No. 626,202. Patented May 30, 1899.

R. B. DULA.

APPARATUS FOR TREATING TOBACCO.

(Application filed Apr. 21, 1898.)

(No Model.) 3 Sheets—Sheet 1.

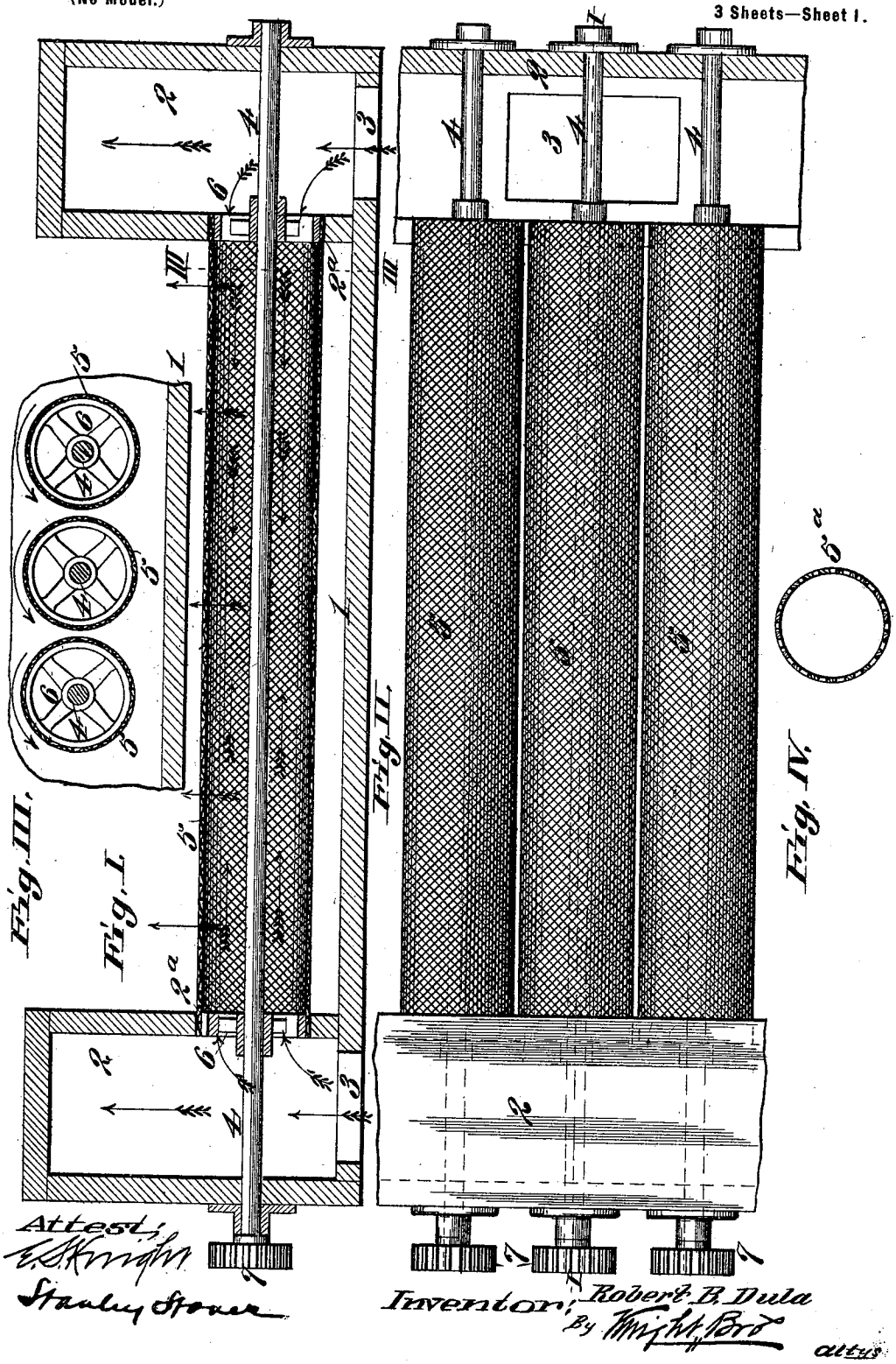

Fig. III.

Fig. I.

Fig. II.

Fig. IV.

Attest:
E. C. Knight
Stanley Stover

Inventor:
Robert B. Dula
By Wm. H. Pope
Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 626,202. Patented May 30, 1899.

R. B. DULA.

APPARATUS FOR TREATING TOBACCO.

(Application filed Apr. 21, 1898.)

(No Model.) 3 Sheets—Sheet 2.

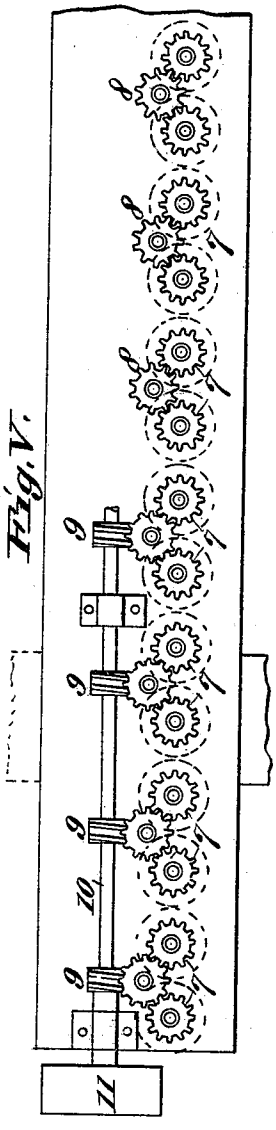

Fig. V.

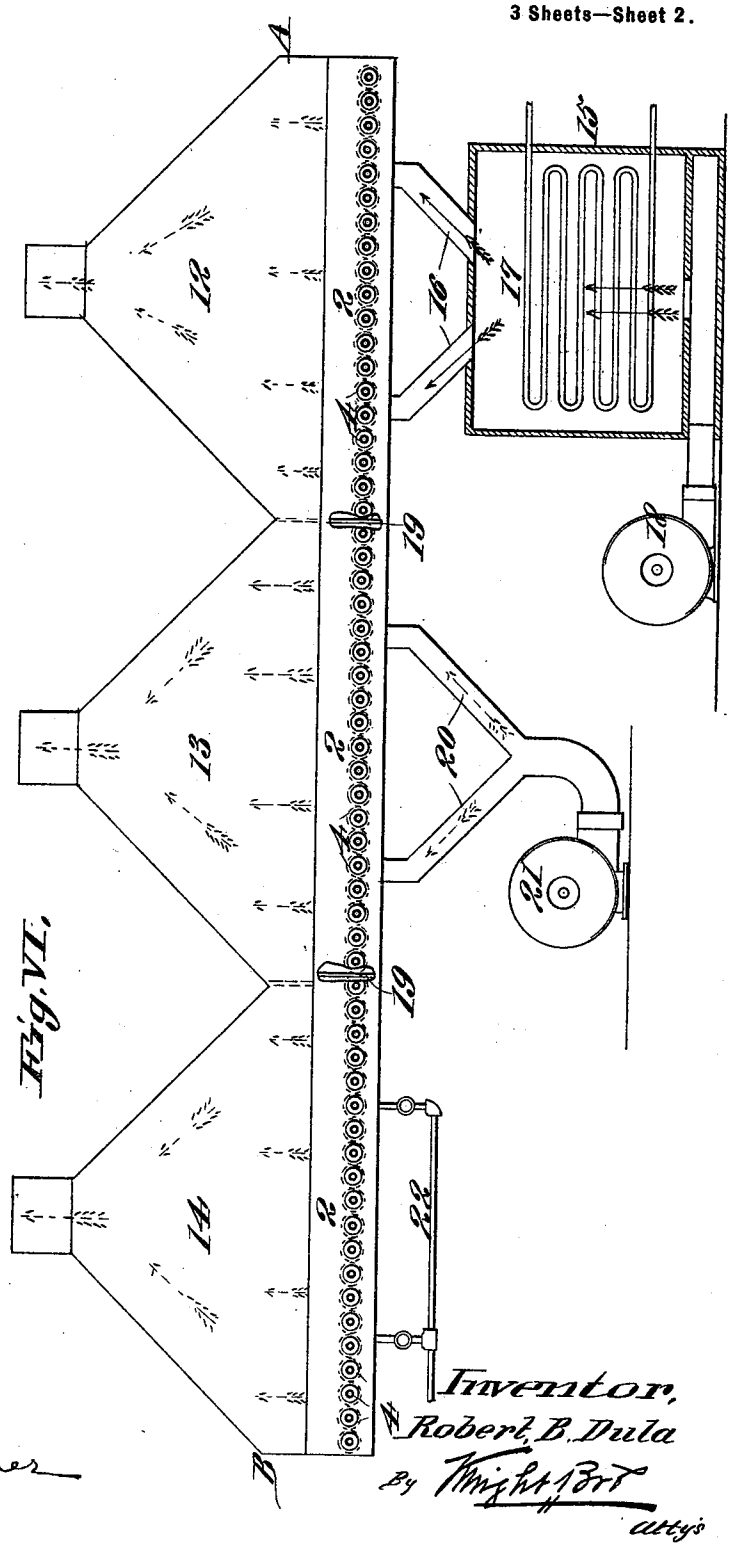

Fig. VI.

Attest:
E. S. Knight
Stanley Stower

Inventor,
Robert B. Dula
By Wright Brt
attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 626,202. Patented May 30, 1899.

R. B. DULA.

APPARATUS FOR TREATING TOBACCO.

(Application filed Apr. 21, 1898.)

(No Model.) 3 Sheets—Sheet 3.

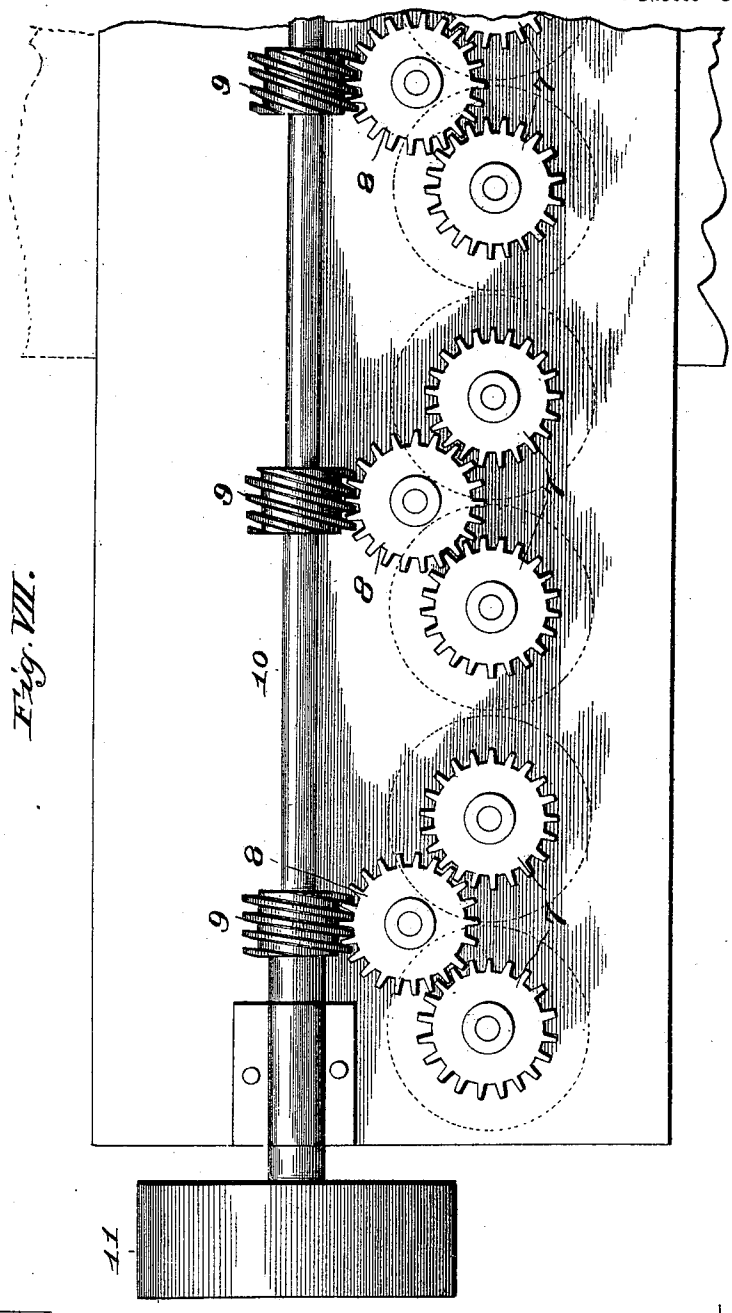

Fig. VII.

Witnesses
G. A. Rauberschmidt
E. S. Knight

Inventor
Robert B. Dula
By Wright Bros
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ROBERT B. DULA, OF ST. LOUIS, MISSOURI.

APPARATUS FOR TREATING TOBACCO.

SPECIFICATION forming part of Letters Patent No. 626,202, dated May 30, 1899.

Application filed April 21, 1898. Serial No. 678,417. (No model.)

To all whom it may concern:

Be it known that I, ROBERT B. DULA, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Apparatuses for Treating Tobacco, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an apparatus for treating tobacco in preparing it for manufacture into marketable plugs and other forms, and to this end the apparatus comprises means for drying, cooling, and steaming the tobacco for the purpose of its treatment; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a sectional view taken on the line I I, Fig. II, through one of the perforated cylinders and the air-chambers of the apparatus. Fig. II is a top view of a series of the perforated cylinders and showing one of the air-chambers in plan view and the other in horizontal section. Fig. III is a vertical transverse section taken on the line III III, Fig. I. Fig. IV is a cross-sectional view of a modified form of cylinder. Fig. V is a side elevation of a driving mechanism for imparting motion to the perforated cylinders. Fig. VI is a side view of the entire apparatus constructed in accordance with my invention, the hot-air box of which is shown in vertical section. Fig. VII is an enlarged detail side elevation of the driving mechanism for imparting motion to the perforated cylinders, showing the differential gearing having worms of different pitch.

In carrying out my invention I employ a series of perforated cylinders that are open at each end to communicate with air-chambers for the purpose of permitting the admission of currents of hot air, cold air, and steam from said chambers into the interior of the front, intermediate, and rear series of perforated cylinders, respectively, whence the currents escape through the perforations in the cylinders and are directed against a stratum of tobacco fed directly onto the tops of the cylinders and traveling from one cylinder to another in the rotation or turning of the cylinders.

1 designates the base of the apparatus, above which are chambers 2, adapted to receive currents of hot air, cold air, and steam entering through apertures 3, that may be located in the base 1, as shown in the drawings, Figs. I and II, or in any other suitable position, leading into the chambers 2.

4 designates shafts mounted in the walls of the chambers 2 and capable of turning freely therein. On the shafts 4 are perforated cylinders 5, the ends of which are attached to spiders 6, fixed to the shafts 4, so as to turn therewith. The ends of the cylinders 5 are arranged in openings 2^a in the inner walls of the chambers 2 for the purpose of placing the cylinders in communication with the interior of the said chambers. The perforated cylinders may be of any suitable material, and in Figs. I to III, inclusive, I have shown them constructed of wire-cloth, while in Fig. IV a cylinder 5^a is shown constructed of a tube having perforations therein.

The cylinders 5 may be revolved by any suitable mechanism applied to the shafts 4. I have shown means for driving them, which I will now describe. On one end of each shaft 4 is a gear-wheel 7. These gear-wheels 7 are driven in pairs by spur-wheels 8, that mesh in each instance with two adjoining gear-wheels, so that two of the shafts 4 are turned through the medium of one spur-wheel 8, and consequently the cylinders carried by the shafts thus turned are revolved therewith. Motion is imparted to the spur-wheels 8 through the medium of worms 9, fixed to a shaft 10, said shaft being driven by power applied to a pulley 11 from a suitable motor. The gearing or driving mechanism thus described may be so constructed and operated that all of the cylinders 5 may be revolved at the same rate of speed, or the gearing may be so constructed as to accomplish a differential speed of the cylinders. To accomplish such results, the worms 9 might all be of equal pitch and the gear-wheels 7 and spur-wheels 8 being alike, when the speed of all of the cylinders would be the same. If, however, a differential speed of the cylinders should be desired, the worms 9 may be of varied pitch, which, as shown in the drawings, they are, and as a consequence a variation of travel of the spur-

wheels results and is transmitted to the revolving cylinders, or the gearing or driving mechanism may be so arranged to accomplish differential speeds of the cylinders, so that the rate of speed of the cylinders will increase from the feed end to the discharge end of the machine or decrease from the feed end to the discharge end, or so that alternate cylinders will travel at greater or less rates of speed than those succeeding throughout the extent of the apparatus. By having the cylinders move at different rates of speed the pieces of tobacco will be more effectually separated from each other as they pass through the machine, as the layer of tobacco in passing from a cylinder on to a faster-turning one will be pulled or jerked apart.

In Fig. VI, I have shown the entire apparatus on a small scale, as used, the cylinders being surmounted by hoods 12, 13, and 14, opened at the top and located between the air-chambers. The front hood 12 incloses the tops of the cylinders at the feed end of the apparatus, and beneath the apparatus at this end is an air-heating box 15, from which pipes 16 lead to the interior of the air-chambers 2 through the apertures 3. The air-heating box contains a steam or other heating pipe 17 and is supplied with a current of air from a blower 18, leading into the box. The intermediate hood 13 surmounts the central portion of the apparatus. In the air-chambers 2 are partitions 19, (see Fig. VI,) that separate the air-chambers from each other. Cold air is supplied to the cylinders 5, located beneath the hood 13, the cold air being forced into the chamber 2 through pipes 20 from a blower 21, the cold air cooling the tobacco and further assisting in drying it. Steam is supplied to the cylinders 5, located beneath the rear hood 14, being conveyed thereto through pipes 22. In passing over the cylinders 5 under the hood 14 the tobacco is steamed, after being heated and dried, to render its condition suitable for handling in manufacturing it into commercial form for market.

In the operation of the apparatus the tobacco is fed in at the end A onto the perforated cylinders 5, the cylinders being in motion to convey the tobacco through the apparatus. While the tobacco is traveling over the cylinders inclosed by the hood 12 the currents of hot air are directed against and through the tobacco to drive the moisture therefrom and out through the hood, as indicated by the arrows. As the tobacco passes on over the cylinders and beneath the hood 13 currents of cold air are directed against it from the pipes 20 to cool and dry the tobacco, and the air finds escape from the hood in the direction as indicated by the arrows. The tobacco then enters beneath the hood 14, and the currents of steam from the pipes 22, passing into and through the cylinders, are directed against the tobacco to moisten it, the steam passing out of the hood in order to permit a continuous flow of the steam-current. The tobacco then escapes at the discharge end B in proper condition for handling and working up into marketable shape.

The machine is well adapted for drying and ordering tobacco after it is taken from the bath into which it has been placed, as is customary in the manufacture of plug-tobacco, as the machine will first dry the tobacco, then cool it, and then add the desired amount of moisture to prepare it for the further process of manufacturing it into the plugs.

By passing the tobacco over a series of revolving cylinders the stratum is given a constant and gentle agitation and will not ball up as it does when tumbled upon itself, which is the action it receives when placed within a revolving cylinder.

I claim as my invention—

1. An apparatus for treating tobacco, comprising a series of perforated cylinders rotatably mounted and adapted to receive, support, and carry a stratum of tobacco which passes thereover, means for rotating said cylinders, a base over which the cylinders operate having hot-air apertures, chambers located at the ends of the cylinders providing communication between the cylinders and the hot-air apertures, an air-heating box communicating with the hot-air apertures, and means for forcing currents of air through the air-heating box; substantially as described.

2. An apparatus for treating tobacco, comprising a series of perforated cylinders rotatably mounted and adapted to receive, support, and carry a stratum of tobacco which passes thereover, a hood having an open top and located over the perforated cylinders, means for rotating said cylinders, a base over which the cylinders operate, having hot-air apertures, chambers located at the ends of the cylinders providing communication between the cylinders and the hot-air apertures, and an air forcing and heating device connected with the hot-air apertures; substantially as described.

3. An apparatus for treating tobacco, comprising a series of perforated cylinders rotatably mounted and adapted to receive, support, and carry a stratum of tobacco which passes thereover, means for rotating said cylinders, a base over which the cylinders operate, chambers located at the ends of the cylinders and communicating therewith, and a cold-air-forcing device connected with the chambers; substantially as described.

4. An apparatus for treating tobacco, comprising a series of perforated cylinders rotatably mounted and adapted to receive, support, and carry a stratum of tobacco which passes thereover, a hood having an open top and located over the perforated cylinders, means for rotating said cylinders, a base over which the cylinders operate, having cold-air apertures, chambers located at the ends of the cylinders and communicating therewith, and a cold-air-forcing device connected with the chambers; substantially as described.

5. An apparatus for treating tobacco, comprising a series of perforated cylinders rotatably mounted and adapted to receive, support, and carry a stratum of tobacco which passes thereover, means for rotating said cylinders, a base over which the cylinders operate, chambers located at the ends of the cylinders and connected therewith, and steam-pipes connected with the chambers; substantially as described.

6. An apparatus for treating tobacco, comprising a series of perforated cylinders rotatably mounted and adapted to receive, support, and carry a stratum of tobacco which passes thereover, a hood having an open top and located over the perforated cylinders, means for rotating said cylinders, a base over which the cylinders operate, chambers located at the ends of the cylinders and communicating therewith, and a steam-pipe connected with the chambers; substantially as described.

7. An apparatus for treating tobacco, comprising a series of perforated cylinders rotatably mounted and adapted to receive, support and carry a stratum of tobacco which passes thereover, means for rotating said cylinders, air-chambers in communication with said cylinders, hoods located over said cylinders, and means for forcing currents of hot air, cold air or steam into said air-chambers; substantially as described.

8. An apparatus for treating tobacco, comprising a series of perforated cylinders rotatably mounted and adapted to receive, support, and carry a stratum of tobacco which passes thereover, means for rotating said cylinders at different rates of speed, and means for forcing currents of hot air, cold air, or steam into said cylinders; substantially as described.

9. An apparatus for treating tobacco, comprising a series of perforated cylinders rotatably mounted and adapted to receive, support, and carry a stratum of tobacco which passes thereover, means for rotating said cylinders, a base over which the cylinders operate, chambers located at the ends of the cylinders and communicating therewith, an air-heating device connected with the front portion of the chambers, a cold-air device connected with the intermediate portion of the chambers, and steam-pipes connected with the rear portion of the chambers; substantially as described.

10. An apparatus for treating tobacco, comprising a series of perforated cylinders rotatably mounted and adapted to receive, support, and carry a stratum of tobacco which passes thereover, means for rotating said cylinders, a base over which the cylinders operate, chambers located at the ends of the cylinders and communicating therewith, a hood having an open top and located over the front cylinders, a hood having an open top and located over the intermediate cylinders, and a hood having an open top and located over the rear cylinders; substantially as described.

ROBERT B. DULA.

In presence of—
E. S. KNIGHT,
STANLEY STONER.