Nov. 16, 1926. 1,607,223

R. L. WILCOX ET AL

FEED MECHANISM

Filed May 19, 1924 3 Sheets-Sheet 1

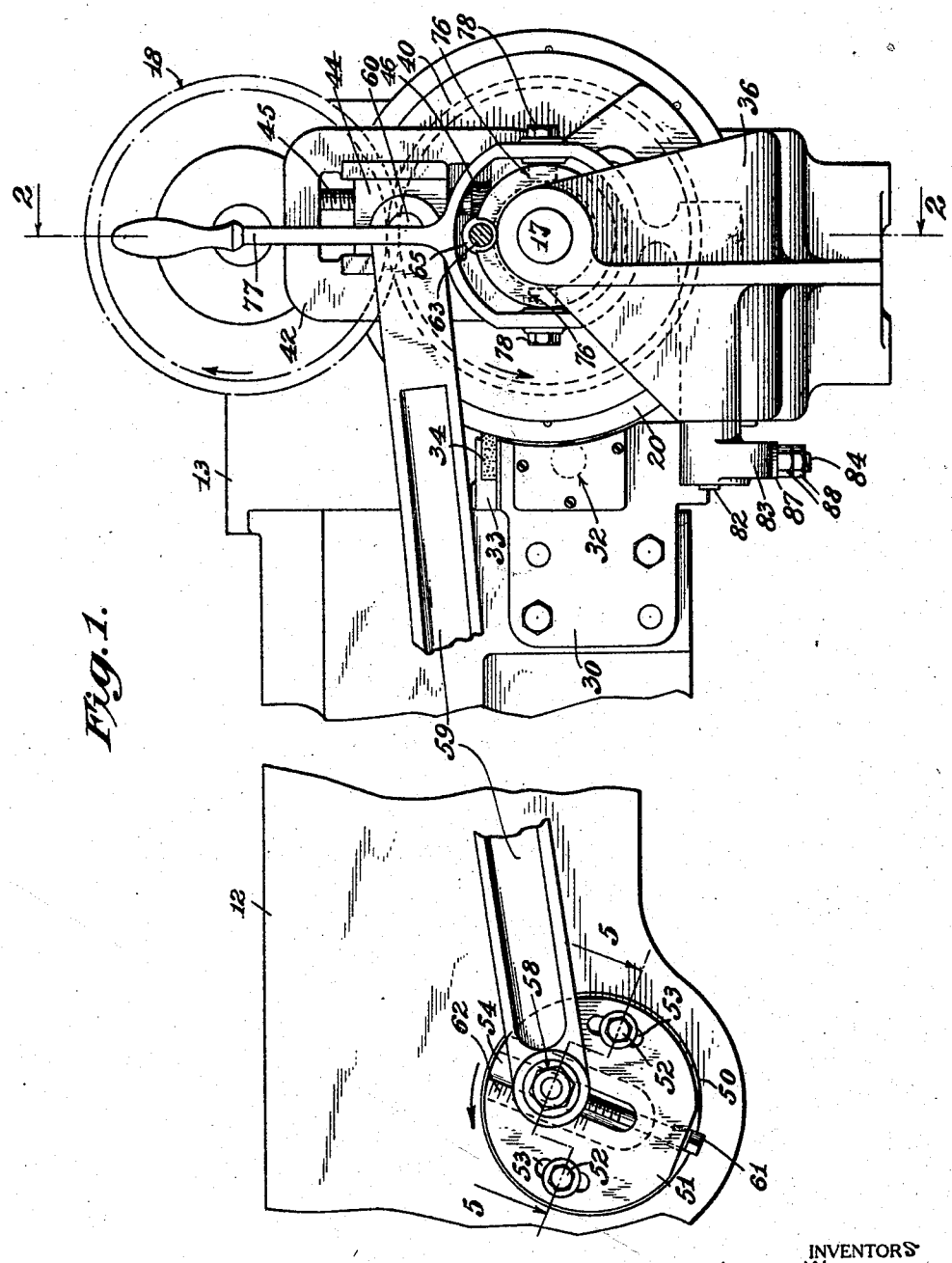


Fig. 1.

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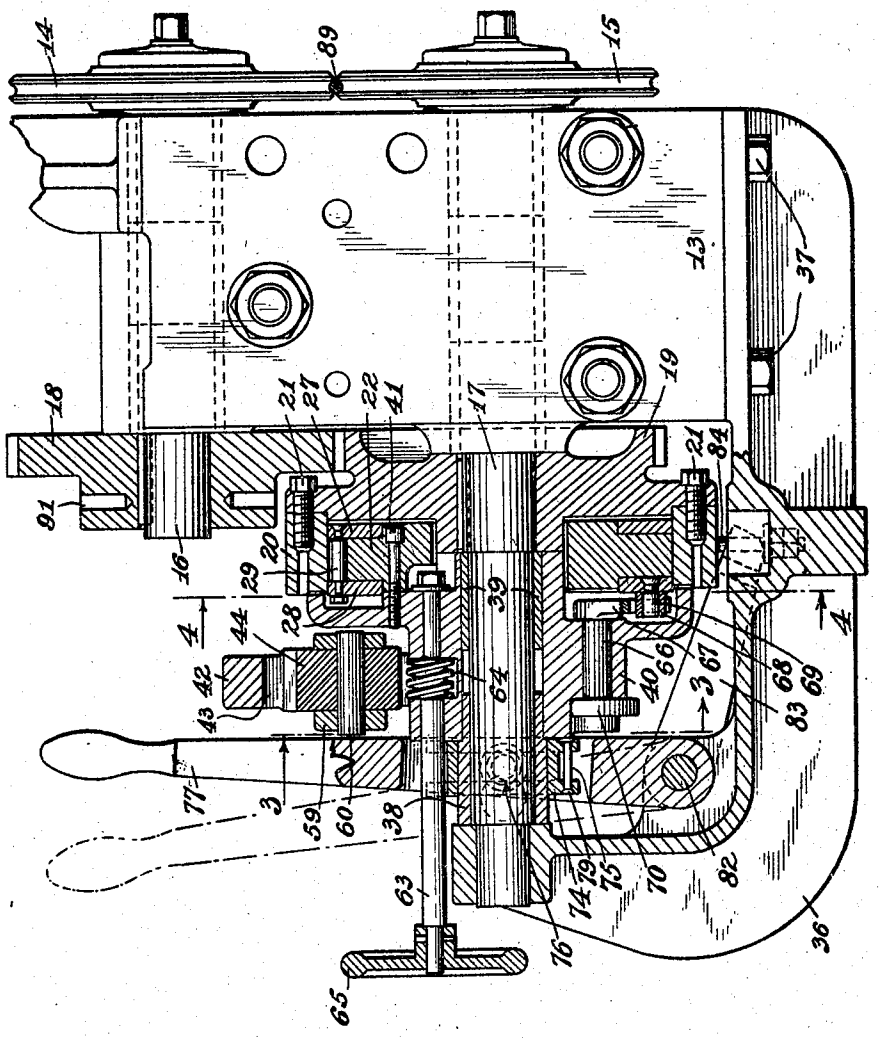
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Fig. 2.



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Fig. 4.

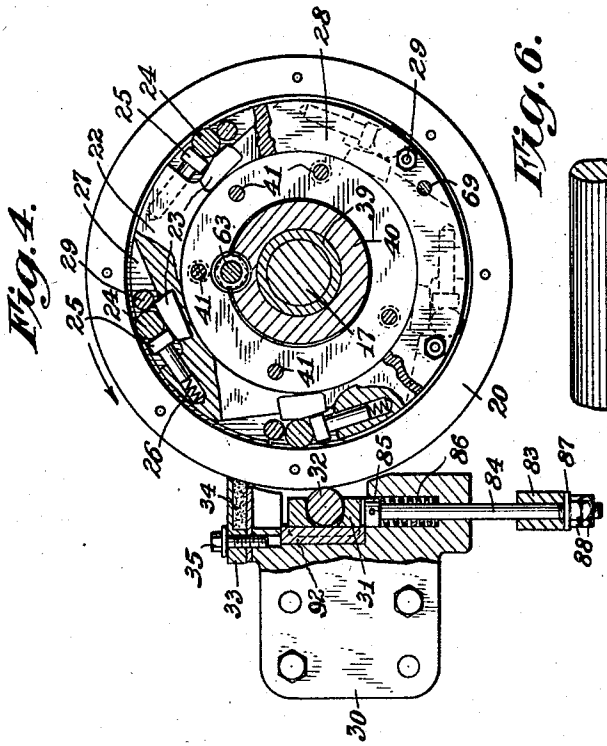


Fig. 6.

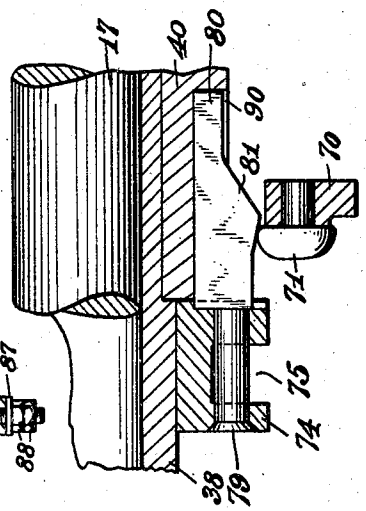


Fig. 3.

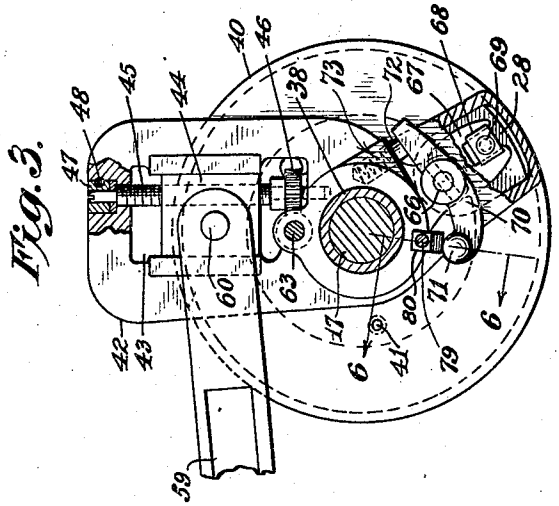
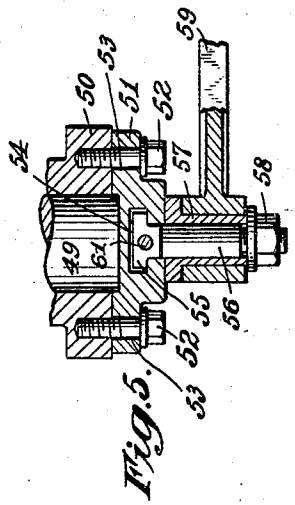


Fig. 5.



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UNITED STATES PATENT OFFICE.

RICHARD LESTER WILCOX AND CLIFFORD O. PETITJEAN, OF WATERBURY, CONNECTICUT, ASSIGNORS TO THE WATERBURY FARREL FOUNDRY AND MACHINE COMPANY, OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT.

FEED MECHANISM.

Application filed May 19, 1924. Serial No. 714,528.

This invention relates to new and improved feed mechanism, particularly adapted for use with a header, upsetting machine, or the like, although it is equally adapted for use with many other types of machines requiring a feed device.

It is the object of this invention, among other things, to provide a feed mechanism of the character mentioned, wherein the lengths of feed may be uniform, readily and easily predetermined, and varied while the parts are in motion, the clutch portion of the mechanism so designed as to permit the same to operate effectively at a comparatively high speed with the minimum wear of parts, to arrange the means for positively stopping the feed immediately upon completion of the feed movement, means for operating in unison the clutch and stop mechanisms, and in addition thereto to so construct the device that it may have great rigidity, whereby the possibility of any spring or yielding of the parts is minimized.

To these, and other ends, our invention consists in the feed mechanism having certain details of construction and combination of parts as will be hereinafter described and more particularly pointed out in the claims.

Referring to the drawings, in which like numerals of reference designate like parts in the several figures;

Figure 1 is a side elevation of our new and improved feed mechanism, as applied to a header, upsetting machine or the like, a portion of which is shown as associated therewith.

Figure 2 is an end view thereof, the parts in section being taken generally upon line 2—2 of Figure 1;

Figure 3 is an elevation of the carrier member and adjacent parts, some of the parts being shown in section, taken generally upon line 3—3 of Figure 2;

Figure 4 is a sectional elevation of the clutch mechanism, the parts in section being taken generally upon line 4—4 of Figure 2;

Figure 5 is a sectional plan view of a portion of the driving mechanism the parts shown in section, being taken generally upon line 5—5 of Figure 1; and

Figure 6 is an enlarged detail, fragmentary plan view of the cam piece and some of the adjacent parts, the parts in section being taken generally upon line 6—6 of Figure 3.

In this type of mechanism it is desirable that the length of the feed should first be uniform and then capable of variation with the maximum accuracy, the minimum labor, and without disturbing the motion of the parts, that the make and break mechanism connecting the feed rolls with the source of power should be capable of motion independently thereof for the purpose of hand feeding, adjustment of parts, etc., that the feed rolls should stop instantly and positively at the termination of the feed stroke, and except at this time should operate freely and without friction thereon by the stop mechanism, to make accurate adjustments of the length of feed during the operation of the machine, and to eliminate as far as possible all spring or resiliency in the parts so as to minimize wear and insure positive feeding of successive blanks of uniform length.

These, and other desirable features, are obtained in our new and improved feed mechanism.

In the drawings; 12 designates the body of a heading, upsetting machine or the like; 13 the roll frame connected therewith, within which is mounted the shaft 17, an upper feed roll 14 fixed upon the roll shaft 16 journaled in the roll frame 13, and the lower feed roll 15 fixed on the shaft 17.

The shafts 16 and 17 are operatively connected by the gears 18 and 19. Secured in the gear 19, by the bolts 21, is a clutch ring 20, or the like, encircling a notched disk 22, in each of the notches of which is a cam block 23, roller 24, and a spring pin 25 moved in one direction by a spring 26.

Rotatably mounted upon both sides of the disk 22, are the rings 27 and 28, connected by a plurality of studs 29 that project laterally through the said notches, there being one stud for each of the rollers 24.

Separably secured to the body 12 is a block 30, within which is vertically movable a roll carrier 31 having a roll 32 mounted therein against a plate 92. The center of the roll 32 is below the center of the shaft 17 so that as said roll is moved upwardly, it impinges against the outer face of the ring 20 and locks the same against movement. For the purpose of keeping the clutch ring 20 clean upon the outside, there is provided a wiper mechanism, comprising a plate 33 having a felt pad 34 therein that lies

against the face of the ring and is secured to the block 30 by the screw 35 or the like.

All of the mechanism above described is known in the art and constitutes no part of our present invention.

The shaft 17 is journaled in and supported at its outer end, by a bracket 36, which is secured to the frame 13 by the bolts 37. Upon this shaft are mounted two bushings 38 and 39 which are fixed in opposite ends of a carrier 40, to which the notched disk 22 is secured by the screws 41, whereby the notched disk and carrier move as a unit.

Projecting radially from the center of the carrier 40 is an arm 42, and within the opening 43 therein is a pitman block 44, through which is threaded the rod 45 having a worm gear 46 on its lower end and held against endwise movement by a collar 47, held against movement by a pin 48. Rotatably mounted in the body 12, is a shaft 49 carrying disk 50 to which is adjustably secured a crank plate 51 by the screws 52 that pass through the radial slots 53 and are threaded into the disk 50.

Mounted for movement within the radial slot 54 in the crank plate 51 is the head 55 of the stud 56, upon which is mounted a bushing 57, both the bushing and stud being held against movement by the nut 58.

A pitman 59 is journaled at one end upon the bushing 57 and at the other end connected with the pitman block 44 by the pin 60, and whereby an oscillating movement is imparted to the carrier 40.

The stud 56 is moved toward and away from the center of the crank plate 51 by the screw 61 threaded in the head 55, and by reason of the graduations 62 upon the face of the crank plate an exact definite length of movement of the carrier 40 is predetermined. If a finer adjustment of such length is desired, it is obtained by moving the block 44 toward and away from the center of the shaft 17. This is accomplished by rotation of the rod 45, through the shaft 63 with a hand wheel 65 thereon, that is rotatably mounted in the carrier 40 and having a worm 64 that meshes into the worm gear 46. By rotation of this hand wheel 65, whether the carrier 40 is in motion or at rest, the relative position of the adjusting block 44 is varied, and through it the length of the feed movement.

So far as at present advised, we are the first to provide a feed mechanism of this character with an adjustment that may be operated while the same is in motion.

The ring 28 is connected with the carrier 40 through a rock shaft 66 journaled therein, having a slotted arm 67 at the inner end thereof, within which is movable a block 68 mounted upon a stud 69, fixed in said ring.

On the end of the rock shaft 66, opposite to the arm 67, is a cam lever 70, having a cam stud 71 fixed therein. This cam lever, and through it the rock arm 66, is rocked in one direction upon its pivot mounting by a plunger 72 mounted in the carrier 40, and actuated by the spring 73.

Journaled on the bushing 38, outside of the carrier 40, is a collar 74, having an annular groove 75 therein, into which project the guide blocks 76 that are connected within the control lever 77 by screws 78, or the like.

Secured in the collar 74 is the shank 79 of a cam piece 80 that slides within a recess 90 in the carrier 40 and having a cam 81 thereon, movable in the path of the cam stud 71 (Fig. 6).

The control lever 77 is fixed on a shaft 82 journaled in the bracket 36. Also fixed to the same shaft is a lever 83 which has a forked outer end that straddles the plunger 84 movably mounted in the block 30 having a head 85 thereon held normally in contact with the underside of the roll carrier 31 by a spring 86. On the lower end of this plunger 84 is a washer 87 and a plurality of jamb nuts 88.

Upon movement of the disk 22 in the direction of the arrow in Figure 4, the spring pins 25 force the rollers 24 onto the high part of the cam blocks 23 where they engage both the inner face of the ring 20 and the cam block 23, thus locking all of the parts together and the same thereafter move as a unit imparting a rotary movement to the rolls 14 and 15 and through this action a feed to the wire rod therebetween, a section of which is shown in Figure 2 and designated by the numeral 89.

Energy applied to the ring 20 is sufficient to release the hold of the roll 32 thereon.

If it is desired to render inoperative the make and break connection of the clutch ring 20 so as to manipulate the feed mechanism by hand, or for other reasons, the studs 29 are moved into a position so that the rollers 24 cannot engage the inner face of the clutch ring 20 and cam blocks 23 at one and the same time. This is accomplished by changing the relative position of the roll rings 27 and 28 about their axis through the shifting of the control lever 77 from its full line position in Figure 2 to its broken line position as shown in Figure 2. By this movement the position of the cam piece 80 is shifted and by its engagement with the cam stud 71 imparts movement to the rock shaft 66 and through the slotted arm 67 and block 68 the studs 29 are advanced slightly in the direction of the arrow in Figure 4. When in this position the rollers 24 cannot form a connection between the clutch ring and cam blocks.

The movement of the control lever 77, from its broken line to full line position in Figure 2, also actuates the lever 83, which pulls the plunger 84 downwardly against the

tension of the spring 86 permitting the roll carrier 31 and roll 32 connected therewith, to move to a position a sufficient distance below the center of the clutch ring 20 to hold the same out of any engagement therewith. Thus a single movement of the control lever releases both the inside and outside clutch mechanisms, enabling the feed rolls 14 and 15, and the shaft connected therewith, to be rotated at will in either direction.

For convenience in this manual rotation the hub of the gear 18 is provided with a plurality of holes 91, into which a bar or the like may be inserted.

There are minor changes and alterations that may be made within our invention, aside from those herein suggested, and we would therefore have it understood that we do not limit ourselves to the exact construction herein shown and described, but claim all that falls fairly within the spirit and scope of the appended claims.

Having described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In mechanism of the character described, the combination with a shaft; of a clutch ring member fixed on the shaft; a carrier member journaled thereon having a notched disk that projects within the clutch ring of the clutch ring member; a rock member journaled in the carrier member upon one side of and substantially parallel with the shaft; a cam movable in the carrier member in the path of said rock member; a make and break connection between the carrier and shaft comprising in part a ring journaled on the notched disk, and means for operatively connecting the make and break connection with said rock member, whereby the position of the rock member will determine the position of the parts of the make and break connection.

2. In mechanism of the character described, the combination with a shaft; of a clutch ring member fixed on the shaft; a carrier member journaled thereon having a notched disk that projects within the clutch ring of the clutch ring member; a rock member journaled in the carrier member upon one side of and substantially parallel with the shaft; a cam movable in the carrier member in the path of the rock member; an element movable independently of the carrier member and engaged by said cam; a make and break connection between the carrier member and shaft comprising in part a ring journaled on the notched disk; and means for operatively connecting the make and break connection with the rock member, whereby the position of the rock member will determine the position of the parts of the make and break connection.

3. In mechanism of the character described, the combination with a shaft, having a ring member connected therewith; of feed rolls, one of which is connected with the shaft; a member, having an intermittent movement; a make and break connection between the member and ring member; means associated with the member for controlling make and break connection, whereby the shaft may move independently thereof; and means, as a carrier, movable outside of the ring in a path tangential with the outer face thereof, a roll of less diameter than the ring, rotatable within the carrier with its axis below the axis of the ring, a member for moving the carrier in one direction, held under tension by the means for controlling the make and break connection, when the member and ring member rotate as a unit, but released from such pressure when the member and ring member are disengaged, when such tension member will move and hold the roll therein in engagement with the ring and stop the rotation of the shaft.

4. In mechanism of the character described, the combination with a shaft; a clutch ring or the like secured in a fixed position relatively to said shaft; a member having an intermittent movement; a make and break connection between said member and said clutch ring operative upon the inside of the latter; a roller brake mechanism upon the outside of and movable in a path so as to have contact with said clutch ring and thereby stop the rotation of said shaft; and positive means for moving said roller brake mechanism to a position out of contact with said ring when said make and break connection is moved to its make position, both said roller brake mechanism and make and break means being actuated from a single manually operated part, said roller brake mechanism having as a part thereof, a roll of less diameter than the clutch ring and mounted loosely in a reciprocating carriage.

5. In mechanism of the character described, the combination with a frame; of a bracket connected therewith; a shaft rotatably mounted on said frame and bracket; a pair of rolls; one of which is connected with said shaft; a member having an intermittent movement journaled on said shaft; a make and break connection between said member and shaft; and means for actuating said make and break connection, including a part pivotally connected with said bracket.

6. In mechanism of the character described, the combination with a frame; of a bracket connected therewith; a shaft rotatably mounted in said frame and bracket; a pair of rolls, one of which is connected with said shaft; a member having an intermittent movement journaled on said shaft; a make and break connection between said member and shaft; and means for actuating said make and break connection, including a part pivotally connected with said bracket,

said member, make and break connection mechanism, and means for actuating the same, being between said frame and the supporting arm of said bracket.

7. In mechanism of the character described, the combination with a frame; of a bracket connected therewith; a shaft rotatably mounted in said frame and bracket; a pair of rolls, one of which is connected with said shaft; a member having an intermittent movement journaled on said shaft; a make and break connection between said member and shaft; means for actuating said make and break connection, including a part pivotally connected with said bracket, said member, make and break connection mechanism, and means for actuating the same, being between said frame and the supporting arm of said bracket; a roller brake mechanism for stopping the rotation of said shaft; a rock shaft journaled in said bracket; a connection between said rock shaft and roller brake mechanism; and a lever connected with said shaft and having a connection with said make and break connection mechanism, whereby the movement of said lever actuates both the latter mechanism and the brake mechanism.

8. In mechanism of the character described, the combination with a frame; of a bracket connected therewith; companion shafts, one of which is rotatably connected with the frame and bracket; a feed roll connected with each of said shafts; a gear connected with each of said shafts and having an intermeshing engagement with each other; a clutch ring connected with one of said gears; a member having an intermittent movement journaled on one of said shafts adjacent to said clutch ring; a make and break connection between said member and clutch ring, comprising in part a rock shaft journaled in said member; a cam connected with said member and having independent movement relatively thereto in the path of an element connected with the rock shaft; a rock shaft mounted in said bracket; a roller brake mechanism connected with a fixed part; a connection between said brake mechanism and the rock shaft in said bracket; and a lever connected with said latter rock shaft and with said cam, whereby the movement of the lever actuates both said make and break mechanism and said roller brake mechanism.

9. In mechanism of the character described, the combination with a shaft; a notched member, having an intermittent movement; a make and break connection between the member and shaft; means, comprising in part an element mounted on the member and having a limited rotary movement relative thereto for controlling the make and break connection, whereby the shaft may move independently thereof; an oscillating sleeve positioned about said shaft and having a longitudinal guideway, a movable sleeve on said shaft, a cam block carried by the movable sleeve and disposed in said guideway, and a rock member engageable by said cam block whereby to actuate the make and break connection between the notched member and shaft.

10. In mechanism of the character described, the combination with a shaft; a member, having an intermittent movement; a make and break connection between the member and shaft comprising in part an independently movable element mounted on the member, an oscillating sleeve positioned about said shaft and having a longitudinal guideway, a movable sleeve on said shaft, a cam block carried by the movable sleeve and disposed in said guideway, and a rock member engageable by said cam block whereby to actuate the make and break connection between the notched member and shaft.

11. In a mechanism of the character described, the combination with a shaft; a member having an intermittent movement; a make and break connection between said member and shaft; means associated with said member for controlling the make and break connection, whereby the shaft may move independently thereof; manually actuated mechanism for initiating the movement thereof to its break position, comprising an oscillating sleeve positioned about said shaft having a longitudinal guideway, a movable sleeve on said shaft, a cam block carried by the movable sleeve and disposed in said guideway, and a rock member engageable by said cam block whereby to actuate the make and break connection between the notched member and shaft.

12. In mechanism of the character described, the combination with a shaft; a two-part member, having an intermittent movement; a make and break connection between one of the parts of the member and shaft, comprising in part one or more rollers, which in one position form an operative connection between parts of the mechanism; means operatively associated with the member that prevent the rollers from occupying said position, comprising in part a ring journaled on the member; one or more studs connected therewith corresponding in number with said rollers; an oscillating sleeve positioned about said shaft having a longitudinal guideway, a movable sleeve on said shaft, a cam block carried by the movable sleeve and disposed in said guideway, and a rock member engageable by said cam block whereby to actuate the make and break connection between the notched member and shaft.

13. In mechanism of the character described, the combination with a shaft; a two-part member, having an intermittent move-

ment; a make and break connection between the member and shaft, comprising in part one or more rollers, which in one position form an operative connection between parts of the mechanism; means operatively associated with the member that prevent the rollers from occupying said position, comprising in part a ring; one or more studs connected therewith corresponding in number with said rollers; an oscillating sleeve positioned about said shaft having a longitudinal guideway, a movable sleeve on said shaft, a cam block carried by the sleeve and disposed in said guideway, and a rock member engageable by said cam block whereby to actuate the make and break connection between the notched member and shaft.

14. In mechanism of the character described, the combination with a shaft; a two-part member, having an intermittent movement; a make and break connection between the member and shaft, comprising in part one or more rollers, which in one position form an operative connection between the parts of said mechanism; means operatively associated with the member and movable relative thereto that prevent the rollers from occupying said position, comprising a ring journaled upon a part of the two part member, and having a plurality of elements fixed therein corresponding in number with the rollers; an oscillating sleeve positioned about said shaft having a longitudinal guideway, a movable sleeve on said shaft, a cam block carried by the movable sleeve and disposed in said guideway and a rock member engageable by said cam block whereby to actuate the make and break connection between the notched member and shaft.

15. In mechanism of the character described, including a shaft, a make and break connection for the shaft, a sleeve positioned about said shaft having a guideway, a slidable cam disposed in said guideway and having an outwardly projecting cam face, means opposite to and independent of the cam and engaged by said face thereof to operate the make and break connection, and means to slide the cam in a path substantially parallel with the axis of the shaft.

16. In mechanism of the character described, including a shaft, a make and break connection for the shaft, a sleeve positioned about said shaft having a guideway, a cam spaced from the shaft and disposed in said guideway, means independent of the shaft to movably support the cam, means arranged opposite to and independent of the cam and engaged thereby to operate the make and break connection, and means to move the cam in a path substantially parallel with the axis of the shaft.

In testimony whereof we have hereunto affixed our signatures.

RICHARD LESTER WILCOX.
CLIFFORD O. PETITJEAN.