

No. 629,930.

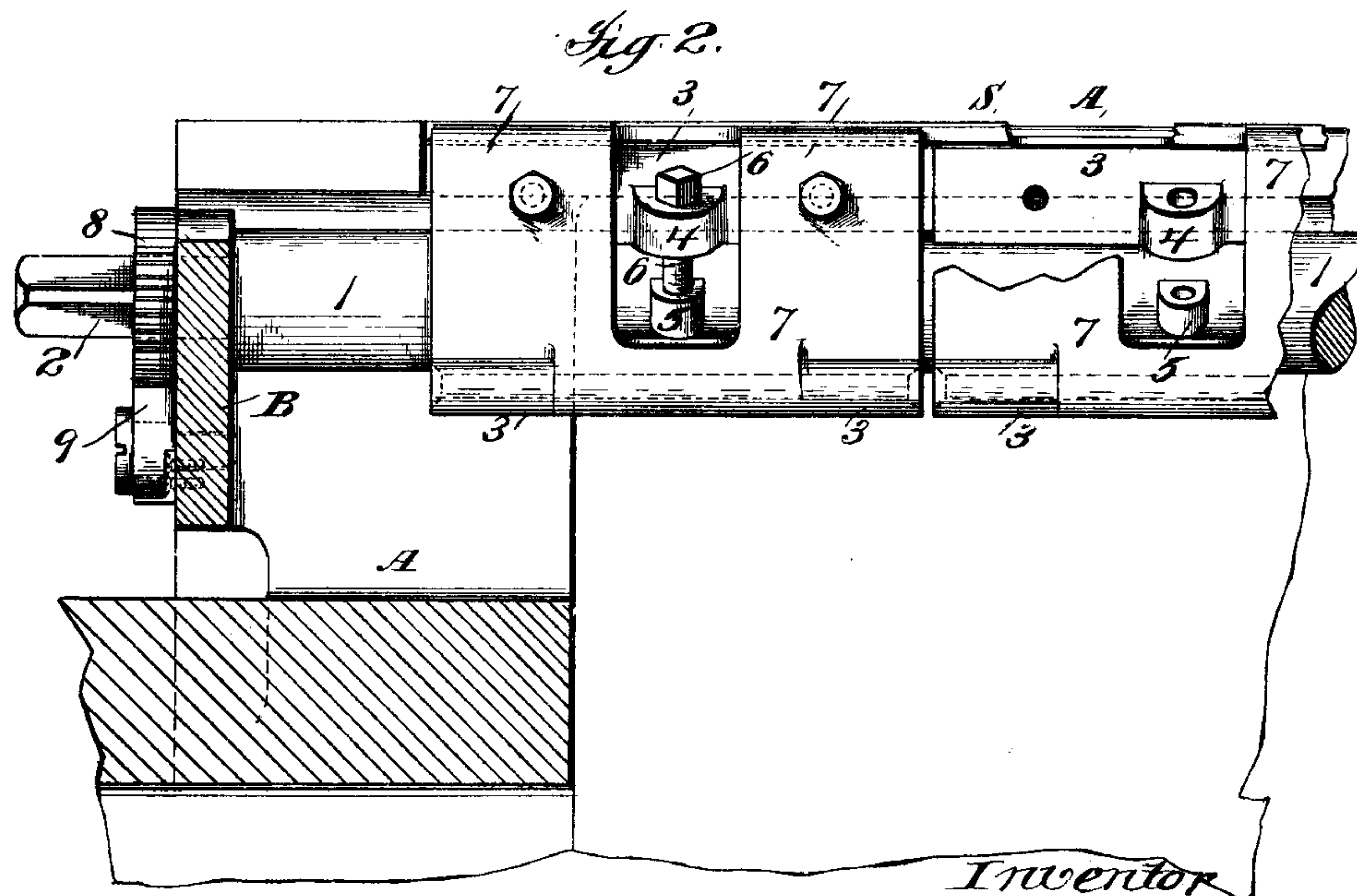
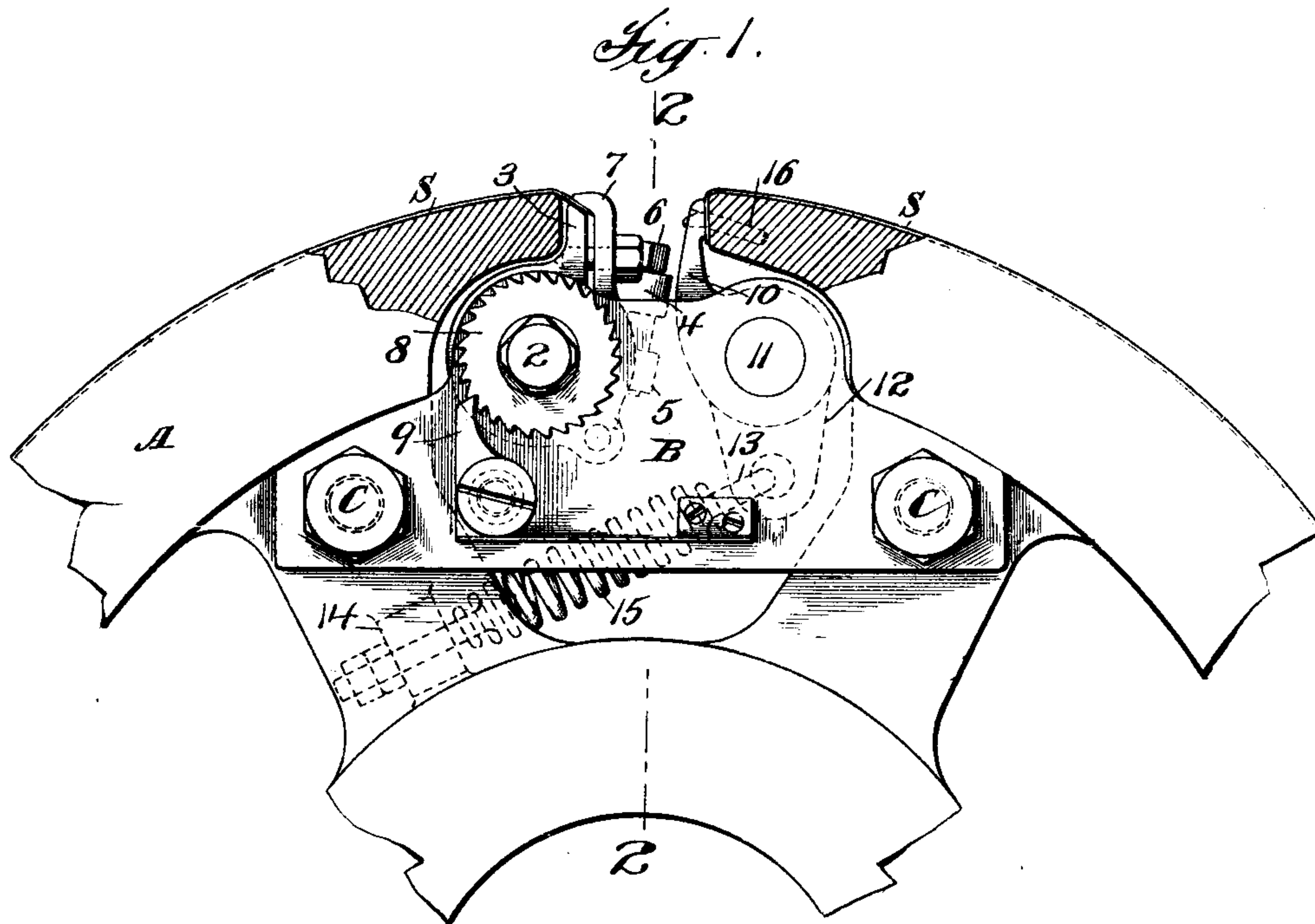
Patented Aug. 1, 1899.

W. SPALCKHAVER.
SHEET HOLDING AND STRAINING DEVICE.

(Application filed Dec. 10, 1898.)

(No Model.)

3 Sheets—Sheet 1.



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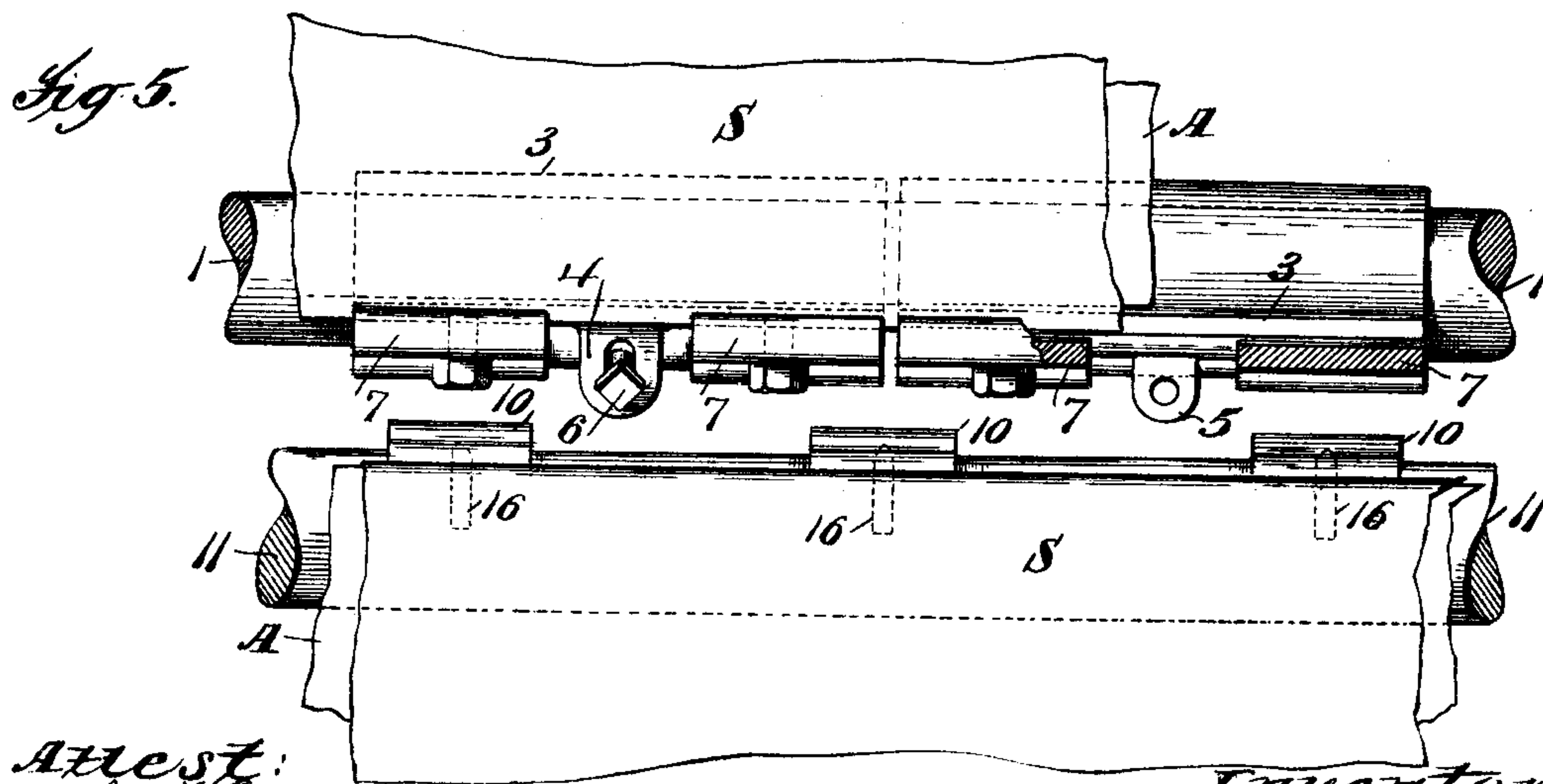
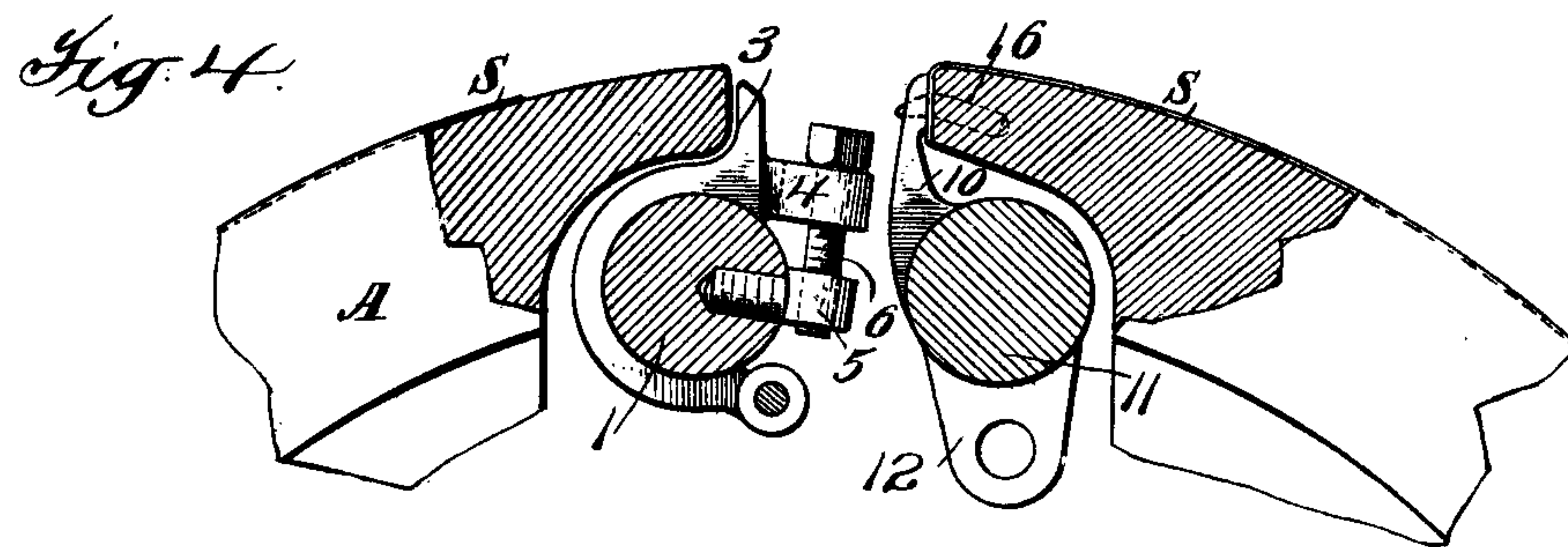
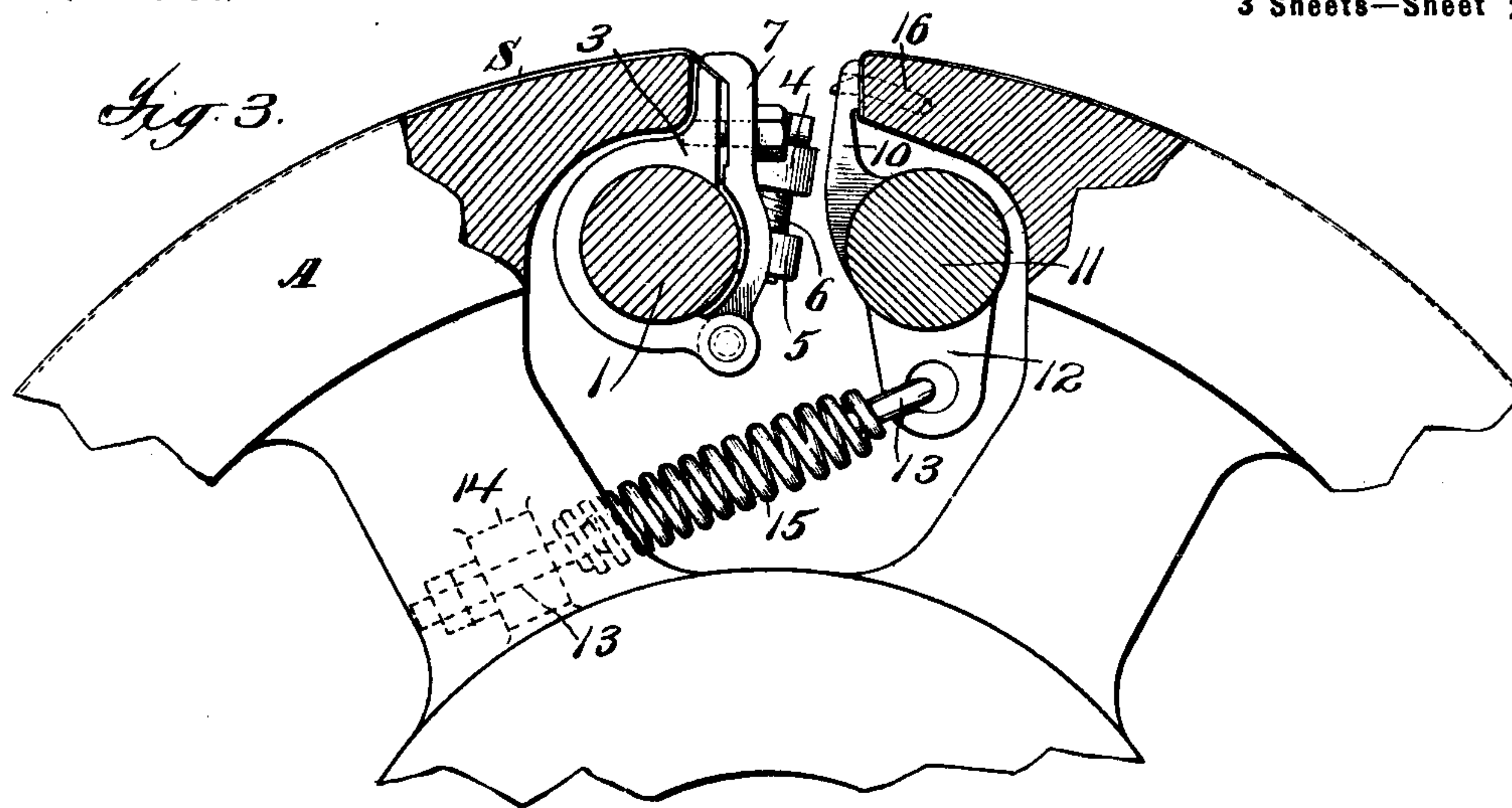
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SHEET HOLDING AND STRAINING DEVICE.

(Application filed Dec. 10, 1898.)

(No Model.)

3 Sheets—Sheet 2.



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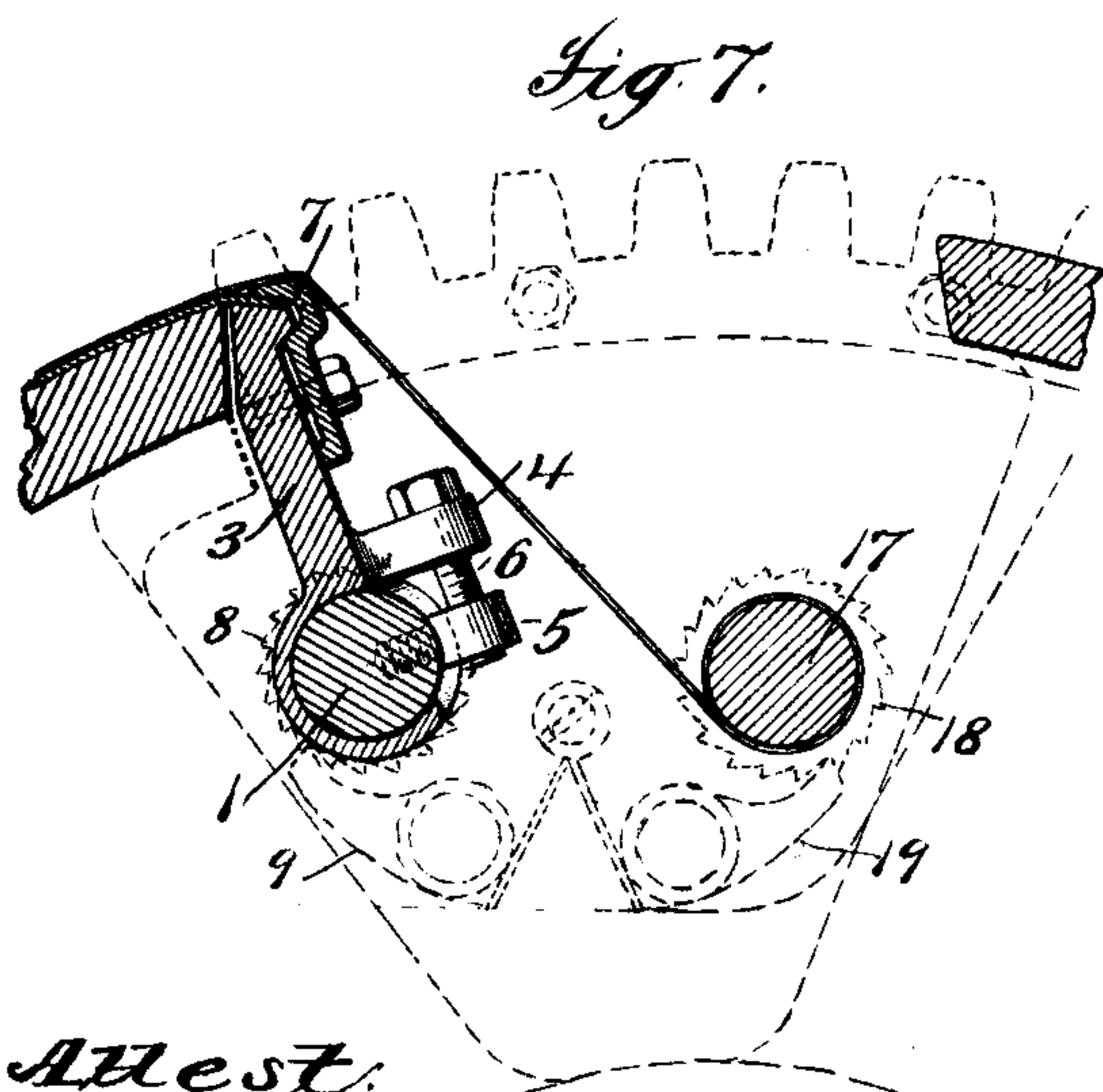
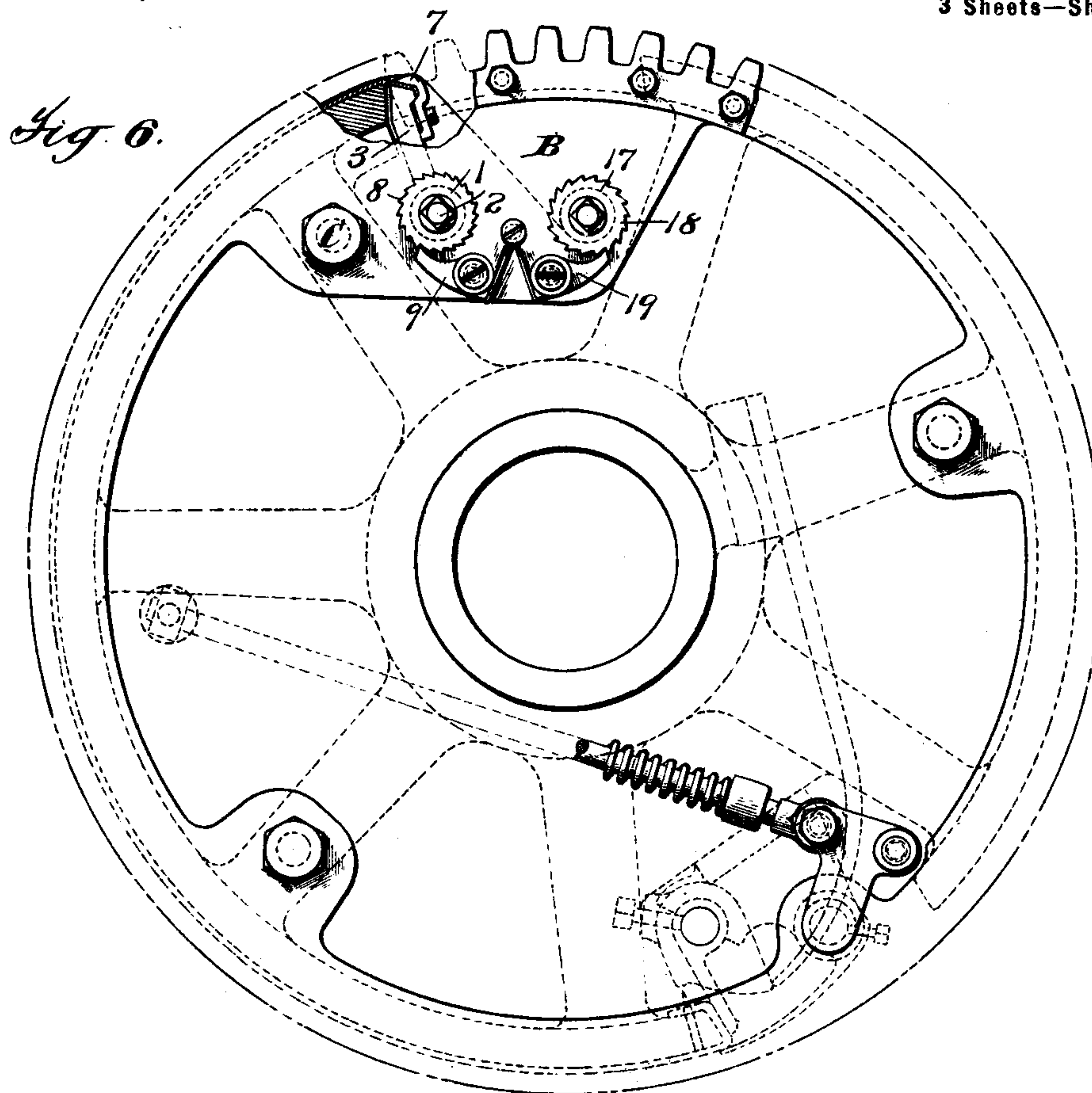
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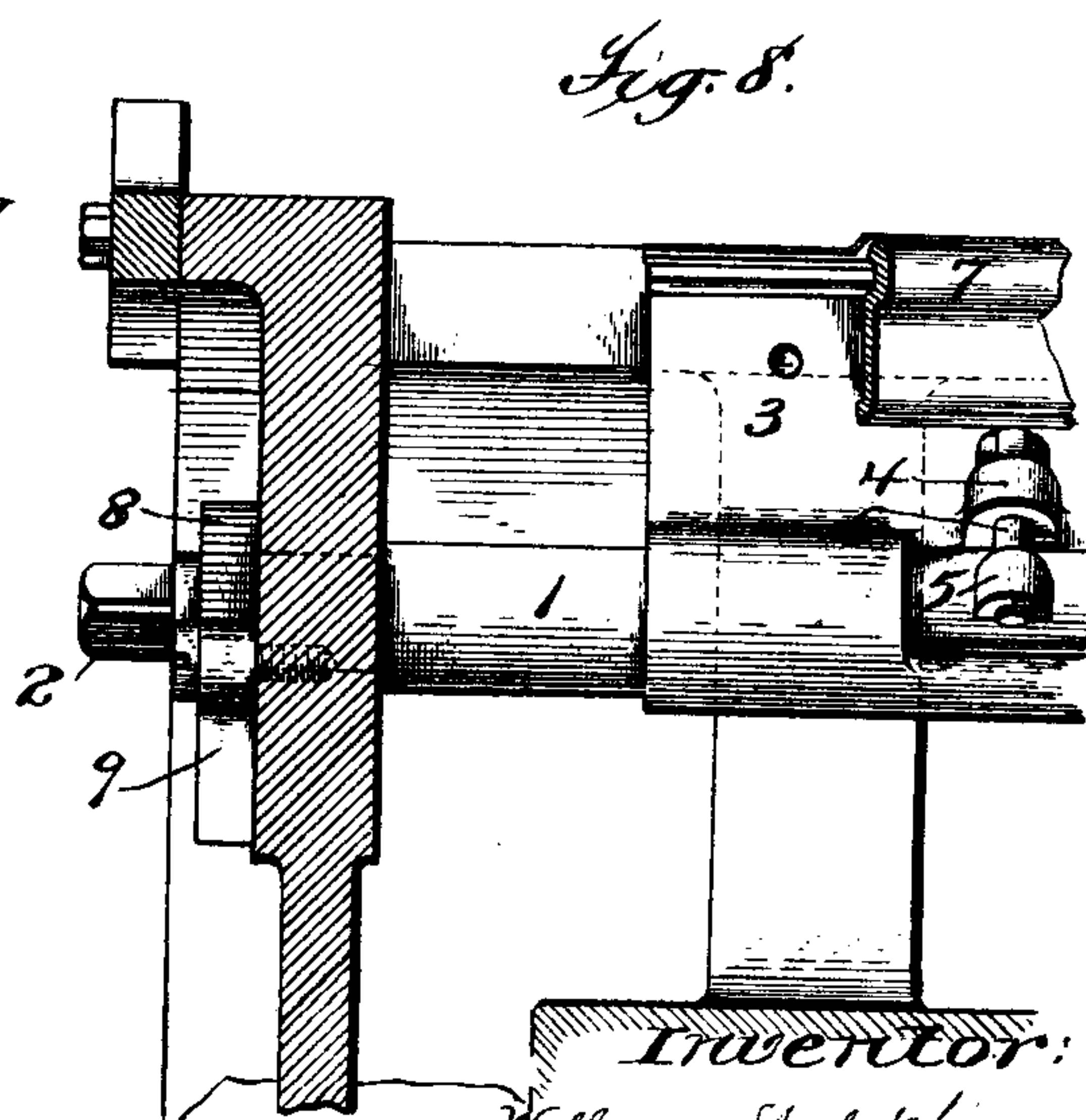
(Application filed Dec. 10, 1898.)

(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

WILLIAM SPALCKHAVER, OF NEW YORK, N. Y., ASSIGNOR TO ROBERT HOE,
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SHEET HOLDING AND STRAINING DEVICE.

SPECIFICATION forming part of Letters Patent No. 629,930, dated August 1, 1899.

Application filed December 10, 1898. Serial No. 698,861. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SPALCKHAVER, a citizen of the United States, residing at New York city, county of Kings, and State of New York, have invented certain new and useful Improvements in Sheet Holding and Straining Devices, 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 devices for straining and holding flexible sheets to thin supporting-surfaces, and is more particularly designed for use in connection with aluminium, zinc, or other metallic printing-plates. It may, however, be used for various other purposes—such, for instance, as holding the blankets or cardboard by which impression-cylinders are prepared on the surfaces of such cylinders.

The object of the invention is to produce improved means by which a holding-jaw or a pair of such jaws may be quickly and accurately adjusted with respect to a support to produce an even tension on the plate or sheet of material which is held by the jaws.

A further object of the invention is to produce an improved means by which each pair of a set of pairs of holding devices may be independently adjusted around a support to produce an even tension on the plate or other sheet of material held by the jaws and in combination therewith to provide means whereby the entire set of jaws may be simultaneously adjusted.

The invention consists in certain constructions, parts, improvements, and combinations, as will be hereinafter fully described and then pointed out in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification and in which like characters of reference indicate the same parts, Figure 1 represents a detail elevation, partly in section, of a portion of a sheet-support, which in this case is a cylinder, and the printing member of a printing-couple provided with the improved holding device. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a vertical section through the construction shown in Fig. 1, the plane of section being at right angles to the shaft of the

cylinder. Fig. 4 is a view similar to Fig. 3 with one of the holding-jaws removed. Fig. 5 is a detail plan view of the construction shown in Fig. 3. Fig. 6 is a detail elevation of an impression-cylinder provided with a modification of the improved holding devices, said devices being shown as applied to holding a sheet of cardboard with which such cylinders are usually provided. Fig. 7 is a detail section of the construction shown in Fig. 6. Fig. 8 is a detail elevation, partly in section, showing certain parts of the construction illustrated in Fig. 6, the other parts being removed.

Referring to the drawings, A indicates a portion of a plate-carrying cylinder. The cylinder is provided with a pair of side plates B, one of these plates being shown in elevation in Fig. 1 and in section in Fig. 2. These side plates are secured to the cylinder by bolts C or in any other suitable way. The cylinder is provided with the usual gap, in which the plate-holding devices are located, and supported beneath this gap is a shaft 1, this shaft finding its bearings in the side plates B. The shaft 1 carries the holding devices to be hereinafter described, such devices being made adjustable around the shaft. The holding devices may be of various kinds, and various means may be provided for adjusting them. They will, however, preferably consist of holding-jaws and will be arranged and adjusted as hereinafter described.

Located on the shaft 1 are a series of jaws 3, which are provided with curved extensions which partially embrace the shaft 1 and also preferably carry perforated lugs or eyes 4. The shaft 1 is preferably provided with a series of lugs 5, which are in vertical alinement with the lugs 4 and are preferably threaded. Passing through the perforations in the lugs 4 and engaging the threaded portions in the lugs 5 are bolts 6. The perforations in the lugs 4 are larger than the diameter of the bolts, and it will be seen that as the bolts are screwed in or out the jaws 3 will be given an angular adjustment around the shaft.

In order to hold the sheet of material S, there is provided a cooperating holding means, such as the jaws 7. These jaws may be supported so as to cooperate with the jaws 3 in various ways. They are shown in one modi-

fication—namely, that illustrated in Figs. 1 to 5—as pivoted to the jaws 3 by a hinged joint, while in the modification illustrated in Figs. 6 to 8 they are shown as carried on the jaws 3, being secured thereto by an ordinary threaded bolt. Other methods of mounting these jaws may be used, it being only necessary to so arrange them that they will cooperate with the jaws 3 in holding the sheet of material and at the same time permit the said jaws to be adjusted with respect to the support. The devices shown are, however, believed to be the preferable ones.

Various means may be provided for rotating the shaft 1 in its bearings, and thus adjusting the jaws or series of jaws mounted thereon. A simple and effective means is that shown in which the shaft is provided with a squared head 2 and a ratchet-wheel 8. The plate B carries a spring-holding pawl 9, which cooperates with the said ratchet-wheel and prevents backward rotation thereof.

The operation of the device so far described is as follows: The edge of the sheet of material S having been inserted between the jaws 3 and 7, the bolts which connect the two jaws are screwed down, so that the sheet is firmly clamped between the jaws. The bolts 6 are then turned by a suitable wrench to adjust the various sets of jaws along the shaft away from the shoulder of the gap in order to produce an even tension on all parts of the sheet of material. It sometimes happens, especially where the device is used to hold and strain metallic printing-plates to their seats on the cylinder, that certain parts of the plate, because of buckling or for some reason, need a greater tension than other parts of the plate. When this is the case, certain of the jaws will be given a greater angular adjustment than the others. When the several sets of holding devices have been suitably adjusted, a wrench is placed on the squared end 2 of the shaft, and the shaft is revolved in its bearings, so as to simultaneously move all the sets of holding devices away from the shoulder of the gap, thus straining the plate to its seat. The holding-pawl 9, cooperating with the ratchet 8, will prevent any backward movement of the shaft 1, and the plate will thus be securely held in position. The opposite edge of the plate may be held in various ways. It is here shown as held by a set of clamping-arms 10, mounted on a shaft 11, which is parallel to the shaft 1. The shaft 11 is provided with an arm 12, to which is connected a hook or eye 13. This hook 13 is connected to a spring 15, the other end of the spring being connected to a block 14, carried on the cylinder. The spring 15 draws the arm 12 toward the block 14, thus holding the arms 10 against the shoulder of the gap and clamping the plate in position. The arms 10 are perforated and engage pins 16, which are secured in the edge of the cylinder. The sheet or plate is provided with perforations, which are placed over the pins.

In the construction shown in Figs. 6, 7, and 8 a device embodying the invention is shown as holding a sheet of cardboard which acts as a backing on an impression-cylinder, the edges of the cardboard being clamped between the jaws 3 and 7. The jaws shown in this modification are different in shape to those shown in the other modification; but the action of the device as a whole is the same. In this modification the impression-cylinder is further provided with a shaft 17, provided with a ratchet-wheel 18, upon which the muslin or other material forming the blanket is wound and held. Cooperating with the ratchet-wheel 18 is a spring-pawl 19 of the usual construction, the same being used to prevent any backward rotation of the shaft. The impression-cylinder in this case is shown as provided with the usual sheet taking and holding grippers and the means for manipulating the same. These grippers and their cooperating devices being of a common and well-known construction are not specifically described.

Various modifications of the construction are possible. For instance, while the bolts 6 and the cooperating eyes form a convenient and ready means for giving the jaws 3 the angular adjustment, this adjustment may be obtained in various other ways. So, too, the jaws might be mounted otherwise than on a shaft and the two adjustments given in other ways. It will also be understood that the jaw-support might carry a single pair of jaws, though a series is deemed preferable for the reasons before stated. While also the invention is shown in connection with a sheet-supporting surface formed on a cylinder, it is to be understood that it is adapted for use with supporting-surfaces formed on other carriers—as, for instance, flat beds. The invention is not, therefore, to be limited to the precise details of construction shown and described, but includes all such modifications as fall within its spirit and scope as defined by the claims.

What I claim is—

1. In a holding and straining device, the combination with a support, of a pair of jaws for acting on one edge of a sheet, means for adjusting the jaws with respect to the support, means for adjusting the support and the jaw simultaneously, and means for holding the sheet in opposition to the jaws, substantially as described.

2. In a holding and straining device, the combination with a support, of a pair of jaws for acting on one edge of a sheet, means for adjusting the jaws angularly about the support, means for adjusting the support and the jaws simultaneously, and means for holding the sheet in opposition to the jaws, substantially as described.

3. In a holding and straining device, the combination with a shaft, of a pair of jaws for acting on a sheet supported on the shaft, means for adjusting the jaws around the

shaft, means for rotating the shaft, and means acting to hold the sheet in opposition to the jaws, substantially as described.

4. In a holding and straining device, the combination with a shaft, of a pair of jaws, means for causing the jaws to clamp a sheet, and means carried by the shaft and one of the jaws for adjusting both jaws about the shaft, substantially as described.

5. In a holding and straining device, the combination with a shaft, of a pair of jaws, means for causing the jaws to clamp a sheet, means carried by the shaft and one of the jaws for adjusting both jaws about the shaft, and means for rotating the shaft, substantially as described.

6. In a holding and straining device, the combination with a shaft, of a pair of hinged jaws surrounding the shaft, means for causing the jaws to clamp the plate between them, and means for adjusting the jaws about the shaft, substantially as described.

7. In a holding and straining device, the combination with a shaft, of a pair of hinged jaws surrounding the shaft, means for causing the jaws to clamp the plate between them, means for adjusting the jaws about the shaft, and means for rotating the shaft, substantially as described.

8. In a holding and straining device, the combination with a shaft, of a jaw partially embracing the same, a projection on the jaw, a projection on the shaft, means engaging both projections for adjusting them toward and from each other and thus adjusting the jaw about the shaft, and means cooperating with the jaw to hold a sheet, substantially as described.

9. In a holding and straining device, the combination with a shaft, of a jaw partially embracing the same, a projection on the jaw, a projection on the shaft, means engaging both projections for adjusting them toward and from each other and thus adjusting the jaw about the shaft, means cooperating with the jaw to hold a sheet, and means for rotating the shaft, substantially as described.

10. In a holding and straining device, the combination with a shaft, of a jaw partially encircling the shaft, a pair of perforated eyes extending from the shaft and jaw, one of said perforations being threaded, a headed bolt passing loosely through one of said eyes and engaging the threaded portion in the other, and holding means cooperating with the jaw, substantially as described.

11. In a holding and straining device, the combination with a shaft, of a jaw partially encircling the shaft, a pair of perforated eyes extending from the shaft and jaw, one of said perforations being threaded, a headed bolt passing loosely through one of said eyes and engaging the threaded portion in the other, holding means cooperating with the jaw, and means for rotating the shaft, substantially as described.

12. In a holding and straining device, the

combination with a shaft, of a jaw partially encircling the same, a pair of perforated eyes extending from the shaft and jaw, a headed bolt passing loosely through one of the eyes and engaging the threaded portion in the other, a second jaw connected to the first-named jaw, and means for adjusting the jaws to produce a clamping action between them, substantially as described.

13. In a holding and straining device, the combination with a shaft, of a jaw partially encircling the same, a pair of perforated eyes extending from the shaft and jaw, a headed bolt passing loosely through one of the eyes and engaging the threaded portion in the other, a second jaw connected to the first-named jaw, means for adjusting the jaws to produce a clamping action between them, and means for rotating the shaft, substantially as described.

14. In a holding and straining device, the combination with a shaft, of a pair of hinged jaws embracing the shaft, means for forcing the jaws together to produce a clamping action, a pair of perforated eyes extending from the shaft and one of the jaws, one of said eyes being threaded, and a headed bolt passing loosely through one of the eyes and engaging the threaded perforation in the other, substantially as described.

15. In a holding and straining device, the combination with a shaft, of a pair of hinged jaws embracing the shaft, means for forcing the jaws together to produce a clamping action, a pair of perforated eyes extending from the shaft and one of the jaws, one of said eyes being threaded, a headed bolt passing loosely through one of the eyes and engaging the threaded perforation in the other, and means for rotating the shaft, substantially as described.

16. In a holding and straining device, the combination with a shaft, of a series of jaws partially encircling the shaft, a second series of jaws cooperating with the first-named jaws, means for forcing the jaws together to produce a clamping action, and means for adjusting each of the sets of jaws angularly about the shaft, substantially as described.

17. In a holding and straining device, the combination with a shaft, of a series of jaws partially encircling the shaft, a second series of jaws cooperating with the first-named jaws, means for forcing the jaws together to produce a clamping action, means for adjusting each of the sets of jaws angularly about the shaft, means for rotating the shaft in one direction, and means for holding the shaft against rotation, substantially as described.

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

WILLIAM SPALCKHAVER.

Witnesses:

F. W. H. CRANE,

E. L. SPEIR.