(No Model.) 2 Sheets—Sheet 1.

T. M. SPILMAN.

EGG TESTER.

No. 543,970. Patented Aug. 6, 1895.

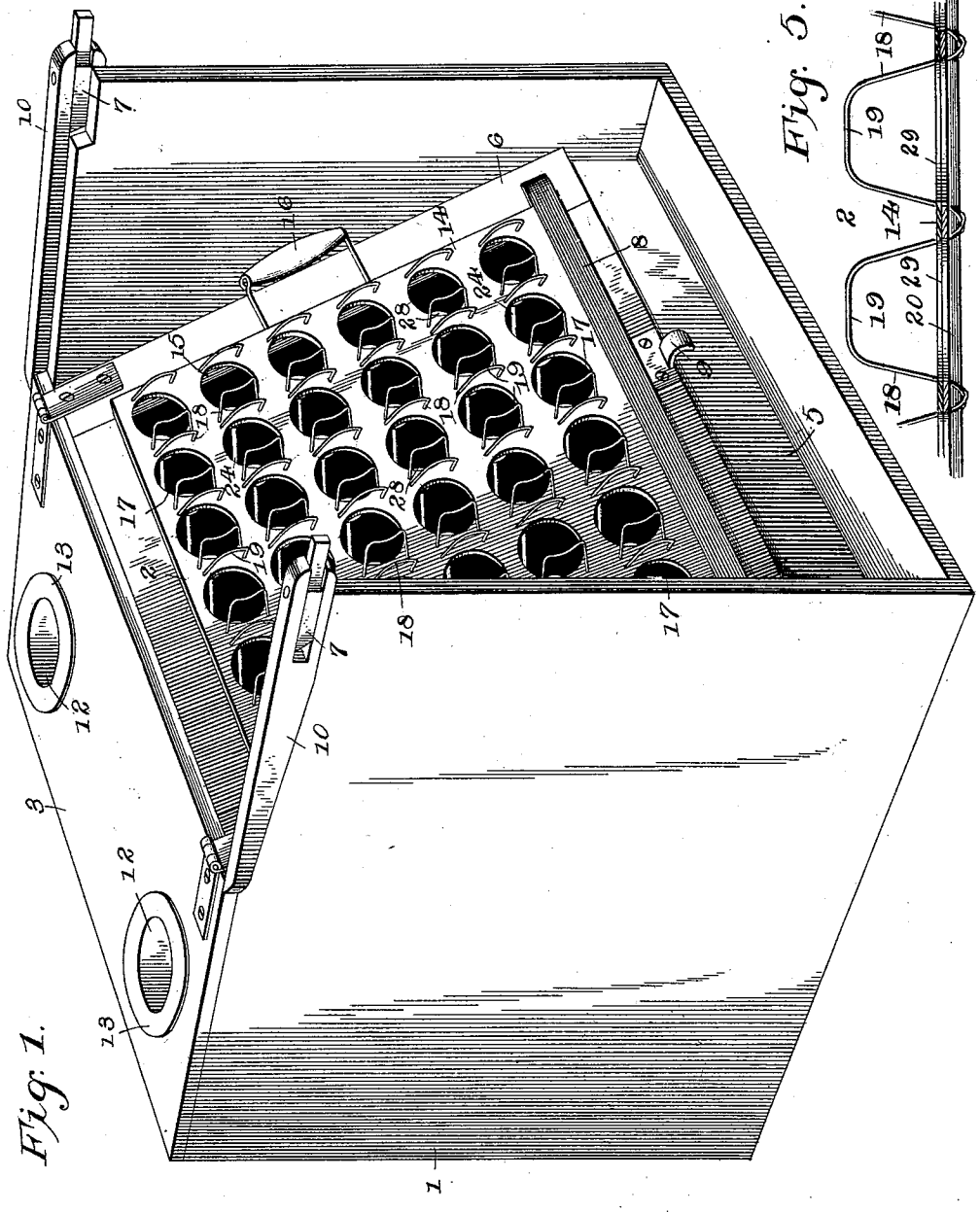

Fig. 1.

Fig. 5.

Witnesses
Chas. A. Ford.
V. B. Hillyard.

Inventor
Thomas M. Spilman,

By his Attorneys.
C. A. Snow & Co.

(No Model.) 2 Sheets—Sheet 2.

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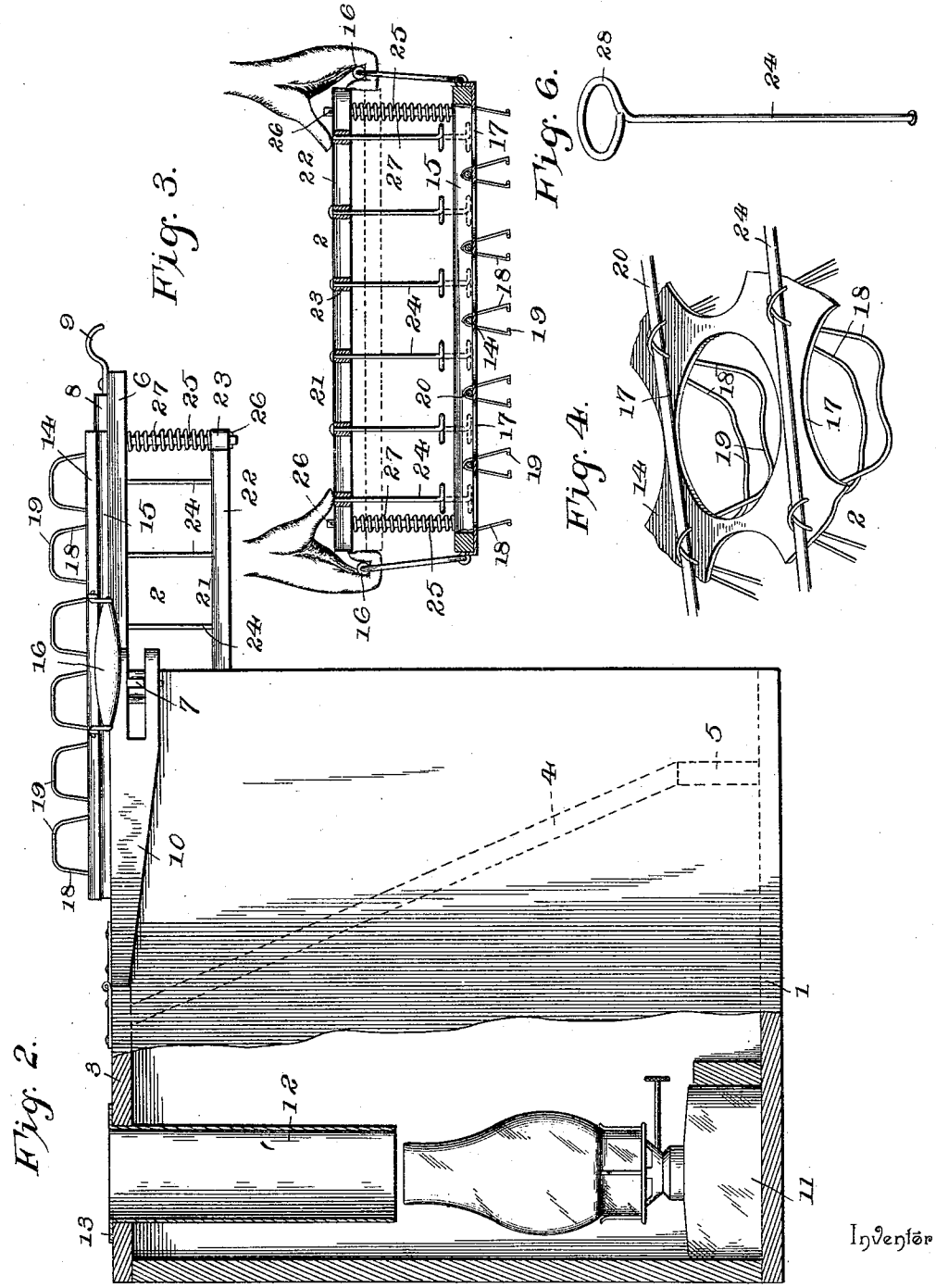

Fig. 2.

Fig. 3.

Fig. 6.

Fig. 4.

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Chas. A. Ford.
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Inventor
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UNITED STATES PATENT OFFICE.

THOMAS M. SPILMAN, OF WASHINGTON, DISTRICT OF COLUMBIA.

EGG-TESTER.

SPECIFICATION forming part of Letters Patent No. 543,970, dated August 6, 1895.

Application filed March 26, 1895. Serial No. 543,240. (No model.)

To all whom it may concern:

Be it known that I, THOMAS M. SPILMAN, a citizen of the United States, residing at Washington, in the District of Columbia, have invented a new and useful Egg-Tester, of which the following is a specification.

The object of the present invention is to facilitate the handling of eggs during the testing and packing process, and enable such operation being performed with ease and dispatch with a minimum of danger of loss by breakage of the eggs.

The improvement consists essentially of a carrier provided with spring-holders, whereby the eggs are held in a positive manner after being placed in the carrier, thereby enabling the latter to be inverted over the filler or nest when packing the eggs in the case, and an ejector in combination with the carrier to force the eggs from the spring-holders of the carrier into the said filler or the nest.

The improvement also consists of the novel construction of the spring-holders and the peculiar formation of the ejectors, whereby a light and durable carrier is provided, and whereby the testing will not be interfered with by the casting of deep shadows upon the egg, which would result from providing ejectors other than those of skeleton form.

The improvement also further consists of the novel features and combinations of the parts, which hereinafter will be more fully described and claimed, and which are illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of an egg-tester constructed in accordance with and embodying the essential features of the invention. Fig. 2 is a side elevation, parts being broken away, of the tester, showing the egg-carrier supported in a horizontal position. Fig. 3 is a detail view, in section, of the egg-carrier, showing it inverted and the operation of the ejectors by dotted lines when forcing the eggs from the spring-holders of the carrier into the receptacles of the packing-case. Fig. 4 is a detail view of a portion of the carrier, showing the manner of bracing the same and providing the spring-holders. Fig. 5 is a detail view of a modified form of carrier-top showing the openings therein provided with an elastic supporting-ledge, whereby a close fit is had between the eggs and the edges of the openings to exclude rays of light and prevent injurious contact of the eggs with the said carrier-top. Fig. 6 is a detail view of an ejector.

The tester comprises a box or case 1 and a carrier 2, the latter being adapted to receive the eggs to be tested, and by means of which the eggs, after being inspected, are transferred to the packing-case.

The case or box is closed at its bottom, sides, back, and top, the front being open and the top 3 terminating at its front edge at a point about midway between the front and rear of the case. Strips 4 incline from the front edge of the top 3 downwardly and forwardly to within a short distance of the front edge of the case-bottom, and are joined at their lower ends by means of a transverse strip 5. The frame 6 is hinged at its upper end to the front edge portion of the top 3, and is adapted to be supported upon the inclined strips 4 when lowered. This frame is adapted to receive the carrier 2 during the process of filling the latter and testing the eggs. When filling the carrier the frame 6 is supported in an approximately horizontal position, as shown in Fig. 2, suitable pivoted catches 7 being provided for the purpose. A strip 8 is attached to the swinging end of the frame 6, and is adapted to support the carrier 2 and prevent the latter from slipping when the frame is lowered to the position shown in Fig. 1. A stop 9 is applied to the swinging edge of the frame 6, to be engaged by the finger when it is required to raise and lower the frame, as will be readily understood. The catches 7, for sustaining the frame 6 in an elevated position, are pivoted midway of their ends in slots formed in the front ends of strips 10, attached to the sides of the case and projecting above the latter a short distance. The precise form of catches is immaterial, so long as the catches will subserve the purpose of supporting the frame and carrier while the latter is filling.

Within the case is located one or more lamps 11, or other light-producing devices, by means of which the testing process is rendered feasible. In testers, as generally constructed, the means for producing the light will be a lamp, and in order to carry off the products of combustion and heated air tubes 12 are located above the lamp-chimneys and are

supported within openings provided in the top 3, said tubes having outer flanges 13, by means of which they are supported within the openings through which the tubes extend.

The carrier 2 comprises a top 14 and a frame 15, and is provided with swinging handles 16 at diametrically-opposite points, whereby the manipulation of the carrier is rendered easy and convenient.

The top 14 may be of any suitable material sufficiently light and strong to provide a neat and durable structure. Sheet metal has been found preferable for this purpose, as it is both light and strong, and admits of the openings 17 being punched therein.

Spring-holders 18, approximately U-shaped in side elevation, are provided in pairs for each opening and located at diametrically-opposite points, so as to act jointly to grip and hold the eggs when placed in proper position upon the carrier. These spring-holders, in connection with the openings 17, retain the eggs in place against accidental displacement on inverting the carrier to deposit the eggs in the nest or filler of the packing-case.

The spring-holders may have any desired form so long as they effect the result of securing the eggs in the openings 17, the construction shown being preferable because of lightness and enabling them to be formed of wire of a single length, which is threaded through apertures in the carrier-top.

The closed ends 19 of the spring-holders are slightly arched and curved between the side members, so as to fit snugly against the sides of the eggs and centralize the latter in the openings 17, and prevent lateral displacement of the said eggs when inverting the carrier. A series of rods 20 are placed in parallel relation between the rows of openings 17, and serve to brace and strengthen the top 14 and provide an anchoring for the wires from which the spring-holders 18 are formed. In threading the wires in the formation of the spring-holders, the portions beneath the top 14 are crossed, so as to embrace the sides of the rods 20 and enable the holders themselves to mutually brace one another. Thus it will be seen that the contiguous spring-holders of adjacent rows of openings 17 are so disposed that the holders in a straight line will have each alternate one formed of one wire and the intermediate ones formed of a second wire, this being due to the crossing of the wires over the rods 20, as will be readily understood.

A frame 21, comprising side bars 22 and cross-bars 23, is yieldingly connected with the frame 15, and carries the ejectors 24, by means of which the eggs are forced from the spring-holders of the carrier. The cross-bars 23 are located immediately opposite the respective rows of openings 17, so that the active ends of the ejectors will operate centrally of the said openings 17. Posts 25 depend from the corners of the frame 15 and operate through openings in the ends of the side bars 22 and have stops 26 on their projecting ends to limit the movement of the frame 21 away from the frame 15. Springs 27 are mounted upon the posts 25, and are confined within the frames 15 and 21, and serve, normally, to hold the said frames separated. The ejectors 24 have a broad head 28 to insure an extended bearing upon the eggs to prevent injurious contact therewith when operating the ejectors to force the eggs from the carrier into the nest or filler.

In the preferable form of construction the ejectors are constructed from wire, which is cut into the required lengths, one end of each length being bent into a ring which forms the head 28, and the other end being secured to the proper cross-bar 23 of the ejector-frame. By this construction of ejector, wire of comparatively-light gage may be used and very little surface is presented for obstructing the rays of light and casting shadows upon the eggs. This is of vital importance in the successful production of a tester of the character herein set forth, because should shadows be reflected upon the eggs the purpose and object of the invention would be defeated, as good eggs may be cast aside as bad by reason of the dark look given thereto if shadows existed.

When using the invention the carrier is placed upon the frame 6, the latter being supported in a horizontal position, in the manner set forth. The eggs to be tested are placed upon the carrier and are retained in position by means of the spring-holders. After the carrier is filled it is lowered into the position shown in Fig. 1, when the eggs are observed from a point directly above, any bad or indifferent ones being readily detected in the ordinary manner. After the test has been made the carrier is detached from the frame 6, by means of the handles 16, and is inverted over the filler or nest, when, by pressing upon the frame 21 by means of the thumb, the eggs will be forced from their holders into the cells or pockets of the filler or nest, as will be readily comprehended.

In order to secure a close joint between the edges of the openings 17 and the sides of the eggs, so as to exclude rays of light and at the same time prevent injurious contact of the eggs with the edge portions of the openings 17, the latter have a projecting ledge 29 of rubber or other elastic material. This is provided in an economical way by covering the top 14 with a sheet of rubber or other elastic material, and forming openings therein of slightly less diameter than the openings 17.

In order to meet the various demands of the trade it is obvious that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new is—

1. In an egg tester, the combination with a

carrier provided with spring holders, of a frame having yielding connection with the carrier, and individual ejectors attached to the said frame and adapted to push the eggs from their respective holders after the carrier has been inverted, substantially as and for the purpose set forth.

2. The combination with an egg carrier having a series of openings, of wires extending parallel with the rows of openings and threaded through apertures in the said carrier, that portion of the wires between the apertures and opposite the openings in the carrier being upwardly deflected and providing spring holders, substantially as set forth for the purpose described.

3. The combination with an egg carrier formed of sheet material and having rows of openings, of a series of rods arranged in parallel relation between the rows of openings and against the under side of the carrier, and wires threaded through apertures in the carrier and having that portion opposite the openings therein upwardly deflected to form spring holders, the said wires crossing on the under side of the carrier and embracing the said rods, substantially as set forth for the purpose described.

4. In an egg tester, the combination with a carrier having spring holders, of a frame having yielding connection with the said carrier, and ejectors formed from wire and having an open expanded head portion to engage with the eggs, substantially as described for the purpose set forth.

5. In an egg tester, the combination with a carrier provided with spring holders and with swinging handles, of a frame comprising side and cross bars having yielding connection with the carrier, and individual ejectors formed from wire and having open expanded end portions to engage with the eggs, and mounted upon the said cross bars, said ejectors being actuated to dislodge the eggs from the carrier after the latter has been inverted, substantially as described for the purpose set forth.

6. An egg tester comprising a case having a hinged frame on its open side which when lowered assumes an inclined position, catches to sustain said frame in an elevated position, a carrier provided with spring holders and ejectors, and adapted to be supported by the said hinged frame during the filling and testing operation, and heat-conducting tubes extending through the top of the case to carry off the heat and products of combustion, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

T. M. SPILMAN.

Witnesses:
JOHN H. SIGGERS,
E. G. SIGGERS.