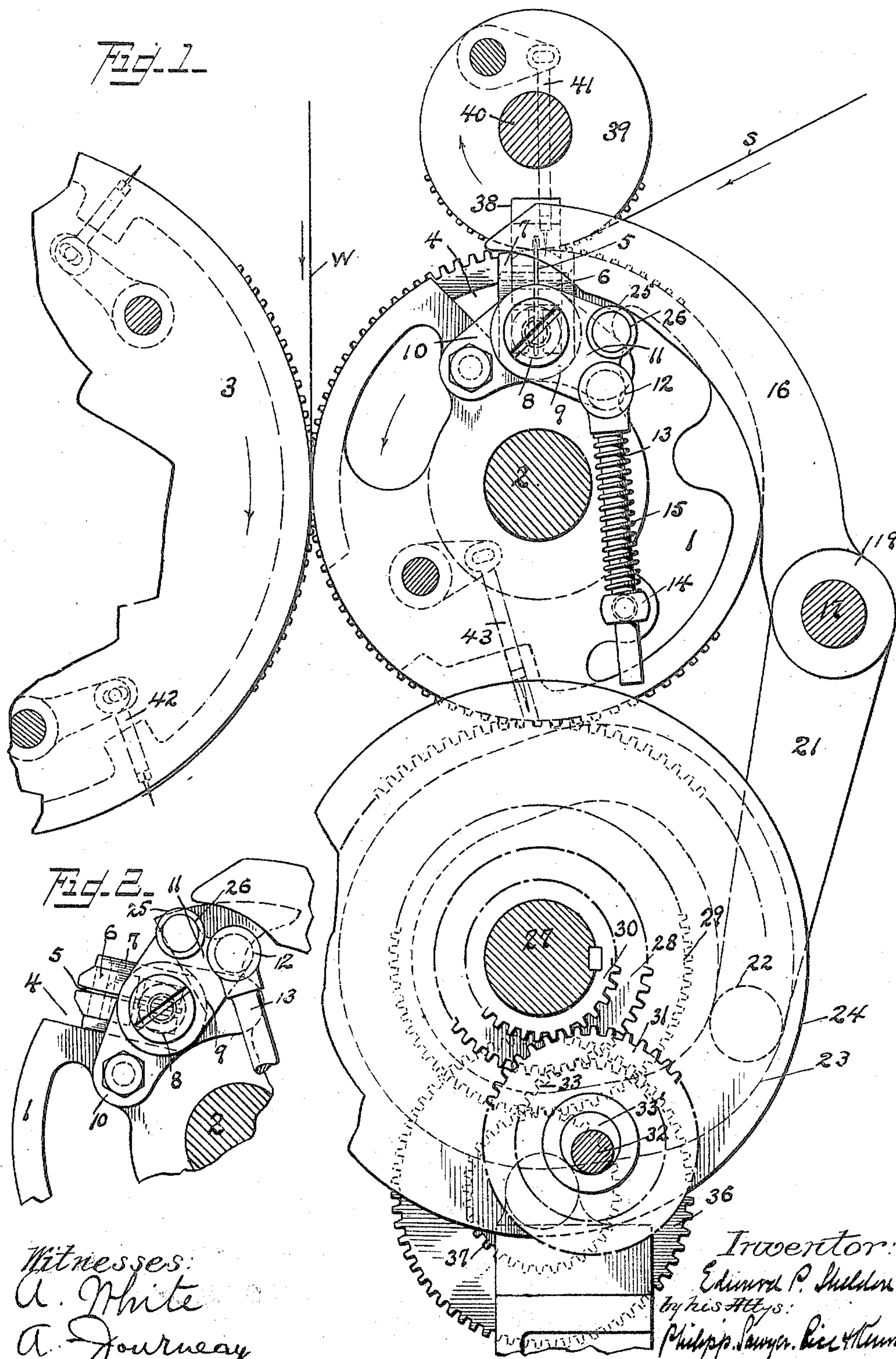


E. P. SHELDON.
CUTTING MECHANISM.
APPLICATION FILED JUNE 22, 1907.

951,490.

Patented Mar. 8, 1910.

2 SHEETS—SHEET 1.

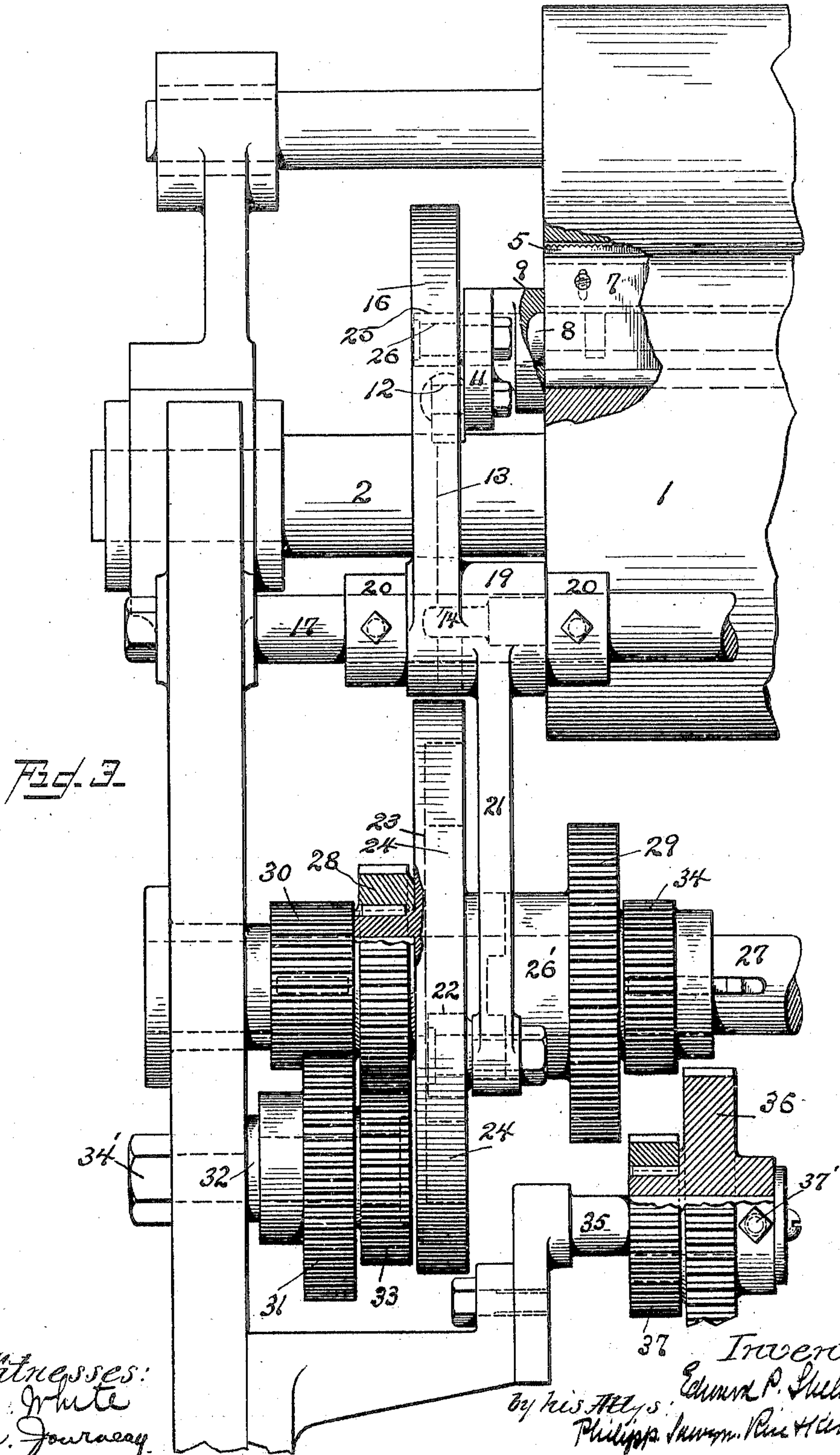


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Witnesses:
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Edmund P. Sheldon
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UNITED STATES PATENT OFFICE.

EDWARD P. SHELDON, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO
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CUTTING MECHANISM.

951,490.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed June 22, 1907. Serial No. 380,222.

To all whom it may concern:

Be it known that I, EDWARD P. SHELDON, a citizen of the United States, residing at New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Cutting Mechanisms, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in rotary cutting mechanisms.

In certain classes of machines, such, for instance, as printing machines, rotary cutting mechanisms are employed by which the paper passing through the machine is severed at the proper times. These cutting mechanisms, as now usually constructed, comprise a pair of cylinders, one of which carries a knife suitably mounted thereon, and the other of which is provided with a cooperating cutting member, such, for instance, as the usual cutting wood. In constructions of the character referred to, the knife operates on the product passing through the machine for each revolution of the knife carrier. It is desirable, however, under some circumstances, to prevent the knife from operating during one or more revolutions of the knife carrier.

It is the object of this invention to produce a rotary cutting mechanism of such a character that the knife may be prevented from operating during one or more revolutions of the rotary knife carrier.

With this and other objects in view, the invention consists in certain constructions, and in certain parts, improvements and combinations, as will be hereinafter fully described and then specifically pointed out in the claims.

Referring to the drawings—Figure 1 is a sectional side elevation of a cutting mechanism embodying the invention. Fig. 2 is a detail view illustrating the means for moving the knife. Fig. 3 is a side elevation of the construction shown in Fig. 1, illustrating more particularly the means for controlling the operation of the knife.

Mechanism embodying the invention will include a rotary knife carrier. While this knife carrier may be varied in its construction, as shown, it comprises a cylinder 1 mounted on a shaft 2 to be supported in suitable bearings. This cylinder, in the particu-

lar construction illustrated, coöperates with a cylinder, indicated at 3, which is or may be the usual collecting cylinder of a printing machine, this cylinder and the cylinder 1 being intergeared, as shown. The knife may be mounted in the knife carrier in any suitable way. In the particular construction illustrated, the cylinder 1 is provided with a gap, as 4, in which the knife construction is mounted and moved. Any suitable form of knife may be employed. As shown, the knife, which is indicated at 5, is mounted between two cutting woods 6, these woods and the knife being in turn mounted in the usual metal knife box, indicated at 7. In the particular construction illustrated, the box is provided with trunnions at each end, one of these trunnions being indicated by the dotted line 8 in Fig. 1. These trunnions are supported in bearings 9 formed in brackets 10 which may be slightly arched and bolted or otherwise secured to the interior of the cylinder below the gap 4 referred to. In the particular construction illustrated, the knife is held normally within the cylinder, the knife box being turned on its trunnions at the proper time to bring the knife into operative position. The particular means for retaining the knife in a normally inoperative position, when this construction is adopted, may be varied. As shown, one of the trunnions 8 has secured to it a short arm 11, this arm having pivoted to it by means of a bolt 12 or in any other suitable manner, a rod 13. This rod passes through a guide or puppet 14 carried on the cylinder and is surrounded by a spring 15 which bears against the puppet and against a shoulder on the rod. The tendency of this spring is to throw the arm up toward the gap, thus rocking the knife box on its trunnions and causing the knife to move in the gap 4 so as to bring its operative edge below the perimeter of the knife carrier. The normal position of the knife is indicated in Fig. 2.

Any suitable means may be employed for turning the knife box on its trunnions in the opposite direction in order to cause the knife to protrude beyond the perimeter of the knife carrier, that is, to place it in operative position. The particular means illustrated include a controller or arm 16, this arm being pivoted on a bar 17 extending across the

machine. The hub 19 of this arm may be located between two collars 20 secured by screws or in any other suitable manner, to the bar 17. This hub may have extending
 5 from it an operating arm 21 carrying a roll 22 which works in a cam groove 23 in a cam disk 24. The arm 16 may be arranged to contact on its inner side with a roll 25 secured by means of a bolt 26, or in any other
 10 suitable manner, to the arm 11. Just before the knife reaches its cutting position the arm 16 is thrown in by the connections described and by its contact with the roller rocks the arm 11, thus throwing the box and knife up
 15 into operating position, this being the position indicated in Fig. 1.

It may be desirable to vary the time of operation of the knife with respect to the rotation of its carrier, that is, to vary the
 20 number of revolutions of the carrier which occur between the operations of the knife. When the mechanism which has just been described has been employed for controlling the movement of the knife, this may be
 25 effected by varying the time of rotation of the cam 24. While this may be effected in any suitable manner, in the construction illustrated, the cam is mounted on a hub 26', this hub being loose on a shaft 27. This
 30 hub 26' has secured to it two gears 28, 29. The shaft is provided with a broad-faced gear 30 which meshes with and drives a gear 31 loose on a stud 32 secured to the machine frame. Secured to and turning with this
 35 gear 32 is a gear 33 which meshes with and drives the gear 28 before referred to, and consequently drives the cam 24. With the gears described and as shown in the drawings, an operation of the knife will be effect-
 40 ed every other revolution of the knife carrier. To vary the time of revolution, there is provided, as shown, a gear 34 fast on the shaft 27. Located in proper relation to this gear is a stud 35 which carries a gear
 45 36 and fast to the hub of this gear is another gear 37. These gears are arranged so that they may slide on the stud to bring the gear 36 in mesh with the gear 34 and the gear 37 in mesh with the gear 29. Before
 50 this is effected, it is obvious that the gears 31, 32 should be thrown out of mesh with the gears 30, 28. In order to effect this, the stud 32 may be provided with an eccentric 33'. By loosening the nut 34' which holds
 55 this stud in the frame, this stud may be turned so as to carry the gears 31, 33 out of mesh with their gears 30, 28. If desired, the hub of the gear 36 may be provided with a screw 37' which holds the gears in position when they are out of operation, this screw of course being loosened when the gears are brought into operation. The number of teeth in the gears 29, 34, 36, 37 is, in the construction illustrated, so designed as
 60 to cause the cam 24 to be rotated at such a

speed that an operation of the knife will be produced every fourth revolution of the carrier.

The cooperating cutting member employed with the knife may be variously located. As shown, it consists of a wood 38
 70 mounted on a cylinder 39, this cylinder being in turn mounted on a shaft 40 suitably supported in the machine frame. In the construction shown, this cylinder is a sheet
 75 carrying cylinder and to that end, as is illustrated, is provided with pins 41 which may be operated in any usual manner. In the particular construction illustrated, furthermore, the mechanism is designed for associ-
 80 ating with sheets cut from a web W, by suitable mechanism not illustrated, double length sheets, indicated at S, these sheets being intermittently fed between the cylinders 1 and 39. As illustrated in Fig. 1, the
 85 double length sheet has just been cut and one part of it and sheets from the web W have been taken by pins 42 on the cylinder 3, which, in the construction illustrated, is a three-part collecting cylinder of the ordi-
 90 nary type. The other part of the sheet will be taken by the pins 41 on the cylinder 39 and in taking the sheet this cylinder makes one revolution. At the end of this revolution, the sheets begin to be delivered and
 95 the cylinder 39 makes a second revolution during the delivery of the sheet. The cylinder now makes a third revolution empty. During its fourth revolution, the end of the next succeeding double sheet is passing be-
 100 tween it and the cylinder 1, and when this revolution is completed, the knife comes into operation and cuts the sheet. The second half of the sheet is now taken by the pins 41 and the cycle of operations is re-
 105 peated.

Changes and variations may be made in the construction by which the invention is carried into effect. The invention is not, therefore, to be confined to the particular
 110 construction hereinbefore described and illustrated in the accompanying drawings.

What is claimed is:—

1. The combination with a rotary carrier, of a knife pivotally mounted within the carrier, means for turning the knife on its
 115 pivots to cause it to move from an inoperative position within the carrier to a cutting position in which it projects radially therefrom, and a cooperating cutting member. 120

2. The combination with a rotary carrier, of a knife pivotally mounted therein, means for normally holding the knife within the carrier and out of cutting position, means
 125 for turning the knife on its pivots to bring it into a radial cutting position in which it projects from the carrier, and a cooperating cutting member.

3. The combination with a rotary carrier, of a knife pivotally mounted within the car- 130

rier, a spring and suitable connections for normally holding the knife within the carrier and out of cutting position, means for turning the knife on its pivots to bring it
5 into a radial cutting position in which it projects from the carrier, and a cooperating cutting member.

4. The combination with a rotary carrier, of a knife pivotally mounted within the carrier, means for normally holding the knife
10 out of cutting position, a knife within the carrier and controller for bringing the knife into cutting position, means for varying the time of operation of the controller, and a
15 cooperating cutting member.

5. The combination with a rotary carrier, of a knife pivotally mounted therein, means for normally holding the knife in inoperative position, a knife controller for turning
20 the knife on its pivots to bring it into operative position, a cam for operating the controller, means for varying the relative speed of the cam and knife carrier, and a cooperating cutting member.

25 6. The combination with a rotary knife carrier, of a pair of supports, a knife box trunnioned in the supports, means including a spring for turning the knife box on

its trunnions to hold the knife in inoperative position within the carrier, a swinging controller for turning the box on its
30 trunnions to bring the knife into a cutting position in which it projects radially from the carrier, a cam for operating the controller, and a cooperating knife carrying
35 member.

7. The combination with a rotary knife carrier, of a pair of supports, a knife box trunnioned in the supports, means including a spring for turning the knife box on
40 its trunnions to hold the knife in inoperative position, a swinging controller for turning the box on its trunnions to bring the knife into operative position, a cam for operating the controller, means for varying the speed
45 of rotation of the cam with respect to the knife carrier, and a cooperating cutting member.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

EDWARD P. SHELDON.

Witnesses:

F. W. H. CRANE,
LOUIS ROEHM.