

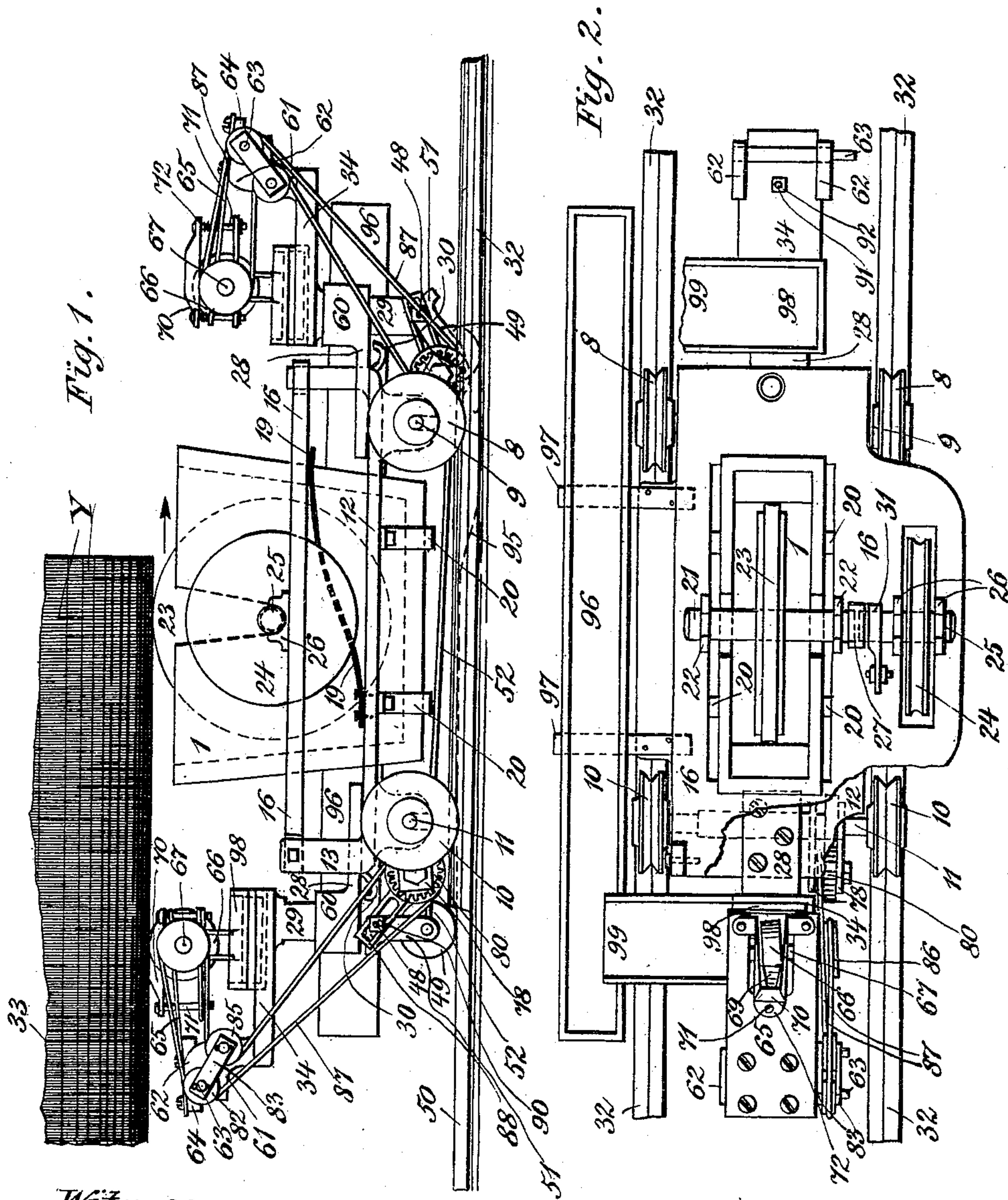
(No Model.)

3 Sheets—Sheet 1.

W. SHAW & F. TROMBLEY.
APPARATUS FOR PRINTING CARPET YARNS.

No. 543,511.

Patented July 30, 1895.



Witnesses:
James McLean
Theo H. Vanness

Inventors:
William Shaw
Frank Trombley
By Chas L. Horack
their Attorney.

(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

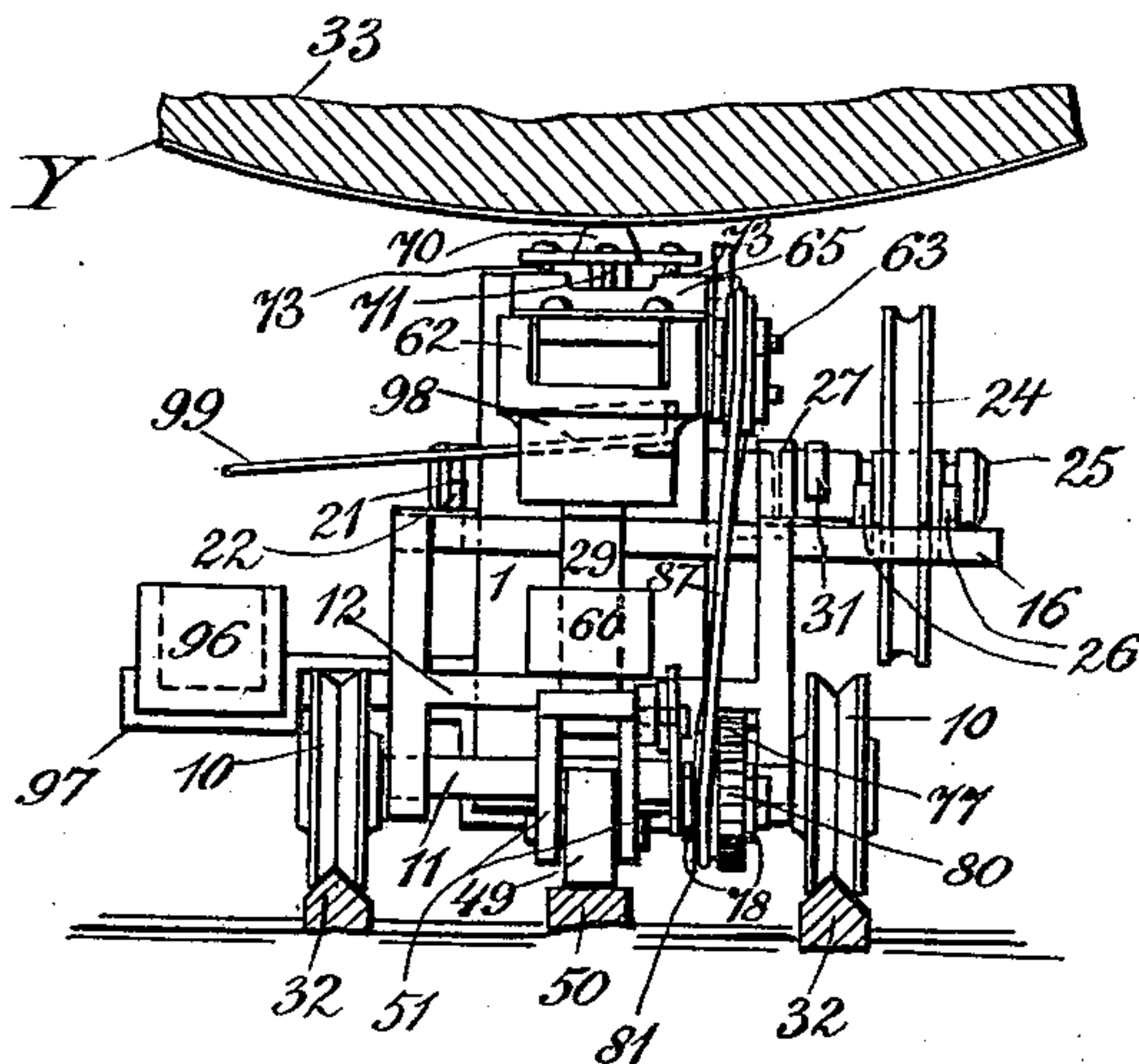


Fig. 6.

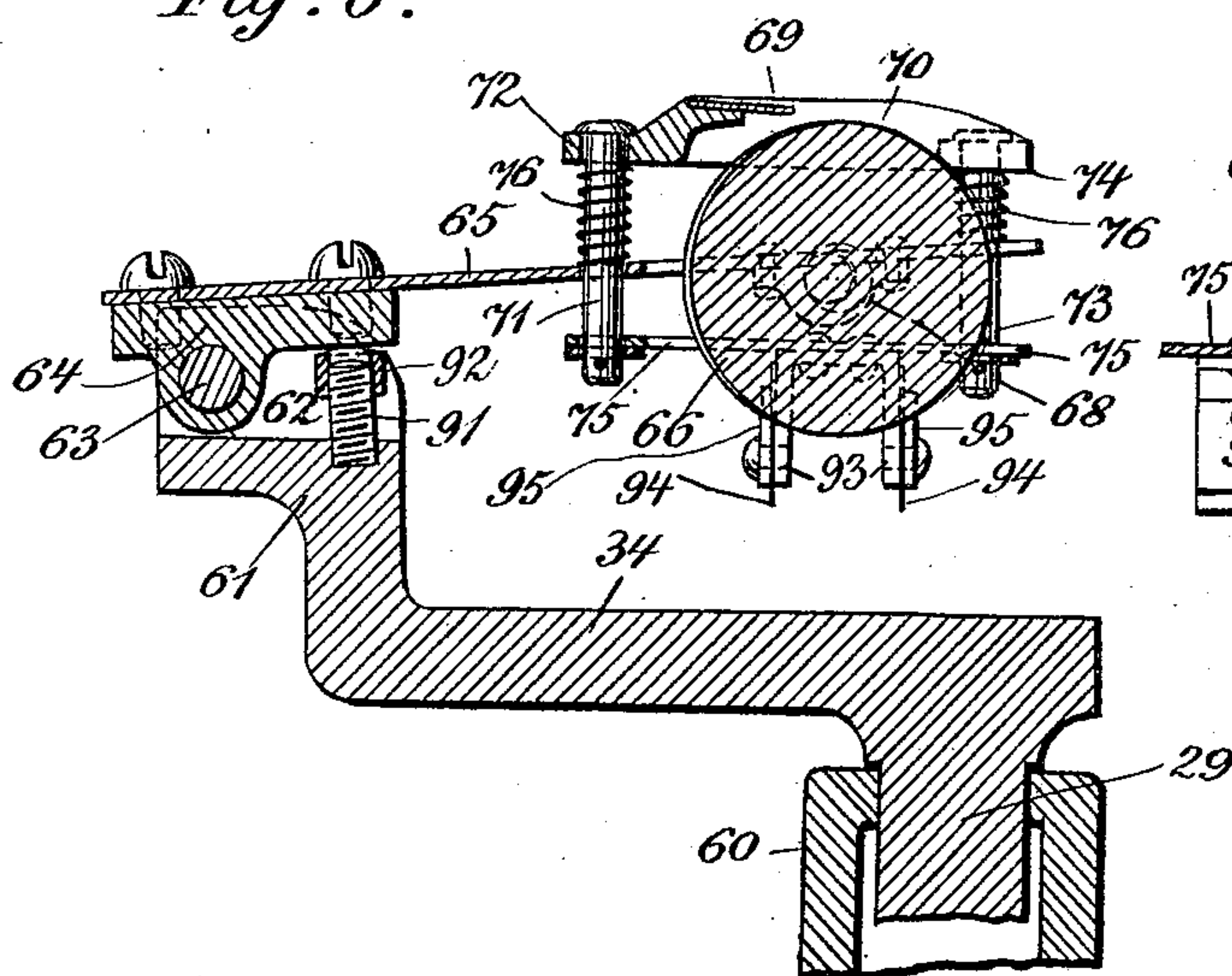
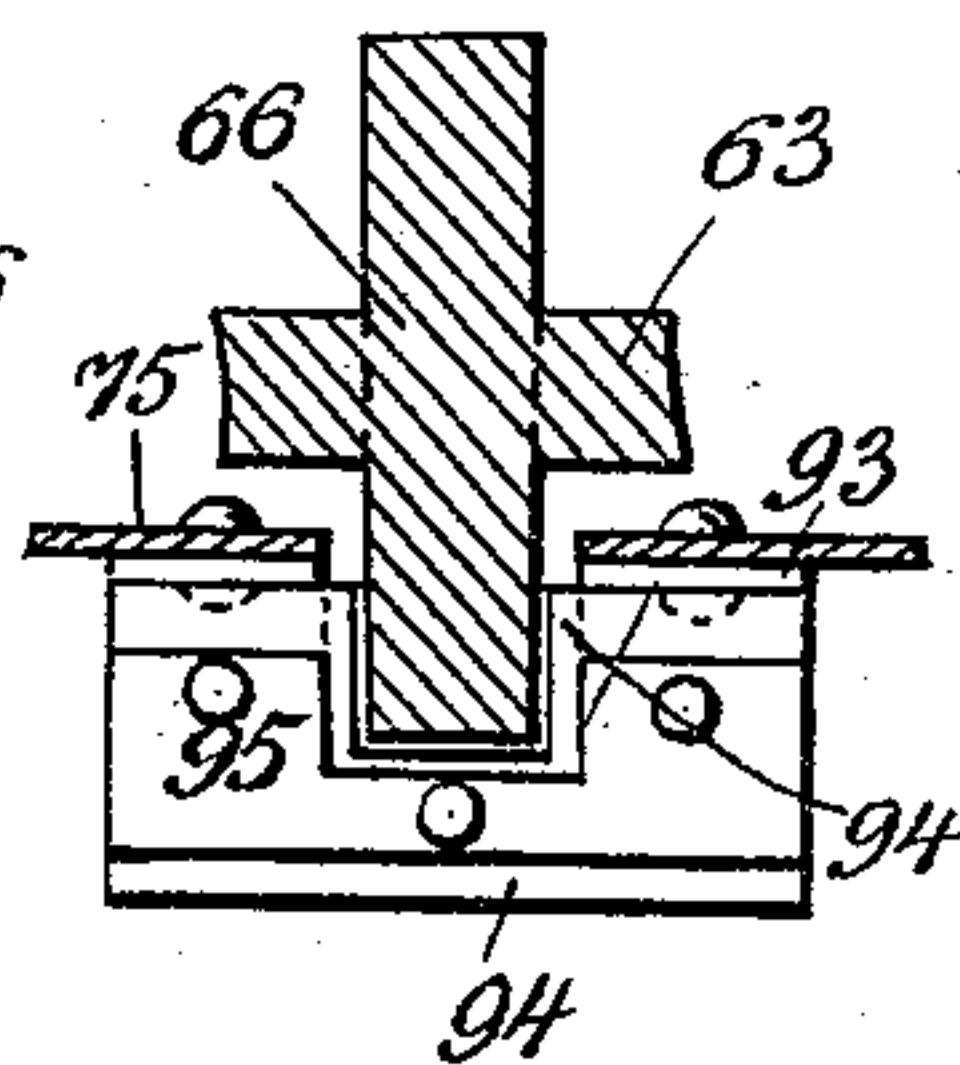


Fig. 7.



Witnesses:

James McLean
Geo. H. Vanness

Inventors:

William Shaw
Frank Trombley
By Chas. L. Horack
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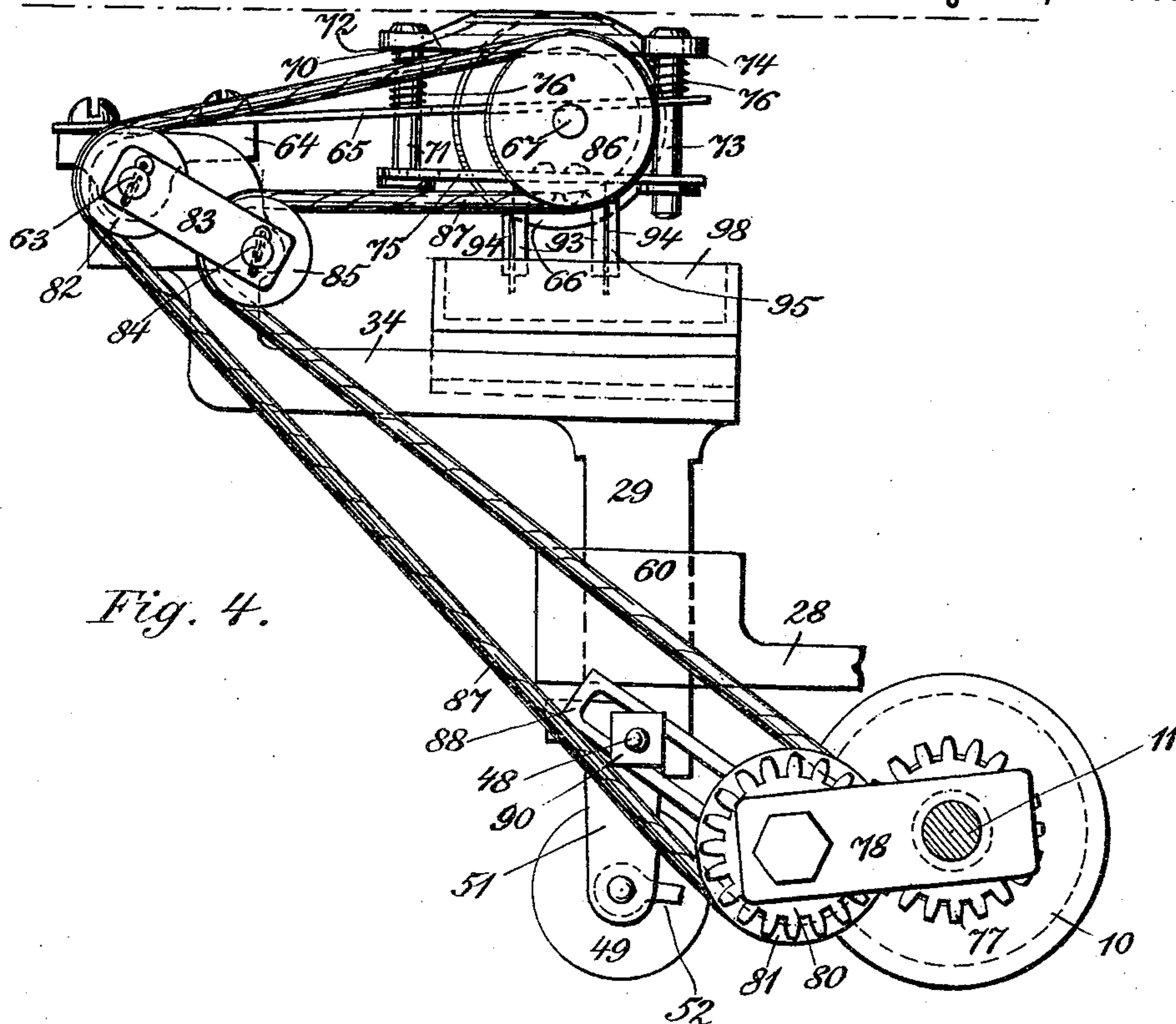


Fig. 4.

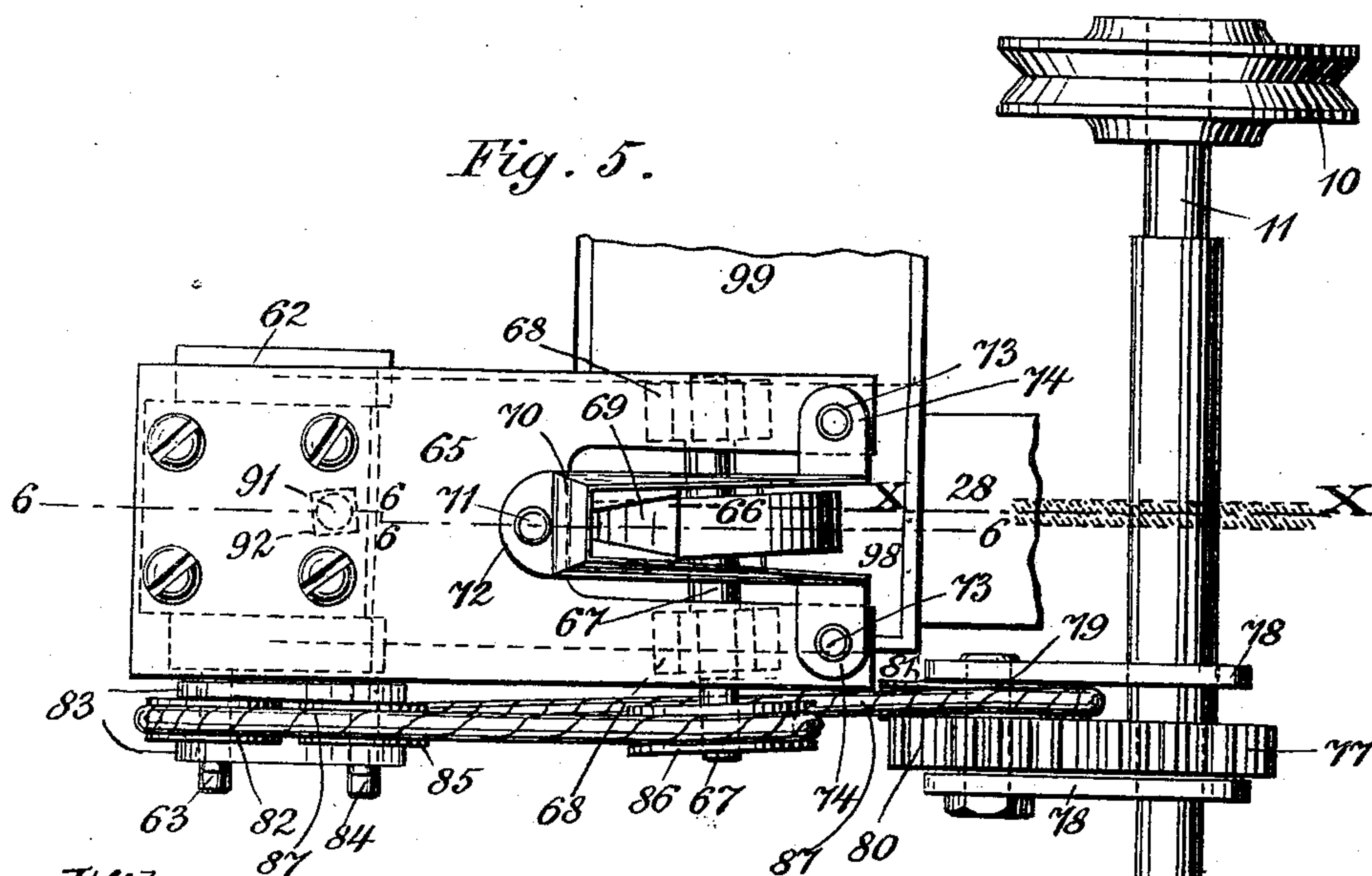


Fig. 5.

Witnesses:

James McLain
Theo H. Harnest

Inventors:

William Shaw
Frank Trombley
By Chas L. Horack
their Attorney

UNITED STATES PATENT OFFICE.

WILLIAM SHAW, OF BROOKLYN, AND FRANK TROMBLEY, OF YONKERS,
NEW YORK.

APPARATUS FOR PRINTING CARPET-YARNS.

SPECIFICATION forming part of Letters Patent No. 543,511, dated July 30, 1895.

Application filed September 5, 1894. Serial No. 522,193. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM SHAW, residing at Brooklyn, in the county of Kings, and FRANK TROMBLEY, residing at Yonkers, in the county of Westchester, State of New York, citizens of the United States, have invented certain new and useful Improvements in Apparatus for Printing Carpet-Yarns, of which the following is a specification.

Our invention relates to improvements in apparatus for printing carpet-yarns, such as are used more particularly in the manufacture of tapestry and velvet carpets.

The principal purpose of our invention is to provide simple mechanical means for efficiently distributing coloring-matter over and through the yarn, so that, after the same shall have been treated by our improved appliances, and shall afterward have been subjected to the usual steaming and washing processes, such yarn shall show uniform shades throughout, so as to equal or excel work done in the most careful manner with hand-scrapers.

Further purposes of our invention are to provide suitable means for cleaning a pressure-roller used in forcing the coloring-matter into the yarn; also to dispose of and to preserve surplus coloring-matter removed from the yarn in the process of printing it without returning the same to the main color-box which feeds the distributing-wheel; also to guard against destruction or damaging of the yarn near the ends of the yarn-drum, where equalizing and rubbing mechanism attached to and traveling with the color-carriage is very apt to produce such damage.

In carrying out our invention we employ an apparatus of the general outline and construction shown in W. Shaw's patent on apparatus for printing carpet-yarn, No. 514,282, dated February 6, 1894, particularly as far as the color-carriage, the main distributing-wheel, and the movable supports are concerned, which carry the appliances for equalizing the color on the yarn, the changes, improvements and additions covered by our present invention being specified hereinafter and set forth more particularly in the claims.

In the accompanying drawings, forming part of this specification, we illustrate an apparatus embodying our improvements, Figure

1 representing a side elevation of a color-carriage provided with our improved appliances, the color-carriage being represented as traveling in the direction of the arrow, toward the right, the rubbing and equalizing appliances in the rear of the distributing-wheel being still in operative contact with the yarn, those in front of such wheel appearing in their lowered inoperative position. Fig. 2 is a ground plan of such apparatus, omitting, however, the equalizer or rubber in front of the distributing-wheel, the leaf-spring to which it is attached, and the gearing for operating the same. Fig. 3 is a view of the rear end of the apparatus, looking at Fig. 1 from the left. Fig. 4 is a side elevation of our improved rubbing and equalizing appliances while in operative position and condition, and Fig. 5 a ground plan of the same, while Fig. 6 represents a vertical cross-section along lines 6 6 in Fig. 4, the equalizer or rubber arranged in the path of the pressure-roller, however, being shown in the position which it occupies when not in contact with the yarn. Fig. 7 is a cross-section of the pressure-roller with a cleaning-blade held in contact with its periphery and sides. Figs. 4, 5, 6, and 7 are drawn on an enlarged scale.

Corresponding reference numbers and letters throughout the different views refer to corresponding parts.

1 is the color-box feeding the main distributing-wheel with liquid coloring-matter.

8 8 and 10 10 are wheels attached to axles 9 and 11, respectively. The main body 12 of the color-carriage engages with such axles in the usual way.

16 is the upper lid, pivoted to abutment 13 at one end, and receiving yielding or elastic upward pressure through two leaf-springs 19, attached to main carriage-body 12, one on each side. Color-box 1 is seated within proper openings in lid 16 and main body 12 and rests on straps 20, attached to the latter.

21 is an axle inserted in bearings 22 22, open on top and attached to lid 16. On said axle main distributing-wheel 23 is mounted so as to be capable of revolving within color-box 1 and to be removed from the color-carriage, together with its axle, when the color-box is lifted from the same.

24 is a grooved pulley mounted on an axle 25, which latter rests in open bearings 26 26, and is placed in line with axle 21 and normally connected therewith by a sleeve-coupling 27 in the usual manner.

31 is a catch hinged to lid 16 and adjusted to keep sleeve 27 in position after the coupling has been effected.

30 30 are hooks fastened to the carriage-body, to which ropes are attached for the purpose of thereby drawing the color-carriage and the equalizing and spreading and rubbing devices supported thereby forward and backward along rails 32 32 and parallel with drum 33, which latter carries the carpet-yarn Y, which is to be printed, and which is wound around said drum in a continuous uniform layer in a manner indicated particularly in Fig. 1. While the main distributing-wheel is thus being moved along said drum it will be held in contact with the yarn by the springs 19 forcing upward lid 16 and with it bearings 22 22, and the friction so produced between such wheel and such yarn will keep the former revolving while such contact and such movement of the carriage continue, and will cause said wheel thereby to bring up from the bottom of box 1 the coloring-matter in which it is to be immersed and which is to be applied to the yarn. It is, however, necessary to provide means for revolving distributing-wheel 23 while it is traveling toward said drum and before it comes in contact with the yarn, so as to have that part of its periphery which at first comes in such contact fully supplied with coloring-matter, and this is accomplished by revolving it by means of pulley 24 and axles 25 and 21, coupled together, pulley 24 being revolved by a cord in the usual manner until the coloring-wheel comes in contact with the yarn and after it passes from under the drum.

The effect of drawing the coloring-wheel along the yarn as described will be the production of a "streak" of coloring-matter on the yarn about three-eighths of an inch wide and slightly exceeding in width the face of such wheel. Owing to the pressure applied to the distributing-wheel by springs 19 the greater part of such coloring-matter thus deposited on the yarn will be forced outward by such wheel, so as to form two ridges directly adjoining the path of such face of the wheel, while the space between such ridges will be covered by coloring-matter, but not as heavily.

Heretofore appliances substantially as described above have been employed. The coloring-wheel having traveled once along the drum the latter was revolved around its axis sufficiently to bring another part of the yarn which was to receive the same shade in the path of such coloring-wheel, and after all the streaks of the same color and shade required had been made the color-box and coloring-wheel were lifted off from the carriage and a different set of them for applying a different color or shade of color were applied. Finally, after the entire surface of the yarn

had thus been coated upon operatives using elastic hand-scrapers would force the coloring-matter forming the ridges above referred to into the intervening spaces, thus equalizing as far as practicable the distribution of the coloring-matter and removing any excess of the same. As this scraping of the yarn, under the circumstances, would necessarily take place some time after the application of the coloring-matter thereto, such coloring-matter would, owing to capillary attraction, have in a measure soaked into the yarn, and the scraping by hand would be only an auxiliary final step toward printing the yarn in a uniform manner.

It has been the practice heretofore, where an isolated streak of a certain color only was applied, (the streaks next adjoining being of a different shade or color,) to leave such a streak unscraped and to depend upon the scouring process to which the printed yarn is always subjected after being removed from the drum to equalize the coloring-matter therein, a single streak being so narrow as to make any inequalities in the coloring-matter applied thereto inappreciable in the finished fabric. The hand-scrapers heretofore employed have been of about double the width of a single streak, the operator in one stroke covering the coloring-matter on two adjoining streaks, scraping first in one and then in the opposite direction, thereby giving a rolling motion to the yarn.

With our improvements we likewise treat two adjoining streaks of the same color and shade at a time, and omit to equalize by mechanical appliances the coloring-matter in single streaks, throwing in the latter case such appliances in front as well as in the rear of the distributing-wheel temporarily out of operation. However, as the apparatus for such throwing out is fully illustrated and described in aforesaid Letters Patent No. 514,282, the same is not further referred to herein, and this specification is confined to the description of mechanical means employed for treating two streaks simultaneously.

28 28 are brackets having their horizontal arms fastened to the upper faces of main carriage-body 12, and extending beyond the same, so as to bring their vertical arms in front and in the rear of the color-carriage. These vertical arms, indicated by 60, form bearings within which posts 29, made of rectangular cross-sections, are made to slide. From the upper ends of these posts extend horizontally platforms 34, having at their outer ends brackets 61 provided with outer lugs 62, between which extends a pivot 63 carrying a swinging lug 64. To the upper surface of said swinging lug there is attached the end of a stiff leaf-spring 65, which spring is made to extend over platform 34, and is made forking near its free end toward the distributing-wheel; and it is this spring which forms the supporting basis for the equalizing and rubbing appliances employed by us.

66 is a roller made of wood, rubber, or similar material, and mounted on a pivot 67, which latter has its bearings in lugs 68 attached at both sides of the roller to the under side of springs 65. It is the function of this roller to follow in the path of the distributing-wheel, so as to force the coloring-matter deposited by the latter into the yarn. In doing so part of such coloring-matter will adhere to the surface of the roller, and for the purpose of reapplying the same to the yarn we provide a tongue or slope 69 in the rear of said roller and adjust the same so that while the roller is in operative contact with the yarn the forward and lower end of such slope will be in contact with the periphery of the roller and will pick up the bulk of the coloring-matter adhering to it, and will carry the same upward toward its rear end, which latter is joined to the heel of a U-shaped equalizer, slightly below the upper edge of the same, and which equalizer is held in contact with the yarn by yielding pressure, as more fully described hereinafter, and which finally again applies to and forces such coloring-matter into the yarn while gliding over the same.

Tongue or slope 69 is mounted upon and may be cast on a frame 70, the longitudinal inner surfaces of which are made substantially vertical and the upper edges of which, together with its walls, form aforesaid equalizer. 71 is a post firmly attached to a lug 72 in the rear of said frame, and 73 73 are posts attached in the same manner to lugs 74 74 extending outward from the front end of such frame. These posts are permitted to play freely through corresponding holes in leaf-spring 65 and carry at their lower ends a U-shaped plate 75.

76 are spiral springs placed around posts 71 and 73 and interposed between leaf-spring 65 and the under side of frame 70, and having a tendency to force frame 70 upward. By placing two posts 73 with their springs near the front end of frame 70, having one such post and spring on each side of the same, wobbling of said frame will be prevented and uniform motion secured for it.

Broken line $x x$ in Fig. 5 indicates the center line of the streak which is being applied by the distributing-wheel in front of roller 66 and frame 70, (shown therein,) and it will be seen from said Fig. 5 that the positions of frame 70 and roller 66 with reference to each other and to distributing-wheel 23 are peculiar. When said roller and said frame are in their operative positions in contact with the yarn, as shown particularly in Figs. 1, 3, and 4, the upper longitudinal edges of frame 70 run substantially parallel with the streaks on the yarn, they being, however, preferably made slightly flaring outward toward said wheel near their free ends, and, in the same manner as described in Patent No. 514,282 with reference to the equalizer mentioned therein, run close to and outside of the outer edges of the streak which is just being applied by the

color-wheel and of the next adjoining streak previously applied.

Roller 66, which is inserted between the arms of frame 70 and the forking branches of leaf-spring 65 and of plate 75, where it comes in contact with the yarn has its periphery equidistant from the two opposite walls of frame 70, so as to there approximately cover the aforesaid adjoining streaks of coloring-matter; but instead of having its axle parallel with that of the distributing-wheel, it is placed under a slight angle with the same in a vertical plane intersecting the vertical plane in which the axle of the color-wheel lies on that side of said wheel from which the unprinted yarn is being turned toward it.

We place the rollers in the slightly-oblique position shown, as we have found from practical experience that upon its impact with the yarn it will in consequence have a tendency to revolve the yarn, thereby thoroughly forcing the coloring-matter into it, and will also force such coloring-matter sidewise along said yarn. The longitudinal arms of frame 70, which simultaneously slide along the yarn, will prevent such revolving motion from extending farther outward. Said arms will also prevent the coloring-matter from spreading; and, owing to their slightly flaring configuration, will have a tendency to force the same inward toward pressure-roller 66. Surplus coloring-matter picked up by said roller will be delivered by it to slope 69 and guided along the same upward toward the heel of the equalizer, which, also being held against the yarn, will reapply to it said coloring-matter under pressure, thus finishing the operation as far as such set of appliances following the distributing-wheel is concerned.

In order to apply positive rolling motion of a predetermined speed to roller 66 we connect the same by any proper mechanical power-transmitting devices with a revolving part of the color-carriage, and preferably, as shown in the drawings, with the axle of one of its wheels, as 11, particularly as in that case rollers 66 can be kept revolving throughout the time during which the carriage is in motion, which we find particularly desirable for the purpose of holding said rollers alternately in operative revolving contact with cleaners, while said rollers are free from contact with the yarn, as set forth hereinafter, so that, owing to this arrangement, cleaning of one of said rollers will thus take place while the carriage is in motion. In the power-transmitting device illustrated therein, 77 is a cog-wheel on such axle and 78 two gravity-levers also pivoted to said axle and carrying between them pivot 79, on which is mounted a cog-wheel 80, meshing with cog-wheel 77 and a pulley 81.

82 is a pulley on axle 63, while 83 83 are gravity-levers pivoted to the same axle and also carrying between them the axle 84 of

another pulley 85. 86 is a pulley on axle 67, which carries the pressure-roller, and 87 a rope so placed over aforesaid pulleys that revolving motion having first been transmitted from axle 11, through cog-wheels 77 and 80, to pulley 81, the same is from there transmitted to roller 66 through the rope. We so proportion these wheels and pulleys as to give to roller 66 a peripheral velocity about twenty-five per cent. greater than the speed with which the edges of frame 70 slide along the yarn, as we find that we thus can best impart to the yarn the rolling motion above referred to.

88 is a link extending from pivot 79 to screw-threaded pin 48, near the foot of post 29 and 90 is a nut, and by means of these parts proper tension can be applied to rope 87 before beginning operations.

By placing pulleys 82 and 85 in the rear of pulley 86, the strain exerted on the latter pulley by rope 87 will also be rearward and substantially in line with leaf-spring 65. We have found such a disposition of the rope very advantageous, as in case the rope was run from pulley 86 downward directly to pulley 81, owing to the necessity of keeping said rope tight, it might overcome fully or partly the upward pressure of spring 65, thus interfering with the proper action of pressure-roller 66.

When platform 34 and all the appliances supported thereby are brought into their depressed position (indicated in the right-hand part of Fig. 1 and in Fig. 6) by the means hereinafter described, the weight of gravity-levers 78 and 83 and of the pulleys attached near their free ends will cause such levers to swing downward until the rope 87 is again tightened sufficiently to enable it to revolve roller 66 for the purposes specified below.

In place of the pulleys and ropes described, sprocket wheels and chain may be employed to good advantage in order to prevent slipping.

91 is a screw let into bracket 61 with its nut 92 so resting against the under side of swinging lug 64 that thereby leaf-spring 65 may be forced upward, and the upward pressure of roller 66 and of equalizing-rubber 70 will be increased accordingly.

A U-shaped hanger 93 is attached to the under side of plate 75 on each side of and in close proximity to roller 66. 94 94 are two thin metallic blades held against the outer surfaces of said hanger by straps 95 95 riveted to the vertical members of such hanger. These plates 94 are so shaped as to have their inner surfaces closely fit the periphery and adjoining parts of the sides of roller 66, so that when said roller is in its lowered position, as shown in Figs. 6 and 7, such inner surfaces of plates 94 will be held against said periphery and side, and will, owing to the action of springs 76, clean the same thoroughly, removing any coloring-matter and fiber that may still adhere to the same, while, when equalizing-rubber 70, and with it plate 75 and said cleaning-blades are depressed, owing to the fact that part 70 is traveling along the surface of the

yarn, said blades will only be in contact with the sides of the roller, leaving the coloring-matter on its periphery undisturbed, thus permitting it to again be brought in contact with the yarn by said roller.

Spiral springs 76 are much weaker than leaf-spring 65, and it is owing to this fact that as the slanting and curving front end of equalizing rubber 70, while the latter is still elevated above the roller, begins to pass underneath the yarn-drum, such part 70 becomes gradually depressed until its upper edges assume a position parallel with the yarn, while the periphery of the roller also moves along the same, the two appliances jointly operating as described above.

The roller and the equalizing-rubber traveling ahead of the distributing-wheel are held from contact, and those traveling in the rear of said wheel are held in contact with the yarn by means of the following appliances, which are connected with the vertically-sliding supports 29 29:

48 48 are pins or pivots extending outward from the lower extremities of posts 29, to which are hinged levers 51, carrying at their lower ends rollers 49 49, journaled thereto in such a manner that such rollers will ride on a rail 50, placed underneath drum 33, and that lever 51 will be compelled to assume a vertical position underneath the support 29, which follows after the distributing-wheel, thereby bringing the appliances supported by it in operative contact with the yarn on the drum, as shown on the left-hand side of Fig. 1, while the same left-hand lever 51 when passing underneath the drum on its return trip and moving ahead of the distributing-wheel on rail 50 will assume the inclined position similar to that shown on the right-hand side of Fig. 1, its inclination, however, being in the opposite direction.

52 is a connecting-rod hinged to the journals of both rollers 49 49 and made of such length that when the levers 51 51, attached to one of the rollers, are in a vertical position, those of the other roller are forced into an inclined position and thereby draw downward the post 29, to which they are attached, withdrawing at the same time the roller and equalizing spreader supported by such post from contact with the yarn.

The right-hand lever 51 in Fig. 1, with its roller, are shown to have passed down an inclined plane 95, which terminates rail 50. Before reaching such incline the position of said lever, while of the same general direction, will be almost level. Such an incline 95 is provided at each end of rail 50, and near the end of drum 33, for the purpose of thereby gradually elevating the post 29, following after the color-wheel, and the appliances supported by it, until the latter come in operative contact with the yarn, and we prefer to so locate said inclines that, while the roller when passing from under drum 33 will come in contact with the yarn in the immediate vicinity

of the end of said drum, the heel of the corresponding equalizer will be dropped before it reaches such end. This will guard against the yarn being forced off of the drum by said heel. Likewise, by keeping the pressure devices from contact with the threads of the yarn nearest to that end of the drum underneath which such devices first pass, preparatory to equalizing the coloring-matter upon the following threads, cutting of the yarn there by said devices is guarded against.

The rollers and equalizing-rubbers in front and in the rear of the distributing-wheel are placed in line with each other for the same reasons which govern like locations of spreaders and equalizers shown in aforesaid Letters Patent No. 514,282.

It is desirable to place rollers 66 and equalizing-rubbers 70 entirely outside of color-box 1 and to dispose of any surplus coloring-matter (which might carry some wool-fiber with it) dripping down from the same without discharging it into said color-box. For such purposes we provide a long receiving-box 96 on one side of the carriage, supporting such box on brackets 97 attached to its main body. We also place a receptacle 98 on top of each platform 34 and provide it with a spout or outlet 99, which extends laterally over and discharges into box 96. As these outlets rise and fall with posts 29 their vertical motion will aid in discharging the waste coloring liquid into the box.

As, in printing carpet-yarns, boxes containing various shades of coloring-matter are used successively, while we employ the same pressure-rollers throughout, it will be seen that in case at the time a box containing a different color was placed upon the carriage while the cleaning of the pressure-rollers had not as yet been fully accomplished by the cleaning devices, coloring-matter of a different color or shade would be discharged from said devices into the color-box just placed on the carriage, which, of course, would seriously interfere with giving to the yarn the exact shades the pattern would call for. All this we avoid by the use of independent receptacles, as described.

We claim as new and desire to secure by Letters Patent—

1. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a pressure roller mounted on a leaf spring, and a rubber actuated by a spring or springs mounted on said leaf spring, substantially as set forth.

2. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a pressure roller mounted on a leaf spring means for adjusting the tension of said spring, and a rubber actuated by a spring or springs mounted on said leaf spring, substantially as set forth.

3. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a pressure roller and an equaliz-

ing rubber, roller and rubber being both mounted on the same leaf spring, substantially as set forth.

4. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, and a pressure roller in the rear of such wheel and having its axle placed under a slight angle to the axle of said wheel, substantially as set forth.

5. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, and two pressure rollers, one placed in front and the other in the rear of said wheel, the axles of both of said rollers being placed under slight angles to the axle of the color wheel in vertical planes intersecting on that side of the color wheel from which the unprinted yarn is turned toward it, substantially as set forth.

6. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, an equalizer constructed as a two armed blade with a substantially vertical drainage channel between said arms, a roller for forcing the coloring matter into the yarn placed within said channel, appliances for raising and lowering said roller and means for revolving such roller when in its lowered position, substantially as set forth.

7. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel mounted on the color carriage, a pressure roller for forcing the coloring matter into the yarn and means for imparting revolving motion of one of the carriage wheels to such roller, substantially as set forth.

8. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a pressure device adjusted to follow in the path of said wheel and an independent spring or springs near the forward end and other such spring or springs near the rear end of said device for forcing it against the yarn, substantially as set forth.

9. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, an equalizer adjusted to follow in the path of said wheel, and independent springs placed in the rear and also to both sides of the same, substantially as set forth.

10. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel mounted on the color carriage, a pressure roller for forcing the coloring matter into the yarn, adjusted to be raised and lowered, a chain or rope for imparting revolving motion to such roller from a roller or axle of fixed elevation, and means for tightening such chain or rope automatically while the roller is either in its elevated or its lowered position, substantially as set forth.

11. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel mounted on the color carriage, a pressure roller for forcing the coloring matter into the yarn, adjusted to be raised and lowered, a chain or rope for imparting re-

volving motion to such roller from a roller or axle of fixed elevation, and one or more auxiliary or intermediate rollers mounted on undulating pivots for the purpose of holding the chain or rope tight, substantially as set forth.

12. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel mounted on the color carriage, a pressure roller for forcing the coloring matter into the yarn, adjusted to be raised and lowered, a chain or rope for imparting revolving motion to such roller from a roller or axle of fixed elevation, and one or more auxiliary rollers having their pivots mounted on gravity levers for the purpose of holding the chain tight, substantially as set forth.

13. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a pressure roller, a pulley for revolving it, both mounted on a leaf spring and a rope or chain for revolving said pulley and extending from the same substantially in the direction of the leaf spring, all as set forth.

14. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a roller for forcing the coloring matter into the yarn and a spring actuated cleaner for such roller, and means for withdrawing the cleaner from the roller while the latter is in operation, substantially as set forth.

15. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a pressure roller and a cleaning device for such roller, and means for intermittently holding such cleaner in contact with the periphery and sides of the roller, substantially as set forth.

16. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a pressure roller, means for revolving the same while the wheel is traveling in either direction, a cleaner and means for holding said cleaner in contact with the periphery and sides while the roller is not in contact with the yarn, and in contact with the sides only when such roller is in contact with the yarn, substantially as set forth.

17. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a roller, means for revolving the same in both directions, and two cleaners comprising blades held in contact with both sides of the roller at different points of its periphery, substantially as set forth.

18. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, an equalizer and a roller

each mounted on a suitable frame, such frames movable with reference to each other, one of the frames being guided by the other, substantially as set forth.

19. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, an equalizer, and a roller mounted between its arms, and means for imparting peripheral velocity to the roller greater than the speed of the arms of the equalizer, substantially as set forth.

20. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a color box for feeding said wheel, a device for removing surplus coloring matter from the yarn, a receiving trough placed sidewise therefrom and a lateral spout for discharging such surplus color into said trough, substantially as set forth.

21. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a color box for feeding the same, devices for removing surplus coloring matter from the yarn, placed in front and in the rear of the wheel and an independent receptacle for said surplus color mounted on the carriage, substantially as set forth.

22. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a color box for feeding said wheel, a device for removing surplus coloring matter from the yarn, means for raising and lowering said device, and a color receptacle adjusted to be raised and lowered with aforesaid color removing device, substantially as set forth.

23. In an apparatus for printing carpet yarns, in combination with the yarn drum, a distributing wheel, a color box for feeding said wheel, devices for removing surplus coloring matter from the yarn placed in front and in the rear of said wheel, means for raising and lowering said color removing devices, receptacles adjusted to be raised and lowered with the same and provided with proper spouts or discharge outlets, and a joint receptacle into which they discharge, substantially as set forth.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 27th day of July, 1894.

WILLIAM SHAW.
FRANK TROMBLEY.

Witnesses:

JAMES MCLAIN,
WM. P. CONSTABLE.