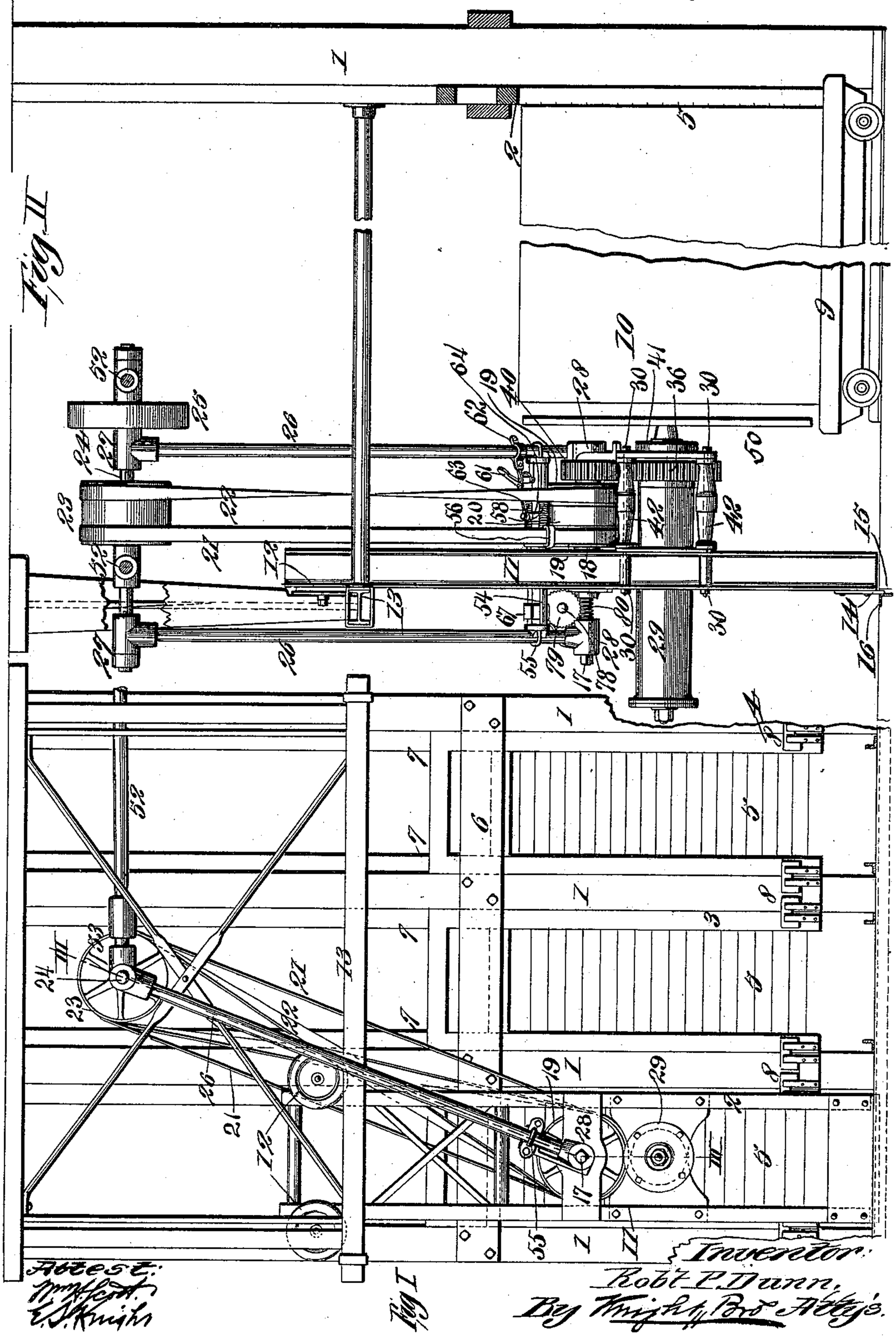
(No Model.) 4 Sheets—Sheet 1.

R. P. DUNN.

SOAP SLABBING MACHINE.

No. 564,507. Patented July 21, 1896.



Witnesses:
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Fig. I.

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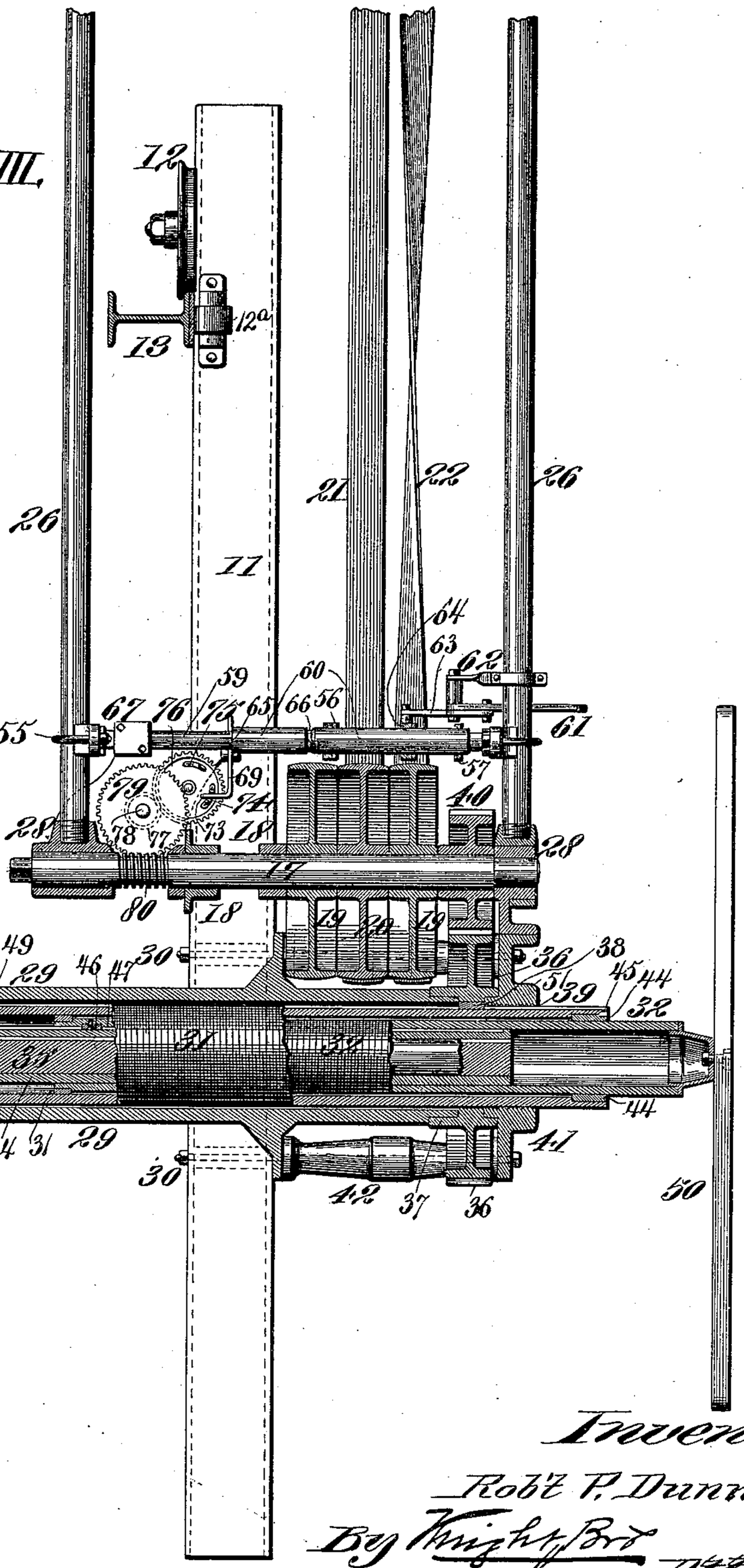
Fig. III.



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SOAP SLABBING MACHINE.

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Fig. IV.

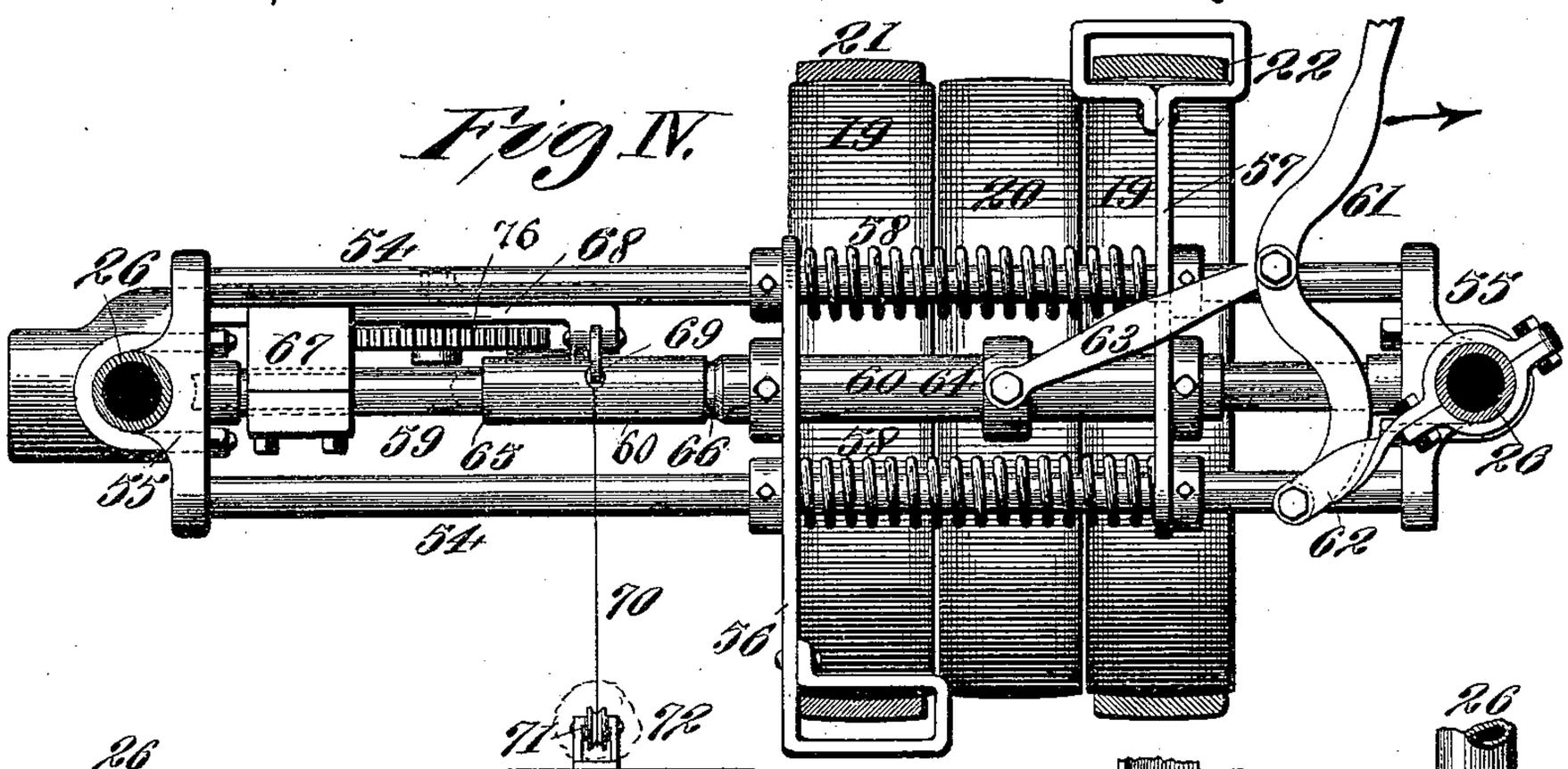


Fig. V.

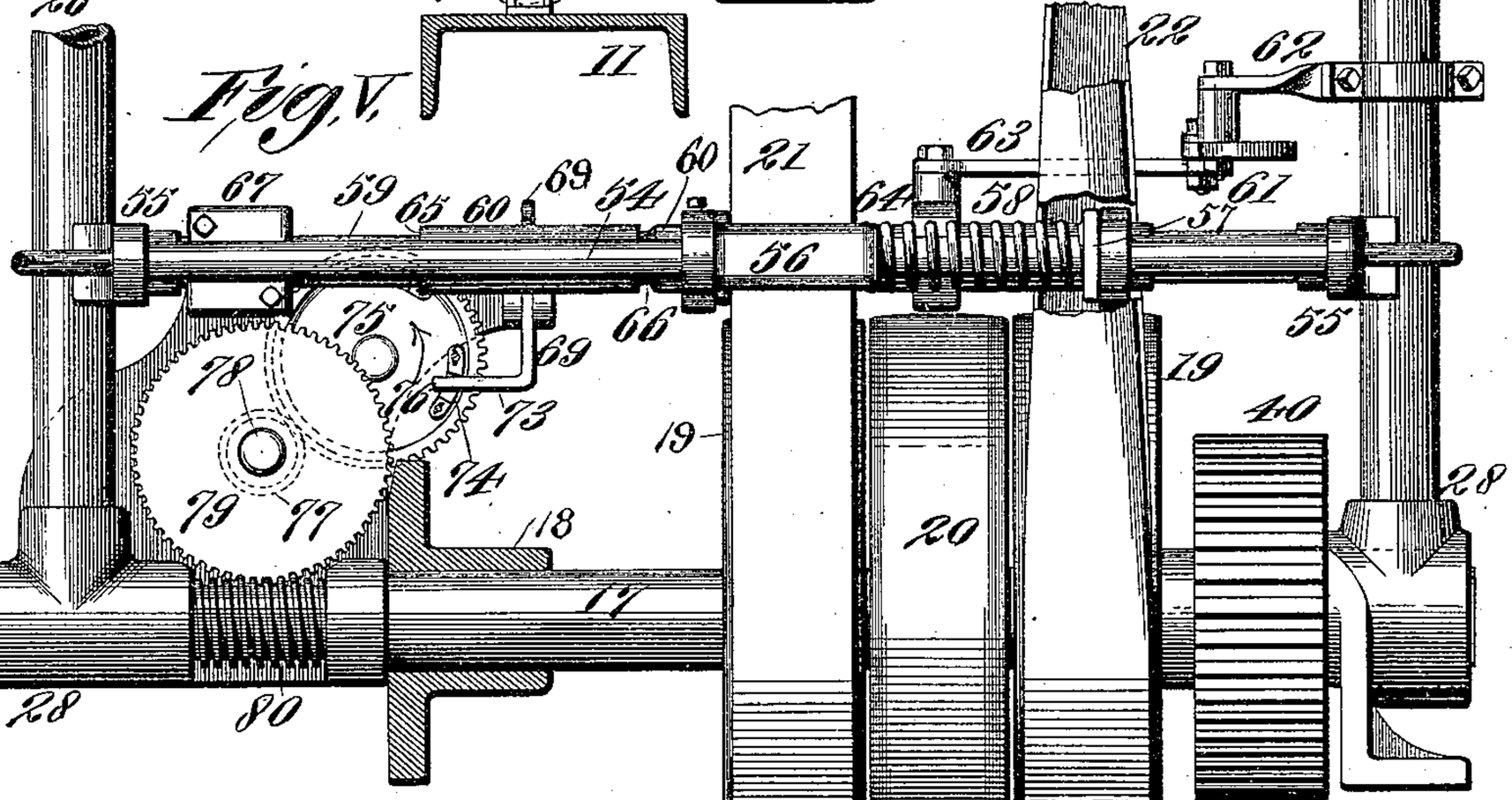
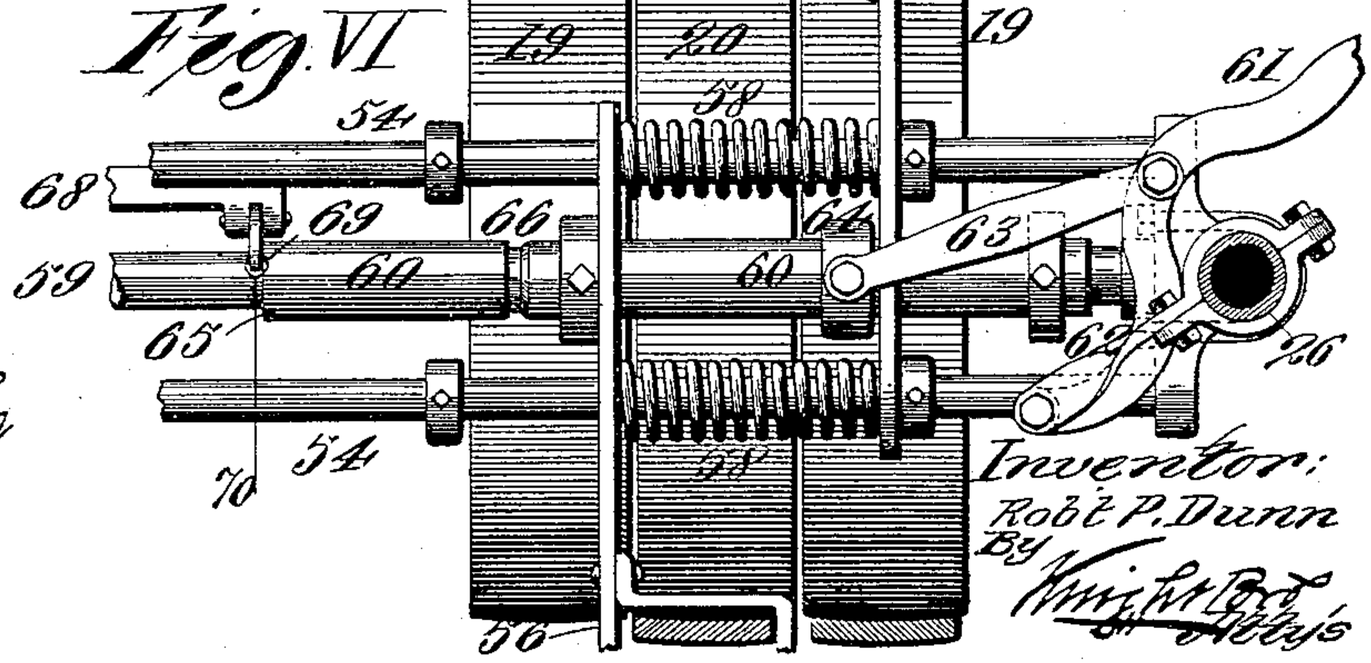


Fig. VI



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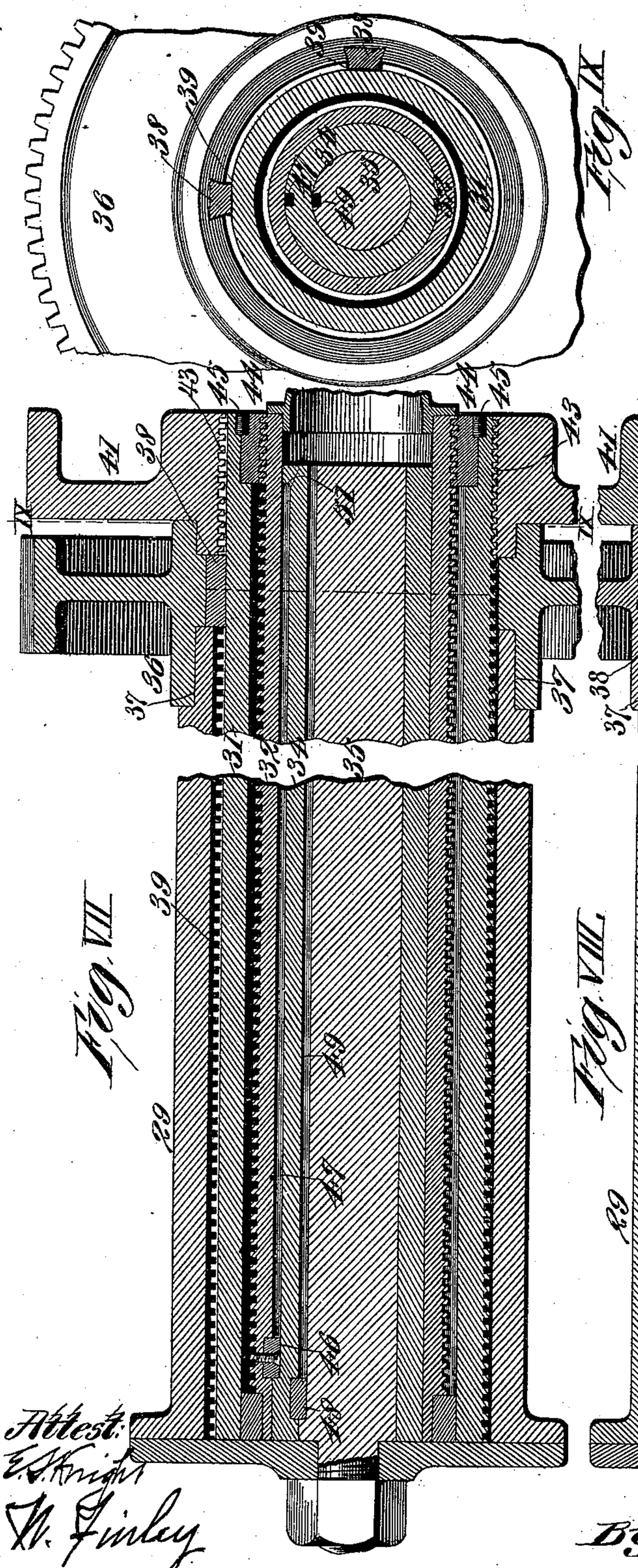
(No Model.) 4 Sheets—Sheet 4.

R. P. DUNN.

SOAP SLABBING MACHINE.

No. 564,507. Patented July 21, 1896.



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E. C. Knight
W. Finley

Inventor:
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By Knight Bros Attys

UNITED STATES PATENT OFFICE.

ROBERT P. DUNN, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO THE N. K. FAIRBANK COMPANY, OF SAME PLACE.

SOAP-SLABBING MACHINE.

SPECIFICATION forming part of Letters Patent No. 564,507, dated July 21, 1896.

Application filed February 3, 1896. Serial No. 577,887. (No model.)

To all whom it may concern:

Be it known that I, ROBERT P. DUNN, a citizen of the United States, and a resident of the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Soap-Slabbing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improved machine for cutting large blocks of soap; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a front view of my improved machine. Fig. II is a side elevation. Fig. III is a vertical section taken on line III III, Fig. I. Fig. IV is an enlarged top view of the belt-shifting arrangement. Fig. V is a side view of same. Fig. VI is a view similar to Fig IV, but showing the parts in a different position. Fig. VII is an enlarged longitudinal sectional view of the screws, showing them in their inner position. Fig. VIII is a view of the screws, part in elevation and part in section, and showing them partly moved out. Fig. IX is a section taken on line IX IX, Fig. VII.

It has long been common to cut large blocks of soap into slabs by forcing the block against stationary wires, these wires being arranged in a removable frame, and it has been the practice to remove these frames as often as it is desired to cut slabs of different thicknesses, as, for instance, if a block is being cut up into slabs an inch and a half thick, one frame will be used, and if it is desired to cut the next block into slabs two inches thick another frame will be used. With my improved machine this necessity of removing the frames to cut different thicknesses of slabs is avoided, and this is of importance, inasmuch as the adjustment of the frames requires a great deal of care to have the proper tension on the wires, and with my invention when a frame is once adjusted it does not have to be removed, and requires no further attention.

My invention also relates to an improved arrangement of screw-power for forcing the blocks of soap against the wires.

Referring to the drawings, 1 represents a number of upright posts, between which are held the frames 2, 3, and 4, to which the cutting-wires 5 are made fast. The frames are held at their upper ends between a cross-strip 6 and shoulders 7 on the posts, the cross-strip being bolted to the post, as shown in Fig. I. The frames are held at bottom by means of suitable clamps 8, and when these frames are once securely fastened in position they require no further attention.

9 represents a truck, upon which the block 10 of soap to be cut is placed. This truck is about the width of one of the wire-frames referred to, and it can be moved laterally to be brought in front of either one of the frames. 11 represents a carriage, supported by rollers or wheels 12 on a track 13. The track 13 is preferably a piece of channel-iron, as seen in Figs. II and III, upon one edge of which the wheels 12 travel. The frame 11 is held from deflection at its bottom by means of a plate 14 fitting in a groove 15 in the floor, this groove being lined with an angle-plate 16, (see Fig. II,) against which the plate 14 bears. The frame 11 is thus capable of being moved along the track 13 to bring it in front of any one of the wire-frames.

The carriage 11 carries a shaft 17 journaled in boxes 18, and upon this shaft are two loose pulleys 19 and a tight pulley 20.

21 represents a straight belt, and 22 a crossed belt extending from the pulleys 19 and 20 to a pulley 23 on a shaft 24 having a driving-pulley 25. The shaft 24 is connected by rods 26 to the outer ends of the shaft 17, these rods being connected to the shaft 24 by boxes 27 and to the shaft 17 by boxes 28.

Secured to the carriage 11 is a cylinder 29, held to the carriage by means of bolts 30. Within this cylinder (see Figs. III, VII, VIII, and IX) is an outer screw 31, an inner screw 32, a sleeve 34 within the inner screw, and a spindle 35 within the sleeve.

36 represents a gear-wheel the hub of which fits in a groove 37 formed in the cylinder, and this gear-wheel is connected to the screw 31 by means of keys 38 fitting in longitudinal grooves 39 formed in the screw 31. The gear-wheel 36 is engaged by a pinion 40 on the shaft 17.

41 represents a head secured to the car-

riage 11 by means of the bolts 30, the bolts being surrounded by distance-blocks 42, that extend from the carriage 11 to the inner face of the stationary head. The screw 31 passes through the head 41, and the head 41 has an internal thread meshing with the screw, as shown at 43. (See Figs. VII and VIII.) It will thus be seen that as the gear-wheel 36 is turned by the shaft 17 through the pinion 40 the screw 31 will be moved endwise, the keys 38 sliding in the grooves 39 of the screw. The screw 31 has secured to it an internally-threaded ring 44, the ring being held to the screw by means of pins 45 or otherwise. The ring 44 meshes with the screw 32, as shown clearly in Fig. VII. The screw 31 has a right-hand thread and the screw 32 has a left-hand thread. The screw 32 is held from turning with the screw 31 by means of a key 46 thereon fitting in a longitudinal groove 47 made in the outer face of the sleeve 34. (See Fig. VII.) Inasmuch, therefore, as the screw 32 cannot turn with the screw 31 while it is connected therewith by the threaded ring 44, this screw 32 will be moved endwise as the screw 31 is turned, the key 46 moving along the groove 47. The sleeve 34 is held from turning by means of a key 48 thereon fitting in a longitudinal groove 49 in the spindle 35. The result of this arrangement is that as the gear-wheel 36 is turned the screws 31 and 32 will move endwise, the screw 32 protruding from the screw 31 at the same rate of speed as the screw 31 protrudes from the stationary head 41. Secured to the outer end of the screw 32 is a bar 50, (see Figs. II and III,) which bears against the block of soap and forces the soap through the wires of the screens as the screws travel out of the cylinder.

By using the two screws I am enabled to get the desired amount of movement of the bar 50 with a comparatively short cylinder 29, and this is still further facilitated by having a spline connection between the sleeve 34 and the spindle 35, for when the key 46 comes against the end 51 of the groove 47 the sleeve will commence to move outward, and key 48 moving in the groove 49. The spindle 35 is of course fixed and held from turning to keep the sleeve 34 from turning.

The shaft 24 of the pulley 25 is connected to flexible rods 52 by means of boxes 53. The rods 52 are arranged approximately in a horizontal position, and are sufficiently flexible to permit of a slight vertical movement of the shaft 24, so that as the carriage is moved back and forth to bring it in front of any one of the desired frames 5 the shaft 24 will rise and fall as the carriage moves to and from a vertical line through the shaft 24, or as the carriage is moved from the center frame 5 to the end frames. Thus the belts 21 and 22 are always taut, as well as the driving-belt that passes over the pulley 25.

My arrangement thus provides for the cutting of blocks of soap into slabs of different thicknesses by simply moving the carriage in front of the desired frame 5, which can be done with ease and rapidity, and I thus avoid the necessity of changing the frames when different thicknesses of slabs are to be cut.

12ª represents rollers journaled to the carriage 11, and that bear against the inner face of the track 13 (see Fig. III) to reduce the friction.

In order that the machine will be stopped automatically when the screws have forced the block of soap through the wires of the frames 5, and prevent the wires from being broken by the bar 50 pressing against them, I supply the machine with an automatic belt-shifter, which I will now describe.

54 represents two parallel rods secured to the rods 26 by means of clamp-heads 55. (See Figs. II, III, and IV.) Rigidly secured to these rods 54 are two belt-yokes 56 and 57, the yoke 56 receiving the belt 21 and the yoke 57 receiving the belt 22. Between the yokes 56 57 are coiled springs 58, surrounding the rods 54. Between the rods 54 is a third rod 59, also supported by the clamp-heads 55. On this rod loosely fits a sleeve 60, to which the belt-yokes 56 57 are rigidly secured.

61 represents a lever fulcrumed to a strap 62, secured to the inner rod 26. This lever is connected by a link 63 to a collar 64, made fast to the sleeve 60. By operating the lever 61 the belts 21 and 22 may be shifted from their respective loose pulleys to the intermediate fixed pulley 20.

The sleeve 60 has an end 65 and a groove 66, the groove being located near the belt-yoke 56.

67 represents a block clamped to the rod 59, and which has an arm 68, to which is pivoted a dog 69, that lies close to the sleeve 60 and is adapted to engage with the end 65 and the groove 66 of the sleeve 60 as the latter reaches the limit of its respective movements. This dog is made to engage the end 65 and groove 66 by means of a cord 70 passing over a pulley 71, secured to the frame 11, and to which is attached a weight 72. The lower end of the dog 69 has an inturned end 73, (see Fig. V,) which is adapted to be engaged by inclines 74 and 75 on a gear-wheel 76 meshing into a pinion 77 (see dotted lines, Fig. V) on a shaft 78, that also carries a worm-wheel 79, engaging a worm 80 on the shaft 17.

In starting the machine to cut a block of soap, the operator takes hold of the lever 61, and by moving it in the direction of the arrow, Fig. IV, shifts the belt 21 onto the tight pulley 20, the springs 58 being compressed by the yoke 56. As the belt 21 is shifted onto the pulley 20, the dog 69 engages the end 65 of the sleeve 60 and holds the belt 21 on the pulley 20 against the pressure of the springs 58. Just as the block of soap is forced through the wires, the incline 74 on the gear-wheel 76 engages the end 73 of the dog and disengages the dog from the end 65 of the

sleeve 60, when the springs 58 will force the belt 21 back onto its loose pulley 19, and the machine comes to rest. To run the screws 31 and 32 back, the operator forces the lever 61 in the opposite direction to that indicated by the arrow, Fig. IV, which moves the crossed belt 22 onto the tight pulley 20 and causes the dog 69 to engage the notch 66 in the sleeve 60, so as to hold the belt 22 on the pulley 20 against the pressure of the springs 58. Just as the screws are entirely returned to a position within the housing or cylinder, the incline 75 on the gear-wheel 76 comes against the end 73 of the dog, disengaging the latter from the groove 66, when the springs 58 will force the belt 22 back onto its loose pulley, and the machine again comes to rest. The machine is thus automatically stopped at the end of each of its respective movements.

The belt-shifting arrangement being carried by the rods 26 is not interfered with by the movement of the carriage 11 to bring it in front of any one of the wire-frames 5.

I claim as my invention—

1. In a soap-slabbing machine, the combination of two or more wire frames arranged side by side, a screw for forcing the block of soap through said wires, a movable carriage supporting said screw, mechanism for operating the screw, a driving-shaft from which said mechanism receives its motive power, flexible rods connected to said shaft, and rods forming a connection between said shaft and said carriage, substantially as and for the purpose set forth.

2. In a soap-slabbing machine, the combination of a carriage 11 supported on a track 13 so as to be brought in front of one of a plurality of wire frames, a screw for forcing the block of soap through said wires and which is mounted in said carriage, mechanism for operating said screw and which is carried by said carriage, a power-shaft for imparting motion to said mechanism, flexible rods connected to said power-shaft, and rods forming a connection between said carriage and shaft, substantially as set forth.

3. In a soap-slabbing machine, a screw mechanism for forcing the block of soap through its cutting-wires, consisting of a cylinder having a stationary threaded head 41, a screw 31 having a spline connection with a driving-pinion and which engages the threads of said head, a screw 32 having a threaded connection 44 with the screw 31, and the end of which is provided with means for bearing against the block of soap, and means for keeping the screw 32 from turning, substantially as set forth.

4. In a soap-slabbing machine, a screw mechanism for forcing the block of soap through its cutting-wires, consisting of a cylinder having a stationary threaded head 41, a screw 31 having a spline connection with a driving-pinion and which engages the threads of said head, a screw 32 having a threaded connection 44 with the screw 31, and the end of which is provided with means for bearing against the block of soap, a sleeve 34 having a spline connection with the screw 32, and a spindle 35 having a spline connection with said sleeve, substantially as and for the purpose set forth.

5. In a soap-slabbing machine, a mechanism for forcing a block of soap through its cutting-wires, consisting essentially of a cylinder, two screws arranged within the cylinder and having respectively right and left hand threads, a sleeve within the inner screw, a spindle within the sleeve, and means for connecting said screws, sleeve and spindle together, substantially as and for the purpose set forth.

ROBERT P. DUNN.

In presence of—
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E. S. KNIGHT.