

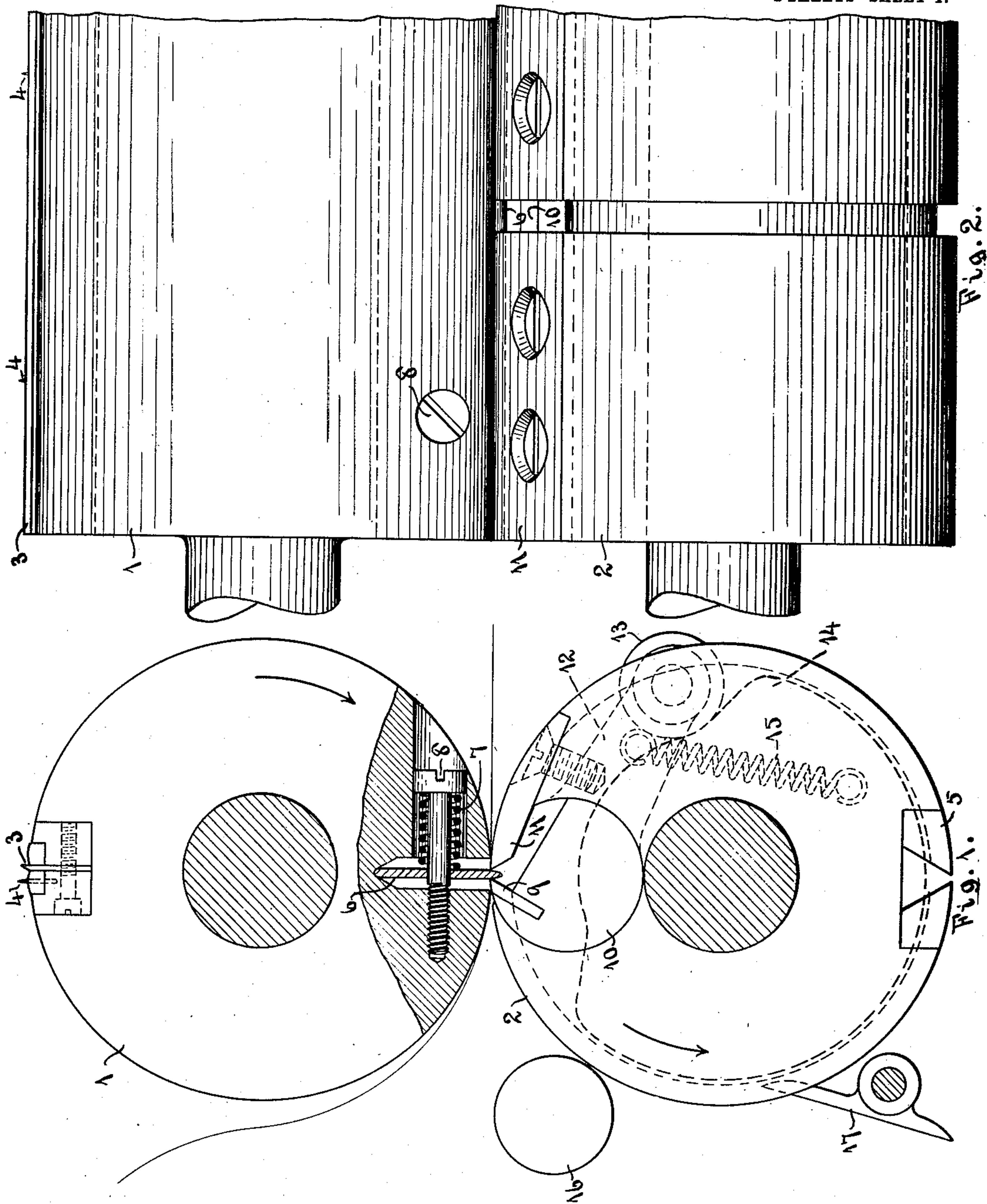
S. HOLLINGSWORTH.
FOLDING MACHINE.

APPLICATION FILED MAR. 28, 1908. RENEWED DEC. 13, 1909.

966,095.

Patented Aug. 2, 1910.

2 SHEETS—SHEET 1.



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INVENTOR

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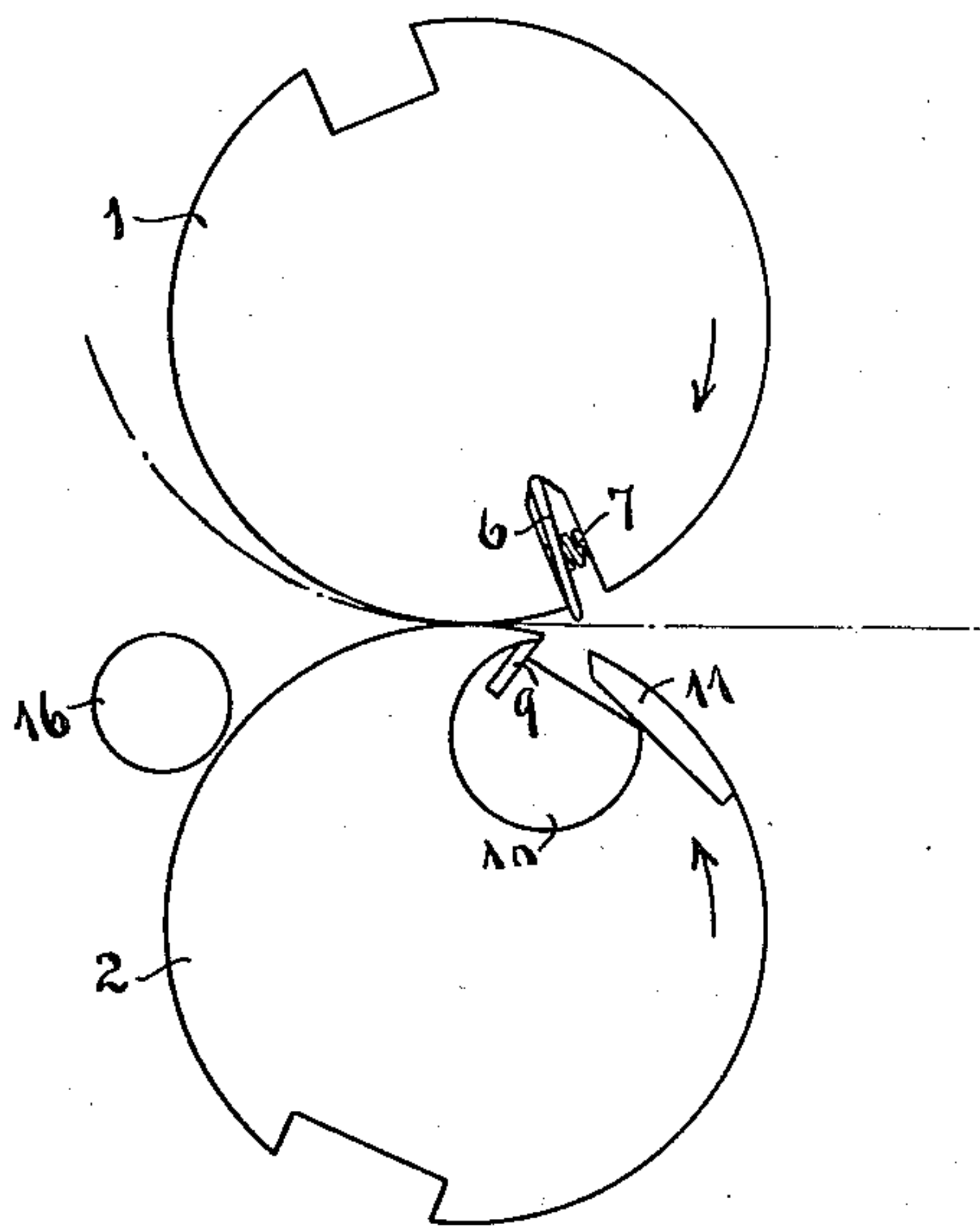


Fig. 3.

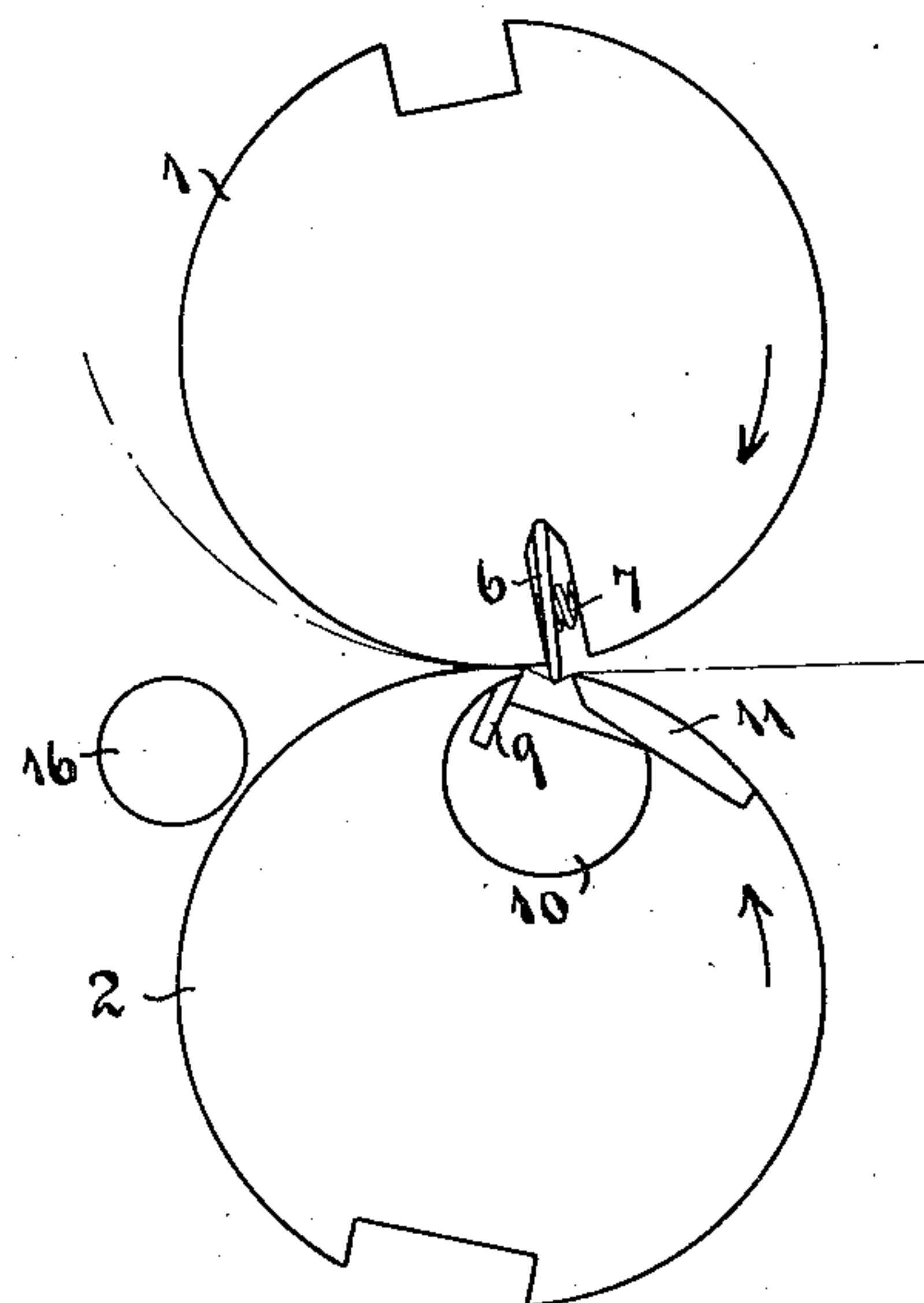


Fig. 4.

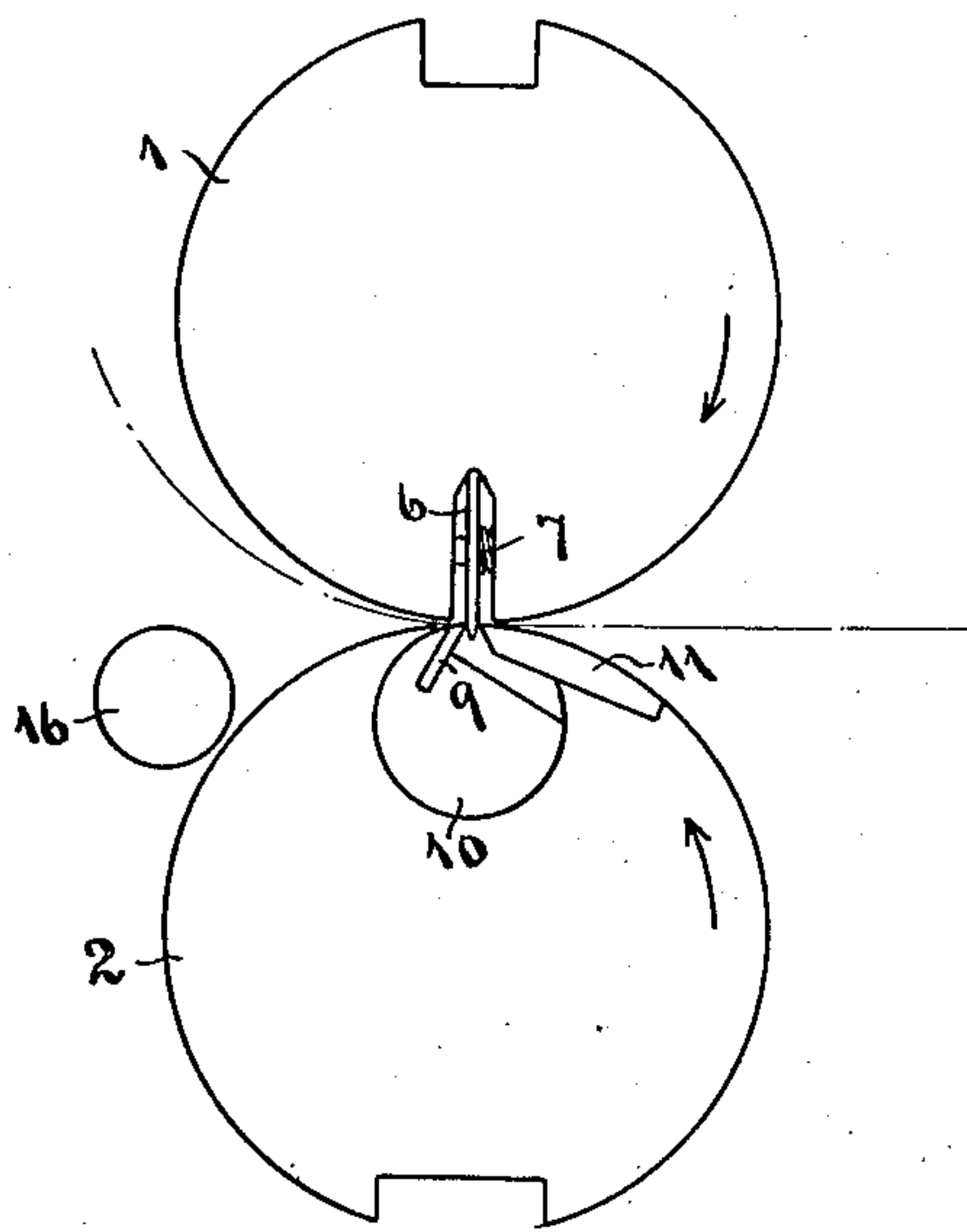


Fig. 5.

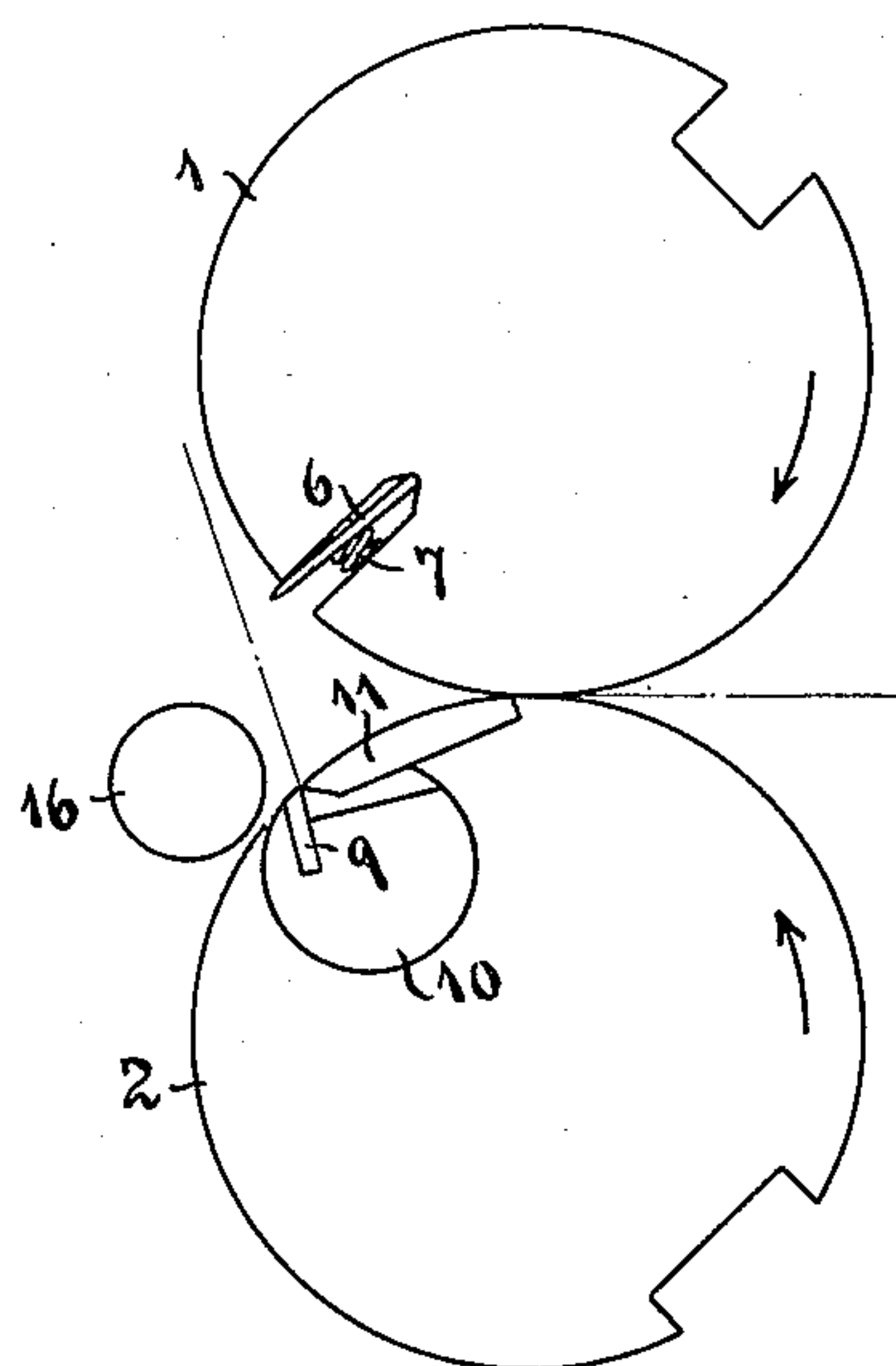


Fig. 6.

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UNITED STATES PATENT OFFICE.

SAMUEL HOLLINGSWORTH, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO AMERICAN SALES BOOK COMPANY, OF ELMIRA, NEW YORK, A CORPORATION OF NEW YORK.

FOLDING-MACHINE.

966,095.

Specification of Letters Patent.

Patented Aug. 2, 1910.

Application filed March 28, 1908, Serial No. 423,879. Renewed December 13, 1909. Serial No. 532,907.

To all whom it may concern:

Be it known that I, SAMUEL HOLLINGSWORTH, a citizen of the United States, residing at Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Folding-Machines, of which the following is a specification.

This invention relates to improvements in the folding cylinders employed in combination with printing and other machines through which paper passes in a continuous web, to be finally cut into sheets and folded for delivery; and the object of my improvements is to provide means for preventing tearing strains upon the web of paper during the folding operation.

I attain my object by constructing the folding cylinders in the manner illustrated in the accompanying drawings, in which—

Figure 1 represents an end view, partially in section, of combined cutting and folding cylinders embodying my invention; Fig. 2, a side elevation showing one end of such cylinders; and Figs. 3 to 6, inclusive, diagrammatic views illustrating the folding operation.

Like numerals designate like parts in the several views.

The cylinders 1 and 2, male and female, are shown in Fig. 1 as being provided, the one with a cutting blade 3 and retaining points 4 of any suitable construction, and the other with a cutting block 5; so that the severed sheet will correspond in length to the circumference of the cylinders. Diametrically opposite the cutting blade the male cylinder is provided with a longitudinal slot, in which is located the folding blade 6, said blade having a central bearing in the bottom of the slot, and being adapted to rock back and forth between the outer edges of the slot. The blade 6 is held within the slot by a suitable number of studs 8, provided with coiled springs 7, which bear against the folding blade in the direction of rotation to press said blade against the opposite edge of the slot. Within the female cylinder there is mounted a longitudinal oscillating gripper bar 10, carrying gripper face-pieces or jaws 9, the outer edges of which are adapted to engage with fixed gripper blocks or jaws 11, set into the outer periphery of the cylinder. At one end, the gripper bar is provided with

an arm 12 carrying a roller 13 at its free end, which engages a fixed cam 14, suitably fastened to the frame of the machine, the roller 13 being held in engagement with said cam by means of a spring 15 attached, at one end, to the end of the cylinder and, at the other end, to the arm 12. This cam motion is not essentially new in the art, and therefore sufficiently illustrated by the broken lines in Fig. 1.

16 is a roller by which the folded leaves are brought together as the female cylinder continues to revolve, after producing the fold; and 17 represents one of the conductors by which the folded sheets are discharged from the female cylinder; said conductors having their ends inserted in suitable circumferential grooves in the female cylinder, one of said grooves being shown in Fig. 2, and indicated in broken lines in Fig. 1. The gripper bar is preferably in the form of a round rod, having the outward side flattened where the gripper blocks 11 project over it, said flattening being sufficient to permit the oscillating motion of the bar to and from said blocks.

In operation: the end of the web, having had cut from it the preceding sheet by the knife blade 3, is carried around cylinder 1 by means of the pins 4, in the usual manner, until the cylinders approach the position shown in Fig. 3; the gripper face-pieces 9 in this position of the cylinder being retracted from the gripper blocks 11. As the cylinders continue to revolve the folding blade enters between these gripper jaws, as shown in Fig. 4, carrying the web with it. At this moment the arm 12 is actuated by the cam 14 and spring 15 to turn the gripper bar, thereby bringing the face-pieces 9 into engagement with the paper and pressing it against the blade 6. This movement of the face-pieces is in the opposite direction to that of the rotation of the cylinders, and, as it continues, the blade 6 is pushed over toward the opposite side of its slot, so that during this period the blade is practically stationary relatively to the running web. The paper, therefore, is drawn in between the blade and the gripper blocks without strain upon the web; the parts being then in the position shown in Fig. 5. As the rotation of the cylinders continues the blade 6 will be drawn out from the fold of the paper, and the face-pieces 9 will be brought

up against the gripper blocks 11, to carry the folded sheet to and beyond the roller 16, the cam 14 acting to release the gripper just before the sheet reaches the conductors 17. 5 After being withdrawn from the gripper the folding blade 6 is returned to its normal position by the springs 7.

While I have shown my improved folding device in combination with a cutting cylinder provided with one blade, it will be understood that any number of these folding blades may be applied to such cylinder, according to the number of cutting blades carried thereby; and, also, that the device may 10 be applied to folding cylinders without the cutting blade, and wherever it is required to make a fold in a running web of paper or other fabric. 15

What I claim as my invention and desire 20 to secure by Letters Patent is—

A folding machine comprising a pair of

cylinders, one of said cylinders being provided with a folding blade susceptible of movement in the opposite direction to that of rotation, and the other of said cylinders 25 being provided with a pair of gripper jaws, one of said jaws being so positioned as to be spaced away from the rearward side of the folding blade when entered between the jaws, the other jaw being movable and set 30 in advance of the folding blade, and means for actuating the latter jaw to cause it to engage the folding blade and press it to the rear against the former jaw during the folding operation. 35

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

SAMUEL HOLLINGSWORTH.

Witnesses:

WILLIAM RUDDY,
HENRY EGGERDING.