No. 650,025. Patented May 22, 1900.

G. H. L. SCHOONMAKER & J. A. CANFIELD.

HAT FORMING MACHINE.

(Application filed May 6, 1899.)

(No Model.) 2 Sheets—Sheet 1

Fig. 4.

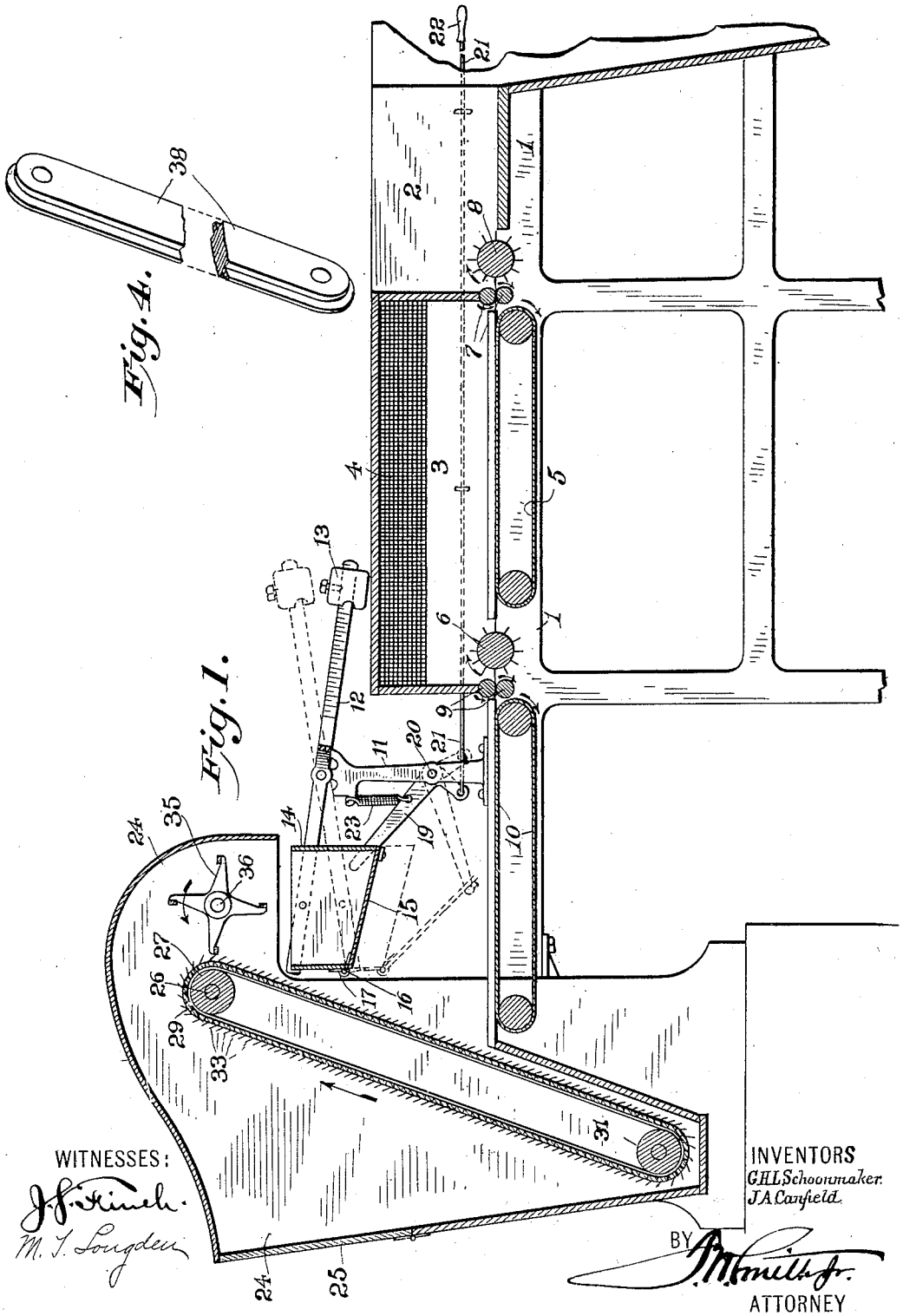

Fig. 1.

WITNESSES:

J. F. Kinch.

M. T. Longden

INVENTORS

G. H. L. Schoonmaker.

J. A. Canfield.

BY

F. H. Smith Jr.

ATTORNEY

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Fig. 3.

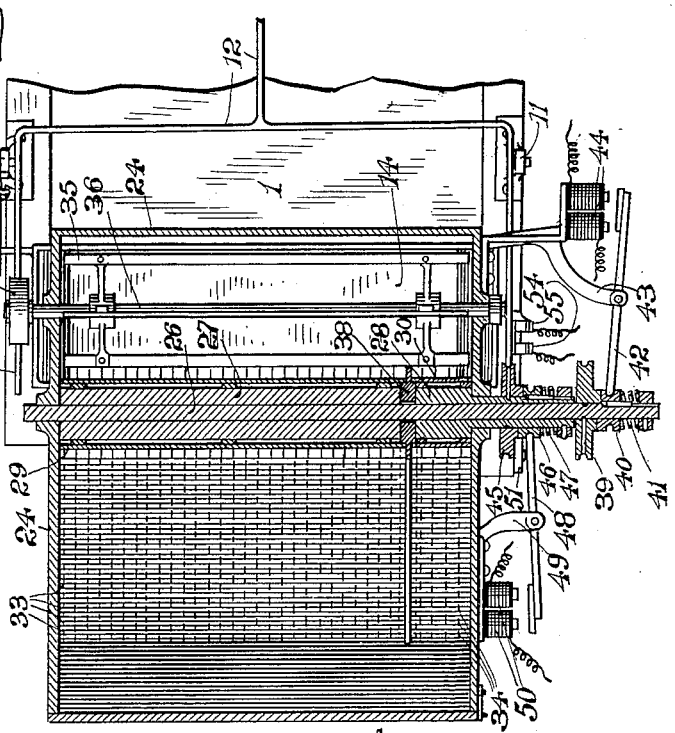
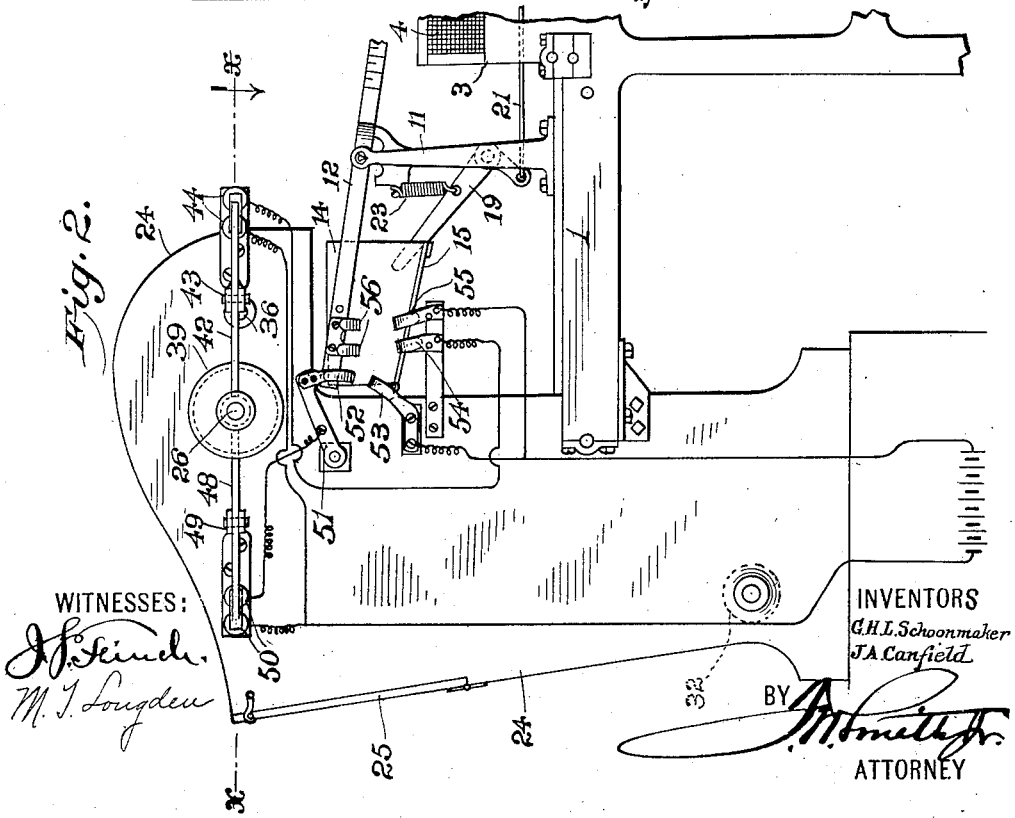


Fig. 2.



WITNESSES:

J. L. Steinle.

M. J. Longden

INVENTORS

G. H. L. Schoonmaker

J. A. Canfield

BY

ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE H. L. SCHOONMAKER AND JOHN A. CANFIELD, OF DANBURY, CONNECTICUT.

HAT-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 650,025, dated May 22, 1900.

Application filed May 6, 1899. Serial No. 715,843. (No model.)

To all whom it may concern:

Be it known that we, GEORGE H. L. SCHOONMAKER and JOHN A. CANFIELD, citizens of the United States, residing at Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Hat-Forming Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to certain new and useful improvements in hat-forming machines, but more particularly relates to automatic weighing-out mechanism whereby the fur will be accurately and uniformly weighed and deposited upon an apron preparatory to being properly and evenly distributed for use on hat-forming cones.

The object of our invention is to accurately weigh and distribute given quantities of fur by automatic instrumentalities, whereby the service of two workmen may be dispensed with; and with these ends in view our invention consists in certain details of construction and combinations of parts, such as will be hereinafter fully set forth and then specifically be designated by the claims.

In order that those skilled in the art to which our invention appertains may more fully understand the same, we will proceed to describe its construction and operation, referring by numbers of reference to the accompanying drawings, which form a part of this application, and in which—

Figure 1 is a sectional elevation, partly broken away, showing a hat-forming machine equipped with our improvement; Fig. 2, a broken side elevation illustrating our improvement; Fig. 3, a section at the line x x of Fig 2, and Fig 4 a detail broken perspective of the division-bar which separates the feeding-belts.

Similar numbers of reference denote like parts in the several figures of the drawings.

1 is the frame of an ordinary hat-forming machine, and 2 the usual chamber which is in communication with the hat-cone.

Usually an attendant weighs out a given quantity of fur and empties it into trays having partitions, these trays being then taken by another attendant who spreads or sprinkles the fur evenly upon an endless apron, and the fur is led by means of this apron directly to the feed-rolls which deliver the fur to the picker in the chamber 2.

We provide a chamber 3, which has preferably a wire-screen roof 4 for the purposes of proper ventilation, and within this chamber are an endless belt 5 and a picker-roll 6.

7 represents the feed-rolls between the chambers 2 3 and by means of which the fur is delivered from the belt 5 to the picker 8 in the chamber 2, and 9 represents feed-rolls at the outer end of the chamber 3, which deliver the fur from an endless belt 10 to the picker 6 in the chamber 3. This belt 10 is in front of the rolls 9, and the fur from the scale-pan is deposited upon this belt and thence conveyed to the feed-rolls 9 and delivered to the picker 6.

The chamber 3 is an extra or auxiliary chamber intermediate of the forming-chamber 2 and the usual belt 10, and by providing this extra chamber the fur can be dumped in a mass upon the belt 10 and evenly spread by the operation of the picker 9 upon the belt 5 preparatory to being delivered within the forming-chamber 2—that is to say, this auxiliary chamber 3 performs the function of evenly spreading the fur upon the belt for delivery to the forming-chamber, which operation of spreading has heretofore been performed by an attendant.

11 represents standards rising from the frame, and between these standards is pivoted in any suitable manner the scale-beam 12, which latter is provided with an adjustable weight 13 at one end, while the other end is yoke-shaped.

Pivoted between the yoke end of the beam 12 is the scale-pan 14, whose bottom 15 is hinged to the body of the pan at 16, while a leaf-spring 17 at or about the point of hinging serves to keep this bottom in closed position. Extending laterally from one side edge of this bottom is a pin 18, and athwart this pin and immediately above the same is the long leg of a bell-crank 19, pivoted at its knee at 20 to one of the standards 11, while to the lower or short leg of this lever is connected a rod 21, which is properly sustained and guided and extends to that portion of the machine adjacent to the forming-chamber and is provided

with a suitable handle 22 for the purpose presently explained.

23 is a coil-spring whose ends are secured, respectively, to one of the standards 11 and to the upper or long leg of the bell-crank 19, the function of this spring being to hold said leg upward in its normal position.

The scale-pan is immediately above the belt 10, so that when the bottom of said pan is opened the contents will drop upon said belt for the purpose presently explained.

24 is a hopper which overhangs the scale-pan and is open at such overhanging portions, and 25 is the door of said hopper through which fur is placed within the latter.

26 is a shaft. 27 is a long drum tight on said shaft, and 28 is a short drum loose around said shaft, which short drum is reduced and journaled in one side of the hopper, while the shaft itself is journaled in the other side of the hopper.

29 30 are respectively wide and narrow endless belts around the drums 27 28 throughout their length within the hopper, said belts also passing around independent idle drums 31 32 within the lower part of said hopper. These idle drums are capable of revolution independent of each other, the drum 31 for the wide belt being shown in section at Fig. 1, while the drum 32 for the narrow belt is shown in dotted lines at Fig. 2. The outer surfaces of both these belts 29 30 are provided with picker-spurs 33 34, and the upper drums 27 28 are near that portion of the hopper which overhangs the scale-pan, so that fur which is picked up by these spurs will be carried over these upper drums, and as said fur leaves the spurs after being carried over said drums it will fall within the scale-pan; but it is quite likely that the fur will not readily drop from the spurs, but will adhere thereto in greater or lesser quantities, and we therefore have provided means for knocking the fur off from said spurs, so that it will readily fall in the scale-pan, this means comprising a paddle 35, having any suitable number of blades and capable of revolving in a direction reverse to that in which the belts travel. The shaft 36 of this paddle is journaled within the sides of the hopper in the overhanging portion, and on one end of this shaft is any suitable pulley 37, which may be belted up to produce the desired movements of the paddle.

38 is a partition which is loosely hung around the upper and lower shafts of the belt-carrying rollers, so as to separate the belts 29 30 from each other.

Loose around the shaft 26, but incapable of movement lengthwise thereof, is a pulley 39, and splined upon this shaft, so as to be capable of lengthwise movement therealong, is a clutch 40, which is normally thrown against the hub of this pulley 39 by means of a coil-spring 41, the adjacent faces of said clutch and hub being provided with teeth in the usual manner, so that it will be clear that when said clutch and hub are engaged any rotary movement of the pulley 39 will be imparted to the shaft 26.

42 is the clutch-lever, pivoted to any suitable bracket 43, extending from the hopper, and 44 represents magnets supported at the side of the hopper. One end of the lever 42 is connected with the clutch 40 in the usual manner, while the other end is formed into an armature within the field of the magnets 44, and it will therefore be readily understood that when the armature is attracted by said magnets the clutch 40 will thereby be forced outwardly against the resiliency of the spring 41, thereby causing the shaft 26 to become stationary.

45 is a pulley loose around the reduced portion of the short drum 28, but incapable of movement lengthwise thereof, and splined upon this reduced portion, so as to be capable of lengthwise movement therealong, is a clutch 46, which is normally thrown against the hub of the pulley 45 by means of a coil-spring 47, the adjacent faces of said clutch and hub being provided with teeth in the usual manner, and it will therefore be clear that the engagement of said clutch and hub will cause any rotary movement of the pulley to be imparted to this short drum 28.

48 is a clutch-lever pivoted to any suitable bracket 49 extending from the hopper, and 50 represents magnets supported at the side of the hopper. One end of this lever 48 is connected with the clutch 46 in any ordinary manner, while the other end constitutes an armature within the field of the magnets 50, and it will therefore be clear that when said armature is attracted by these magnets the clutch 46 will thereby be forced outwardly against the resiliency of the spring 47, thereby causing said short drum to become stationary.

51 is a dog pivoted to the side of the hopper, while the other extremity rests by gravity upon the scale-beam.

52 53 are light spring insulated contacts, the former depending from the free end of the dog 51, while the latter is secured at the side of the hopper and extends upwardly. 54 55 are insulated terminals secured to the side of the hopper, and 56 is a circuit-closer carried by the scale-beam. These contacts 52 53 and terminals 54 55 are electrically connected in any usual and well-known manner with the coils of the magnets heretofore referred to, so that when a circuit is closed by the engagement of the contacts 52 53 the magnets 44 will be vitalized, thereby stopping the movement of the drum 27 and the wide belt carried thereby, while the closing of the circuit by means of contact between the closer 56 and the terminals 54 55 will effect the vitalization of the magnets 50, thereby stopping the movement of the short drum and the narrow belt carried thereby.

In all sorts of weighing apparatus for various purposes and also in weighing substances by the depositing of the latter within a scale-pan the articles or substances weighed are

very slowly deposited within the scale-pan toward the latter part of the weighing operation in order to obtain accuracy in weight. It would never do to suddenly dump a considerable amount of any substance within a scale-pan, because if overweight was ascertained then such substance would have to be gradually removed. Our invention aims to gradually deposit the fur in the scale-pan toward the latter part of the weighing operation, and this is effected by the action of the magnets, as we will now describe.

It will of course be apparent that the dog 51 adds a certain weight to the scale-beam so long as it rests thereon, and we will also call attention to the fact that as the scale-pan falls the contacts 52 53 will engage before the closer 56 comes in contact with the terminals 54 55. As the belts 29 30 travel, owing to the normal engagement of the clutches and pulleys heretofore referred to, the fur will be picked up from the hopper and will be deposited within the scale-pan, the amount of fur required being such as will just overbalance the weight 13 in the position to which the latter is adjusted. When the scale-pan drops, owing to the combined weights of the fur and dog 51, the contacts 52 53 will be engaged, thereby stopping the movement of the larger belt 29, and the scale-beam will then be relieved of the weight of this dog, so that the small belt 30 will now operate to deposit fur within the pan in small quantities until said weight is overbalanced, whereupon the closer 56 will engage with the terminals 54 55, thereby stopping the movement of this small belt 30. The operator now pulls the handle 22, thereby opening the bottom of the scale-pan and allowing the fur contained therein to be dumped upon the belt 10, whereupon the operator releases this handle and the bottom of the pan closes automatically, owing to its resilient action, and the scale-pan, being relieved of the fur, will rise to its normal position, and the electric circuit will be broken, so that the clutches and pulleys will engage and the operation of weighing be continued. The belt 10 is constantly traveling, and the fur dumped thereon will be carried to the feed-rolls 9, which latter will deliver it to the picker 6 in the chamber 3, which picker will cause the fur to be evenly distributed upon the traveling belt 5, which latter will convey it to the feed-rolls 7, whereby it will be delivered to the picker 8 in the forming-chamber 2. It will thus be readily understood that our machine is automatic in every particular and that the fur will at first be deposited within the pan in considerable quantities until the desired amount is nearly obtained, whereupon the further weighing will be accomplished gradually.

The amount of fur which is gradually weighed out toward the latter end of the weighing operation of course depends upon the weight of the dog upon the scale-beam, and this dog may be more or less heavy, according to the demands of the occasion, and we of course do not wish to be limited in this respect.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a hat-forming machine, the herein-described apparatus for weighing out the fur, which comprises a pivoted scale-beam carrying a weighing-pan, a predetermined weight resting upon said beam near the pan and adapted to descend for a certain distance with said beam, a hopper which contains the fur, fast and slow feeding devices within said hopper initially operated in harmony for primarily underloading said pan whereby the latter is caused to descend when there is a shortage in its contents equal to said weight, electrical contacts supported by the frame of the machine and by said weight, and means, operated by the closing of said contacts, for relieving the beam of said weight and for causing an amount of fur equal to said shortage to be deposited in the weighing-pan by the action of the slow-feeding device alone, substantially as set forth.

2. In a hat-forming machine, the combination of the pivoted scale-beam carrying the weighing-pan, the pivoted dog resting by gravity upon said beam at the end which carries the pan, insulated electric contacts carried by said dog and by a stationary part of the machine, the circuit-closer carried by said beam, electric terminals secured to a stationary part of the machine, means operated by the engagement of said contacts for effecting the final filling of said pan at a lesser speed, and means operated by the engagement of said closer and terminals for stopping the delivery of fur into said pan, substantially as set forth.

3. In a hat-forming machine, the combination of the pivoted scale-beam carrying the weighing-pan and a circuit-closer, the pivoted dog resting upon said beam and carrying an insulated electrical contact, the hopper within which the fur is placed, the wide and narrow belts capable of operation in unison and whereby the fur is delivered from said hopper into the weighing-pan, and the electric contact and terminals secured to a stationary part of the machine and with which the first-named contact and the circuit-closer respectively engage in succession during the dropping of said pan, whereby the final delivery of the fur into said pan is effected solely by means of the narrow belt and the feeding of the fur entirely stopped after the desired amount has been weighed out, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE H. L. SCHOONMAKER.
JOHN A. CANFIELD.

Witnesses:
MARY E. BROOKS,
FRANK BROOKS.