C. D. DYE.

BREAD CUTTING MACHINE.

APPLICATION FILED SEPT. 27, 1916.

1,229,918.

Patented June 12, 1917.

4 SHEETS—SHEET 1.

Fig. 1.

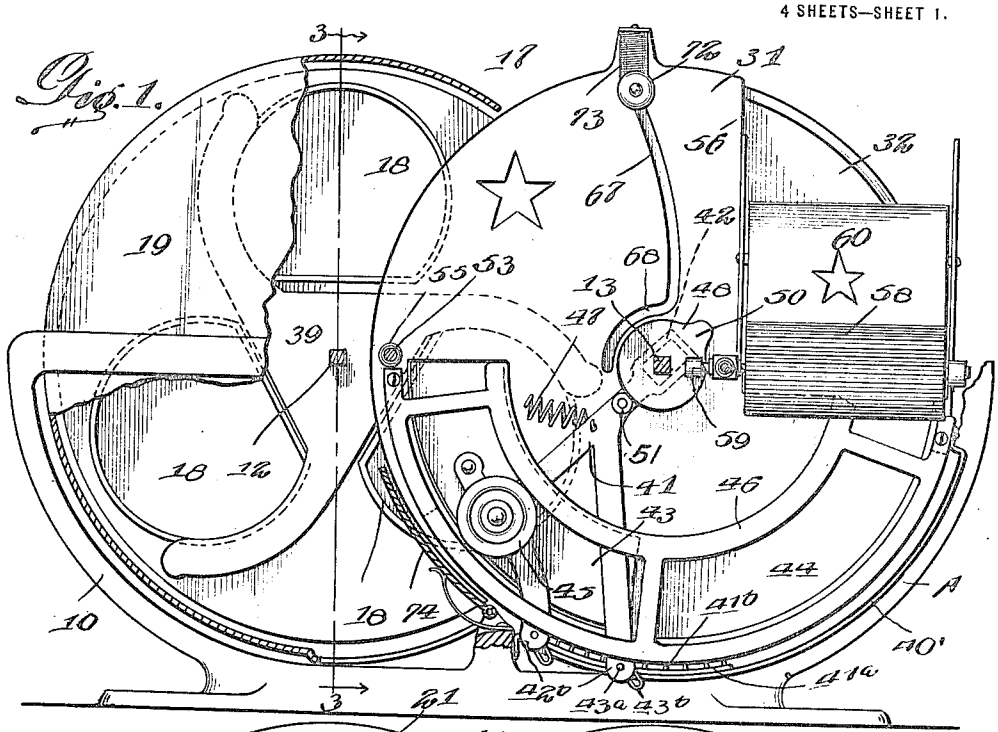
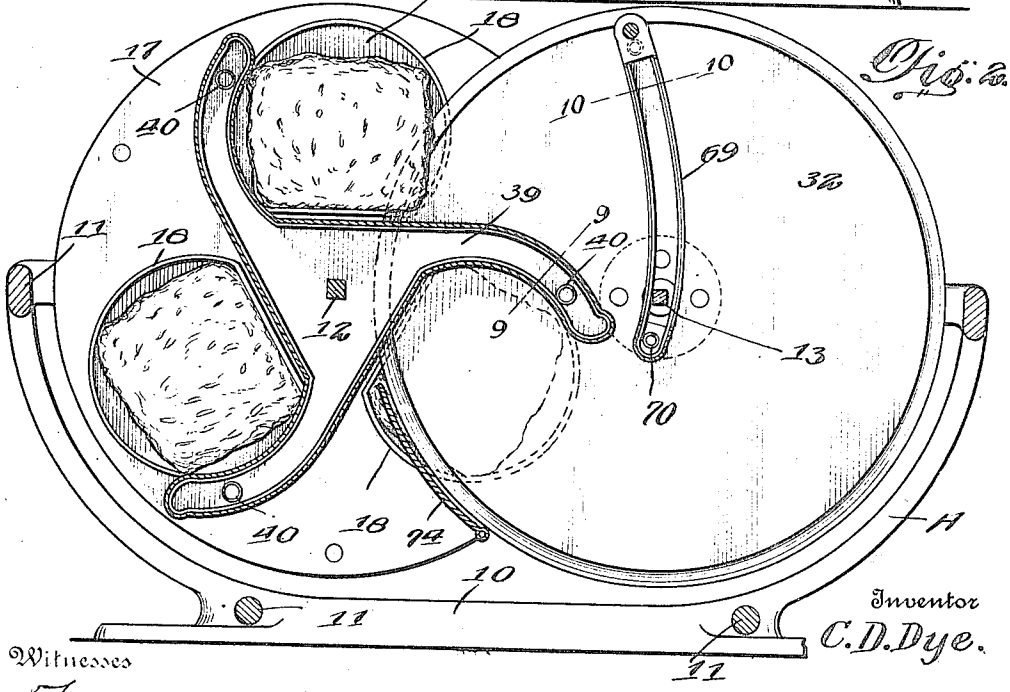


Fig. 2.



Witnesses

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4 SHEETS—SHEET 2.

Fig. 3.

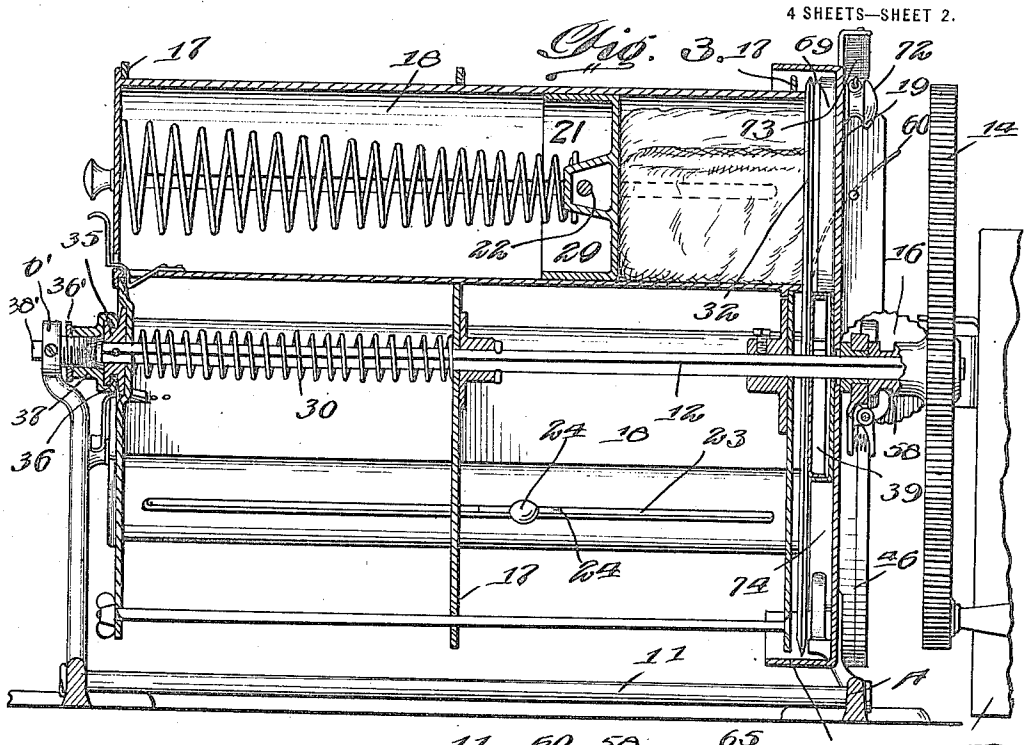
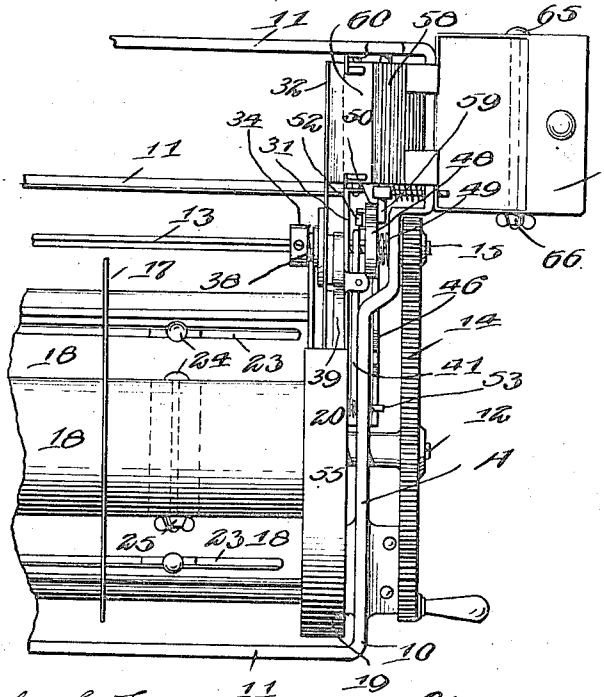


Fig. 4.



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4 SHEETS—SHEET 3.

Fig. 5.

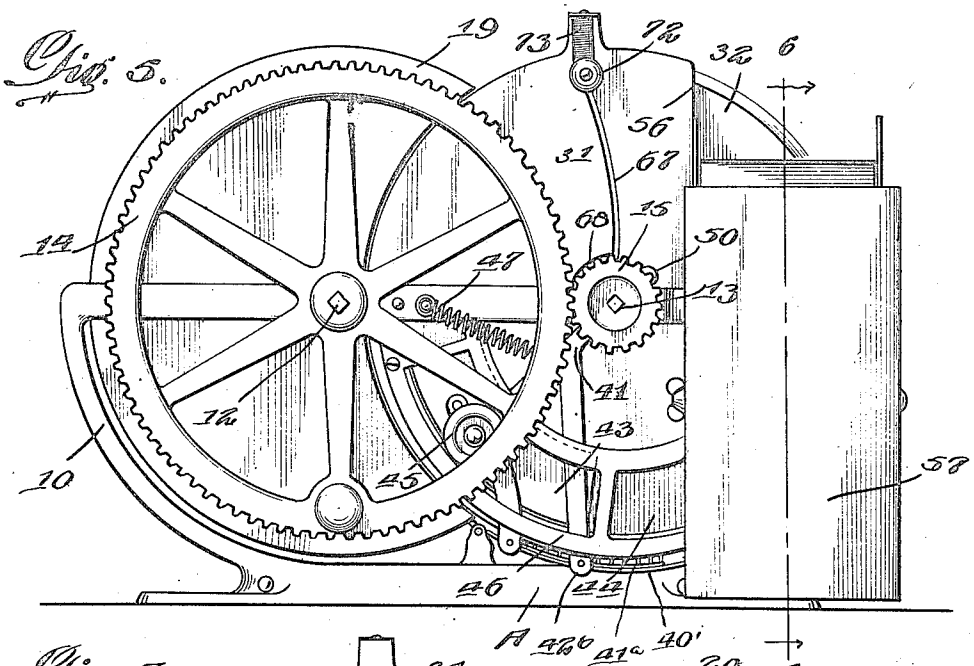
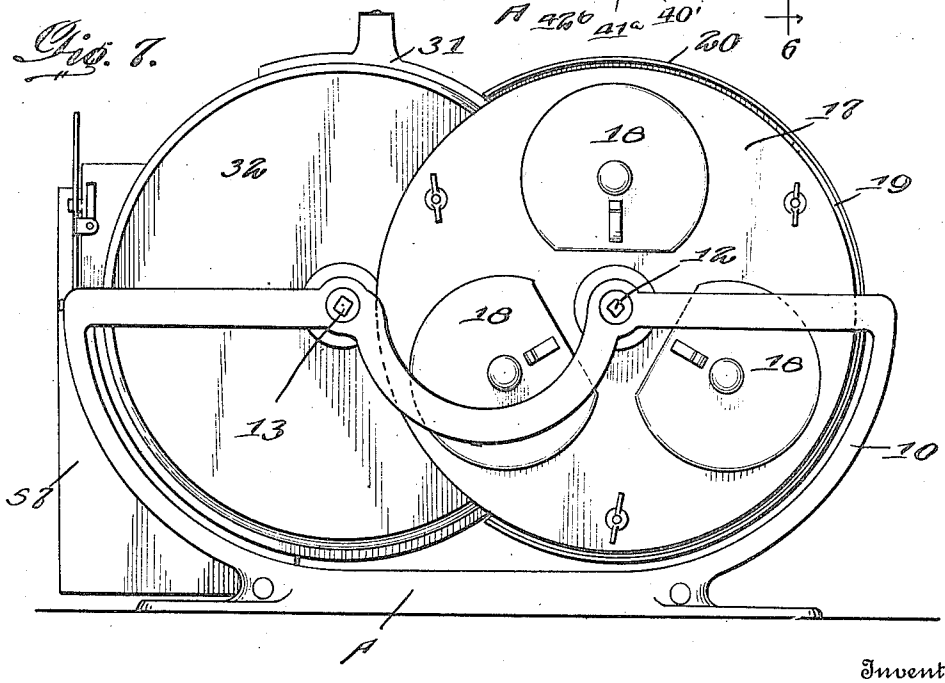


Fig. 7.



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4 SHEETS—SHEET 4.

Fig. 6.

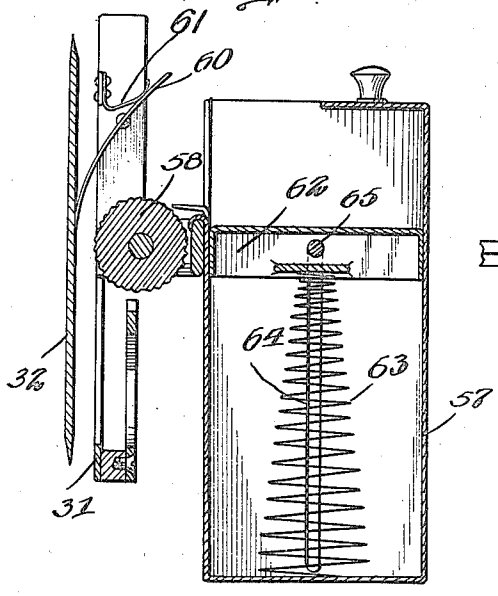


Fig. 8.

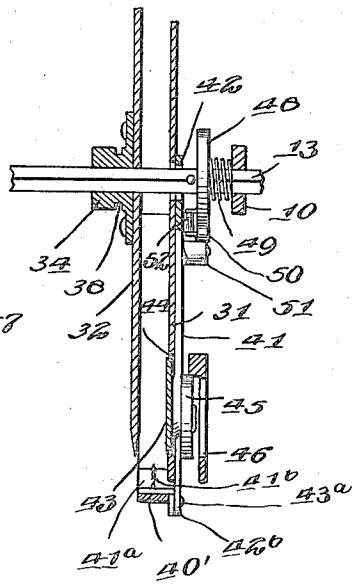


Fig. 9.

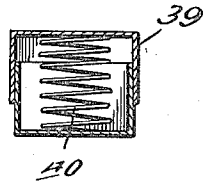
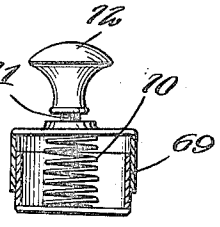


Fig. 10.



Witnesses

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UNITED STATES PATENT OFFICE.

CARL D. DYE, OF EDMONTON, ALBERTA, CANADA.

BREAD-CUTTING MACHINE.

1,229,918. Specification of Letters Patent. Patented June 12, 1917.

Application filed September 27, 1916. Serial No. 122,500.

To all whom it may concern:

Be it known that I, CARL D. DYE, a subject of the King of England, residing at Edmonton, in the Province of Alberta and Dominion of Canada, have invented new and useful Improvements in Bread-Cutting Machines, of which the following is a specification.

This invention relates to bread cutting machines.

Broadly stated, the invention contemplates the provision of a machine of this character wherein one or more loaves of bread can be expeditiously cut up into slices of any desired thickness, the machine being especially advantageous for use in hotels, cafés and the like, although its general application is contemplated by the claims.

The invention has many important objects in view which will be obvious as the following description is read in connection with the accompanying drawings, wherein the preferred embodiment of the invention is illustrated.

In the drawings forming part of this specification like numerals of reference indicate similar parts in the several views and wherein:—

Figure 1 is an end elevation partly in section.

Fig. 2 is a transverse sectional view.

Fig. 3 is a sectional view on line 3—3 of Fig. 1 looking in the direction of the arrow.

Fig. 4 is a fragmentary top plan view.

Fig. 5 is a rear end elevation.

Fig. 6 is a sectional view taken on line 6—6 of Fig. 5.

Fig. 7 is a forward end elevation.

Fig. 8 is an enlarged detail sectional view.

Fig. 9 is a transverse sectional view through one of the spider arms, taken on line 9—9 of Fig. 2.

Fig. 10 is a similar view through the manually operable arm taken on line 10—10 of Fig. 2.

Referring more particularly to the drawings A indicates a frame which may be constructed from any suitable material and comprises spaced parallel end members 10 connected together by the transversely disposed brace bars 11. Journaled between the end members 10 are a pair of spaced parallel shafts 12 and 13 respectively, which preferably are rectangular in cross section for the major portion of their length. Carried by the shaft 12 is a gear wheel 14 which meshes with a relatively small gear wheel 15 carried by the shaft 11 whereby said shafts are rotated at different speeds, and the wheel 14 may be hand operated as shown or otherwise.

Mounted upon the shaft 12 for rotation therewith are a plurality of spaced disks 17, each of which is provided with a circular series of enlarged openings registering with each other for the reception of the load carrying cylinders 18. As shown in the present instance I employ three disks of proper diameter to accommodate any number of cylinders as may be desired. Mounted upon the frame in advance of the cylinders and permanently secured thereto in any suitable manner is a crescent-shaped stationary disk 19 of the same diameter as the disks 17 and preferably formed with an inwardly directed flange 20 which extends slightly over the adjacent ends of the cylinders 18. Arranged within each cylinder is a spring pressed plunger 21 whose purpose is to force the loaf of bread forwardly against the crescent disk 19. Each of the plungers 21 is provided with a transverse opening 22 which registers with the longitudinally disposed parallel slots 23 in the walls of the cylinders, and passed through the opening 22 in said slots is a headed bolt 24 upon the free end of which is threaded a nut 25. Manifestly by reason of this construction the plunger 21 of any one or all of the cylinders can be immovably held within its respective cylinder at any desired location by tightening the nut 25. Obviously when the machine is in operation a loaf of bread can be projected from any one of the cylinders singly, or from all of the cylinders at the same time, as the occasion may require. Encircling the shaft 12 and interposed between the outermost and intermediate disks 17 is the coil spring 30.

Mounted upon the shaft 13 is a non-cutting disk 31 of the same diameter as the aforementioned disks and normally disposed in a plane with the crescent-shaped disk having a portion fitted within the cut out portion of the crescent-shaped disk. The non-cutting disk 31 is loosely mounted upon the shaft, while fixed upon the same shaft for rotation therewith is a knife disk 32. The knife disk 32 as will be obvious from the drawing is adapted to rotate between the

open ends of the cylinders 18 and the crescent-shaped disk 19 for the purpose of cutting the loaves of bread projected from the respective cylinders into slices, as the knife disk comes in contact therewith.

Secured to the knife disk 32 for sliding adjustment therewith upon the shaft 13 is a sleeve 34, which latter is provided with a circumferential groove 38 in which the innermost cylinder carrying disk 17 revolves. Keyed upon the outer extremity of the shaft 12 is a collar 35 provided with a circumferential groove to receive the flange 36 constituting one extremity of an interiorly threaded sleeve 37, which latter projects beyond the collar 35 to receive a threaded stud 38′ fixed within the bearing *b′*. Interposed between the bearing B and the sleeve 37, and having threaded engagement with the stud 38′ is a nut 36′ which holds the sleeve in its adjusted position upon the stud 38′. When the sleeve 37 is adjusted upon the stud 38′, the shaft 12 together with its associated parts is moved longitudinally, and by reason of the fact that the innermost cylinder carrying disk 17 is fitted within the groove 38 of the sleeve 34, it is manifest that the cutting disk 32 is adjusted relatively to the non-cutting disk 31, thus varying the space or distance between these disks according to the desired thickness of the slice to be severed from the loaf, as the space between the disks obviously controls the thickness of the slice.

Mounted upon the shaft 12 for rotation therewith is a three armed spider 39 which is so arranged that each arm thereof is positioned exactly between two of the loaf carrying cylinders 18. As will be noted the outline of these arms at their point of juncture is such as to conform to the curvature of said cylinders. The spider is arranged between the open ends of the cylinders and the crescent-shaped disk 19, and revolves with said cylinders within the flange 20 of the crescent-shaped disk so that as the bread is forced out of the cylinders it passes between two of the arms of the spider against the crescent-shaped disk 19, the arms of the spider forming a backing for the loaf to insure proper action of the knife disk 32 in its function of severing a slice from the loaf. The spider preferably comprises two sides or members, the arms of which are substantially U-shaped in cross section and the arms of one member straddling the arms of another. Interposed between these members is a spring 40 under the action of which the spider automatically accommodates itself in width according to the space between the non-cutting disk 31 and the knife disk 32, or in other words in accordance with the thickness of the slices to be severed.

The arm 41 is mounted upon the shaft 13 for oscillatory movement, the arm having an elongated slot 42 for the reception of the shaft 13 and which slot permits the arm to have a slight vertical as well as a longitudinal movement relatively to the shaft, the purpose of which will be hereinafter described. Carried by the lower end of the arm 41 is a curved plate 43 arranged for sliding movement in an arcuate-shaped slot 44 formed in the lower portion of the non-cutting disk 31, and which slot is slightly eccentric with respect to the shaft 13. Projecting from the opposite side of the arm adjecent the lower end thereof is a roller 45 movable within a channel-shaped guide 46 secured to the non-cutting disk 31 in juxtaposition to the slot 44. Secured to the frame A and having one end secured to the arm 41 is a spring 47 that normally maintains the arm in its elevated position, with the curved plate 43 occupying approximately one-half of the length of the slot 44 from one end thereof, which is the normal or inactive position of the arm 41 and the curved plate 43.

Yieldably mounted upon the shaft 13 for rotation therewith is a wheel 48, between which and the frame is interposed a spring 49 which encircles the shaft 13 and exerts pressure against the wheel 48. The wheel 48 has a cam extension 50 which is adapted to intermittently engage a roller 51 projecting from the arm 41 at an appropriate point in its length, for the purpose of carrying this arm from its normal or inactive position in a direction toward the opposite end of the slot 44. Carried by the wheel 48 is a relatively small roller 52 which is adapted to bear against the arm 41 at the same time, and during the same time that the cam extension 50 engages the roller 51. The roller 52 is adapted to press the arm 41 into effective engagement with the non-cutting disk 31 while the arm is being carried from its normal or inactive position in the direction of the opposite end of the slot 44 thereby holding the curved plate 43 within the slot 44. Now, as the slices are severed, they are received between the non-cutting disk 31 and the knife disk 32 at one side of the shaft 13, and are adapted to be effectively clamped between the knife disk 32 and the curved plate 43. It is for the purpose of holding the plate 43 in tight engagement with the slice, that the roller 52 exerts a pressure against the arm 41, while the cooperation between the cam extension 50 of the wheel 48 with the roller 51 serves to swing the arm 41 in the direction of the opposite end of the slot 44, thereby carrying the slice to the opposite side of the shaft 13. From this point the slice is removed from between the non-cutting disk 31 and knife disk 32 and conveyed into a receptacle or bin in the manner to be hereinafter described. As hereinabove stated the slot 44 is disposed eccentric with respect to the

shaft 13, and during the movement of the plate 43 within the slot from its normal position, it gradually moves toward the periphery of the disk. This outward movement gradually lowers the arm 41, which has a slight vertical movement by reason of the slot 42, thereby bringing the roller 51 out of engagement with the cam extension 50, at which time the spring 47 functions to return the arm 41 and the plate 43 to normal position before the wheel 48 can engage the roller 51 the second time. As above stated the slot 42 of the arm 41 permits the latter a slight longitudinal movement on the shaft 13, and the spring 47 is so arranged that when operating to return the arm to normal position, it exerts an outward pressure upon the latter for the purpose of moving the plate 43 slightly out of the slot 44, and out of the path of movement of the slice. It might here be stated that the plate 43 is of a thickness equal to the thickness of the non-cutting disk 31 or it may be slightly thicker. The non-cutting disk 31 is loose upon the shaft 13, and yieldably supported by means of the bolt 53 projecting from the disk 31 through an opening in the frame. Encircling the bolt 53 is a spring 55 having one end bearing against the frame, and its opposite end bearing against the disk 31, which construction permits the non-cutting disk to yield or move in a direction away from the knife disk 32 should the slices be clamped too tightly between the respective disks. The non-cutting disk has a cut-out portion 56 adjacent the top thereof and extending to the periphery of the disk and through which cut-out portion the slices are discharged from between the respective disks into a receptacle 57 which is removably mounted upon the frame of the machine in juxtaposition to the non-cutting disk 31.

Journaled between the frame A and the non-cutting disk 31 is a roller 58 which is disposed with relation to the cut-out portion 56 so that a portion of the roller 58 extends above the lower edge of said cut-out. A spindle 59 projects from one end of the roller for engagement with the wheel 48, whereby the roller 58 will be rotated through the instrumentality of the wheel 48. The roller 58 is adjustably mounted upon the frame, while the bearing for the opposite end of the roller is spring pressed to hold the spindle 59 always in engagement with the wheel 48, so that the roller 58 will be also moved with the wheel 48, it being understood that the latter is yieldably mounted upon the shaft 13. The roller 58 has a roughened surface for the purpose of effectively gripping the slices after the same have been moved from one to the other side of the shaft 13 by means of the curved plate 43. As hereinabove stated the curved plate is automatically returned to normal position after moving the slice a predetermined distance, and from this point the slice is engaged by the roughened roller 58 which forces the slice upwardly toward the cut-out portion 56 of the disk.

The final slice of each loaf is generally thinner than the previous slices severed therefrom, and it is possible that the final or thin slice cannot be properly gripped between the cutting disk and the blade 43. With a view of taking care of thin slices under such conditions, I provide an arcuate-shaped member 40′ supported beneath the non-cutting and cutting disks respectively, the member 40′ constituting a support for the arcuate-shaped plate 41^a which latter is positioned immediately beneath the space between the non-cutting and cutting disks respectively. This plate is adapted for movement along the member 40′, and is operated by means of the branches 42^b of the arm 41, the extremities of which branches have secured thereto pins 43^a which work within the slotted lugs 43^b depending from the plate. The lugs 43^b are disposed at an angle as shown so that as the arm 41 is operated to move the plate 43 to active position, the branches of the arm also operate to move the plate 41^a along its support as well as with a slight vertical movement, for the purpose of throwing or forcing the relatively thin slice to a position whereby it will be gripped by the roller 58. Rising from the plate 41^a is a series of spurs or the like 41^b which materially assist in forcing the relatively thin slice to the position above mentioned.

Pivotally mounted upon the non-cutting disk 31 is a plate 60 of appropriate dimensions, the plate being disposed at an inclination and having its lower edge resting against the knife disk about two or three inches above the bottom of the cut-out portion 56 and non-cutting disk, the plate serving to force the slices through the cut-out portion as they are elevated by the roughened roller 58. The plate is automatically adjustable to assume an operative position when the distance between the respective disks is varied, and this adjustment is preferably carried into effect by means of a spring 61 having one end connected to the plate and its opposite end connected to a non-cutting disk.

The receptacle 57 may be of any suitable construction, and preferably provided with a movable bottom 62 which when the receptacle is emptied is elevated near the upper edge of the receptacle by means of a spring 63, and as the slices are delivered into the receptacle, the bottom is automatically lowered as will be readily understood. The bottom is provided with a transverse opening registering with parallel slots 64 in the op-

posed walls of the receptacle, and through the opening in the bottom and the slots 64 is extended a headed bolt 65, with which a nut 66 is associated. By reason of this construction the bottom 62 can be held fixed within the receptacle at any desired location by simply tightening the nut 66.

It occasionally happens that the last slice or end of a loaf is narrower than the thickness of the cut, and consequently would not be discharged from between the respective disks in the usual manner. However to provide for the removal of the final slice of the loaf I construct the non-cutting disk 31 with a vertical slot 67 which at its point adjacent the shaft 13 takes an arcuate formation as at 68, this latter portion of the slot being disposed concentrically to the shaft 13. An arm 69 is arranged between the non-cutting disk 31 and the knife disk 32, and preferably consists of two sides or members of substantially U-shaped formation in cross section, with one of the members straddling the other. Interposed between the members are springs 70 to permit the arm to automatically vary itself in width according to the space between the respective disks 31 and 32, or in other words in accordance with the thickness of the slices to be severed. Projecting from one of the members of the arm is a stud 71 which passes through the slot 67 and provided with a knob 72 disposed on the outer side of the non-cutting disk to permit the arm to be moved in an arc of a circle for the purpose of forcing the final slice of the loaf from between the respective disks. A spring 73 having one end connected to the non-cutting disk adjacent the periphery thereof, and its opposite end connected to the stud 71 functions to normally maintain the arm 69 in an elevated position wholly out of the way of the slice being severed from the loaf and discharged through the cut-out portion 56 in the manner above described. The use of the arm 69 would not be required very often, but when its use is necessary, the knob 72 is grasped to lower the arm in the vertical slot 67 against the tension of the spring 73, and when the stud has reached the lower end of the slot 67 it can then be transferred into the arcuate-shaped slot 68 which arrangement permits of the arm being moved in an arc of a circle for the purpose stated. When released, the spring 73 automatically retracts the arm to its normal position.

A leaf spring 74 is secured at the lower end of the crescent-shaped disk 19 between the latter and the loaf carrying cylinders 18, for the purpose of keeping the narrow slices of bread from dropping into the wrong space which they have a tendency to do. The free end of the spring 74 is disposed in the path of movement of the spider arms 39, and is adapted to be depressed by each of the arms as the latter revolve. The spring 74 through its inherent qualities will return to normal position as the spider arms move away therefrom, but not in time to strike any of the slices of uniform thickness, and therefore does not interfere with the prescribed course that these slices are to take. However when the final slice of the loaf, which is narrower than the previous slice, is discharged from the cylinder, it has a tendency to drop into the wrong space, and in coming in contact with the spring 74 is forcibly elevated to a position making it possible for the roughened roller 58 engaging the narrow slice, and carrying the same to the cut-out portion 56 of the non-cutting disk to be discharged into the bin. However, should the roughened roller 58 fail to engage the narrow slice for this purpose, the spring 74 will elevate the same to a position from which it can be conveniently removed from between the respective disks by means of the arm 69.

The cylinders 18 are mounted to slide through the openings in the outermost disk 17, which latter is fixed upon the shaft 12, but the intermediate and innermost disks 17 are arranged to slide with the cylinders, so that when it is desired to charge the cylinders, the cylinders are retracted against the tension of the spring 30. The plungers 21 of the cylinders can then be moved to their innermost position therein, and held in this position by tightening the nut 25 on the bolt 24. One or more loaves of bread can then be positioned in each cylinder and the latter moved forwardly to normal position. The nut 25 is then loosened to permit the plungers 21 to exert the proper pressure against the bread with a view of forcing the loaves therefrom against the crescent-shaped disk 19.

From the foregoing description it is believed that the nature and advantages of the invention will be readily apparent, although I desire to have it understood that what is herein shown and described is merely illustrative of one embodiment of the invention to which I do not limit myself, and that such changes in the construction and arrangement of parts may be resorted to when desired as fall within the scope of what is claimed.

What is claimed is:—

1. In a machine of the class described, a frame, shafts journaled in said frame, a plurality of loaf carrying cylinders mounted for rotation about one of said shafts, a stationary disk disposed in advance of the open end of said cylinders, a spring pressed plunger arranged within each cylinder for feeding the loaves against said disk, means for holding any of said plungers fixed within its cylinder in any location, a knife carried

by the other of said shafts for rotation between the cylinders and disk, and means for rotating said shafts.

2. In a machine of the class described, a frame, shafts journaled in said frame, a plurality of loaf carrying cylinders mounted for rotation about one of said shafts, a stationary disk disposed in advance of the open end of said cylinders, a spring pressed plunger arranged within each cylinder for feeding the loaves against said disk, said cylinders having parallel slots, a headed bolt passed through the slots and plunger of each cylinder, a nut on the free end of the bolt whereby said plunger can be held fixed within the cylinder, a knife carried by the other of said shafts for rotation between the cylinders and disk, and means for rotating said shafts.

3. In a machine of the class described, a frame, shafts journaled in said frame, a plurality of cylinders mounted on one of said shafts for rotation therewith, a stationary disk disposed in advance of said cylinders and having an inwardly directed flange extending over the open end of said cylinders, a spring pressed plunger arranged within each cylinder, a knife mounted on the other of said shafts for rotation between said cylinders and disk, and means for rotating the shafts.

4. In a machine of the class described, a frame, shafts journaled in said frame, a series of loaf carrying cylinders mounted for rotation with one of said shafts, a stationary crescent-shaped disk disposed in advance of said cylinders, means for feeding each loaf against said disk, a non-cutting disk mounted on the other of said shafts and normally disposed in a plane with the crescent-shaped disk, a knife mounted on said shaft for rotation therewith and disposed in spaced relation to the non-cutting disk, said knife rotating between the cylinders and said crescent-shaped disk, and means for rotating said shafts.

5. In a bread slicing machine, a frame, shafts journaled in said frame, a plurality of loaf carrying cylinders mounted on one of said shafts for rotation therewith, a stationary crescent-shaped disk disposed in advance of said cylinders, means for feeding the loaves against said disk, a non-cutting disk on the other of said shafts and extending within the cut-out portion of the crescent-shaped disk, a knife disk mounted on the shaft, means for adjusting the knife disk toward and away from said non-cutting disk, to regulate the thickness of the slice to be severed, said knife disk being fixed to the shaft for rotation between the cylinders and said stationary disk, and means for rotating said shaft.

6. In a machine of the class described, a frame, shafts journaled in said frame, a series of loaf carrying cylinders mounted upon one of said shafts for rotation therewith, a stationary crescent-shaped disk disposed in advance of said cylinders, means for feeding the loaves from the cylinders against said disks, a non-cutting disk yieldably mounted upon the other of said shafts and having a portion extended within the cut-out of said crescent disk, a knife disk mounted on said shaft for rotation between the cylinders and said stationary disk, and means for rotating said shafts.

7. In a machine of the class described, a frame, shafts journaled in said frames, a plurality of cylinders surrounding one of the shafts and adapted to rotate therewith, a stationary crescent-shaped disk disposed in advance of said cylinders, spring pressed plungers arranged within said cylinders for feeding the loaves against said disk, means for holding any of said plungers fixed within its respective cylinder, a non-cutting disk yieldably mounted upon the other of said shafts, a knife disk mounted on said shaft for rotation between the cylinders and the first mentioned disk, and means for rotating said shafts.

8. In a machine of the class described, a frame, shafts journaled in said frame, a plurality of cylinders mounted on one of the shafts for rotation therewith, a stationary disk disposed in advance of said cylinders, means for feeding the loaves from the cylinders against said disk, a knife disk mounted on the other of said shafts for rotation therewith and extending between the cylinders and the stationary disk, a non-cutting disk mounted on the shaft and normally disposed in a plane with the first mentioned disk, means for rotating said shafts, and means for adjusting the knife disk toward and away from said non-cutting disk.

9. In a machine of the class described, a frame, shafts journaled in said frame, a plurality of cylinders mounted on one of said shafts for rotation therewith, a stationary disk disposed in advance of said cylinders, means for feeding the loaves from the cylinders against said disk, a knife disk mounted on the other of said shafts for rotation therewith, and extending between the cylinders and said stationary disk, a non-cutting disk yieldably mounted upon said shaft and normally disposed in a plane with the first mentioned disk, and in spaced relation to said knife disk, means for adjusting the knife disk toward and away from said non-cutting disk, and means for rotating said shafts.

10. In a machine of the class described, a frame, shafts journaled in said frame, a series of cylinders mounted on one of said shafts for rotation therewith, a stationary disk disposed in advance of said cylinders,

means for feeding the loaves from the cylinder against said disk, a non-cutting disk on the other of said shafts, a knife disk mounted on said shaft for rotation therewith and extending between the cylinders and first mentioned disk, means for simultaneously adjusting the knife disk and cylinders longitudinally of their respective shafts, and means for rotating said shafts.

11. In a machine of the class described, a frame, shafts journaled in said frame, a series of loaf carrying cylinders mounted on one of the shafts for rotation therewith, a stationary disk disposed in advance of said cylinders, means for feeding the loaves of bread from the cylinders against said disk, a non-cutting disk on the other of said shafts, a knife disk fixed upon said shaft for rotation therewith and extending between the cylinders and said first mentioned disk, a collar adjustably mounted on said shaft and connected with said knife disk for moving the latter toward and away from said non-cutting disk, and means for rotating said shafts.

12. In a machine of the class described, a frame, shafts journaled in said frame, a series of loaf carrying cylinders mounted on one of said shafts for rotation therewith, a stationary disk disposed in advance of said cylinders, means for automatically feeding the loaves from the cylinders against said disk, a non-cutting disk on the other of said shafts, a knife disk on said shaft for rotation therewith and extending between the cylinders and said first mentioned disk, a sleeve secured to said knife disk and slidably mounted on the shaft, a pin projecting from the sleeve, a collar adjustably mounted upon the shaft and having an annular groove for the reception of the pin, whereby said knife disk is moved toward and away from the non-cutting disk upon adjustment of the collar, and means for rotating said shafts.

13. In a machine of the class described, a frame, shafts journaled in said frame, a plurality of spaced disks on one of said shafts for rotation therewith, cylinders supported by said disks, a stationary disk disposed in advance of said cylinders, means for feeding the loaves from the cylinders against said stationary disk, a non-cutting disk on the other of said shafts, a knife disk thereon for rotation therewith and extending between the cylinders and said stationary disk, a sleeve slidably mounted on the shaft and connected with said knife disk, a collar adjustably mounted on the shaft and connected with the sleeve to move the knife disk toward and away from said non-cutting disk, said sleeve having a groove in which one of the disks on the first mentioned shaft revolves, and whereby said cylinders are simultaneously adjusted longitudinally of their shafts upon adjustment of the knife disks, and means for rotating said shafts.

14. In a machine of the class described, a frame, shafts journaled in said frame, a series of loaf carrying cylinders mounted on said shaft for rotation therewith, a stationary disk disposed in advance of said cylinders, means for automatically feeding the loaves from the cylinders against said disk, a non-cutting disk on the other of said shafts, a knife disk on said shaft for rotation therewith and extending between the cylinders and said stationary disk, a spider mounted upon the first mentioned shaft between the cylinders and stationary disk for rotation between the said knife and non-cutting disks, and means for rotating said shafts.

15. In a machine of the class described, a frame, shafts journaled in said frame, a series of cylinders mounted on one of said shafts for rotation therewith, a stationary crescent-shaped disk disposed in advance of said cylinders, means for automatically feeding the loaves from the cylinders against said disk, a non-cutting disk on the other of said shafts, a knife disk on said shaft for rotation therewith and extending between the cylinders and said stationary disk, a spider mounted upon the first mentioned shaft for rotation therewith between said cylinders and stationary disk, each arm of said spider being disposed between two cylinders to provide a backing for the loaf to insure proper action of the knife disk, and means for rotating said shafts.

16. In a machine of the class described, a frame, shafts journaled in said frame, a plurality of cylinders mounted on one of said shafts for rotation therewith, a stationary crescent-shaped disk disposed in advance of said cylinders, means for automatically feeding the loaves from the cylinders against said disk, a non-cutting disk on the other of said shafts having a portion extended within the cut out of the crescent-shaped disk, a knife disk on said shaft for rotation therewith and extending between the cylinders and said stationary disk, said knife disk being adjustable toward and away from the non-cutting disk, a spider mounted upon said first mentioned shaft between the cylinders and stationary disk for rotation between the knife and non-cutting disks respectively, each arm of said spider being arranged between two cylinders and automatically adjustable to accommodate itself to the space between said disks, and means for rotating the shafts.

17. In a machine of the class described, a frame, shafts journaled in the frame, a plurality of cylinders mounted on one of the shafts for rotation therewith, a stationary disk disposed in advance of said cylinders,

means for feeding the loaves from the cylinders against said disk, a non-cutting disk on the other of said shafts, a knife disk on said shaft for rotation therewith and extending between the cylinders and said stationary disk, said knife disk being adjustable toward and away from the non-cutting disk, a spider mounted on the first mentioned shaft between the cylinders and stationary disk for rotation between the knife and non-cutting disks respectively, each arm of the spider being arranged between two cylinders, and comprising telescopic sections, a yieldable means between said sections for automatically adjusting each arm to permit the latter to accommodate itself to the space between said disks, and means for rotating said shafts.

18. In a machine of the class described, a frame, shafts journaled in said frame, a plurality of spaced disks on said shafts, said disks having enlarged alined openings therein, loaf carrying cylinders passed through said openings and supported by said disks for rotation with said shaft, spring pressed plungers in said cylinders, a stationary crescent-shaped disk disposed in advance of said cylinders, a non-cutting disk on the other of said shafts and having a portion disposed in the cut-out of said crescent-shaped disk, a knife disk on said shaft in spaced relation to the non-cutting disk and adapted to rotate with said shaft extending between the cylinders and said stationary disk, and means for rotating said shafts.

19. In a machine of the class described, a frame, shafts journaled in said frame, loaf carrying cylinders mounted on one of the shafts for rotation therewith, a stationary disk disposed in advance of the cylinders, spring pressed plungers within the cylinders, a stationary non-cutting disk on the other of said shafts, a cutting disk for rotation therewith and extending between the cylinders and the first mentioned disk, means for rotating said shafts, and means associated with the non-cutting disk and coöperating with the knife disk for discharging the slices from between said disks.

20. A machine of the class described, a frame, shafts journaled in the frame, a plurality of cylinders mounted on one of the shafts for rotation therewith, a stationary disk disposed in advance of said cylinders, means for automatically feeding the loaves from the cylinders against said disk, a non-rotatable disk on the other of said shafts, a knife disk on said shaft for rotation therewith and extending between the cylinders and said stationary disk, means adjustably supported upon the non-rotatable disk and coöperating with the cutting disk to carry the slices from in advance of the cylinders wholly between said disks, means for removing the slices from between said disks, and means for rotating said shafts.

21. In a machine of the class described, a frame, shafts journaled in said frame, a plurality of loaf carrying cylinders mounted on one of said shafts for rotation therewith, a stationary disk disposed in advance of said cylinders, means for automatically forcing the loaves from the cylinders against said disk, a non-rotatable disk mounted on the other of said shafts, a knife disk mounted on said shaft for rotation therewith and extending between the cylinders and said stationary disk, means adjustably associated with the non-rotatable disk and coöperating with the knife disk to carry the slices away from in advance of the cylinders to a predetermined position between said disks, means for discharging the slice from between said disks, means for automatically returning the first mentioned means to normal position, and means for rotating said shafts.

22. In a machine of the class described, a frame, shafts journaled in said frame, a plurality of loaf carrying cylinders mounted on one of said shafts for rotation therewith, a stationary disk disposed in advance of said cylinders, means for automatically forming the loaves through the cylinders against said disk, a non-rotatable disk mounted on the other of said shafts, a knife disk mounted on said shaft for rotation therewith and extending between the cylinders and said stationary disk, a plate movable within a slot in the non-rotatable disk and coöperating with the knife disk to carry the slices away from in advance of the cylinders to a predetermined position between the disks, means for discharging the slices from between the disks, and means for rotating said shafts.

23. In a machine of the class described, a frame, shafts journaled in the frame, a plurality of loaf carrying cylinders mounted on one of the shafts for rotation therewith a stationary disk disposed in advance of the cylinders, means for forcing the loaves from the cylinders against said disk, a non-rotatable disk mounted on the other shaft, a knife disk on said shaft for rotation therewith and extending between the cylinders and said stationary disk, a plate movable within a slot in the non-rotatable disk, means for normally holding the plate at one end of the slot, means for moving the plate toward the opposite end of the slot for cooperation with said knife disk to carry the slices away from in advance of the cylinders, and means for rotating said shafts.

24. In a machine of the class described, a frame, shafts journaled in the frame, a plurality of cylinders mounted upon the shaft for rotation therewith, a stationary

member disposed in advance of the cylinders, means for forcing the loaves from the cylinders against said members, a non-rotatable disk mounted on the other shaft, a knife disk mounted on said shaft for rotation therewith, a plate arranged for oscillatory movement within a slot in said non-rotatable disk, means for moving the plate in one direction to coöperate with the knife disk to carry the slices away from in advance of the cylinders to a predetermined position between said disks, means for automatically returning the plate to normal position, means for continuing the movement of the slice to discharge the same from between the disks, and means for rotating said shafts.

25. A machine of the class described comprising a frame, shafts journaled in the frame, a plurality of loaf carrying cylinders mounted upon one of said shafts for rotation therewith, a stationary member disposed in advance of the cylinders, means for forcing the loaves from within the cylinders against said member, a non-rotatable disk mounted on the other of said shafts, a knife disk mounted on said shaft for rotation therewith, a plate arranged for adjustment within a slot in said non-rotatable disk, means for moving the plate in one direction to coöperate with the knife disk for carrying the slices away from in advance of the cylinders, means for exerting inward pressure against the said plate, means for automatically returning the plate to normal position, and means for rotating said shafts.

26. A machine of the class described comprising a frame, shafts journaled therein, a plurality of cylinders mounted on one of the shafts for rotation therewith, a stationary member disposed in advance of said cylinders, means for forcing the loaves from the cylinders against said member, a non-rotatable disk mounted on the other of said shafts, a knife disk mounted on said shaft for rotation therewith, a plate movable within an arcuately-shaped slot in the non-rotatable disk, means for moving the plate in one direction to coöperate with the knife disk for moving the slices away from in advance of the cylinders, means operable simultaneously with the last mentioned means for exerting inward pressure against said plate, means for automatically returning the plate to normal position when relieved of said pressure, and means for rotating the shafts.

27. In a machine of the class described, a frame, shafts journaled in the frame, a plurality of cylinders mounted upon one of the shafts for rotation therewith, a stationary member disposed in advance of said cylinders, means for automatically feeding the loaves from the cylinders against said member, a non-rotatable disk on the other of said shafts, a knife disk on said shaft for rotation therewith, a plate arranged within an arcuate-shaped slot in said non-rotatable disk, means for moving the plate in one direction to coöperate with the knife disk for removing the slices away from in advance of the cylinders, means for automatically returning the plate to normal position and moving the plate outwardly of the disk, and means for rotating said shafts.

28. A machine of the class described comprising a frame, shafts journaled in said frame, a plurality of cylinders mounted on one of the shafts for rotation therewith, a stationary member disposed in advance of the cylinders, means for forcing the loaves from the cylinders against said member, a non-rotatable disk mounted on the other of said shafts, a knife disk mounted on said shaft for rotation therewith, a plate arranged for movement in an arcuate-shaped slot in the non-rotatable disk, means for moving the plate in one direction, means operable simultaneously with the last mentioned means for exerting an inward pressure on said plate, and means for automatically returning the plate to normal position and moving the same outwardly of the disk when relieved of said pressure.

29. A machine of the class described comprising a frame, shafts journaled therein, a plurality of loaf carrying cylinders mounted on one of the shafts for rotation therewith, a stationary member disposed in advance of said cylinders, means for forcing the loaves from the cylinders against said member, a non-rotatable disk mounted on the other of said shafts, a knife disk mounted thereon for rotation therewith, an arm depending from said shaft for swinging movement, a plate carried by the lower end of the arm and fitted within an arcuate-shaped slot in the non-rotatable disk, means for operating the arm to move the plate in one direction within the slot, means for automatically returning the arm and plate to normal position, and means for rotating said shafts.

30. A machine of the class described comprising a frame, shafts journaled therein, a plurality of cylinders mounted upon one of the shafts for rotation therewith, a stationary member disposed in advance of said cylinders, means for forcing the loaves from the cylinders against said member, a non-rotatable disk on the other of said shafts, a knife disk mounted thereon for rotation therewith, an arm depending from said shaft for swinging movement, a plate carried by the lower end of the arm and arranged within the arcuate-shaped slot in the non-rotatable disk, a wheel having a cam surface mounted for rotation on said shaft, a member projecting from the arm and dis-

posed in the path of movement of said wheel, whereby said arm and plate are moved in one direction, means for automatically returning the arm and plate to normal position when released from said wheel, and means for rotating the shafts.

31. A machine of the class described comprising a frame, shafts journaled therein, a plurality of cylinders mounted on one of the shafts, a stationary member disposed in advance of said cylinders, means for forcing the loaves from the cylinders against said member, a non-rotatable disk mounted on the other of said shafts, a knife disk mounted thereon for rotation therewith, an arm depending from said shaft for swinging movement, a member carried by the lower end of the arm for movement with an arcuate-shaped slot in the non-rotatable disk, means for swinging the arm in one direction, a guide mounted on said disk, a roller on the lower end of the arm and fitted within said guide, means for automatically returning the arm to normal position when released from the first mentioned means, and means for rotating said shafts.

32. A machine of the class described comprising a frame, shafts journaled therein, a plurality of cylinders mounted on one of said shafts for rotation therewith; a stationary member disposed in advance of said cylinders, means for forcing the loaves from the cylinders against said member, a non-rotatable disk on the other of said shafts, a knife disk thereon for rotation therewith, an arm depending from said shaft for swinging movement, a member carried by the lower end of the arm for movement within an arcuate-shaped slot in said non-rotatable disk, a wheel yieldably mounted upon the shaft for rotation therewith, said wheel having a cam surface adapted to engage a projection on said arm for swinging the latter in one direction, said wheel exerting an inward pressure on said arm while operating the latter, means for automatically returning the arm to normal position when released from said wheel, and means for rotating the shafts.

33. A machine of the class described comprising a frame, shafts journaled therein, a plurality of loaf carrying cylinders mounted on one of said shafts for rotation therewith, a stationary member disposed in advance of the cylinders, means for feeding the loaves from the cylinders against said member, a non-rotatable disk on the other of said shafts, a knife disk thereon mounted on the shaft for rotation therewith, means adjustably associated with the non-rotatable disk and coöperating with the knife disk to carry the slices away from in advance of the cylinders to a predetermined position between said disks, a roller mounted between the disks for rotation and operable to continue the movement of said slices to discharge the same from between the disks, and means for rotating said shafts.

34. A machine of the class described comprising a frame, shafts journaled therein, loaf carrying cylinders mounted on the shaft for rotation therewith, a stationary member disposed in advance of the cylinders, means for feeding the loaves from the cylinders against said member, a non-rotatable disk on the other of said shafts, a knife disk on said shaft for rotation therewith, means adjustably associated with the non-rotatable disk and coöperating with the knife disk for carrying the slices away from in advance of the cylinders to a predetermined position between the disks, means for continuing the movement of the slice to a discharge position from between said disks, means for automatically returning the adjustable means to normal position, and means for rotating said shafts.

35. A machine of the class described comprising a frame, shafts journaled therein, loaf carrying cylinders mounted on one of said shafts for rotation therewith, a stationary member disposed in advance of the cylinders, means for feeding the loaves from the cylinders against said member, a non-rotatable disk on the other of said shafts, a knife disk mounted on said shaft for rotation therewith, means adjustably associated with the non-rotatable disk and coöperating with the knife disk to carry the slices away from in advance of the cylinders to a predetermined position between said disks, said non-rotatable disk having an enlarged opening therein, means for discharging the slices from between the disks through said opening and including an adjustable inclined plate fitted between the disks, and means for rotating said shafts.

36. A machine of the class described, a frame, shafts journaled in the frame, cylinders mounted on one of the shafts for rotation therewith, a stationary member disposed in advance of said cylinders, means for feeding the loaves from the cylinders against said member, a non-rotatable disk on the other of said shafts, a knife disk on said shaft for rotation therewith, means adjustably associated with the non-rotatable disk and coöperating with the knife disk for carrying the slices away from in advance of the cylinders, said non-rotatable disk having an enlarged opening, means for discharging the slices from between the disk including a self-adjustable inclined plate disposed between the disks for directing the slices to said opening, and means for rotating said shafts.

37. A machine of the class described comprising a frame, shafts journaled therein, loaf carrying cylinders mounted on one of the shafts for rotation therewith, a sta-

tionary member disposed in advance of the cylinders, means for feeding the loaves from the cylinders against said member, a non-rotatable disk on the other of said shafts, a knife disk mounted thereon for rotation therewith, automatic means for removing the slices away from in advance of the cylinders and discharging the same from between the disks, auxiliary manually operable means for removing the slices from between said disks, and means for rotating said shafts.

38. A machine of the class described comprising a frame, shafts journaled therein, loaf carrying cylinders mounted on one of the shafts for rotation therewith, a stationary member disposed in advance of the cylinders, means for feeding the loaves from the cylinders against said member, a non-rotatable disk on the other of said shafts, a knife disk mounted on the shaft for rotation therewith and spaced from the first mentioned disk, an arm mounted on the non-rotatable disk for vertical sliding and swinging movement, means for normally holding the arm in elevated position, and means for rotating the shaft.

39. A machine of the class described comprising a frame, shafts journaled therein, loaf carrying cylinders mounted on one of said shafts for rotation therewith, a stationary member disposed in advance of the cylinders, means for feeding the loaves from the cylinders against said member, a non-rotatable disk mounted on the other of said shafts, a knife disk mounted on said shaft for rotation therewith, a resilient element supported upon the stationary member adjacent the lower edge thereof, an arm mounted upon the non-rotatable disk for vertical adjustment and oscillatory movement, means for normally maintaining the arm in its uppermost position, and means for rotating said shafts.

40. A machine of the class described comprising a frame, shafts journaled therein, loaf carrying cylinders mounted on one of the shafts for rotation therewith, a stationary member disposed in advance of the cylinders, means for feeding the loaves from the cylinders against said member, a non-rotatable disk on the other of said shafts, a knife disk on said shaft for rotation therewith, means arranged between the disks for carrying the slices away from in advance of the cylinders, an arm mounted upon the non rotatable disk for vertical sliding and swinging movement, said arm being automatically adjustable to accommodate itself to the space between said disks, means for normally holding the arm in its elevated position, and means for operating said shafts.

In testimony whereof I affix my signature.

CARL D. DYE.