

Nov. 26, 1968

T. H. AQUARIUS ET AL
HEAT SEALING PACKING DEVICE

3,412,527

Filed July 28, 1965

3 Sheets-Sheet 1

FIG. 1

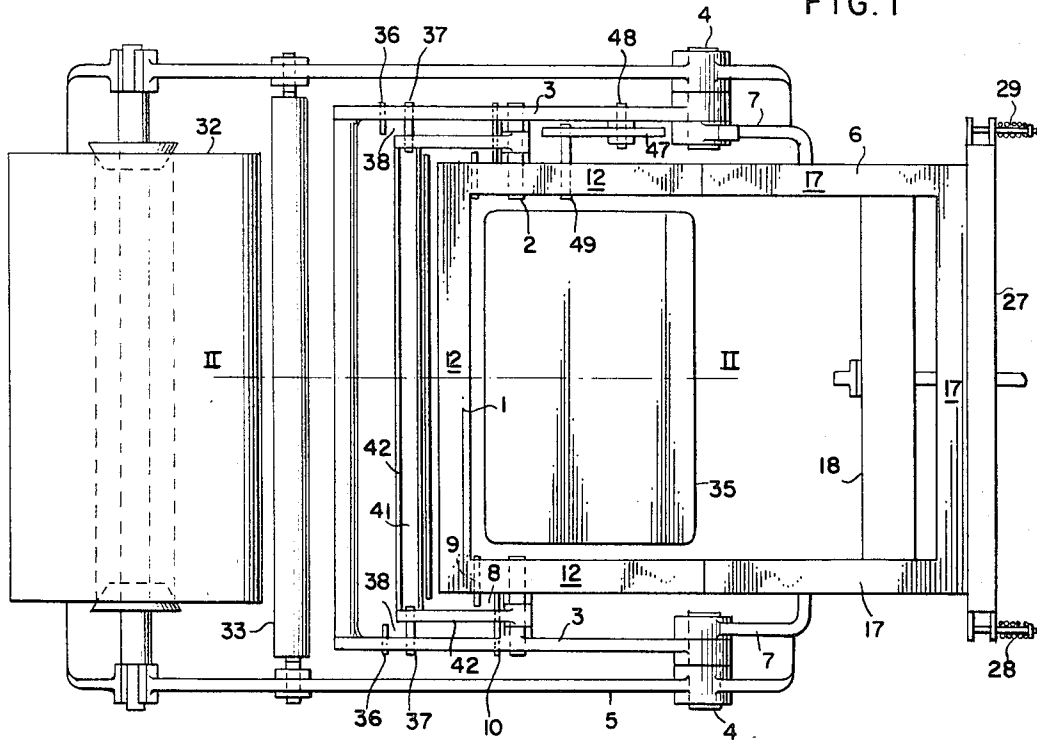
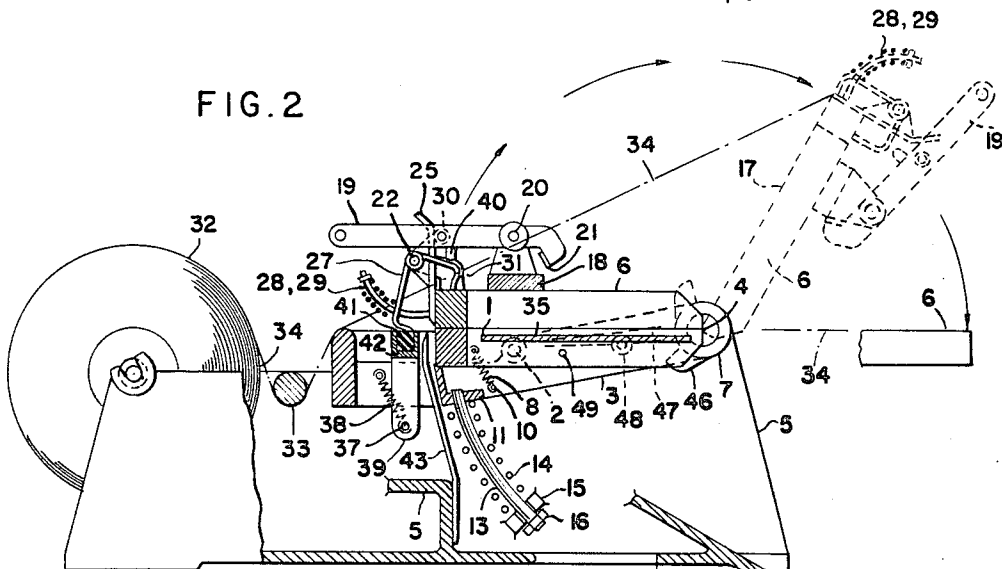


FIG. 2



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FIG. 3

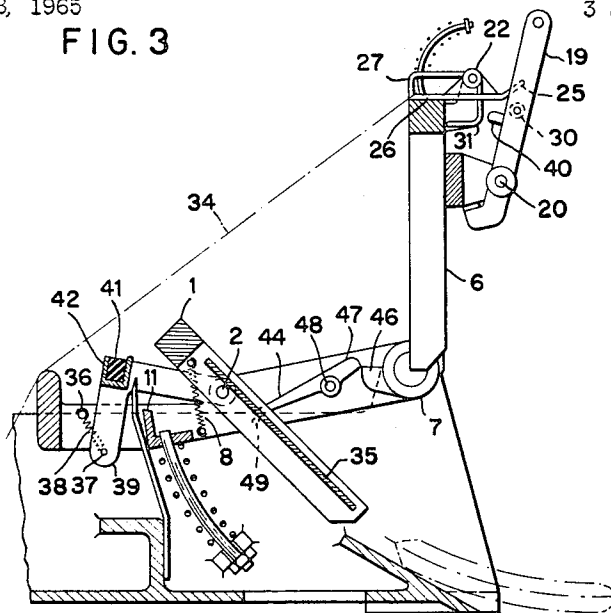


FIG. 4

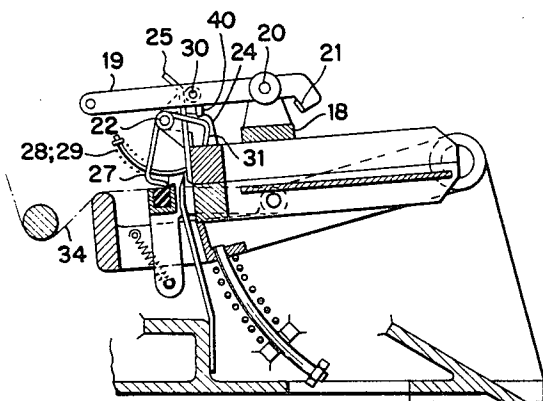
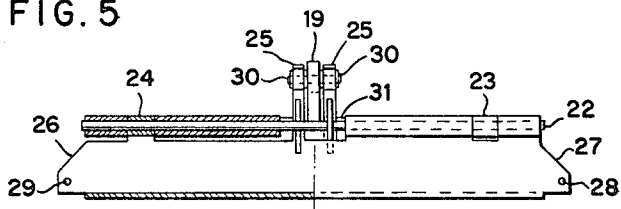


FIG. 5



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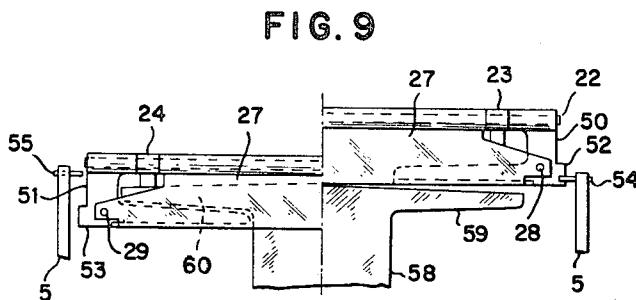
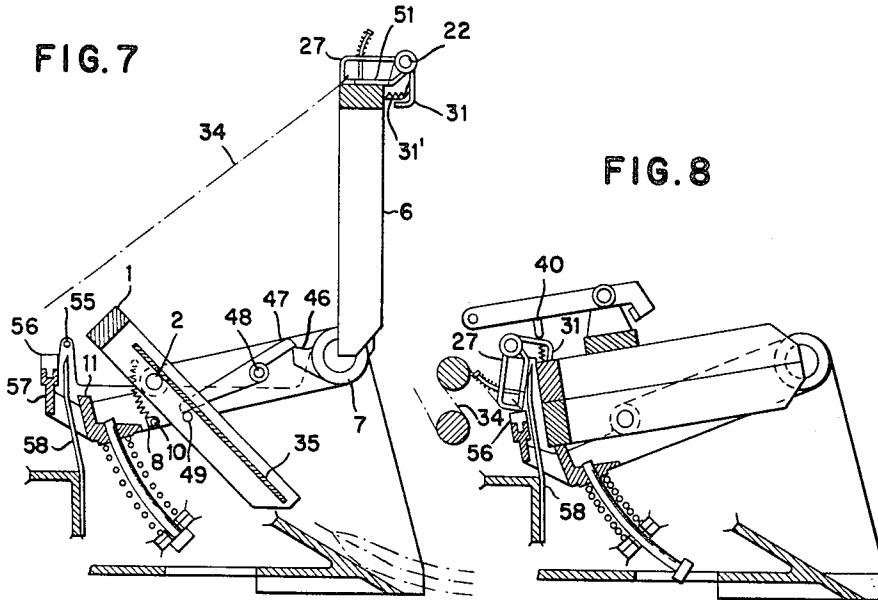
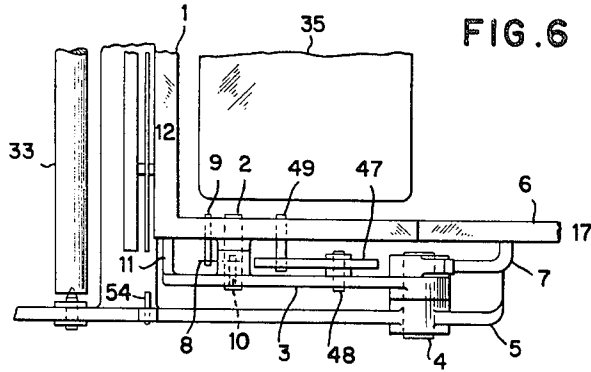
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3,412,527

HEAT SEALING PACKING DEVICE

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6408893

13 Claims. (Cl. 53—390)

ABSTRACT OF THE DISCLOSURE

Apparatus for sealing articles in a heat-sealable pack-
ing web, comprising a frame having upper and lower
mating U-shaped sealing clamps hingedly mounted there-
on. An actuating handle is pivotally mounted on the
upper sealing clamp and has associated therewith web
clamp and cutting means so arranged that, when the
handle is depressed, upper and lower sealing clamps en-
gage and seal the periphery of a folded over web hav-
ing an article placed therein and, as the handle is further
depressed, the continuous web stock is cut from the
sealed package and the free edge thereof engaged by
the web clamping means. When the handle is subse-
quently retracted to return the upper sealing clamp to the
open position, the web is drawn along thereby and placed
in position for a subsequent sealing operation.

The invention relates to a device for packing objects
in a heat sealable packing web, which device is provided
with a frame supporting a pivotable upper sealing bracket,
a lower sealing bracket co-operating with the upper
sealing bracket, and a clamp device for the sealable web,
which clamp device is attached to the upper sealing bracket,
and so cooperating that with a reciprocal pivot move-
ment of the upper sealing bracket whereby it is first re-
tracted and subsequently extended, a portion of the web
engaged by the clamp device is folded over another por-
tion thereof, which portions can be sealed together by the
sealing brackets in a closed area extending from the fold.

With a known device of this type, vide e.g. the U.S.
Patent No. 3,016,673, the area, that is removed from
the sealable web is so formed that at the edges excess
web material remains present. This involves a loss of
web material. Further with this known device the separa-
tion between the package obtained and the excess seal-
able packing web stock occurs solely by virtue of the
fact that the web, at the same time the package is sealed,
is melted through also and not severed by cutting. This
means, however, that only materials can be used, which
can completely melt and that e.g. materials consisting
of a paper sheet and a sealable layer attached to that
sheet, cannot be used.

The invention aims to provide a device, with which the
complete width of the sealable packing web can be made
use of and in which the packing web need not be com-
pletely meltable, although such completely meltable webs
may readily be used with the invention. In addition to
completely meltable webs, however, webs which are not

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completely meltable, e.g. consisting of a sheet of paper
and a sealable layer, can be used.

The above indicated aims are obtained by the inven-
tion in that a dividing device severing the web over its
complete width is present and in that the clamping de-
vice, attached to the upper sealing bracket, is adapted
to grip and retain the free end, that is formed by the
severing action of the dividing device.

It is a further aim of the invention that the packing
web in the position of the device, in which an object to
be packed can be laid on it, form a plain supporting sur-
face. This enhances and speeds up the work with the
packing device. To obtain this result there is, according
to a further elaboration of the invention, provided in
that the upper sealing bracket in the closed position in
which the sealing brackets co-operate, grips the pack-
ing web rim and takes the web along with the movement
of the upper sealing bracket and can be pivoted to such
extent that the packing web is almost positioned in a
horizontal plane whereas with the return pivot move-
ment of the upper sealing bracket no packing web trans-
port occurs.

Preferably, but not necessarily, the sealing brackets
are essentially U-shaped.

A constructively simple and reliable embodiment of the
invention can be obtained, with a locking mechanism
actionable by a handle, which locking mechanism is
adapted to lock a clamp of the clamping device such that
in the position of the handle in which closing pressure is
exerted on the sealing brackets, the said clamp of the
clamping device is locked.

The above mentioned and further aims of the inven-
tion will appear from the specification, that follows at
hand of the accompanying drawing, in which two em-
bodiments of the invention are shown.

FIGURE 1 shows a plane view of a first embodiment
of the invention with the sealing brackets in the open
position;

FIGURE 2 shows the same device in elevation and in
the closed position, interrupted lines showing an inter-
mediate position;

FIGURE 3 shows the same device again, in which
especially the working of the sealing mechanism is in-
dicated;

FIGURE 4 shows the same device in still a further
work position;

FIGURE 5 shows, partly in elevation and partly in
cross-section a detail of a clamping device for the seal-
able web;

FIGURE 6 shows partially a further embodiment of
the invention;

FIGURES 7 and 8 show the further embodiment in
two different work positions in longitudinal cross-section;
and

FIGURE 9 shows the clamping device of the second
embodiment in two different positions.

The embodiment shown in FIGURES 1-5 inclusive
has an U-shaped lower sealing bracket 1 that is pivotally
mounted on pins 2 which are attached to a support 3.
The support 3 itself can pivot at pins 4 that are also
the pivot means for the eyes or trunnion ends 7 of an
U-shaped sealing bracket 6. A tension spring 8 is con-
nected with the lower sealing bracket 1 by means of a

pin 9 and with the support 3 by means of a pin 10, by reason of which the lower sealing bracket 1 normally is held against the rim 11 of the support 3. A pin 13 is fixedly connected to the support 3 and at its end provided with a stop 16 which engages ring 15 fixedly connected to the frame of the device, which engagement is caused by the working of a pressure spring 14 which is mounted between the rim 11 and the ring 15. One of the sealing brackets 1 or 6 or both of them can be heated at its sealing surface 12 and 17 respectively.

The upper sealing bracket 6 bears a support 18 in which driving means in the form of an actuating handle 19 is mounted which can carry out a small pivotal movement around a pin 20. In the rest or elevated position the nose 21 of the handle 19 engages the support 18. If the handle 19 is lowered, as more clearly indicated in FIGURES 2 and 4, a clamping device for gripping the packing web is actuated. This clamping device is attached to the foreside of the upper sealing bracket 6 and is supported by a shaft 22, that can pivot in bearings 23 and 24 attached to the upper sealing bracket 6. The clamping device is formed by a back clamp 26 and a fore clamp 27. With the back clamp 26 a cam member 25 is connected. The clamps 26 and 27 are mutually subjected to a spring pressure in the closing direction by means of springs 28 and 29 mounted on pins affixed at their ends to the clamp 26. These springs are for the sake of clearness only shown in FIGURE 2 in the opened position drawn cross-sectionally with interrupted lines instead of in full elevational view with uninterrupted lines. The cam member 25 can co-operate with a stop member 30 attached to the handle 19 to prevent the clamp 26 from following the clamp 27 when the handle 19 is depressed.

Fixedly with the clamp 27 a stop member 31 is connected, which by means of a finger 40 of the handle 19 can be pivoted clockwise for opening the clamp 27.

As shown more especially in FIGURES 1 and 2 the packing web 34 is taken from a roll 32 and guided by means of one or more guide rolls 33. If the clamping device 26, 27 has gripped the web 34 and the upper sealing bracket is pivoted over 180°, the sealing surfaces 12 and 17 of the sealing brackets 1 and 6 are positioned in a horizontal plane, on which the web 34 is positioned. The object to be packed can be put on the portion of the web above the lower sealing bracket 1, after which the upper sealing bracket 6 is pivoted back. At the end of this return pivot movement the sealing brackets 1 and 6 engage each other and by further pressure on the handle 19 the stop member 30 will lock the clamp 26 by means of the cam member 25. Following this the finger 40 engages member 31 by reason of which clamp 27 is pivoted clockwise in the opening direction. The clamp 27 will then engage a strip 41 of elastic material by reason of which the packing web is clamped between 27 and 41. With further lowering of the handle 19 the strip 41 will yield because it is pivotally mounted on the taps elongating the spring 38 which has been tensioned between the pins 36 and 37, so that a desired clamping action is maintained on the packing web 34 between clamp 27 and strip 41. The pin 36 is attached to the support 3 and the pin 37 to a lever 39 which is connected with the support 42 of the strip 41. If the handle 19 is still lowered further the upper sealing bracket 6 lowers the lower sealing bracket 1, compressing spring 14. At that moment the knife 43, that fixedly is mounted, engages the packing web gripped between at the one hand the sealing brackets 1 and 6 and at the other hand the clamp 27 and the elastic strip 41. The web is now cut. By returning the handle, spring 14 urges both the sealing brackets 1 and 6 upwardly and normally the handle 19 will remain in the position of FIGURE 4 with the clamp 26 locked by means of the locking member 25 and the stop member 30. The elastic strip 41 also moves upwardly and by reason of this the edge of the packing web remains clamped between 27

and 41. As an extra security means there is a non elastic edge of the U-beam 42 located at the right hand side of the strip 41. When the handle is released or is actuated for a pivot movement for opening the brackets, clamp 26 engages clamp 27 and takes over the clamping action of the edge 42.

The working of the above depicted clamping device in practice has proved to be completely sufficient, it being an advantage, that, when a new web of packing material has to be inserted or the web has been disrupted for some reason or the other, the end of the web can be laid simply on the elastic strip 41, after which the web automatically is gripped by the clamping device, when the handle 19 is moved downwardly and after that again upwardly.

Important for proper operation of the device is further, that the non elastic edge 42 retains clamp 27 in its open position when the finger 30 releases member 31, when the handle 19 moves back.

When the upper sealing bracket 6 again partially is pivoted clockwise, cam 46 of one of the eyes 7 engages the lever 47. This lever can pivot on a pin 48, which fixedly has been attached to the support 3. The arm 44 of lever 47 engages a pin 49 which has been fixedly mounted in the lower sealing bracket 1. By reason of this the lower sealing bracket will pivot around pins 2, so that the sealed package 61 will glide from the supporting plate 35 towards the right side in the drawing. When the upper sealing bracket is moved further on, the stop 46 will release the lever 47, so that the lower sealing bracket will return under influence of spring 8 into its horizontal position, in which it engages rim 11 of the support 3. When the upper sealing bracket 1 is moved backwardly again, the lever 47 will be pivoted around pin 48, but this does not result in a movement of the supporting plate 35.

The embodiment shown in FIGURES 6-9 inclusive in many respects is identical to the described embodiment and corresponding members are indicated with the same references, so that it is considered that any further elucidation of them is superfluous.

A point of difference is, that the handle 40 is not provided with a locking device for co-operating with the clamps, but that the stop member fixedly connected to clamp 27 is exposed to a spring action urging clamp 27 counter clockwise. Further the cutting knife is T-shaped and consists of an upright portion 58 and two horizontally extending portions 59 and 60 respectively. The clamp co-operating with clamp 27 is formed by two parts 50 and 51, which can pivot around the centerline of shaft 22 and again are urged by springs 28 and 29 towards clamp 27. The clamp parts 50 and 51 have a protruding portion 52 and 53 respectively, which can co-operate with stop pins 54 and 55 respectively fixedly mounted in the frame of the device.

When the handle with the finger 40 presses on the stop member 31, the clamping device consisting of the fore-clamp 27 and both the back clamps 50 and 51 remain closed so that a space is created between the sealing brackets and the clamping device which space receives the knife 58, 59, 60. The working of this embodiment of the invention is the following: When the sealing brackets are closed, the back clamps 51 and 52 are locked by the stop pins 54 and 55, so that they cannot pivot clockwise as viewed in FIGURE 8 around the shaft 22. By reason of this the clamping device 27, 50, 51 is opened and the clamps 50 and 51 move between the knife blades 59 and 60 and the sealing brackets. Following this the clamp 27 engages with its lower end the elastical strip 56 and retains the packing web, that is cut through by the knife 58, 59. When the handle is further lowered the sealing brackets pivot downwardly and the locking of clamps 51 and 52 is eliminated because the protruding portions 52 and 53 come below the pins 54, 55. After this and due to the T-form of the knife 58, 59, 60, the L-shaped back clamps 50, 51 can pass the

knife portions 59 and 60 and their lower side, so that they are ready to close immediately with clamp 27 under influence of the springs 28 and 29, when the handle again is moved upwardly, after which they take over and retain the edge of the web, kept between 56 and 27.

What we claim is:

1. A device for feeding a heat sealable packing web to an object to be packed, wrapping said object and sealing the web thereabout comprising: a frame; means supplying said web in a continuous sheet; means for severing a portion of said web along a severing line extending over the full width of the web; clamping means for gripping and retaining the edge of the severed web; an upper sealing bracket pivotably mounted in said frame and supporting said clamping means; a lower sealing bracket co-operating with said upper sealing bracket and pivotally mounted in said frame with the same pivotal axis as the upper sealing bracket; a driving means for pivoting the upper sealing bracket in a first direction away from the lower sealing bracket and in the reverse direction unto said lower bracket, for pivoting both brackets further in the said reverse direction to move the joining plane of both sealing brackets past the severing means, said driving means being provided with a means for opening the clamping means and closing them again for gripping the web edge.

2. The structure of claim 1 wherein a retaining means is present for retaining the web at the moment it is severed until the web edge is gripped by the clamping means.

3. The structure of claim 1 in which the pivot movement of the upper sealing bracket with respect to the lower sealing bracket is substantially 180° and in which means are provided for keeping the upper surface of the lower sealing bracket horizontally so that both brackets have their upper surfaces in substantially a single horizontal plane, when said upper bracket has been pivoted 180° with respect to said lower bracket.

4. The structure of claim 1 wherein the sealing brackets are substantially U-shaped.

5. A device for feeding a heat sealable packing web to an object to be packed, wrapping said object and sealing the web thereabout comprising: a frame; means supplying said web in a continuous sheet; means for wrapping an object in a portion of said web; a cutting knife for severing said portion of said web along a severing line extending over the full width of the web; clamping means for gripping and retaining the edge of the severed web; an upper sealing bracket pivotably mounted in said frame and supporting said clamping means; a lower sealing bracket co-operating with said upper sealing bracket and pivotably mounted in said frame with the same pivot line as the upper sealing bracket; a driving means for pivoting the upper sealing bracket in a first direction away from the lower sealing bracket and in the reverse direction unto said lower bracket, for pivoting both brackets further in the said reverse direction to move the joining plane of both sealing brackets past the cutting knife, said driving means being provided with a means for opening the clamping means and closing them again for gripping the web edge.

6. A device for feeding a heat sealable packing web to an object to be packed, wrapping said object and sealing the web thereabout comprising: a frame; means supplying said web in a continuous sheet; means for wrapping an object in a portion of said web; means for severing said portion of said web along a severing line extending over the full width of the web; clamping means for gripping and retaining the edge of the severed web; an upper sealing bracket pivotably mounted in said frame and supporting said clamping means; a lower sealing bracket co-operating with said upper sealing bracket and pivotably mounted in said frame with the same pivot line as the upper sealing bracket; a driving means for pivoting the upper sealing bracket in a first direction away from the lower sealing bracket and in the reverse direction unto said lower bracket, for pivoting both brackets further in

the said reverse direction to move the joining plane of both sealing brackets past the severing means, said driving means being provided with a means for opening the clamping means and closing them again for gripping the web edge, said clamping means consisting of two pivot clamps urged towards each other by spring means, the said driving means being provided with a locking mechanism, said locking mechanism being adapted to inhibit pivotable movement of one of said clamps when on the said driving means a force is exerted for pressing the sealing brackets together.

7. The structure of claim 6 in which the driving means are pivotably mounted and provided with a first cam member, a second cam member being attached to said clamp.

8. A device for feeding a heat sealable packing web to an object to be packed, wrapping said object and sealing the web thereabout comprising: a frame; means supplying said web in a continuous sheet; means for wrapping an object in a portion of said web; means for severing said portion of said web along a severing line extending over the full width of the web; clamping means for gripping and retaining the edge of the severed web; an upper sealing bracket pivotably mounted in said frame and supporting said clamping means; a lower sealing bracket co-operating with said upper sealing bracket and pivotably mounted in said frame with the same pivot line as the upper sealing bracket; a driving means for pivoting the upper sealing bracket in a first direction away from the lower sealing bracket and in the reverse direction unto said lower bracket, for pivoting both brackets further in the said reverse direction to move the joining plane of both sealing brackets past the severing means, said driving means being provided with a means for opening the clamping means and closing them again for gripping the web edge, wherein a retaining means is present for retaining the web at the moment it is severed until the web edge is gripped by the clamping means, said retaining means containing an elastical strip connected with the lower sealing bracket and a pressure member for pressing the packing web on the elastical strip, said pressure member being connected to the upper sealing bracket.

9. The structure according to claim 8 in which the pressure member is one of the clamps of the clamping device.

10. The structure according to claim 8 wherein the elastical strip is mounted pivotably in a downward direction against the force exerted by spring means.

11. The structure of claim 8 wherein a non elastical rim is mounted at the side of the elastical strip facing the lower sealing bracket, the elastical strip together with said non elastical rim being pivotably mounted in a downward direction against the force exerted by spring means, the said pressure member being a clamp of the clamping device.

12. A device for feeding a heat sealable packing web to an object to be packed, wrapping said object and sealing the web thereabout comprising: a frame; means supplying said web in a continuous sheet; means for wrapping an object in a portion of said web; means for severing said portion of said web along a severing line extending over the full width of the web; clamping means for gripping and retaining the edge of the severed web; an upper sealing bracket pivotably mounted in said frame and supporting said clamping means; a lower sealing bracket co-operating with said upper sealing bracket and pivotably mounted in said frame with the same pivot line as the upper sealing bracket in a first direction away from the lower sealing bracket and in the reverse direction unto said lower bracket, for pivoting both brackets further in the said reverse direction to move the joining plane of both sealing brackets past the severing means, driving means for the upper sealing bracket, said driving means being provided with a means for opening the clamping means and closing them again for gripping the web edge, wherein a supporting surface for the wrapped object is

mounted pivotably together with the lower sealing bracket around a further pivot line spaced from the common pivot line of the sealing brackets.

13. The structure according to claim 12, wherein means are present for causing the lower sealing bracket and the supporting surface pivot around the further pivot line, said last mentioned means having a driving part, connected with the upper sealing bracket and a driven part, coupled with the lower sealing bracket, said driving and driven parts being adapted to engage each other co-operatively in the first part of the relative pivotal movement of the first sealing bracket with respect to the lower seal-

ing bracket and disengage with further progress of said relative movement.

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