(No Model.)

L. E. BROOKES.

PAPER FOLDER.

No. 389,192. Patented Sept. 11, 1888.

Fig. 1.

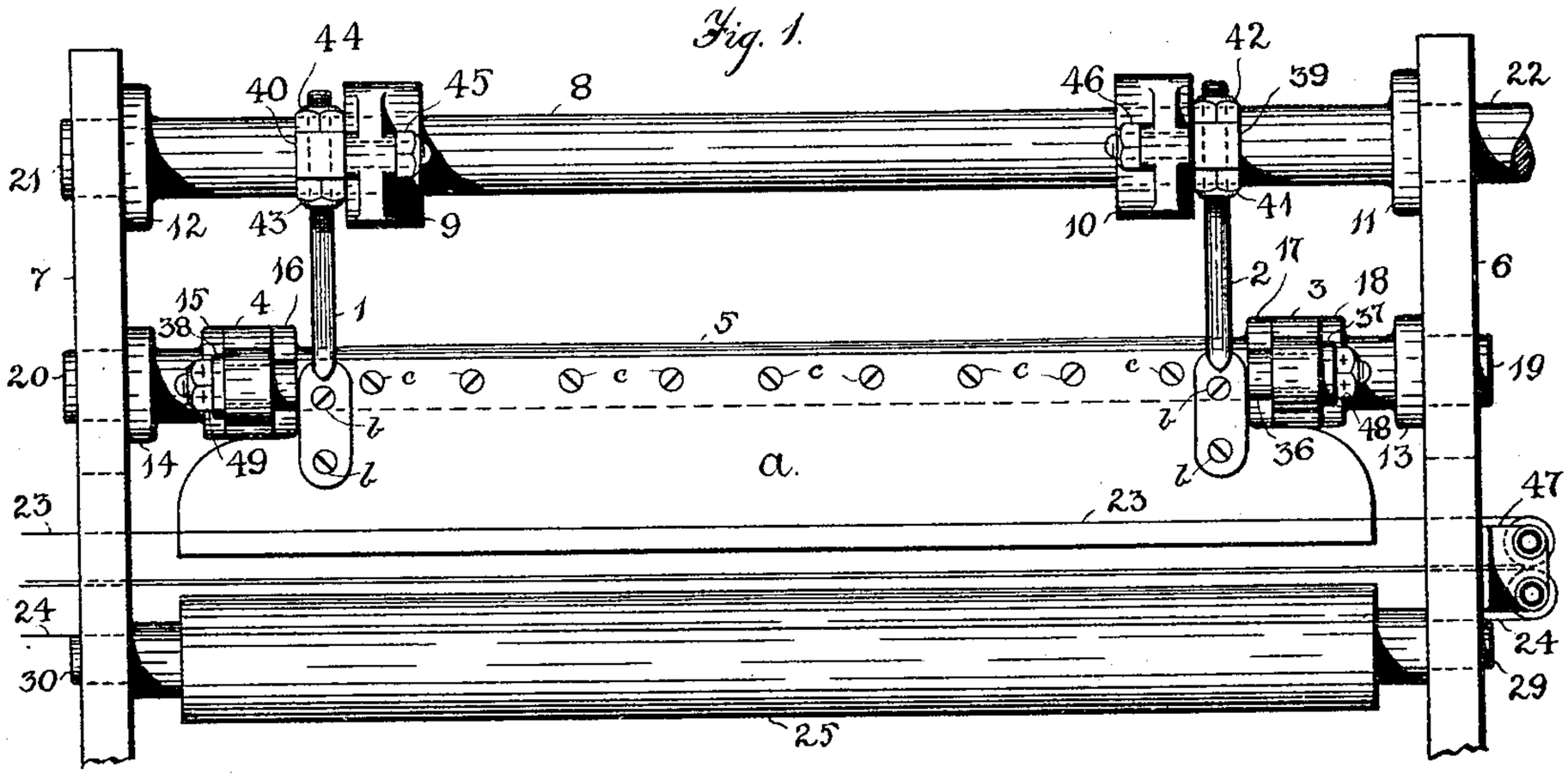
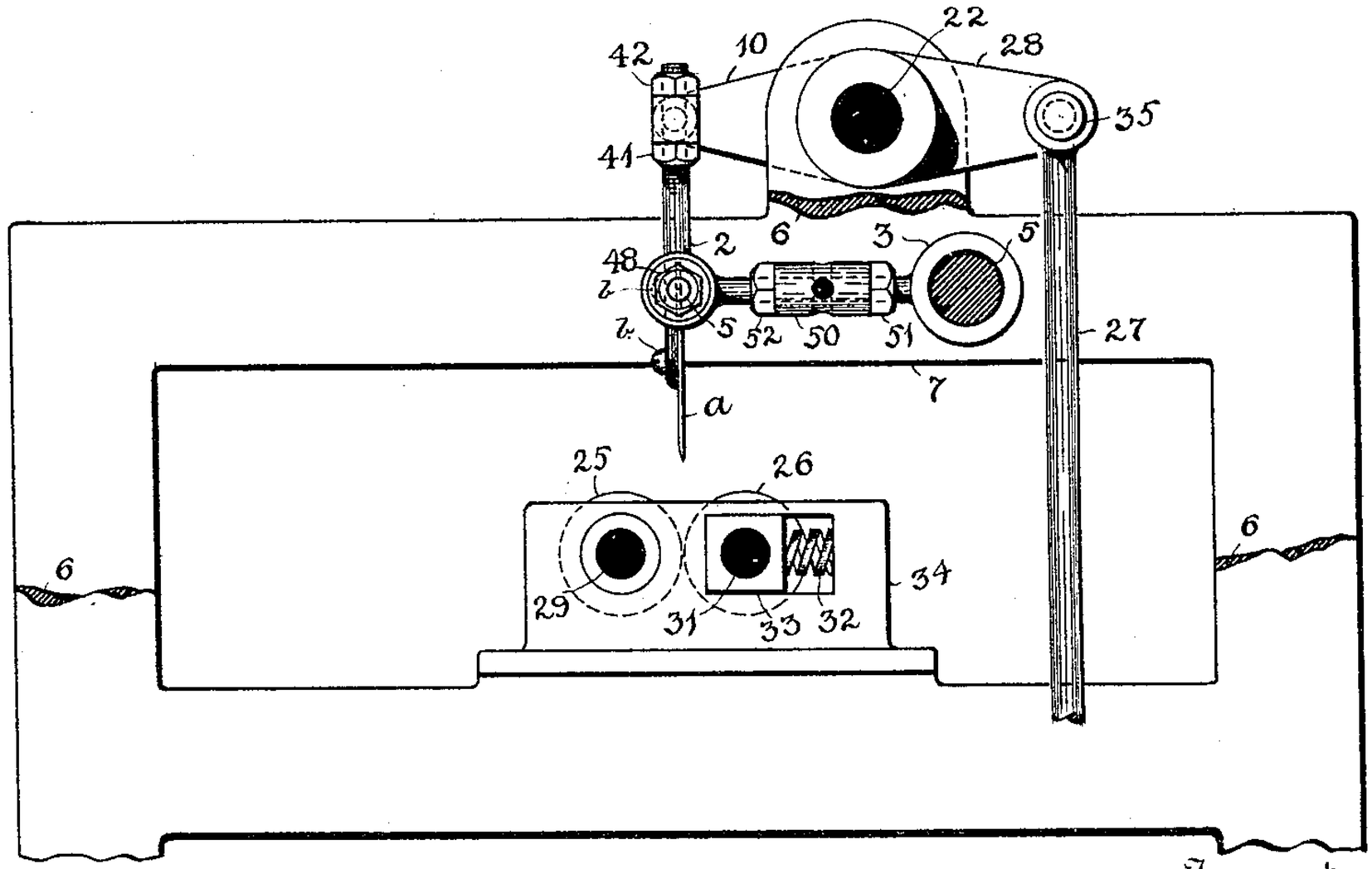


Fig. 2.



Witnesses.
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LEONARD E. BROOKES, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF, CONRAD KAHLER, AND JOHN J. KAHLER, ALL OF SAME PLACE.

PAPER-FOLDER.

SPECIFICATION forming part of Letters Patent No. 389,192, dated September 11, 1888.

Application filed November 19, 1887. Serial No. 255,600. (No model.)

To all whom it may concern:

Be it known that I, LEONARD E. BROOKES, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Paper-Folders, of which the following is a specification, reference being had to the accompanying drawings, in which--

Figure 1 is a side elevation. Fig. 2 is a cross-section.

This invention relates to paper-folders in which the folding-blade has a movement on the arc of a circle, which, however, is nearly a vertical action for the distance which the knife is to move, and is primarily designed for use with folding-machines for printing-presses, but can be used for other purposes; and it has for its objects to compensate for the slight curve in which the blade moves, so that when the blade enters the bite of the folding-rollers it will have approximately a direct force in line with such bite; and its nature consists in the several parts and combinations of parts hereinafter described and claimed as new.

In the drawings, *a* represents the blade, which may be of any of the ordinary forms of construction. This blade *a* is attached by screws *b* to the outer or lower ends of rods 1 and 2, and by screws *c* to a cross bar or piece, 36, which piece runs from arms extending out from collars 3 and 4, which collars are mounted upon a suitable cross-shaft, 5, which is supported in suitable boxes at each end on the cross-piece 7, as shown in Fig. 2, which cross-piece is formed with or secured to the end piece, 6. Extending up from each cross-piece 7 is a supporting-ear, in which is journaled a shaft, 8, which shaft at one end has a journal, 21, and at the other a journal, 22, which journal 22 projects beyond the end of the plate; and, as shown, this shaft at one end has an abutting collar, 11, and at the other end an abutting collar, 12, and, as shown, the shaft 5, supporting the collars 3 and 4, is provided at one end with a journal, 19, and at its other end with a journal, 20, and with abutting collars 13 and 14 at the respective ends. These collars 13 and 14 and the collars 11 and 12 prevent end movement of the respective shafts to which they are applied. The shaft 8 has secured thereto by suitable collars or rings arms 9 and 10, to which the rods which support the blade are connected. The shaft 5 is provided at one end with collars 15 and 16, and at the other end with collars 17 and 18, with a space between the respective collars, between which collars are located the rings or hubs 3 and 4, 3 being between the collars 17 and 18, and 4 between the collars 15 and 16.

A series of leading-tapes, 23, is located below the folding-blade, and a corresponding series of tapes, 24, is located below the tapes 23, and these tapes 23 and 24 are arranged to lead over the folding-rollers 25 and 26 and deliver the paper to the rollers. The folding-roller 25 is provided with a journal, 29, at one end, and at the other end with a journal, 30, and each journal is mounted in a suitable box located in the support 34, attached to the cross-piece of the frame, and the journal 31 of the folding-roller 26 is supported at each end in a box, 33, located in a slot in the support 34, and in this slot, back of the journal-box, is a coiled spring, 32, which allows the box and folding-roller to yield whenever required.

Attached to the journal 22 of the shaft 8 is an arm, 28, to which is connected by a pin, 35, the end of the pitman or connecting-rod 27, which rod at its other end is connected with an operating mechanism, by which it can be given a reciprocating movement to move the arm 28 and rock the shaft 8, and through such shaft move the arms 9 and 10 to operate the rods 1 and 2, and move the folding-blade to or from the folding-rollers.

The cross-rod 36, to which the folding-blade *a* is attached by screws *c*, is supported in the outer ends of the arms carried by the collars 3 and 4, and is held in position by nuts 37 and 38 and lock-nuts 48 and 49, by which means the blade is given a firm and strong support. The outer end of the arm 9 has a socket, through which passes a bolt, 45, having at its head end an eye and socket portion, 40, through which the screw-threaded end of the stem 1 passes, and this stem is adjusted for the proper position of the folding-blade by lock-nuts 43 and 44, and the arm 10 has a corresponding socket, through which passes a bolt, 46, having an eye or socket head, 39, through which passes the screw-threaded end of the stem or rod 2, which is likewise adjusted for the position of the folding-blade by locking-nuts 41 and 42. The tapes 23 and 24 run over pulleys, which pul-

leys are mounted on a shaft supported in the bracket 47, attached to the frame of the machine.

The arm of each collar or hub 3 and 4 is formed in two portions, one of which is secured to the hub, and the other has a socket, in which the end of the cross-bar 36 is secured, and these portions are connected by a turn-buckle, 50, located between set-nuts 51 and 52 on the respective portions of the rod, so that by turning the buckle 50 the rod as a whole can be lengthened or shortened to move the cross-bar 36 out or in to bring the edge of the folding-blade in line with the bite of the folding-rollers when performing its work, and these arms and the manner of connecting them with the cross-bar 36 and the arms 9 and 10 and the manner of connecting them with the stems or rods 1 and 2 form a parallel motion, by which the blade is raised and lowered in a manner to bring its acting end in a direct line with the bite of the folding-rollers, and it will be seen that by means of the adjusting device by which the blade is supported and connected with the parallel arms the blade can be adjusted in or out, or up or down, as may be required for the correct position in use, and at the same time the relation between the arms is not materially changed; and, furthermore, by this manner of supporting the blade the actuating force is applied in a direct line, or nearly so, and at the point that will prevent any side-play or wabbling of the blade in use.

The operation is as follows: The blade is adjusted in its position to line with the folding-rollers by means of the connecting-arms of the cross-bar 36, and is adjusted for the limit of its motion by means of its stems or rods 1 and 2, and when adjusted properly the rod 27 is reciprocated to move the arm 28, which rocks the shaft 8 and moves the arms 9 and 10, which arms, through connecting stems or rods 1 and 2, give the proper thrust to the blade, and the blade, through its supporting-bar 36, moves the arms of the hubs or collars 3 and 4 in unison with the movements of the arms 9 and 10.

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

1. The combination, with the folding-blade, of the rods 1 and 2, the rocking arms 9 and 10, adjustably connected with said rods, the shaft 5, having collars 3 and 4, provided with adjustable arms, the cross-bar 36, journaled in said arms and attached to the folding blade for the purpose of changing the line of descent of said blade, and means for supporting and actuating the rocking arms, substantially as described.

2. The combination, with folding-rollers, of a folding-blade carried by the adjustable connecting-bar, and the rod 36, carried in adjustable arms connected with the collars 3 and 4, and parallel moving arms for operating the connecting stems or rods, substantially as described.

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