

No. 641,984.

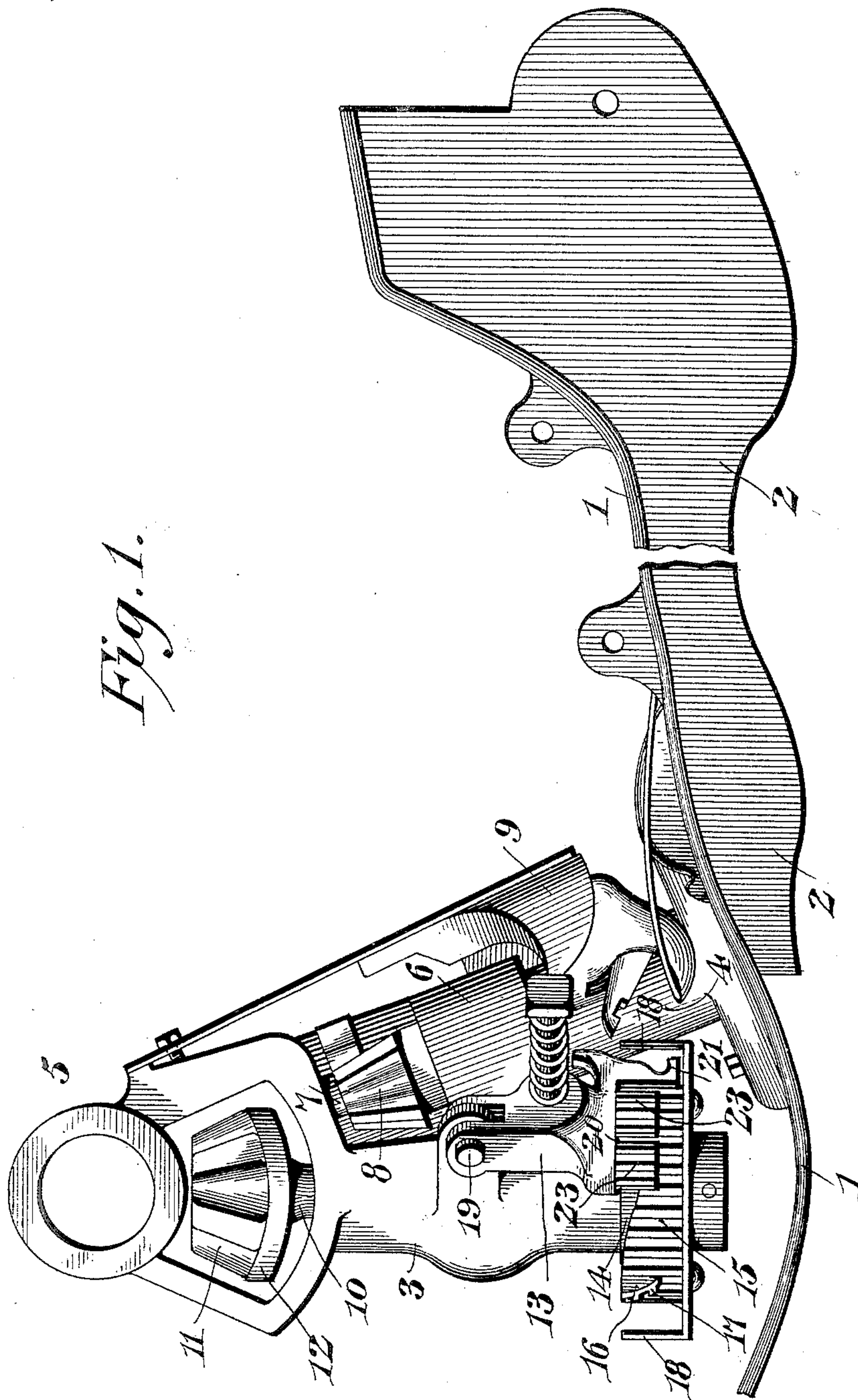
Patented Jan. 23, 1900.

W. L. MUENDER.
ATTACHMENT FOR BINDERS.

(Application filed July 31, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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Chas. S. Hoyer.

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By *his* Attorneys,

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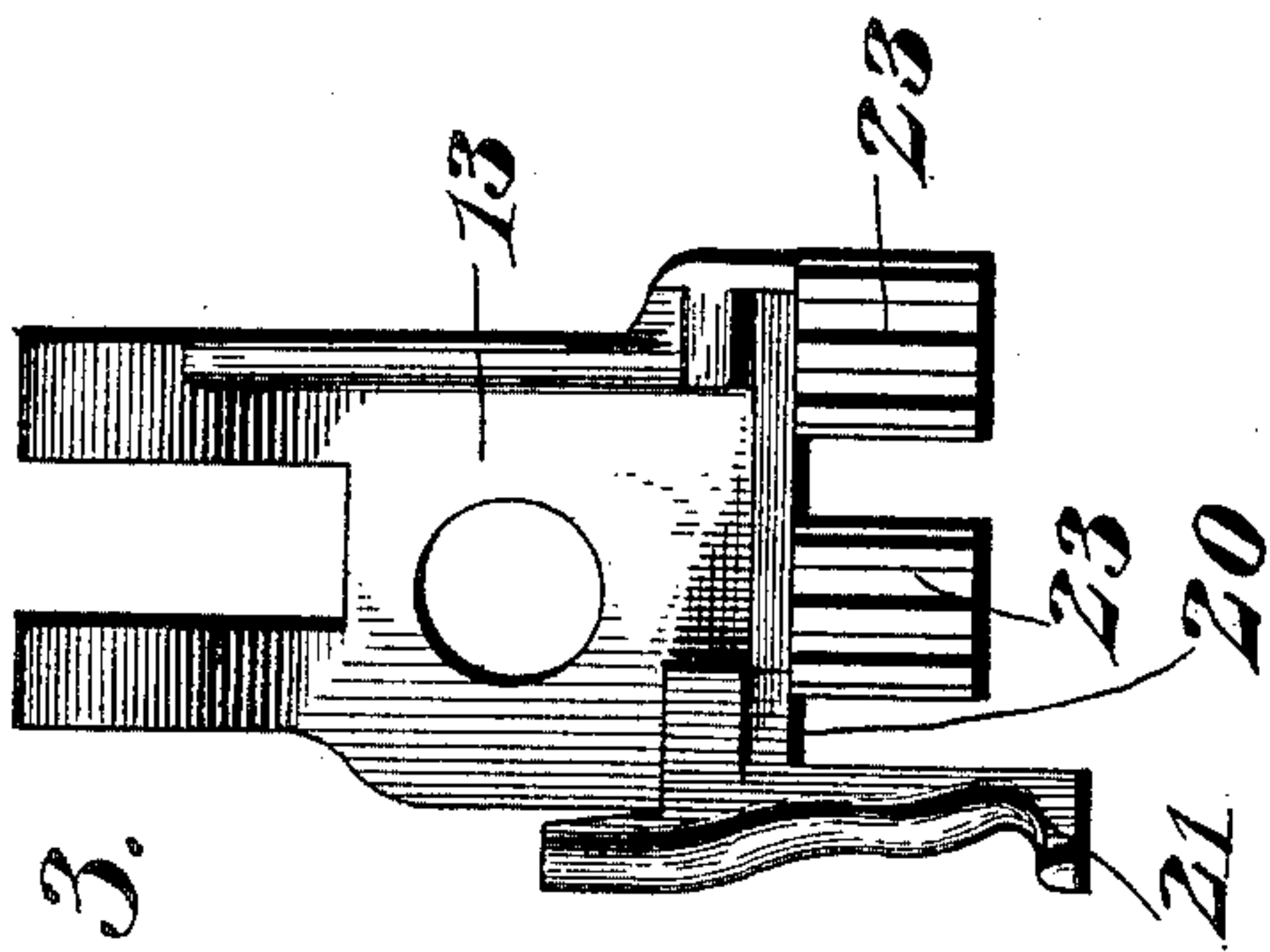


Fig. 3.

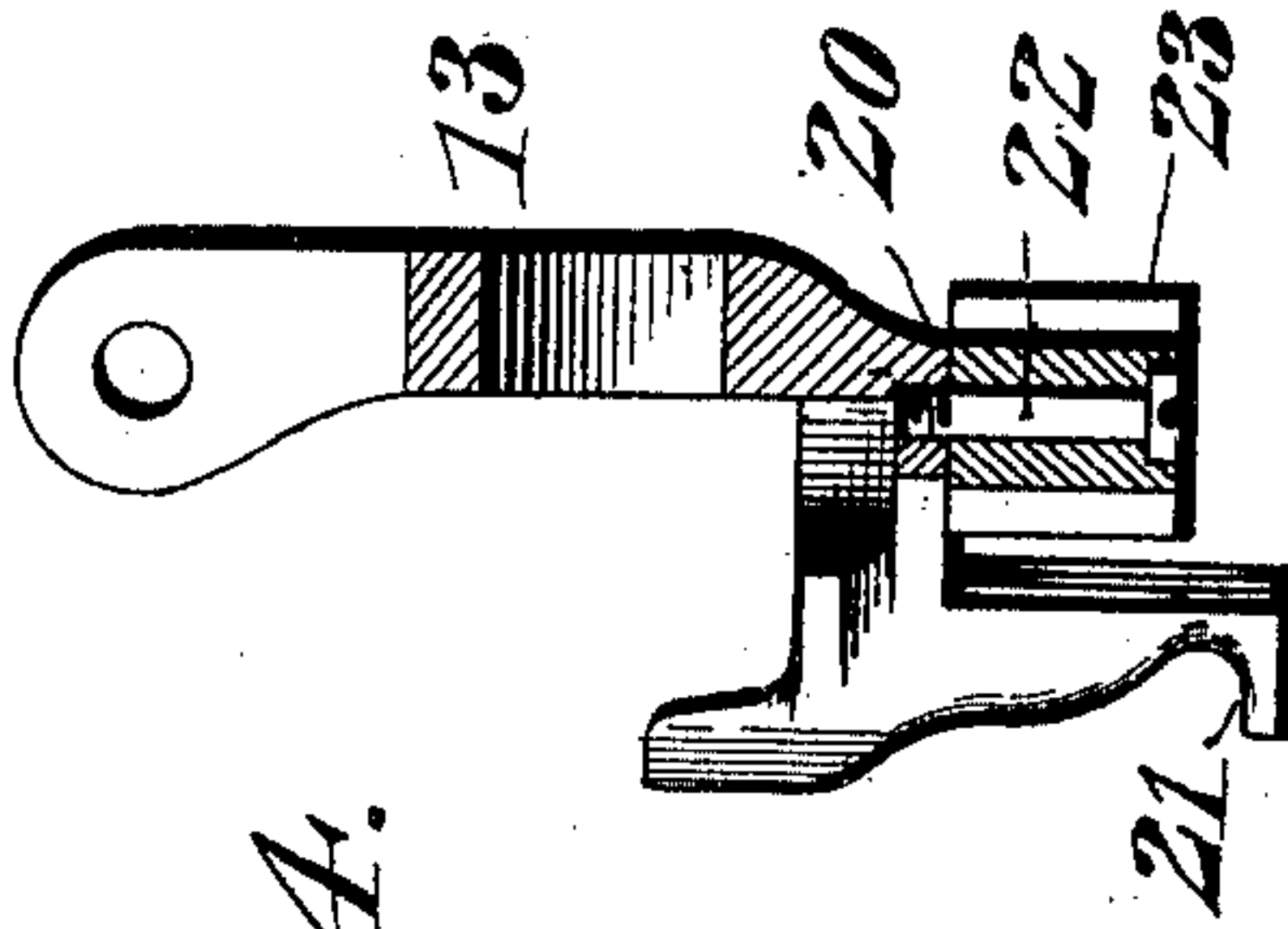


Fig. 4.

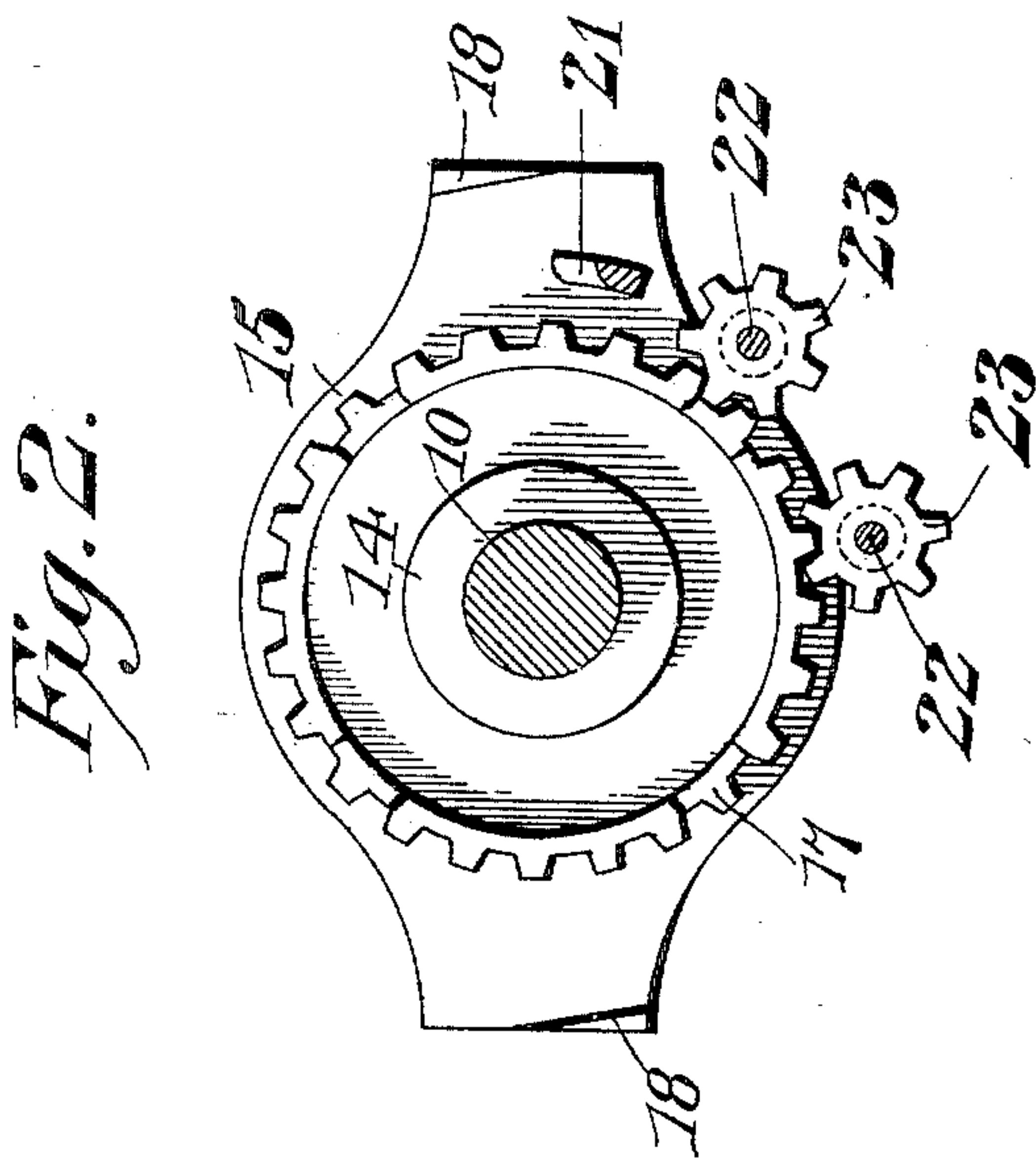


Fig. 2.

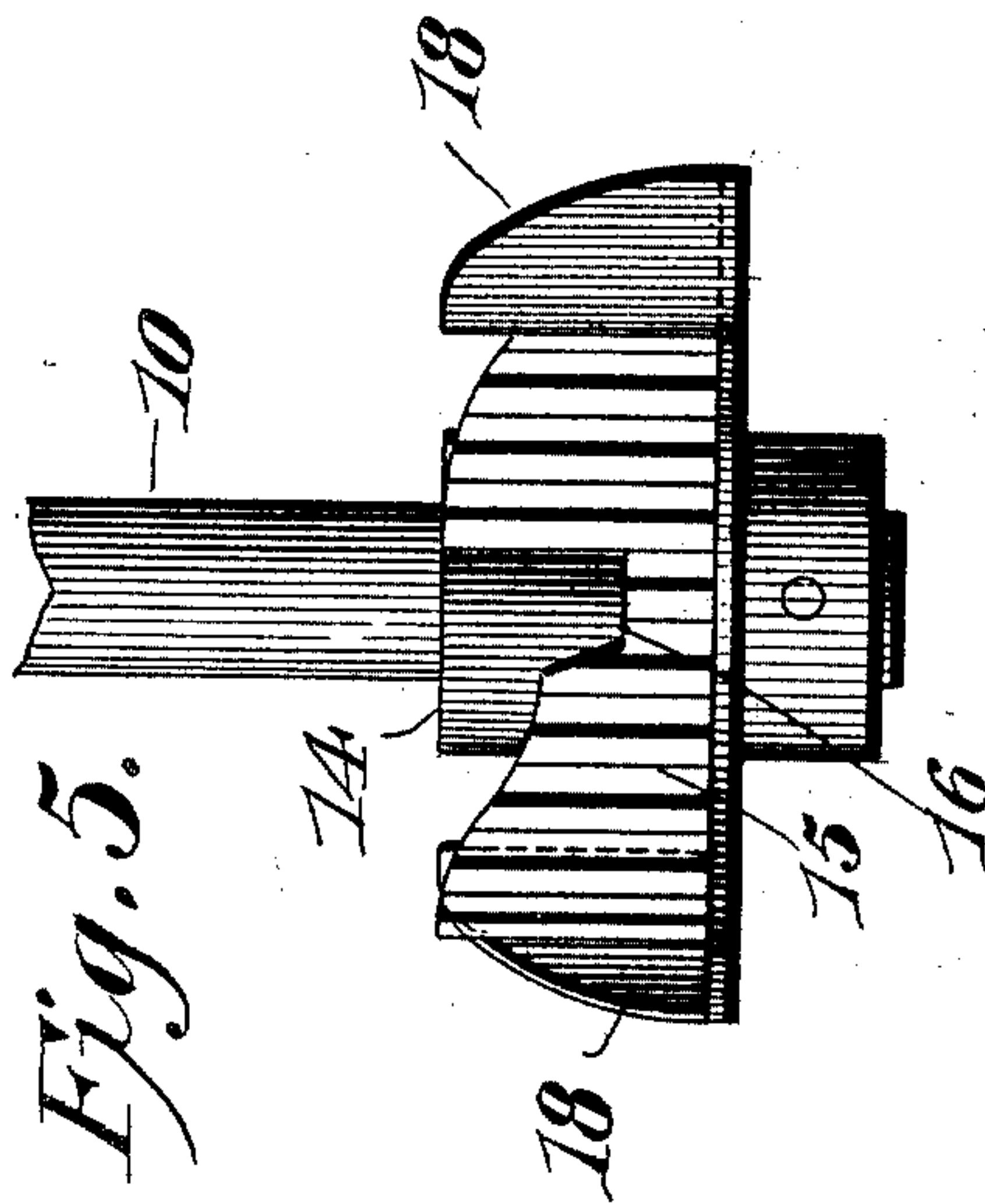


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM L. MUENDER, OF MONTFORT, WISCONSIN.

ATTACHMENT FOR BINDERS.

SPECIFICATION forming part of Letters Patent No. 641,984, dated January 23, 1900.

Application filed July 31, 1899. Serial No. 725,662. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. MUENDER, a citizen of the United States, residing at Montfort, in the county of Grant and State of Wisconsin, have invented a new and useful Attachment for Binders, of which the following is a specification.

This invention relates to an improvement on the knot-forming mechanism of a grain-binder, and particularly refers to the cord-holder, the object of the same being to provide simple and efficient means for holding the cord and preventing wear by establishing intermediate teeth or corrugations on adjacent parts and which will also induce a regularity of movement and a more accurate and positive result.

Other objects and advantages will appear in the subjoined description, and the preferred embodiment is illustrated in the accompanying drawings, wherein similar parts are indicated by corresponding reference characters in the several views, and in which—

Figure 1 is an elevation of knotter mechanism for a binder, showing well-known devices together with the improved attachment. Fig. 2 is a horizontal section showing the improved form of holder-disk and devices in engagement therewith carried by the shoe. Fig. 3 is a detail elevation of the improved shoe. Fig. 4 is a transverse vertical section of the shoe. Fig. 5 is a detail elevation of the holder-disk.

The numeral 1 designates an overhead breast-plate provided with pendent ribs 2, which are located on either side of a longitudinal slot in said plate, through which the binder-arm is adapted to pass to reach the tying-bill and holder. A tier-frame 3, consisting of an upright post or bracket 4, is bolted at its foot to the breast-plate and supported by means of a sleeve 5, which is adapted to be fitted on the tier-shaft. A bearing 6, afforded by the tier frame or bracket, receives the tier-spindle 7, which is disposed radially to the tier-shaft and has thereon a bevel-pinion 8, which may be provided with a delay-shoe to respectively engage a segmental rack and a delay-flange on the face of the tier-cam, as will be understood, and whereby the tier-spindle is given

one revolution and stopped with the tying-jaws pointing outward in the direction of the extended slot on the stubble side of the stop-finger in the breast-plate, which slot at this side of the finger is somewhat oblique to assist in the proper relation of the tying-jaws. The tying-bill itself does not or need not differ from those heretofore used and consists, essentially, of a rigid jaw or crown integral with the spindle and a second jaw pivoted thereto and having a heel extension usually provided with an antifriction-roller engaged by a spring-cam 9, whereby this jaw is forcibly closed just before the tying-bill ceases its revolution, and is therefore kept closed until a fresh revolution is commenced and during the incipient stages of such revolution.

Outside of the tier-spindle is the holder-spindle 10, having a suitable bearing in the knotter frame or stock and set radially to the tier-shaft, thereby being oblique to the tier-spindle, but at the same time, in about the same vertical plane, parallel with the face of the tier-cam. At its head the holder-spindle receives a bevel-pinion 11 and a delay-shoe 12, which respectively engage with a short segment-rack and a delay-flange on the face of the tier-cam, the rack being in the present instance of sufficient length to give the spindle one-half of a complete revolution and then cause it to be stopped by the delay-flange until the next knotting operation. All of these parts are well known in the art of knotting mechanisms for grain-binders and are referred to simply to illustrate the application of the parts of such devices on which the present improvement is made.

The improved attachment comprises a specially-formed shoe 13 and a holder-disk 14, the latter being of that shape which is commonly known as a "crown-disk"—that is, it has an upturned annular flange 15 at or adjacent to its periphery, which is notched at suitable intervals, as at 16, for the reception of the cord. It is preferred that four of these notches be formed in the flange 15, which are equidistant and agree with the semirevolution of the flange and disk for each binding operation. These notches are not cut completely to the bottom of the flange, but only part way, as in ordinary devices of this character, and

are intended to have a contour best adapted to act against the cord, so that the latter may not escape from them. On its exterior the flange 15 is formed with a series of teeth or
 5 corrugations 17, extending completely from the base thereof to the upper edge and well defined in their formation, and the said holder-disk also carries two knives 18, diametrically
 10 opposite each other and projected upward from a plate of hardened metal secured to the bottom of said disk, preferably in an adjustable manner. These knives are also of com-
 15 mon form and are so arranged that each of them runs a little behind an adjacent notch in the disk and are set far enough outward from the flange 15 to pass outside of the shoe 13 or parts of the same in the revolution of the knotter.

The shoe 13 is pivoted at 19 to the tier
 20 frame or stock and controlled as to its pressure by means of an adjusting-screw passing through it and entering said stock and by a coiled spring interposed between the head of the screw and the adjacent part of the shoe,
 25 which will be readily understood in view of the fact that such construction and arrangement is well known in the art. In the present instance the lower part of the shoe is cut away, as at 20; but the leading or feeding fin-
 30 ger 21 depends over the exterior of the flange 15. By cutting away the greater part of the lower extremity of the shoe a slot or seat is formed having depending from the top marginal wall thereof a pair of studs 22, which
 35 may be removable and have rotatably mounted thereon pinions 23, which are spaced apart and rotate independently. The teeth of the pinions 23 mesh with the teeth 17 of the flange 15, and by this means wear on the said disk
 40 by frictional contact or movement thereover of a smooth surface, as in ordinary shoes, is prevented, and, moreover, the cord will be held tightly between the pinions and disk or flange of the latter. By making the studs 22 remov-
 45 able the pinions can be replaced at any time desired, and the additional features comprised in the entire improved attachment will ren-

der the operation of knotter mechanisms of binders more effective, one of the greatest advantages being the prevention thereby of slip- 50
 ping movement of the binding-cord.

The cost of making the change is very small when considered in comparison with the advantages gained, and in some applications it may be necessary to vary the proportions, 55
 size, and minor details of construction, and such changes will be made as are within the scope and without sacrificing any of the advantages of the invention.

Having thus described the invention, what 60
 is claimed as new is—

1. The combination with knotting mechanism for grain-binders, of a rotatable holder-disk with an upstanding exteriorly-toothed flange formed with notches at regular inter- 65
 vals, and a shoe depending adjacent the said flange and carrying a toothed device meshing with the teeth of the said flange.

2. The combination with the knotter mechanism of a grain-binder, of a rotatable holder- 70
 disk having an upstanding flange with exterior teeth and notches at regular intervals therein, and a shoe depending adjacent the said flange and carrying a pair of independently-rotatable pinions meshing with the teeth 75
 of the said flange.

3. The combination with the knotter mechanism of a grain-binder, of a rotatable holder-disk having an upstanding flange with exterior teeth extending vertically thereof, a shoe 80
 depending adjacent the said flange and having a lower cut-away portion, and a pair of pinions vertically disposed in the said cut-away portion of the shoe and having an independent rotation, the teeth of said pinions 85
 regularly meshing with the teeth on the exterior of the flange of the holder-disk.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM L. MUENDER.

Witnesses:

HENRY E. MUENDER,
 CHAS. KRAMER.