

C. H. GRINGS.
 DEVICE FOR STAPLING LEATHER LOOPS.
 APPLICATION FILED APR. 16, 1917.

1,256,553.

Patented Feb. 19, 1918.
 2 SHEETS—SHEET 1.

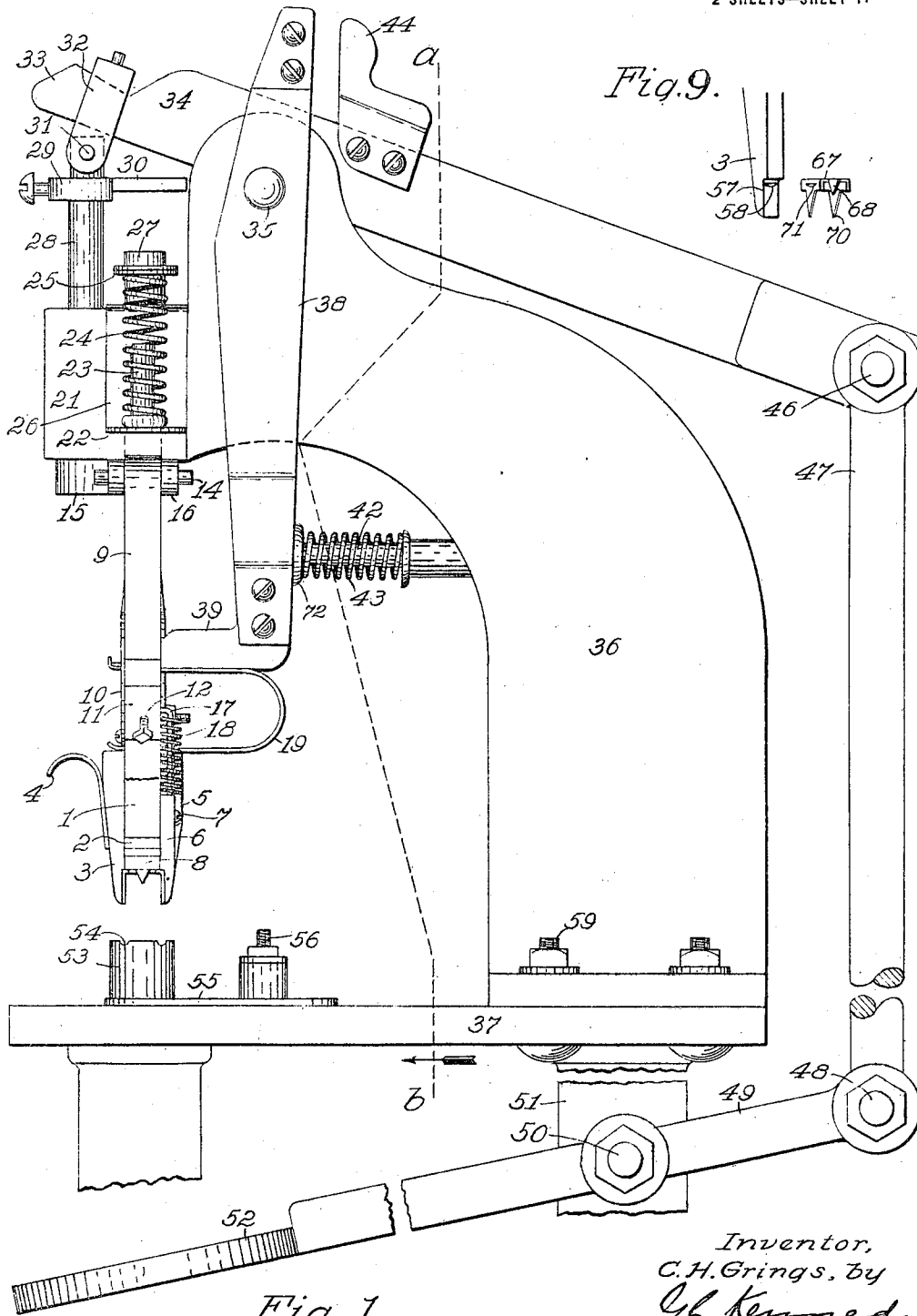


Fig. 1.

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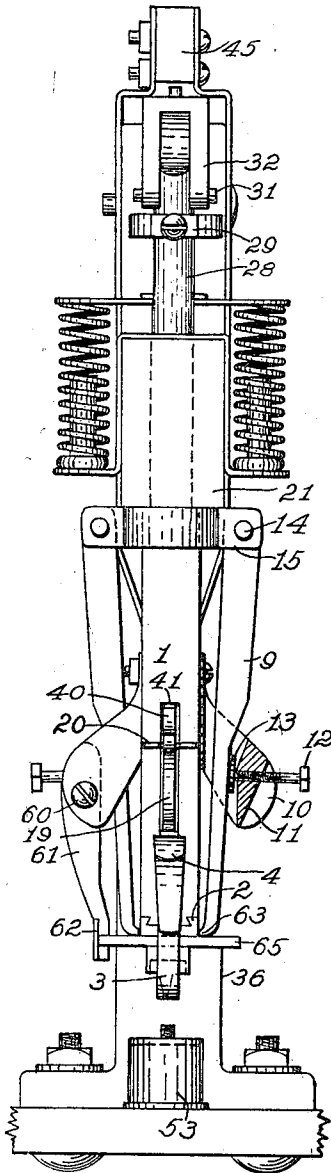


Fig. 2.

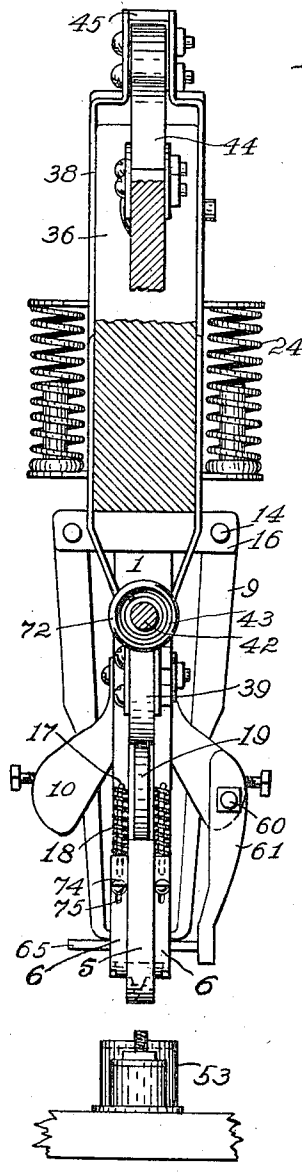


Fig. 3.

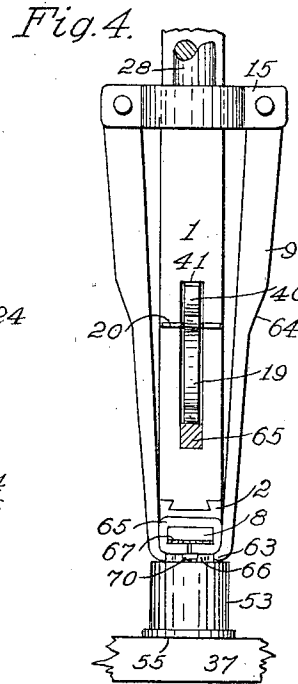


Fig. 4.

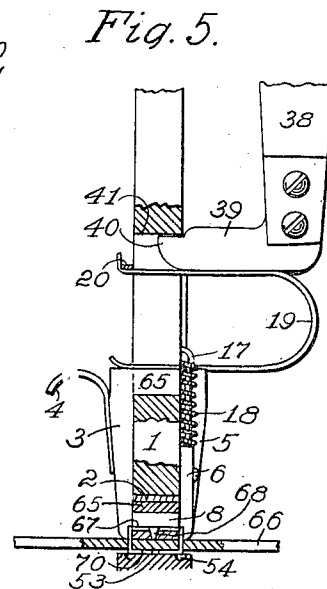


Fig. 5.

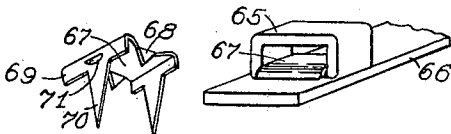


Fig. 6.

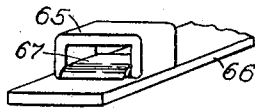


Fig. 7.

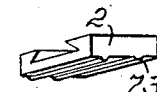


Fig. 8.

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UNITED STATES PATENT OFFICE.

CASPER HUGO GRINGS, OF WATERLOO, IOWA.

DEVICE FOR STAPLING LEATHER LOOPS.

1,256,553.

Specification of Letters Patent.

Patented Feb. 19, 1918.

Application filed April 16, 1917. Serial No. 162,508.

To all whom it may concern:

Be it known that I, CASPER HUGO GRINGS, a citizen of the United States of America, and a resident of Waterloo, Blackhawk county, Iowa, have invented certain new and useful Improvements in Devices for Stapling Leather Loops, of which the following is a specification.

My invention relates to improvements in devices for stapling leather loops, and the object of my improvement is to furnish a machine for successively forming a leather loop and then fastening it to a strap or other supporting body in one operation and by one actuation of the machine. Other objects will be hereinafter described, and more specifically pointed out in the claims.

My improved machine is illustrated by the accompanying drawings, in which Figure 1 is a side elevation thereof with parts broken away; Fig. 2 is a front elevation of the machine; Fig. 3 is a vertical transverse section of said machine, taken on the broken line *a-b* of said Fig. 1, and looking in the direction indicated by the arrow; Fig. 4 is a detail front elevation, with parts broken away or removed, of the loop-forming and stapling parts of the machine, and Fig. 5 is a detail of the same parts, looking from the side, showing these parts in operation upon a loop and its fastening-means; Fig. 6 is a perspective view of one of the fastening devices used to fasten a leather loop to an underlying body, and Fig. 7 is a perspective view of a loop so secured to a supporting body by means of said fastening device; Fig. 8 is a perspective view of the removable compression-head of the machine plunger. Fig. 9 is a view of one of the staple-holding fingers with a staple located near it.

Similar numerals of reference denote corresponding parts throughout the several views.

Referring to Fig. 1, the numeral 37 denotes a table or base supported on legs 51, and having a solid standard or machine frame 36 mounted fixedly thereon by means of bolts 59. The upper part of said frame is curved over forwardly with an integral bracketed part 21 having two vertical bearing orifices for plunger-shafts 27 and 28, and having also upwardly extending bifurcations between which a lever 34 is pivoted on a pintle 35. The rear end of the lever 34 is pivotally connected by a pintle 46 to the upper end of a connecting-rod 47, and the

lower end of said rod is pivotally connected by a pintle 48 to the rear end of a lever 49. The lever 49 is medially fulcrumed on a stud 50 to one of the supports 51, and has a pedal 52 at its forward end. The forward end of the lever 34 is diminished to provide a finger 33 which is somewhat widened forwardly, and a shackle 32 is mounted to ride upon the finger 33 and connected pivotally to the upper end of the plunger-shaft 28 by means of a pintle 31. A ring 29 is adjustably mounted upon the shaft 28 by means of a set-screw, and has a rearwardly-extending finger 30 positioned above the upper end of the shaft 27.

A transverse plate 25 is fixed on the upper part of the shaft 27 to extend oppositely therefrom, and a yoke 26 is mounted upon the frame projection 21 and has its ends bent outwardly, coiled compression springs 24 bring engaged between the ends 22 and the plate 25 about interior guide studs 23.

The numeral 38 denotes a pair of like vertical bars positioned on opposite sides of the frame 36 and pivotally connected thereto on the said pintle 35, and the upper parts of said bars are offset inwardly to approach each other, having a spacing-block 45 between them secured by bolts, an upwardly-projecting finger or block 44 being fixed upon the lever 34 a short distance to the rear of the block 45 to engage the latter when the lever is rocked in one direction. The lower ends of the bars 38 are converged below the supporting part of said frame and a forwardly-directed finger 39 is secured between them. A fixed rod 42 on the frame 36 carries a coiled compression-spring 43 engaged with a fixed flange thereon, and having an annular head 72 engaged with the rear edges of the plates 38.

Below the frame extension 21, the shaft 27 has a squared plunger-body 1 provided with a vertical slot 41 extending between its front and rear faces, and receiving the diminished forward extremity 40 of the finger 39. A pressure block or die 2 is dovetailed to the lower end of the plunger-body 1 so as to be removable to permit of substitution of other forms of dies.

The numeral 65 denotes a bar or rider passed through the slot 41 to be slidable upwardly therein, and has depending integral fingers 3 and 5 which extend downwardly below the die 2. A bent plate-spring 19 has its ends passed through the slot 41 with its

lower end engaging the top of the bar 65 and its upper member bent over and engaged with a securing cross-piece 20 fixed on the front face of the plunger 1. A hooked finger-clip 4 is fixed on the forward finger 3 of the cross-bar 65 whereby it can be lifted against the yielding tension of the spring 19. On opposite sides of the plunger-body 1 are fixed plates having pairs of spaced members 10 connected by solid spacing-bodies 11, the latter spaced from the body of each plate.

The numerals 15 and 16 denote connected bars positioned to embrace the plunger body 1, and connected together to be slidable thereon. The forward bar 15 has a boss which is fixedly mounted by welding or otherwise on the lower end of the forward plunger-shaft 28. Like loop-forming fingers 9 are pivotally connected by pintles 14 to the opposite ends of the bars 15 and 16, depending therefrom to pass downwardly through the interspaces of the spacers 11 and the plates which carry the members 10. Each finger 9 has on its outer edge a sloping shoulder 64, while its lower part has an inturned extremity 63. An adjusting screw 12 is passed through a threaded opening in each spacer 11 and has rotatably secured on its end a disk 13 which engages the outer edge of the finger 9.

The numeral 8 denotes a spacing block positioned below the die 2 and carried by a pair of spaced integral standards 6 which last are in contact with the rear face of the plunger 1 on opposite sides of the rear finger 5, the latter movable between them. Each standard 6 has a short vertical slot 75, a screw 74 being passed therethrough into the plunger-body 1, so that the standards may have a limited amount of vertical play, and each standard has in its top a socket which receives the lower end of a rod 17 whose upper end is fixed on the said plunger-body, a coiled compression-spring about said rod being engaged between the top of the standard and the bent over upper part of the rod.

Below the spacer 8 is an anvil 53 having across its top a pair of parallel grooves 54, said anvil being mounted on a plate 55, and the latter secured to the base 37 by a bolt 56. A plate 61 is secured dependently upon the left-hand plate 10 by a bolt 60, and has an angularly positioned stop 62 opposite the interspace of the spacer 8 and die 2.

Referring now to Figs. 6 and 7, the numeral 67 denotes a fastening-device or four pronged staple employed to fasten a leather loop formed from a strip 65 upon a strap 66 by the employment of my above described machine. This fastening-device consists of a small rectangular piece of plate metal having two opposite ends bent over at 69 and provided with long pointed prongs

70, each bent-over part 69 having a small exterior indentation 71 to receive a low boss 58 on the inner face of the front finger 3, as best shown in said Fig. 9, so as to grasp the fastener removably before it is stapled to the leather strap 66. On the other two opposite edges of said fastener are the small pointed prongs 68.

Operation: The machine moving parts being in their positions shown in said Figs. 1 to 3, inclusive, a leather strip 65 is passed through the interspace of the spacer 8 and the die 2 until arrested by coming in contact with the depending stop 62. The operator then raises the hooked clip 4 and places a fastener 67, prongs down, under the spacer 8, then lowers the clip so that the boss 58 on its rear face slips into the indentation 71 on the fastener, which holds the fastener in place. A strap 66 is placed on the anvil 53. The operator then depresses the pedal 52, which by means of the connecting elements described, rocks the lever 34 a short distance before the projection 44 engages the block 45, to lower the plunger-shaft 28 and with it the bars 15—16, the latter sliding downwardly along the plunger-body 1. The fingers 9 are thus displaced downwardly relatively to the plunger-body 1 which carries the inturned extremities 63 below the lower end of the spacing-block 8, at which time the continued movement downwardly of the fingers causes their sloping offset edges 64 to move over the disks 13 of the adjusting-screws 12, which pushes the fingers toward each other. It will be observed that in the first part of their movement, the extremities of said fingers bear down the projecting ends of the flat leather strip 65, and in the second part of the movement, the extremities bear inwardly and force the strip into a closed loop about the spacing-block 8 and fastener 67. All this has been done before the block 44 on the lever 34 has engaged the block 45 fixed between the upper ends of the lever-parts 38. Continued pressure upon the pedal 52 now forces the block 44 against the block 45 which rocks the lever 38 to withdraw the locking-finger 39—40 out of the slot 41 in the plunger-body 1 immediately before the finger 30 on the shaft 28 engages the top of the shaft 27. The continued movement of the shaft 28 as also the finger 30, pushes down the released plunger-body 1, bringing the fastener 67 and its holding elements into contact with the strap 66 on said anvil 53, the front and rear fingers 3 and 5 moving upwardly against the yielding spring 19, while the spacing-block 8 yields also upwardly to a more limited extent against the yielding springs 18. The pressure of the die 2 indents its transverse ribs 73 into the top of the leather strip 65, at the same time forcing the short

prongs 68 through the inturned underlying ends of the strip to lock them together. Simultaneously, the long prongs 70 are forced through the said underlying strap 66 entering the grooves 54 in the anvil 53 which causes them to become clenched upon the under side of the strap. This operation secures the loop 65 to the strap 66, as shown in Figs. 5 and 7. When the pedal 52 is released, the reaction of the relatively strong coiled springs 24 lifts the plunger-body 1 to its first position, and also raises the side fingers 9 away from the formed loop. The parts 3, 5 and 8 now being disengaged also from the formed loop, are respectively returned to their first positions by the reaction of the springs 19 and 18, while the reaction of the spring 43 causes the locking finger to enter the slot 41 in the plunger-body 1 to lock the latter in its elevated position.

It will be seen that but one movement of the pedal 52 is required to actuate the machine to successively form the loop, and to secure it to the strap 66 by means of said fastening-device 67. This conduces to speed and economy of production, and insures perfection and uniformity in the shaping of the loop.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In a device for stapling leather loops, in combination, a movable holder for a strip of material consisting of a die and a relatively movable spacing-block supported thereunder to hold the middle part only of a strip of material between them, and forming bodies movable against the projecting ends of the strip to form it into a loop about the said spacing-block.

2. In a device for stapling leather loops, in combination, a movable holder for a strip of material consisting of a plunger-body, a die removably connected to its lower end, and a relatively movable spacing-block supported below and spaced from said die to hold the middle part of a strip of material between them, and forming-bodies movable against the projecting ends of said strip to form it into a loop about said spacing-block.

3. In a device for stapling leather loops, in combination, a movable holder for a strip of material consisting of a plunger-body, a spacing-block supported below and spaced from the lower end of the plunger-body to hold the middle part of a strip of material therebetween, a stop positioned adjacent to one end of the interspace between said plunger-body and spacing-block, and means for forming the projecting end parts of said strip into a loop about said spacing-block.

4. In a device for stapling leather loops, in combination, a movable plunger-body, a spacing-block yieldingly resiliently support-

ed below and spaced from said plunger-body, and forming bodies movable past opposite ends of the interspace of said plunger-body and spacing-block.

5. In a device for stapling leather loops, in combination, a movable plunger-body, a spacing-block supported below and spaced from said plunger-body, and bodies movable first past opposite ends of the interspace of said plunger-body and said spacing-block and second toward each other below said spacing-block, to form a strip of material held between said plunger-block and spacing-block into a loop about the spacing-block.

6. In a device for stapling leather loops, in combination, a movable plunger-body, a spacing-block supported below and spaced from said plunger-body, bodies movable past the ends of the interspace of said plunger-block and spacing-block and under the spacing block to form a strip of material in said interspace into a loop about the spacing-block, and an anvil positioned below and spaced from said spacing-block.

7. In a device for stapling leather loops, in combination, a movable plunger-body, a spacing-block supported below and spaced from said plunger-body, bodies movable relative to opposite ends of said plunger-body and spacing-block adapted to form a strip of material between them into a loop about the spacing-block, and an anvil positioned below and spaced from said spacing-block provided with prong deflecting cavities.

8. In a device for stapling leather loops, in combination, a plunger-body having a die formed on its lower end, a spacing-block supported yieldingly and resiliently below said die, an anvil positioned below said spacing-block, and forming bodies movable past opposite parts of said die and spacing-block.

9. In a device for stapling leather loops, in combination, a plunger-body, a slide-body slidably mounted on said plunger-body, orificed guides on opposite sides of said plunger-body, and forming-fingers pivotally connected to said slide-body and slidable through said guides past the end of said plunger-body.

10. In a device for stapling leather loops, in combination, a plunger-body, a slide-body slidably mounted on said plunger-body, orificed guides on opposite sides of said plunger-body, and forming-fingers with inturned extremities, pivotally connected to said slide-body, said fingers having sloping shoulders, and movable through the orifices in said guides to pass beyond the end of the plunger-body, the shoulders on said fingers engaging the walls of said orifices to move the ends of the fingers toward each other below the plunger-body.

11. In a device for stapling leather loops, in combination, a plunger-body, a spacing-block supported below and spaced from said plunger-body, and a clip-member movably supported in said plunger-body and having clip-engaging members extending below said spacing-block.

12. In a device for stapling leather loops, in combination, a slotted plunger-body, a spacing-block supported below and spaced from said plunger-body, and a clip-member movably and resiliently supported in and traversing the slot in said plunger-body, having depending clip-engaging members positioned to the front and rear of the plunger-block and spacing-block to extend below them.

13. In a device for stapling leather loops, in combination, a slotted plunger-body, a spacing-block supported below and spaced from the plunger-body, a clip-member having a part resiliently mounted and traversing the slot in said plunger-body and having depending clip-engaging members contacting with the front and rear faces of said plunger-body and spacing-block to hang below them, and forming-fingers movable first past the sides of said plunger-body and spacing-block and second toward each other when their lower extremities have passed the spacing-block.

14. In a device for stapling leather loops, in combination, a slotted plunger-body, a spacing-block supported below and spaced from the plunger-body, and a clip-member having a part movably mounted in and traversing the slot in said plunger-body and having depending clip-engaging members, one of which has a boss on its inner face.

15. In a device for stapling leather loops, in combination, a plunger-body, a spacing-block supported below and spaced from said plunger-body, orificed guides on opposite sides of said plunger-body, forming-fingers movable through the orifices in said guides, and means for adjusting said fingers transversely relatively to said plunger-body.

16. In a device for stapling leather loops, in combination, a plunger-body, forming-

fingers mounted on opposite sides of the plunger-body and movable relatively thereto, and means adapted to successively move said fingers relatively to said plunger-body and then move the fingers and plunger-body simultaneously.

17. In a device for stapling leather loops, in combination, a plunger-body, forming-fingers mounted on opposite sides of the plunger-body and movable thereover, and means adapted to successively at one actuation first move the fingers along the plunger-body and then toward each other, and second, move the plunger-body and said fingers simultaneously in one direction.

18. In a device for stapling leather loops, in combination, a plunger-body, a forming-body movable thereover, and means for successively moving said parts in one actuation, to move first the forming-body and secondly the plunger-body and forming-body simultaneously.

19. In a device for stapling leather loops, in combination, a plunger-body, a forming-body movable thereover, and means for successively moving said parts in one actuation, including a locking-device for the plunger-body, adapted to first move said forming-body, second, unlock said locking-device, and third, move the plunger-body and forming-body simultaneously.

20. In a device for stapling leather loops, in combination, a plunger-body, a forming-body, and means for successively moving said parts in one actuation, including a locking-device for the plunger-body, adapted to first move said forming-body, second, unlock said locking device, third, move the plunger-body and forming-body simultaneously in one direction, and yieldable resilient means operative upon said parts to return them to their first positions after their said actuation.

Signed at Waterloo, Iowa, this 29th day of March, 1917.

CASPER HUGO GRINGS.

Witnesses:

PEARL M. STANTON,

G. C. KENNEDY.