No. 861,179. PATENTED JULY 23, 1907.

W. H. HOOPER.

CHANNEL FLAP LAYER.

APPLICATION FILED MAR. 31, 1906.

Fig. 1

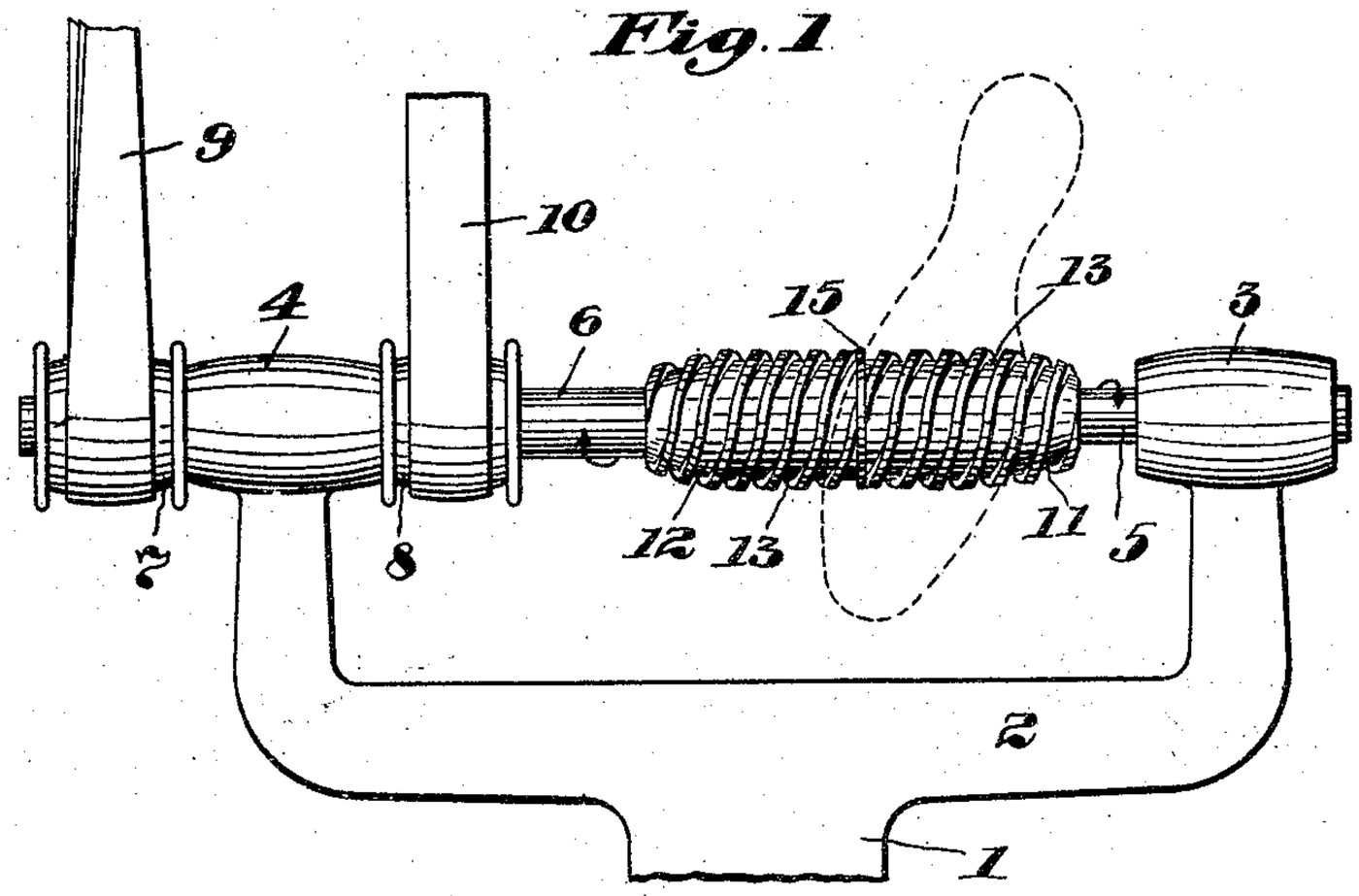


Fig. 2

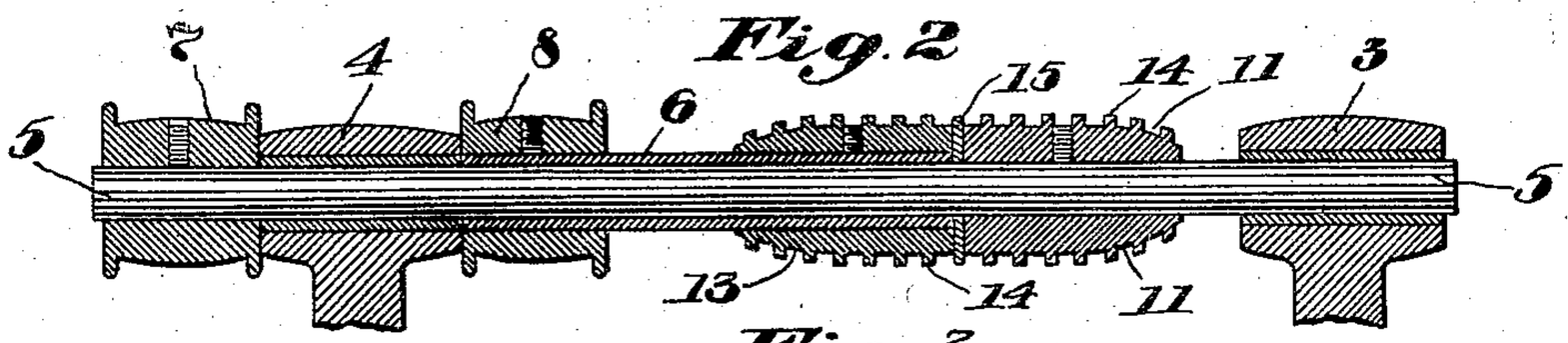


Fig. 3

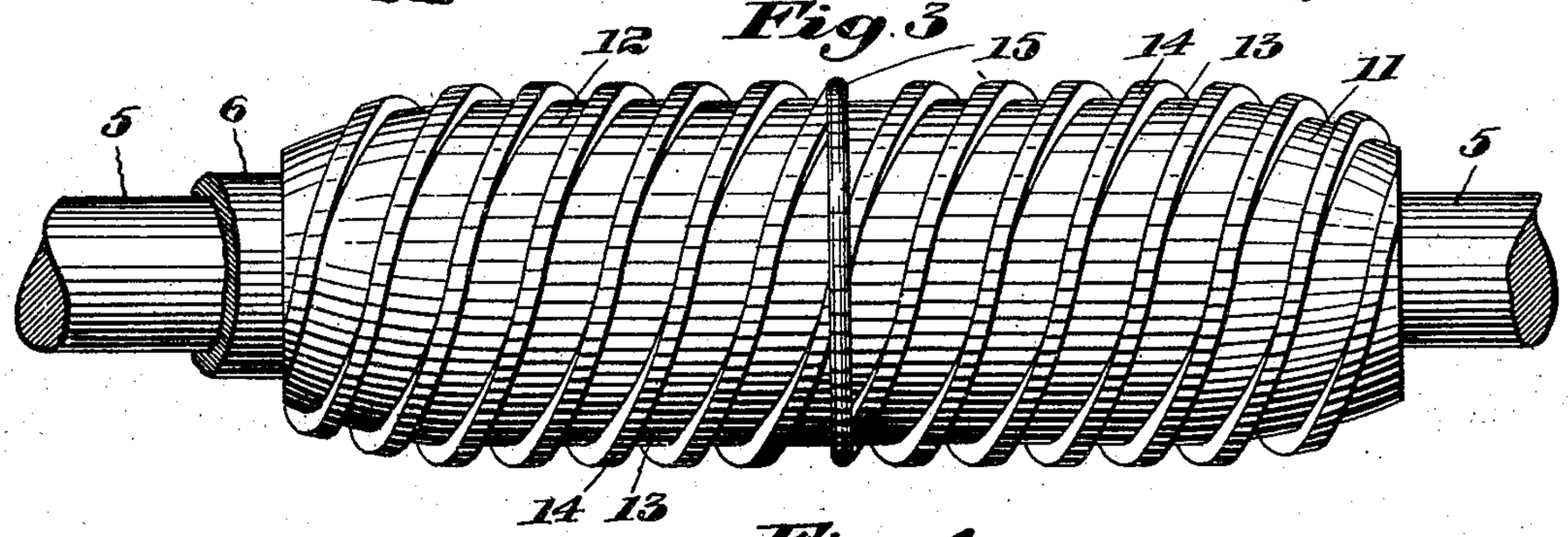
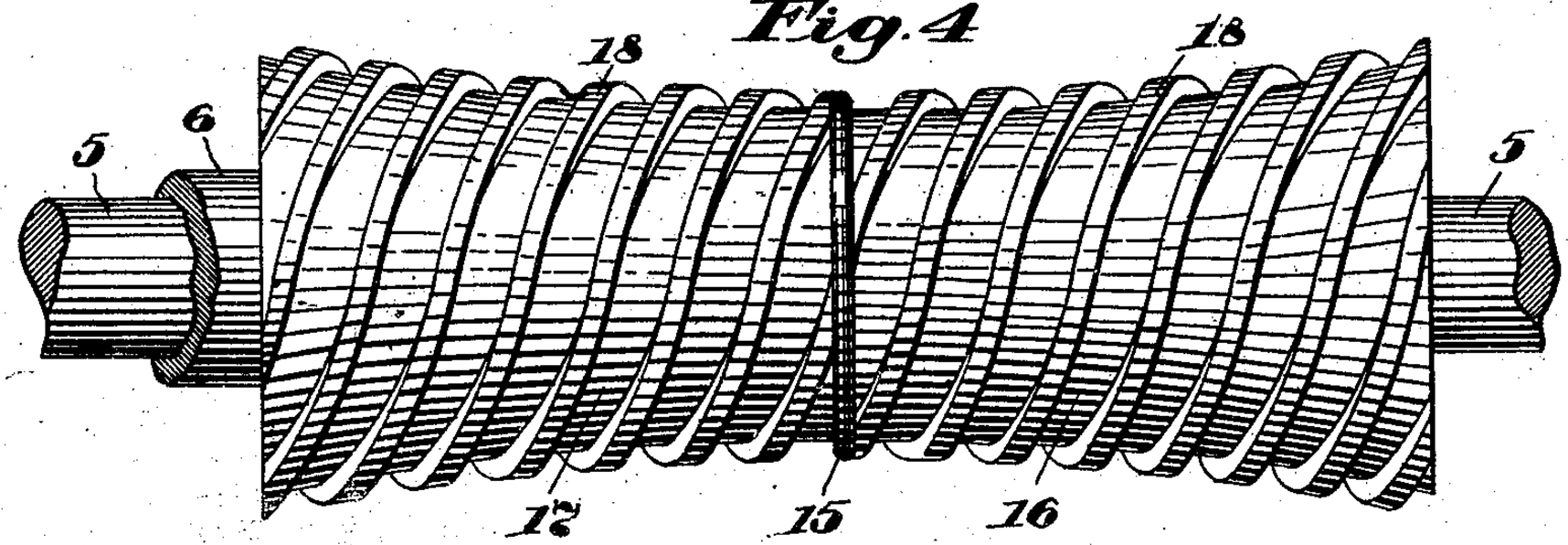


Fig. 4



Witnesses:
Horace R. Crossman
Robert H. Kammler.

Inventor:
William H. Hooper
by Emery & Booth
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM H. HOOPER, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO MANUFACTURERS MACHINE COMPANY, OF MONTCLAIR, NEW JERSEY, A NEW JERSEY CORPORATION.

CHANNEL-FLAP LAYER.

No. 861,179. Specification of Letters Patent. Patented July 23, 1907.

Application filed March 31, 1906, Serial No. 309,127.

To all whom it may concern:

Be it known that I, WILLIAM H. HOOPER, a citizen of the United States, residing at Swampscott, in the county of Essex and State of Massachusetts, have invented an Improvement in Channel-Flap Layers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to channel flap layers or devices for pressing to place and smoothing out the channel flap of a boot or shoe sole after the operation of attaching the sole to the upper by stitches or other fastenings in the channel has been completed. In the manufacture of boots and shoes after said stitches or other fastenings have been inserted in the channel formed in the sole, the channel flap or lip is cemented and then relaid or turned down into its original position to cover and protect said fastenings.

In the operation of nearly all channeling machines, as at present constructed, the channeling tool is caused to commence its channel cutting or forming movement at one side of the shank portion of the sole, usually the right side, working thence forward, following the edge of the sole to and around the toe to a corresponding point on the opposite side of the shank, the flap thus being turned up and laid back progressively in one direction. To efficiently relay this flap, it should be turned down all around the sole uniformly in the opposite direction and in the reverse manner to which it was turned up, so that each part of the flap will be returned to its former place or position in the sole and any wrinkles, put into it in turning up the flap, taken out or removed during the turning down or laying process. As heretofore constructed, however, channel flap laying machines have been provided with a grooved roller turning always in the same direction, so that when the sole has been presented thereto, the channel flap has been progressively turned down into the channel on one side of the shoe in a direction opposite that in which it was turned up by the action of the channel cutting and flap turning tool, while on the other side or edge of the sole the action of the flap laying roller is in the same progressive direction as that in which the channel flap was originally cut and upturned, so that on said side or edge the wrinkles or distortions in the flap produced by the act of cutting and turning up the flap are intensified, instead of neutralized or removed.

With these generally stated conditions in view, one of the objects of the present invention is to provide means whereby the channel flap may be turned down throughout its extent by the action of said means in a direction reverse to that in which the channel flap was cut and turned up.

These and other objects and features of my invention will be best understood and appreciated from the following description taken in connection with the accompanying drawings of a machine embodying one form of my invention and selected for the purposes of illustration, the scope of the invention being more particularly pointed out in the appended claims.

Referring to the drawings,—Figure 1 is a front elevation of a machine selected for purposes of illustration, showing the channel laying rollers and the support in which they are rotatably mounted, the column being broken away; Fig. 2, a vertical longitudinal section thereof through the axis of the rotary shaft; Fig. 3, an enlarged detail to show the channel flap rollers and shaft separated from the machine, and Fig. 4, a modified construction of rollers.

In the embodiment of my invention herein illustrated (see Figs. 1 and 2), the usual head 1 of the machine is provided with a supporting yoke or frame 2, having bearings 3 and 4, in which are respectively mounted the rotary shaft 5 and the tubular sleeve 6, the shaft, at its end opposite the bearing 3, being extended loosely into and having a bearing in said sleeve 6. Said shaft 5, also extends beyond the bearing 4 to receive thereon the fast pulley 7. At the inner face of said bearing 4, the loose sleeve 6 is provided with a fast pulley 8, said pulleys 7 and 8 being respectively operated by belts 9 and 10, driven from any suitable source of power (not shown), one of the belts, however, being crossed, so that when said belts are driving the pulleys 7 and 8, shaft 5 and the sleeve 6 will be rotated in opposite directions for a purpose that will presently be made clear. Between the bearings 3 and 4, said shaft 5 and its sleeve 6 are each provided with a work member or channel flap layer, respectively comprising, in the present instance, the rollers 11 and 12, the inner ends of said rollers being separated sufficiently to permit free rotation thereof without interference. Each of the rollers, 11, 12, as herein shown, has an approximately cylindrical surface for a portion of its length, the outer end being tapered or conical, and the periphery of each is formed with a continuous spiral groove 13, and an intervening continuous spiral ribs 14, although obviously my invention is not restricted to one or any particular number of ribs or grooves. A loose idler or ring 15 is interposed on said shaft 5, between the opposed ends of the rollers 11 and 12, and has the same diameter as that of the outside diameter of the ends of the adjacent rollers, constituting not only a rest for the sole, but a protector or covering for the sharp edges of the ribs, thereby preventing injurious action therefrom during presentation of the sole to the rollers, the periphery of said ring being convex for the same purpose. Rotation of these rollers causes said ribs to act upon a channel flap, presented to them, and move the same longitudinally of

the rollers and transversely to the direction of rotation, *i, e,* in a direction to lay the said flap upon or flush with the sole from which said flap was cut and upturned.

In operating upon a shoe with the form of rollers shown herein, particularly in Figs. 1 and 3, the shank of the sole is presented by the operator, who stands in front of the machine, to the action of the roller 11, (see Fig. 1), bringing the flap at the cutting out end of the channel first against the spiral rib or working face of said roller 11, to be spread or laid thereby, the shoe being then drawn firmly toward the operator until the toe is reached. The shoe sole is then turned slightly and moved or rocked into position under the opposite traveling roller 12, and returned or pushed thereunder in any opposite direction, away from the operator, so that the rib 14, of the oppositely moving roller 12, in its spiral action, effectually and properly completes the flap laying at the opposite side of the sole.

By the combined forward and lateral movement produced by the traveling ribs upon the flap on the right side of the shoe as it is brought up against said ribs, the flap is turned down forwardly and outwardly on that side of the sole—that is, in a reverse direction to that in which the flap was upturned. As the shoe sole is turned while the ribs act upon the toe portion of the sole, the flap is further and continuously relaid in the right direction and along the toe and upon being rocked under and presented at its opposite side to the action of the ribs of the oppositely traveling roller, it is turned down outwardly and backwardly, at said opposite side, obviously in the opposite direction to that caused by the action of the channeling or flap turning tool.

In relaying the flap in the manner described, each part is beaten down into the previously cemented channel to occupy its original position therein, and the action of the roller ribs is such as to turn the flap down always in an opposite direction to that in which it was bent by the channeling or turning tool, not only on one side of the sole but all the way around from the cutting out to the cutting in end of the channel. This permits the flap to be relaid on both sides of the sole without any puckering or wrinkling of the flap or bunching at the toe portion, effectually smoothing out such wrinkles as have been produced in the flap by the action of the channeling or turning tool, and avoiding such increase or intensification of the wrinkling on one side of the sole as is produced by the machines in common use.

In the operation of roller channel flap laying machines as hitherto generally constructed, the toe of the shoe-sole is presented to the under surface of the revolving roller and the shoe passes thereunder, to gradually bring the flap on one side to the action of the laying ribs until the shank of the shoe is reached. The operation is repeated by moving the sole from toe to heel with its opposite side firmly bearing upon the revolving roller, causing the ribs or other working face to beat down the flap into place. With all these machines as practically operated, two distinct passes, each comprising a forward and backward movement, are required in addition to the slight rocking of the shoe at the toe portion. In the embodiment of my invention as herein illustrated and described, but one pass of the shoe is required, forward and back with continuous operation upon the shoe, resulting of course in a considerable saving of labor, time and expense.

The cylindrical portions of the rollers 11 and 12, are long enough to extend across the sole permitting, when desired, the flap at both edges of the sole to be laid at one operation by one movement of the shoe. To facilitate the turning of the shoe to present first one and then the opposite edge to the turning tools, as well as to facilitate simultaneously relaying the flap at both edges of the sole, when such action is desired, I have also provided rollers of the form illustrated in Fig. 4. As herein shown, each of the two spirally grooved rollers 16, 17, is mounted in the same manner in which rollers 11 and 12 are mounted, said rollers, however, tapering toward the center and being provided longitudinally with concave peripheries, to receive the convex bottoms of shoe soles thereon between their outer ends. These rollers are also similarly mounted to be rotated in opposite directions, the ribs or work faces 18 thereon, acting to beat and smooth down the flap into its normal place in the sole when the shoe is properly presented. This form of roller layer is also provided with the idle ring 15.

In operating with this form of rollers, the sole is presented to bring its shank portion under and to the action of the ribs 18, and the shoe drawn forward toward the operator in a manner similar to that described when referring to the form or rollers illustrated by Figs. 1—3, and then returned in the opposite direction under the action of the other roller, or the sole may be presented to both rollers simultaneously to cause them to bear upon the flap at opposite sides of the sole which is relaid by their action. Obviously the toe of the sole may first be presented rather than the shank but with less efficient results. These rollers are preferably used, or the shoe soles presented thereto, in exactly the same manner as when operating with the form of rollers 11 and 12, and produce the same uniformly smoothed out flap.

Claim.

1. A channel flap layer comprising rollers provided with peripheral flap laying devices, and means to rotate said rollers independently to cause their flap laying devices respectively to exert combined lateral and longitudinal flap laying action.

2. A channel flap layer comprising rollers provided with portions obliquely arranged relative to the roller axes and adapted to lay and smooth down the channel flap of a shoe sole, said rollers being arranged to rotate in opposite directions.

3. A channel flap layer comprising rollers provided with spirally arranged ribs adapted to lay and smooth down the channel flap of a shoe sole, and means to rotate said rollers in opposite directions.

4. A channel flap layer comprising a plurality of work members, each having grooved working faces provided with working portions disposed obliquely to the line of its work movement, and means simultaneously to move said working members in opposite directions.

5. A channel flap layer comprising a plurality of approximately cylindrical work members, each having a grooved working face disposed obliquely to the line of working movement, and means simultaneously to move said working members in opposite directions.

6. A channel flap layer comprising a plurality of tapered work members, each having a grooved working face disposed obliquely to the line of working movement, and means simultaneously to move said working members in opposite directions.

7. A channel flap layer comprising a plurality of work members provided with a convex working face, each having a groove disposed obliquely to the line of working movement, and means simultaneously to move said working members in opposite directions.

8. A channel flap layer comprising a plurality of approximately cylindrical working members each, having an end of a size differing from the body portion, and means simultaneously to move said working members in opposite directions.

9. In a device for laying channel flaps, a plurality of spirally arranged flap laying members provided with means for rotating the same in opposite directions.

10. In a device for laying channel flaps, a plurality of rollers having spirally arranged laying members and provided with means simultaneously to rotate said working members in opposite directions.

11. In a channel flap laying machine, the combination of a plurality of channel flap-laying means proximately disposed with relation to each other, and means for imparting different directional lateral and longitudinal movements thereto in laying a channel flap.

12. In a channel flap laying machine constructed to act upon the channel flap of a boot or shoe sole in a direction opposed to that in which it was turned up, means arranged to act laterally and longitudinally in different directions with respect to the general direction of the boot or shoe sole and to lay the flap in the manner and for the purpose described.

13. In a channel flap layer for the soles of boots and shoes, working members having laterally working faces, means for giving said members different movements, and an idler interposed between said members.

14. In a channel flap layer for the soles of boots and shoes, work members having working faces and means to operate said members to cause said faces to have contrary longitudinal and lateral movements.

15. In a channel flap layer for the soles of boots and shoes, work members each having a working face and means to operate said members to cause one of said faces to have a forward and lateral motion, the other a backward and lateral motion substantially as described.

16. In a channel flap layer for the soles of boots and shoes, working members having laterally and longitudinally moving working faces, and means to impart different directional movements to said members.

17. In a flap laying machine, rotary flap laying devices, means for rotating them in opposite directions, and means intermediate said devices to prevent interference one with the other or injury to the work.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIAM H. HOOPER.

Witnesses:
SIDNEY F. SMITH,
MAURICE V. BRESNAHAN.