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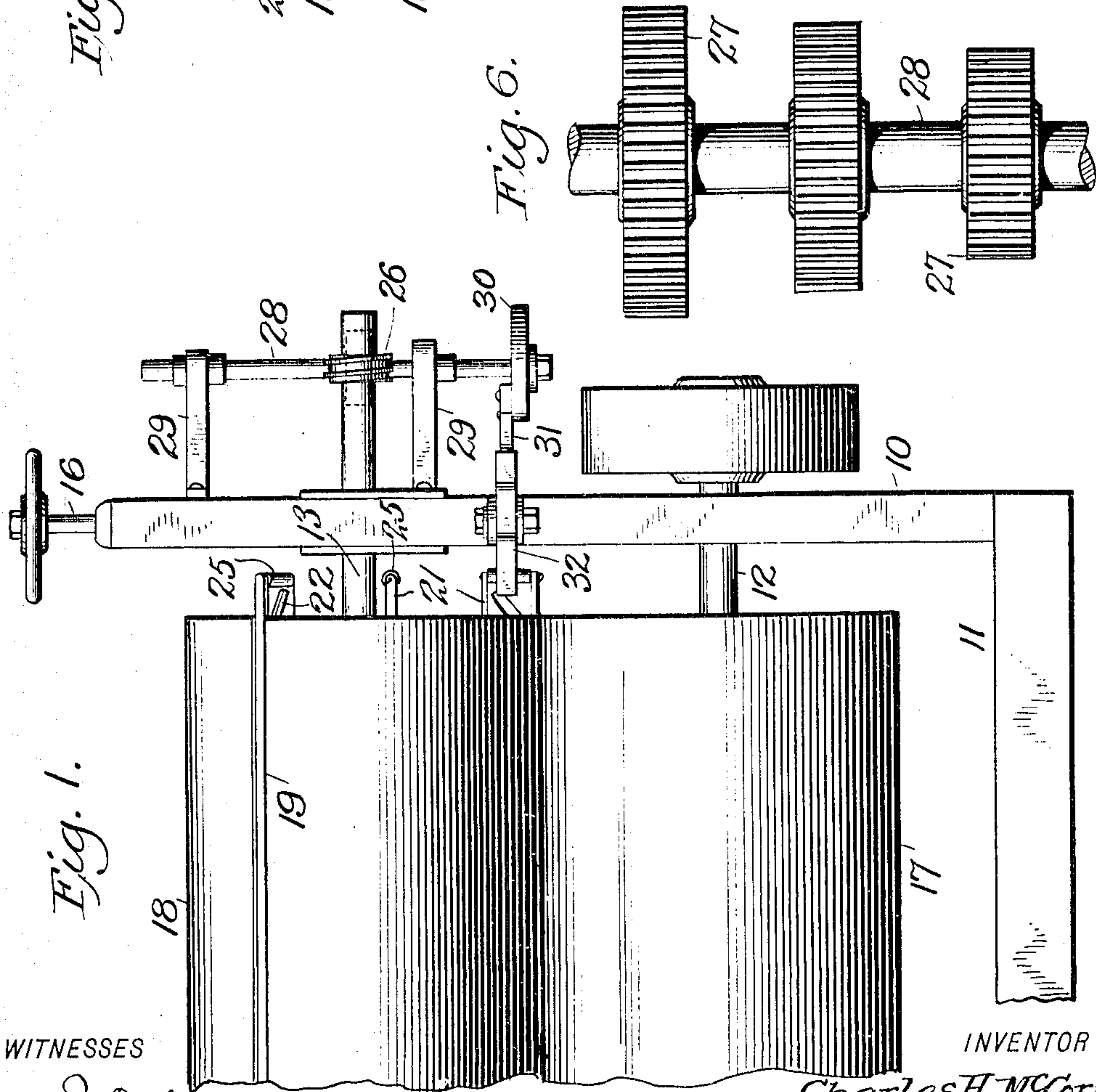
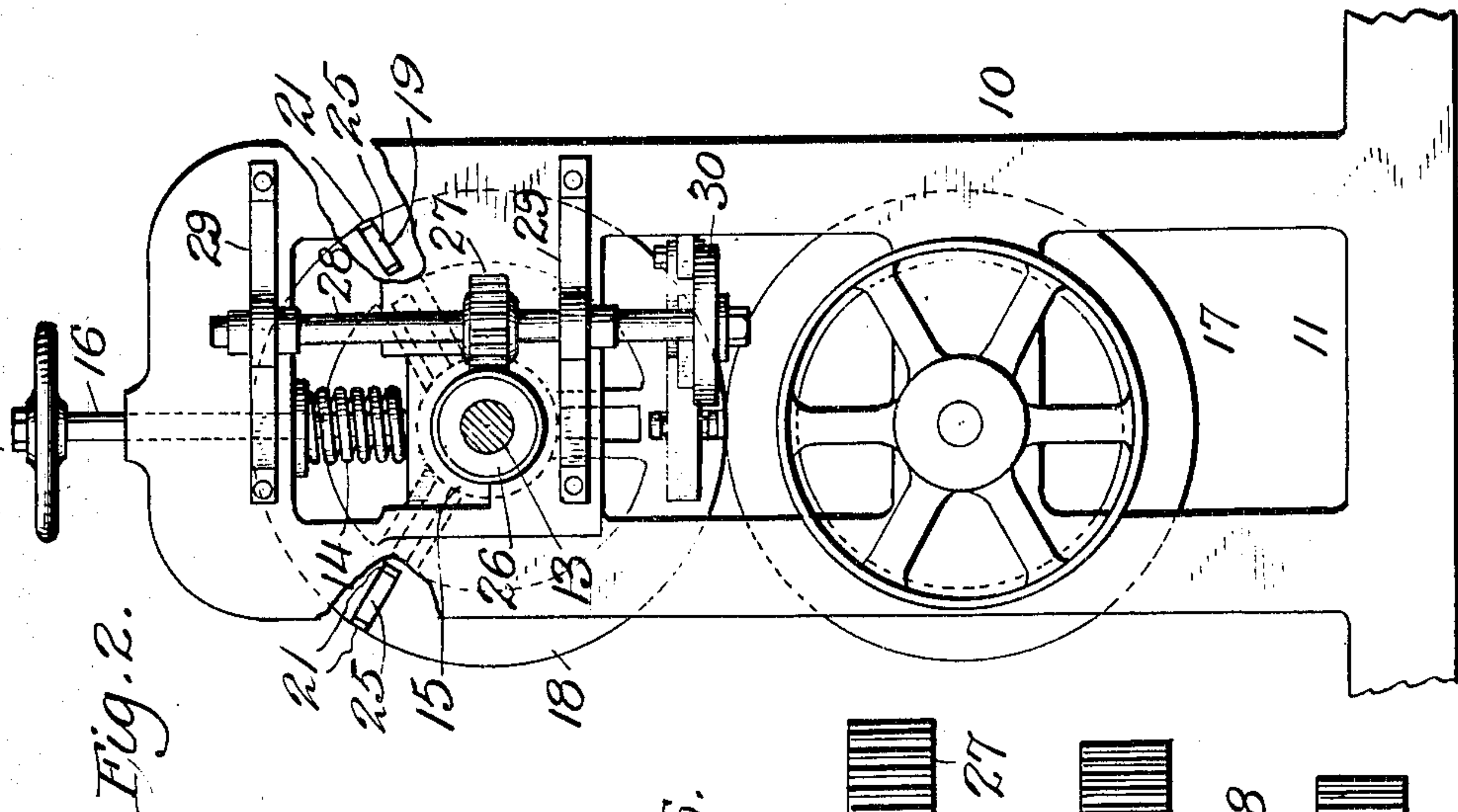
PATENTED NOV. 26, 1907.

C. H. McCORMICK.

CUTTING ATTACHMENT FOR PAPER MAKING MACHINES.

APPLICATION FILED DEC. 12, 1906.

2 SHEETS—SHEET 1.



WITNESSES

James F. Duhamel.
Anna Brown.

INVENTOR

Charles H. McCormick,
BY
Victor J. Evans
ATTORNEY

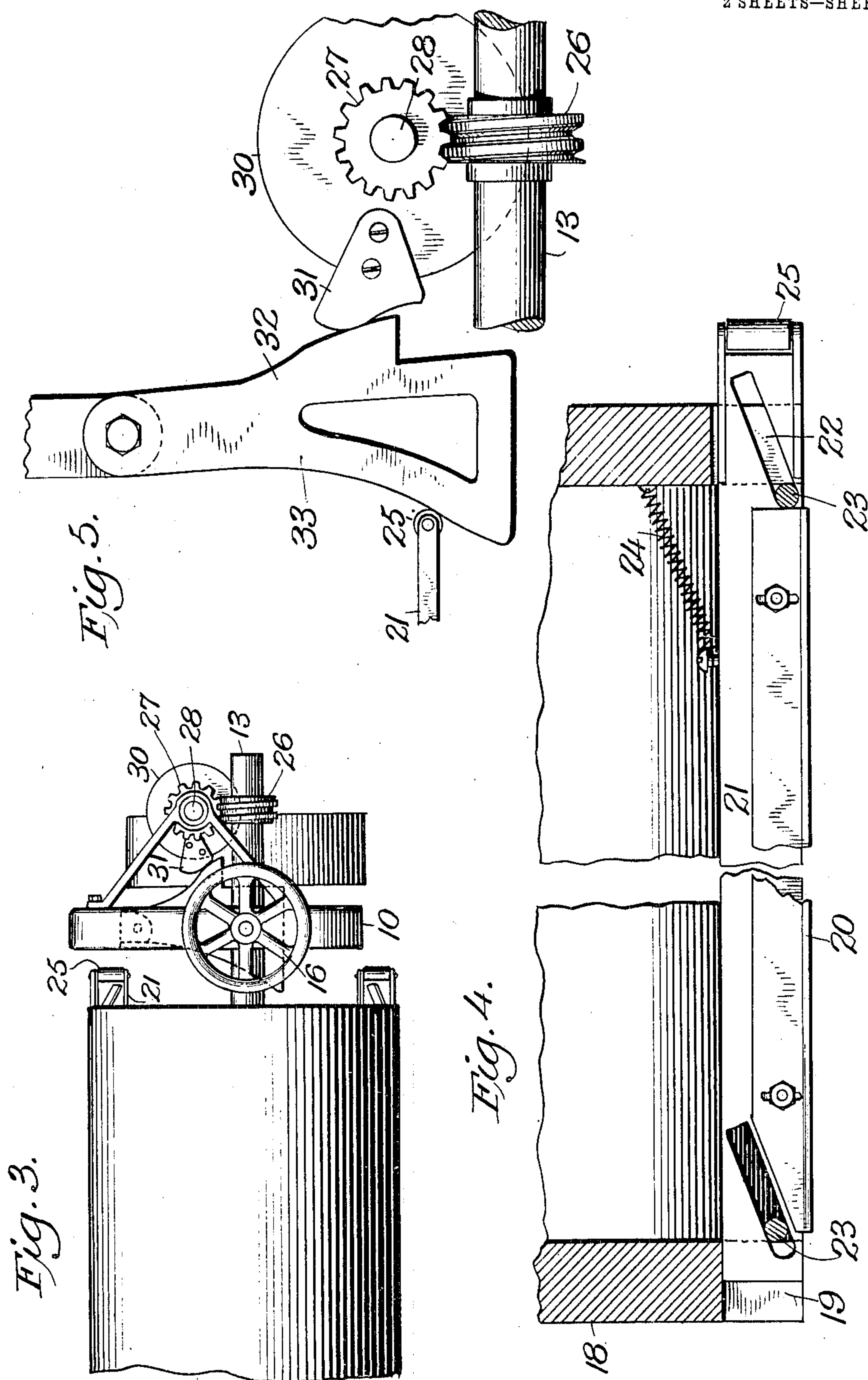
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UNITED STATES PATENT OFFICE.

CHARLES H. McCORMICK, OF JERSEY CITY, NEW JERSEY.

CUTTING ATTACHMENT FOR PAPER-MAKING MACHINES.

No. 872,248.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed December 12, 1906. Serial No. 347,529.

To all whom it may concern:

Be it known that I, CHARLES H. McCORMICK, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Cutting Attachments for Paper-Making Machines, of which the following is a specification.

My invention relates to improvements in paper making and paper cutting machines, or more particularly to that portion of a pulp-board machine which first forms the board upon the outer surface of a roller from a number of layers of paper direct from the ordinary pulp vat and rollers and wherein means are provided whereby after the proper number of layers have been deposited on the rollers and the proper thickness of material attained it is cut into sheets or boards of desired sizes by means of knives automatically operated, the invention consisting in the features more fully described in the following specification, set forth in the claims and illustrated in the accompanying drawings in which

Figure 1 is a side elevation of one end of my improved apparatus. Fig. 2 is an end view of the same. Fig. 3 is a plan view of the top or cutting roller. Fig. 4 is an enlarged view of one of the cutting knives. Fig. 5 is an enlarged detail view of the mechanism for operating the knives. Fig. 6 shows the means for varying the size of the sheets.

The drawings illustrate one end of a paper making machine and it has not been thought necessary to show the balance or main portion of the machine but only those parts which are connected directly with the invention itself.

Formed by uprights 10 rising from a base 11 are two standards only one of which however, is shown and in these standards are journaled the shafts 12 and 13, the lower shaft being mounted in stationary journal boxes while the upper shaft 13 is arranged to yield in consequence of undue pressure from below but is forced downward by a spring 14 which bears upon the upper half of the journal box 15 whose upward movement is limited by the screw 16. The shaft 12 carries an ordinary drum 17 while the drum 18 carried by the shaft 13 is provided with a series of longitudinal grooves 19 for the reception of three (more or less) knives 20 secured to the sides of slides 21 which work in the grooves, having slots 22 to accommodate

pins 23. These slots 22 are inclined and when the slide 21 is in its normal position where it has been retracted by the spring 24 the slide and knife lie within the plane of the surface of the drum or roller 18 but when they are pushed against the tension of the spring 24 they ride up on the pins 23 and the edge of the knife passes beyond the surface of the roller and cuts any paper or board which may be wound around the roller.

In the process of the manufacture of the card board a layer of paper which has just been completed is drawn from the machine and passes around the drum 18, having a sufficient amount of adhesive material to cause the layers to adhere. The pressure of the rollers against each other squeezes out the surplus moisture and after the predetermined number of layers have been wound the slides 21 are forced inward cutting the paper in desired lengths and the roller moves on again rewinding the paper for an additional supply of card-board.

The ends of the slides 21 are provided with rollers 25 and in the drawing I have illustrated three cutting knives which are adapted to cut the board which envelops the roller into three sections but it is obvious that the number of these knives is determined by the size of the rollers and the sheets which are to be cut so that in some instances the roller 18 is provided with a greater or less number of knives.

The mechanism for operating the knives is best shown in Fig. 5 where it will be seen that on the outer end of the shaft 13 is a worm-wheel 26 which meshes with a worm wheel 27 on an upright shaft 28 carried by suitable brackets 29 and at the lower end of this shaft 28 is a wheel or disk 30 having an offset 31 which may be adjusted to any desired degree or position and acts as a cam at certain stages in the rotation of the disk 30 and strikes an intermediate swinging arm or cam dog 32 which is thrown in the path of the rollers 25 of the slide carrying the knives, so that as the shaft 13 rotates and the drum 18 winds up the layers of paper the disk 30 is rotated and at a certain point the arm 32 is thrown in the path of the rollers on the slide and the knives are forced through the card-board which has been accumulated on the roller and cut into three pieces, which drop from the roller.

In order to relieve the rollers and the slide from any sudden jar while striking the arm

32, the latter is provided with an inclined face 33 up which the roller moves to its extreme cutting position.

In case that larger sheets of card-board are desired the number of knives is decreased and where different thickness of board are to be made the size of the worm-wheel and worm are varied so that a greater number of layers may be wound in proportion to the rotation of the cam which operates the knives and the cuts made sooner or later as the drum revolves, thus making up boards of greater or less thickness. In order to provide for this variation of sizes of board I may provide the vertical shaft with different sizes of worm-wheels as shown in Fig. 6 and which may be retained on the shaft but slid into position and locked at the desired point. Likewise different size worms may be arranged on the shaft 13 and of such proportion as to cooperate with the worm-wheels on the vertical shaft.

It is obvious that in the construction of this device I do not confine myself to the exact construction illustrated but may depart from same without materially affecting the essential features as above described.

What I claim as new and desire to secure by Letters Patent is:

1. In a paper cutting attachment for paper making machines, a paper winding roll, a cutter thereon, and means driven by the shaft of the roll for operating the cutter.

2. In a paper cutting attachment for paper making machines, a winding roll, a cutter mounted thereon, and means supported by the frame of the machine and driven by the shaft of the roll for operating the cutter at timed intervals.

3. In a paper cutting attachment for paper making machines, a paper winding roll, a cutter thereon, gearing driven by the shaft of the roll for actuating the cutter at timed intervals, and means forming a part of said gearing for varying the intervals of operation.

4. In a paper cutting attachment for paper making machines, a paper winding roll, a cutter normally lying within the periphery thereof, said cutter being movable longitudinally of and outwardly and inwardly from the periphery of the roll, a swinging cam dog for imparting an endwise projecting movement thereto, a cam for actuating said dog, and gearing for operating the cam to project the cutter when a predetermined number of layers have been wound upon the roll.

5. In a paper cutting attachment for paper making machines, a paper winding roll, a cutter thereon normally lying within the periphery thereof, said cutter being movable longitudinally of the roll, means for projecting the cutter beyond the periphery of the roll, a swinging cam for imparting an endwise projecting movement to the cutter, a

rotary cam for actuating the swinging cam, and gearing for operating the rotary cam.

6. In a paper cutting attachment for paper making machines, a winding roll, a cutter normally lying within the periphery of the roll, a carrier therefor movable longitudinally of the roll for projecting and retracting the cutter, a swinging cam for moving the carrier longitudinally to project the cutter, a rotary cam for operating said member, and worm gearing for actuating the rotary cam.

7. In a paper cutting attachment for paper making machines, a winding roll, a cutter upon the roll normally lying within the periphery thereof, cam mechanism upon the frame of the machine for projecting the cutter beyond the periphery of the roll through the paper wound thereon, and gearing actuated by the shaft of the roll for operating said cam mechanism.

8. In a paper cutting attachment for paper making machines, a winding roll, a cutter upon the roll normally occupying a groove therein, an operating device for projecting the same, a vertical shaft in gear with the shaft of the roll, and a cam actuated by said shaft for periodically actuating said operating device.

9. In a paper cutting attachment for paper making machines, a winding roll provided with a longitudinal groove in the periphery thereof, a slide provided with inclined slots, guide pins upon the roll engaging said slots, a cutting knife normally arranged to lie within the groove and adjustably secured to the slide, automatic means for imparting an endwise movement in one direction to the slide to project the knife, and means for retracting the slide and knife.

10. In a paper cutting attachment for paper making machines, a winding roll having a peripheral groove, a slide movable longitudinally in said groove, means for causing the slide to move in and out on its reverse longitudinal movements, a spring housed within the roll for moving the slide in one direction, automatic means for moving the slide in the reverse direction, and a cutting knife adjustably mounted on the slide.

11. In a paper cutting attachment for paper making machines, a paper winding roll, an automatically retractable cutter thereon, a vertical shaft on the frame of the machine, gearing for connecting said shaft with the shaft of the roll to operate the vertical shaft at different speeds, and cam mechanism operated by the vertical shaft for projecting the cutter at timed periods, varying according to the speed of rotation of said vertical shaft.

12. In a paper cutting attachment for paper making machines, a paper winding roll, a cutter normally lying within the periphery thereof, means for normally holding the cutter retracted, a bar carrying the cutter and

movable endwise for projecting and retracting the same, a swinging dog movable into the path of the bar and having an inclined or cam surface to engage the same to effect a
5 projection of the cutter, a rotary cam for actuating said dog, and gearing driven from the shaft of the roll for operating the cam.

13. In a paper cutting attachment for paper making machines, a paper winding roll, a
10 cutter normally lying within the periphery thereof, a bar carrying the cutter and movable longitudinally of the roll for projecting and retracting said cutter, means for normally holding the cutter retracted, a swinging
15 cam dog pivotally mounted upon the frame of the machine for projection into the path of movement of one end of the bar, said dog having opposite cam surfaces, one adapted to effect longitudinal projecting movement of the bar, a rotary cam adapted to engage the other cam surface of the dog to swing the same into operative position, and
20 gearing driven by the shaft of the roll for rotating said cam.

25 14. In a paper cutting attachment for pa-

per making machines, a paper winding roll, a cutter normally arranged to lie within the periphery of the roll, an endwise and radially movable bar carrying the cutter, a spring
housed within the roll and connected with 30 the bar for normally holding the same and the cutter retracted, a shaft supported by the frame of the machine and in gear with the shaft of the roll, a rotary cam operated by said vertical shaft, and a swinging dog ar- 35 ranged between said cam and one end of the bar and having opposite cam or inclined surfaces for coöperation therewith.

15. In a paper cutting attachment for paper making machines, a winding roll, a plu- 40 rality of cutters thereon, and means for operating said cutters at intervals in the path of revolution of the roll.

In testimony whereof, I affix my signature in presence of two witnesses.

CHARLES H. McCORMICK.

Witnesses:

THOMAS L. McCORMICK,
CHARLIE F. GRIMM.