

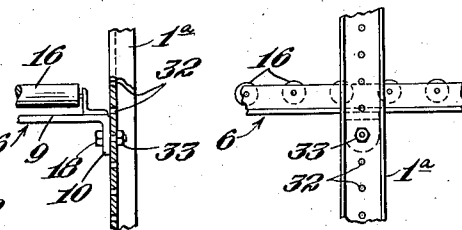
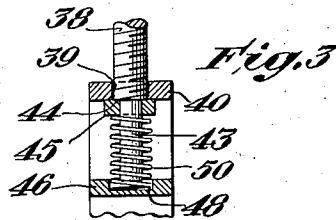
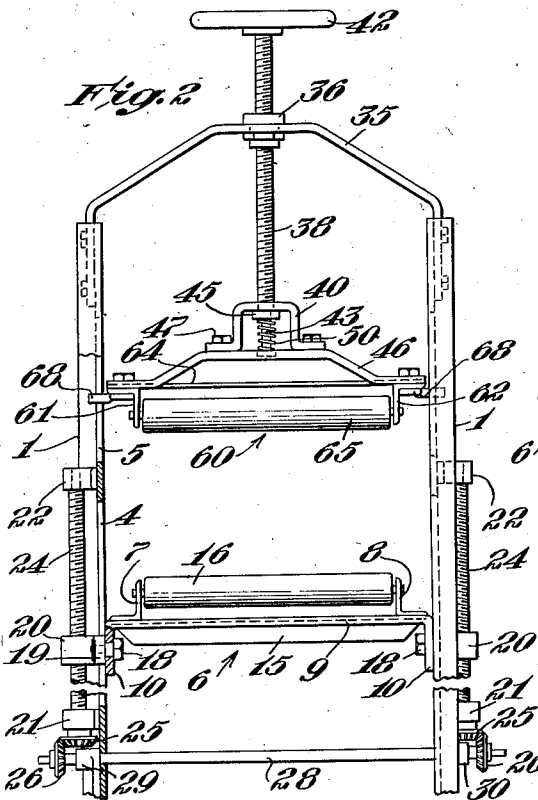
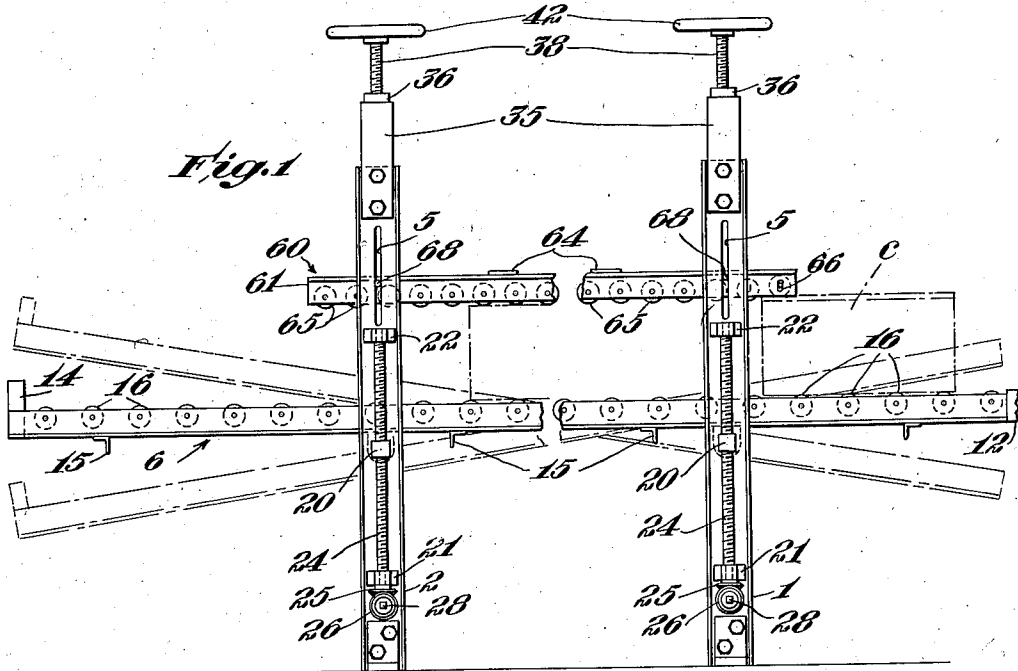
Jan. 19, 1937.

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2,068,439

SEALING MACHINE

Filed Feb. 5, 1936



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UNITED STATES PATENT OFFICE

2,068,439

SEALING MACHINE

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Application February 5, 1936, Serial No. 62,460

3 Claims. (Cl. 93—2)

This invention relates to an apparatus for seal-
ing containers, such as fiber board cartons hav-
ing inwardly folding flaps adapted to be secured
in closed position by any suitable adhesive.

5 In packaging goods in fiber board cartons, it
is the usual practice to seal the flaps by means
of an adhesive, such as a vegetable or animal
glue, which requires an appreciable period of
time to penetrate the surface of the flaps and
10 become "set" sufficiently to hold the flaps in
closed position. In order to insure a satisfactory
penetration and setting of the adhesive, it is the
practice to use a sealing means having a presser
head which clamps the flaps of one or more car-
15 tons for a period of time sufficient to insure a
penetration and setting of the adhesive. With
machines of this type the sealing operation is
carried out in batches, and for this reason not
only necessitates considerable handling, but also
20 is quite apt to slow down production. Moreover,
in machines of this type the presser head clamps
down upon the flaps carrying the adhesive sud-
denly and subjects them to a pressure which
often causes a substantial amount of adhesive to
25 be forced from between the flaps before it has
had time to penetrate, thereby producing a much
weaker bond than would have been produced if
the adhesive had been allowed to penetrate be-
fore being subjected to pressure.

30 The principal objects of this invention are to
provide a sealing machine which overcomes the
aforementioned deficiencies of prior machines
and which is designed for continuous operation;
to provide a sealing machine capable of operat-
35 ing on cartons of widely varying size, and which
is so designed that the period of penetration of
the adhesive and the pressure applied to the flaps
carrying the adhesive may be varied so as to pro-
duce the most effective bond; and to provide a
40 sealing machine which is of simple construction,
reliable and efficient in operation, and which may
be operated in conjunction with any of the con-
ventional types of gluing machines and con-
veyors.

45 Further objects of the invention will be ap-
parent from a consideration of the following de-
scription and accompanying drawing, wherein—

50 Fig. 1 is a side elevation of a sealing machine
constructed in accordance with the present in-
vention;

Fig. 2 is an end view of the machine;

Fig. 3 is an enlarged detail view of a part of the
adjusting mechanism for the upper run; and

55 Figs. 4 and 5 are fragmentary views showing a

modified arrangement for adjusting the position
of the lower run.

The embodiment chosen for illustration com-
prises two pairs of spaced uprights 1 and 2 which
are preferably U-shaped in cross section, the
5 lower and upper parts of each upright being
formed with elongate slots 4 and 5, respectively.
A lower frame member, designated generally by
the numeral 6, is supported by the uprights and
comprises a pair of spaced angle irons 7 and 8
10 rigidly secured to a pair of spaced cross bars 9
each having depending ears 10 at each end, the
ears being positioned slidably to engage the inner
faces of the uprights 1 and 2. A plurality of
15 rollers 16 are journaled in any suitable manner
in the upright wings of the angle irons 7 and 8
and constitute the lower run of a conveyor which
supports the cartons C being sealed. The front
and rear ends of the frame may also be provided
with transverse members 12 and 14 and a plu-
20 rality of intermediate braces 15 may be provided
to increase the rigidity of the frame.

As above noted, the depending ears 10 of the
cross bars 9 are disposed in alignment with the
uprights 1 and 2 and each of these ears is pro-
25 vided with an opening which receives the shank
of a bolt or machine screw 18 which projects
from the inner side of the ears 10, as shown in
Fig. 2. Each bolt has a threaded engagement
with an inwardly directed lug 19 which is slid-
30 able in the lower slot 4 and which is integral with
a collar 20 having a vertically extending threaded
bore. A lower bearing member 21 is rigidly se-
cured to each of the uprights adjacent to its
lower end and an upper bearing member 22 is
35 rigidly secured to each upright between the slots
4 and 5. Each pair of bearings 21 and 22 support
a screw shaft 24 which carries a collar 20. The
lower end of the screw shaft carries a bevelled
gear 25 meshing with a gear 26 secured to an
40 operating shaft 28 which is journaled in bearings
29 and 30 secured to the uprights. One end of
the operating shaft is squared or otherwise shaped
to receive a crank (not shown) by means of which
the screw shafts may be rotated so as to raise or
45 lower one or both ends of the frame member 6 to
any desired height or angle of inclination, as in-
dicated by the dot and dash lines of Fig. 1.

In the modified construction shown in Figs. 4
and 5 the uprights 1^a are provided with a plu-
50 rality of spaced openings 32 in place of the slots
4 and the bolts 18 project through these open-
ings and receive nuts 33 which lock the parts in
any position of adjustment. The openings 32
may be spaced apart a distance of the order of
55

one inch and may extend from adjacent to the lower end of each upright to the slots 5 so that the lower frame member may have a wide range of adjustment.

5 A transversely extending yoke 35 is secured to the upper ends of each pair of uprights and each yoke is provided with a central opening which receives a collar 36 having a screw-threaded bore. A screw bar 38 is carried by the collar 36 and projects downwardly through an opening 39 (Fig. 3) in a U-shaped bracket 40. The upper end of the screw bar is provided with an operating wheel 42 by means of which it may be raised or lowered and its lower end is shaped to provide a stem 10 43 of reduced diameter. The stem 43 carries a washer 45 which engages the shoulder 44 surrounding the stem and also the marginal portion surrounding the opening 39 in bracket 40, as shown in Fig. 3. The bracket 40 is rigidly 20 secured to another bracket 46 by screws 47 and the bracket 46 is provided with a centrally disposed opening or recess 48 in alignment with the end of the stem 43, as shown in Fig. 3. A coil spring 50 is circumposed about the stem 43 with one end abutting the washer 45 and its other end being seated in the recess 48. The spring 50 is normally compressed sufficiently to hold the washer 45 against the underside of the bracket 40 and shoulder 44 and the end of the stem 43 is thus normally held in spaced relation to the bot- 25 tom of the recess 48 so that the spring 50 is operative yieldingly to oppose upward and downward movement of the bracket 40 and associated parts, relative to the screw bar and uprights. 30 The distance between the end of the stem 43 and the bottom of the recess 48 may be of the order of $\frac{3}{8}$ of an inch so as to permit a slight upward displacement of the brackets and associated parts, relative to the screw bar.

40 The bracket 46 supports an upper frame member, designated generally by the numeral 60, which comprises a pair of spaced angle irons 61 and 62 rigidly secured by a plurality of transverse braces 64. The wings of the angle irons 61 and 45 62 extend downwardly and rotatably support a plurality of rollers 65 constituting the upper run of the machine. The first roller at the front end, and preferably the first two or three rollers, may be either mounted in vertically extending 50 slots 66 or provided with floating bearings so that it is vertically movable relative to the frame member 60. Laterally extending lugs 68 are secured to the frame member 60, these lugs projecting into the slots 5 in the uprights 1 and 2 55 to guide the frame member 60 during its movement toward and away from the lower frame member 6 and also to oppose any tendency of the frame member 60 to sway longitudinally during the sealing operation.

60 In using a machine constructed in accordance with the present invention the upper and lower frame members are first adjusted in accordance with the size or height of the cartons to be sealed. For example, if the height of the cartons to be 65 sealed is twelve inches when the flaps are in closed position, the screw bar 38 may be so adjusted that the distance between the front rollers of the upper and lower run is twelve to twelve and one-quarter inches and the distance between 70 the rear rollers of the upper and lower run is eleven and three-quarters to twelve inches. When thus adjusted the end of each stem 43 is spaced from the bottom of the recess 48 so as to permit an upward displacement of the frame which 75 will prevent any danger of crushing the cartons.

The flaps of the cartons are provided with a layer of adhesive in the usual manner, this operation either being performed automatically or manually, and the flaps are then folded inwardly and the carton is then conveyed or carried to the 5 lower run and fed or pushed between the rollers of the upper and lower frames. As the rollers at the front of the machine are supported in floating bearings or the like, they exert but little pressure on the flaps and merely serve to hold 10 them in closed position so that the adhesive will have time to penetrate the surfaces of the flaps. As cartons C are pushed or conveyed toward the rear or exit end of the machine, the intermediate 15 rollers of the upper and lower runs, being successively closer to each other, exert a gradually increasing pressure and when the cartons reach the rollers at the rear or exit end of the machine the maximum pressure is exerted thereon due to 20 the fact that the cartons effect an upward displacement of the upper frame member and not only sustain the entire weight of the rear end of the frame but also are subjected to the force resulting from the action of the spring 50 at the rear of the machine, which yieldingly opposes 25 the upward displacement of the frame 60. It is thus apparent that as the cartons move from one end to the other, their inturned flaps are subjected to a gradually increasing pressure which may be varied by manipulating the screw bars 30 38 so as to vary the distance between the upper and lower run of rollers.

If desired both the upper and lower run of rollers may be inclined so that during the sealing operation the cartons may be conveyed from one 35 level to another. The cartons may be carried or pushed through the machine manually or automatically, and in either case their movement may be facilitated by positioning the upper and lower run so that they are downwardly inclined there- 40 by utilizing the action of gravity without impairing the aforementioned function.

It will be noted that in using the machine constructed in accordance with the present invention the sealing operation may be carried on as 45 a continuous operation, as distinguished from batch operations, and that the sealing operation when thus carried out dispenses with supervision and laborious handling of the cartons.

While I have shown and described one desirable 50 embodiment of my invention it is to be understood that this disclosure is for the purpose of illustration only and that various changes in shape, proportion and arrangement of parts, as well as the substitution of equivalent elements 55 for those herein shown and described, may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. A sealing machine comprising upper and lower frame members, the upper frame member being mounted for independent vertical movement toward and away from the lower frame member, a plurality of rollers rotatably supported 65 by each of said frame members, and means for yieldingly supporting said upper frame member for movement toward and away from said lower frame member, said means comprising a bracket secured to said upper frame member, a horizon- 70 tally disposed yoke rigidly supported above said bracket, a vertically disposed screw shaft carried by said yoke, and connections between the lower end of said screw shaft and bracket including resilient means operative normally to hold the 75

end of said screw shaft spaced from said bracket and yieldingly to oppose vertical movement of said upper frame member.

2. A sealing machine comprising upper and lower frame members, the upper frame member being mounted for independent vertical movement toward and away from the lower frame member, a plurality of rollers rotatably supported by each of said frame members, and means for yieldingly supporting said upper frame member for movement toward and away from said lower frame member, said means comprising a bracket secured to said upper frame member, a horizontally disposed yoke rigidly supported above said bracket, a vertically disposed screw shaft carried by said yoke, and connections between the lower end of said screw shaft and bracket including a spring, one end of which is superposed about the lower end of said screw shaft and its other end arranged to engage said bracket, thereby yieldingly to oppose upward movement of said upper frame member, and means associated with said spring for supporting said bracket so as to permit

a limited upward movement of said upper frame member.

3. A machine for sealing cartons, comprising a plurality of upright supports, an elongate lower frame member adjustably secured adjacent to each end to said upright supports so that its position relative to a horizontal plane may be varied, an upper frame member, a plurality of rollers rotatably supported by each frame member, adjustable means carried by said upright supports and connected to said upper frame member adjacent to its ends, said means being constructed and arranged to vary the position of said upper frame member relative to a horizontal plane independently of said lower frame members so that the relative position of the upper and lower frame members may be varied in accordance with the desired pressures to be exerted on cartons passing between the rollers carried thereby, and means associated with said adjustable means and upper frame member operative yieldingly to permit a predetermined upward displacement of said upper frame member.

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