

No. 629,761.

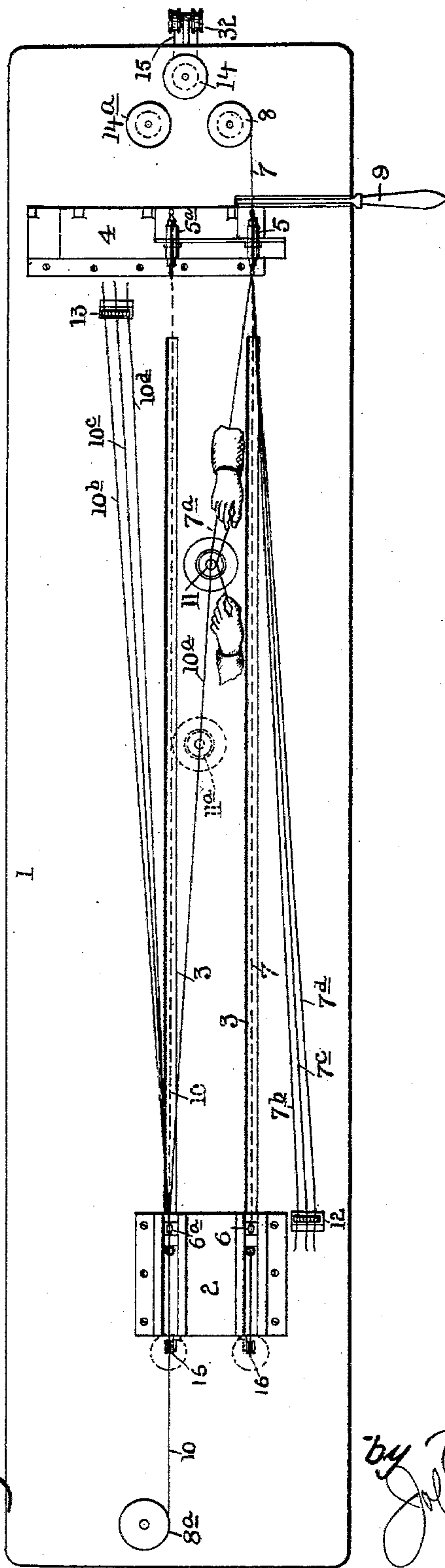
Patented Aug. 1, 1899.

J. E. BARBOUR.
SPLICING DEVICE.

(Application filed Feb. 9, 1898.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses.

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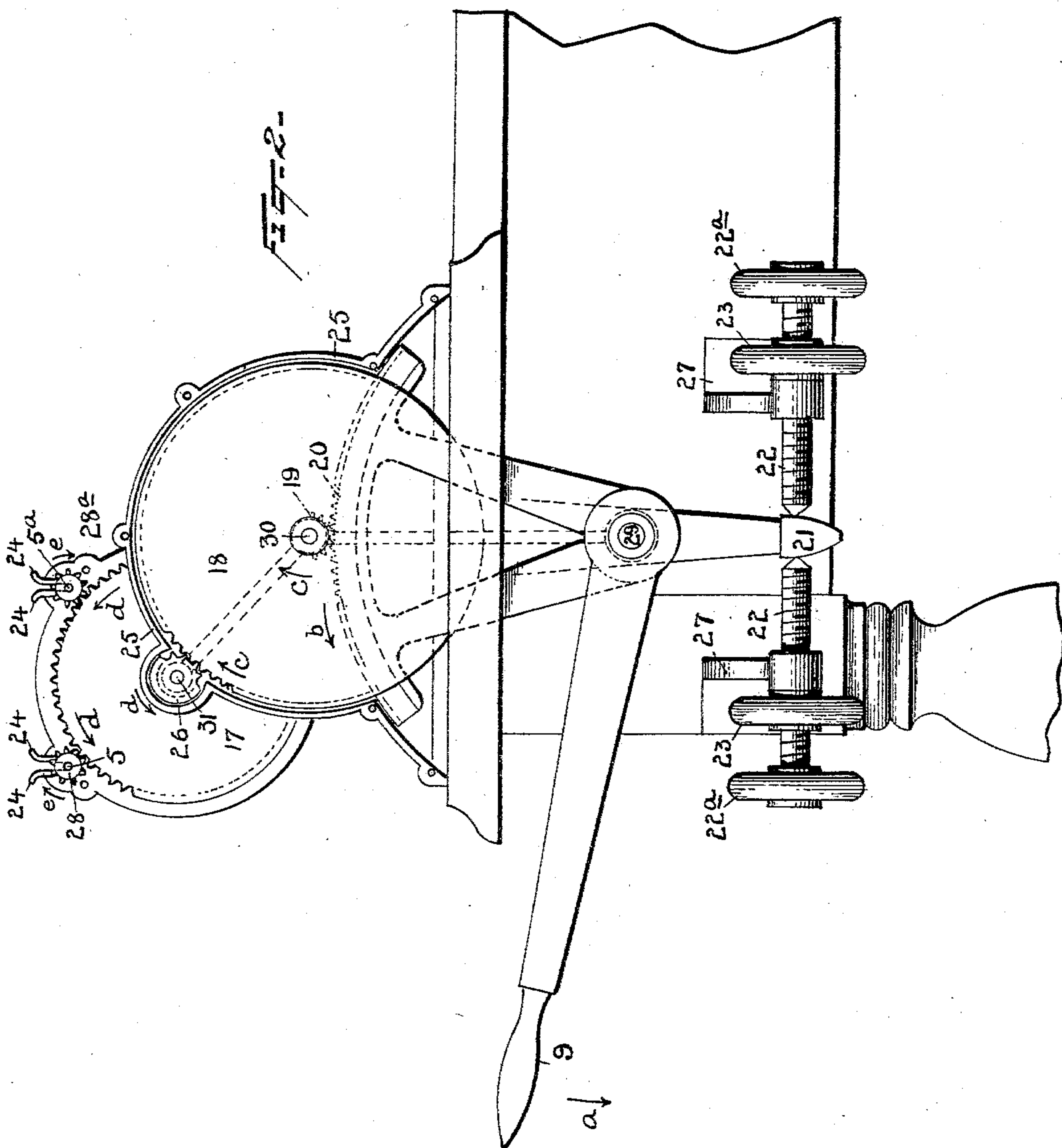
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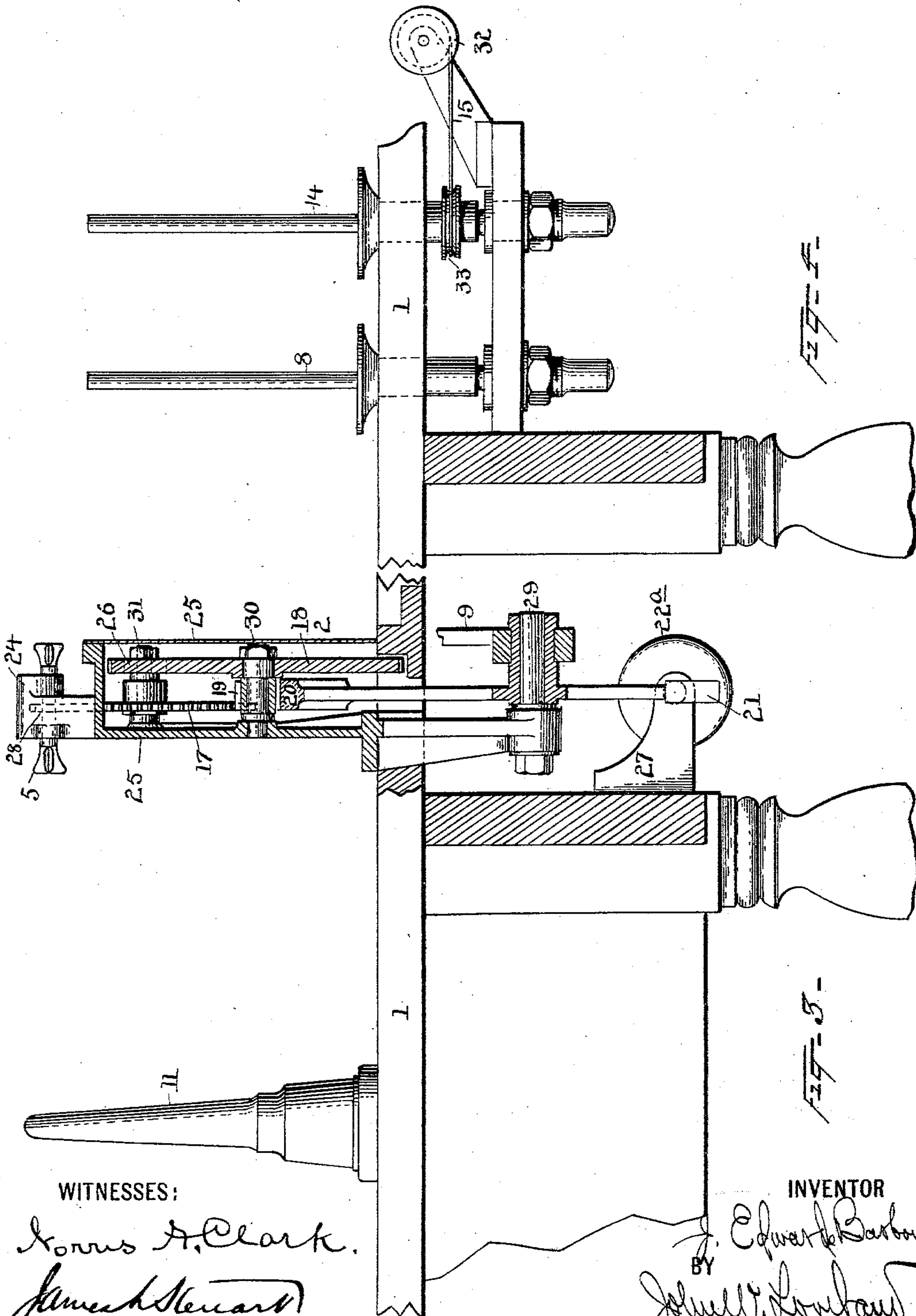
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4 Sheets—Sheet 3.



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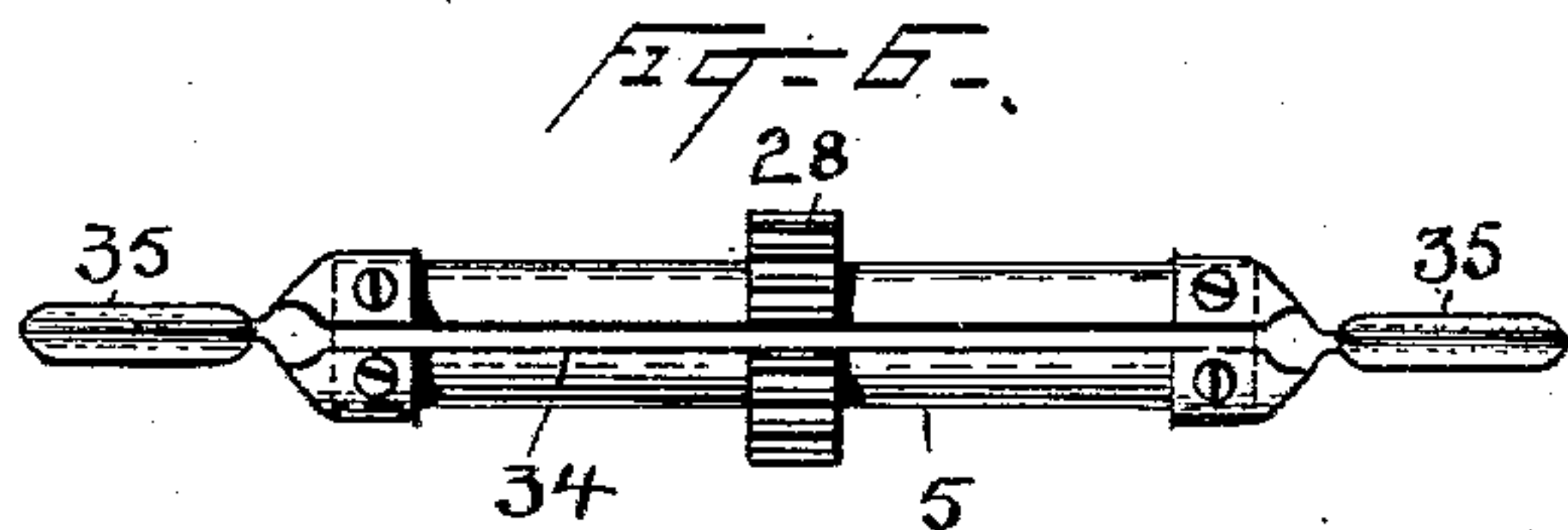
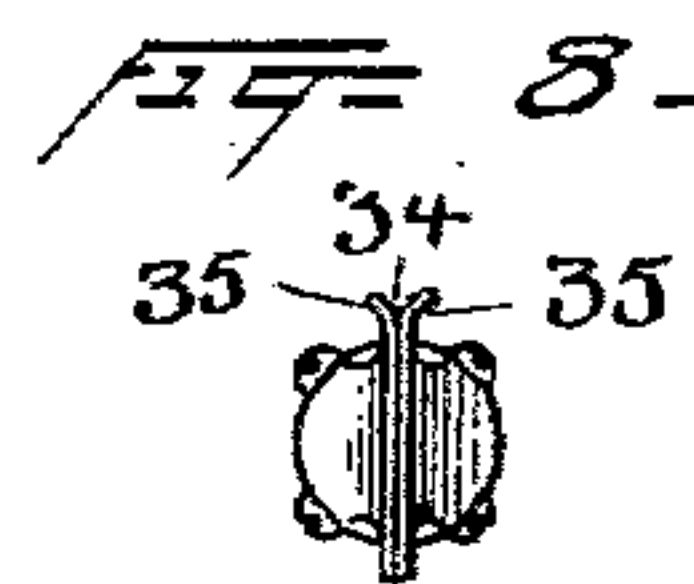
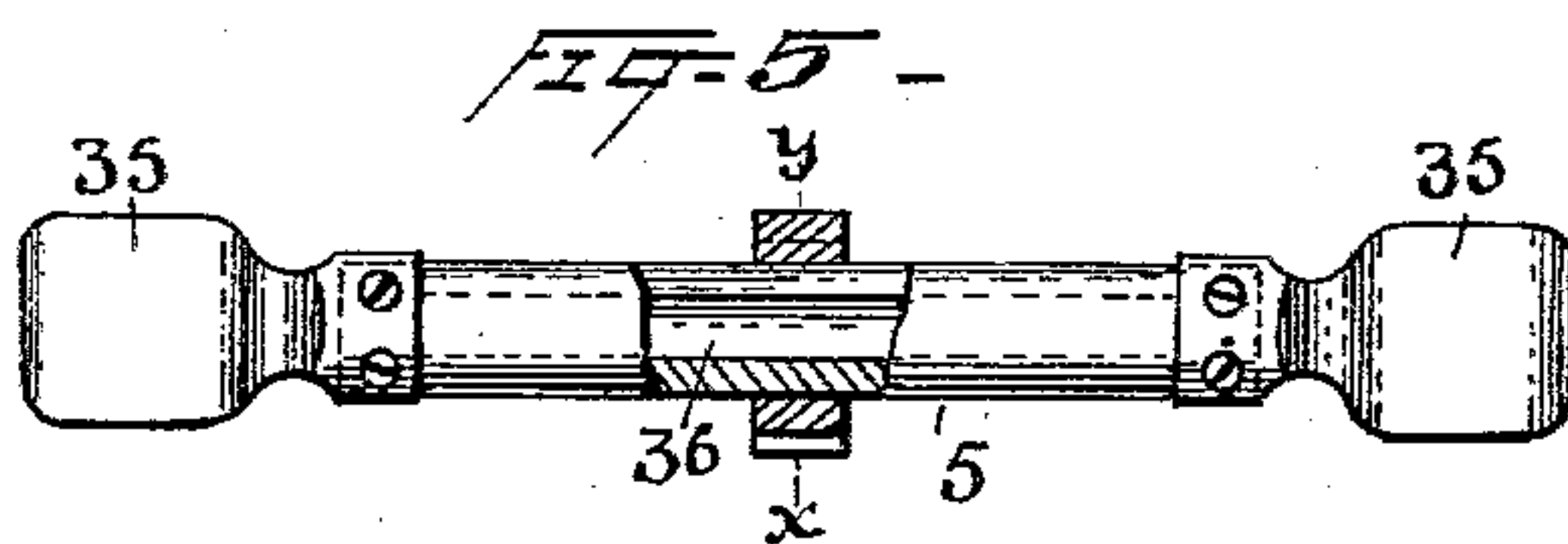
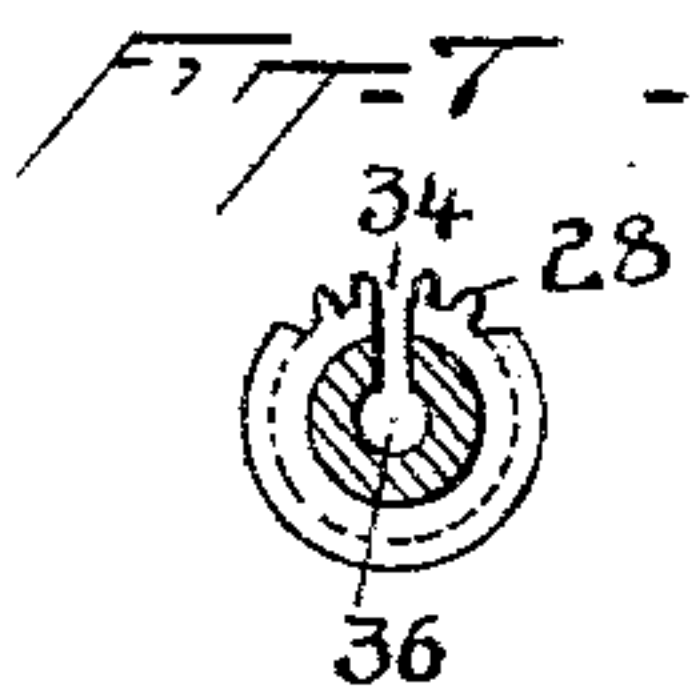
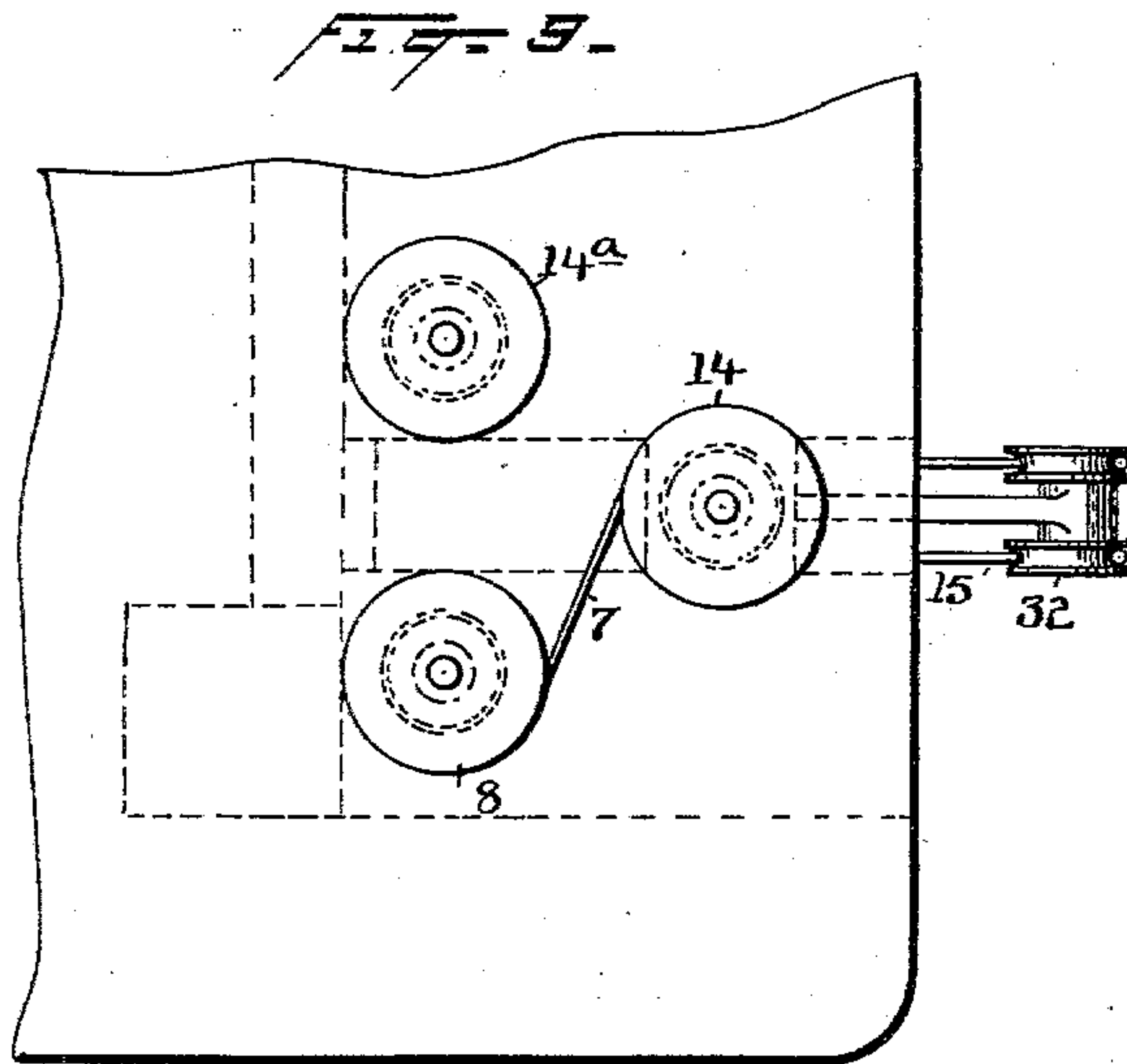
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

JOHN EDWARDS BARBOUR, OF PATERSON, NEW JERSEY.

SPLICING DEVICE.

SPECIFICATION forming part of Letters Patent No. 629,761, dated August 1, 1899.

Application filed February 9, 1898. Serial No. 669,696. (No model.)

To all whom it may concern:

Be it known that I, JOHN EDWARDS BARBOUR, a citizen of the United States, and a resident of Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Splicing Devices, of which the following is a specification.

My invention relates to devices for splicing cordage, and more especially to that class of devices in which the cordage is first partially untwisted, thus enabling the different strands to be separated and subsequently united with the respective strands to which they are to be joined.

I am aware that splicing devices exist and that some of them untwist the cordage in a somewhat similar manner; but I have found that they are complicated and easily disarranged, are unwieldy and slow in operation, and are irregular in their action, thus necessitating delays and inconvenience and giving unsatisfactory results. To obviate these objections, I have invented certain devices having for their object, first, an easy and convenient means for untwisting and separating the strands; second, convenient means for manipulating the cordage in tying the splices; third, means for securing uniform results, and, fourth, means for quickly performing the necessary operations. I attain these ends by means of the devices shown in the accompanying drawings and hereinafter more particularly described.

In the drawings like numbers of reference refer to similar parts throughout the various views.

Figure 1 is a plan view of the complete device, showing the operation of tying the splice and the various parts in their proper positions at the time. Fig. 2 is an enlarged end elevation of the device, the casing being removed to show the component parts. Fig. 3 is a view showing, enlarged, a portion of the device in section; Fig. 4, a similar view of another portion. Fig. 5 is a part sectional elevation showing the revolving clip. Fig. 6 is a view of the same, showing it in another position. Fig. 7 is a section of this portion on the line X Y. Fig. 8 is an end view.

Referring now to Fig. 1, 1 is the bed or table on which the device is mounted.

2 is a sliding carriage traveling in the ways or grooves 3, by which means it may be adjusted to suit different lengths of splice. This carriage bears two non-rotating spring-clips 6 and 6^a, which are free to slide longitudinally in said carriage, having attached to them weights and cords passing over pulleys 16, by which a tension is maintained upon the cordage being manipulated, as hereinafter more particularly set forth.

4 is the head or twister, comprising a covering case and certain elements of machinery more particularly described hereinafter.

5 and 5^a are revolving clips adapted to engage the cord and hold it while being twisted or untwisted, according to the stage of the operation.

6 and 6^a have already been mentioned as being non-rotating adjustable clips for securing the cord.

7 and 10 represent the cord from the spools which are placed on the spindles 8 and 8^a, on which spools it is wound and which it is desired to unite.

The dotted figures 7 and 10 indicate the cords after being secured in the clips preparatory to untwisting.

It is to be understood that the proportions of the device as shown in the drawings need not be strictly adhered to, and particularly it should be understood that the spindle 8 in the machine as actually constructed is placed far enough away from the rotating clip 5 so that when said clip is operated to untwist the strand 7 too much twist will not be put into the said strand between the clip and the said spool 8.

11 represents a movable clip or cord-holder designed to secure the two opposite strands, as 7^a and 10^a, during the operation of tying the knot, which operation is here illustrated by the representation of hands and which will be more fully described below. This holder is also shown enlarged and in elevation in Fig. 3. The dotted lines 11^a show this holder in position for tying the second knot.

12 13 are combs or teeth for holding the separated strands preparatory to tying the

knots. 7^b , 7^c , 7^d and 10^b , 10^c , and 10^d represent these separated strands held in said combs, the strands 7^a and 10^a being removed therefrom and shown as being knotted in the holder 11.

14 is a revolving spindle driven by belt 15, passing on the pulleys 32. Its use will be explained below.

16 are pulleys over which pass the cords bearing weights to apply tension to the clips 6 6^a , sliding in the carriage 2.

In Fig. 2 the cover has been removed to show the interior arrangement of the mechanism by which rotation is communicated to the spindles or clips 5 and 5^a . Here 20 is a sector revolving on the shaft 29 and operated by the handle-lever 9. Its teeth mesh into the pinion 19 on the shaft 30, on which shaft is also fixed the gear-wheel 18, whose teeth mesh into the pinion 26 on the shaft 31, which shaft in turn bears the gear-wheel 17, whose teeth in turn mesh into the pinions 28 and 28^a , driving the spindle-clips 5 and 5^a . The motion of the sector 20 is limited by the stop or stud 21, which is free to move in connection with the sector 20 between the points of the adjusting-screws 22, operated and locked by the nuts and heads 22^a 23, 27 being the bearings supporting the screws 22, the latter being in this figure locked, so as to prevent all motion of the elements.

Fig. 4 shows the spindles enlarged. 14 is revolved by the belt 15, passing on the pulleys 32 and about the pulley 35, which communicates the motion to the spindle.

Figs. 5, 6, 7, and 8 show full size the spindle-clip 5. This consists of the hollow axis 36, into which the cord is slipped at 34 through the spring clips or fingers 35, which are spread apart at the upper edge to allow easy entrance. 28 is the pinion or spur-gear upon the same.

Fig. 9 is a detail plan view of the rewinding or reeling device, in which 7 is the spliced cord being unwound from the spool placed on 8 onto the spool placed on 14, the latter being revolved by the belt 15.

The operation of the device is as follows: The spools the cord on which it is desired to join are respectively placed on the spindles 8 8^a , Fig. 1. The cord 7 from the spool on 8 is then drawn off sufficiently to allow the end to be placed in the clip 6, while the standing part is then placed in the spindle-clip 5. A similar operation is performed with relation to the cord 10 from the spool on 8^a , the end, however, being instead placed in the spindle-clip 5^a and the standing part in the clip 6^a . The adjusting-screws 22, Fig. 2, are so set that the sector is permitted just sufficient movement to rotate the spindles 5 5^a , so as to remove substantially all the twist in the cord between the securing-points of the clips. Since some cords have more strands than others, it is necessary in the case of the greater number of strands to make the splice longer. Hence the carriage 2 is placed well away from

4 for that purpose. In such event a larger number of revolutions of the spindles 5 5^a are necessary in order to remove all twist in the greater length. Therefore the adjustment of the screws 22 must be such as to allow a greater travel in the stop or stud 21, which thereafter is invariable until readjusted. Upon depressing the handle 9 (see Fig. 2) the sector 20 rotates in direction of the arrow, which then of course rotates the shaft 30 by the spur or pinion 19, and so the gear 18, which in turn eventually rotates the spindle-clips 5 5^a in direction of the arrows *ee*. Upon fully untwisting the two cords the rotation is automatically stopped by means of one of the previously-adjusted screws 22, against which 21 is forced. Again, referring to Fig. 1, the various strands are then separated and so placed in the combs 12 13, whereupon one from each comb is then removed, as 7^a 10^a , and placed in the slit in the top of the holder 11, which has been placed well up near the spindle-clips 5 5^a . These strands are then joined by a knot and the ends clipped. The tied strand is then removed from the holder, the latter moved a short distance, and the operation is repeated with the strands 7^b 10^b , 7^c 10^c , and 7^d 10^d , &c., until all are tied. The motion of the spindle-clips is then reversed by raising the lever 9, and exactly the same amount of twist is then replaced in the spliced cord as was originally removed from it, since the stop-motion adjustment is unchanged. The spliced cord is then removed from the clips, and one spool being placed on 8 (see also Fig. 9) and the other on 14 the revolution of the latter above referred to finally results in transferring all the cord to this spool. When the operation is to be repeated, the spindle 14^a is to be used instead of 8 in so transferring, and 8 is to be used again at once in splicing the cord on another pair of spools.

While I prefer the arrangement and construction shown and described herein, still I do not wish to limit myself to the exact construction or the identical arrangement or the identical elements or means shown, and while I am aware that other splicing devices exist in the art and do not therefore claim, broadly, such a device, yet

What I do claim, and desire to protect by Letters Patent, is—

1. In an organized device for splicing cord or other similar material, means for untwisting and retwisting the ends of the strands, and an adjustable stop for regulating the amount of rotation of the strands, substantially as described.

2. A plurality of tension-controlled elements adapted to grip a cord, a plurality of rotating elements oppositely disposed thereto and adapted to grip a cord, an oscillating element with intermediate means by which its oscillation revolves the rotating elements, and an adjustable stop for uniformly regulating the amount of motion.

3. A clip for holding a strand and means for revolving it, said clip consisting of a tube having a longitudinal slit, and terminating at each end in surfaces adapted to hold the strand between them, substantially as described.

4. The combination of means for holding a strand; means for rotating the strand; an oscillating element adapted to transmit rotation to the strand and an adjustable stop for regulating the amount of oscillation, substantially as described.

5. In an organized device for splicing strands, the combination of means for holding the strand; means for untwisting the strand which consists of a spring-clip; a lever and intermediary devices for revolving the clip, and an adjustable stop for limiting the motion of the lever, substantially as described.

6. The combination of cord-holding clips, means for rotating the same, an operating-lever, intermediate means for communicating rotation to the clips by the oscillation of the lever, and means for adjusting the amount of oscillation of the lever.

7. In an organized device for splicing strands, the combination of adjustable gripping-clips with means for applying tension to the same; rotating clips; means for holding portions of the strand separate; an oscillating lever with intermediary means for rotating the clips and an adjustable stop for regulating the amount of oscillation of the lever, substantially as described.

8. In a twine-splicing device the combination of a plurality of tension-controlled devices for gripping the cord, a plurality of rotating devices for gripping the cord oppositely disposed thereto, means for holding the strands of the cord separate, a sector arranged to rotate the revolving gripping devices, and means for adjusting the movement of the sector, substantially as described.

9. In an organized splicing device the combination of means for holding the strand under tension; means for holding and revolving the strand; means for holding portions of the strand separated; an oscillating sector with intermediate means for rotating the strand-holder; means for oscillating the sector and

an adjustable stop for regulating the oscillation of the sector, substantially as described.

10. In an organized device for splicing strands the combination of means for untwisting and retwisting the ends of the two strands, means for holding individual strands while tying and an adjustable stop for regulating the amount of rotation, substantially as described.

11. In an organized device for splicing strands the combination of means for untwisting and retwisting the ends of the two strands and one or more adjustable stops adapted to engage and limit the movement of the mechanism.

12. In a device for splicing strands, the combination of means for untwisting and retwisting the ends of the strands, and means for adjusting and making uniform the amount of such untwisting and retwisting, which consists in a lever and intermediate transmitting elements, and adjustable stops adapted to engage the lever, substantially as described.

13. In a device for splicing strands, the combination of means for untwisting and retwisting the ends of the strands, and means for adjusting and making uniform the amount of such untwisting and retwisting, which consists in elements for transmitting rotation to the strands, and adjustable stops adapted to engage the transmitting elements, substantially as described.

14. In a device for splicing strands, the combination of means for untwisting and retwisting the ends of the two strands, and a movable spindle for holding individual strands while tying, substantially as described.

15. In a device for splicing strands, the combination of means for untwisting and retwisting the ends of the two strands, and a movable spindle intermediate the strands for holding the same while tying, substantially as described.

Signed at New York, in the county of New York and State of New York, this 7th day of February, A. D. 1898.

JOHN EDWARDS BARBOUR.

Witnesses:

FRED. H. DU BOIS,
JOHN J. GIESER.