L. CHAMBON.

MACHINE FOR CUTTING PAPER, &c.

APPLICATION FILED JUNE 30, 1909.

953,121.

Patented Mar. 29, 1910.

2 SHEETS—SHEET 1.

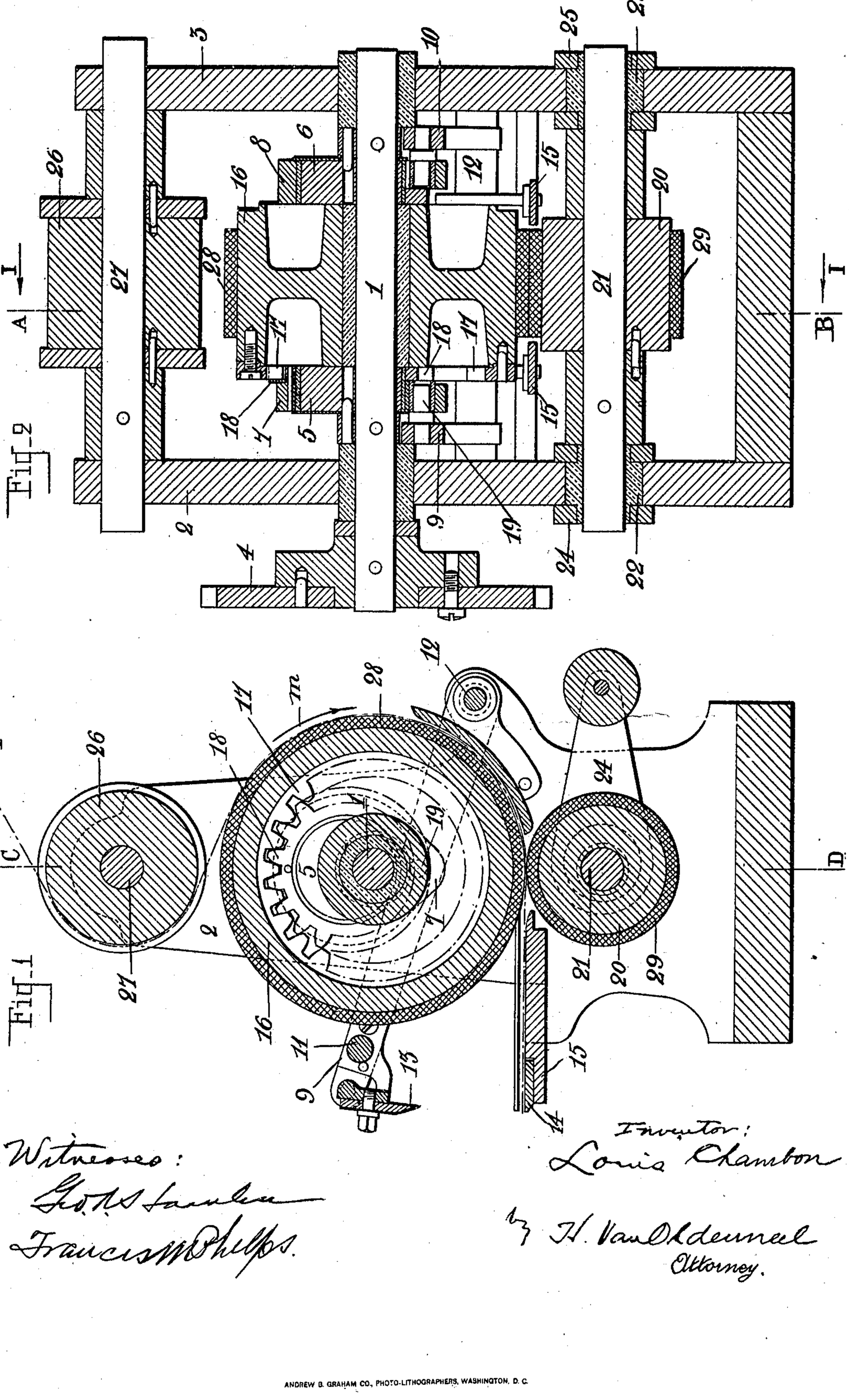


Fig. 2.

Fig. 1.

Witnesses:

Geo. H. Graham

Francis W. Phelps.

Inventor:

Louis Chambon

by H. Van Oldenneel

Attorney.

L. CHAMBON.

MACHINE FOR CUTTING PAPER, &c.

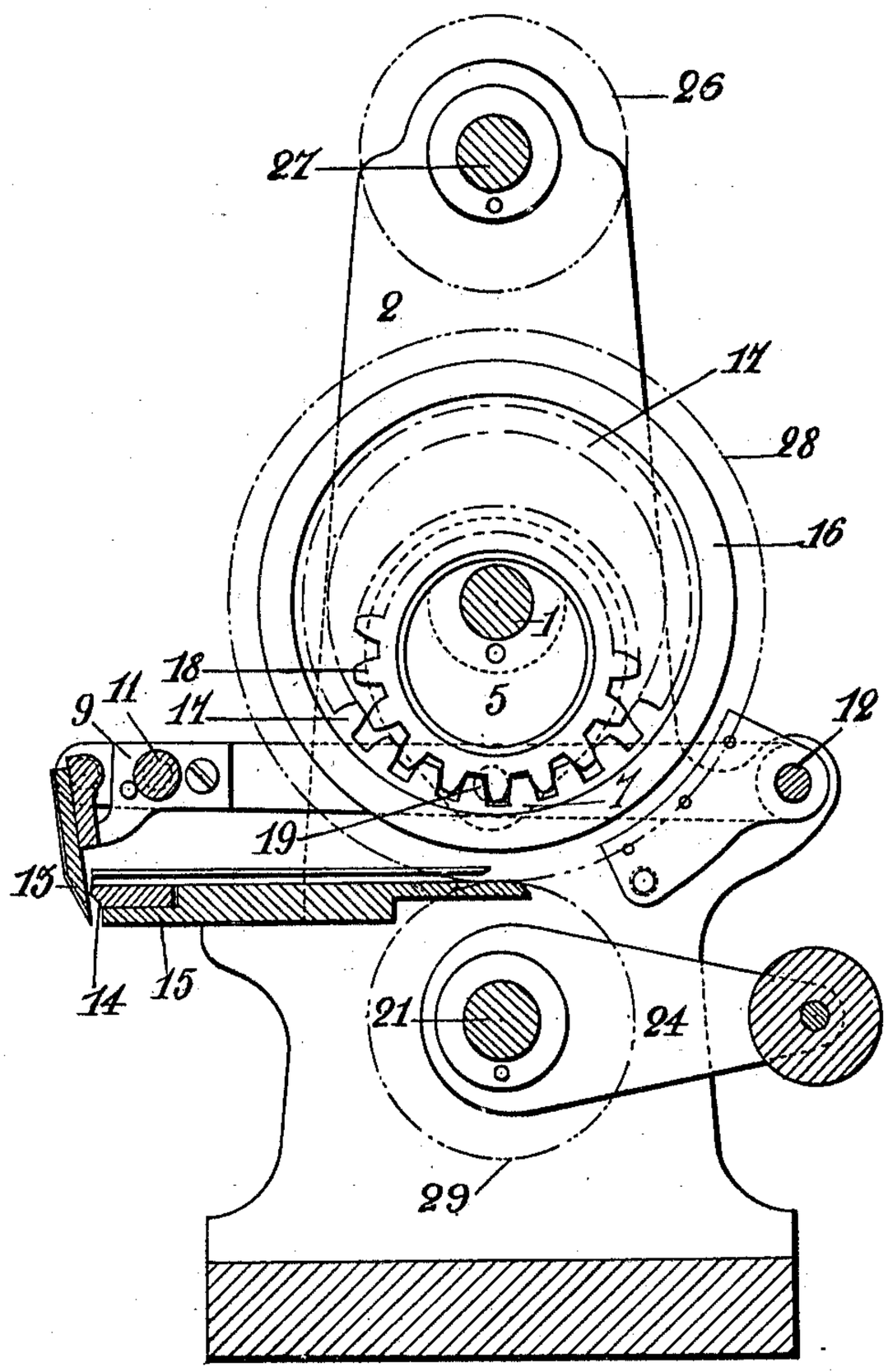
APPLICATION FILED JUNE 30, 1909.

953,121.

Patented Mar. 29, 1910.

2 SHEETS—SHEET 2.

Fig. 3



Witnesses:

Geo. H. Graham

Francis M. Phelps

Inventor:

Louis Chambon

By H. Van Oldenael

Attorney.

UNITED STATES PATENT OFFICE.

LOUIS CHAMBON, OF PARIS, FRANCE.

MACHINE FOR CUTTING PAPER, &c.

953,121. Specification of Letters Patent. **Patented Mar. 29, 1910.**

Application filed June 30, 1909. Serial No. 505,280.

To all whom it may concern:

Be it known that I, LOUIS CHAMBON, citizen of France, residing at Paris, in the said Republic, have invented new and useful Improvements in Machines for Cutting Paper or the Like, (for which I have filed an application for a patent in France, No. 391,849, bearing date July 1, 1908,) of which the following is a specification.

This invention relates to an improved machine for cutting paper, cardboard, or any like product adapted to be unrolled from a roll.

The machine insures a rapid and perfectly smooth cut it being arranged that the period during which the cutting knife is coöperating with the counter-blade corresponds with the period during which the paper or the like proceeding from the feeding apparatus is not appreciably advanced by the draft cylinders.

The accompanying drawings illustrate the invention, Figure 1 being a vertical section on line A—B of Fig. 2 viewed in the direction of the arrows I—I. Fig. 2 is a vertical section on line C—D of Fig. 1. Fig. 3 is a sectional elevation corresponding with Fig. 1 but showing the parts of the machine in a different position.

The same reference numerals indicate the same parts in the various figures.

The apparatus comprises a shaft 1 journaled in uprights 2 and 3 and uniformly rotated through a gear wheel 4 in the direction indicated by the arrow *m*. The shaft performs one revolution for each cutting operation.

On the shaft 1 are keyed in the same angular position two identical eccentrics 5 and 6 controlling two connecting rods 7 and 8 which move up and down a frame consisting of two levers 9 and 10 and two rods 11 and 12. The frame carries a knife 13 which owing to the movement of the frame oscillates about the axis 12 and toward the end of its stroke coöperates with the counter-blade 14 fixed on a table 15 carried by the uprights 2 and 3.

On the driving shaft 1 is mounted free a cylinder 16 carrying an internal ring of teeth 17. These teeth engage with pinion 18 fixed to the connecting rod 7 and concentric with the eccentric 5.

The difference between the radius of toothed ring 17 and pinion 18 is equal to the radius of eccentric 5 or 6. During the movement of the pinion 18 together with the connecting rod 7, the pitch circle of this pinion rolls on that of the ring 17 in such a manner that at each revolution of the shaft 1 the point of contact of the pitch circles of pinion 18 and ring 17 occupies the same position in space as does also the pinion 18. The two pitch circles have then rolled on one another through a distance equal to the circumference of the pitch circle of the pinion 18.

When shaft 1 has performed a complete revolution the initial point of contact of the pitch circles in question has turned through an arc equal to the circumference of the pinion 18. It follows that the ring 17 turns in the direction of rotation of shaft 1 through an arc equal to the difference between the said pitch circles. In space the ring 17 makes one quarter of a revolution for each revolution of shaft 1 since the radius of eccentric 5 is equal to one-fourth of the radius of the pitch circle of the ring 17. Furthermore, since the center of the pin 19 connecting the connecting rod 7 with the lever 9 is on the pitch circle of the pinion 18, it follows that in the position shown in Fig. 3 which corresponds with the lower position of the knife, the cylinder 16 has a speed of rotation which is *nil* since the point of contact has a speed which is *nil*. This speed increases as the position of the parts passes from that shown in Fig. 3 to that shown in Fig. 1, which corresponds with the upper position of the knife; in this latter position the speed is at a maximum; it then decreases to zero again as the parts return from the position shown in Fig. 1 to that shown in Fig. 3.

The cylinder 20 mounted on a shaft 21 which turns in eccentric bearings 22, 23, carried by counter-poised levers 24, 25, presses on the cylinder 16 and is turned by friction therewith. The paper P drawn from the roll passes over a fixed guide 26 mounted on a shaft 27 and around the cylinder 16; it then passes between the two cylinders 16 and 20 both of which are sheathed in leather 28, 29 to increase the friction on the paper. By these cylinders the paper is advanced along the table 15 which is arranged to prevent any deviation of the paper.

At each revolution of the shaft 1 the cylinders 16 and 20 advance a length of paper

equal to one-fourth of the circumference of cylinder 16, this advancement being at first accelerated and then retarded.

The time during which the knife 13 is co-operating with the counter-blade 14 corresponds with the period during which the speed of the cylinders is practically *nil* and the rapidity with which the cut is effected is such that the paper does not receive an appreciable advance during the operation.

Having thus described my invention and the best means I know of carrying the same into practical effect, I claim:—

A machine for cutting paper, cardboard or like product adapted to be unrolled from a roll, comprising a driving shaft, a draft cylinder mounted on the said shaft, an internally toothed ring fixed co-axially to the said cylinder, an eccentric keyed to the said driving shaft, a connecting rod mounted on the said eccentric, a frame adapted to be moved up and down by the said connecting rod, a knife carried by the said frame, a counter-blade wherewith the said knife is adapted to coöperate, a pinion fixed to the said connecting rod concentrically with the said eccentric and adapted to engage the said toothed ring, the ratio of the diameters of the said pinion and toothed ring being such that when the connecting rod has lowered the frame into the position of coöperation of the counter-blade the speed of the draft cylinder is *nil* and remains substantially *nil* during the cutting operation.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS CHAMBON.

Witnesses:
JULES FAYOLLET,
EUGÈNE PICHON.