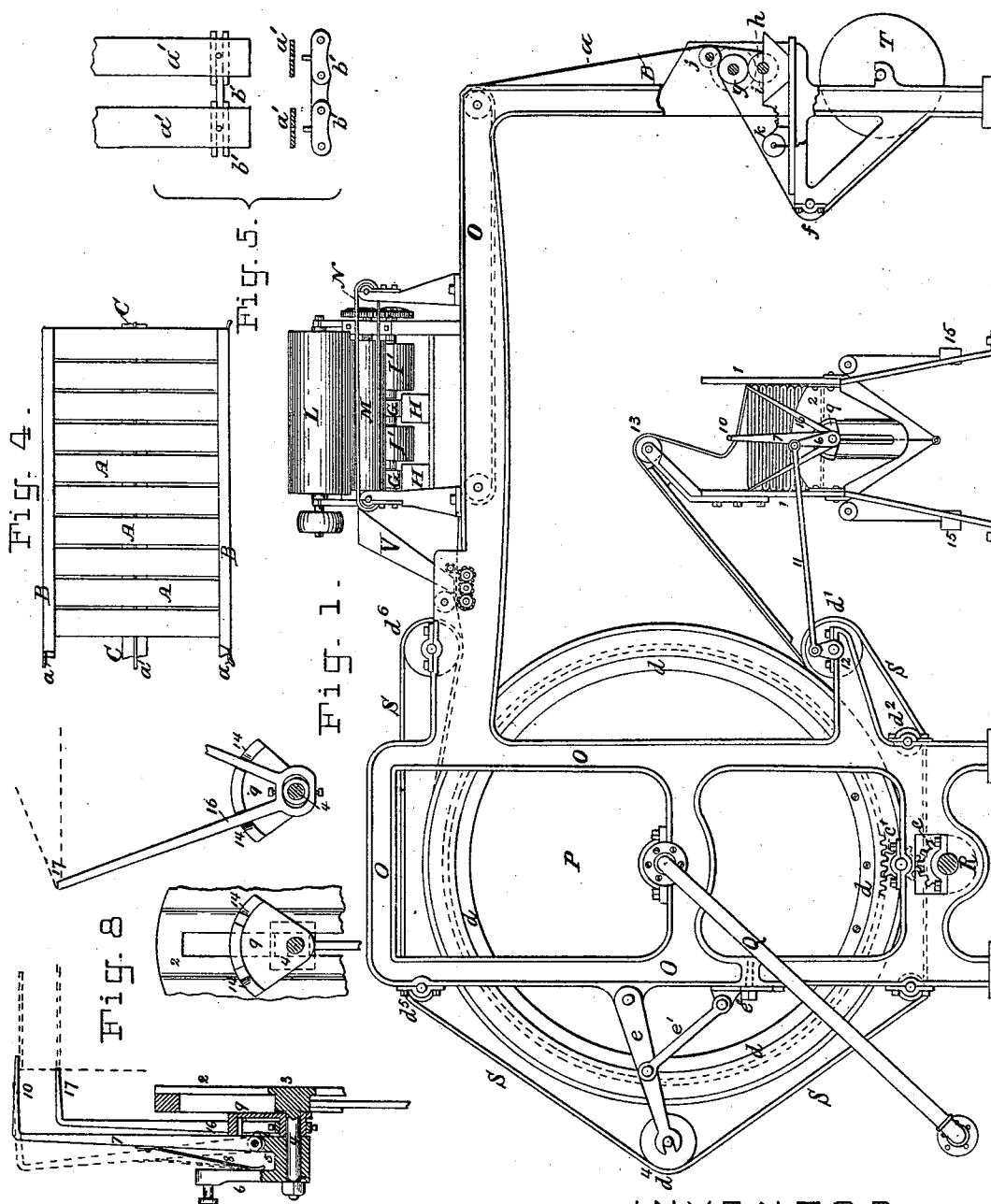


(No Model.)

2 Sheets—Sheet 1.

C. K. STINSON.  
Machine for Making Carpet Linings.  
No. 240,198. Patented April 12, 1881.



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Charles K. Stinson,  
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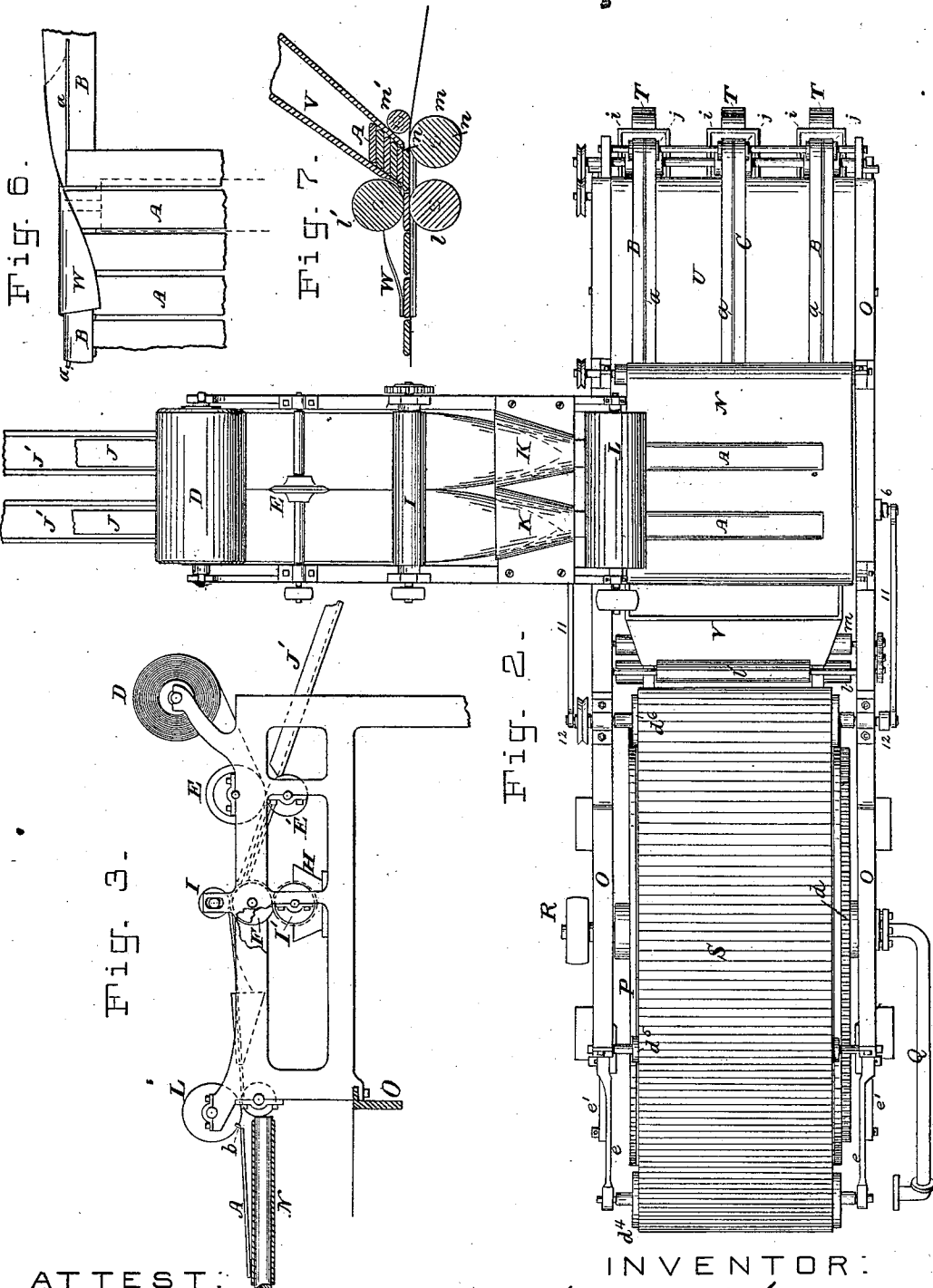
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*By his Atty -*  
*Burke, Tracy & Connel*

# UNITED STATES PATENT OFFICE.

CHARLES K. STINSON, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN CARPET-LINING COMPANY, OF SAME PLACE AND OF BOSTON, MASS.

## MACHINE FOR MAKING CARPET-LININGS.

SPECIFICATION forming part of Letters Patent No. 240,198, dated April 12, 1881.

Application filed January 25, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES K. STINSON, a citizen of the United States, residing in the city, county, and State of New York, have invented certain Improvements in Machines for Making Carpet-Linings, of which the following is a specification.

This invention relates, in the main, to a machine for manufacturing carpet-linings made up of sections which are connected together by means of strips of paper and cords pasted thereto, all as will be fully hereinafter set forth.

In the drawings, which serve to illustrate my invention, Figure 1 is a side elevation of the main portion of the machine, the portion designed for constructing the sections being shown in front elevation. Fig. 2 is a plan of the entire machine. Fig. 3 is a side elevation of that portion of the machine designed for constructing the sections. Fig. 4 is a view showing the lining as made in my machine. Figs. 5, 6, 7, and 8 are detached detail views, on a larger scale, designed to illustrate the more intricate portions of the mechanism.

Referring to Fig. 4, I will first describe the lining which is made by my machine.

Sections A A are made by covering a strip or "lap" of cotton, wool, or similar fibrous material with stout paper, and pasting down the overlapping edge of the paper upon that underneath it. These sections are made of a length corresponding to the intended width of the lining, and are connected by means of binding-strips B B, of strong paper, turned or hemmed over the ends of the sections, and another strip or strips, C, arranged as intermediates between the borders. There may be one, two, or more of these latter, depending on the width of the lining. I also lay within the fold of the marginal binding-strips B, or under their folded edges, a continuous cord, a, and also lay similar cords, when necessary, between one or all of the strips C and the sections. These cords give the lining all the strength required. In the description of my machine, which follows, I have described the mechanism employed for laying these cords.

I will now describe my machine for making the lining, and for the sake of clearness will refer to that portion of the machine which constructs the sections as the "section-machine,"

and that portion which connects the sections and completes the lining as the "main machine."

Referring to Figs. 2 and 3, which illustrate the section-machine, D is a roll of paper mounted in bearings in a suitable frame. This paper serves as covers for the cotton laps, and the two together form the section. The paper passes from the roll under a slitting-wheel, E, which bears on a roller, E', below it. The wheel E slits the paper in the center, and the two strips pass to pasting-wheels F, which are fed by "doctor-rolls" G, arranged to rotate in paste-vessels H in the usual way. The paste is applied to but one edge of each strip, an idler-roll, I, being employed to keep the strips down to the paste-wheels and to the bearing-rolls I', between said paste-wheels, on the same shaft. At this point the cotton laps J, one for each strip of paper, are received from the "scratcher," so called. It will not be necessary to describe this machine for forming the cotton-laps, as it has long been in common use. I will merely say that the laps are, or may be, brought from the scratcher along ways or aprons, or up inclined planes J', as shown, and they then pass between the idler I and the bearing-rolls I', under the strips, as indicated by the dotted lines in Fig. 2. The strips and laps pass now to folders K, which are made from sheet metal and adapted to turn the edges of the strips over on the laps, so as to completely inclose the latter. The pasted edge of the strip is thus brought down upon the paper beneath it, and the section-strip so formed passes immediately under the cutting and compressing roll L. This roll is of such size that its circumference equals the length of the section, and it is provided with a cutting-blade, b, set in or secured to its periphery, which blade serves to cut off the sections from the strip at every revolution of the roll. Below the roll I is a bearing-roll, M, covered, by preference, with copper or other material suitable to cut on. The sections, as they are cut off, fall upon an endless apron, N, which travels at right angles to the movement of the section-strip, and which forms a part of the main machine, which I will now describe.

Referring to Figs. 1 and 2, O is the main frame of the machine, and P is a steam-heated

drum or cylinder arranged to revolve in bearings in the same.

Q is the steam-pipe which leads steam to the drum at the trunnions or journals in the usual way, and R is the main driving-shaft, which communicates rotary motion to the drum through gears *c c'* and a toothed rim, *d*, fixed to the drum, as shown.

S is an endless apron, which passes around the drum *p* and sundry bearing-rolls, *d' d''*, &c., as shown. The roll *d'* is mounted in bearings at the ends of arms *e e*, hinged to the main frame, and connected by struts or links *e' e'* with adjustable slotted sliding-plates *e'' e''*. By means of this device the endless apron S may be strained taut and caused to press tightly up to the drum. The construction of the apron S will be hereinafter referred to more particularly.

T T represent the several rolls of paper for forming the connecting and binding strips. These rolls are mounted in suitable bearings at the back of the machine, and the strips are led therefrom over a guide-roll, *f*, thence over paste wheels or rolls *g g*, (which latter are fed by doctor-rolls *h h*, arranged to rotate in paste troughs or vessels *i i*,) thence around weighted bearing-rolls *j j*, and thence up to the bed of the machine, where they pass onto an endless apron, U, arranged to travel toward the drum P and bear the pasted strips thereto.

Returning again to the mechanism at the rear end of the machine, *k k* are twine-spools, which supply the cords *a a*. (Shown in Fig. 4.) The cords from these spools are led first from suitable or ordinary tension devices, and thence around the wheels in the paste-troughs, over the bearing-rolls and the strips B C, up to the endless apron U. The cords and strips are joined together by this operation and travel together. As the strips B C and the cords *a* are borne forward they pass under the mouth of the hopper V, into which the sections drop from the endless apron N.

The hopper V and its attendant mechanism will require particular description, and attention is called to Figs. 6 and 7 for a better understanding of the same. It will be first observed that the opening in the bottom of the hopper corresponds in size and shape with one of the sections, and that it is arranged with reference to the strips B C, which pass under it, the bottom of the hopper being raised above the said strips a distance equal to the thickness of a section, A, or a trifle in excess of this. Fig. 7 is a section taken through the hopper and the rolls connected with it, as well as a few of the sections A in the hopper and a portion of the lining as it is being made. The hopper stands inclined, so that the sections, as they fall into it from the apron N, overlap each other at the back, as clearly shown. Just in front of the hopper are arranged two rolls, *l l'*, and just below the rear edge of the delivery-opening of the hopper is arranged a feed-roll, *m*, provided with pushing blades or points *n*, which, as the roll revolves, strike and push forward

the lower section from the hopper until it is caught between the rolls *l l'*. As this section is carried forward out of the way the next section drops down, and the operation is repeated. A bearing-roll, *m'*, rests upon the roll *m* and keeps the strips B C, (with the attached cords *a*,) which pass between the rolls *l l'* and *m m'*, pressed down snugly to the feed-roll. The roll *l'* is also a bearing-roll.

Referring to Fig. 6, (which is a plan arranged to illustrate the mode of turning over the binding-strips B,) W W are sheet-metal turning or binding plates, arranged, by preference, opposite to and in front of the hopper, at its side, so as to begin turning the strips B at a point opposite to or back of the hopper, and to complete the turning in front of the hopper. The binding might, however, be accomplished altogether in front of the hopper. The roll *l'* is somewhat shorter than the sections, as shown, so as not to interfere with the binder, and the roll *m'* may be a series of short rolls or wheels on a common shaft, the said rolls being arranged to avoid the blades or points *n* in the feed-wheel in a well-known way. As the lining passes out of the binders W it is substantially completed; but it passes under the roll *d'* to the drum P, where it is compressed between said drum and its encircling apron S. As it passes around the drum it is thoroughly dried and pressed, and passes thence out and over the roll *d'* complete and ready for folding.

The folding-machine is illustrated in Figs. 1 and 8. It is arranged under the frame of the machine, and receives the finished lining from the drum, as shown in Fig. 1. The folder consists of a sort of box, in which the lining is folded back and forth by means of a reciprocating arm bearing a finger, which engages the bight of the incoming strip of lining and carries it across from side to side of the box, it being released at the end of each movement by means of a cam which throws it back.

Let 1 1 represent the sides of the box, and 2 2 vertically-slotted plates arranged between the ends of the same. I have shown but one end of the folder; but it will be understood that both ends are provided with like mechanism. A block, 3, slides in the slot in plate 2, and from said block projects a bearing-stud, 4, on which oscillates a boss, 5, to which is fixed a crank, 6, and to which is hinged the folding-arm 7. A spring, 8, behind the folding-arm keeps it pressed up to a cam-plate, 9, secured also to the stud 4. The arm 7 has a finger, 10, which takes into the bight of the lining-strip and carries it from side to side. The oscillation or reciprocation of the folding-arm may be produced in any way; but I have shown it as produced through the medium of a connecting-rod, 11, which extends from the crank 6 to a shorter crank, 12, on the projecting shaft of the roll *d'*.

So far as described, the operation is as follows: The continuous strip of lining is fed into the folding-box over a guide-roll, 13, and the finger 10 engages the bight, when the folding

has been started, and carries it over to the side of the box. As the arm reaches the end of its stroke it rides on the higher part of the cam 9, (see 14 14 in Fig. 8,) which draws the finger 10 back clear of the edge of the lining-strip and allows it to pass back in its return-stroke over the top and into the next bight. The block 3 rises as the box fills, sliding up in the slot and, bearing with it the cams and other parts connected with it. To counterbalance these parts I employ a weight or weights, 15, connected, in some suitable manner, with the parts to be counterbalanced by means of cords or chains, substantially as set forth.

To hold the last lap or fold down while the next is being made, and to prevent the return movement of the finger 10 from disarranging it, I employ a device shown in the right and left in Fig. 8. Between the cam 9 and the folding-arm 7 I pivot on the cam-boss a forked holder, 16. The branches of this holder pass upward and outward, and have fingers 17 at their extremities, which take into the bight of the folds next to the sides of the box. Being pivoted, however, when one end swings in and inserts its finger into the fold the other end swings out. This holder is operated by the folding-arm as it plays to and fro. When the arm 7 swings over to one side its butt, below the hinge, first comes in contact with a branch of the holder on that side and presses it in. The upper part of the arm then strikes the higher part of the cam and is thrown back. Then, when the arm swings to the other side, the engaged finger of the holder remains inserted and permits the folder-finger to lay the next fold; but on the folder reaching the termination of its stroke on that side the other branch of the holder is pressed in and the opposite one released.

I construct the endless apron S, and also the aprons N and U, where desirable or necessary, of metal slats or plates mounted on Vaucanson chains. This construction is shown in Fig. 5, the upper view being a plan. In this figure *a'* represents the slats, and *b'* the links of the chain. The links may be secured to the slats by means of screws or rivets. Such an apron will not warp, stretch, or get out of shape from the contact with the hot drum, and is always positive in its action.

The bearing-rolls *d'* *d''*, &c., may be simply narrow rolls or wheels fixed at intervals on a common shaft.

The section-machine is shown as constructed to make but two section-strips at one time; but by making it wider any number may be made, or only one may be made and the slitting-wheel omitted. I have also shown the machine as constructed to make a narrow strip of lining with but one intermediate strip, C; but it may be constructed to make strips of any desired width.

In lieu of the slotted adjusting-plates *e*<sup>2</sup> *e'*<sup>2</sup>, ratchets or other known adjusting devices may be employed.

It will be understood that the various parts

of the machine must work in unison, and suitable wheels, belts, &c., may be employed for driving the various wheels, rolls, aprons, &c. This, however, requires only ordinary mechanical skill, and I do not deem it necessary to describe them here. I will say, however, that the section-machine may be driven from the scratcher to good advantage, if desired.

The cutting-roll L may, if desired, have a circumference equal in extent to the length of a section, or equal to any multiple thereof.

I prefer to drive such of the rolls, paste-wheels, cutters, feeders, &c., as are not designated as bearing-rolls or idlers, either directly or indirectly, through belts, chains, or gear-wheels. It is important that they should have a positive motion, and that too much strain should not be thrown upon the strips of paper employed.

In lieu of the feed-roll *m*, provided with points or blades *n*, I might employ a reciprocating feeder or pusher; but I prefer the roll shown.

As before stated, I do not claim a carpet-lining made up of sections in this manner, nor do I claim, broadly, that pasting and folding wrappers or strips in this manner by means of paste-wheels and folders is new with me.

I am also aware that steam-heated drums, rotating in contact with aprons, is common in paper-making and other machinery; but

What I do claim is—

1. The section-machine comprising bearing or gripping rolls to receive the strips of paper and the lap from the scratcher, pasting-rolls to apply paste to the edge of the strip, a folder to fold the paper over the lap, and a compressing and cutting roll to cut the sections from the section-strip of the proper length, all combined and arranged substantially as set forth.

2. The combination, to form a machine for constructing the sections for a carpet-lining, of a slitting wheel or wheels to divide the paper as it comes from the roll into strips of suitable width, bearing or gripping rolls to receive the strips of paper and the laps and carry them forward in proper conjunction, pasting-rolls to apply paste to the edges of the strips, folders to fold the strips over the laps so as to envelope them, and a compressing and cutting roll to cut the sections to the proper length and deliver them, substantially as and for the purposes set forth.

3. The mechanism for securing the section to the continuous strips which comprises an inclined hopper to receive and deliver the sections, the bottom of said hopper being arranged above the continuous binding-strips far enough to let the section pass freely under it, a feeder to push the section forward between gripping-rolls arranged to receive it, the said gripping-rolls, and folders or binders arranged to turn the binding-strips down over the ends of the section, all combined substantially as set forth.

4. The combination, with the mechanism for forming the sections comprising the paste-rolls,

bearing or griping rolls, the folder, and the compressing and cutting roll, of the apron, which bears the sections from the cutting-roll to the hopper, the said hopper, the feeder for pushing the sections forward one by one between the griping-rolls, the said griping-rolls, and the folders for turning the binding-strips down on the ends of the sections, arranged substantially as and for the purposes set forth.

5. The combination, with the steam-drum and the endless apron arranged to encircle it, of the pasting-mechanism for pasting the binding and intermediate strips, the endless apron U, the hopper V, the rolls *l l'*, the feeder *m*, the bearing-roll *m'*, and the folders W, all arranged to operate substantially as set forth.

6. The mechanism for folding the strips of lining or fabric as it comes from the machine, consisting of a pair of oscillating arms arranged at each end of a folding-box and adapted to rise and fall as the box fills, said folding-arms having fingers at their extremities to take into the bight of the fabric and lay it, cams to take under the folding-arm and withdraw the fingers at the end of the stroke of the arms, and forked holders, pivoted at the ends of the folding-box, between the folding-arms and the cams, and arranged to be pressed

into the bight of the fold by the folding-arms, so as to retain the fabric while the arms are making the succeeding fold, substantially as set forth.

7. The combination, to form a folding mechanism, of the slides 1 1, slotted end plates, 2 2, sliding-blocks 3, spindles 4, bosses 5, cranks or arms 6, the folding-arms 7, springs 8, cams 9, folding-fingers 10, counter weight or weights 15, and forked holders 16, provided with fingers 17, all combined and arranged to operate substantially as set forth.

8. An endless apron composed of metallic Vaucanson chains, to which are secured metallic slats to form the bed or apron proper, substantially as and for the purposes set forth.

9. The combination, with the paste and doctor rolls *g* and *h* and the bearing or idler roll *j*, of the twine-spool *k*, all arranged to operate substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CHARLES K. STINSON.

Witnesses:

HENRY CONNETT,  
ARTHUR C. FRASER.