Dec. 17, 1957 J. M. GERRARD ET AL 2,816,337

SELF-TENSIONING SEAL

Filed Sept. 17, 1954

Fig. 1

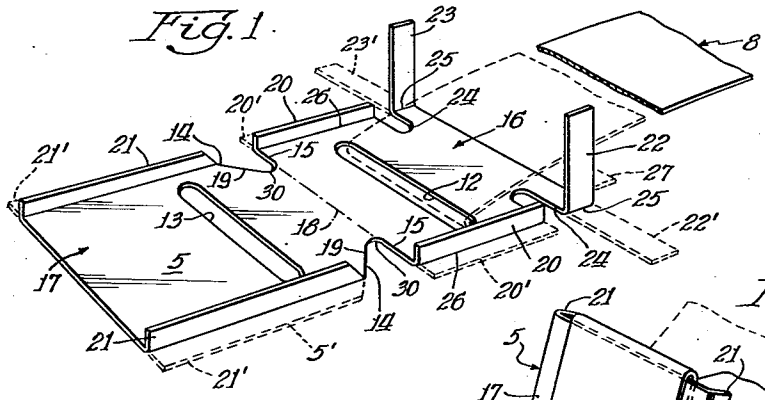


Fig. 2

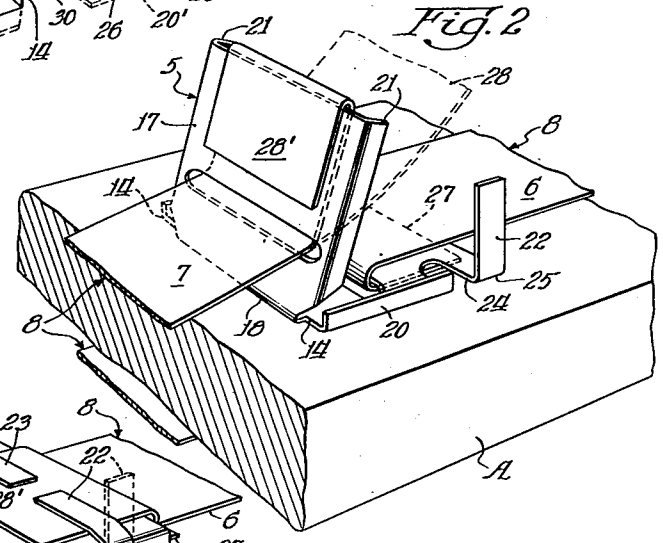


Fig. 3

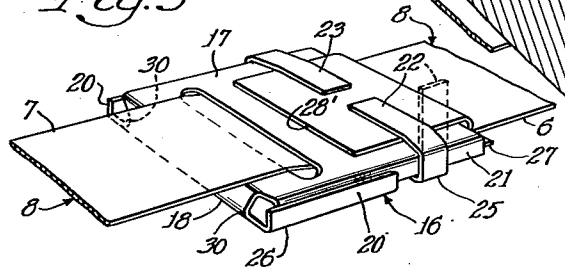
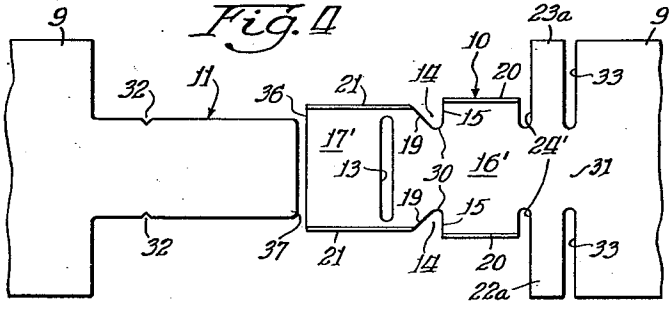


Fig. 4



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SELF-TENSIONING SEAL

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20 Claims. (Cl. 24—23)

This invention relates to a strap seal and more particularly to a self-tensioning seal used to fasten the loose ends of a band or strap for applying insulation to stills, cracking towers, or the like in the petroleum-chemical field, and may be used with the type of bands as disclosed and claimed in U. S. Patent No. 2,666,004 issued January 12, 1954 to J. M. Gerrard; and is also an improvement over the type of seal as disclosed and claimed in the U. S. patent to J. M. Gerrard, No. 2,377,224 granted May 29, 1945. The self-tensioning seal of this invention is also equally adaptable for fastening the loose ends of a band employed for packing and crating purposes, and the self-tensioning seal may also be employed with other flexible strapping, such as plastic, tape or fiber rather than metal for tightly securing the same about an object where it is not necessary to have the strength of the band within the range normally used for steel strapping.

Various kinds of seals have been manufactured for this purpose, for example, baling tie buckles, such as disclosed and claimed in U. S. Patents 1,009,632 granted November 21, 1911 to Bartran and No. 1,047,036 granted December 10, 1912 to Furth. A more recent form of strap seal has been disclosed and claimed in the U. S. Patent No. 2,663,923 to Mattingly granted December 29, 1953. Although certain of these early form of seals are satisfactory for securing bundles of lath, shingles, and the like, they are not satisfactory for securing insulation to duct work, cracking towers, and the like, and the strap seal of Mattingly still requires a sealing tool to finally lock the seal in its tensioned position.

It is, therefore, a principal object of the invention to provide an improved form of self-tensioning seal capable of use in connection with a metallic band or with non-metallic bands which are tough and have great tensile strength comparable with that of metallic bands of the same size.

Another object of the invention is the provision of a self-tensioning seal for fastening the ends of the band, and which can be applied to the ends of the band without undue deformation.

Still another object of the invention is the provision of a self-tensioning seal which can be easily and readily applied to and fastened upon the ends of the band without any danger of slippage of the loose ends of the band through the seal.

A further object of the invention is the provision of a self-tensioning seal construction which can be integrally fabricated with portions thereof complementally formed on the free ends of the bands so that bands or strapping may be formed with a self-tensioning seal of predetermined sizes.

Another object of the invention is the provision of a self-tensioning seal wherein no tools are needed to assemble and seal the device.

Still another object of the invention is to provide a self-tensioning seal wherein the tension may be varied and the ease with which the seal operates may be modified.

Still another object of the invention is to provide bands

or strapping of predetermined lengths fabricated with an integrally formed self-tensioning seal.

A further object of the invention is to provide a self-tensioning seal construction in which designated tensions can always be duplicated by providing a predetermined point at one end of the band for applying the band to its complementally formed portion of the self-tensioning seal.

In order to accomplish the various objects and features of the invention, we have provided an improved form of self-tensioning seal which may be readily fabricated from a minimum amount of material, which may be formed for securing the ends of the self-tensioning seal to the free ends of banding or strapping to be tensioned and sealed. The free ends of the self-tensioning seal are folded upon themselves about a reduced center portion to permit ease in moving the ends of the seal with respect to each other. The ease at which the seal operates may be modified by the cross-sectional area of the reduced portion or by change in gauge or temper of the metal. Locking means are integrally formed from one end of the self-tensioning seal to latch the seal in its final position with the band to which it is affixed properly tensioned.

In another embodiment of our invention, we have illustrated the self-tensioning seal applied to bands of predetermined lengths. In this embodiment, predetermined tensions may be duplicated by notching the tongue of the reduced portion of the band forming a separable part of the seal to locate the proper point for applying the band.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given. To this end, our invention consists in the novel construction, arrangement, and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawing, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a perspective view of the self-tensioning seal of the invention, illustrating the seal formed to its final position from its original blank, and applied to one end of a band;

Fig. 2 illustrates the seal and strapping applied to an object with the free end of the strapping positioned for the final movement of the seal for tensioning the band about the object;

Fig. 3 illustrates, in perspective, the final position of the self-tensioning seal with the band tensioned and with the ends of the seal latched in their final tensioned position; and,

Fig. 4 illustrates another embodiment of the self-tensioning seal of our invention applied to the free end of bands of predetermined lengths, and the method of making from continuous rolls of strapping.

Referring to the drawing which is merely illustrative of several forms of the present invention, there is illustrated a self-tensioning seal construction 5, Figs. 1, 2, and 3, adapted for affixing to the free ends 6 and 7 of a band or strapping 8 adapted to be placed around an object or body A for securely affixing any separable parts of the body together and under sufficient tension to prevent removal of the strap after the seal has been latched in place. The object or body A is illustrative of a small package which is either wrapped or may be made up of one or more articles, such as packages of plaster lath, bundles of shingles, insulated siding, and the like. It is also illustrative of a construction for retaining insulation and/or structural members on tanks, vessels, or the like, or similar constructions using steel strapping and a shield construction therefor, and more particularly to an expanded band in the form of an expanding and contracting steel strapping and shield construction, such as disclosed and claimed in the aforesaid U. S. Patent No. 2,666,004 for

"Steel Strapping and Shield." Recently, there has been a rapid advancement in the art of manufacturing insulation blocks and insulating insulation substances so that the previous methods for securing these insulation materials have become antiquated. Although in the aforementioned patent, conventional forms of clamps and seals requiring a tensioning tool and clamp for affixing the ends of the band together are used, in many instances the applicators are working high above the ground on slings or on catwalks, and it is a distinct advantage not to be required to have a strapping tool, seal, and sealers in such positions. Therefore, the self-tensioning seal of this invention is in great demand. This demand for self-tensioning seals has been primarily brought about by the extreme changes in temperature, requiring a form of strap that will take care of this change in expansion which is inherent in devices in the petroleum-chemical art. Most of these processes require heat or cold and the process involves such an area of space that it is impossible to house the various steels, cracking towers, etc., within buildings so that they are primarily located outdoors. This has, likewise, demanded a great improvement in insulation and, as a consequence, a rapid means of applying expanded and contracting steel strapping of the aforementioned patent, or other forms of bands, under tension to secure aluminum or other types of insulation. It is also an additional requirement in industriail installation of piping and the like, where preformed insulation is placed about pipes which carry fluids at either very high or very low temperatures to have a simple form of band and self-tensioning device to secure the insulation in place to pipes or conduit. There is also the requirement for the home owner or in the home workshop where at times it is desired to have short runs of insulation either about conduits or about furnaces in installing asbestos insulation and the like, which would not warrant an individual purchasing a strapping tool, seals, and sealers; and, therefore, it is very desirous of having bands of designated lengths **9**, such as illustrated in Fig. 4. In this embodiment, the band **9** has a self-tensioning seal **10** slightly modified from that of Figs. 1 through 3 integrally formed with one end of the band **9**, and the opposite end of the band provided with a tongue **11** being complementally formed for affixing to the seal so that a band of predetermined length may be tensioned and suitably affixed in place to the periphery of any object or building construction and the like, such as disclosed and claimed in the aforementioned U. S. Patent No. 2,666,004.

Referring to Figs. 1 through 3, the preferred self-tensioning seal **5**, which may be separably attached to a band or strapping **8**, will be particularly described. It is preferred to form a seal for three-fourth inch conventional strapping from a blank essentially one and seven-eighth inches square from material 0.020 inch thick. These seals may be suitably blanked from a continuous strip of material so that the rolled grain of the strip is preferably in the direction of the longitudinal axis of the completed seal **5**. The method of fabricating these seals may be by individually blanking and/or forming these seals, or it may be an automatic step-by-step operation. The method of fabricating is one which will most economically produce the finished form on the seal as illustrated in the solid finished form **5** and dotted form **5'**, is formed with longitudinally spaced slots **12** and **13** which extend transversely to the longitudinal axis of the finished seal **5**. Intermediate the slots **12** and **13** are symmetrically formed, oppositely positioned, substantially V-shaped notches **14**. The notches **14** are formed with legs **15** which are at right angles to the longitudinal axis of the seal, and about which the opposite ends **16** and **17** may be folded along the line of bending **18**. The legs **19** of the notches **14** are formed at an angle, as illustrated in Fig. 1, so that the bend takes place along the line formed by the legs **15** of the opposite notches. It is preferred to form this angle at substantially 45°, and the radius

connecting the legs **15** and **19** of each notch is such that the metal will not crack or tear as the strap is being tensioned. In order to increase the moment of inertia of the section forming the seal, the opposite edges **20** are formed as a flange from the blank portions **20'**. Similarly, the edges **21** of the end **17** are formed as upturned flanges from the edges **21'**. The vertical heights of the flanges **20** and **21** are substantially equal, and for the seal described for a three-fourth of an inch strap, the height is substantially one-sixteenth of an inch. The lateral distance between the opposite flanges **20** of the end of the seal **16** is substantially one and one-sixteenth inches, whereas the distance between the flanges **21** of the opposite end **17** of the seal is substantially fifteen-sixteenths of an inch so that as the seal is finally positioned, as illustrated in Fig. 3, the flanges **21** are complementally received between the upturned flanges **20** with the flanges **21**, as illustrated in Figs. 2 and 3, being downturned. As the ends of the seals are positioned, as illustrated in Fig. 3, the edges of the flanges **21** preferably about the upper face of the end **16**.

In order to latch the opposite ends **16** and **17** of the seal together, as illustrated in Fig. 3, latching means in the form of laterally extending ears **22** and **23** are formed contiguous to the outer edge of the end portion **16**, as illustrated in Fig. 1, from the laterally extending ear portions **22'** and **23'** as formed in the blank from which the seal is formed. U-shaped notches **24** are integrally formed from each edge of the seal to space the ears **22** and **23** from the flanges **20** and to permit the ears to be readily bent along a fold line **25**, corresponding to the fold line **26** of the flanges **20** so that the opposite end **17** has its flanges **21** extending between the ears **22** and **23** in the latched position of the seal when affixed to the strap **8**. In the sealed position, as illustrated in Fig. 3, the length of the end portion **17** is substantially one inch whereas the end portion **16** is substantially seven-eighths of an inch, so that the overall dimension of the seal in the latched position may be considered as being substantially one and one-sixteenth inches plus the thickness of the two flanges **20** of substantially 0.040 inch. The width of the ears **22** is substantially one-eighth of an inch and the notch **24** is substantially three thirty-seconds of an inch with the distance between the inner ends of the notch being substantially twenty-one thirty-seconds of an inch. For a three-fourth inch strap, the length of the slots is substantially twenty-five thirty-seconds of an inch and the width of the slots is substantially three thirty-seconds of an inch. The above dimensions have been given as illustrative of one embodiment of the self-tensioning seal for use with three-fourth inch conventional strapping. It is to be understood that the dimensions of the seal would vary, depending upon the width and thickness of the strapping with which the self-tensioning seal is to be used, wherein the seal in a sealed position will develop substantially the tensile strength of the strapping with which it is used and will not become unlatched under the tension applied.

Referring to Figs. 1, 2, and 3, the application of the self-tensioning seal will be described with reference to banding an object or article A, which may be packaged; or the application of strapping for applying insulation and the like, structures to the peripheral surface of a tank and the like, used in petroleum and chemical industries. The application is also illustrative of applying strapping either to a package rectangular in cross section, circular, or any other geometrical shape to which it is conventionally desirous of applying strapping. The free end **6** of the strapping or banding iron **8** is inserted through the slot **12** with the end **27** bent as illustrated to extend slightly beyond the end **16** of the seal **5**. When applied in this manner, the seal **5** is substantially affixed to one end of the strapping **8** so that it will not be disengaged as the seal is applied to a face of an object as illustrated in Fig. 2. The end **27** is preferably first bent

back substantially one inch and inserted in the slot 12. If desired, one free end of strapping of predetermined length may come with one end of the strapping being bent back as illustrated in Fig. 1. Secondly, the seal 5 is bent, as illustrated in Fig. 2, with the end portion 17 substantially in a vertical position about the fold line 18 formed by the notched portions 14. The free end 7 of the strapping 8 is brought through the second slot 13 to the dotted position 28, Fig. 2. The end 7 of the strapping is drawn as tightly as possible about the package or object by hand, and then bent about the end 17 to the position 28' shown in the solid lines of Fig. 2. When formed in this manner, the strapping is tightly affixed about the periphery of the object being banded as the slack has been removed by pulling the end 7 as described above. The upright portion 17 of the seal, as illustrated in Fig. 2, is then pushed down with the thumb or palm of the hand, whichever is convenient. It is preferred that the latching means formed by the ears 22 and 23 are in a substantially upright position as illustrated in Figs. 1 and 2. As the end portion 17 of the seal is pushed downwardly to its maximum lowest position, the strapping or banding 8 is tensioned to a predetermined amount and the portion 17 of the seal is secured to the bottom portion 16 by pushing down the ears or retaining lugs 22 and 23 from their substantially upright position to their positions shown in solid lines in Fig. 3. The seal is then securely affixed and the strapping is properly tensioned about the periphery or circumference of an article, package or building construction, such as disclosed and claimed in the aforesaid U. S. Patent No. 2,666,004.

The strapping may be removed in the reverse manner by bending the lugs upwardly to the position shown in Fig. 2, after which the ends 17 may be raised, as also shown in Fig. 2, and the ends 7 detached in the reverse order as applied. However, normally, in detaching the bands, they would be usually snipped or cut as the seals are primarily made to be disposable.

Seals of this type may be manufactured to have tension of varying degrees by moving the slot 13 away from the fold line 18. In the embodiment particularly disclosed, the centerline of each of the slots 12 and 13 is substantially three-eighths of an inch from the centerline of the radii forming the V-shaped notches 14. The ease at which the seal operates may also be modified by varying the depths of slots 14, for example, in the embodiment illustrated, the distance between the centers of the radii 30 forming the curved connection of the notches is substantially twenty-one thirty-seconds of an inch. It is also possible to vary the ease at which the seal operates by varying the gauge of the metal or the temper of the metal, if it is formed from a carbon steel.

For ease in applying the seals, it may be desirous to slightly bend the ends 16 and 17 about the fold line 18 and to slightly bend the lugs 22' and 23' about their fold line 25'. When so formed, the seals may be nested together for packaging and ease in handling on the job.

Referring to Fig. 4, bands 9 of designated length can be fabricated for applying insulation and the like to pipes or insulation to building constructions, such as that disclosed and claimed in the aforementioned U. S. Patent No. 2,666,004. When used in this manner the bands are formed with spaced undulating arcuate, corrugated segments for the expansion and contraction of the band under variations in temperature. For example, the strapping 9 of the embodiment illustrated in Fig. 4 is substantially two inches in width. The self-tensioning seal of this embodiment is, however, similarly formed as the seal 5 described with reference to Fig. 1 with the exception that it is integrally formed from the band 9 by a connecting portion 31 corresponding substantially to a three-fourths of a inch strapping. Similarly, the opposite end of the band is formed with a tongue 11, also substantially three-fourths of an inch in width and approximately one and five-eighths inches in length. V-shaped notches 32 are formed on opposite edges of the tongue substantially one and one-fourth inches from the end thereof so that designated tensions may always be duplicated, since the notching of the tongue locates the proper point at which to insert the tongue within the slot 13 which corresponds to the slot of the separable seal 5 of Fig. 1.

Since the remainder of the construction of the integral self-tensioning seal 10 is the same as that described above with reference to the seal of Fig. 1, like or primed reference characters will indicate the same or similar parts. With the exception that the slot 12 is omitted from the end 16' and the ears or retaining lugs 22*a* and 23*a* extend to the outer edge of the strapping 9 and are formed by notching the strap by notches 24' similar to the notches 24, and U-shaped notches 33 to separate the retaining lugs from the band from which the lugs and seal are integrally formed, the seal 5 of Fig. 1 and seal 10 of Fig. 4 are similar. Bands of the type as illustrated in Fig. 4 may be formed with undulating expansion constructions as mentioned above and as disclosed and claimed in the aforementioned U. S. Patent No. 2,666,004, and when so formed are preferably formed from stainless steel. It is also within the scope of the invention that bands 9 may be formed from aluminum strapping, steel strapping, or other material for the purpose required.

In assembling a band or strapping 9, the band is applied about the periphery or circumference of a construction and with the end 17' positioned as illustrated in Fig. 2, the tongue 11 is inserted to the V-shaped notches 32 and bent back upon itself and returned as the end 28' described with reference to Fig. 2. The end 17' is then pushed downwardly so that the seal assumes a position as illustrated in Fig. 3, and the lugs 22*a* and 23*a* are bent down corresponding to the position of the lugs 22 and 23 of Fig. 3. Since the lugs 22*a* and 23*a* may be slightly longer than the lugs 22 and 23, they may abut or overlap slightly.

The banding or strapping 9 may be disassembled in the reverse order as described with reference to the detachment of the strapping described with reference to the embodiment illustrated in Figs. 1, 2, and 3. Normally, however, once the strapping is erected, it is not dismantled unless it is desired to remove the insulation or other construction to which the banding is applied.

Although the self-tensioning seal has been described as being fabricated either from small blanks, either separately or continuously formed and as complementally formed ends on predetermined lengths of strapping, it is also within the scope of the invention that predetermined lengths of strapping could be continuously formed from a coil of strapping or band iron, after which the predetermined lengths of strapping could be separated by shearing. For example, Fig. 4 is also illustrative of strapping formed in a continuous strip whereupon the predetermined lengths of strapping could be separated along the edges 36 and 37, respectively, of the end portion 17' and tongue 11. When fabricated in this manner, the edges 36 and 37 are integrally separated by a shearing step.

Although it is preferred to use the self-tensioning seal of this invention fabricated from ferrous or nonferrous metals, it is also within the scope of the invention that the self-tensioning seals of the various embodiments described may also be fabricated from suitable plastic material, in the form of blanks or as continuous strapping, with the spaced seals integrally formed as the plastic strapping is extruded by a suitable forming operation. The metal or plastic self-tensioning seal is equally adapted for affixing to metal strapping or plastic strapping or other form of strapping material, such as tape and the like. When the strapping and seals are formed in a continuous strip, it is within the scope of the invention that the latching means may be longitudinally or axially formed from portions of the strapping rather than laterally formed without departing from the scope of the invention.

Similarly, if it is desired to affix the seal contiguous to an edge of the package, it is within the scope of the invention that the end portion **16** may be formed with a downturned flange at its outer edge and, when formed in this manner, it would be desirable to form not only the slot **12** from the downturned portion but, likewise, form the latching means contiguous to the corner between the flat portion and the downturned flange.

From the above disclosure, it is obvious that there has been disclosed an improved form of self-tensioning seal to be separably applied to the ends of strapping for tensioning and affixing the ends of the strapping, or for integrally applying a self-tensioning seal to a band which is particularly adapted for use in applying insulation to structural vessels used in the chemical and refinery industries. Although the self-tensioning seals of this construction have been primarily disclosed with reference to these industries, it is also obvious that the construction is suitably adapted for the insulation of home water heaters and the like, and for other adaptations which will occur to those skilled in the art without departing from the scope of the invention. Likewise, the self-tensioning seals, whether for application to strapping or integrally formed therewith of this invention, are equally adapted for the banding and tensioning of strapping applied to the periphery of articles, objects, packages and the like for shipping.

Having thus described our invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of our invention; hence, we do not wish to be understood as limiting ourselves to the exact form, construction, arrangement, and combination of parts herein shown and described, or uses mentioned.

What we claim as new and desire to secure by Letters Patent is:

1. The combination with a strap to be secured about an object, of a self-tensioning seal for securing the ends of the strap about the object and comprising an elongated body formed with upturned flanges along the longitudinal edges for reinforcing the seal and with a reduced portion intermediate the ends thereof permitting the ends to move inwardly with respect to each other under a force supplied to one end while the other end remains stationary, said flanges on opposite sides of the reduced portion complementally formed to nest together, means for securing one end of the strap to one end of the seal, and means for adjustably receiving and affixing the free end of the strap, whereby as the ends of the seal are moved toward each other the strap is tensioned about the object and the flanged edges nested together.

2. The combination with a strap to be secured about an object, of a self-tensioning seal for securing the ends of the strap about the object, said self-tensioning seal comprising one end of said strap formed with an elongated body portion with upturned flanges along the longitudinal edges for reinforcing the seal, said elongated body portion affixed at one end thereof to an end of the strap, said upturned flanges of the elongated body portion formed to complementally receive upturned flanges of the complementally formed portion of the opposite free end of said strap, said elongated body portion intermediate the flanged portions formed with a reduced portion permitting the free end of the elongated body portion to move inwardly with respect to each other under a force supplied to one end while the other end of the elongated body portion remains stationary, and means formed on said free end of said elongated body portion for complementally receiving the free end of said strap, whereby as the ends of the seal are moved toward each other, the strap is tensioned about the object.

3. The combination with an object to be banded and tensioned, of a strap including a channel-shaped self-tensioning seal for securing the ends of the strap about the object and tensioning the strap, said channel-shaped self-tensioning seal comprising transversely slotted means with respect to the longitudinal axis of the seal and complementally formed to receive a free end of the strap with the free end looped through the slotted means and abutting the object being banded, a second transversely slotted means parallel to the first-mentioned slotted means at the opposite end of the seal and complementally formed to receive the other end of the strap with the end thereof looped through said second-mentioned slotted means and returned about the free end of the seal, and said channel-shaped seal comprising flanged longitudinal edges at opposite ends of the seal, said channel-shaped seal and flanged longitudinal edges reduced in cross-section intermediate the slotted means permitting the ends of the channel-shaped seal to be moved toward each other tensioning the strap about the object with faces of portions of the strap between the slotted means and the ends of the seal substantially abutting and with the flanged edges of the opposite ends of the seal nesting together.

4. The combination with an object to be banded and tensioned, of a strap including a self-tensioning seal for securing the ends of the strap about the object and tensioning the strap, said self-tensioning seal comprising transversely slotted means with respect to the longitudinal axis of the seal and complementally formed to receive a free end of the strap with the free end looped through the slotted means and abutting the object being banded, a second transversely slotted means parallel to the first-mentioned slotted means at the opposite end of the seal and complementally formed to receive the other end of the strap with the end thereof looped through said second-mentioned slotted means and returned about the free end of the seal, said seal reduced in cross section intermediate the slotted means permitting the ends of the seal to be moved toward each other tensioning the strap about the object with faces of portions of the strap between the slotted means and the ends of the seal substantially abutting, and latching means comprising laterally extending lugs contiguous to one end of the seal and integrally formed from the seal for affixing the ends of the seal and the ends of the tensioned strap together.

5. The combination with an object to be banded and tensioned, of a strap including a channel-shaped self-tensioning seal for securing the ends of the strap about the object and tensioning the strap, said channel-shaped self-tensioning seal comprising transversely slotted means with respect to the longitudinal axis of the seal and complementally formed to receive a free end of the strap with the free end looped through the slotted means and abutting the object being banded, a second transversely slotted means parallel to the first-mentioned slotted means at the opposite end of the seal and complementally formed to receive the other end of the strap with the end thereof looped through said second-mentioned slotted means and returned about the free end of the seal, said channel-shaped seal comprising flanged longitudinal edges at opposite ends of the seal, said channel-shaped seal reduced in cross section intermediate the slotted means permitting the ends of the channel-shaped seal to be moved toward each other tensioning the strap about the object with faces of portions of the strap between the slotted means and the ends of the seal substantially abutting, and latching means comprising laterally extending lugs contiguous to one end of the seal for affixing the ends of the seal together.

6. The combination with an object to be banded and tensioned, of a strap including a channel-shaped self-tensioning seal for securing the ends of the strap about the object and tensioning the strap, said channel-shaped self-tensioning seal comprising transversely slotted means with respect to the longitudinal axis of the seal and comlementally formed to receive a free end of the strap with the free end looped through the slotted means and abutting the object being banded, a second transversely slotted means parallel to the first-mentioned slotted means at the opposite end of the seal and complementally formed

to receive the other end of the strap with the end thereof looped through said second-mentioned slotted means and returned about the free end of the seal, said channel-shaped seal comprising flanged longitudinal edges at opposite ends of the seal, said channel-shaped seal reduced in cross section intermediate the slotted means permitting the ends of the seal to be moved toward each other tensioning the strap about the object with faces of portions of the strap between the slotted means and the ends of the channel-shaped seal substantially abutting, and latching means extending laterally of the seal and adapted for folding inwardly for affixing the ends of the seal and the ends of the tensioned strap together and with the flanged edges of the opposite ends of the seal nesting together.

7. The method of forming a self-tensioning seal for strapping from strip material, which comprises the steps: forming end portions of the seal by blanking notches in the longitudinal edges of the strip material separating the seal into end portions about a fold line through the material intermediate the notches, forming slots for receiving at least one free end of a strap to which the seal is to be affixed, forming the end portions with flanges and one of said end portions to telescopically receive the other of said end portions upon the folding of the end portions in abutting relationship, and forming latching means contiguous to one end portion of the seal for affixing the telescoped ends of the seal together.

8. The method of forming a self-tensioning seal from a roll of strip material, which comprises the steps: forming end portions for the seal by laterally notching the edges of the strip, certain of said notches forming a fold line for the ends of the seal, forming a laterally extending slot transverse to the longitudinal axis of the seal and spaced from the fold line a predetermined distance for adjusting the tension of a strap to which the seal is affixed, forming flanges on the lateral edges of each of said end portions of the seal, said flanged end portions adapted to telescope together when folded one upon the other about the fold line, and forming latching means contiguous to one end portion of the seal so that in the telescoped position of the end portions the end portions are affixed together.

9. The method of continuously forming from a strip of material predetermined lengths of strapping, the ends thereof adapted to be affixed together when the predetermined lengths are separated from the contiguous strip of material, which comprises the steps: forming a self-tensioning seal from the strip with a notched portion forming a fold line between contiguous end portions of the seal, forming said end portions causing the end portions to telescope together about the fold line, forming latching means from the strip material contiguous to one end portion so that in the folded-over position of the end portions, the end portions are adapted to be affixed together, forming one end portion with a slot spaced from the fold line forming a tongue contiguous to the end portion and complementally formed to be received within the slot, and severing the strip between the end of the tongue and the end portion formed with the slot causing separable lengths of strapping of predetermined length to be formed so that the ends of the strapping may be affixed together, tensioned, and sealed when the strapping is applied about a periphery of an object being banded.

10. The method of forming strapping with self-tensioning sealing means, which comprises the steps: forming a predetermined length of strapping, forming one end of said strapping into a self-tensioning seal by forming end portions of the seal by notching the seal intermediate its ends providing a fold line for the ends of the seal, slotting one end portion of the seal transverse to the longitudinal axis of the seal for receiving a complementally formed tongue portion formed from the opposite end of the strapping, and forming latching means from the strip material contiguous to the end portion of the seal formed without the slot, and forming longitudinally extending flanges on the side edges of the end portions of the seal so that the flanged end portions of the seal telescope together when the end portions are brought together about the fold line.

11. As an article of manufacture, a self-tensioning seal comprising integrally formed flanged end portions formed by a reduced cross section formed between the flanged end portions and about which the flanged end portions may be folded, each of said end portions formed with a slot to complementally receive opposite ends of strapping which are to be affixed together by the seal, laterally extending latching means integrally formed from one of the flanged end portions of the seal for affixing the ends of the seal together in the folded-over position of the end portions of the seal.

12. As an article of manufacture, a self-tensioning seal for affixing together ends of strapping, said self-tensioning seal comprising end portions formed by a reduced area intermediate the end portions about which the end portions are adapted to be folded together, each of said end portions having the side edges thereof flanged, said end portions complementally formed so that the flanged portions of one end portion telescope within the flanged portions of the other end portion, one of said end portions formed with a laterally extending slot longitudinally spaced from the reduced portion intermediate the end portions for affixing a free end of strapping thereto so that the strapping to which the seal is affixed may be tensioned about an object as the end portions are brought together, and means for affixing the end portions of the seal and the ends of the tensioned strap together upon the end portions of the seal being brought together.

13. A self-tensioning strap seal for securing an object, comprising complementally formed flanged end portions formed with a reduced section intermediate the complementally formed flanged ends of the seal, one flanged end portion formed with a transverse slot, said slot formed intermediate the reduced section and the end of the flanged end portion, a transverse slot formed in the opposite flanged end portion and spaced from the fold line formed by the reduced scetion, each of said slots complementally formed to receive strapping, said first-mentioned transverse slot adapted to have one end of the strapping hooked therethrough, and the second-mentioned transverse slot adapted to have the opposite end of the strapping drawn therethrough with the said end portion in a raised position and the end of the strapping folded over the end of said last-mentioned flanged end portion, so that upon further movement of said last-mentioned flanged end portion toward the first-mentioned flanged end portion, the strapping placed about the periphery of an object is tensioned and with the complementally formed flanged end portions of the seal nesting together.

14. A self-tensioning strap seal for securing an object, comprising complementally formed flanged end portions formed with a reduced section intermediate the complementally formed flanged ends of the seal, one flanged end portion formed with a transverse slot, said slot formed intermediate the reduced section and the end of the flanged end portion, a transverse slot formed in the opposite flanged end portion and spaced from the fold line formed by the reduced section, each of said slots complementally formed to receive strapping, said first-mentioned transverse slot adapted to have one end of the strapping hooked therethrough, and the second-mentioned transverse slot adapted to have the opposite end of the strapping drawn therethrough with the said end portion in a raised position and the end of the strapping folded over the end of said last-mentioned flanged end portion, so that upon further movement of said last-mentioned flanged end portion toward the first-mentioned flanged end portion the strapping placed about the periphery of an object is tensioned and with the complementally formed flanged end portions of the seal nesting together, said reduced section forming a fold line about which the end portions may be moved in nesting relationship with re-

spect to one another in substantially abutting relationship.

15. A self-tensioning strap seal for securing an object, comprising end portions formed with a reduced section intermediate the ends of the seal, one end portion formed with a transverse slot, said slot formed intermediate the reduced end portion and the end of the end portion, a transverse slot formed in the opposite end portion and spaced from the fold line formed by the reduced section, each of said slots complementally formed to receive strapping, said first-mentioned transverse slot adapted to have one end of the strapping hooked therethrough, and the second-mentioned transverse slot adapted to have the opposite end of the strapping drawn therethrough with the said end portion in a raised position and the end of the strapping folded over the end of said last-mentioned end portion, so that upon further movement of said last-mentioned end portion toward the first-mentioned end portion the strapping placed about the periphery of an object is tensioned, each of said end portions having their longitudinal edges upwardly flanged and complementally formed whereby the free end portion of the seal is adapted to be telescoped within the first-mentioned flanged portion.

16. A self-tensioning strap seal for securing an object, comprising complementally formed flanged end portions formed with a reduced section intermediate the complementally formed flanged ends of the seal, one flanged end portion formed with a transverse slot, said slot formed intermediate the reduced section and the end of the flanged end portion, a transverse slot formed in the opposite flanged end portion and spaced from the fold line formed by the reduced section, each of said slots complementally formed to receive strapping, said first-mentioned transverse slot adapted to have one end of the strapping hooked therethrough, and the second-mentioned transverse slot adapted to have the opposite end of the strapping drawn therethrough with the said flanged end portion in a raised position and the end of the strapping folded over the end of said last-mentioned flanged end portion, so that upon further movement of said last-mentioned flanged end portion toward the first-mentioned flanged end portion the strapping placed about the periphery of an object is tensioned and with the complementally formed flanged end portions of the seal nesting together, and latching means integrally formed from the first-mentioned flanged end portion for affixing the ends of the seal and the ends of the tensioned strap together.

17. A self-tensioning strap seal for securing an object, comprising complementally formed flanged end portions formed with a reduced section intermediate the complementally formed flanged ends of the seal, one flanged end portion formed with a transverse slot, said slot formed intermediate the reduced section and the end of the flanged end portion, a transverse slot formed in the opposite flanged end portion and spaced from the fold line formed by the reduced section, each of said slots complementally formed to receive strapping, said first-mentioned transverse slot adapted to have one end of the strapping hooked therethrough, and the second-mentioned transverse slot adapted to have the opposite end of the strapping drawn therethrough with the said flanged end portion in a raised position and the end of the strapping folded over the end of said last-mentioned flanged end portion, so that upon further movement of said last-mentioned end portion toward the first-mentioned flanged end portion the strapping placed about the periphery of an object is tensioned and with the complementally formed flanged end portions of the seal nesting together, and latching means for affixing the complementally formed flanged ends of the seal together in nested relationship.

18. A self-tensioning strap seal for securing an object, comprising complementally formed flanged end portions formed with a reduced section intermediate the complementally formed flanged ends of the seal, one flanged end portion formed with a transverse slot, said slot formed intermediate the reduced section and the end of the flanged end portion, a transverse slot formed in the opposite flanged end portion and spaced from the fold line formed by the reduced section, each of said slots complementally formed to receive strapping, said first-mentioned transverse slot adapted to have one end of the strapping hooked therethrough, and the second-mentioned transverse slot adapted to have the opposite end of the strapping drawn therethrough with the said flanged end portion in a raised position and the end of the strapping folded over the end of said last-mentioned flanged end portion, so that upon further movement of said last-mentioned flanged end portion toward the first-mentioned end portion the strapping placed about the periphery of an object is tensioned and with the complementally formed flanged end portions of the seal nested together, and latching means extending laterally of the seal and adapted for folding inwardly for affixing the complementally formed ends of the seal and the ends of the tensioned strap together.

19. As an article of manufacture, strapping of predetermined length, one end thereof comprising a self-tensioning seal, said self-tensioning seal comprising end portions formed by a reduced cross-section intermediate the end portions about which the end portions are adapted to be brought together, the outer end portion formed with a transverse slot spaced from a fold line formed by the reduced cross section, said end portions of the seal complementally formed with upturned flanges along the edges thereof and adapted to telescope together in nested relationship in the sealed position of the seal, said opposite end of said strapping formed with a tongue complementally formed to be hooked within the slot and with the free end of the tongue bent back over the outer end of the seal whereby upon the strap being placed about an object to be banded the strap is tensioned, and laterally extending latching means integrally formed contiguous to the end portion formed without the transverse slot for affixing the ends of the seal and the ends of the tensioned strap together.

20. As an article of manufacture, strapping of predetermined length, one end thereof comprising a self-tensioning seal, said self-tensioning seal comprising end portions formed by a reduced cross section intermediate the end portions about which the end portions are adapted to be brought together, the outer end portion formed with a transverse slot spaced from a fold line formed by the reduced cross section, said end portions of the seal formed with upturned flanges along the edges thereof and adapted to telescope together in the sealed position of the seal, said opposite end of said strapping formed with a tongue complementally formed to be hooked within the slot and with the free end of the tongue bent back over the outer end of the seal whereby upon the strap being placed about an object to be banded the strap is tensioned, and latching means integrally formed contiguous to the end portion formed without the transverse slot for affixing the ends of the seal and the ends of the tensioned strap together, and said tongue formed with indicia means so that predetermined tensions may be duplicated by inserting the tongue within the transverse slot at the indicia means.

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