

April 12, 1932.

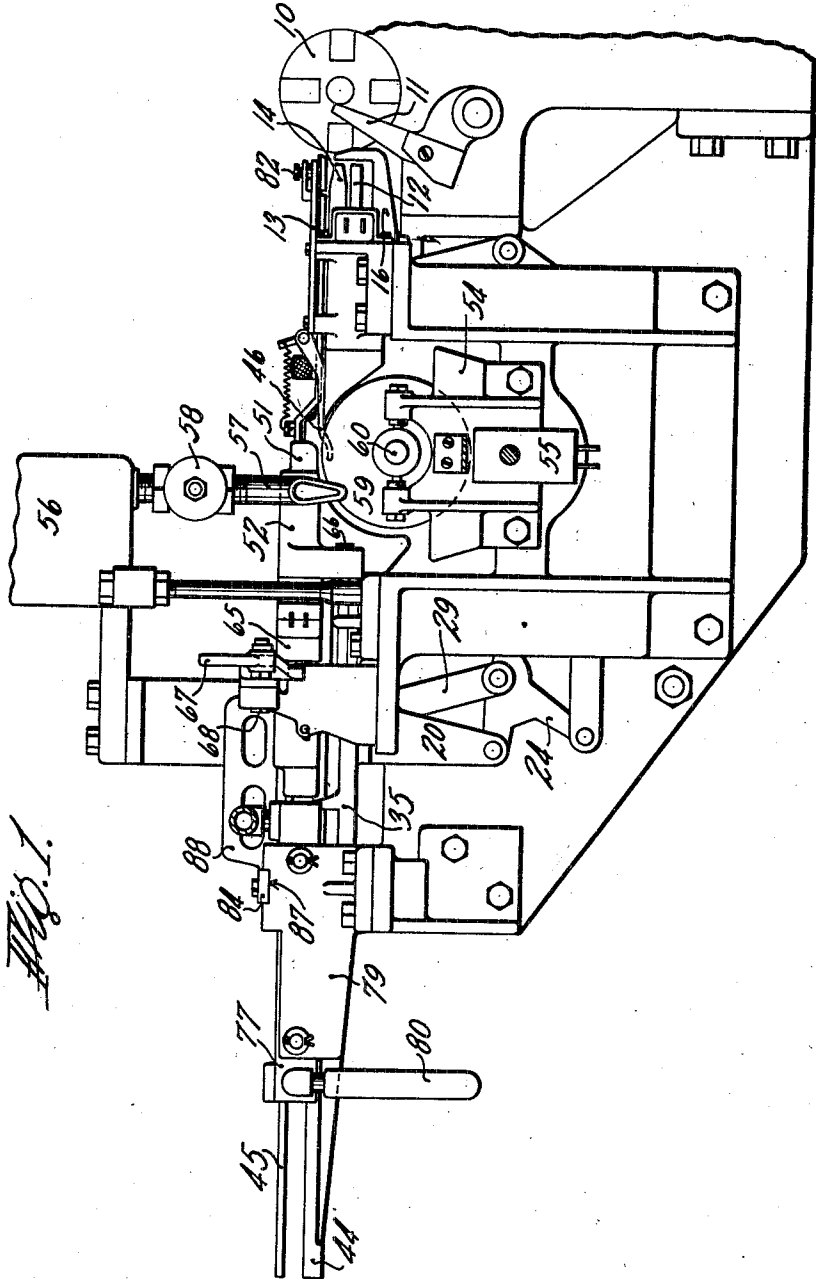
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1,853,091

WRAPPING MACHINE

Filed April 14, 1930

3 Sheets-Sheet 1



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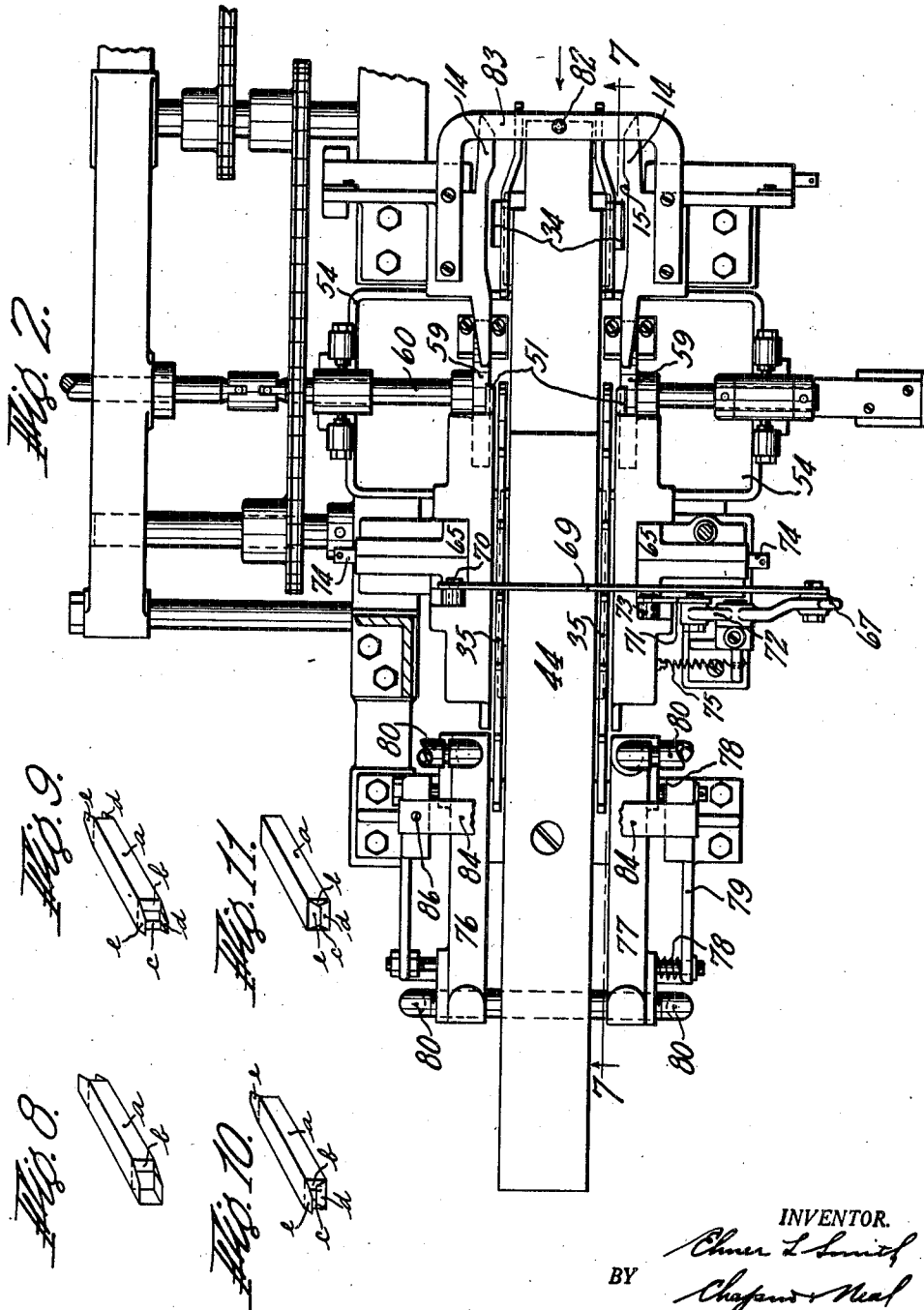
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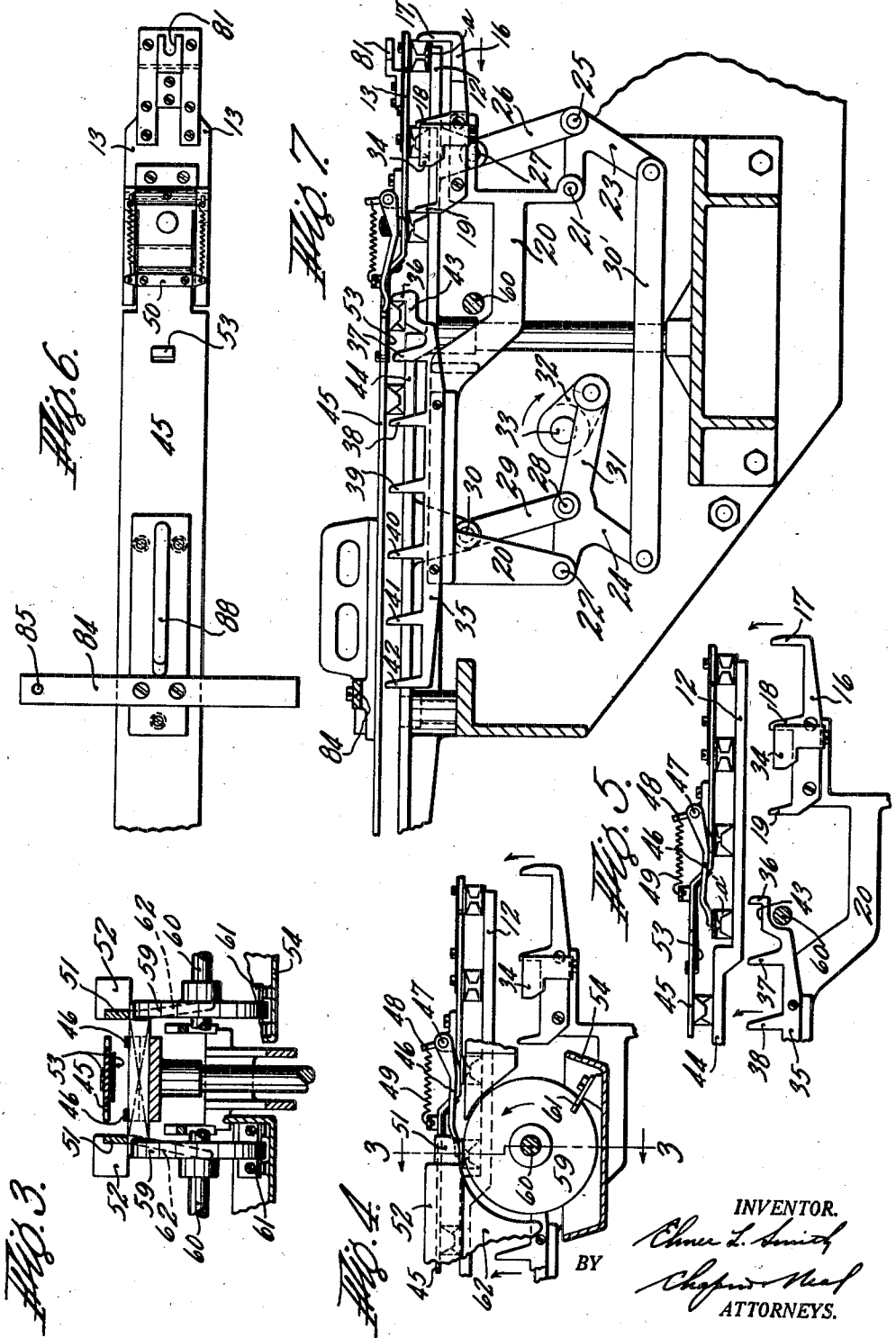
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Filed April 14, 1930

3 Sheets-Sheet 3



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# UNITED STATES PATENT OFFICE

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## WRAPPING MACHINE

Application filed April 14, 1930. Serial No. 444,048.

This invention relates to wrapping machines and has particular reference to mechanism for folding and sealing the last projecting flap of the wrapper end extensions of an article which may have the previous folds made by any desired mechanism. One object of the invention is to provide a mechanism for insuring a neat and completely sealed end fold. A further object is to provide an improved manner of feeding the article along the wrapping path. A further object is to provide an improved mechanism for applying a sealing material to the ends of the article. Other and further objects will appear from the following description and claims.

Referring to the drawings:

Fig. 1 is a side elevation of so much of a wrapping machine as relates to my present invention;

Fig. 2 is a top plan view thereof with the top plate of the wrapping channel removed;

Fig. 3 is a detail of the mechanism for applying sealing material, taken on line 3—3 of Fig. 4;

Fig. 4 is a partial side elevation of the machine with some of the parts removed, illustrating particularly the manner in which the final end fold is made and the sealing material applied;

Fig. 5 is a view similar to Fig. 4 but with the mechanism for applying sealing material removed so as to disclose other parts hidden thereby;

Fig. 6 is a top plan view of the upper plate covering the wrapping channel;

Fig. 7 is a section taken on line 7—7 of Fig. 2, showing in part the same elements as in Fig. 5 in a different position of operation;

Fig. 8 is a perspective view of a package in the form in which it is delivered to my improved mechanism; and

Figs. 9, 10 and 11 are similar views showing further steps in the wrapping operation.

My improved folding and sealing mechanism is designed for use with any desired form of wrapping machine. Such a machine has been conventionally illustrated in the form of a wrapping wheel 10 (Fig. 1) having an ejector 11 which forces a partially wrapped article in the form of Fig. 8 onto a

supporting plate 12. An upper plate 13, mounted as will be described later, holds the partially wrapped article against the lower plate during its subsequent travel. At each side of the wrapping path are end tuckers 14 (see also Fig. 2) which make the tuck *c* at each end of the article as shown in Fig. 9. These tuckers are cut away as at 15 for a purpose to be later described.

In order to convey the articles along the plate 12, a transport mechanism is provided having a series of fingers which for convenience will be divided into two groups. The fingers are given a motion in a closed path travelling first along the folding channel, then down out of it and finally back to their initial position so as to clear the articles previously advanced. The first group of fingers are mounted upon parallel transport bars 16 (Fig. 7) and are denoted in the drawings by the numerals 17, 18 and 19. The bars 16 are secured to a main transport frame 20 which is pivoted at 21 and 22 to members 23 and 24, which for convenience will be referred to as bell cranks. The bell crank 23 is pivoted at 25 to a link 26 swinging about a pivot 27 fixed to the frame. The bell crank 24 is pivoted at 28 to a similar link 29 swinging upon the frame as at 30. Equal arms of the two bell cranks are joined together by a connecting link 30' so that they are constrained to move in unison. An extension 31 of the bell crank 24 is joined to a crank 32 revolving upon a shaft 33 which may be driven continuously by any suitable means. The bell cranks are thus given a generally circular motion which, by reason of the form of the linkage, is transferred to the transport frame 20 so as to give to the fingers an elongated path having a substantially straight portion extending through the folding channel.

The lower end flaps *d* are folded upwardly against the end of the article by folding plates 34 carried upon the bars 16 adjacent the fingers 18. These plates pass between the ends of the articles and the cut away portions 15 of the end tucking plates 14. By this action a tight wrap is obtained, the end flap being doubled upon itself as fully described

in patent to Ferguson No. 1,634,711, July 5, 1927.

After the flap *d* is turned up by this means, the article is carried forward by the fingers 5 19 and positioned in the location shown at *a'* in Fig. 5. During this motion the tucking plates 14 continue to hold the flaps *d* in their folded positions. At the point *a'* the article comes under the influence of the second set 10 of transporting fingers carried by transport bars 35 and denoted in the drawings by the numerals 36 to 42 inclusive. These transport bars are carried upon the frame 20 and partake of its movement. At the fingers 36 15 the bars 35 are formed with ledges 43 underlying the article so that as the transporter moves from the position of Fig. 5 to that of Fig. 7 the article will be elevated. Fig. 7 shows an intermediate position in the travel 20 of the transport fingers, the fingers 36 continuing to move the article forwardly and ultimately positioning it upon an extension 44 of the plate 12, the two being joined by an offset corresponding to the offset in the path 25 of the article as it is moved upwardly by the ledges 43. The top plate 13 also has an extension 45 which continues above the plate 44 to determine a channel through which the articles pass.

At the point *a'* in Fig. 5, a pair of steady- 30 ing fingers 46 rest upon the top of the article. These fingers are pivoted at 47 to the frame and a pin 48 connected to them is joined by a spring 49 with a stationary bracket 50. 35 By this means, the steady fingers are held yieldably upon the article and move with it as it is elevated by the ledges 43. They serve the double purpose of keeping the article correctly positioned and holding the wrapper 40 tightly so that it cannot become unfolded.

As the articles are elevated, the upper flaps 45 *e* come in contact with the top folders 51 which are formed as extensions of side plates 52 mounted to the machine as will be described later. As far as their folding function is concerned, these top folders are stationary, the fold being made by the movement of the article between them. As the article is carried to the left it passes out of the 50 range of the fingers 46 and under a yielding plate 53 suitably connected to the top plate 45.

In order to seal the folds at the end of the article, mechanism is provided for coating 55 both the external surfaces of the folds *b*, *c* and *d* and the inner surface of the fold *e* at each end of the package with a liquid sealing material, preferably melted paraffin wax. This wax is contained in pots 54 arranged at each side of the path of travel of the article and kept hot by electric heaters 55. 60 Above the article channel is located a wax supply tank 56, also electrically heated, from which lead pipes 57 including hand operated valves 58. This upper tank reserves a comparatively large quantity of melted wax in

condition for use and can be drawn upon as required to replenish the supply in the pots 54.

In each of the pots rotates a disk 59 mounted upon a shaft 60 driven constantly by a motor which is not shown. Scraping members 61 are placed to remove excess wax from the sides of the disks as they emerge from the pots, it having been found that the wax on the periphery is sufficient in quantity to run down the sides near the upper portion of the disk as it revolves and thus give a coating to the flaps at the end of the article. 70

The article in the position *a'* has its ends abutting the adjacent faces of the disks 57, 80 as shown in Fig. 3, and has the bottom surfaces of the extending flaps *e* resting upon the peripheries of the disks. Since the disks are constantly revolving, the wax is forced into all corners of the wrapper end folds and the wrapping material is thoroughly coated. Further relative movement between the disks and the article ends occurs as the article is elevated out of the range of the disks by the ledges 43. The side members 52 are formed 90 with downwardly extending flanges or wings 62 which are preferably bent away from each other as shown in dotted lines in Fig. 3. Any excess wax which has been applied to the article is squeezed out as it is compressed 95 between the heated top folders 51 and runs down these wings, dripping off into the pots 54.

The side members 52 are provided with heating units 65 and are preferably pivoted 100 at 66 (Fig. 1) to the frame of the machine. A handle 67 is pivotally supported at 68 at one side of the machine and is joined by a link 69 (Fig. 2) with a pivot 70 formed upon the remote side member. A link 71 extending 105 between an arm 72 on the handle and a pivot 73 on the adjacent side member produces a motion equal and opposite to that of the link 69 so that as the handle is rocked the two side members may be moved either into the position shown in which they press against the ends of the articles or to an inactive position in which they will not supply excessive heat to the articles when the machine is stopped. The handle is manually operated 115 whenever the machine is stopped so as to prevent damage to the articles by excessive heating. Each of the heating units 65 is provided with an electrical plug connection 74 and is moved outwardly by a spring 75, the 120 link mechanism described acting as a toggle to hold the side plates rigidly in their active positions when in use.

After leaving the heated side members, the ends of the articles pass between opposed cold 125 boxes 76 and 77. The box 77 is joined by springs 78 to a bracket 79 so as to accommodate slight inequalities in package dimensions. Cold boxes are provided with pipes 80 for the circulation of a cooling liquid. 130

It is preferable to have the top plate 13, 45 detachably mounted upon the machine. For this purpose, it is provided at one end with a slot 81 (Fig. 6) fitting upon the grooved button 82 (Figs. 1 and 2) projecting from a stationary arch 83. At the other end a cross piece 84 is secured to the top plate having a hole 85 (Fig. 6) which receives a dowel 86 (Fig. 2) on a stationary part of the machine. Opposite the dowel the bracket 79 is provided with a slot 87 in which the cross piece fits as shown in Fig. 1. The top plate is provided with a handle 88 by which it may be picked up when it is desired to have access to the wrapping channel.

The operation of the machine will now be summarized briefly. An article in the condition of Fig. 8 is delivered to the right hand end of the machine, as shown in Fig. 1, by any suitable mechanism, the folds *b* having previously been made. The fold *c* at each end is formed by the tucking plates 14 and the article is fed one step by the fingers 17. As the fingers 18 come into action to move the article another step, the folding plates 34 turn up the bottom end folds *d*. The fingers 19 then move the article into the position *a'* in which it is acted upon by the wax applying disks 59 at each end. The fingers 36 and the ledges 43 then raise the article, causing the upper flaps *e* to be turned down by the stationary members 51 and carrying the articles onto the upper level of the supporting plate 44. Any excess wax will be pressed out by the heated side members 52 and will run back to the pots 54 down the wings 62. The article is now completely wrapped and sealed and it remains only to chill the wax by passage between the cold boxes 76 and 77.

Claims:

1. Wrapping mechanism for folding down the final flap of a wrapper end extension which comprises means for transporting a package with the final flap extending away from the other flaps, means for applying hot paraffin wax to the outer faces of the previously laid folds and the inner surface of the final fold, and means for pressing said flaps together, the wax being applied in excess and being squeezed out by the pressing of the folds.

2. Wrapping mechanism for folding down the final flap of a wrapper end extension which comprises means for transporting a package with the final flap extending away from the other flaps, a wax pot at each side of the path of travel of the article, a roll dipping into the wax in each pot and rotating to carry the melted wax into contact with the outer faces of the previously laid folds and the inner surface of the final fold, and means for pressing said flaps together.

3. A wrapping mechanism as claimed in claim 2, having a drain for carrying the ex-

cess wax from the pressing means back to the pot.

4. Wrapping mechanism for folding down the final flap of a wrapper end extension which comprises means for transporting a package with a final flap extending away from the other flaps, means for applying melted wax to the outer faces of the previously laid folds and the inner surface of the final fold, and heated pressing members to press side folds together and squeeze out excess wax.

5. Wrapping mechanism for folding down the final end flaps of a wrapper end extension which comprises an article support having an offset path, stationary folders located adjacent the offset to fold down the final flap of the end extension, means for feeding articles in steps along the support and against the folder by the offset, and a yieldable steadying member resting upon the article during its travel through the offset portion of the path.

6. Wrapping mechanism for folding down the final end flaps of the end extensions of a wrapper which comprises an article support having an offset path, a transport mechanism having fingers movable through a closed path and provided with a ledge for moving the article through the offset portion of the path, stationary folders located at the offset portion of said path and operative to fold down the final flap, and a yieldable steadying member resting upon the article during its travel through the offset portion of the path.

7. A wrapping machine as claimed in claim 6 having a yieldable member opposed to the support and positioned to receive the article from the ledge of a transporter.

8. A wrapping machine as claimed in claim 5 having opposed disks located adjacent the offset portion of the support, the sides of the disk bearing against the ends of the article and the peripheries of the disk bearing against the inside of the final flap of the end extension, and means for supplying a sealing fluid to said disks.

9. A wrapping machine comprising mechanism for folding in a plurality of folds the end extension of a tubular wrapper, leaving a single flap only extending away from the other folds, means for coating the outer faces of the previously laid folds and the inner surface of the single projecting flap with sealing fluid, and means for pressing the final flap against the previously laid folds.

In testimony whereof I have affixed my signature.

ELMER L. SMITH.

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