Dec. 29, 1931. R. E. RUNDELL 1,838,157

CIGAR BUNCH CONCENTRATOR

Filed April 20, 1927 2 Sheets-Sheet 1

Fig. 1.

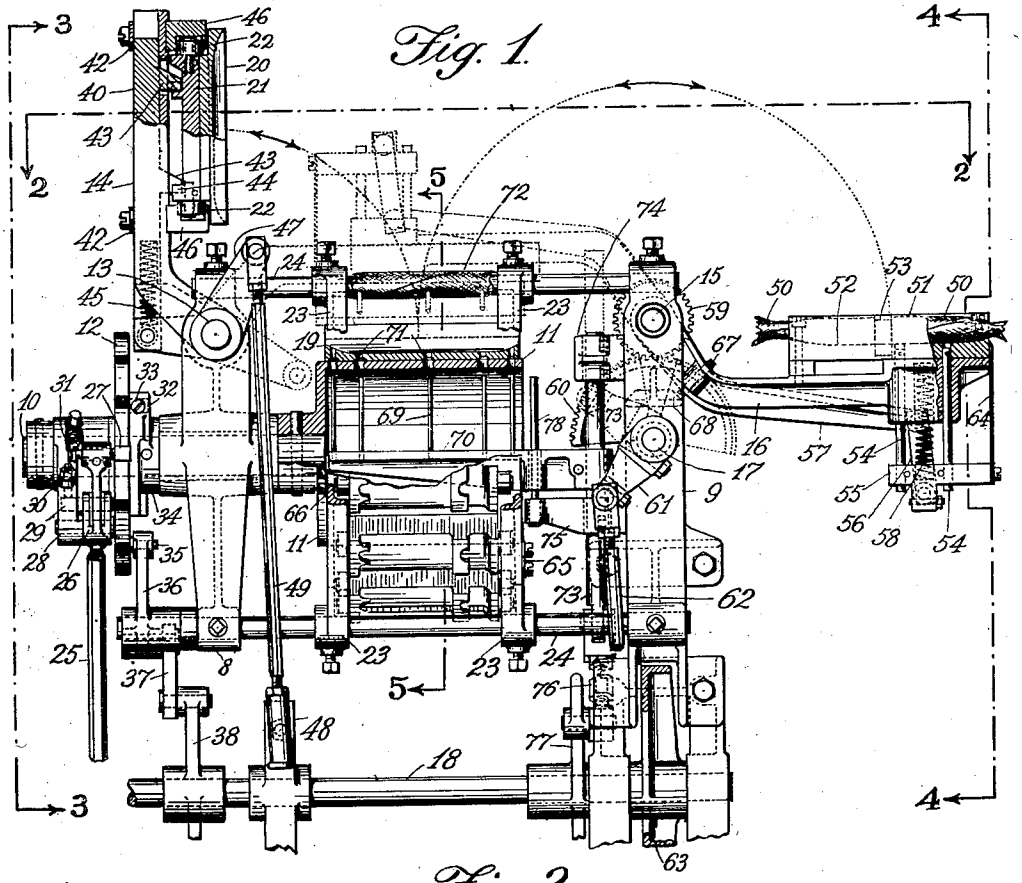
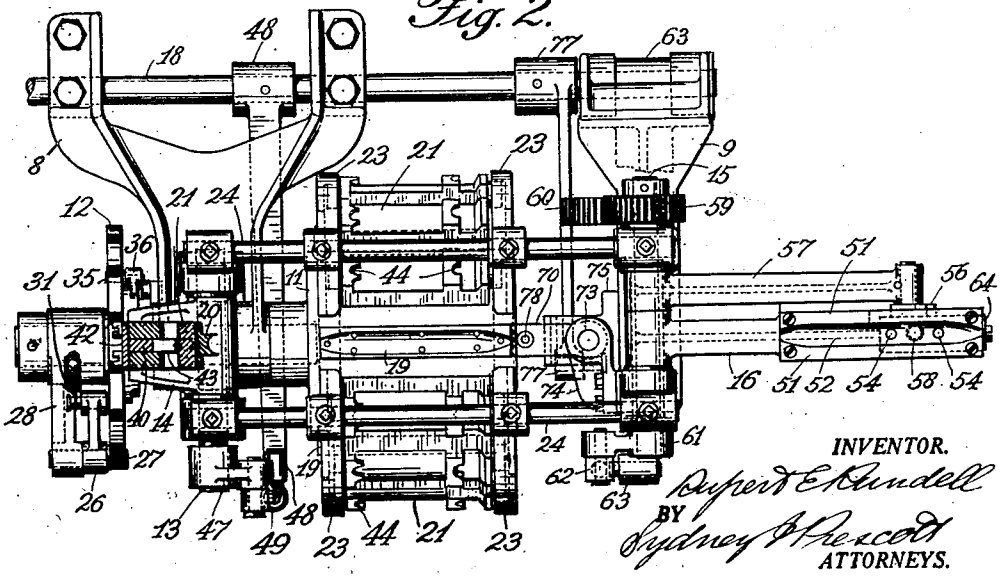


Fig. 2.



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Fig. 3.

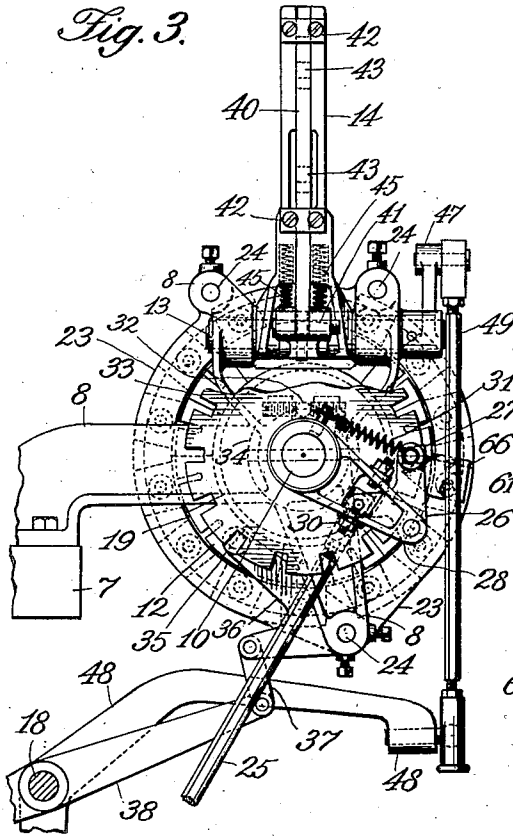


Fig. 4.

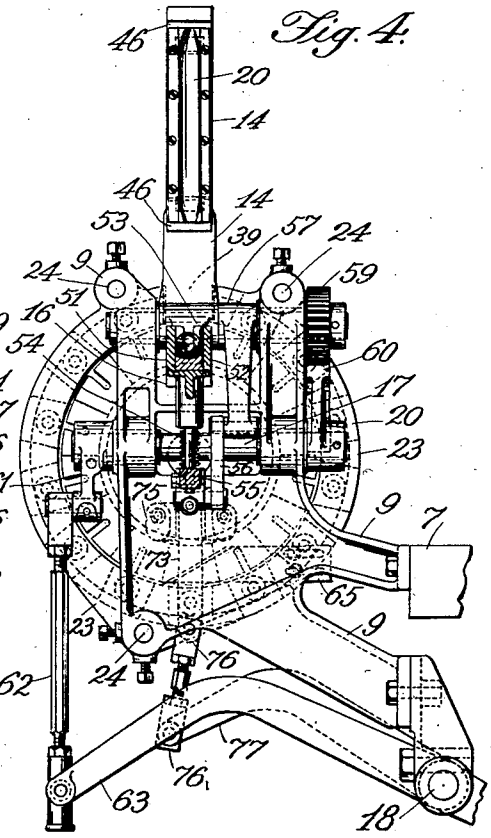


Fig. 5.

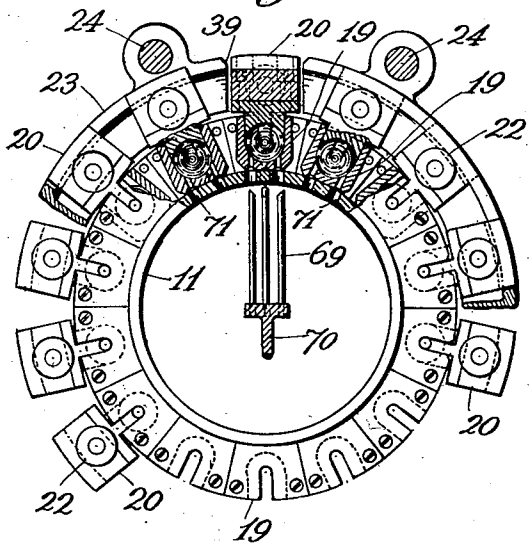
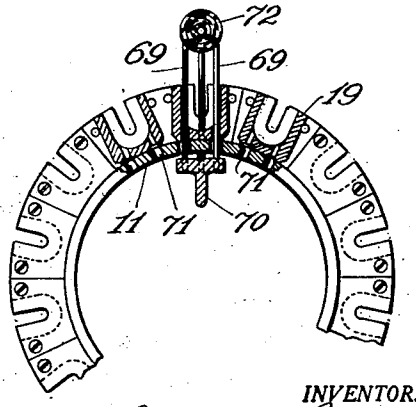


Fig. 6.



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UNITED STATES PATENT OFFICE

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CIGAR BUNCH CONCENTRATOR

Application filed April 20, 1927. Serial No. 185,199.

This invention relates to an improved cigar bunch concentrator.

The machine in which the invention is embodied includes a rotating horizontal turret upon which a plurality of bunch concentrators are mounted, each concentrator consisting of a female section secured to the turrent and a removable male section. Mechanism is provided for giving the turret a step-by-step motion, each step corresponding to the angular displacement of two successive concentrators. Associated with the turret are two swingable arms both registering with the uppermost concentrator of the turret when swung toward the later. One of these arms has a swinging range of substantially 180 degrees and serves as a loading arm transferring the bunches from receiving position and depositing them in the female section of each concentrator as the latter dwells in its uppermost position. The other, or concentrator opening arm, which has a swing of 90 degrees, engages the male section of each mold as it arrives in its uppermost position and lifts it off, allowing the concentrated bunch to be pushed out of the female section by an ejector disposed within the shell of the turret, and permitting a new bunch to be inserted by the loading arm, after which the opening arm restores and presses home the male section, remaining in this position for one step of the turret, and then returns to its raised position with the male section of the next concentrator. The opening arm is provided with clamps for holding the male sections, said clamps being normally in closed position and open only after the opening arm has returned a male section to its place on the turret. Upon being opened in this position, they remain open until the next concentrator has arrived in its uppermost position, and then they close upon the male section of that concentrator prior to lifting the same from the turret. The loading arm has a bunch discharging device which travels with it and pushes the bunch into the female section of the uppermost concentrator after the loading arm has reached its final position on the turret, and returns to its normal position before the loading arm breaks its engagement with the turret. With the discharging device is associated a bunch trimming knife which moves down with the bunch delivering plunger and trims one end of the bunch as it presses the same into the concentrator. The other end of the bunch is trimmed and the first mentioned end is retrimmed by stationary knives bearing against the ends of the turret. The underlying object of the invention is the production of a machine of the general type above indicated. With this and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter fully described and then specifically pointed out in the claims hereunto appended.

In the accompanying drawings, in which like characters of reference indicate the same or like parts, Fig. 1 is a side elevation, partly in cross section, of a machine constructed in accordance with the invention; Fig. 2 is a plan view of the same, as seen from the line 2—2 in Fig. 1; Fig. 3 is an end elevation, as viewed from the line 3—3 in Fig. 1; Fig. 4 is an end elevation, as viewed from the line 4—4 in Fig. 1; Fig. 5 is a transverse cross section of the turret taken on the line 5—5 of Fig. 1, when the uppermost concentrator is being loaded; and Fig. 6 is a transverse section of the turret with a concentrated bunch being ejected therefrom.

In carrying the invention into effect, there is provided a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, means having a cooperating pathway on either side of said group for holding said sections together during group rotation, and means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position. In the best constructions contemplated, each male section has at each of its ends a roller for engagement with the pathways and with the continuations thereof; said removing means includes an arm successively carrying the male sections away from bunch receiving and discharging position to provide fairways for successively discharging and loading the fe-

male sections; and bunch discharging means and bunch loading means sequentially coming into action during each period of group rest, are also provided. All of these parts may be widely varied in construction within the scope of the claims, for the specific structure selected to illustrate the invention is but one of many possible concrete embodiments of the same. The invention therefore is not to be restricted to the precise details of the structure shown and described.

Figs. 1 to 4 illustrate the improved cigar bunch concentrator as one of the constituent parts of a scrap cigar machine, said concentrator being attached to the frame 7 of the cigar machine by means of the brackets 8 and 9. The bracket 8 supports a shaft 10, upon which a turret 11 is mounted and which has an indexing device 12 which imparts to the turret 11 a step-by-step rotary motion. The bracket 8 also supports a shaft 13, on which swings a concentrator opening arm 14. The bracket 9 supports a shaft 15, on which is mounted a loading arm 16, and it also supports a crank shaft 17, from which the shaft 15 receives its motion, and one end of a shaft 18 on which the cam levers for the various motion transmitting devices are fulcrumed.

The turret consists of the cylindrical shell 11, mounted on the shaft 10, and to which are fastened the female sections 19 of the concentrators, there being a circular group of complementary male and female cigar bunch concentrator sections on the turret. The male sections 20 are attached to holders 21 provided with rollers 22 which, when the two halves of the concentrators are forced together, enter pathways 23 supported on rods 24 held by the brackets 8 and 9.

The turret is rotated in a step-by-step motion by the indexing device 12, which is operated by a cam-actuated rod 25, connected to one arm of a bell crank lever 26, the other arm of which carries a lock 27 engaging the slots of the index 12. The bell crank lever 26 is fulcrumed on a loose arm 28 of the turret shaft 10 in such a manner, by means of a pin 29 and stop screws 30, that it can turn relatively an amount just sufficient to lock and unlock the index 12, a spring 31 attached to the arm 28 normally keeping the lock in engagement. When the rod 25 moves up, it raises the bell crank lever 26 and thereby unlocks the index. Then the pin 29 engages the upper stop screw 30, whereupon the rod 25 raises the arm 28 until the spring 31 has pulled the lock 27 into engagement with the nearest succeeding slot of the index. On its subsequent downward motion, the rod 25 will then move the index one step forward. The idex carries a pin 32 projecting from it horizontally between the adjusting screws 33 which are carried by the lugs of a collar 34 pinned to the shaft 10, and by it the motion of the index is transmitted to the turret 11. While the index arm 28 moves forward and the lock 27 is out of engagement, the index is kept from turning by a lock 35 carried by a bell crank lever 36, which is fulcrumed on the rod 24 and is operated through a link 37 by a cam lever 38 fulcrumed on the shaft 18.

The pathways 23 at the top of the turret are provided with openings 39 so that the male section of each concentrator, as it reaches its uppermost position in the turret, can be removed for the purpose of discharging the concentrated bunch and of receiving an unconcentrated bunch. The removal of the male sections is accomplished by the swinging arm 14 loosely fulcrumed on the shaft 13 and having a slide bar 40 which is hinged to an arm 41 pinned to the shaft 13. The slide bar 40 is confined in the slideway of the arm 14 by the guide strips 42 and has fingers 43 which engage slots 44 provided for this purpose in the male section holders 21 and are normally held in locked position by the springs 45, the latter holding the arms 14 and 41 separated. The shaft 13 is provided with a crank 47 which receives reciprocating motion from a cam lever 48 through a rod 49.

The arm 14 is provided with channeled end pieces 46 forming continuations of the pathways 23 and into which the rollers 22 of the male sections 20 roll as a concentrator approaches its uppermost position. The male sections are securely locked in the arm 14 by the fingers 43 when the arm 41 is held away from the arm 14 by the springs 45. As soon, however, as the arm 41 is pushed against the arm 14, which occurs when the crank 47 keeps on moving up after the arm 14 has come to rest on the turret with the concentrator closed, the slide bar 40 moves out and disengages the fingers 43 from the slots 44.

An unconcentrated bunch 50 may be placed, by the operator or by suitable mechanism, into the receiving pocket of the arm 16, the said pocket being formed by stationary side walls 51 and a movable bottom 52. A flat spring 53, attached to one of the side walls 51, prevents the bunch from falling out when the arm 16 is turned. The bottom 52 of the pocket, which fits between the side walls 51, is attached to rods 54 carried by a cross head 55 and guided in the end of the arm 16 which is loosely mounted on the shaft 15. The cross head 55 is connected by a link 56 to an arm 57 which is pinned to the shaft 15, a compression spring 58 connecting the cross head 55 with the arm 16. The shaft 15 has a gear 59 which is rocked back and forth by a gear section 60 mounted on the shaft 17 and actuated by a crank 61 which, by means of a rod 62, is connected to a cam lever 63 fulcrumed on the shaft 18 and actuated by a cam mounted on the main cam shaft of the

machine, not shown. When the shaft 15, with the arms 16 and 57, has been moved through 180 degrees by the sector 60 (as shown by dotted lines in Fig. 1), the side walls 51 of the loading pocket rest on the uppermost female section 19, thereby stopping the arm 16. As the shaft then moves farther, the arm 57 compresses the spring 58 and moves toward the arm 16, thereby pushing down the bottom 52 of the bunch pocket, which then is uppermost, and then pressing the bunch down into the female section 19 on the turret. As the arm 57 moves toward the arm 16 in bunch discharging position, the knife 64, attached to the cross head 55, engages the end of the section 19 and trims one end of the bunch just being inserted. The other end of the bunch is trimmed, as the turret revolves, by the stationary knife 65, adjacent the right end pathway 23. Another knife 66, adjacent the left end pathway 23, is provided for retrimming the first trimmed end of the bunch.

As soon as the unconcentrated bunch is in position in the uppermost female section 19, the gear sector 60 moves back, first releasing the spring 58 and thereby allowing the pocket bottom 52 to return to its normal position, and then swinging the arm 16 back into loading position, in which it rests with its adjustable stop screw 67 abutting a suitable inclined seat 68 provided on the bracket 9. At the same time, while the newly charged concentrator still dwells in the uppermost position on the turret, the arm 14 swings downward, presses the male section 20 into the female section 19, and releases the clamp fingers 32. In this position, the channeled end pieces 46 of the arm 14 fit into the openings 39 of the pathways 23 and form a continuation of the same, so that advance of the turret causes the rollers of the male section to enter the pathways 23, which hold the sections together during one complete revolution of the turret. As the newly charged concentrator enters the pathways 23, the next succeeding concentrator, which has just finished one revolution in the turret, enters the channeled end pieces 46 of the arm 14, which has remained in its down position during one step of the turret, and which now, during the next dwell of the turret, is raised into its uppermost position, the fingers 43 gripping the male section 20 of the newly arrived concentrator and lifting it out of engagement with the female section 19, so that the finished bunch can be ejected from the concentrator.

The bunch ejecting mechanism consists of a number of vertical pins 69 which collectively form a cradle for a bunch and are mounted upon a horizontal arm 70. The arm carrying these pins is placed inside the turret shell 11 and the latter, as well as the female sections 19, are provided with corresponding holes 71, so that when the arm 70 is raised, the pins 69 will engage the finished bunch 72 and lift it out of the turret, to be picked up by a suitable transfer arm, not shown, which delivers it to a bunch wrapping device. The arm 70 is mounted on a vertical rod 73 which moves up and down in the brackets 74 and 75 attached to the main bracket 9. The rod 73, by means of an adjustable link 76, is connected to a cam lever 77, from which the ejecting mechanism receives its reciprocating motion. The bracket 75 carries a vertical rod 78 which fits into a guide hole in the arm 70 and prevents the latter from turning in the slide bearings of the rod 73.

What is claimed is:

1. The combination with a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, of means having a cooperating pathway on either side of said group for holding said sections together during group rotation, and means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position.

2. The combination with a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, of means having a cooperating pathway on either side of said group for holding said sections together during group rotation, and means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position, each male section having at each of its ends a roller for engagement with said pathways and with the continuations thereof.

3. The combination with a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, of means having a cooperating pathway on either side of said group for holding said sections together during group rotation, and means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position, said position being at the top of said group.

4. The combination with a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, of means having a cooperating pathway on either side of said group for holding said sections together during group rotation, and means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position, said removing means including an arm successively carrying the male sections away from said position to pro-

vide fairways for successively discharging and loading the female sections.

5. The combination with a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, of means having a cooperating pathway on either side of said group for holding said sections together during group rotation, means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position, and means for successively discharging bunches from the female sections.

6. The combination with a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, of means having a cooperating pathway on either side of said group for holding said sections together during group rotation, means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position, and means for successively loading bunches into the female sections.

7. The combination with a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, of means having a cooperating pathway on either side of said group for holding said sections together during group rotation, means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position, and bunch discharging means and bunch loading means sequentially coming into action during each period of group rest.

8. The combination with a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, of means having a cooperating pathway on either side of said group for holding said sections together during group rotation, means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position, and bunch discharging means including a series of pins reciprocating within said group and successively coacting with the female sections.

9. The combination with a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, of means having a cooperating pathway on either side of said group for holding said sections together during group rotation, means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position, and bunch loading means including a bunch carrier and an ejector therefor both being movable to and from said position.

10. The combination with a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, of means having a cooperating pathway on either side of said group for holding said sections together during group rotation, means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position, and bunch loading means including a yielding bunch carrier and an unyielding ejector therefor both being movable to and from said position.

11. The combination with a circular group of complementary male and female cigar bunch concentrator sections intermittently rotating about a horizontal axis, of means having a cooperating pathway on either side of said group for holding said sections together during group rotation, means having continuations of said pathways for successively removing and replacing the male sections at bunch receiving and discharging position, and bunch loading means including gearing and bunch carrier and ejector arms swung by said gearing to and from said position.

12. The combination with intermittently traveling complementary male and female cigar bunch concentrator sections the former having a roller at each of its ends, of pathways engaging said rollers to hold the sections together during travel, and means having continuations of said pathways into which said rollers enter for removing and replacing the male sections.

13. The combination with intermittently traveling complementary male and female cigar bunch concentrator sections the former having a roller at each of its ends, of pathways engaging said rollers to hold the sections together during travel, and a swinging arm having continuations of said pathways into which said rollers enter for removing and replacing the male sections.

14. The combination with intermittently traveling complementary male and female cigar bunch concentrator sections the former having a roller at each of its ends, of pathways engaging said rollers to hold the sections together during travel, means having continuations of said pathways into which said rollers enter for removing and replacing the male section, and bunch discharging means and bunch loading means sequentially coming into action while the male section is removed.

In testimony whereof, I have signed my name to this specification.

RUPERT E. RUNDELL.