Aug. 30, 1932. H. J. MELVILLE ET AL 1,874,568

PACKAGE SEALING MACHINE

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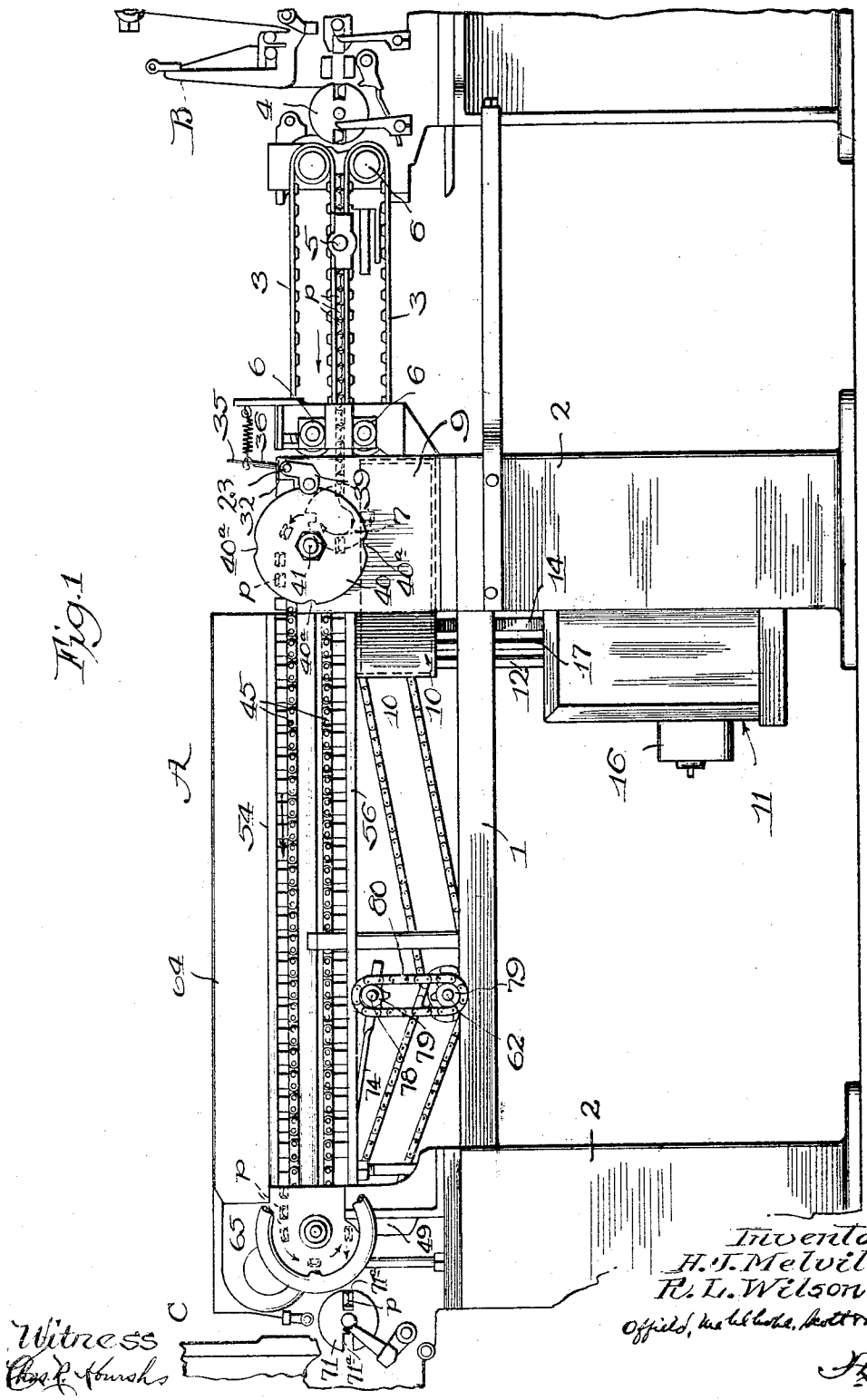


Fig. 1

Witness
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PACKAGE SEALING MACHINE

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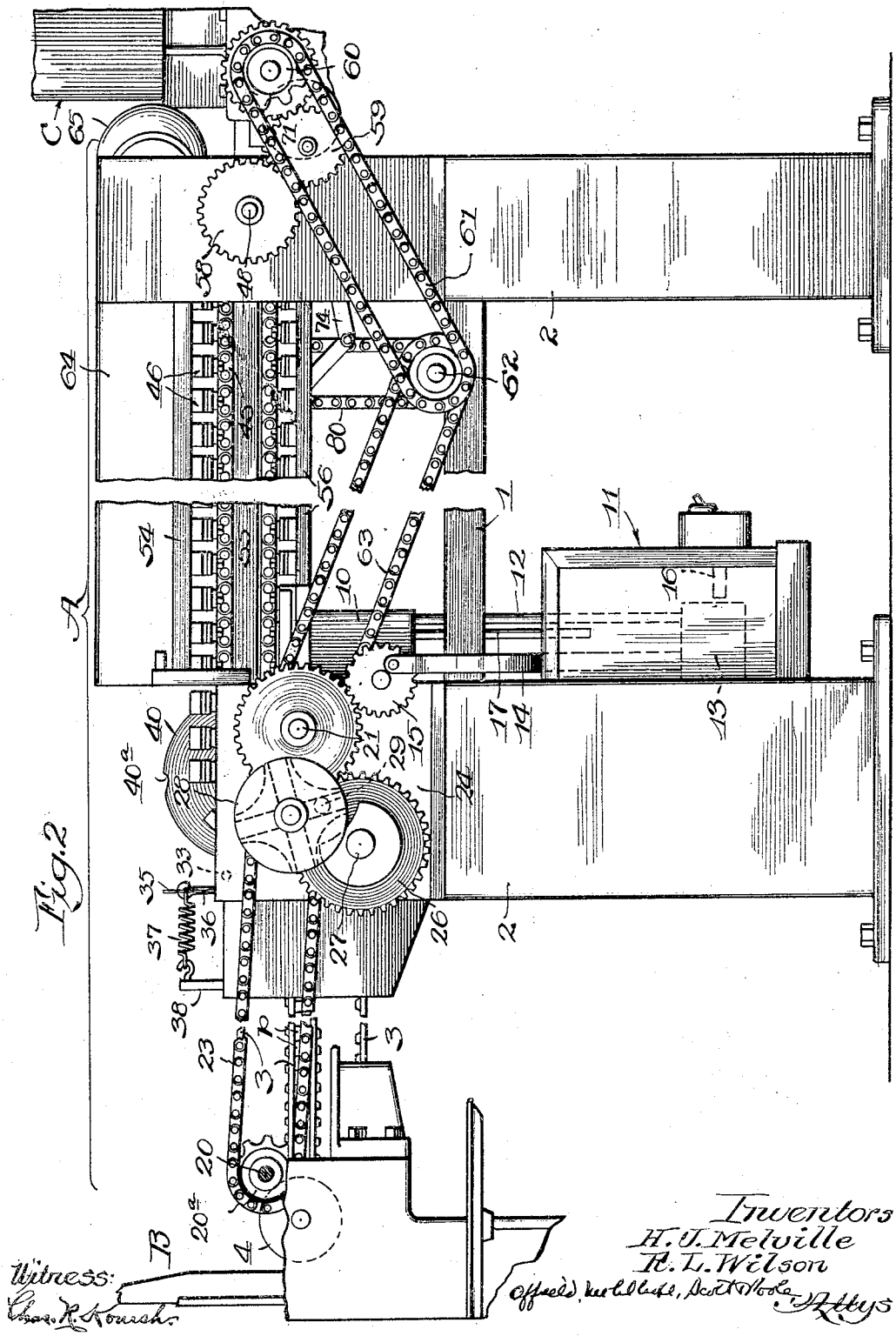


Fig. 2

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PACKAGE SEALING MACHINE

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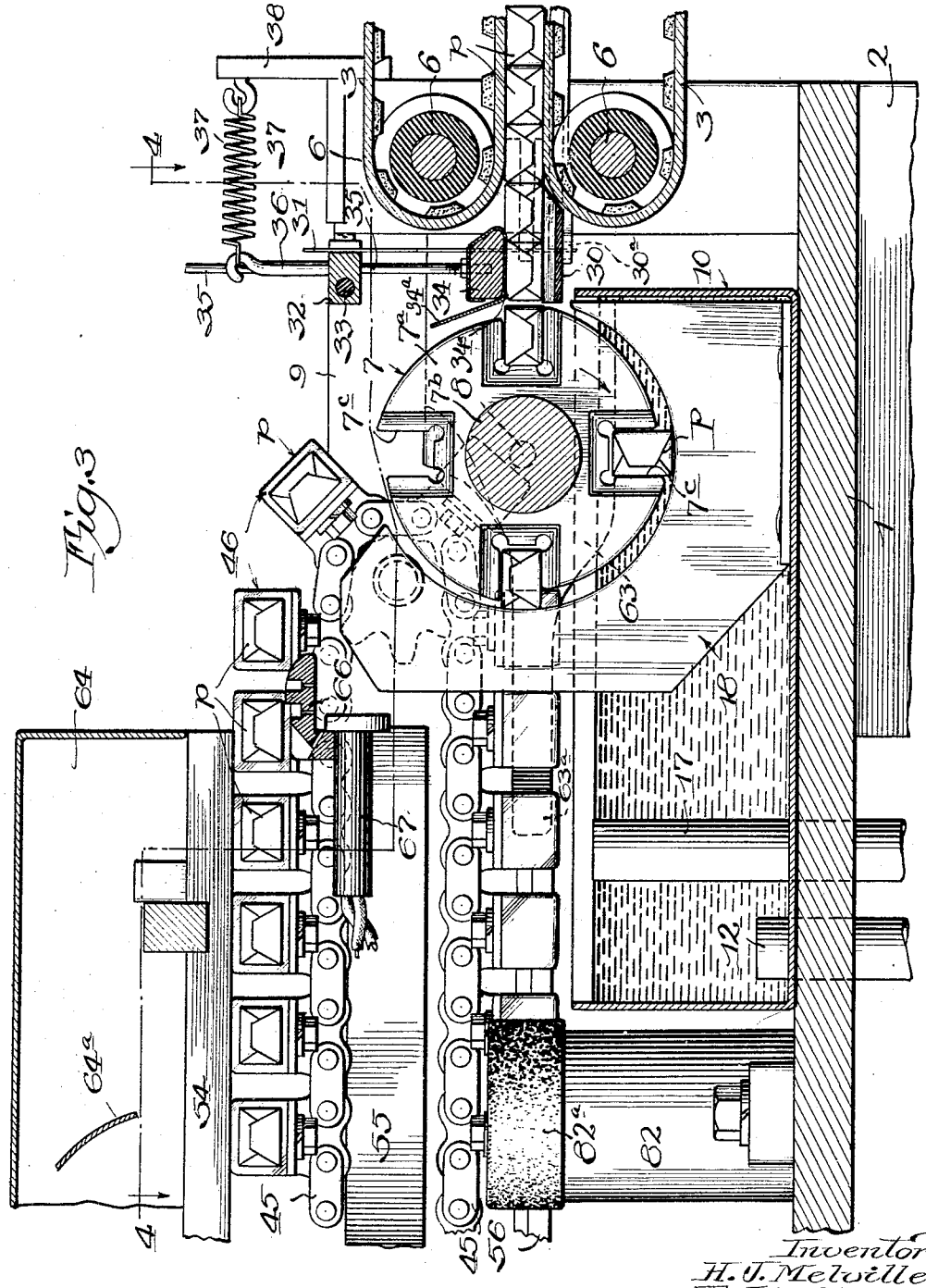


Fig. 3

Witness:
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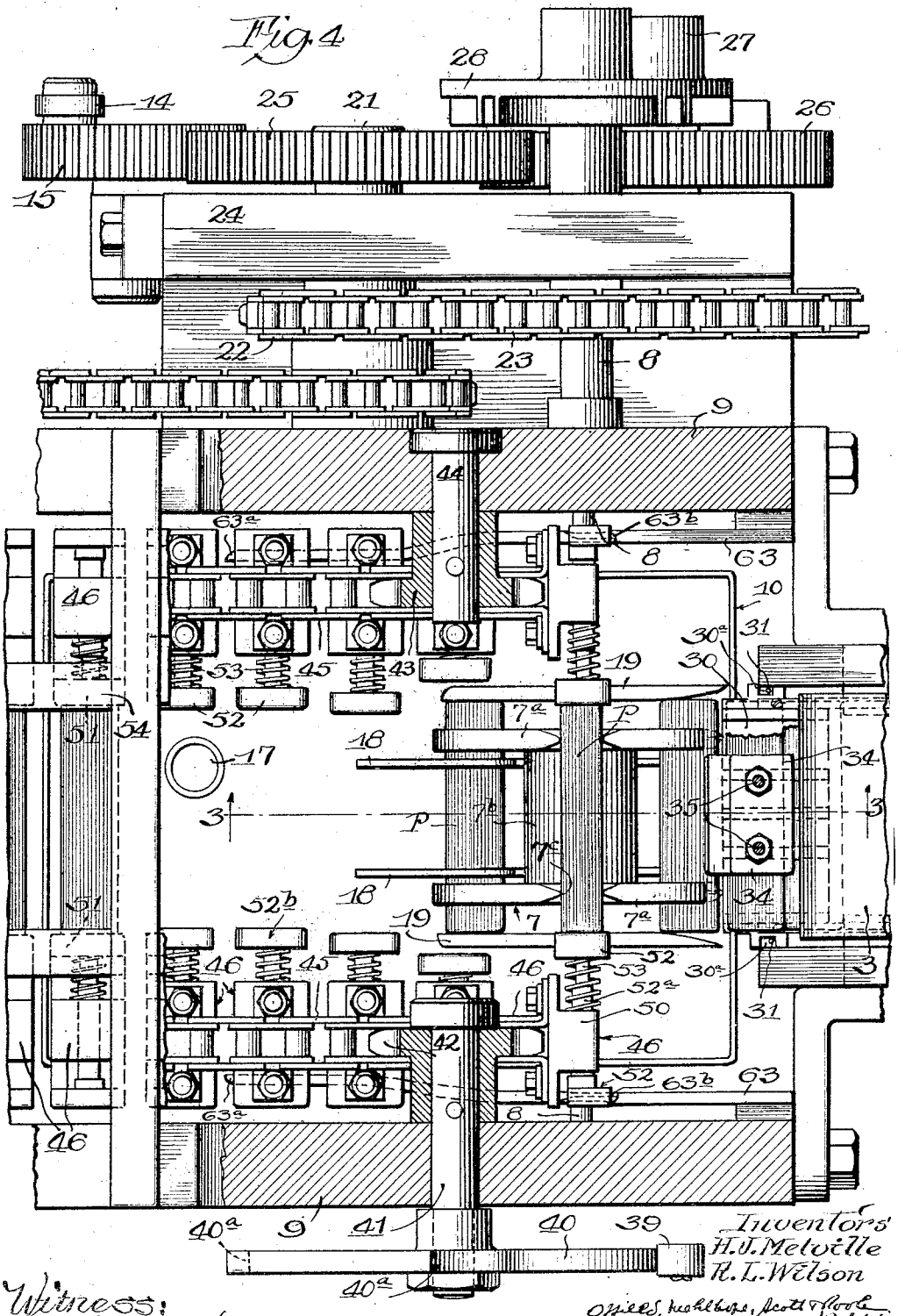
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PACKAGE SEALING MACHINE

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Fig. 4



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Aug. 30, 1932. H. J. MELVILLE ET AL 1,874,568

PACKAGE SEALING MACHINE

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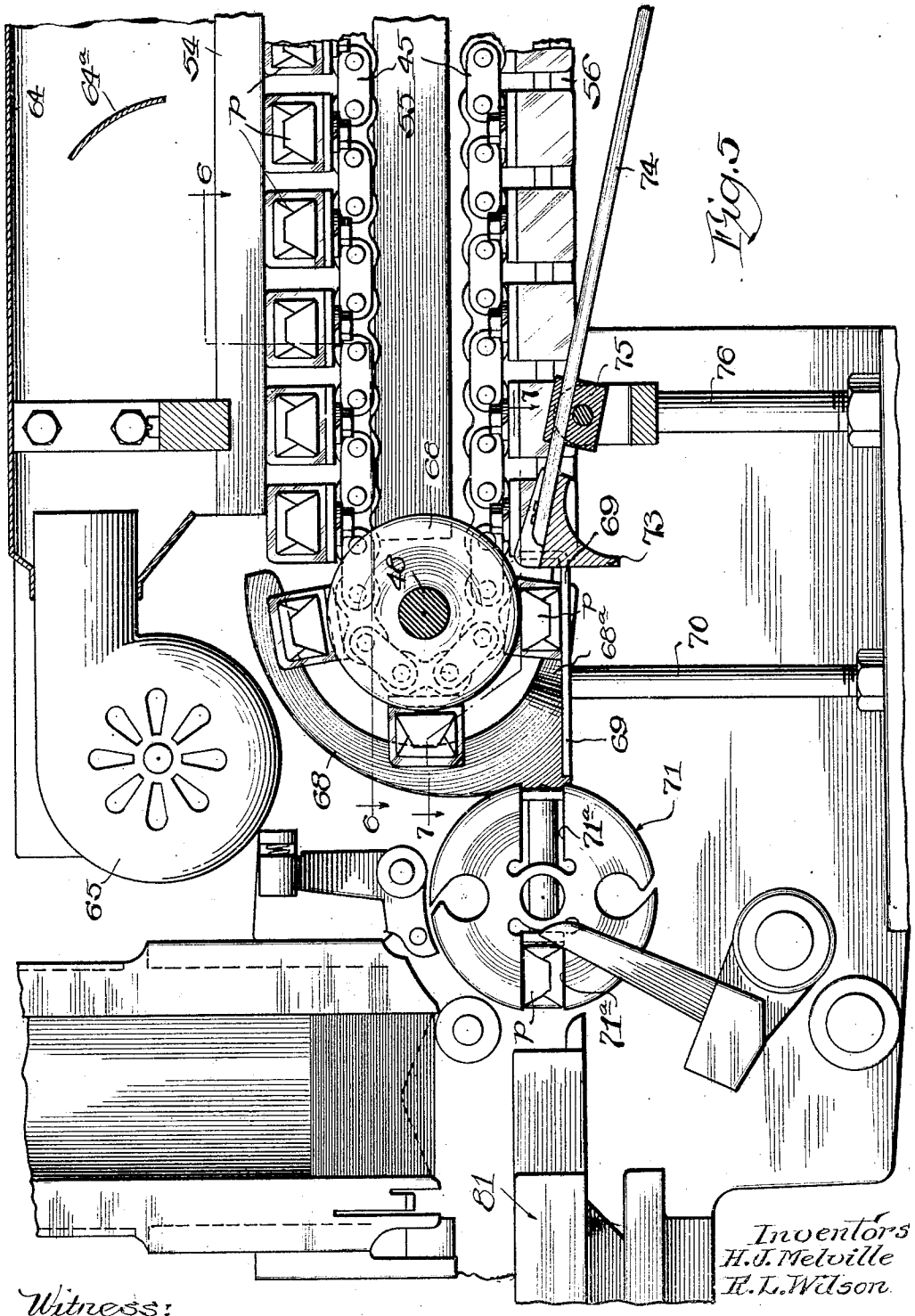


Fig. 5

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Aug. 30, 1932. H. J. MELVILLE ET AL 1,874,568

PACKAGE SEALING MACHINE

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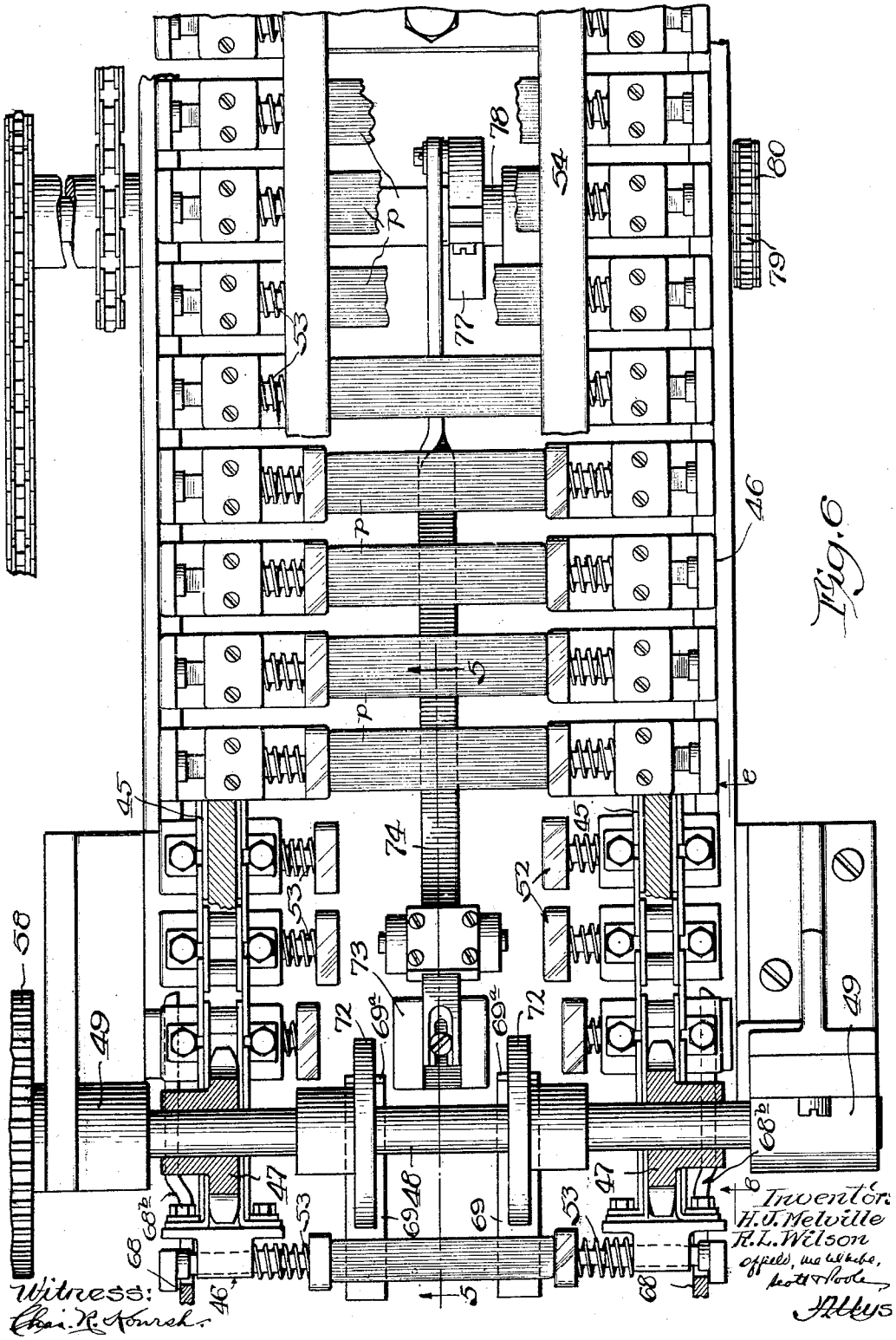


Fig. 6

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PACKAGE SEALING MACHINE

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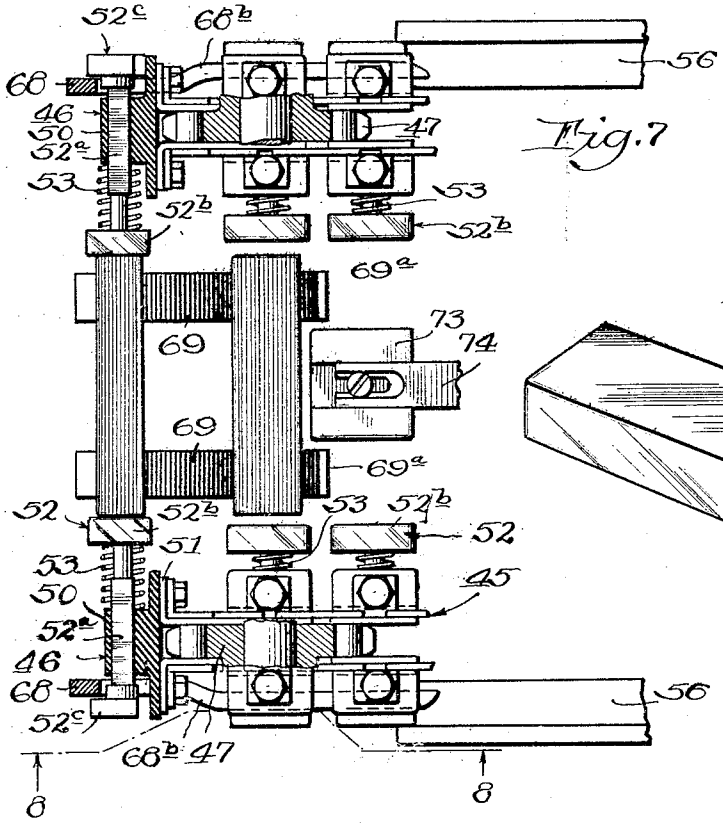
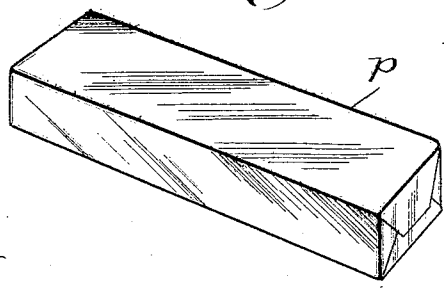


Fig. 7

Fig. 9



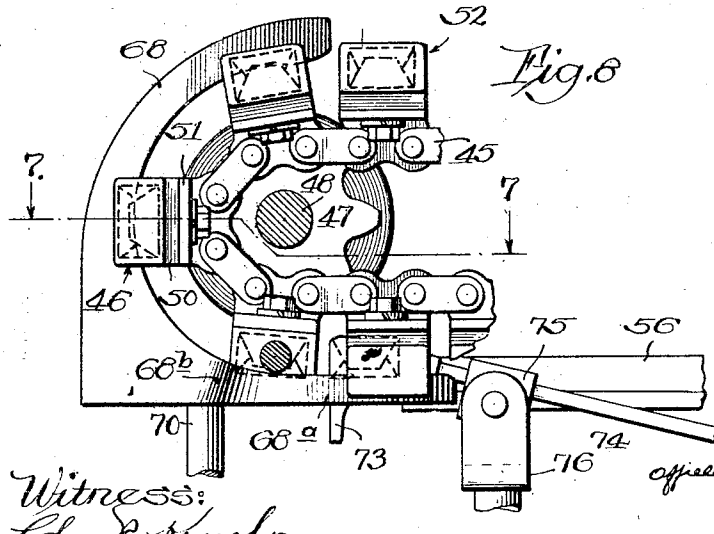


Fig. 8

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Patented Aug. 30, 1932 1,874,568

UNITED STATES PATENT OFFICE

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PACKAGE SEALING MACHINE

Application filed May 1, 1930. Serial No. 448,879½.

This invention relates to improvements in package sealing machines, and more particularly to machines for conducting wrapped packages of confections through a bath of molten paraffine, from which they emerge with a thin coating completely sealing the package.

The object of the invention is to provide a machine capable of handling the packages at the same speed as they are discharged from a wrapping machine whereby the wrapping and sealing of the packages become sucessive steps in a continuous packaging operation.

The machine of the present disclosure is adapted and designed for the sealing of packages of chewing gum, although it may be employed to equal advantage in the packaging of other products. Moreover, the present machine is shown as a part of a continuous process wrapping machine so that the complete packaging operation consists of enveloping the gum in an inside wrapper preferably of paraffine paper, folding and sealing the ends of the wrapper, discharging the wrapped packages into a slotted reel which carries the package through a bath of molten paraffine to be then picked up by grippers mounted on an endless chain conveyor and transported through a cooling chamber through which a current of air is circulated, and finally discharging the sealed packages into another wrapping mechanism which applies an outer wrapper or band.

So far as the wrapping mechanisms are concerned, they may be considered as parted sections of a standard wrapping machine with the dipping and cooling apparatus introduced between the two sections, and all moving parts so synchronized that the progress of the packages is continuous from end to end. Thus while the sealing apparatus is a complete unit or machine, it is preferably designed to function as a part of a complete wrapping machine, and hence the present disclosure includes the discharge end of one wrapping mechanism and the feeding end of the other wrapping mechanism.

Referring to the accompanying drawings:

Figure 1 is a general view of the machine in elevation taken from the side which places the feeding end at the right and the discharge end at the left.

Figure 2 is also a general view in side elevation, but taken from the opposite side of the machine.

Figure 3 is an enlarged detail view of the head end of the machine in longitudinal vertical section as taken on line 3—3 of Figure 4.

Figure 4 is a top plan view of the head end of the machine with portions in horizontal section as taken on line 4—4 of Figure 3.

Figure 5 is an enlarged detail view of the discharge end of the machine in vertical longitudinal section along the line 5—5 of Figure 6.

Figure 6 is a top plan view corresponding to Figure 5 with portions in horizontal section as taken on line 6—6 of Figure 5.

Figure 7 is a detail view in horizontal section taken on line 7—7 of Figure 5.

Figure 8 is a detail view in vertical section taken on line 8—8 of Figure 6.

Figure 9 is a perspective view of a completely sealed package.

Referring to Figures 1 and 2, the machine A for dipping the packages is located between two wrapping machine units B and C, the one (B) on the right (Figure 1) operating to apply paraffine paper wrappers to the goods and to feed them to the dipping machine, while the unit C at the left (Figure 1) receives the paraffine sealed packages and applies an outer wrapper thereto. All these units or machines are preferably driven from a single source of power, and their action so timed that the progress of the packages from one to the other is a continuous movement. The wrapping units are of standard design and, therefore, their construction and operation need be mentioned and parts identified only when essential to a clear understanding of the function of the package dipping machine or unit. At the same time it is manifest that the wrapping operations are not essential to the completeness of the dipping machine, and, therefore, serve primarily as means for feeding the packages to and receiving them from the machine.

Briefly, the dipping machine is a horizontally arranged mechanism, which receives the packages in rapid succession at one end, each package being picked up by a rotating carrier or reel and passed through a tank containing melted paraffine, and as they emerge from the tank, are removed from the reel by grippers carried on an endless chain, transported through a cooling chamber, and finally released at the discharge end of the machine.

The machine is erected upon a horizontal base plate 1 supported at each end on vertical standards 2, 2 of about waist height. The head or feed end of the machine is in horizontal alignment with the discharge end of the wrapping unit B, and between the two is a pair of endless transfer belts 3, 3 spaced one above the other, the packages *p* being advanced between the two adjacent parallel leads of these belts as they are discharged in rapid succession from the wrapping drum 4 of said unit B, Figure 1.

Throughout their entire movement, the packages extend transversely of the direction of travel, so they enter the transfer belts with their ends projecting slightly beyond the edges of the belts, and as they are advanced forwardly the folded ends of the wrapper come in contact with electrically heated blocks 5 which soften the paraffine sufficiently to seal the folded end flaps together.

These transfer belts 3, 3 are supported at each end by pairs of rolls 6, 6 journalled on the frame of the wrapping unit B and sealing machine A, those on the former being preferably the driving rolls and operatively connected with the wrapping mechanism.

Immediately ahead of the discharge ends of the transfer belts 3, 3 is a carrier or dipping reel 7 mounted on a horizontal transverse shaft 8, journalled in side frame members 9, 9, said shaft being extended beyond one frame member (Figure 4) and connected with driving mechanism as will presently be disclosed.

The reel 7 consists of two circular discs 7*a*, 7*a* at either end of a cylindric hub 7*b*, the complete reel assembly being fixed to the shaft 8 which it will be noted is considerably reduced in diameter between the side frame members 9, 9. Immediately below the reel 7 is a tank or open receptacle 10 resting on the base plate 1, and of a height such that the lower portions of the discs 7*a*, 7*a* of the reel are immersed in molten paraffine, which is heated in a supply tank or reservoir 11, immediately below the open tank 10 and forced upwardly into the latter through a supply pipe 12 by a pump 13 mounted in the reservoir and driven by a vertical pump rod 14 having a crank connection with a gear wheel 15 driven from a gear train, also to be later described. A thermostatically controlled electric heating unit 16 in the reservoir keeps the paraffine in a molten state and an overflow pipe 17 connecting the upper tank 10 with the reservoir 11 maintains the molten paraffine at a constant level in the upper tank (Figures 1 and 2).

The discs 7*a* of the reel 7 are provided at their peripheries with sets of radial slots or notches 7*c* spaced apart at 90° and of rectangular conformation corresponding to the cross sectional area of the packages. These slotted discs are spaced apart at a distance somewhat less than the length of the packages and the edges of the slots 7*c* are preferably beveled to knife edges so that the contact between the reel and packages is reduced to lines rather than surfaces, and thus promote complete exposure of the packages to the paraffine. And finally the periphery of each disc 7, as clearly shown in Figure 3, is divided into slightly eccentric sectors extending between the several slots 7*c* so that assuming the reel rotates in a clockwise direction, the leading radial edge of each slot projects slightly beyond its rear or following edge. The purpose of this formation is to facilitate the removal of the packages from the slots as will presently be described.

Located between the reel discs 7*a* is a pair of vertical guide plates 18, 18 (Figures 3 and 4), each being spaced a short distance inwardly from each disc and suitably supported upon the bottom of the paraffine tank 10 below the reel. Portions of these plates are cut away to form substantially semi-circular recesses having their edges concentric with and spaced a short distance outwardly from the periphery of the reel discs 7*a*. More specifically, the edges of these arcuate recesses extend from a point just below the ends of the transfer belts, 3, 3 around the periphery of the reel through an arc of a little more than 180° in a clockwise direction and terminating just short of a point diametrically above the axis of the reel.

The arcuate edges of these guide plates serve to retain the packages in the slots of the reel 7, as they are being carried through the paraffine in the tank 10, it being observed that the width of these slots and their radial dimension from the edge of the guide plates 18 to the bottom of the slots is slightly greater than the corresponding dimensions of the packages, and therefore are held somewhat loosely in the slots. Thus as shown in Figure 3, the packages are free to shift slightly within the slots as they travel through the paraffine bath, and thus insure the exposure of the entire surface of the package to the paraffine.

In addition to the guide plates 18, 18 is a pair of vertical plates 19, 19, being spaced outwardly beyond each end of the reel 7, with their inner faces in the plane of the ends of the packages being carried by the reel. These plates serve several purposes, first, to insure the centering of the packages

lengthwise in the reel as they start to emerge from the tank, second, to contact lightly with the ends of the packages after they have emerged from the tank and to thereby wipe the excess paraffine adhering thereto, and lastly, to act as baffles to prevent the paraffine from splashing over onto the moving parts at either end of the reel.

Referring now to the drive for the reel and other moving parts of the machine thus far identified, it may be understood that the source of power may be any suitable prime mover, although in the present arrangement the power is derived from a motor (not shown) which drives the primary wrapping mechanism B, and from which the necessary power is transmitted to the dipping machine as well as to the secondary wrapping unit C, by means of sprocket chains, gearing or other suitable power transmitting elements, designed to impart the required speed and direction to the part driven thereby. For the purpose of this disclosure, the power for driving the dipping machine is taken from a shaft 20 (Figure 2) of the wrapping machine unit B. This shaft 20 which also drives the roll 6 of the upper transfer belt 3, is connected with a stub shaft 21 on the rear or far side (Figure 4) of the machine just to the left of the axis of the reel shaft 8 through a sprocket 20*a* on said shaft 20, a sprocket 22 on the stub shaft and a chain 23. The stub shaft is journalled between the side frame member 9 and an outlying bearing bracket 24, and projecting beyond the latter, carries a pinion 25 meeting with a spur gear 26 mounted on a stub shaft 27 on the outer face of the bracket 24, and located to the left and below the stub shaft 21, Figure 2.

Now, the reel shaft 8 is extending through both the side frame member 9 and bracket 24, and carries at its outer end the driven member of a conventional Geneva movement, namely, a disc 28 having diametrically intersecting slots on its inner face adapted to engage a pin 29 mounted on the outer face of the spur gear 26. The function of the Geneva movement is to impart an intermittent or stop motion to the reel 7 which, as before stated, turns in a clockwise direction. Thus the reel comes to rest momentarily with one set of package receiving slots 7*c* opening laterally and in line with the packages being advanced between the conveyor belts 3, 3 as shown in Figure 4, and when a package has been received, to advance through a quarter revolution to bring the next slot into package receiving position, and so on. Thus the packages are carried downwardly and through the paraffine in the tank and thence upwardly to a point near the top of the reel where they are automatically removed or picked up by pairs of grippers carried on an endless chain conveyor which intersects the circular path of the packages.

Before describing the chain conveyor, the discussion of the package feeding mechanism to the reel 7 will be completed: Inasmuch as the transfer belts 3, 3 advance the packages forward with a more or less uniform movement, it is necessary to synchronize the feeding of the packages from the inner end of the package feed line into the slots in the reel, inasmuch as the latter rotates with an intermittent motion. This is accomplished by means of an auxiliary feeding device located between the discharge ends of the feed belts 3, 3 and the reel 7, and comprises the following parts (Figures 3 and 4):

A horizontal feed plate 30, forming a continuation of the lower feed belt 3, is slidably mounted for limited reciprocity motion toward and from the reel 7. At either end of this plate are longitudinal slots 30*a* into which extend the lower ends of the vertical wire rods 31, 31 depending from a block 32 fixed to a transverse rock shaft 33 journalled at the upper edges of the side frame members 9, 9. Spaced above the feed plate is a coacting feed or pusher block 34 adapted to contact with the upper surfaces of the packages just beyond the end of the upper transfer belt 3. This block is mounted at the lower ends of a pair of vertical rods 35 depending from the block 32 on the rock shaft 33, said block 32 having a vertical arm 36 with a hooked end, carrying one end of a coil tension spring 37 attached at its other end to a fixed bracket 38 located a short distance to the right (Figure 4) so that the tension of the spring resists the rocking movement of the shaft 33 in a direction to shift the pusher block rearwardly or to the right. At one end of the rock shaft 33 is fixed a lever arm 39, Figure 1, having a cam roller which rides on the edge of a cam disc 40, lying in the plane of the arm 39 and fixed to the outer end of a stub shaft 41 journalled in the near side frame member 9, Figure 4, and carrying at its inner end one of the sprockets 42 which supports the adjacent section of the package conveyor chain, the complementary sprocket 43 being mounted on a stub shaft 44 projecting inwardly from the opposite side frame member.

On the periphery of the cam disc 40 are recesses 40*a* spaced 90° apart and which coact with the cam arm 39 to actuate the rock shaft 33 at predetermined intervals, namely, during the period that each pair of slots 7*c* in the reel discs 7*a* are in package receiving position. The movement of the rock shaft is accomplished by the tension spring 37 which is permitted to function by the depression of the cam arm 39 as it rides over the notches in the cam disc, thereby imparting an intermittent forward movement to the pusher block 34 and the lower feed plate 39. As shown in Figure 4, the pusher block normally contacts with the next to the end

package, and thus retards the advance of the packages from behind, but when actuated, carries the package forwardly which forces the endmost package into the registering slots 7c of the reel. The movement of the feed plate 30 is timed with that of the pusher block, though the resilient rods 31, 31 act as springs to shift the plate forwardly and rearwardly, as the pressure of the pusher block on the packages is released. To facilitate the intermittent feeding action of the pusher block, it is preferably provided with a resilient blade 34a yieldingly resting on the packages.

Referring now to the package conveyor, the same consists of two sections extending lengthwise of the machine on either side of the path of the packages. Each section of the conveyor consists of an endless sprocket chain 45 having grippers 46 mounted in close proximity along their outer surfaces. The forward end of the chains 45, 45 are carried by the sprockets 42 and 43 located just rearwardly of and slightly above the reel 7, while their rear ends are carried by a similar pair of sprockets 47, 47 keyed to a shaft 48 at the rear or discharge end of the machine, and journalled in bearing brackets 49, 49 located just outside of the path of the chains 45 (Figure 6).

Each gripper 46 (Figure 7) consists of a block 50 arranged transversely of the chain to which it is attached, and bolted to a plate 51 integral with alternate links of the chain. Extending through a square bore in each block is a spring plunger 52 having square shank 52a, a gripper plate 52b at its inner end, and an L-shaped arm 52c at its outer end (Figures 4 and 7). A small coil spring 53 surrounds the shank 52a between the inner end of the block 50 and the gripper plate 52b and normally acts to extend the plunger inwardly, that is, toward the center line of the machine.

The conveyor chains 45 with their grippers 46 mounted on alternate links, assume the position of a flat loop, with the lower lead moving from left to right and the upper lead moving from right to left. The grippers 46 project downwardly from the chains along the lower lead and upwardly from the upper lead, and in passing around the sprockets at each end the grippers assume radially spaced positions as shown in Figures 3 and 8. Moreover, the leads of the conveyor chains maintain a straight line of travel from front to rear by virtue of pairs of parallel track bars 54, 54, 55, 55 and 56, 56 located above, between and beneath the leads of the chains respectively. The intermediate track bars 55 lie in the vertical plane of the upper leads of the chains and support the same, while the upper track bars 54, 54 are positioned inwardly above the inner ends of the gripper blocks 50, and hold them against tilting upwardly when carrying the packages. The lower pair of track bars 56, 56 extend beneath the outer ends of the gripper blocks and support the lower leads of the chains.

The chain conveyor is driven at a constant speed which is determined by and synchronized with the speed of the reel 7, the direction of movement being counter-clockwise, that is, the grippers approach the reel from below and leave the reel in an upward and rearward direction, as will presently be described in greater detail. The shaft 48 carrying the rear pair of sprockets 47, 47 is preferably the driven element of the conveyor assembly, having a gear wheel 58 which in turn is driven at the required speed from an intermediate gear wheel 59 forming a part of the driving mechanism of the secondary wrapping unit C, the latter receiving its power from a driven sprocket 60, a chain 61 leading back to an intermediate driven shaft 62, and thence back to the main driven shaft 21 of the dipping machine through another chain 63, and sprockets on said main shaft and intermediate shaft 62 as shown in Figure 2.

Referring now to Figures 3 and 4, the action of the grippers 46 in transferring the paraffine dipped packages from the reel 7 to the chain conveyor will now be described. In the first place it is to be observed that the grippers on the two chains 45, 45 are arranged in pairs opposing each other, so that each pair forms one package pickup and transporting unit. In the normal position of each pair of grippers, their plungers are extending inwardly and toward each other under the tension of the springs 53, so that the distance between the gripper plates 52b is slightly less than the length of the packages *p*.

It is therefore necessary to spread the gripper plates apart and then release them in order to pick up a package from the reel 7, this being accomplished by cams 63, 63 in the form of vertical plates spaced just inwardly from the side frame members 9, 9 and lying in the path of the outer ends of the grippers adjacent the point where the lower leads of the chains approach and travel upwardly around the sprockets on either side of the reel 7. These cam plates have blade-like portions 63a which project from the main body portion thereof rearwardly in line with lower heads of the chains, and are beveled to a knife edge so that the inner face of the lug 52c at the outer end of each gripper plunger 52 passes outside of the blade as the gripper approaches the end of its forward travel and is about to be carried upwardly and around the sprockets 42 and 43. The blades moreover are inclined inwardly from the plane of the main body of the plates, so that as the lugs slide along their upper edges the plungers 52 of the grippers are successively retracted against the tension of the springs, thereby spreading apart the

plates of each pair of grippers. At the point where the grippers change direction, namely, below the axis of the sprockets, the upper edge of the cam blades merge with an upwardly inclined edge of the main cam plate which extends to a point forwardly and above the axis of the reel 7, and just inwardly from the periphery of the reel discs 7*a*. At these points the inclined edge of the cam plates terminate in beveled cam points 63*b* which release the lugs 52*c* and permit the gripper plungers to spring toward each other just as each pair registers with a package *p*, which has been advanced in the reel from the tank below and rests in the upwardly facing sets of slots 7*c* in the reel discs.

The releasing of the gripper plungers brings their plates into contact with the ends of the package which is at rest, due to the intermittent stop motion of the reel, with the result that a package is picked up or lifted out of the reel by each pair of grippers as they pass upwardly and around the sprocket. Thus it will be seen that the curvilinear path of the grippers around the end sprockets not only intersect the circular path of the packages being carried upwardly by the reel after their immersion in the tank, but each pair of grippers is moving in a path substantially tangential to the radial edges of slots 7*c* when the latter arrive and are momentarily brought to rest in their uppermost vertical position. It follows, therefore, that the movement of the reel and that of the chain is so synchronized with the cam action that each pair of grippers are released at the proper instant in the cycle of operation to remove the packages from the reel, and transfer them to the continuously moving conveyor for transportation rearwardly along the upper lead thereof.

Extending lengthwise of the machine and enclosing the upper lead of the conveyor is an elongated housing 64 which forms a chamber or enclosure through which the paraffine dipped packages are conducted by the conveyor for the purpose of artificially cooling and hardening the freshly applied coating of molten paraffine. The cooling is effected by forcing a current or blast of air through the housing by means of a small motor driven fan or blower 65 mounted at the opposite end thereof, that is, remote from the package entering end. The housing is preferably provided at intervals throughout its length in internal baffle plates or deflectors 64*a* which direct the air downwardly and crosswise of the path of the packages.

Inasmuch as the paraffine is more or less in a fluid state when they are transferred to the conveyor, it follows that the packages will carry an excess of the paraffine on leaving the tank, which will tend to drip from the lower edges. In order to prevent the drippings from fouling the conveyor chain, or an excess of paraffine hardening on the bottom surfaces of the packages, a metal drip plate 66 is mounted at the head end of the conveyor to extend transversely between the chains beneath the path of the packages. This plate has a transversely rounded top surface with longitudinal channels opening downwardly through the plate so that the paraffine drippings removed from the packages will drain back into the tank 10 immediately below. To insure the removal and return of the excess paraffine, the plate is maintained at a temperature sufficient to melt the paraffine by means of an electric heating coil 67.

It may be assumed, therefore, that when the packages reach the rear end of the machine, the paraffine has cooled and hardened, and can now be discharged from the conveyor and carried into the secondary wrapping unit C for the application of the final wrapper or band. The discharging of the package is accomplished generally by tripping the grippers, that is, retracting the plungers of each pair of grippers so that the package is released, this being accomplished by fixed cam plates not unlike those which actuate the grippers in removing the packages from the reel at the head end of the machine.

Referring to Figures 5 to 8, the package releasing cams have the form of vertical plates 68, 68 provided with semi-circular edges concentric with the path of the packages as they are carried downwardly and around the sprockets at the rear end of the conveyor. As before, these cam plates lie in the plane of the lugs 52*c* at the outer ends of the spring plungers of the grippers, and have narrow blade-like portions 68*a*, 68*a* projecting forwardly beneath the lower leads of the conveyor chains and which are offset slightly in an outward direction. Thus as each pair of grippers carrying a package between them reaches the end of their travel from front to rear, the lugs at the outer ends come into contact with the outer faces of the semi-circular edges of the cam plates along their inner semi-circular edges, although the plungers are not retracted until the grippers have traveled downwardly through 180°, that is, until the lugs strike the outward offset at 68*b* in the blade portions of the cam plates. At this point the grippers are retracted, thus releasing the package which drops into a pair of horizontal spaced guide tracks 69, 69 supported upon a standard 70 and extending rearwardly toward the wrapping drum 71 of the wrapping unit C which rotates intermittently through 180° and receives the successive packages in the diametrically opposed slots 71*a*.

In order to guide the packages as they reach the end of the conveyor chain, a pair of guide discs 72, 72 are mounted on the shaft 48 in line with the guide tracks 69, the latter having their forward ends upturned as at

69*a* to prevent the packages from being carried on after they have been released by the grippers.

As each package is thus released or dropped onto the guide tracks 69, 69, it must necessarily be carried immediately into the drum 71 of the wrapping unit C to clear the way for the next package which will be dropped in the same position in the next instance. For this purpose, a reciprocating pusher block 73 moving backwardly and forwardly between the guide tracks 69 and throughout the length thereof, is employed. This pusher block is mounted at the end of a combined rocking and reciprocating bar 74, supported intermediate its ends on a pivoted trunnion 75 at the upper end of a vertical standard 76, (Figure 5), and at its opposite end has pivotal connection with a crank disc 77 mounted at the end of a stub-shaft 78 driven by sprockets 79 and a chain 80 from the intermediate driven shaft 62 immediately below, (Figure 1). The reciprocating movement imparted to the block 73 is manifestly timed to the rate of package discharge from the conveyor, so that they are fed continuously into the wrapping unit C which need not be described in greater detail than to explain that as each package enters one of the slots 71*a* in the drum 71, a wrapper or band is applied and sealed, and then discharged onto a track 81 as the drum is rotated through the next one-half revolution.

In Figure 3 is shown a device which has been found to be desirable in case there is a tendency for the paraffine to adhere to the contact plates of the grippers, and to otherwise interfere with the release of the packages from the grippers, and particularly if the surfaces of the plates are embossed with the idea of impressing a name or symbol in the soft paraffine at the ends of the package. This device which may be termed an oiler, consists of a cylindric upright receptacle 82 mounted on the base plate 1 near the head end of the conveyor, and between the lower leads of the chains. The upper end of the receptacle supports a circular head 82*a* of some absorbent material such as chamois, which lies in the space between the contact plates of the grippers and has wiping contact with their surfaces. The receptacle contains a suitable light oil which saturates the head, and thus transfers a thin coating to the faces of the plates just before they contact with the packages, and thus counteracts any tendency for sticking or accumulation of paraffine in the plates.

As already suggested, a machine for dipping packages of gum or other consumable products may be used separately or in conjunction with wrapping or other package handling devices, and moreover may perform the same sequence of operation with somewhat different arrangement of parts or mechanisms without departing from the spirit of this invention. Therefore, we do not wish to be limited to the specific disclosure herein set forth except in so far as the invention is defined in the appended claims.

We claim as our invention:

1. In a package sealing machine, the combination of a carrier rotative about a fixed horizontal axis and provided with package holding recesses spaced apart about its periphery, an open tank beneath said carrier and adapted to contain molten paraffine into which the lower portion of the carrier extends, means for feeding packages into the holding recesses of said carrier and a continuously moving conveyor comprising a multiplicity of longitudinally spaced grippers moving in a path intersecting the circular path of the packages in said carrier and operative to engage the packages after they have been carried through said tank and transfer same to said conveyor.

2. In a package sealing machine, the combination of a rotative carrier having a plurality of package holding recesses about its periphery, a tank below said carrier and containing molten paraffine to a level above the lower portion of said carrier, means for feeding packages into said recesses of said carrier in advance of their passage through the tank, and means for subsequently removing said packages from said recesses comprising an endless conveyor having a multiplicity of grippers traveling in a path adjacent a predetermined discharge position of the recesses of said carrier, and means for actuating said grippers to engage and remove said packages from said carrier, and means for releasing said grippers to discharge said packages after they have been transported a predetermined distance by said conveyor.

3. In a package sealing machine, the combination of an intermittently rotative carrier having a plurality of package holding recesses about its periphery, a tank below said carrier containing molten paraffine to a level above the lower portion of said carrier, means for feeding packages into said recesses in advance of their passage through the tank, and means for subsequently removing said packages from said recesses comprising an endless conveyor having a multiplicity of grippers moving continuously in a path intersecting the path of the packages being advanced in said carrier, said grippers being operative at a predetermined position in which said carrier momentarily comes to rest, to engage the ends of said packages and transfer them to said conveyor, and to release said packages from said conveyor at a predetermined point of discharge.

4. In a package sealing machine, the combination of a carrier rotative on a horizontal axis, driving means imparting an intermittent stop motion to said carrier, a paraffine

tank below said carrier into which the lower portion thereof projects, said carrier having package holding recesses spaced at predetermined intervals about its periphery, means for feeding packages into said recesses in advance of their passage through said tank, an endless conveyor comprising a multiplicity of grippers moving continuously toward and from said carrier, their path intersecting the circular path of the package holding recesses of said carrier at a predetermined point above said tank, said grippers consisting of pairs of spring plungers adapted to engage the ends of a package, and cams located in the path of said grippers and adapted to retract and release said grippers to engage the packages and remove the same from said carrier and to retract said grippers to discharge said packages after they have been transported to a predetermined point along said conveyor, and means for cooling said packages during their travel on said conveyor.

5. In a package sealing machine, the combination of a tank containing molten paraffine, a dipping reel comprising discs having their lower portions immersed in said paraffine and provided with package holding recesses spaced apart at intervals about the peripheries of said discs, means for imparting an intermittent rotary motion to said reel, means for feeding packages into the recesses of said reel as the same come to rest in a predetermined feeding position, and means for removing said packages from said recesses after passing through said tank comprising a continuously moving conveyor having a multiplicity of grippers moving in a path substantially tangential to the discs of said reel, and means for actuating said grippers to engage said packages and remove the same from said reel and to release the same after they have been transported a predetermined distance by said conveyor.

6. In a package sealing machine, the combination of a reel rotative on a horizontal axis, driving means imparting an intermittent stop motion to said reel, a paraffine tank below said reel into which the lower portion of said reel projects, said reel having radially opening recesses spaced at predetermined intervals about its periphery, and adapted to loosely hold said packages, a guide plate coacting with said recesses for retaining said packages therein during their passage through said tank, means for feeding packages into said recesses in advance of their passage through said tank, an endless conveyor comprising a multiplicity of grippers moving continuously in a path intersecting the path of the packages being advanced in said carrier, and operative to engage and remove said packages therefrom.

7. In a package sealing machine, the combination of a tank containing molten paraffine, a dipping reel comprising discs having their lower peripheral portions immersed in said paraffine and provided with package holding recesses, and having their edges beveled to substantially knife edges, means for imparting an intermittent rotary motion to said reel, a vertical guide plate having an edge concentric with said carrier and coacting therewith to guide said packages through said tank, means for feeding packages to said reel to be advanced thereby through said tank, and means for removing said packages from said reel after passing through said tank comprising a continuously moving endless chain conveyor having a multiplicity of grippers moving in a path substantially tangential to the discs of said reel, and cams for actuating said grippers to engage said packages and remove the same from said recesses at a predetermined stop portion of said carrier.

8. In a package sealing machine, the combination of a paraffine receptacle, a carrier rotative about a horizontal axis with its lower portion immersed in said receptacle and having a plurality of package holding recesses about its periphery, means for feeding packages to said carrier to be carried thereby into and out of said receptacle, a multiplicity of package grippers mounted on an endless chain moving toward and from said reel, sprockets supporting the ends of said chain, whereby said grippers transverse a semi-circular arc substantially tangential to the path of the package-holding recesses of said reel above said receptacle, said grippers comprising pairs of spring actuated plungers shiftable endwise toward and from each other to engage the ends of said packages, cam members mounted in the path of said plungers and operative to trip the same to engage and remove said packages from said conveyor and to release the same after a predetermined travel along said conveyor.

9. In a package sealing machine, the combination of a rotative carrier having a plurality of package retaining pockets travelling in a circular path about the fixed axis of said carrier, a receptacle beneath said carrier containing a liquid sealing material through which the packages are advanced by said carrier, means for feeding packages into the pockets of said carrier, a package conveyor moving in a path adjacent said package carrier and comprising individual package-engaging members operative to successively remove the packages from said carrier after passing through said receptacle.

10. In a package sealing machine, the combination of a carrier rotative about a fixed axis and having a plurality of radially disposed package retaining members, a carrier, a receptacle through which the packages are advanced by said carrier and adapted to contain a liquid sealing material, means for feeding the packages to be sealed to said carrier, a package conveyor moving in a path inter-

secting the path of the package retaining members of said carrier and comprising individual package engaging members operative to remove the packages from said carrier and to release the same upon reaching a predetermined point of discharge.

11. In a package sealing machine, the combination of a carrier rotative about a fixed axis and provided with package holding members spaced apart about its periphery, a receptacle beneath said carrier and adapted to contain a sealing material through which the lower portion of the carrier travels, means for feeding packages to said carrier, a continuously moving conveyor comprising a multiplicity of individual package-engaging members moving in a path adjacent the path of the package-holding members of said carrier subsequent to their passage through said tank, and means for actuating said package-engaging members to effect the continuous transfer of the packages from said carrier to said conveyor.

Signed at Chicago, Illinois, this 10th day of April, 1930.

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