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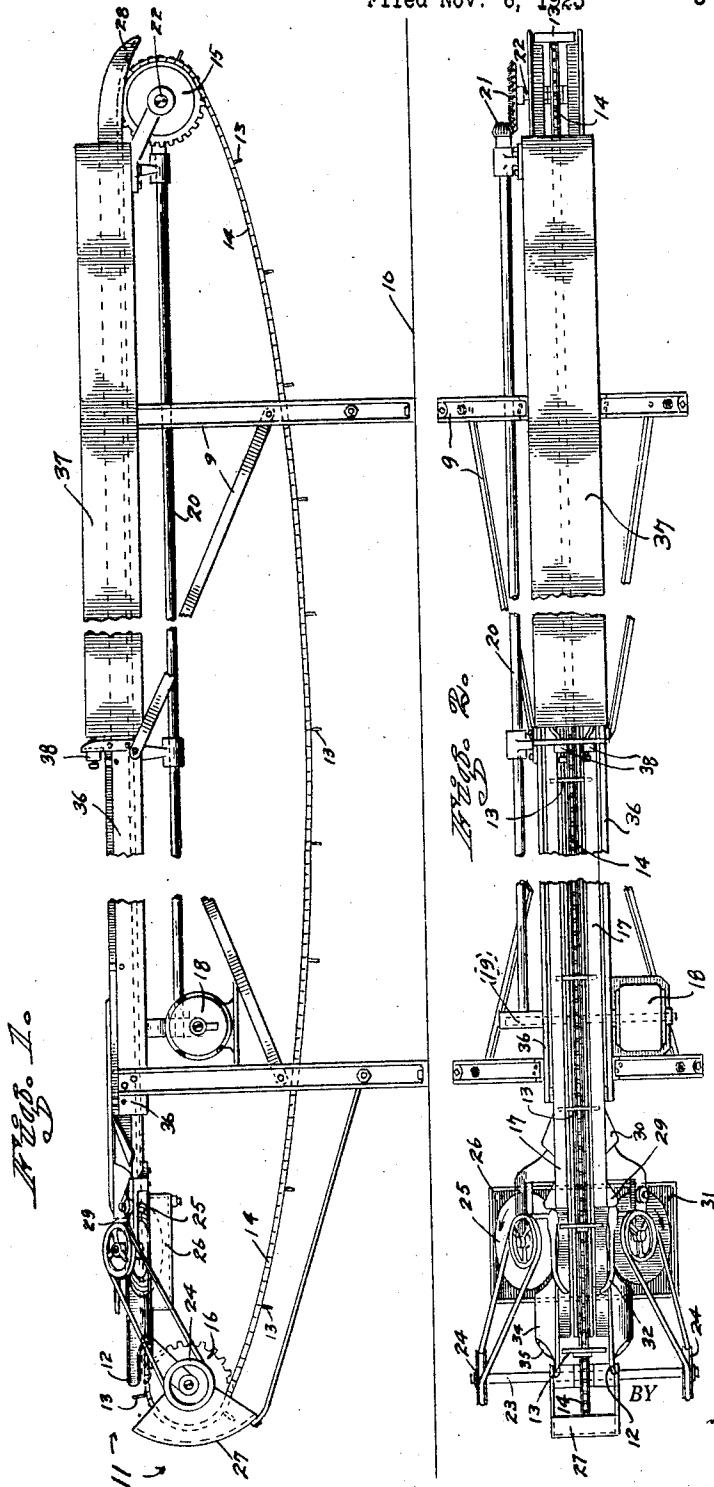
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APPARATUS FOR SEALING PACKAGES

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3 Sheets-Sheet 1



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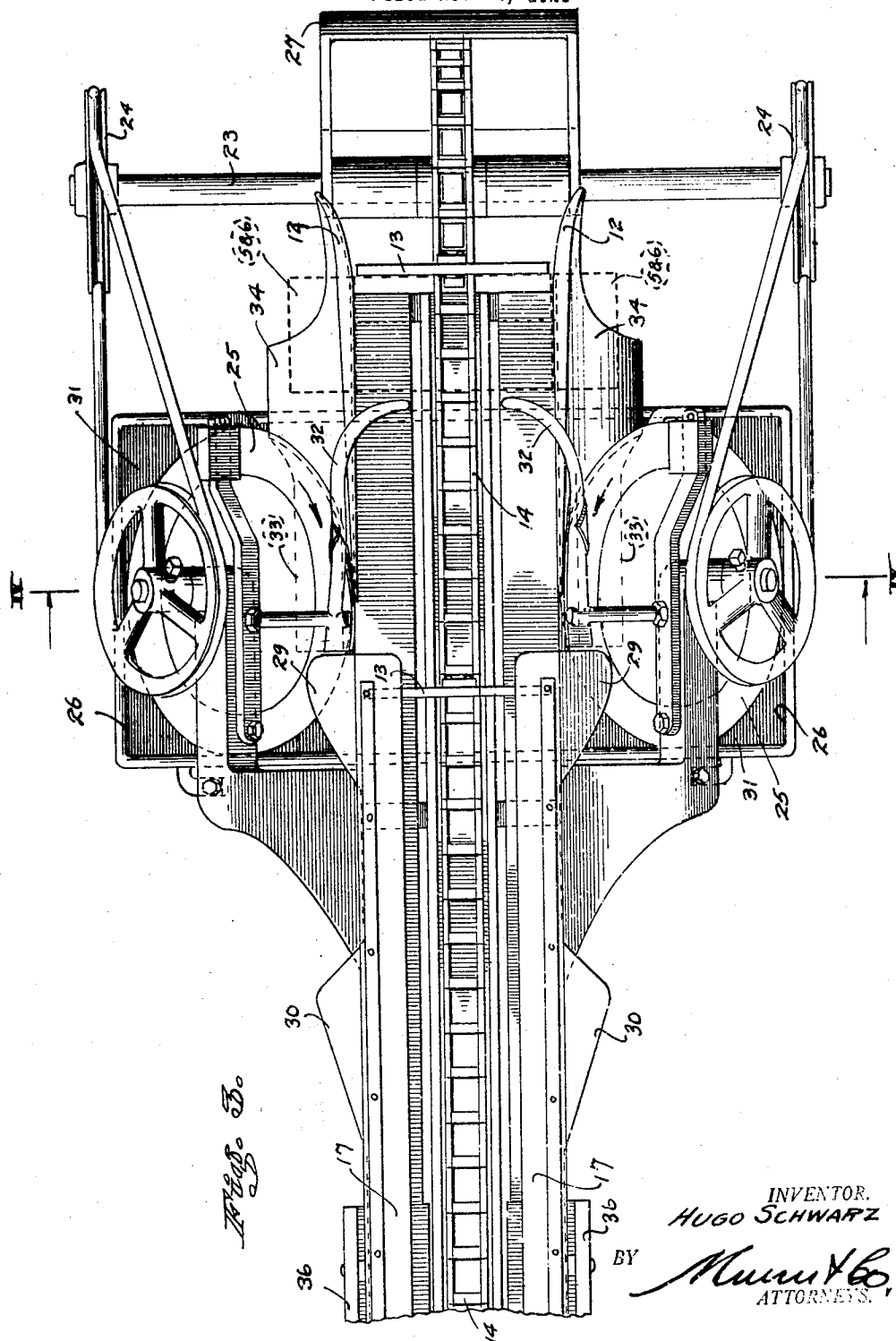
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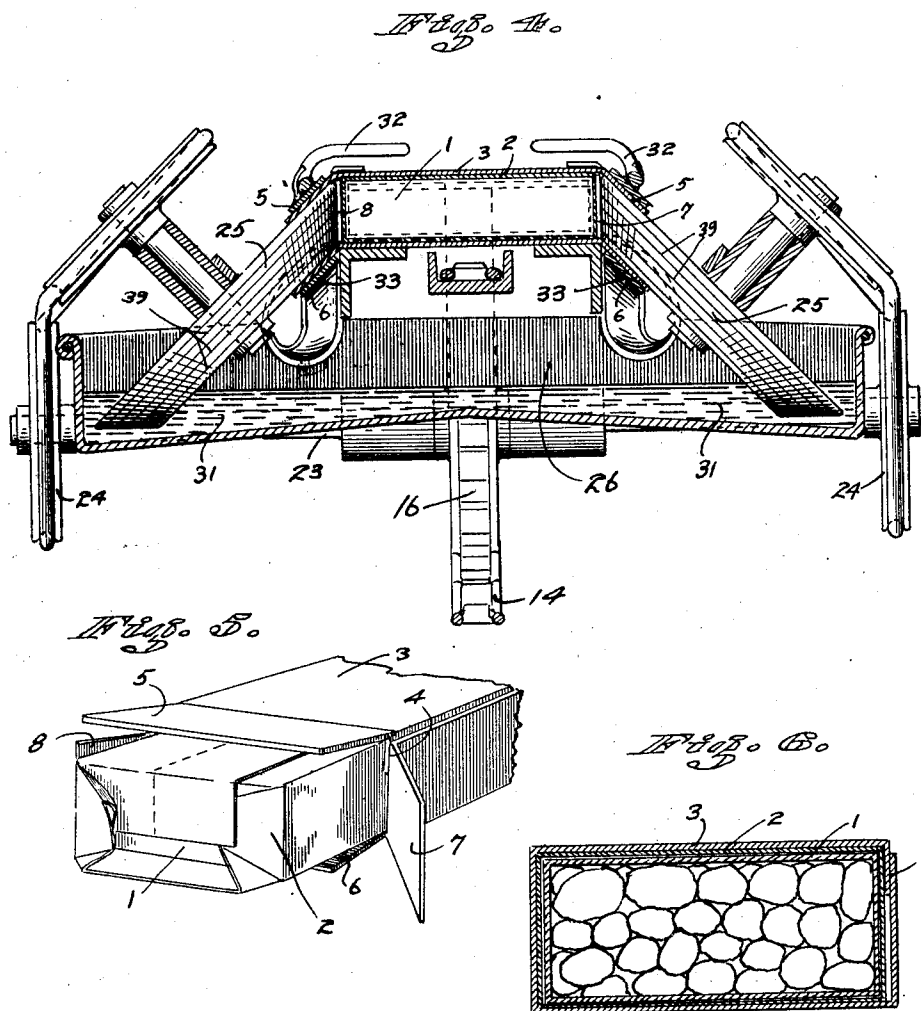
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR SEALING PACKAGES.

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This invention relates to apparatus as used for the gluing and sealing of wrapped articles, cardboard cartons, paper wrappers on cartons, et cetera, and has for its particular objects a simple, durable and reliable machine which thoroughly cements the entire surface of all the open flaps of a carton or package, as against the localized application of cement heretofore used, and which will apply heat to the cemented joint to set the joint, and at the same time melt together the layers of a wax or other impregnated inner wrapping of the package or carton, whereby in a single operation the outer wrapping is sealed and the inner wrapping hermetically sealed.

I attain the objects outlined in the apparatus described in the following specification and shown in the accompanying drawings, and in which:

Figure 1 is a side elevation of my complete machine; Figure 2 a plan view thereof, Figure 3 an enlarged plan view of the receiving, cementing and folding elements of my machine;

Figure 4 a cross section of Figure 3 along the line 4—4 thereof;

Figure 5 a perspective view of the package before sealing and Figure 6 a cross section of the package.

Before entering a detailed description of the machine, the package to be sealed had better be described so as to give a quicker appreciation of the machine for sealing it.

The package as shown in Figures 5 and 6 represents a candy package, and consists of an inner cardboard container (1) for the candy, a waxed or paraffined paper wrapping (2) folded by hand around the inner container, and an outer cardboard carton (3) into which the waxed paper wrapped inner carton fits snugly and into which it is inserted by hand.

The outer carton is furnished by the manufacturers as a tubular article open at both ends, the longitudinal joint (4) being glued at the carton factory.

At each open end of the outer carton are four simple flaps, (5) and (6) denoting respectively, the upper and lower side flaps, and (7) and (8) respectively the two edge flaps.

My invention is concerned with the gluing down of the four flaps at each end of the

outer carton as well as the heat sealing of the joints and overlapping ends of the paraffined inner wrapping.

In Figures 1 and 2 my machine is shown as having a supporting frame (9) adapted to rest upon the floor (10) and having the feeding end (11) of the apparatus at a convenient height for an operator whose duty it is to insert the candy filled double cartons, one at a time between the receiving guide plates (12), each carton being inserted in front of one of the traveling slats (13) of an endless chain conveyor (14) carried over head and tail sprockets (15) and (16) rotatably mounted at opposite ends of the machine. The upper part of the frame supports long guides (17) slotted for the chain and along which the cartons are dragged by the slats (13) which project above the slotted guide.

On the frame is supported a motor (18) geared through means of a worm reduction (19) to a shaft (20), thence through bevel gearing (21) to the head sprocket shaft (22).

The tail sprocket (16) is actuated by the moving conveyor chain and has an extension shaft (23) carrying pulleys (24)—(24) at both ends belted to rotate the flap gluing wheels (25) which revolve in suitable glue troughs (26), removable for cleaning.

Around the exposed portion of the tail sprocket (16) is a guard (27) suitably braced to the frame as shown so that an operator can safely rest against it in feeding the machine, without danger of being injured by the sprocket or chain.

The cartons are entered between the guides (12) with the edge flaps folded down against the waxed paper wrapped inner carton and with the side flaps extended over the guides (12) as indicated in the enlarged view (Figure 3), and are caught each by a slat of the conveyor and after being sealed are carried toward the discharge chute (28) positioned over the head sprocket (15).

The sealing of the flaps is effected through the combination of gluing wheels (25) and folding fingers or ears (29) and (30) as follows:

The gluing wheels are wide face wheels with a bevel edge and are each mounted to rotate at an angle of forty-five degrees as best shown in Figure 4, with the lower part

of the wheel revolving in a bath of liquid glue or other cement (31), which may be heated or not as desired, whereby the wheel edge and both sides are covered with the glue which is carried up as the wheel revolves and delivered to the carton flaps.

The wheel face is made of a width corresponding to the vertical height of the carton between the guide flaps so that it will coat the entire exposed surface of both edge flaps which have previously been folded against the inner package as explained. This gluing of the entire end of the carton is a particular feature of my invention in making a better seal and permitting the use of a cheaper adhesive owing to the additional gluing of the outer flaps, as the outer and lower sides of the wheel at the same time coat the respective inner surfaces of the upper and lower side flaps (7) and (8). The wheels are preferably grooved on the gluing surfaces as indicated at (39) to increase the quantity of glue carried on them.

The machine is made to suit the length of the carton so that the wheels bear against the folded end flaps, and the side flaps are held lightly in contact with the sides of the wheel by sheet metal finger extensions (32) and (33).

From the receiving guides (12) extend suitable guiding plates (34) and (35) toward the gluing wheels to insure that the flaps pass over the proper sides of the wheels.

After passing the gluing wheels the ears (29) strike the upper flap and through the action of their curved surfaces fold up the flap as the carton moves along, and after which a second set of similar ears (30) repeat the operation on the lower flaps.

Upon the glued flaps all being folded against the carton as described the carton enters between two side walls (36) which hold the glued flaps tightly against the ends of the carton while they are passed through a heating chamber (37) which entirely surrounds the conveyor and may be heated by any convenient means, but I prefer to heat it electrically; and the illustration is intended to portray an electrical oven or heating box surrounding the conveyor and preferably of well known construction providing different stages of heat controlled through switches (38) so that the most effective heat can be easily produced.

The object of the elongated oven is to do two things: to dry, or partially dry the glued or cemented flaps, and at the same time to fuse the paraffine or wax coating of the inner wrapping so as to hermetically

seal the inner package against the entrance of moisture.

The heat is therefore an intense one, but of short duration, so that the proper result is quickly achieved before the heat penetrates through the inner carton to injure the candy.

The duration of the heat depends of course on the speed of travel of the conveyor chain as well as on the length of the oven through which the cartons pass.

In describing my apparatus I have omitted any unnecessary reference to the many constructive features common to such apparatus indicated in the drawings and well known in the art, as my invention is confined to a device which will perform the successive steps to glue the outer package and seal the inner one by heat without especial limitation to detail except so far as the peculiar form and mounting of my gluing wheels is concerned; for this latter feature provides in a single wheel a means of transporting the glue or cement from a pan beneath to three different carton surfaces simultaneously, and covers the entire surface of all the flaps instead of a small strip only, as heretofore generally done.

The machine as described while primarily intended to seal candy packages, may be adapted to the sealing of any similar packages such as breakfast foods and the like, and any modifications falling within the spirit of my invention and adapting it to such use are intended to be covered in my appended claims.

I claim:

1. A package sealing machine comprising an elongated guide, a traveling chain conveyor therealong adapted to convey the packages along the guide, a pair of gluing wheels rotatably mounted at an angle alongside the guide adapted to revolve in liquid adhesive at the lower edge and contact the passing packages at their vertical edges, and transmission elements for actuating the conveyor and gluing wheels simultaneously.

2. In a device of the type described, a beveled wheel extending at an angle with respect to a package, the periphery of said wheel contacting with one end of said package and having a width equal to the thickness of the package, means for applying a cementitious material to the periphery and to portions of two of the surfaces of said wheel, and means for holding the extending flaps of said package in contact with said surfaces, whereby said wheel will simultaneously coat the end of the package and the surfaces of the extending flaps.

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