Dec. 28, 1937. W. N. McWADE 2,103,544

REFRIGERATED SEALING EQUIPMENT

Filed Feb. 12, 1937

Fig. 1

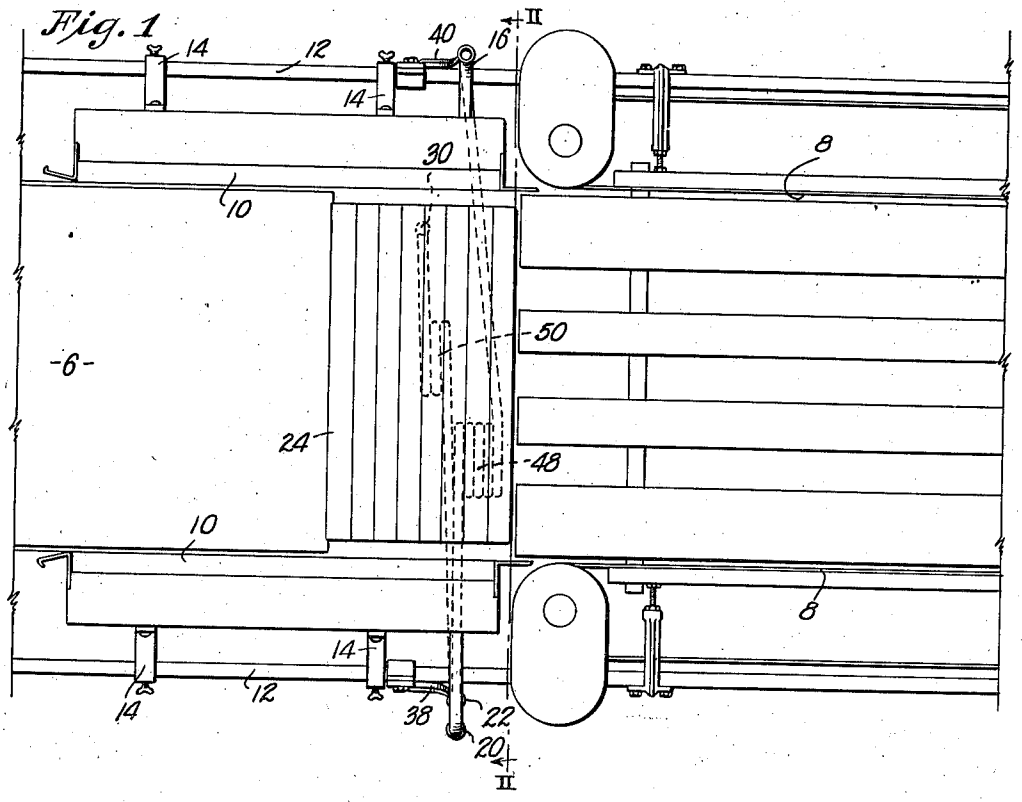


Fig. 2

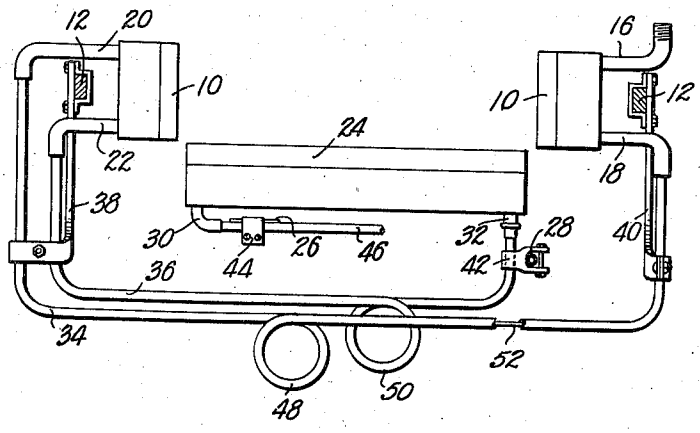
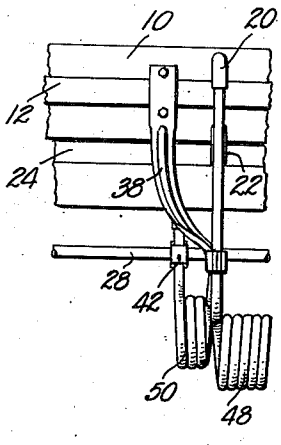


Fig. 3



INVENTOR.
WALTER N. McWADE

BY Howey & Hamilton
ATTORNEYS.

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REFRIGERATED SEALING EQUIPMENT

Walter N. McWade, Overland Park, Kans., assignor of one-half to Merlin A. Sticelber, Kansas City, Mo.

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5 Claims. (Cl. 62—1)

This invention relates to sealing units for wrapping machines, wherein is employed a refrigerant for cooling the two movable side plates and the stationary bottom plate.

In sealing equipment which is greatly improved when constructed in accordance with this invention, it is customary to interconnect the side sealing plates and the bottom sealing plate through the medium of flexible connections, through which the refrigerant passes to conduits forming a part of the said plates. It is necessary to maintain good connection between the refrigerating unit and the several sealing plates in order that leaks might be prevented, and while various ways of conducting a refrigerant to the cooling plates of the sealing unit have been employed, none have provided ways for preventing leaks at the various connections required and for using tubing of commercial type and formed to permit adjustment of the plates which it interconnects.

Sealing plates for units of the aforementioned character are known in the art, and an example of their use is made clear in United States Letters Patent Number 2,007,439, dated July 9, 1935, and 2,030,725, dated February 11, 1936. In both of these patents, movable side plates and a stationary bottom plate are shown to be joined together by tubing.

One of the important aims of this invention is to provide anchoring means for tubing which interconnects the sealing plates of the unit so as to protect the joints required to establish connection between the tubes and the conduits forming a part of the plates.

Another object of the invention is the provision of especially formed tubing for interconnecting the plates of a sealing unit, which tubing is normally of a rigid nature, but which, after being formed in accordance with this invention, permits easy relative adjustment of the plates that it connects, without danger of creating leaks therein.

A yet further aim of this invention is to provide tube-supporting elements for sealing units of wrapping machines that may be readily positioned to clamp the tubing at points intermediate the joints formed therein and the especially created coils that are formed to permit relative movement of the interconnecting plates.

A large number of minor objects will appear during the course of the following specification, referring to the accompanying drawing, wherein:

Figure 1 is a fragmentary, plan view of sealing equipment for wrapping machines, having structure embodying the present invention.

Fig. 2 is a cross sectional view through the sealing unit taken on line II—II of Figure 1, and Fig. 3 is a fragmentary, side elevation of a portion of the sealing unit.

A part of the delivery mechanism of a wrapping machine is shown in Fig. 1. The package is moved into the sealing unit along a platform or conveyor 6, and upon leaving the sealing unit, endless belts 8 move the package along a supporting member therebetween. Side plates 10 contact the ends of the package being treated, and are mounted upon movable frame elements 12 through the medium of a bracket or the like 14. Side plates 10 are provided with conduits for the passage of a refrigerant, and these conduits extend outwardly from the side plates in the form of branches 16 and 18 on the one side and 20 and 22 on the other side. A bottom plate 24 is rigidly mounted through the medium of a group of stationary frame members including elements 26 and 28. Bottom plate 24 likewise has a conduit for refrigerant, and the ends of this conduit extend outwardly, as indicated at 30 and 32.

The operator adjusts side plates 10 to agree with the length of the package being wrapped, and this adjustment takes place at regular intervals. The connections between plates 10 and between one of plates 10 and plate 24 must, therefore, be flexible to allow the adjustment without destructive results to the connection. When producing an assembly having the parts hereinabove mentioned, it is desirable, if not practically necessary, to establish connections at the points of juncture between tube 34 and branch 20 and 18 and between tube 36 and branch 22 and end of conduit 32. These connections will leak if not properly protected.

The connections between tubes 34 and 36 and ends 20 and 22 respectively of conduit forming a part of 10 are protected by a bracket 38 that is mounted upon frame member 12. Bracket 40, mounted upon frame member 12 which supports the opposite side cooling plate 10, protects the joint established between 18 and the other end of tube 34. These brackets 38 and 40 are rigid and move with side plates 10. A bracket 42 anchors one end of tube 36 to stationary frame member 28, and another bracket 44 may be used to support the end of tube 46 which leads to the compressor, not here shown.

Each tube 34 and 36 has created therein a series of coils 48 and 50 respectively. These coils are spirally wound and there is a larger number of coils 48 than there are coils 50 because of the amount of adjustment possible between the ele-

ments which the respective tubes join. As an example, when side plates 10 are moved from each other, more lengthening of tube 34 is required than when side plate 10 is moved outwardly from bottom plate 24 so as to extend tube 36.

In commercial practice, the maximum distance which side plates 10 must travel is four inches each; that is, there is an eight inch differential between the maximum and minimum settings.

Each tube 34 and 36 comprises a covering of rubber or similar yieldable material and a continuous metal tube 52, through which passes the refrigerant. This tube 52 may be of the conventional commercial type, and its covering conforms to the shape of the spiral loops, regardless of the number employed. This covering not only conforms to the shape of the tube throughout its length to protect the same against relatively sharp bends, but serves as an insulating coating which contributes to the efficiency of the sealing unit. When the distance between the ends of either tube 34 or 36 is increased, the diameter of each loop or coil 48 and 50, as the case may be, is decreased, and because of the number of loops employed, the change in diameter and therefore strain upon the tubing, is reduced to a minimum.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In package sealing equipment of the character described having a bottom cooling member provided with conduits for a refrigerant, and a pair of spaced-apart side cooling members above the bottom cooling member, adjustable toward and from each other and each provided with conduits for a refrigerant, the combination of a tube, having coils formed therein, joining said side cooling members; connections at the points of juncture between the tube and said side cooling members establishing communication between said conduits and said tube; and a bracket assembled with each side cooling member respectively holding the said tube at points thereof between the coils formed therein and the said connections for the purpose specified.

2. In package sealing equipment of the character described having a stationary bottom cooling member provided with conduits for a refrigerant, a frame supporting the bottom cooling plate, a pair of spaced-apart side cooling members above the bottom cooling member, each provided with conduits for refrigerant, and a frame carrying the side cooling members for movement toward and from each other, the combination of a tube, having coils formed therein, joining the bottom cooling member and one of said side cooling members; connections at the points of juncture between the tube and said side and bottom cooling members; a bracket anchoring the end of the tube joining the bottom cooling member to the frame supporting said bottom cooling member; and a bracket anchoring the end of the tube joining the side cooling member to the frame carrying said cooling member.

3. In package sealing equipment of the character described having a stationary bottom cooling member provided with conduits for a refrigerant, a frame supporting the bottom cooling plate, a pair of spaced-apart side cooling members above the bottom cooling member, each provided with conduits for a refrigerant, and a frame carrying the side cooling members for movement toward and from each other, the combination of a tube, having coils formed therein, joining the bottom cooling member and one of said side cooling members; connections at the points of juncture between the tube and said side and bottom cooling members; a bracket anchoring the end of the tube joining the bottom cooling member to the frame supporting said bottom cooling member; a bracket anchoring the end of the tube joining the side cooling member to the frame carrying said cooling member; a tube, having coils formed therein, joining the two side cooling members; and a bracket anchoring the ends of the last mentioned tube to the frames respectively carrying said side cooling members.

4. In package sealing equipment of the character described having a bottom cooling member provided with conduits for a refrigerant, and a pair of spaced-apart side cooling members above the bottom cooling member, adjustable toward and from each other and each provided with conduits for a refrigerant, the combination of a tube, having coils formed therein, joining said side cooling members; connections at the points of juncture between the tube and said side cooling members establishing communication between said conduits and said tube; and a bracket assembled with each side cooling member respectively holding the said tube at points thereof between the coils formed therein and the said connections for the purpose specified, the coils formed in the tube intermediate the ends thereof being spirally wound whereby to have each coil decreased in diameter as the side cooling members are moved apart.

5. In package sealing equipment of the character described having a bottom cooling member provided with conduits for a refrigerant, and a pair of spaced-apart side cooling members above the bottom cooling member, adjustable toward and from each other and each provided with conduits for a refrigerant, the combination of a tube, having coils formed therein, joining said side cooling members; connections at the points of juncture between the tube and said side cooling members establishing communication between said conduits and said tube; and a bracket assembled with each side cooling member respectively holding the said tube at points thereof between the coils formed therein and the said connections for the purpose specified, the coils formed in the tube intermediate the ends thereof being spirally wound whereby to have each coil decreased in diameter as the side cooling members are moved apart, said tube having a covering of flexible material thereon of a character adapted to conform to the changing form of the coils formed therein as adjustment of the side cooling members takes place.

WALTER N. McWADE.