Dec. 21, 1943. H. P. RUF 2,337,274

CORE CUTTING MACHINE

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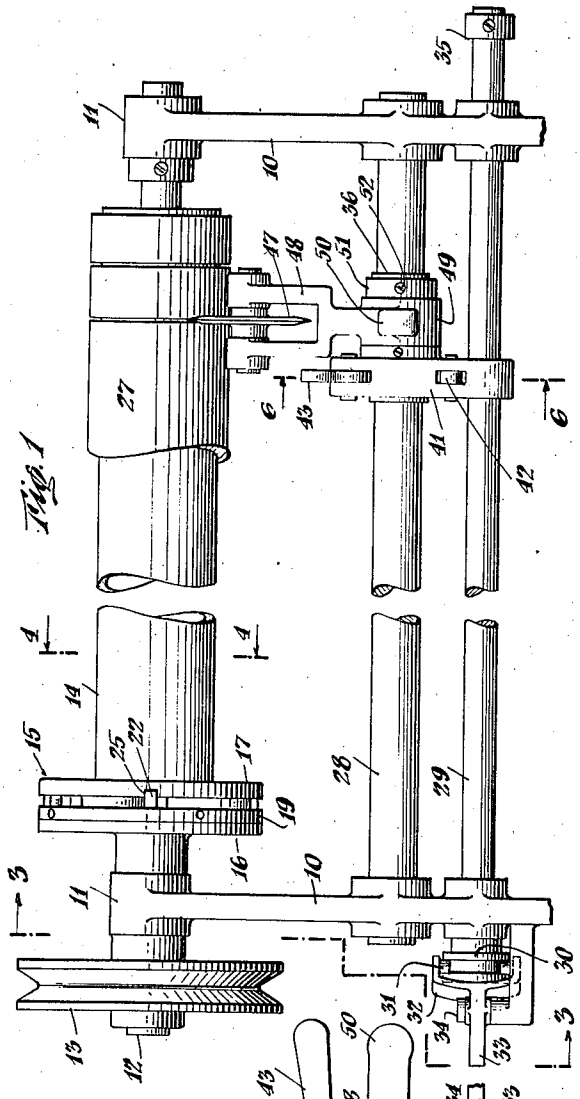


Fig. 1

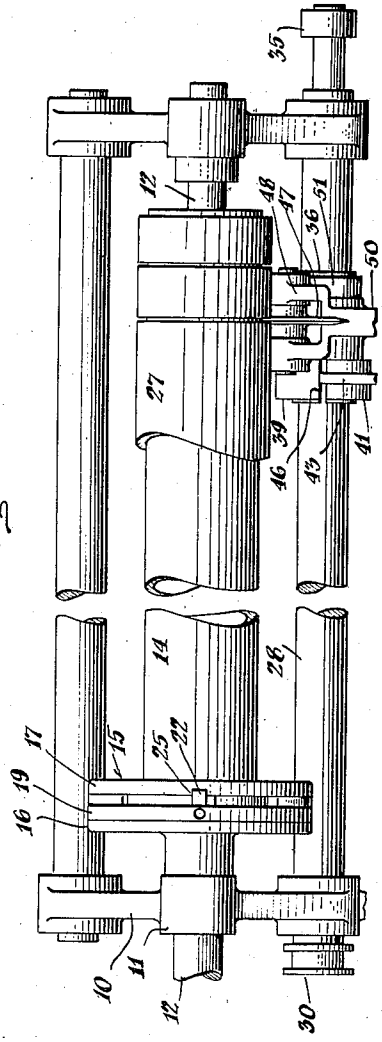


Fig. 2

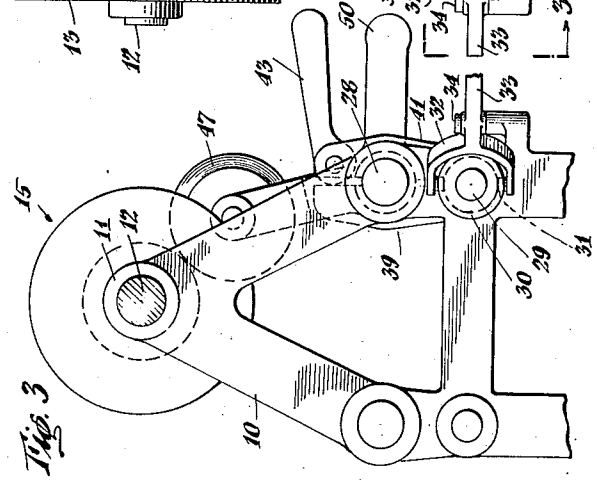


Fig. 3

INVENTOR.
Herman P. Ruf
BY George P. Hennicke
ATTORNEY

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Fig. 4

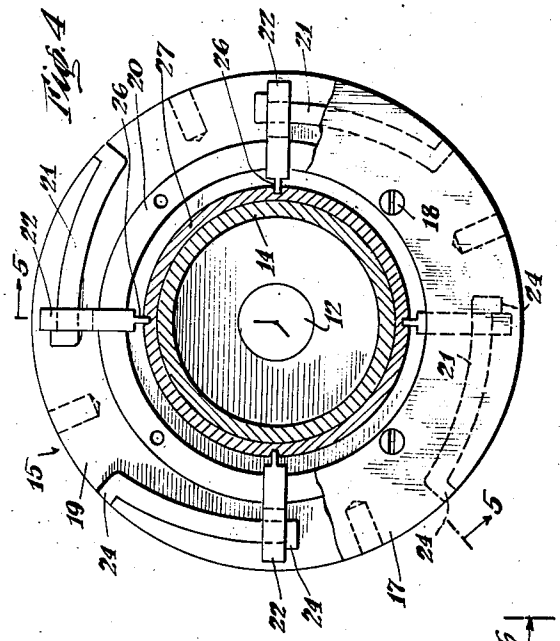


Fig. 7

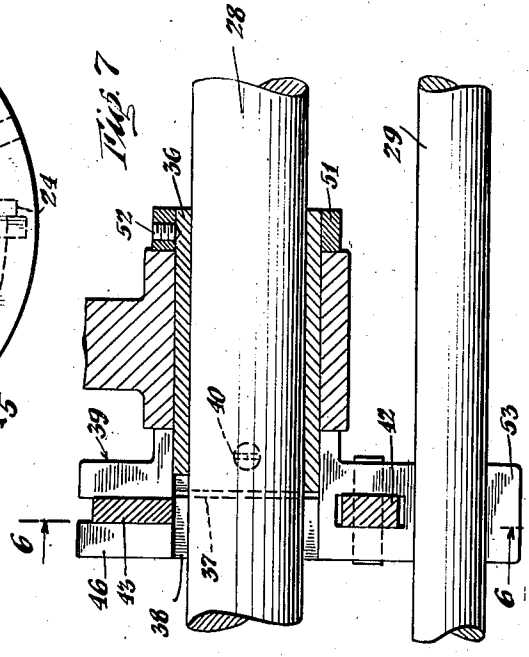


Fig. 5

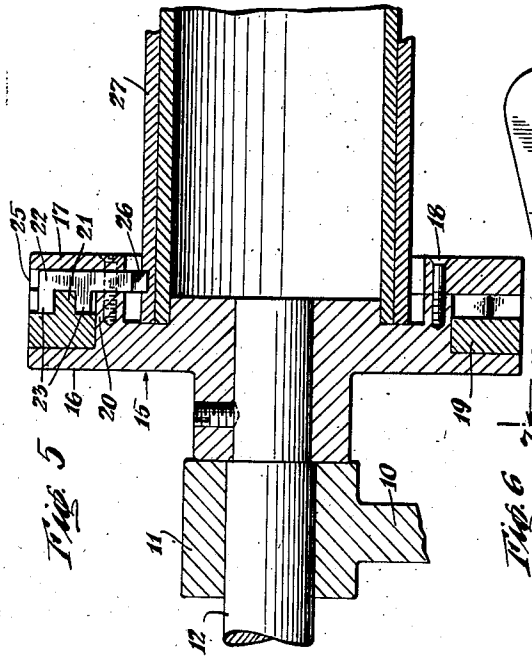
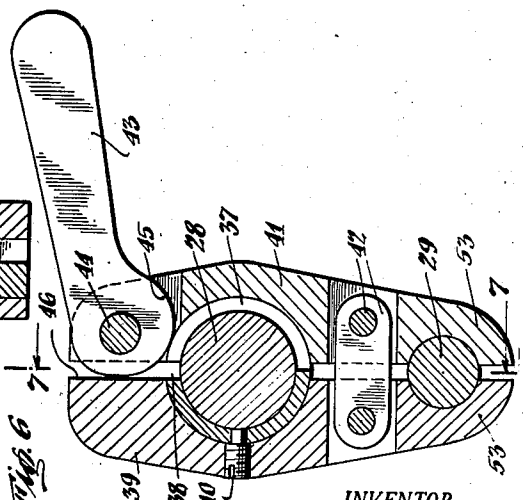


Fig. 6



INVENTOR.
Herman P. Ruf
George C. Holmes
BY

ATTORNEY

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CORE CUTTING MACHINE

Herman P. Ruf, New York, N. Y.

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2 Claims. (Cl. 164—69)

This invention relates to improvements in core cutting machines, principally cutters providing means to slice or cut a paper core into a number of predetermined sections.

The new machine is especially adaptable for cutting heavy wall paper cores, leaving clean, dustless bevelled edges so vitally necessary when the cores are used on slitting machine rewind arbors.

The new and useful core cutting machine according to my invention is comparatively simple in design and very simple to operate, its frames are all metal and rugged in construction while all rotating parts are dynamically balanced.

Another object of my invention is the provision of a core cutting machine equipped with a gripper device to prevent the core tube from slipping around its mandrel and make it positively rotate with the drive shaft during the slicing operation.

A further object of my invention is the provision of a core cutter including a specially constructed slicing device.

Other objects and advantages of my invention will become more fully known as the description thereof proceeds and will then be more specifically defined in the appended claims.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a front elevation of a core cutting machine constructed according to my invention.

Fig. 2 is a top plan view thereof.

Fig. 3 is a vertical section on line 3—3 of Fig. 1.

Fig. 4 is a vertical section on line 4—4 of Fig. 1 with parts broken away.

Fig. 5 is a vertical section on line 5—5 of Fig. 4.

Fig. 6 is a section on line 6—6 of Fig. 7 and Fig. 1.

Fig. 7 is a section on line 7—7 of Fig. 6.

As illustrated, 10 is the frame of the machine with bearing 11 to support the main drive shaft 12 rotated by pulley 13. A mandrel 14 is mounted to shaft 12 by a connection arrangement 15. The connection 15 consists of backplate 16 fastened to shaft 12 and frontplate 17 fastened to backplate 16 by screws 18. A cam ring 19 is positioned between plate 16 and plate 17, guided by shoulder ring 20. Cam ring 19 carries cam portions 21, which are straddled by grippers 22 or their gripping fingers 23 respectively. Cam portions 21 carry stops 24 to limit the rotating movement of cam ring 19. The grippers 22 are mounted in grooves 25 of frontplate 17 and by rotating the cam ring 19, the grippers 22 are enabled to either move in or out. The end portion 26 is reduced to permit easier penetration of the paper core tube 27 which is to be cut. The purpose of the grippers is to prevent core tube 27 from slipping around mandrel 14 and make it positively rotate with drive shaft 12 during the slicing operation.

Shaft 28 is mounted into frame 10 fixedly while shaft 29 is slidably mounted in its bearing. Shaft 29 carries on one end a collar 30, whose groove is engaged by pins 31 of lever fork 32 of lever 33. This lever is mounted on pivoted stud 34 to the main frame of the machine. On the other end of sliding shaft 29 is mounted an adjustable collar 35. The shaft 29 therefore, can slide in its bearings for the distance of the collar 35 and bearing on frame by virtue of hand operated lever 33. By varying the position of collar 35, the distance of the travel of shaft 29 can be predetermined. The cutting mechanism consists as follows: A sleeve 36 is slipped over shaft 28. Said sleeve is at one end slotted semi-circumferentially as at 37 and a short distance longitudinally as at 38. Therefore this end is made flexible and can be pressed around shaft 28 as will be explained later. At the same end of sleeve 36 there is mounted to it a half clamping shell 39 by a set screw 40. The other half clamping shell 41 is connected to section 39 by pin and link connection 42. A lever 43 mounted to member 41 on pivot 44 carries a cam 45, which at the working position clamps the flexible end of sleeve 36 to the shaft 28 and during the feeding period cam 45 pressing against face 46 of member 39, loosens the grip on sleeve 36 and by the fixed link connection 42, which serves as a fulcrum pressed against feed shaft 29 and thus enabling clamping shells 39 and 41 to move with shaft 29. The cutter 47 is carried in a fork 48 terminating in a bearing portion 49 rotatably mounted on sleeve 36. Handle portion 50 serves for manually controlling the cutter 47. Set ring 51 fixed to sleeve 36 by set screw 52 helps to make the whole cutting unit move as a unit.

The operation is as follows: After core 27 is put over mandrel 14, the clutch ring 19 is moved clockwise (see Fig. 4) to cause grippers 26 to engage the paper core.

Washer 35 is set at the right spacing required to make uniform cuts.

Members 39 and 41 are clamped around sleeve 36 and shaft 28 respectively. Then cutter 47 is brought into engagement with paper core 27 by pressing hand lever 50 upward. After the cut is completed, cam lever 43 is rotated a short distance in counter-clockwise direction, therefore releasing the pressure on sleeve 36, permitting same to slide freely on shaft 28.

At the same time cam 45 forces the jaws of members 39 and 41 apart by engaging face 46 of member 39 and bringing the lower jaw members 53 into firm gripping engagement with shaft 29.

By manual operation of lever 33 shaft 29 is moved from right to left as shown on Figure 1 carrying with it the whole cutting unit.

By moving the lever 43 into its original position as shown in Figure 6 and restoring shaft 29 to the previous position, the cutter is ready to make a new cut.

The principal idea is that in making a cut on core member 27 the cutting device must be mounted on shaft 28.

For moving the cutter into a new position to make another cut, the cutting unit must be held in tight engagement to shaft 29 before shaft 29 will be moved. After the new position is reached then the connection to shaft 29 is loosened and the cutting unit is clamped to shaft 28 again.

It will be understood that I have described and shown the preferred form of my invention as one example only of the many possible modifications thereof in practice, and that I may make such changes in the general arrangement of the machine and in the construction of the minor details thereof as come within the scope of the appended claims without departure from the spirit of the invention and the principles involved.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent is:

1. In a core cutting and slicing machine as described, a connecting arrangement on the drive shaft to secure a mandrel on said shaft, said connecting arrangement consisting of a back plate fastened to the drive shaft, and a front plate fastened to said back plate, a cam ring positioned between both plates, grippers mounted in grooves of the front plate straddling the cam portions of the cam ring, the rotation of said cam ring enabling the grippers to move in or out, and means to limit the rotation of said cam ring.

2. In a core cutting machine as described, a shaft bearing sleeve made of two shell members and slotted circumferentially at one end and slotted longitudinaly for a short distance to make it substantially flexible, a shaft carrying the cutter held in said sleeve by squeezing the flexible portion of the sleeve about it, a set screw for connecting both shell members, and a pin and link connection for both shell members, a lever mounted on one of said members carrying a cam for clamping the flexible end of the sleeve about the cutter shaft, said pin and link connection serving as a fulcrum pressing the sleeve members against a feed shaft enabling the sleeve to be displaced along the shaft.

HERMAN P. RUF.