

No. 714,835.

Patented Dec. 2, 1902.

O. N. TEVANDER.
PRINTING WHEEL.

(Application filed Oct. 24, 1901.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

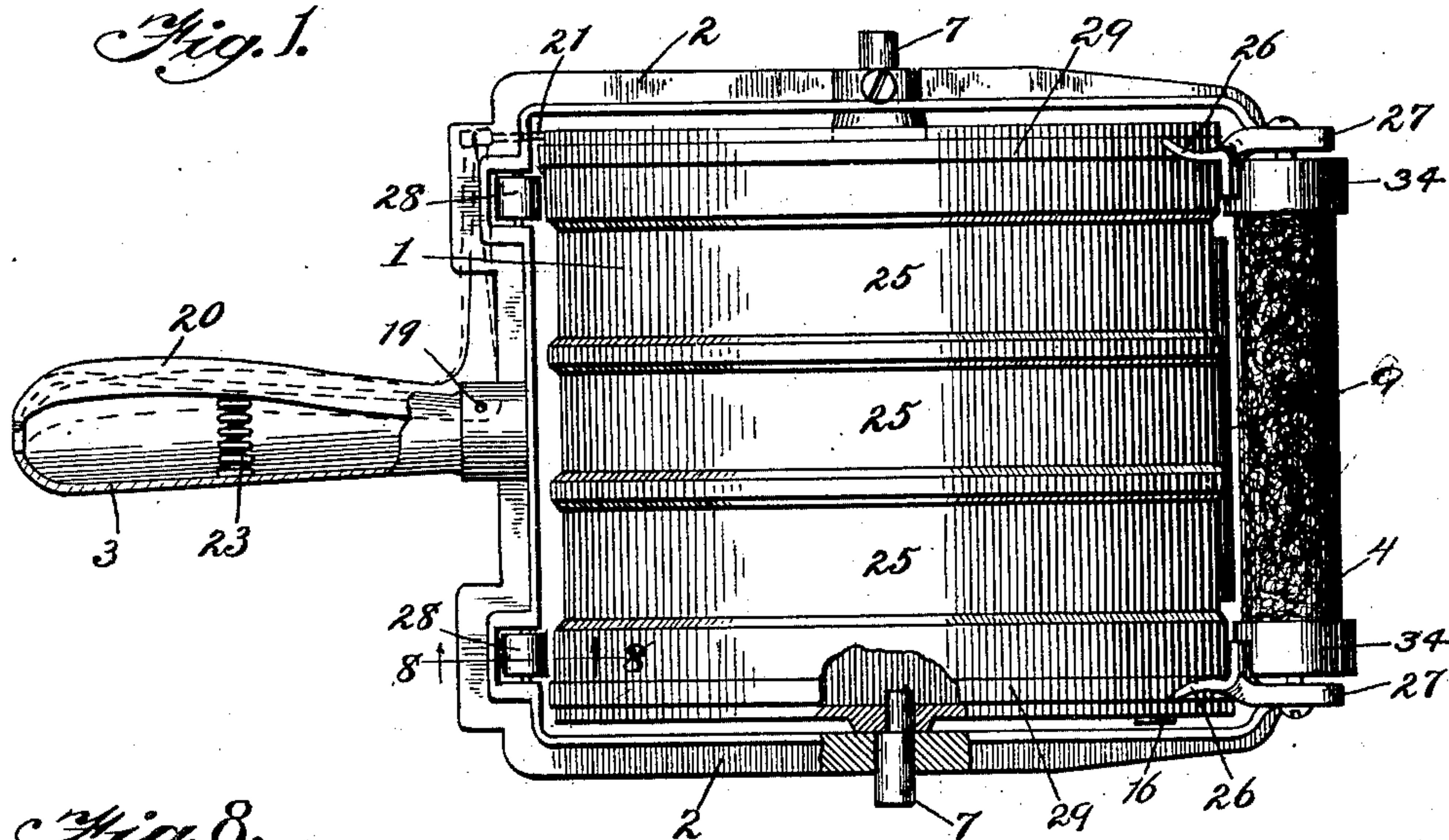


Fig. 8.

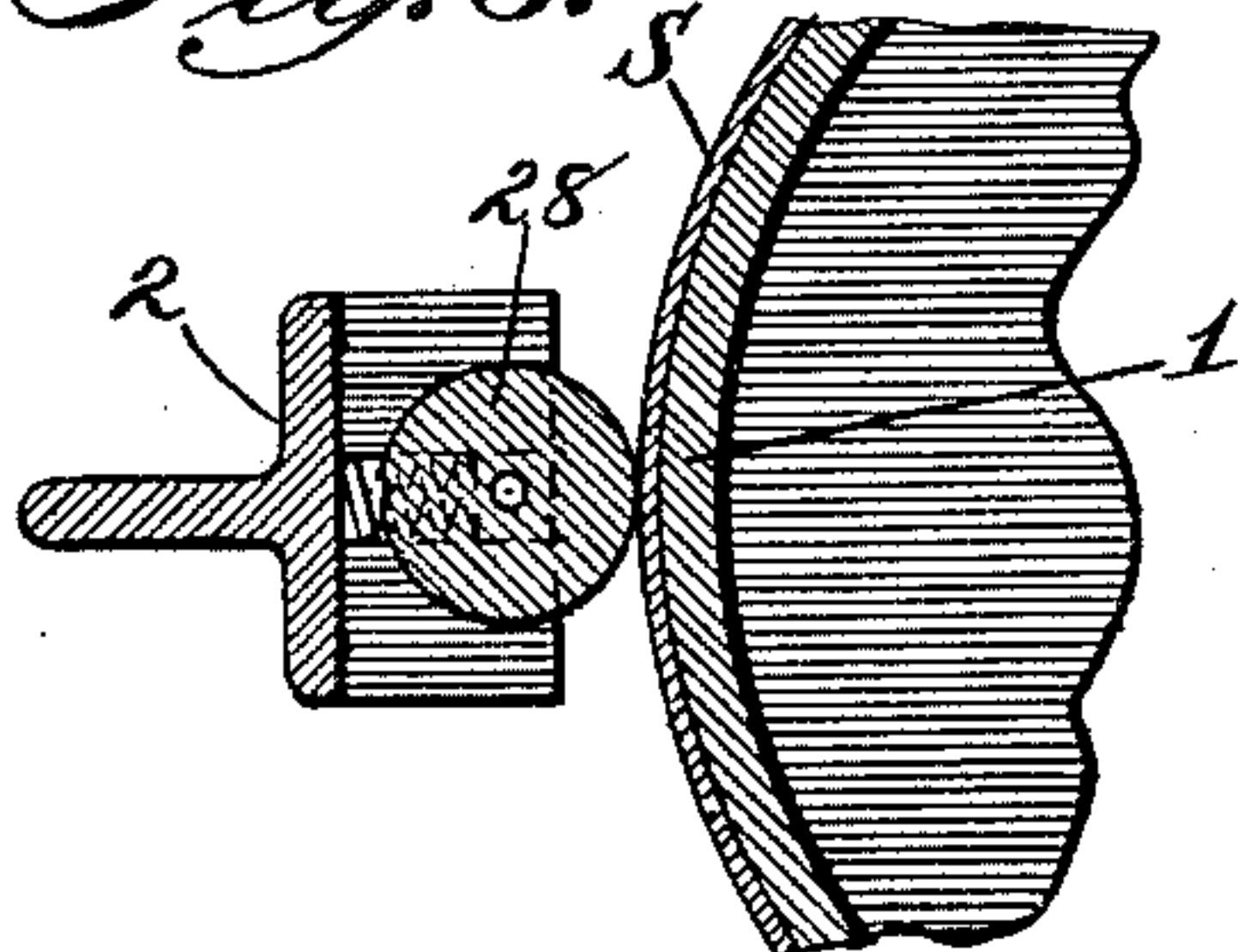


Fig. 2.

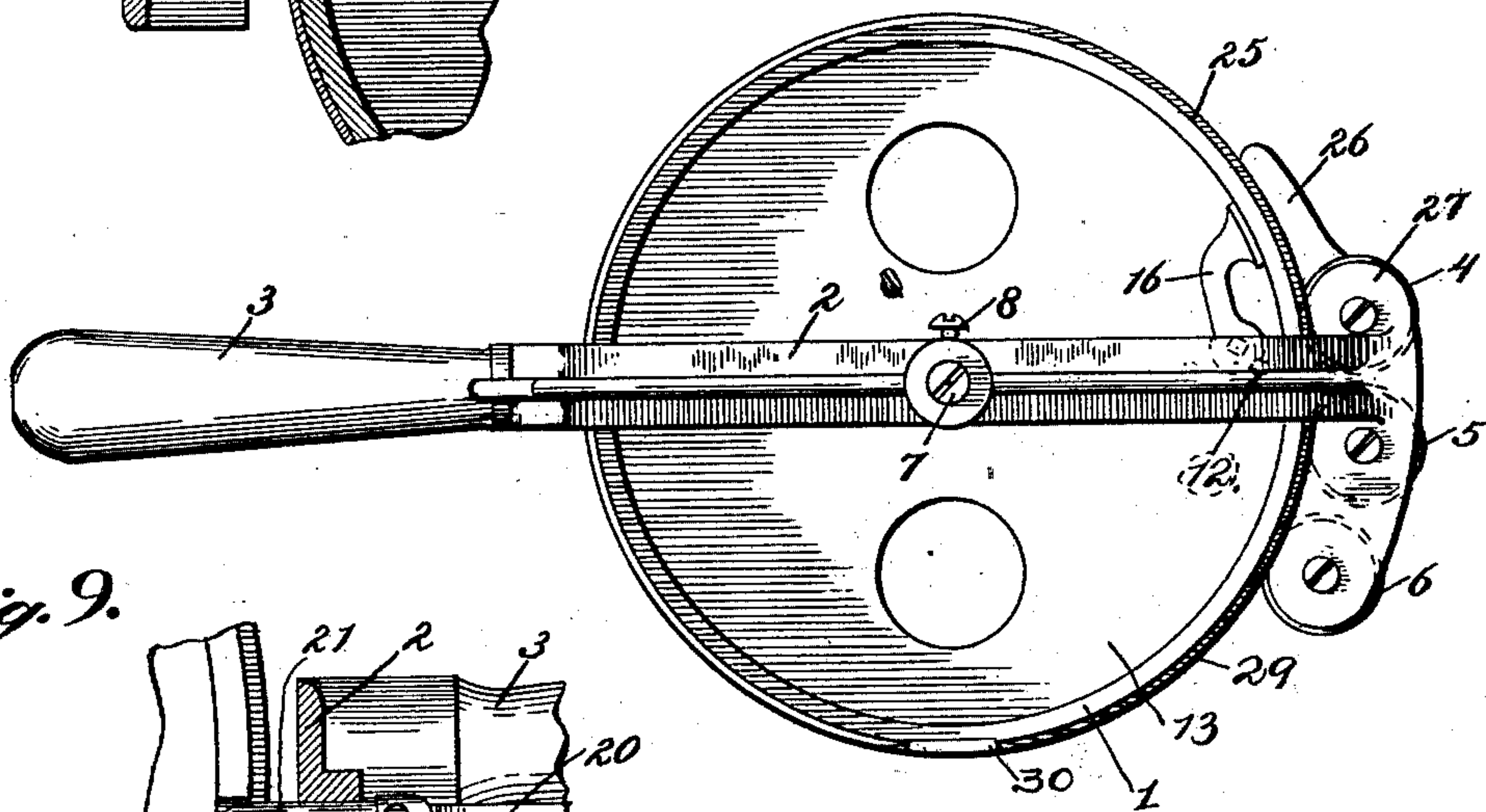


Fig. 9.

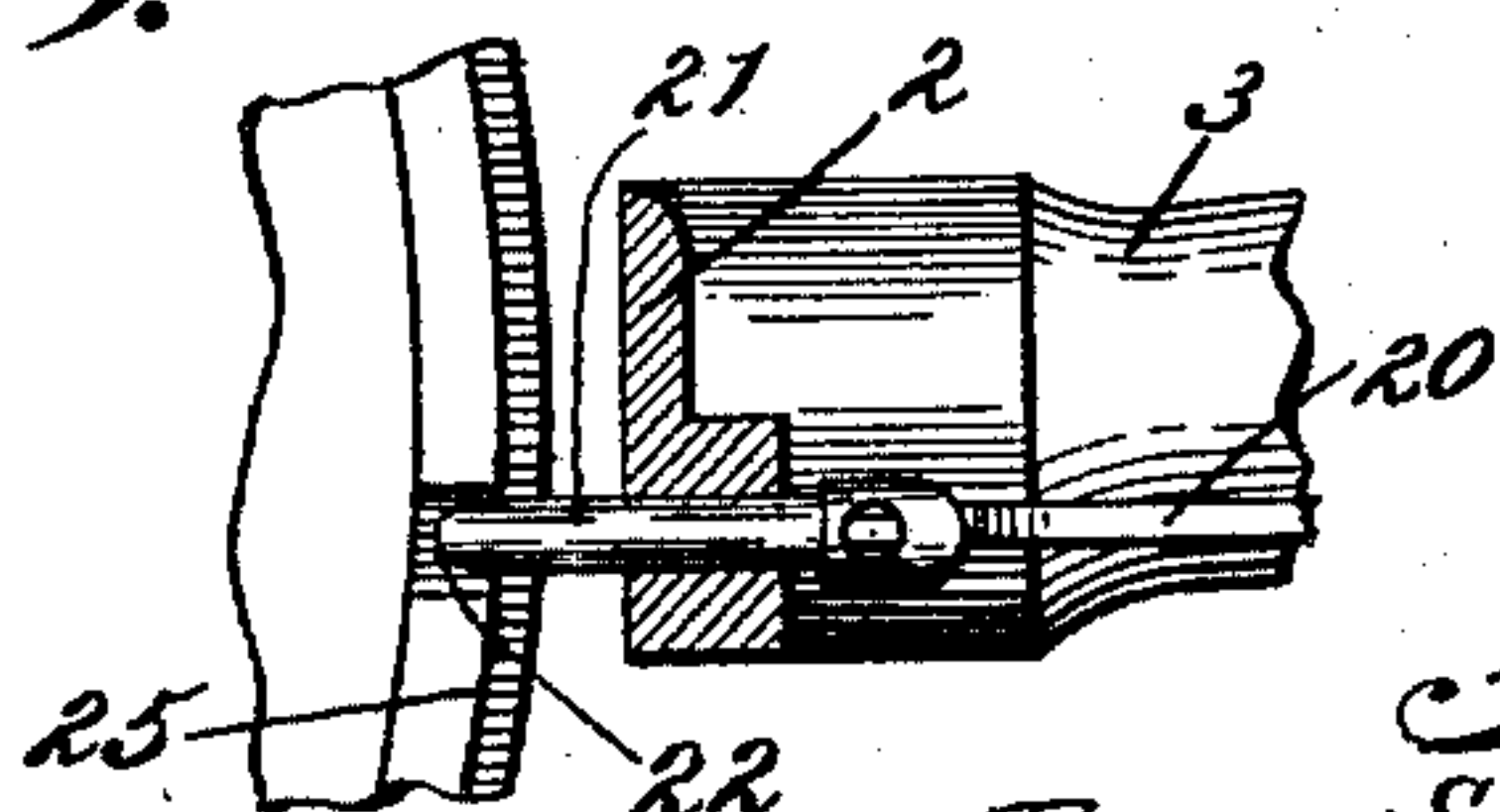
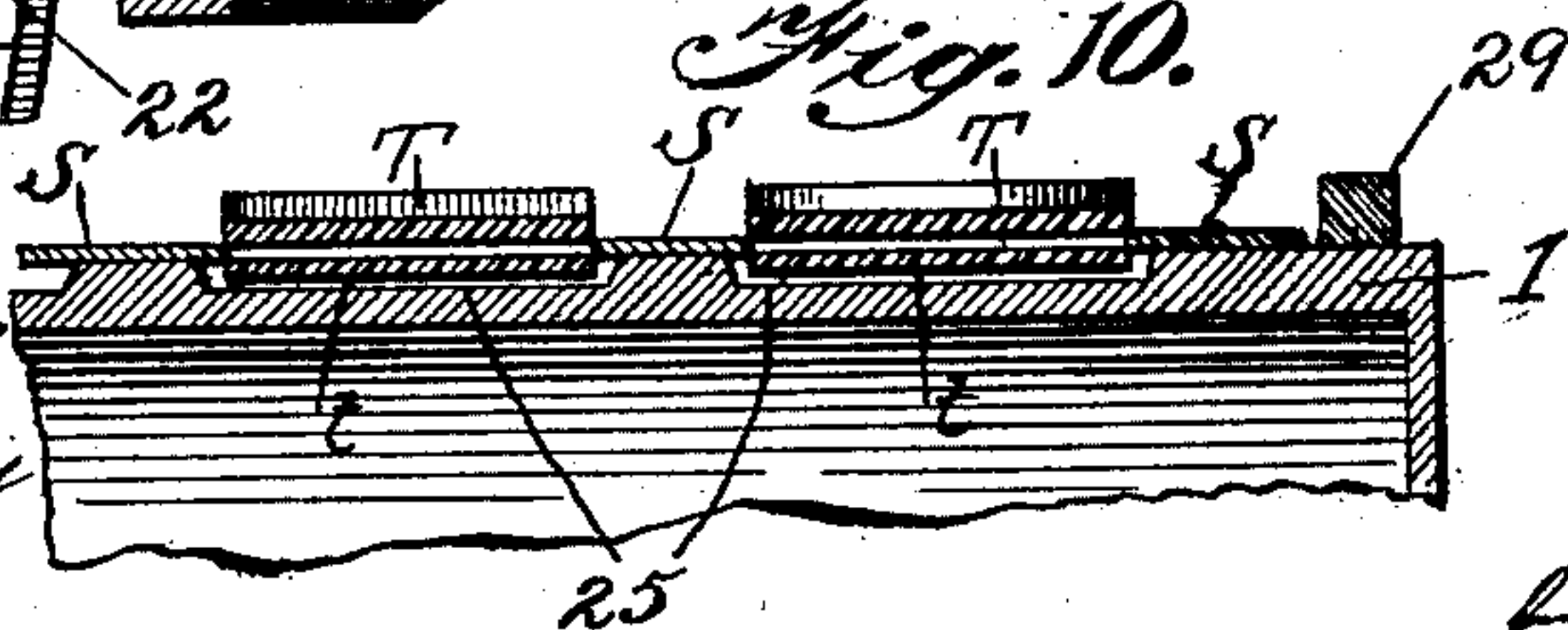


Fig. 10.



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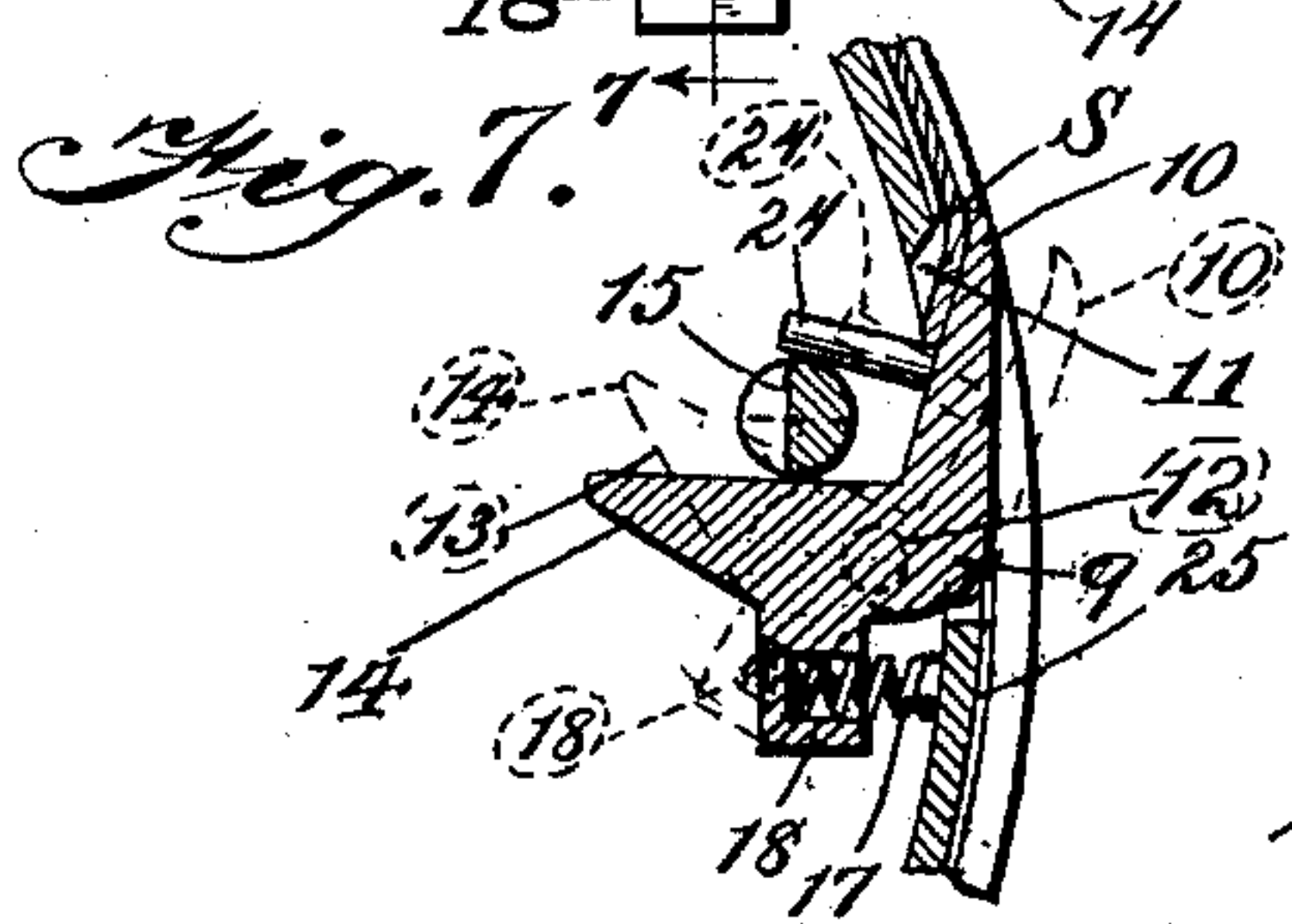
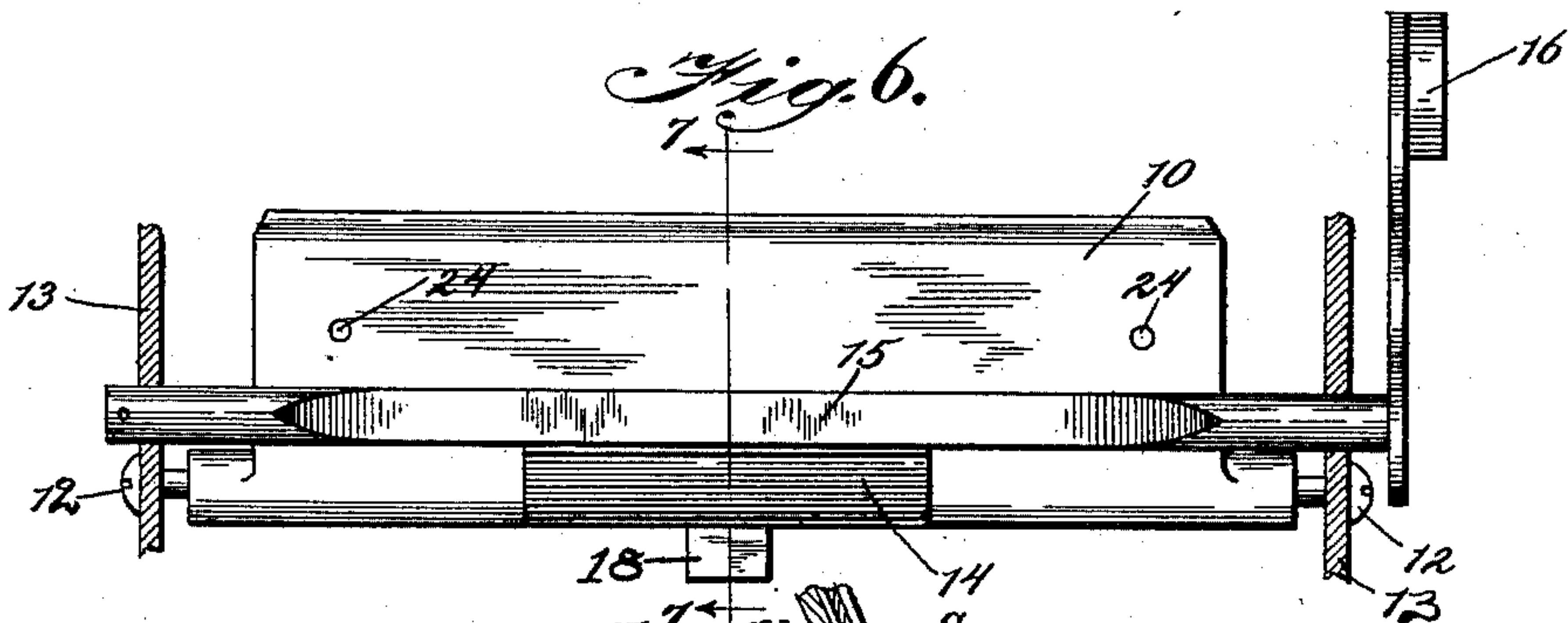
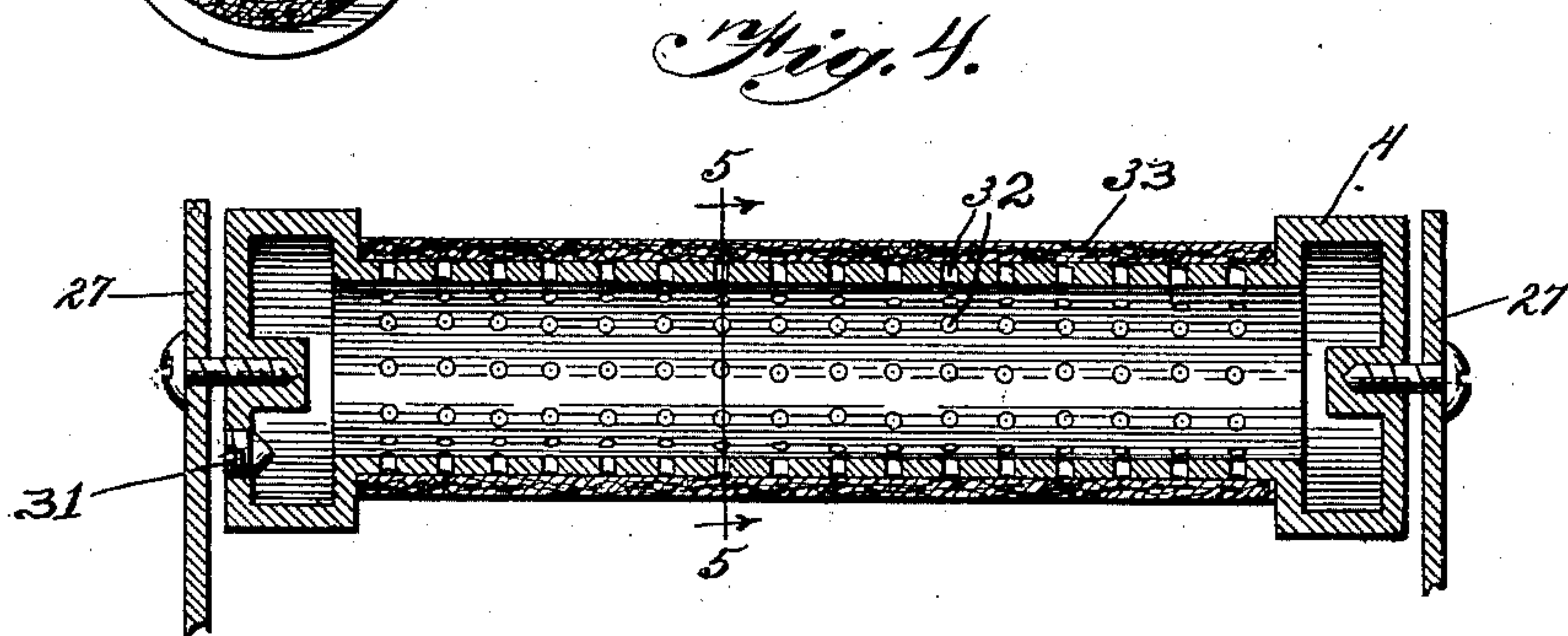
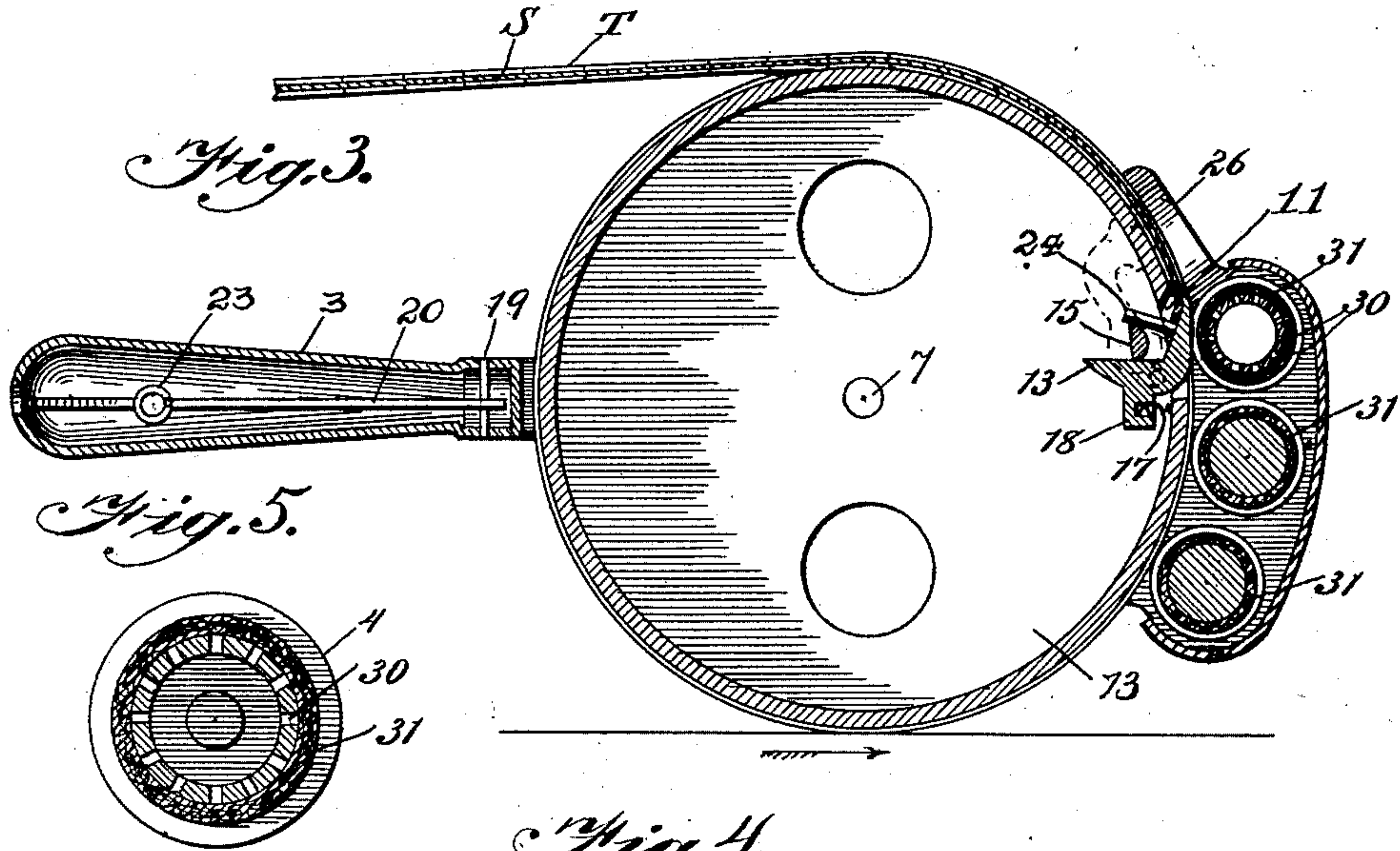
Patented Dec. 2, 1902.

O. N. TEVANDER.
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(Application filed Oct. 24, 1901.)

(No Model.)

3 Sheets—Sheet 2.



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(Application filed Oct. 24, 1901.)

(No Model.)

3 Sheets—Sheet 3.

Fig. 11.

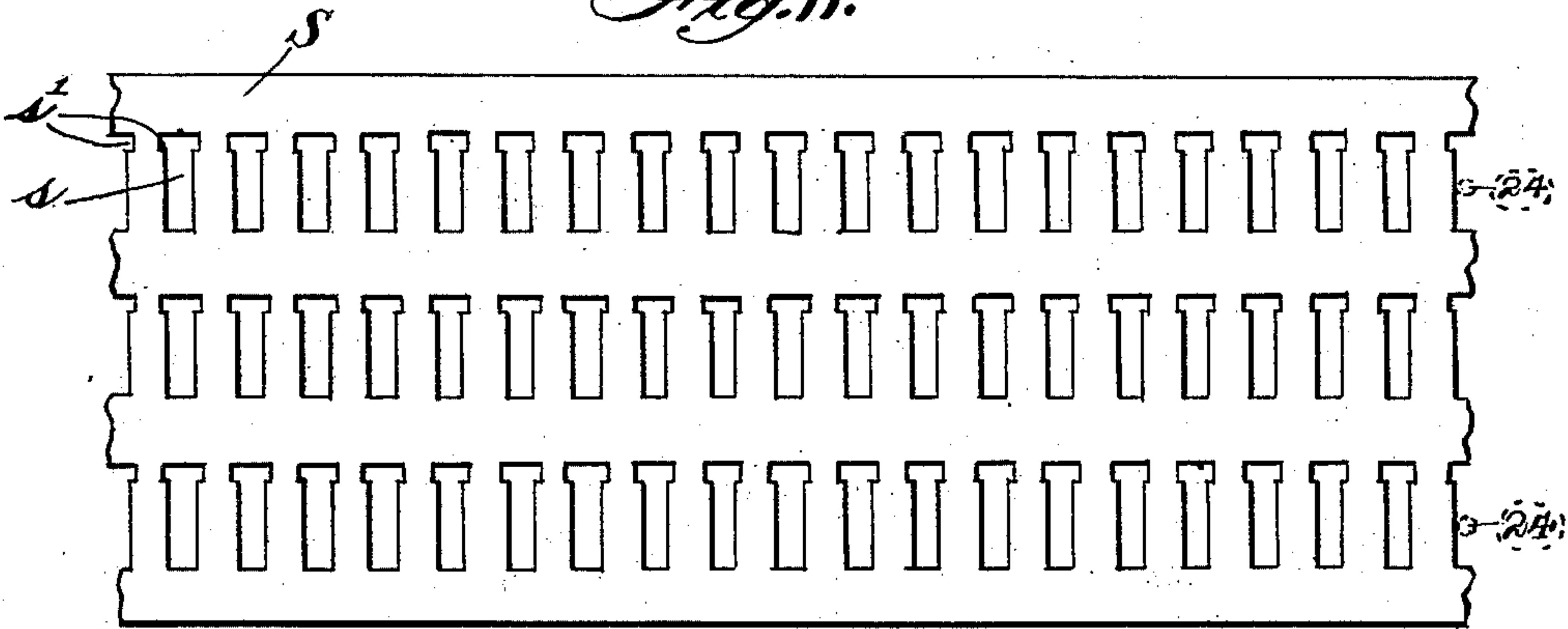


Fig. 13.

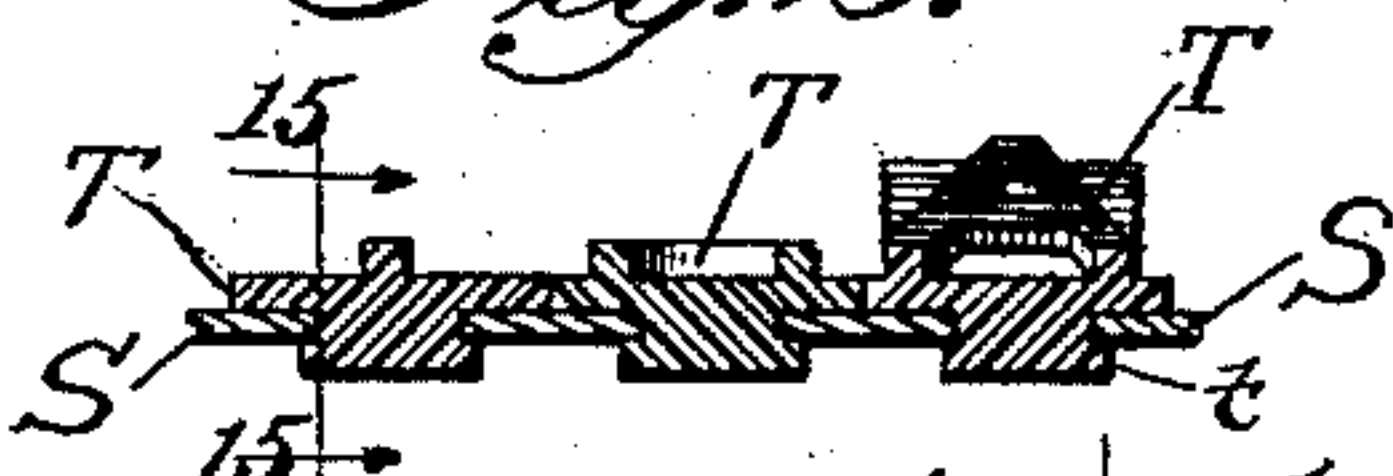


Fig. 12.

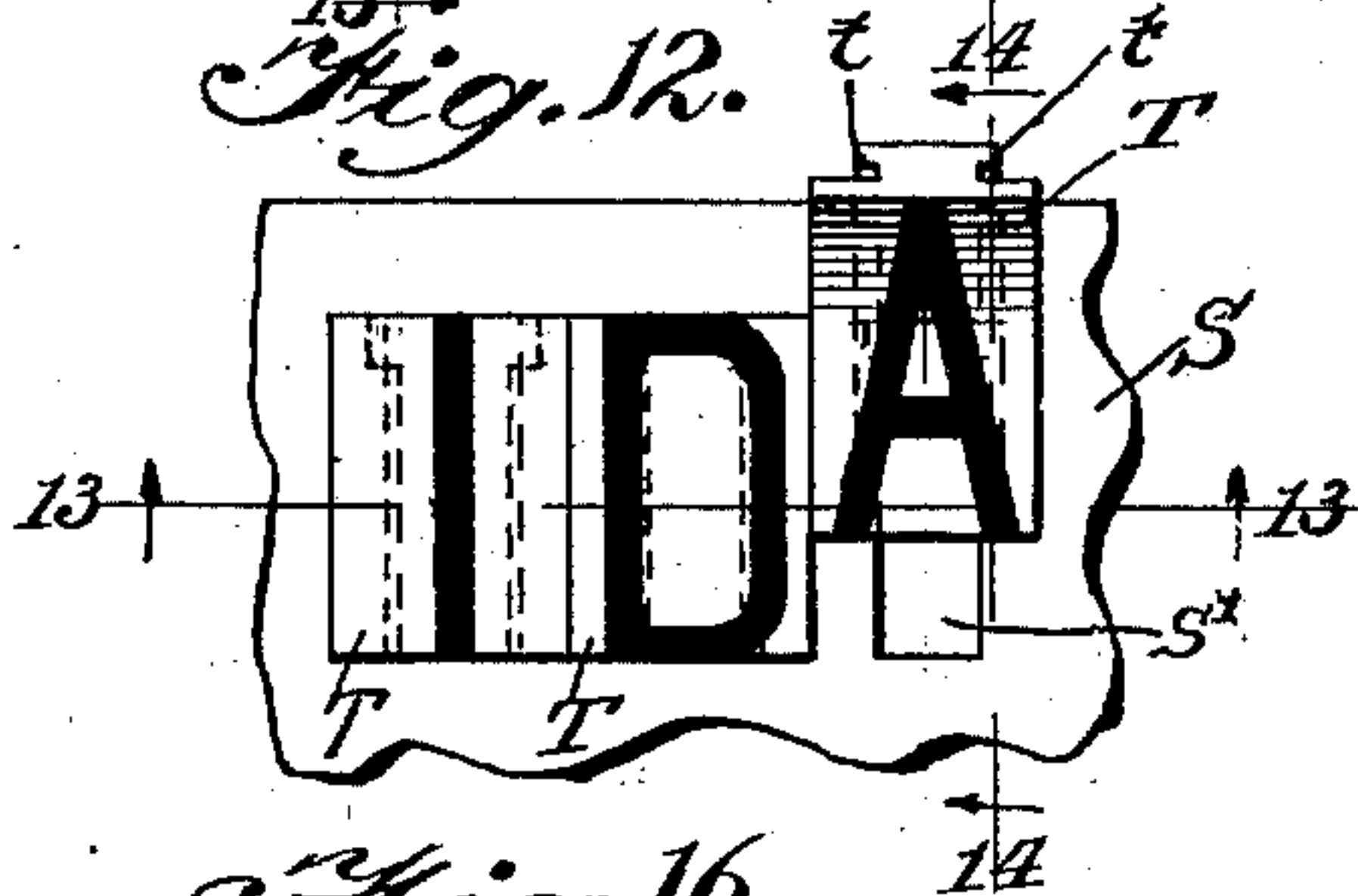


Fig. 16.

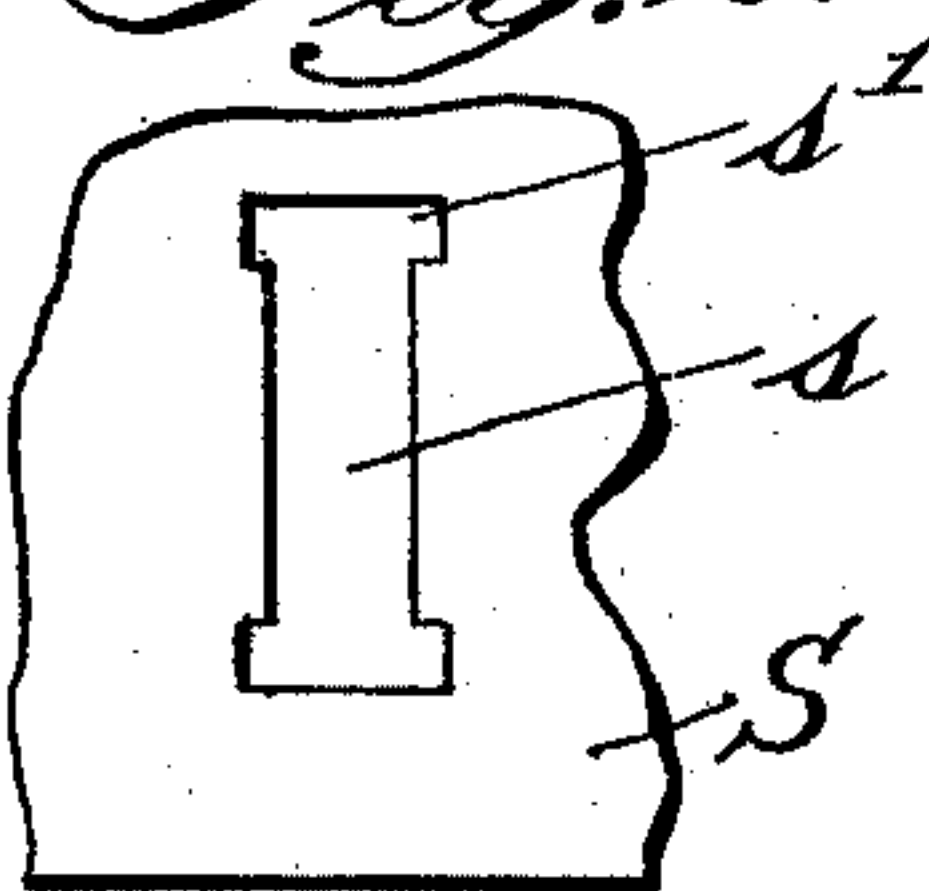


Fig. 14.

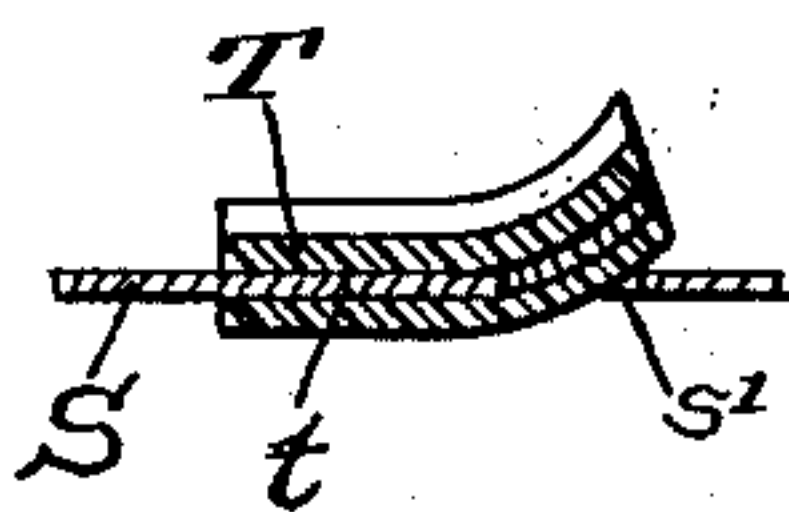


Fig. 15.



Fig. 17.

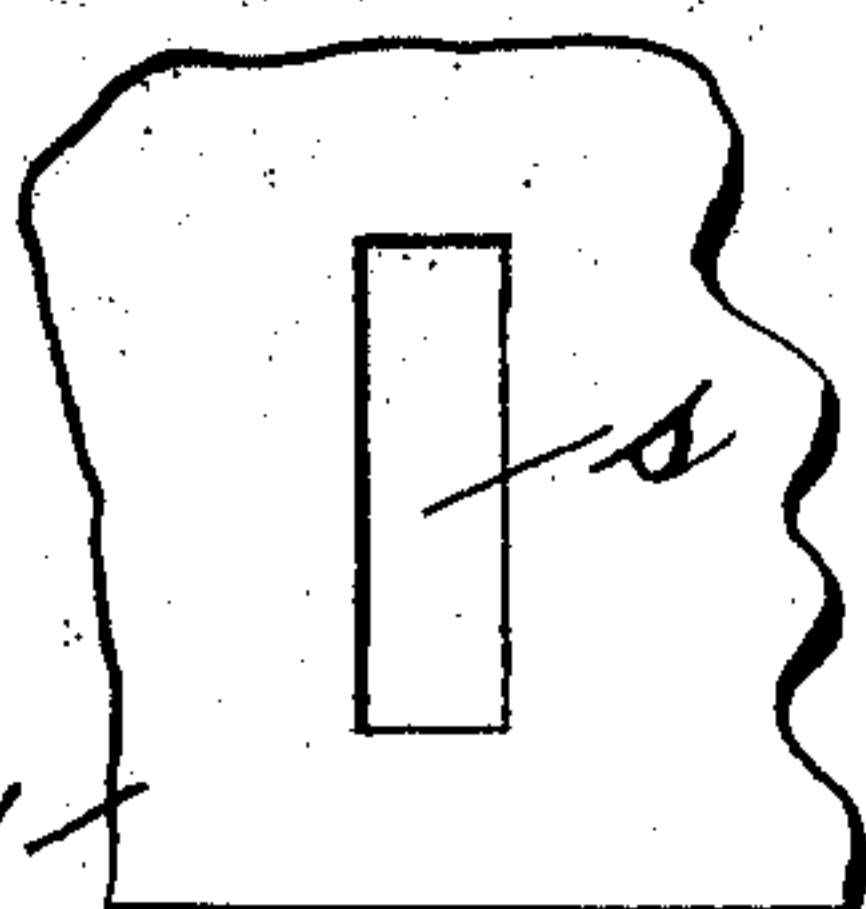
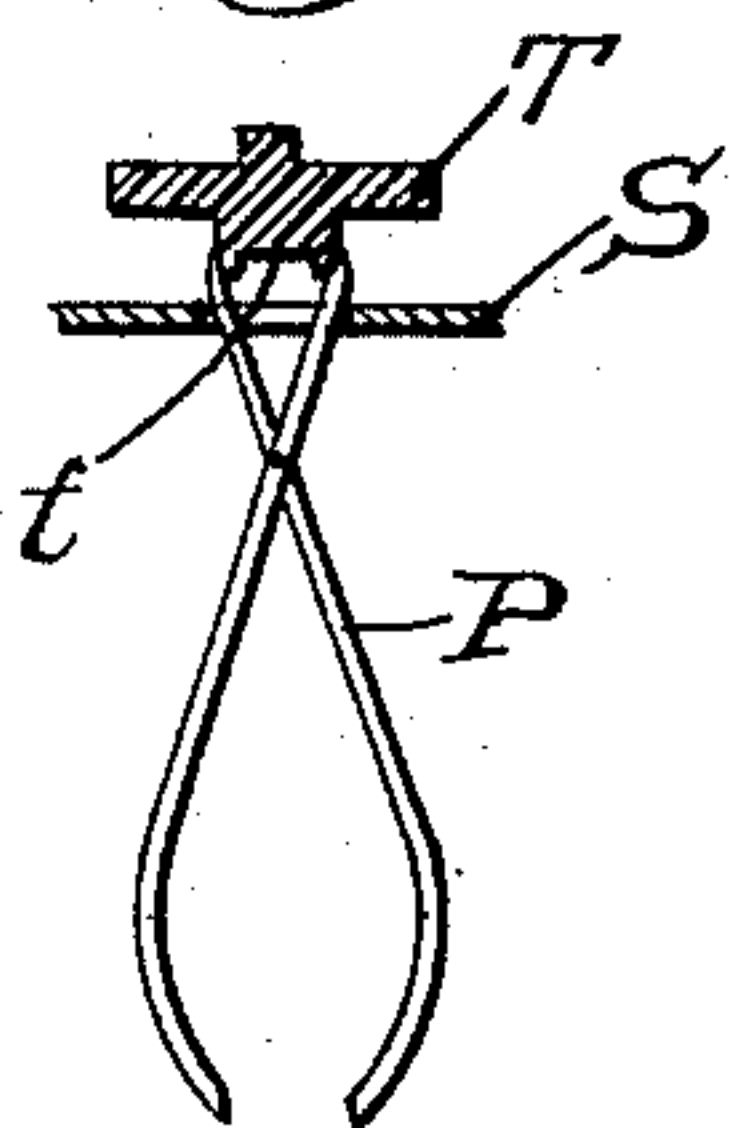


Fig. 18.



Fig. 19.



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UNITED STATES PATENT OFFICE.

OLOF N. TEVANDER, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO
GEORGE L. THOMPSON AND C. H. FOSTER, OF CHICAGO, ILLINOIS.

PRINTING-WHEEL.

SPECIFICATION forming part of Letters Patent No. 714,835, dated December 2, 1902.

Application filed October 24, 1901. Serial No. 79,824. (No model.)

To all whom it may concern:

Be it known that I, OLOF N. TEVANDER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Printing-Wheels, of which the following is a specification.

This invention relates to improvements in printing-wheels of that class which are adapted to be used in place of stencils for marking cases, boxes, and the like for shipment and for other similar purposes. As heretofore constructed the usefulness of devices of this character has been greatly limited by the difficulty of making the numerous changes in the printing face or type of the wheel necessary to print the many different addresses to which goods must be sent in the course of any ordinary shipping business. To obviate this difficulty, it has been proposed to mount the type on a flexible sheet, which could be detachably secured to the wheel or roller, so that by having a number of sheets corresponding to the number of different addresses to be printed a single printing-wheel could be used for printing all the addresses by interchanging the type-sheet, as required. As heretofore practiced, however, such flexible type-sheet has either been provided in the form of an endless band large enough to slip over the end of the roller or in the form of a fixed length of band which was tightly stretched upon the roller by means of clamping devices to which the opposite ends were secured. In either case the removal of one sheet and the substitution of another involves an undue amount of time and attention. The slipping on of an endless band necessitates the removal of the roller from the handle-frame in which it is ordinarily mounted as well as the use of a band-tightener to take up the slack in the sheet and hold it firmly upon the roller, while the bending of a type-sheet around the roller and securing of it at both ends requires the use of two separate clamping devices and a more or less troublesome manipulation of the sheet to pass it between the roller and handle-frame and avoid the obstruction offered by the inking devices or rolls carried by such frame. Moreover, in both cases and whether the sheet

is an endless band or is simply secured by its ends between a pair of clamps the length of the sheet is fixed and must be the same whether the legend or address to be printed is long or short. Where a continuous band is used, this length must always be greater than the circumference of the roller, and where stretched beneath clamps the distance between the clamps, and consequently the length of the band, must be great enough to provide for the longest legend or address which the wheel is intended to print. These objections have been practically so serious as to prevent any considerable adoption of the interchangeable type-sheet feature, and as generally practiced the type-sheet has been permanently secured to the roller by tacking or cementing it thereon.

The object of the present invention is to render the use of interchangeable type-sheets practicable and convenient by clamping the flexible sheet to the printing wheel or roller at its front end only, leaving its other end detached and loose from the roller and extending rearwardly from the clamp as far as need be to accommodate the length of legend necessary for the address to be printed. No attempt is made to wrap the type-sheet about the roller or hold it taut thereon; but when the wheel is rolled forward along the surface of the box or case to be printed the clamped front end of the sheet will be carried around beneath the roller, past the inking devices, and between the roller and the surface of the box or shipping-case, so as to transfer to the latter the imprint of its type. This enables the many type-sheets needed for each wheel to be provided in a continuous web or roll from which pieces of the length required for the different sheets may be clipped from time to time as called for. Upon the sheets thus clipped off from the web or roll will be mounted types forming the legend or address which it is desired to print, and to enable such types to be readily and interchangeably secured on the sheet the continuous web is provided throughout its entire length with rows of type-receiving slots with which the types will be constructed to detachably interlock.

In the further carrying out of the invention inking devices or rolls are mounted on

the handle-frame at the front of the wheel (considered with reference to the direction toward which the wheel is moved to accomplish the printing operation) and a stop device is arranged to normally lock the wheel stationary when the clamp which secures the front end of the type-sheet to the roller occupies a position just above and to the rear of these inking-rolls. This leaves the upper side of the wheel clear for the introduction of the type-sheet, the free end of which can then extend indefinitely rearward over the handle-frame without interference with the latter, and it also brings the first of the type as near as practicable to the printing-point, so that when the stop device is released the printing operation will begin as soon as the wheel has moved forward far enough to carry the front edge of the sheet fairly past the inking-rolls.

The invention consists in the matters thus and hereinafter set forth and particularly pointed out in the appended claims and will be fully understood from the following description of the devices illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of a printing-wheel constructed in accordance with my invention with the type-sheet removed therefrom. Fig. 2 is a side elevation thereof. Fig. 3 is a sectional side elevation thereof with the type-bearing sheet applied thereto. Fig. 4 is a longitudinal section of the self-inking roller. Fig. 5 is a transverse section thereof, taken on line 5 5 of Fig. 4. Fig. 6 is a detail view of the flexible type-sheet-clamping device removed from the cylinder. Fig. 7 is a sectional detail thereof, taken on line 7 7 of Fig. 6. Fig. 8 is an enlarged detail taken on line 8 8 of Fig. 1. Fig. 9 is an enlarged detail of the locking device, taken on line 9 9 of Fig. 1. Fig. 10 is a transverse sectional detail showing the manner in which the type lie in relation to the printing-wheel. Fig. 11 is a top plan view of one form of type-plate. Fig. 12 is an enlarged detail thereof, showing the mounting of the type therein. Fig. 13 is a sectional detail taken on line 13 13 of Fig. 12. Fig. 14 is a sectional detail taken on line 14 14 of Fig. 12. Fig. 15 is an enlarged detail taken on line 15 15 of Fig. 13. Figs. 16 and 17 are details showing modified forms of type-receiving slots. Fig. 18 is a detail showing one manner of inserting the type in slots of the form shown in Fig. 17. Fig. 19 is a similar detail showing another manner of inserting the type in such slots.

In said drawings, 1 designates a cylindric roller which may conveniently be made of metal, aluminium being preferred on account of its lightness. This roller is journaled within a frame 2, provided with a handle 3 and having inking-rolls 4, 5, and 6 mounted at its front end in close proximity to the cylinder, adjustment being provided for between the cylinder and inking-rolls by journaling the cylinder upon eccentric-pins 7, which can

be secured in any desired position of rotation by set-screws 8.

S designates a flexible type-bearing sheet which is made entirely separate from the cylinder 1, but is designed to be detachably secured thereto along its front edge by a clamp 9 on the cylinder. This clamp comprises a jaw-plate 10, which projects through the slot 11 in the circumferential wall of the cylinder and is mounted to oscillate upon pivot-screws 12, passing through the end walls 13 of the cylinder. An inwardly-projecting lip 14 is formed on this jaw-plate, and immediately above this lip is a cam-shaft 15, which extends through the end walls of the cylinder and is provided on one of its projecting ends with a finger-lever 16 by which it may be oscillated. A spring 17, inserted between the circumferential wall of the cylinder and a lug 18 on the clamp, serves to normally keep the latter open; but a partial rotation of the cam-shaft 15 will force down the lip 14 and swing the jaw-plate 10 inwardly against the outer face of the cylinder along the upper edge of the slot 11, as shown in Figs. 3 and 7.

Pivotaly attached at 19 to the handle 3 of the frame is a latching-lever 20, the outer end of which operatively engages a locking-pin 21, which extends slidingly through an aperture in the frame and is adapted to enter a socket 22 in the cylinder, such locking-pin being normally projected into this socket by a spring 23, inserted between the handle and latching-lever 20, and thereby preventing the cylinder from rotating except at such times as the latching-lever is pressed against the handle. When thus locked, the cylinder is in such position that the clamp 9 stands in close proximity to the uppermost inking-roll 4, Fig. 3, and it is contemplated that the type-sheet S will be inserted in the clamp when the cylinder is in this position. When the type-sheet is thus inserted and clamped fast, the wheel is ready to print upon any surface over which it can be rolled, the latch 20 being first pressed against the handle to withdraw the locking-pin and release the cylinder. To accomplish the printing operation, the wheel will be pushed forward in the direction of the inking-rolls, and the direction of rotation of the cylinder will consequently be such as to carry the clamp downwardly past the inking-rolls and upwardly past the handle. (See arrows in Fig. 3.) The flexible type-sheet S during this movement will wrap itself about the cylinder and be drawn between the cylinder and the surface (usually that of a box or shipping-case) upon which the apparatus rests, thereby impressing upon such surface an imprint of the type carried by the sheet. The length of the type-sheet is made such that the impression is completed by the time the cylinder has made one complete revolution, at the termination of which the locking-pin 21 will snap into its socket in the cylinder again under the pressure of the spring 23. The printing

operation may then be repeated upon another box or shipping-case with the same type-sheet, or the clamp may be opened to release this sheet and permit the insertion of a different one for the marking of another box or boxes, it being contemplated that any desired number of different type-sheets will be provided with each wheel, so that different shipping addresses or labels may be readily imprinted in rapid succession with a single apparatus by clamping the several type-sheets upon the cylinder in succession as required.

The type upon the flexible sheet S may in some instances be made integral therewith or permanently secured thereto; but as a further improvement my invention contemplates the provision in connection with such a flexible sheet of removable types T, capable of being interchanged as desired. This is herein shown as conveniently accomplished by providing the sheet with type-receiving slots s and the under surface of the type, which will ordinarily be made of rubber, with downwardly-projecting and laterally-grooved tongues, which can be thrust through the slots and made to interlock with the edges thereof. As shown in Figs. 11 to 16, inclusive, these slots s are made T-shaped or with wider portions s' at one end and through which the wider portions of the tongues t can be inserted and drawn longitudinally until the type is fully seated in the slot, the body of the type bending, after the manner shown in Fig. 14, to permit of its being inserted in this manner. The form of slot shown in Fig. 16 is the same, except that a wider portion s is provided at both ends of the slot to permit the type to be inserted from either direction. As shown in Fig. 17, however, the slot is of uniform width throughout, and the type is inserted either by pressing its tongue t forcibly down through the slot, as shown in Fig. 18, or by compressing the wider portion of the tongue with a pair of pliers P and then permitting it to expand again after being drawn through the slot by the pliers, the ends of the pliers being purposely shaped so that they may be introduced through the slot to grasp the type, as shown in Fig. 19, and yet other forms of slot and of interlocking connections between the type-sheet and types may obviously also be devised. The type-sheet itself may be made of any suitable sheet material having the desired flexibility and at the same time enough stiffness to securely hold the type in proper relative position, celluloid, for example, being a satisfactory material for this purpose. Such sheets may be provided in continuous strips and cut or broken off into suitable lengths to accommodate different addresses or labels to be printed. The severing of the strip will preferably be done through the slots s, as shown in Fig. 11, and to bring the length of the strip exactly at right angles to the clamp pins 24 are provided near opposite ends of the jaw-plate 10 and spaced at such distances apart as to engage

the exposed edges of the slots s, through which the sheet is severed, and as these edges will always be in exact alinement and at right angles to the length of the sheet its correct position on the cylinder will thereby always be secured. A number of parallel circumferential grooves 25, corresponding with the number of lines of type, are shown as formed in the surface of the cylinder to receive the tongues t of the type, which project beneath the sheet and are made some deeper than the projecting depth of these tongues, so that the type are, in fact, resiliently supported by the sheet, instead of resting solidly against the cylinder. This produces, in effect, a cushioning of the printing-surface, which enables it to yield more or less and accommodate itself to the unevenness of the surface of the box or packing-case which is being labeled, thus insuring a more perfect impression thereon than could be obtained if such elastic mounting were not provided.

Lateral guides 26 for the type-sheet are herein shown as provided on the side plates 27 of the frame 2, between which the inking-rolls are mounted, and antifriction-rollers 28 are herein shown as mounted in the front of the frame to form a rolling guide for the type-sheet as it passes up between the frame and cylinder. To secure a frictional engagement between the surface to be printed and the cylinder sufficient to insure proper rotation of the latter, rubber bands or tires 29 may conveniently be provided on the ends of the cylinder, as shown in Fig. 10, and to prevent wear on these tires at the point on which the cylinder rests and tends to slide at the moment the locking-pin checks its rotation a metal lug 30 is formed on the cylinder at that point to take the wear. The ink-rolls themselves may be of any desired construction, but as herein shown the roll 4 is a self-inking roll formed with a hollow center into which ink may be poured through any suitable normally corked aperture 31, the roll being provided with perforations 32 to permit the ink to soak through into a felt covering 33, forming the surface of the roll. In such case the other rolls 5 and 6 need not be inked, but will merely serve to better distribute upon the surface of the type the ink applied thereto by the roll 4. The ends 34 of the ink-rolls, or one or more of them, are furthermore shown as made of slightly-greater diameter than that of their inking-surfaces and engage the edges of the flexible sheet outside of the type, so as to form a rolling guide for the sheet and prevent it from being inked. As to these and other details of construction described, however, it will be obvious that they are incidental to rather than of the essence of the present improvements and although deemed satisfactory and desirable for the purpose intended may be widely varied without departure from the broad spirit of the invention claimed.

I claim as my invention—

1. In a printing-wheel, the combination with a handle-frame, a cylinder journaled therein, and inking devices mounted on the frame in proximity to the cylinder, of a flexible type-sheet removably clamped to the cylinder at its front end only, substantially as described.

2. In a printing-wheel, the combination with a handle-frame, a cylinder journaled therein, and inking devices mounted on the frame in proximity to the cylinder, of a flexible type-sheet removably clamped to the cylinder at its front end only, and independent types detachably secured to said type-sheet, substantially as described.

3. In a printing-wheel, the combination with a handle-frame, a cylinder journaled therein, and inking devices mounted on the frame in proximity to the cylinder, of a flexible type-sheet removably clamped to the cylinder at its front end only, type-receiving slots in said sheet, and independent types removably inserted in said slots, substantially as described.

4. In a printing-wheel, the combination with a handle-frame, a cylinder journaled therein, and inking devices mounted on the front of the frame in proximity to the cylinder, of a stop device normally preventing the cylinder from rotating in the frame, a clamp on the cylinder located above and to the rear of the inking devices when the cylinder is held by the stop, and a flexible type-sheet having its front end detachably held in the clamp and with its other end left free from the cylinder, substantially as described.

5. In a printing-wheel, the combination with a handle-frame, of a cylinder journaled therein, and a flexible type-sheet secured to said cylinder, the cylinder being cut away beneath the type so that the latter are resiliently supported by the type-sheet, substantially as described.

6. In a printing-wheel, the combination with a handle-frame, and a cylinder journaled therein, of a flexible type-sheet secured to the

cylinder, and independent types removably inserted in said sheet, the cylinder being cut away beneath the types, substantially as described.

7. In a printing-wheel, the combination with a cylinder, of a flexible type-sheet secured to said cylinder, type-receiving slots in said sheet, and independent types having tongues removably interlocking with said slots, the cylinder being cut away circumferentially beneath the type so as to leave the latter resiliently supported by the flexible type-sheet, substantially as described.

8. A type-sheet provided with individual type-receiving slots one for each type, each slot being widened at its end, of independent flexible type having grooved tongues each removably inserted in one of said slots through the wider portion thereof, substantially as described.

9. In a printing-wheel, the combination with a frame, and a cylinder journaled therein, of a flexible type-sheet secured to the cylinder and having free lateral edges projecting beyond the type, and inking-rollers mounted on the frame and provided at their ends with bearing-surfaces made larger than their inking-surfaces and serving to engage and guide the free lateral edges of the type-sheet, substantially as described.

10. In a printing-wheel, the combination with a frame, of a cylinder journaled therein, a flexible type-sheet secured to the cylinder, inking-rollers mounted on the frame for supplying ink to the surface of the type, and lateral guides secured to the frame on the entering side of such inking-rollers, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two subscribing witnesses, this 11th day of October, A. D. 1901.

O. N. TEVANDER.

Witnesses:

HENRY W. CARTER,
K. A. COSTELLO.