being operated upon, a fixed flexible blade above the paddle wheel, means for rotating said wheel, and a hopper shaped cover for the casing opening shaped to serve in its closed position to guide the work to the paddle wheel.

3. Apparatus of the character described, com-

prising a hollow casing provided with end panels connected by a body wall provided with a front opening, a paddle wheel provided with flexible blades rotatable in said casing, a fixed flexible blade above the paddle wheel adjacent the front opening of the casing, the body wall having its lower portion curved and lying close to the edges of the wheel blades and beyond said wheel being inclined upwardly and rearwardly away from the blade edges to provide storage space behind said wheel and fixed blade for the work being operated upon, means for rotating said wheel, and a hopper shaped cover for said opening lying entirely outside of said opening and pivoted on a single axis only near the upper edge of the opening, said cover having a work charging closed position in which it is applied to said opening and a work discharging open position in which it is spaced from said opening.

4. Apparatus of the character described, comprising a hollow casing provided with end panels connected by a body wall provided with a front opening, a paddle wheel provided with flexible blades rotatable in said casing, the body wall having its lower portion curved and lying close to the edges of the wheel blades and beyond said wheel being inclined upwardly and rearwardly to provide open storage space for the work being operated upon, a fixed flexible blade above the paddle wheel, means for rotating said wheel, and a hopper shaped cover for said opening pivoted on an axis near the upper edge of the opening and having work charging closed and work discharging open positions, the hopper portion of said cover having a wall sloping downwardly toward said curved lower portion of the body wall in work charging position of said cover, said last named wall being spaced from said casing in work discharging position of said cover to form a baffle against which the work is discharged to direct it downwardly.

5. Apparatus of the character described, comprising a hollow casing provided with end panels connected by a body wall provided with a front opening, a paddle wheel provided with flexible blades rotatable in said casing, the body wall having its lower portion curved and lying close to the edges of the wheel blades and beyond said wheel being inclined upwardly and rearwardly to provide open storage space for the work being operated upon, a fixed flexible blade above the paddle wheel, means for rotating said wheel, a hopper shaped cover for said opening pivoted on an axis near the upper edge of the opening and having open and closed positions, the hopper portion of said cover having a wall sloping downwardly toward said curved lower portion of the body wall in closed position of said cover, said last named wall being spaced from said casing in open position of said cover to form a baffle against which the work is discharged to direct it downwardly, and a receiver lying below the open cover for receiving the work, said receiver having a vertical pivotal mounting at one side thereof for swinging said receiver laterally from its position beneath said cover.

6. Apparatus of the character described, comprising a hollow casing provided with end panels connected by a body wall provided with a front opening, a paddle wheel provided with flexible blades rotatable in said casing, the body wall having its lower portion curved and lying close to the edges of the wheel blades and beyond said wheel being inclined upwardly and rearwardly to provide open storage space for the work being operated upon, a fixed flexible blade above the paddle wheel, means for rotating said wheel, an open top hopper shaped cover for said opening pivoted on an axis near the upper edge of the opening and having work charging and discharging positions, in the former of which it guides work downwardly toward the curved casing bottom and in the latter of which it forms a baffle against which the work is discharged to direct it downwardly, and a pivoted closure for the open upper end of said cover.

7. Apparatus of the character described, comprising a hollow casing provided with end panels connected by a body wall provided with a front opening, a paddle wheel provided with flexible blades rotatable in said casing, the body wall having its lower portion curved and lying close to the edges of the wheel blades, a fixed flexible blade above the paddle wheel, means for rotating said wheel, a hopper shaped cover for said opening pivoted on an axis near the upper edge of the opening and having open and closed positions, a closure for the open upper end of said cover having a pivot adjacent the pivotal axis of said cover, and snap-over spring means working across the closure pivot and tending to hold said closure end open or closed.

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