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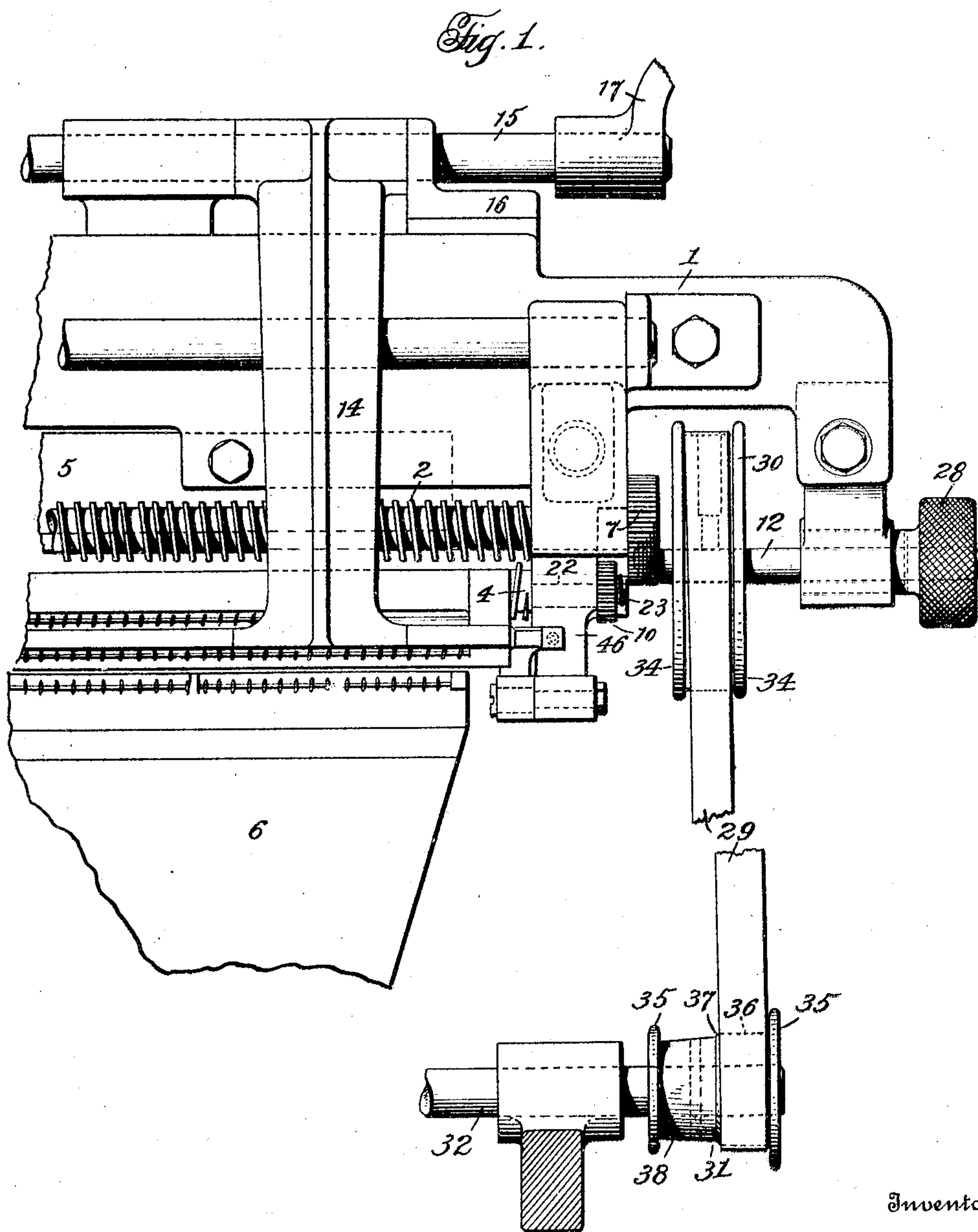
1,440,934.

H. PETERSEN.

DISTRIBUTOR MECHANISM FOR TYPOGRAPHICAL MACHINES.

FILED OCT. 11, 1921.

4 SHEETS—SHEET 1.



Inventor:

Witness:

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Attorneys:

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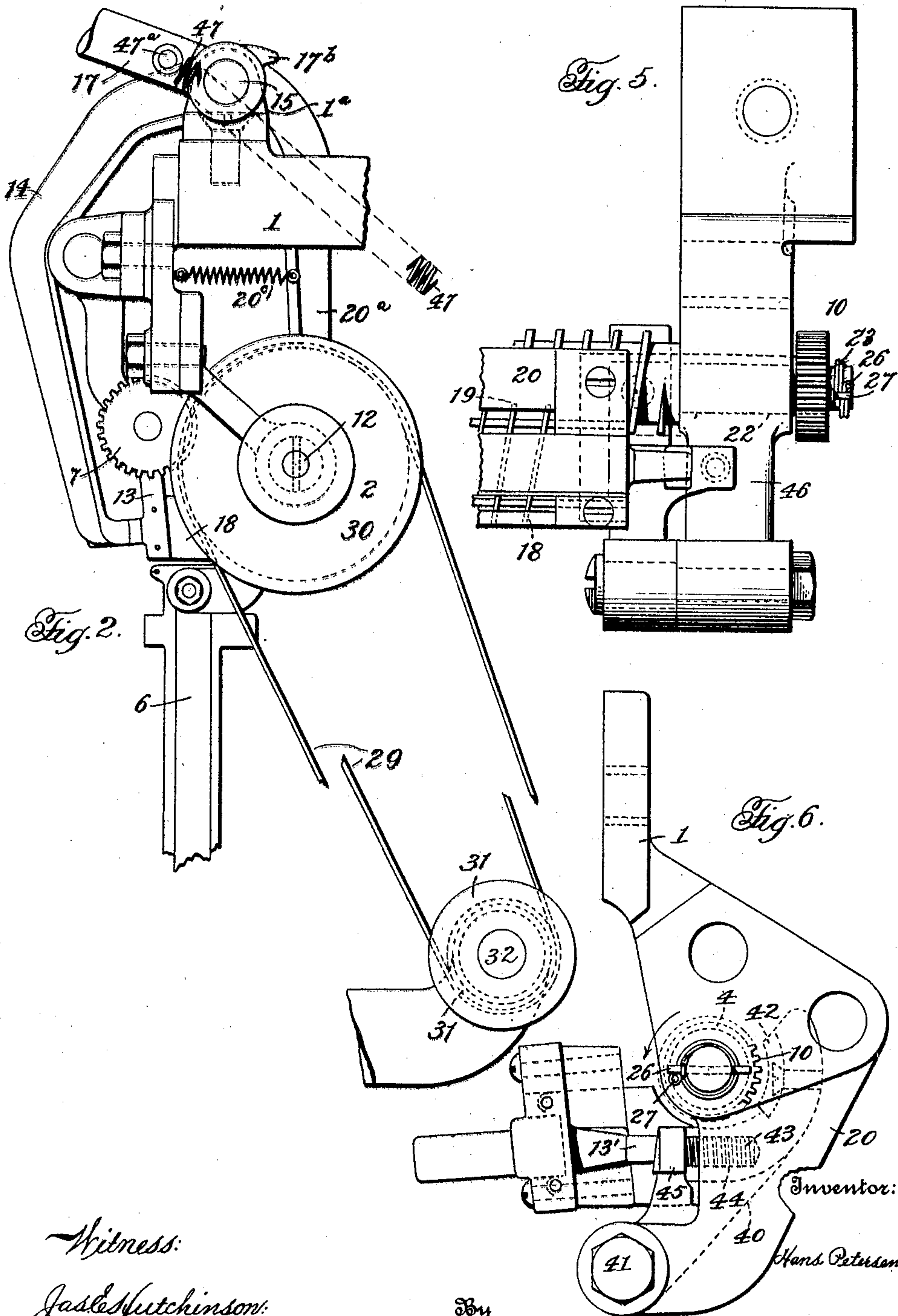
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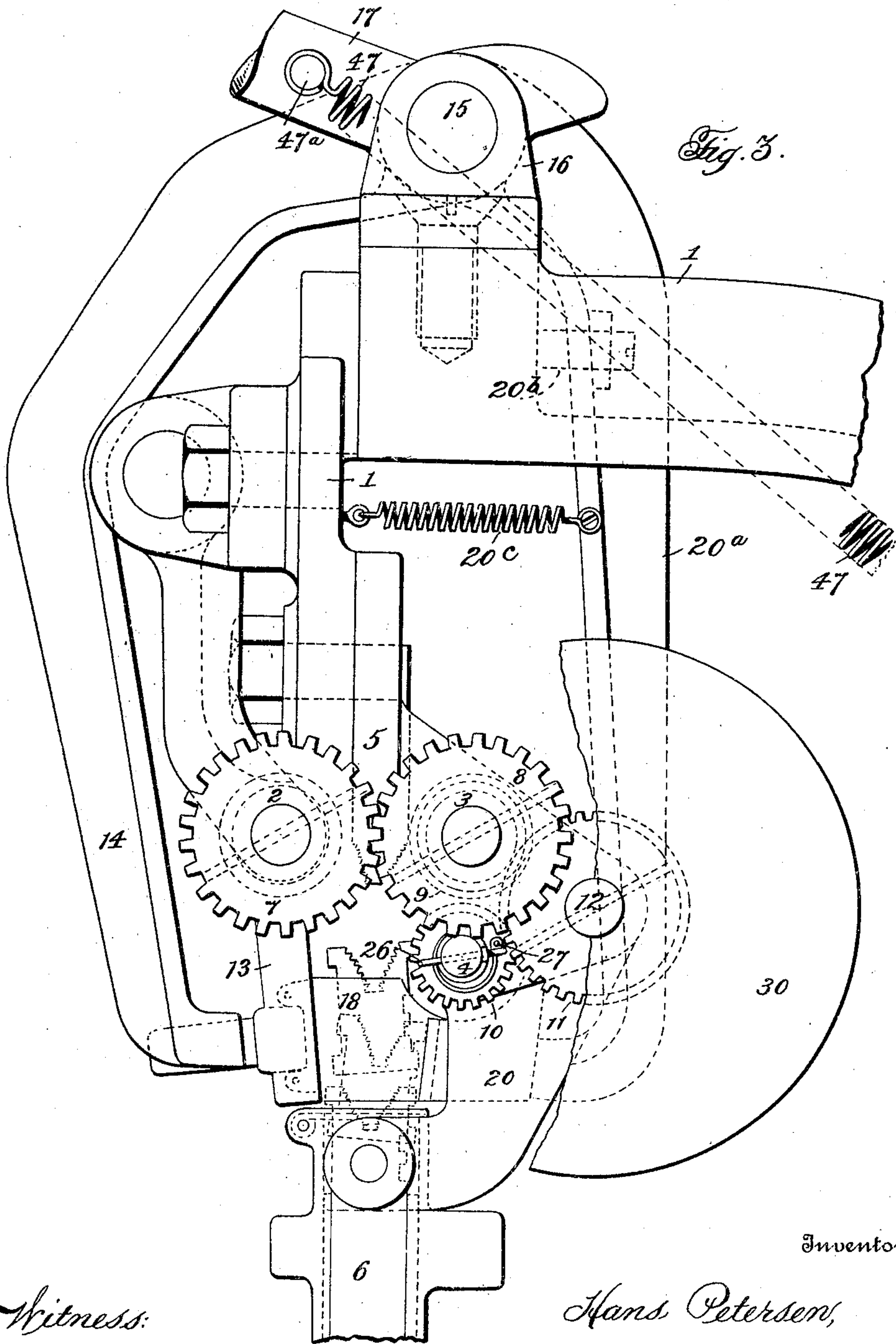
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4 SHEETS—SHEET 3.



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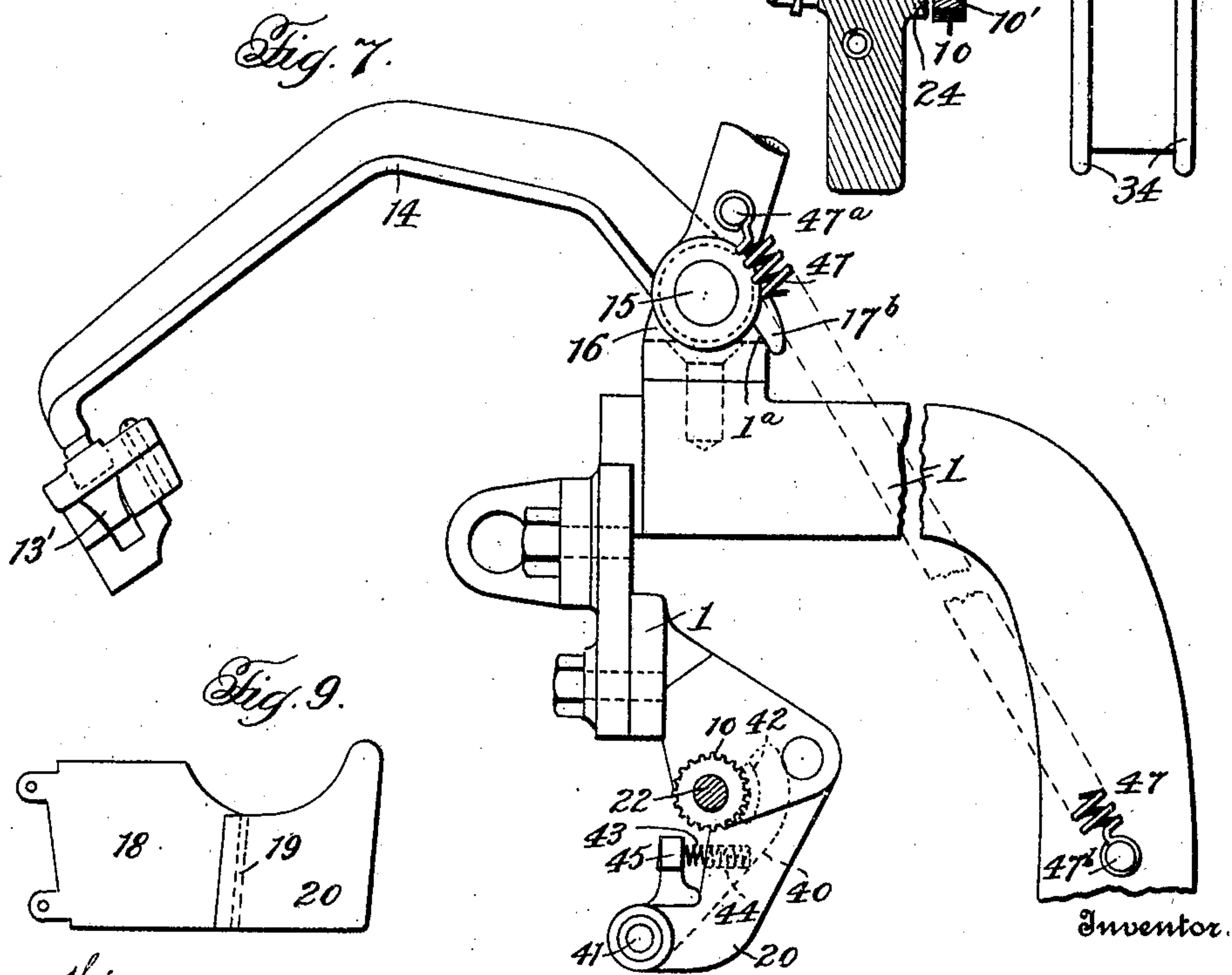
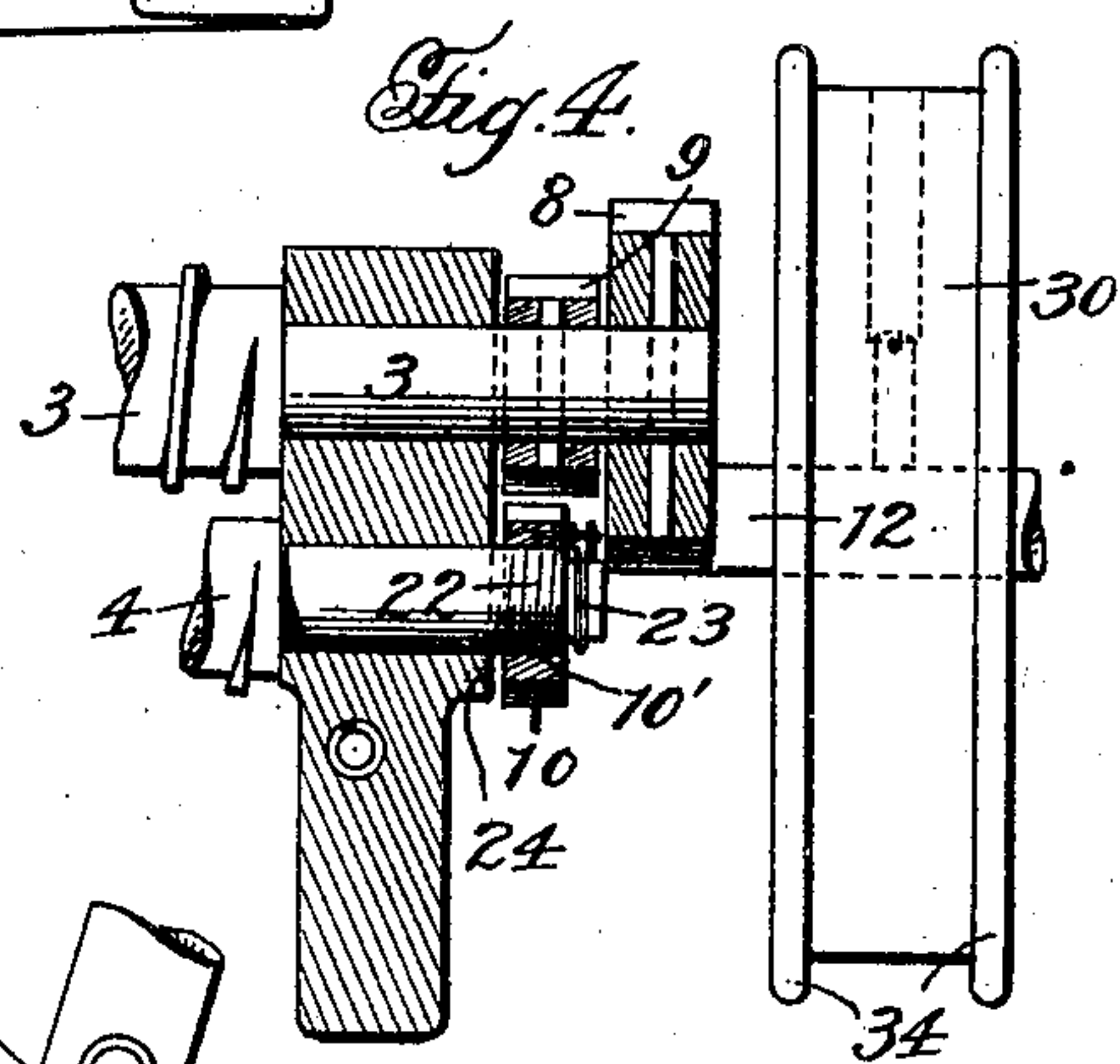
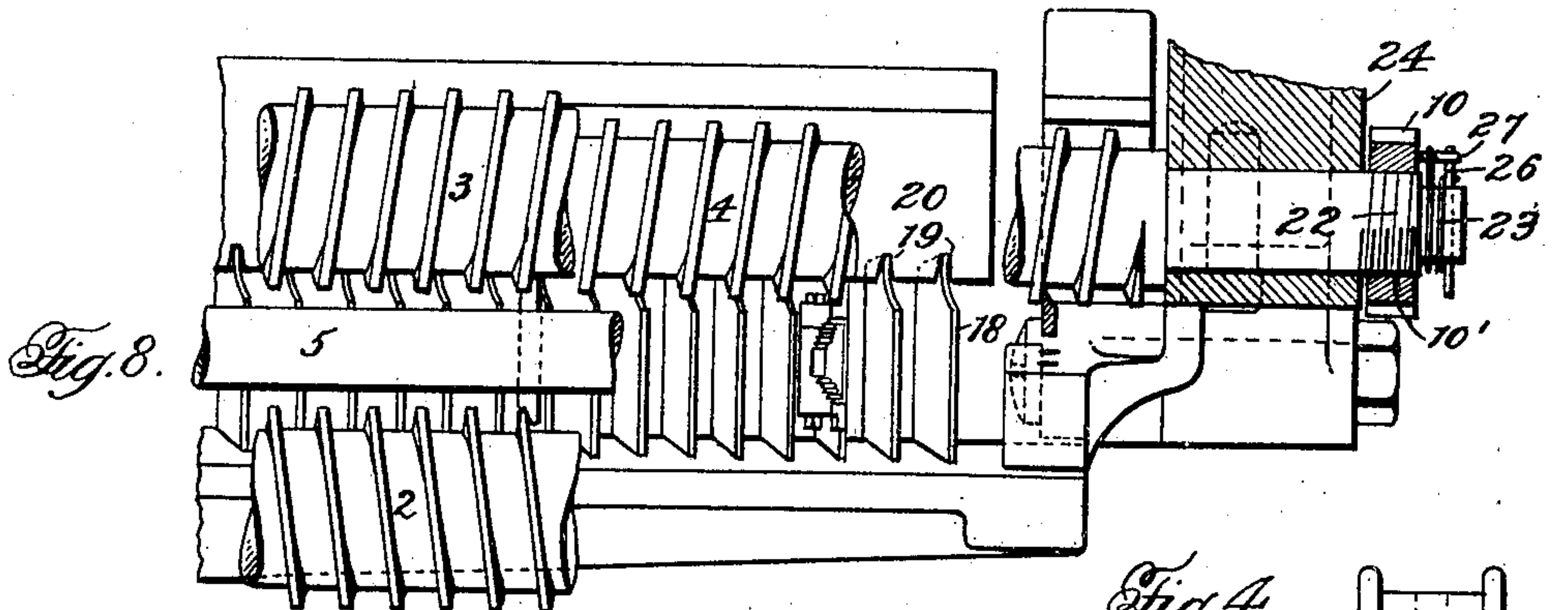
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4 SHEETS—SHEET 4.



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Patented Jan. 2, 1923.

1,440,934

# UNITED STATES PATENT OFFICE.

HANS PETERSEN, OF DAVENPORT, IOWA.

DISTRIBUTOR MECHANISM FOR TYPOGRAPHICAL MACHINES.

Application filed October 11, 1921. Serial No. 507,018.

*To all whom it may concern:*

Be it known that I, HANS PETERSEN, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Distributor Mechanism for Typographical Machines, of which the following is a specification.

This invention relates to improvements in distributor mechanism for typographical machines, and more especially to improved automatic stop mechanism therefor.

The main object of the invention is to provide improved automatic stop means of a simple and efficient nature that will provide for relieving the matrices and the distributor mechanism from strains, whenever, for any reason, the operation of the distributor mechanism is interfered with, or stopped, as in the case of the magazine or distributor entrance becoming blocked or choked.

The invention, with other objects and advantages thereof, and the particular constructions, combinations and arrangements of parts comprising the same will be understood from the herein contained detail description, when considered in connection with the accompanying drawings, forming part hereof and illustrating one embodiment of the invention.

In the drawings:

Figure 1 is a front elevation of the right hand end portion of the distributor mechanism equipped with improved automatic stopping mechanism in accordance with the present invention.

Fig. 2 is an end elevation.

Fig. 3 is an end elevation with certain of the parts broken away.

Fig. 4 is a detail section illustrating the drive gear for the lower back distributor screw, and parts directly associated therewith.

Fig. 5 is a detail front elevation of part of the distributor mechanism.

Fig. 6 is a detail end elevation.

Fig. 7 is a view similar to Fig. 6, with the distributor entrance swung to open position and the brake device engaging the distributor screw.

Fig. 8 is a detail top plan view.

Fig. 9 is a detail view of one of the entrance partitions and the cooperating slotted rear bar.

While in the drawings a specific embodiment of the invention is illustrated, it will of course be understood that changes and variations, in the particular construction shown, may be made, and the invention may be embodied in other forms, as will appeal to those skilled in the art and falling within the scope of the appended claims, without departing from the spirit of the invention.

The invention comprehends the use of a power transmission belt operatively connected with the distributor mechanism, in combination with improved means acting automatically to relieve the tension on the transmission belt whenever the load on the belt reaches a predetermined degree. The invention further contemplates automatic means for stopping the operation of the distributor mechanism whenever the normal operation thereof is interfered with, and also a brake device controlled by the distributor entrance for automatically stopping the distributor mechanism upon the opening of the distributor entrance as when, for instance, the distributor entrance is opened for inspection or to clear away the matrices when a "block-up" of the entrance occurs.

In the drawings, distributor mechanism of conventional form is shown comprising a suitable frame 1, distributor screws 2, 3, and 4, distributor bar 5, and magazine 6, the distributor screws 2, 3 and 4 operating in unison to move the matrices along the distributing bar and return them to the magazine in the usual way.

The distributor screws are operated by suitable gearing shown in the drawings, as consisting of intermeshing pinions 7, 8, on the two upper distributor screws 2, 3, a pinion 9 on the upper distributor screw 3, a pinion 10 on the lower distributor screw 4 and a main drive pinion 11 mounted on a shaft 12 and meshing with the pinions 9 and 10, of the upper and lower distributor screws 3, 4. 13 designates the magazine entrance supported to be swung outwardly to an open position as indicated in Figure 7 of the drawings, the same being carried by arms 14 secured at their upper ends to a pivot shaft 15 mounted for rotation in bearings 16 on the frame 1. 17 is an operating handle on one end of the shaft 15.

A beam 20 is provided, said beam being formed with slots 19, the rear end portions



of the partitions 18 of the distributor entrance fitting within the slots 19 of the beam 20 and being rigidly supported thereby when the entrance is in closed position. (See Fig. 5 of the drawings). The beam 20 is carried by arms 20<sup>a</sup> pivotally mounted upon the shaft 15. 20<sup>b</sup> is a stop on the beam 20 adapted to abut against a part of the frame, said beam 20 being normally held in its lowermost operative position by a spring 20<sup>c</sup> connected at opposite ends to one of the arms 20<sup>a</sup> and the frame 1.

As hereinbefore intimated, in accordance with the present invention automatic means is provided for stopping the distributor mechanism whenever the normal operation thereof is interfered with, as by a matrix "block-up." The exemplification of the means for this purpose illustrated in the drawings, comprises the pinion 10 of the lower distributor screw 4. The pinion 10, for this purpose, is provided with a threaded bore or nut 10' to engage a threaded portion 22 provided on one end of the lower distributor screw 4, and 23 is a coiled spring suitably secured at opposite ends to the distributor screw 4 and the pinion 10 to provide a yieldable drive connection therebetween, the tension of the spring 23 being such that under normal conditions the lower distributor screw 4 rotates with the pinion, being driven through the tension of the spring 23, but whenever the operation of the distributor screw 4 is interfered with, such as by a matrix "block-up", and checked or stopped, the pinion 10 will continue to rotate independently of the lower distributor screw 4 against the tension of the spring 23, the pinion 10 being screwed up on the portion 22 against the outer face of the frame part or bearing 24 resulting in the stopping of the distributor screw. The pinion 10 rotates in an anti-clockwise direction indicated by the arrow, and it will be understood that the thread of the portion 22 is accordingly a left hand thread. The spring 23 tends to turn the pinion 10 to the right, and the pinion 10 normally occupies a position a slight distance from the outer face of the frame part 24 (see Figure 4), co-operating stop pins 26—27 on the distributor screw 4 and pinion 10 being provided to limit the rearward movement of the pinion 10 on the threaded portion 22. As illustrated in Figure 3 of the drawings, when a matrix fails to properly enter its channel in the magazine 1, the following matrices will pile one on top of the other in the magazine entrance until they fill the whole space and begin to come into contact with the lower distributor screw 4, which, as will be understood, results in a certain degree of interference with the movement of the lower distributor screw.

To release the pinion 10 from engagement with the frame part 24 the shaft 12 is ro-

tated in the proper direction to turn back the pinion 10 away from the frame part 24, the tension of the coiled spring 23 again acting to unscrew the pinion 10 until the stop pin 27 on the pinion engages the stop pin 26 on the distributor screw shaft 4. An operating handle 28 is provided on the outer end portion of the shaft 12.

Power transmission means is provided comprising a belt 29, the belt engaging a pulley 30 on the shaft 12, and a pulley 31 on a power shaft 32. The pulleys 30 and 31 are constructed and arranged to permit the belt 29 to slip whenever the load on the belt reaches a predetermined degree. The driven pulley 30 is provided with flanges 34 and the distance between the flanges 34 is substantially equal to the width of the belt 29. The driving pulley 31 has flanges 35, and a portion 36 constituting the driving surface of the pulley, said portion 36 tapering to a slight degree and being of a length substantially equal to the width of the belt 29. At one side of the portion 36, the pulley is formed with an abruptly tapering step 37, and a tapering portion 38 of substantially less diameter than that of the driving portion 36, both of said portions 36 and 38 tapering in the same direction. The special construction of the driving pulley 31 and its proper location with reference to the driven pulley 30, as shown compels the belt 29 to run from the portion 36 of greater diameter to the reduced portion 38 as soon as the driven pulley 30 stops or has an excessive load placed upon it, the belt 29 continuing to slip on the driving pulley 31 until the additional resistance or load is removed from the driven pulley.

Whenever a matrix "block-up" occurs the normal movement of the lower distributor screw 4 is interfered with, as indicated in Figure 3 of the drawings, and the resistance to the operation of the lower distributor screw 4 results in the screwing up of the pinion 10 against the frame part 24 and the stopping of the distributor mechanism, the driven pulley 30 being held from rotation and the power transmission belt 29 slips on the pulleys, the belt shifting from the portion 36 of the driving pulley 31 to the reduced portion 38. There is then only a very slight tendency to revolve the driven pulley 30, the matrices and distributor mechanism being thus relieved of substantially all strain. To remove the "block-up" the distributor entrance 13 is swung back to the position shown in Figure 7. After the matrices have been cleared away and the gear pinion 10 has been turned back from the frame part 24 through the medium of the handle 28, the handle 28 is simply let go or it may be given a slight turn in the normal direction of rotation of the shaft 12 to help to overcome the inertia of the distributor



mechanism. The belt 29 then immediately climbs toward the high side or portion 36 of the driving pulley 31 in normal position to drive the pulley 30.

5 A brake device is provided to stop the distributor mechanism whenever the distributor entrance 13 is open for any reason, as for the purpose of inspection or in the case of "block-up." The particular construction of  
10 brake for this purpose, illustrated in the drawings, comprises an arm 40 pivotally mounted at its lower end at 41 on the frame 1 of the machine, and carrying at its outer end portion a braking surface 42 of curved  
15 formation to frictionally engage the lower distributor screw 4. 43 designates a coiled spring seated in a recess 44 of the frame part 24, and having its outer end bearing against an angular extension 45 of the arm 40. The  
20 tendency of the coiled spring 43 is to force the arms 40 forwardly to bring the braking element 42 to bear against the lower distributor screw 4 but normally the arm and its braking element is held out of operation by  
25 the distributor entrance 13, a part 13' on the distributor entrance engaging the angular extension 45 on the brake arm 40, the spring 43 being held under compression. 46 designates a stop portion on the frame 1 of the  
30 machine, which is engaged by the distributor entrance 13 when in closed position, and 47 is a coiled tension spring for yieldingly maintaining the entrance in its closed position, the tension of said spring 47 being such  
35 as to overcome the force exerted by the brake spring 43. One end of the spring 47 is attached to a pin 47<sup>a</sup> on the handle 17, the other end of the spring being secured to the frame of the machine at 47<sup>b</sup>, and the handle  
40 17 near its fulcrum has a projecting part 17<sup>b</sup> adapted to abut against the frame at 1<sup>a</sup> and limit the extent of opening movement of the arms 14, the arrangement being such that the spring 47 also serves to maintain the en-  
45 trance in its full open position indicated in Figure 7 of the drawings. As soon as the distributor entrance 13 is opened, the brake arm 40 is impelled forwardly by the spring 43, and the braking element 42 pressed  
50 against the lower distributor screw 4 with sufficient force to overcome the driving tension of the spring 23, and, consequently either stops the revolution of the lower distributor screw 4 or if the screw is already  
55 stationary, prevents it from starting up until the friction of the braking element 42 is relieved by the re-closing of the magazine entrance 13.

60 In some instances the automatic stopping and locking means for the distributor screw may be omitted and the automatic belt shifting means relied upon entirely to prevent excessive tension or strain being put on the matrices and the distributor mechanism  
65 in the case of "block-ups." The operation

with this arrangement of parts, will be as follows: When a matrix fails to enter the magazine and either this or succeeding matrices get jammed between the threads of the distributor screws and the magazine entrance  
70 partition the additional load put upon the transmission belt 29 will at once result in the belt running off from the driving portion 36 of the driving pulley 31 to the reduced portion 38 of the pulley, the belt slipping upon the pulleys and relieving the tension, preventing damage to the parts. To  
75 clear up the "block-up" the distributor entrance is then opened permitting the friction brake to engage the distributor screw 4. The opening of the distributor entrance relieves  
80 the tension on the matrices and the entrance partition, but as the friction brake has been applied by the same operation the transmission belt 29 is still maintained in its tension  
85 relieving position. When the displaced matrices have been cleared away, the entrance is closed, by which operation the friction brake and the distributor screw is released, and the transmission belt 29 automatically  
90 begins to rotate the driven pulley 30 and returned to the larger driving portion 36 of the pulley, the belt in this position operating to transmit full power to the driven pulley.

It will be noted that the special automatic  
95 stop mechanism hereinbefore described, is of a simple practical nature and operates to relieve the matrices and distributor mechanism of all strains, provision being made for quickly stopping the distributor mechanism  
100 whenever the normal operation of the same is interfered with, and also whenever the distributor entrance is opened.

What I claim is:

1. Power transmission means including a  
105 belt, means acting automatically to shift the belt to an inoperative position to relieve the tension thereon whenever the load on the belt reaches a predetermined point, and means  
110 for supporting the belt in its operative position.

2. Power transmission means including a driving pulley and driven pulley, a belt associated therewith, means acting automati-  
115 cally to shift the belt out of operative relation with one of said pulleys whenever the load reaches a predetermined degree, and means for supporting the belt in inoperative position adjacent said pulley.

3. Power transmission means, including  
120 a belt and pulley, said pulley having two tapering portions separated by a step, both of said portions tapering in the same direction, and one being of less diameter than the other, whereby when the load on the belt  
125 reaches a predetermined degree, the belt will be automatically shifted from the larger tapering portion of the pulley to the smaller tapering portion and the tension on the belt relieved.



4. In a typographical machine, the combination of distributor mechanism including a movable entrance, a driving pulley, a driven pulley, and a power transmission belt operatively connected with the distributor mechanism, means acting automatically to shift the belt out of operative relation with one of said pulleys whenever the load exceeds a predetermined degree, means for supporting the belt in inoperative position adjacent said pulley, and a brake device operating to stop the distributor mechanism upon the opening of the distributor entrance.

5. In a typographical machine, the combination of distributor mechanism including a distributor screw and a movable entrance, power transmission means connected with the distributor mechanism, and a friction brake device operating upon the distributor screw to stop the same upon the opening of the distributor entrance.

6. In a typographical machine, the combination of distributor mechanism, including a movable entrance, power transmission means operably connected with the distributor mechanism, said power means including a belt and pulley, the pulley having two tapering portions separated by a step, both of said portions tapering in the same direction and one being of less diameter than the other, providing for relieving the tension on the belt when the load reaches a predetermined degree, and a brake device operating to stop the distributor mechanism when the distributor entrance is opened.

7. In a typographical machine, the combination of distributor means including a distributor screw and a movable entrance, power transmission means for the screw including a yieldable drive connection, and a friction brake acting automatically upon the screw to stop the same upon the opening of the distributor entrance.

8. In a typographical machine, the combination of distributor means including a distributor screw and a movable entrance, power transmission means for the screw including a yieldable drive gear connection between the screw and said power means, and a friction brake acting automatically upon the distributor screw to stop the same upon the opening of the distributor entrance.

9. In a typographical machine, the combination of distributor means, including a distributor screw, a movable entrance, and a friction brake operating automatically to stop the distributor screw upon the opening of the distributor entrance.

10. In a typographical machine, the combination of distributor means, including a distributor screw and a movable entrance, of a movable brake device for the distributor screw, and means for forcing the brake

device into engagement with the distributor screw, said distributor entrance being constructed and arranged to hold the brake device out of engagement with the distributor screw when the distributor entrance is in closed position.

11. In a typographical machine, the combination of distributor means, including a distributor screw and a movable distributor entrance, of a movable brake device, spring means for forcing the brake device into engagement with the distributor screw, said distributor entrance having a part adapted to engage the brake device, and to move and hold the same out of engagement with the distributor screw when the entrance is moved to closed position.

12. In a typographical machine, the combination of distributor means, including a distributor screw and a movable distributor entrance, of a movable brake device, spring means for forcing the brake device into engagement with the distributor screw, said distributor entrance having a part adapted to engage the brake device, and to move and hold the same out of engagement with the distributor screw when the entrance is moved to closed position, and means for holding the distributor entrance in closed position.

13. In a typographical machine, the combination of distributor means, including a distributor screw and a movable distributor entrance, of a movable brake device, spring means for forcing the brake device into engagement with the distributor screw, said distributor entrance having a part adapted to engage the brake device, and to hold the same out of engagement with the distributor screw when the entrance is moved to closed position, and spring means for holding the distributor entrance in closed position, said last mentioned spring means being capable of exerting greater tension than the first mentioned spring means.

14. In a typographical machine, the combination of distributor means, including a distributing screw, and a distributor entrance mounted to swing to open and closed positions, of a pivotally mounted brake device, a spring acting to force the brake device into engagement with the distributor screw, said distributor entrance when swung to closed position being adapted to engage and move the brake device out of engagement with the distributor screw.

15. In a typographical machine, the combination of distributing means, including a distributor screw, and a distributor entrance mounted to swing to open and closed positions, of a pivotally mounted brake device, a spring acting to force the brake device into engagement with the distributor screw, said distributor entrance when swung to closed position being adapted to engage and move



the brake device out of engagement with the distributor screw, and means for holding the distributor entrance in closed position.

16. In a typographical machine, distributor mechanism including a rotary distributor screw, power transmission means operatively connected with the distributor mechanism, including a belt, means acting automatically to relieve the tension on the belt when the load on the belt reaches a predetermined degree, in combination with a device acting automatically to arrest the movement of the distributor screw when its normal rotation is interfered with.

17. In a typographical machine, distributor mechanism including a rotary distributor screw, power transmission mechanism for the distributor mechanism, including a belt and pulley, said pulley having a tapering portion and a portion at one side thereof of less diameter than the tapering portion, whereby the belt will be shifted to the pulley portion of smaller diameter when the load on the belt reaches a predetermined degree, and a device acting automatically to arrest the movement of the distributor screw when its normal rotation is interfered with.

18. In a typographical machine, the combination of distributor mechanism, including a rotary distributor screw, of means acting automatically to arrest the movement of the distributor screw when its normal rotation is interfered with, said means including a threaded portion of the distributor screw, a drive gear for the screw engaging said threaded portion, a frame part, and a spring drive connection between said gear and distributor screw, the drive gear being adapted to rotate independently of the distributor screw when the normal rotation

of the latter is interfered with, and to engage said frame part and stop the distributor screw from rotating.

19. In a typographical machine, distributor mechanism, including a rotary distributor screw, means acting automatically to arrest the movement of the screw when its normal rotation is interfered with, said means including a threaded portion on the distributor screw, a frame part, a drive gear for the screw engaging said threaded portion, and a spring drive connection between said gear and distributor screw, the driven gear being adapted to rotate independently of the distributor screw when the normal rotation of the latter is interfered with, and to engage said frame part and stop the distributor screw from rotation, in combination with a power transmission belt operatively connected with the distributor mechanism, and means acting automatically to relieve the tension on the belt when the load on the belt reaches a predetermined degree.

20. In a typographical machine, the combination of distributor mechanism, including a rotary distributor screw, and a movable entrance, of means acting automatically to arrest the movement of the screw when its normal rotation is interfered with, a power transmission belt operatively connected with the distributor mechanism, means acting to relieve the tension on said belt when the load on the belt reaches a predetermined degree, and a brake device controlled by the movable distributor entrance and operating to prevent rotation of the distributor screw when the distributor entrance is opened.

In testimony whereof I affix my signature.  
HANS PETERSEN.