

5 Sheets—Sheet 1.

S. KRIBS.

Patented Jan. 4, 1898.



INVENTOR

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 BY  
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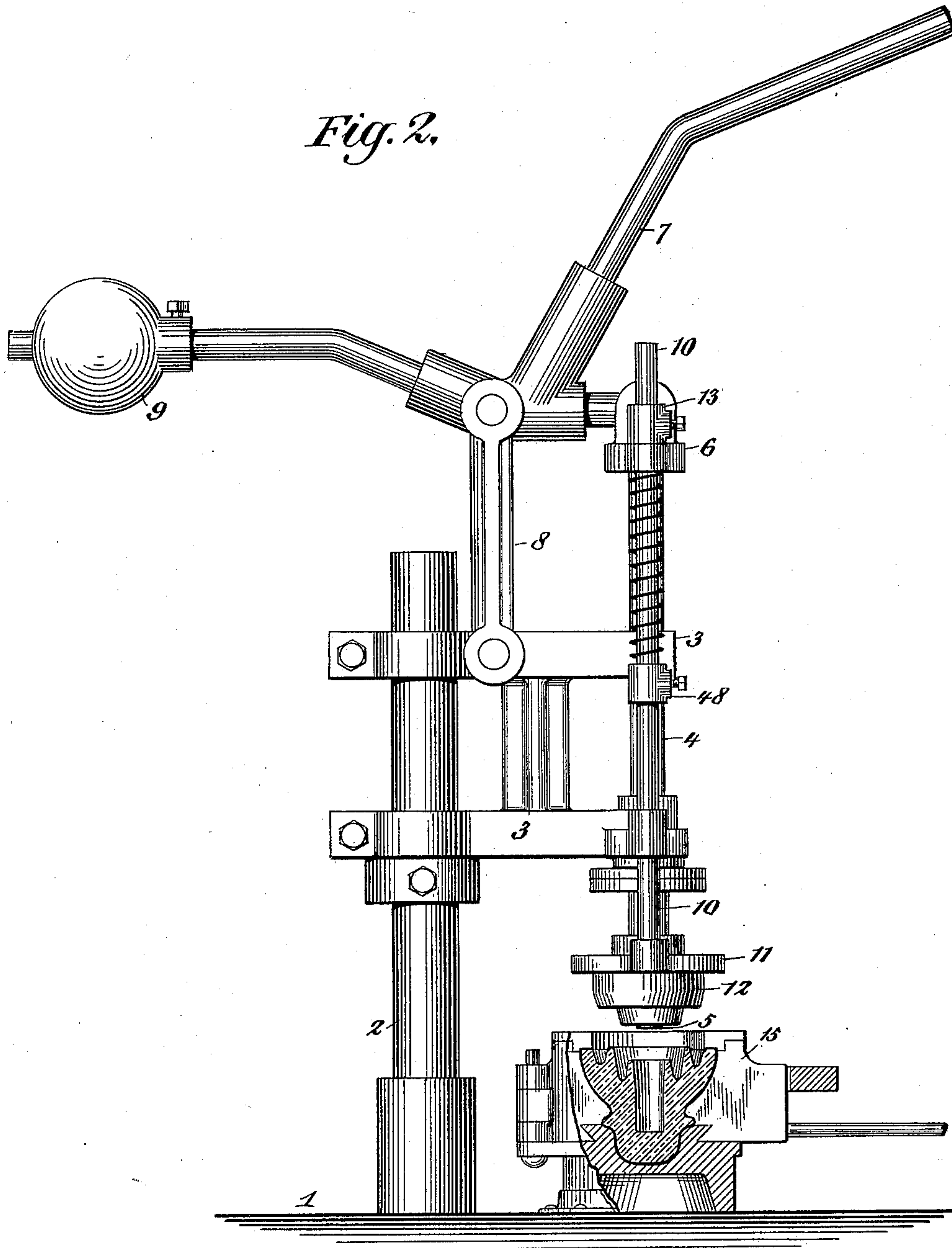
(No Model.)

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S. KRIBS.  
PRESS FOR MAKING INSULATORS.

No. 596,682.

Patented Jan. 4, 1898.



WITNESSES:

*Sidney Mann.*  
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(No Model.)

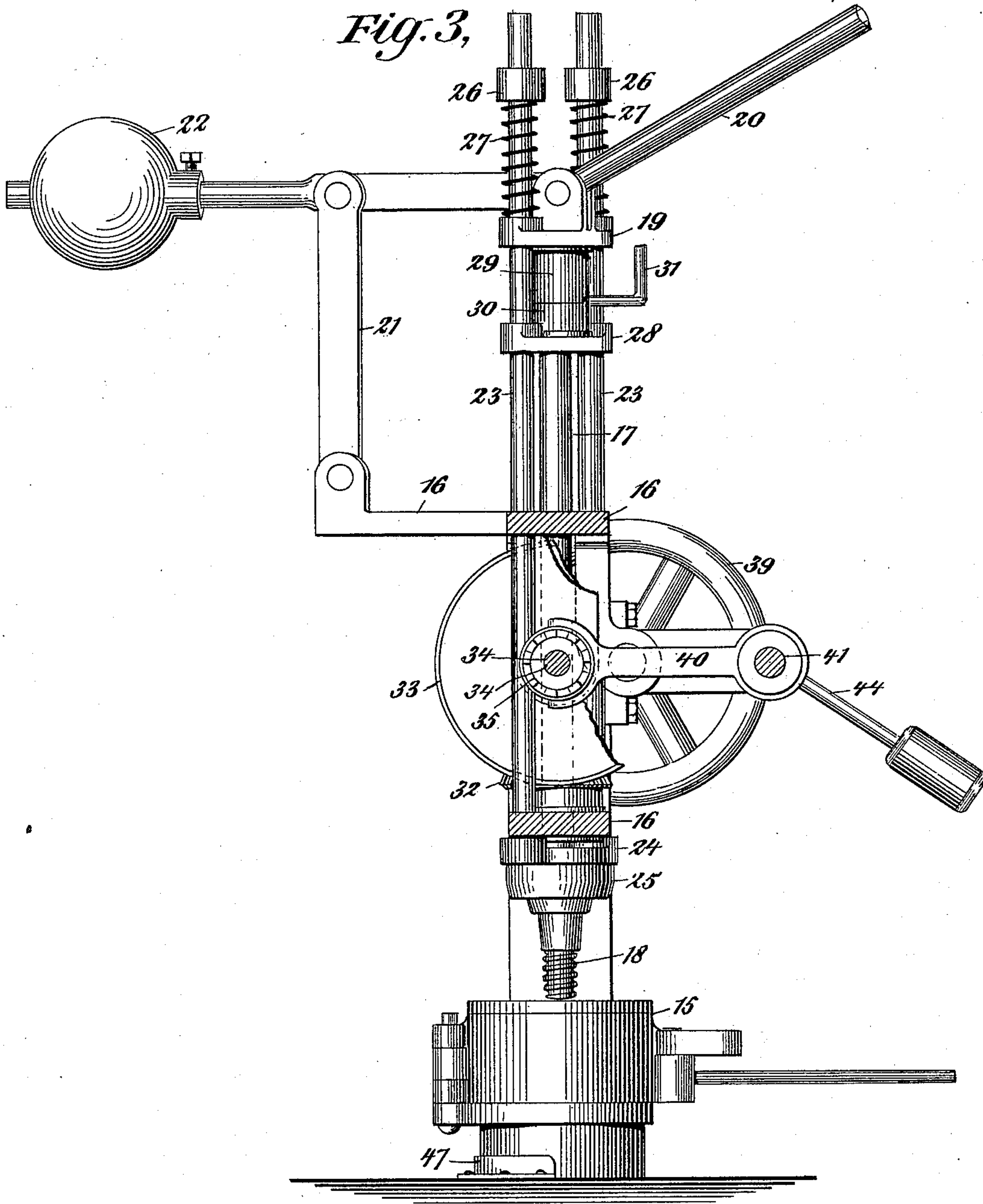
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*Fig. 3,*



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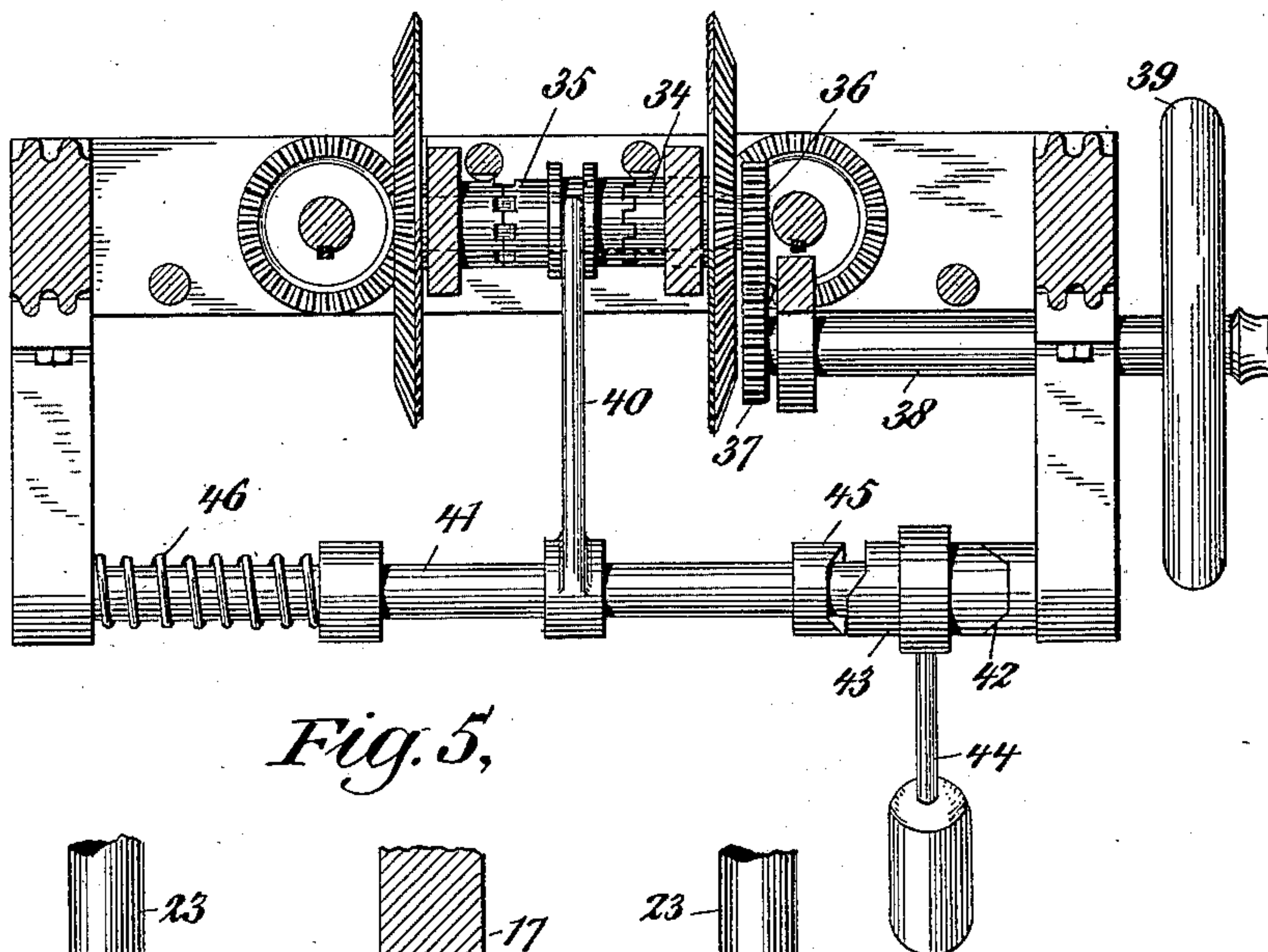
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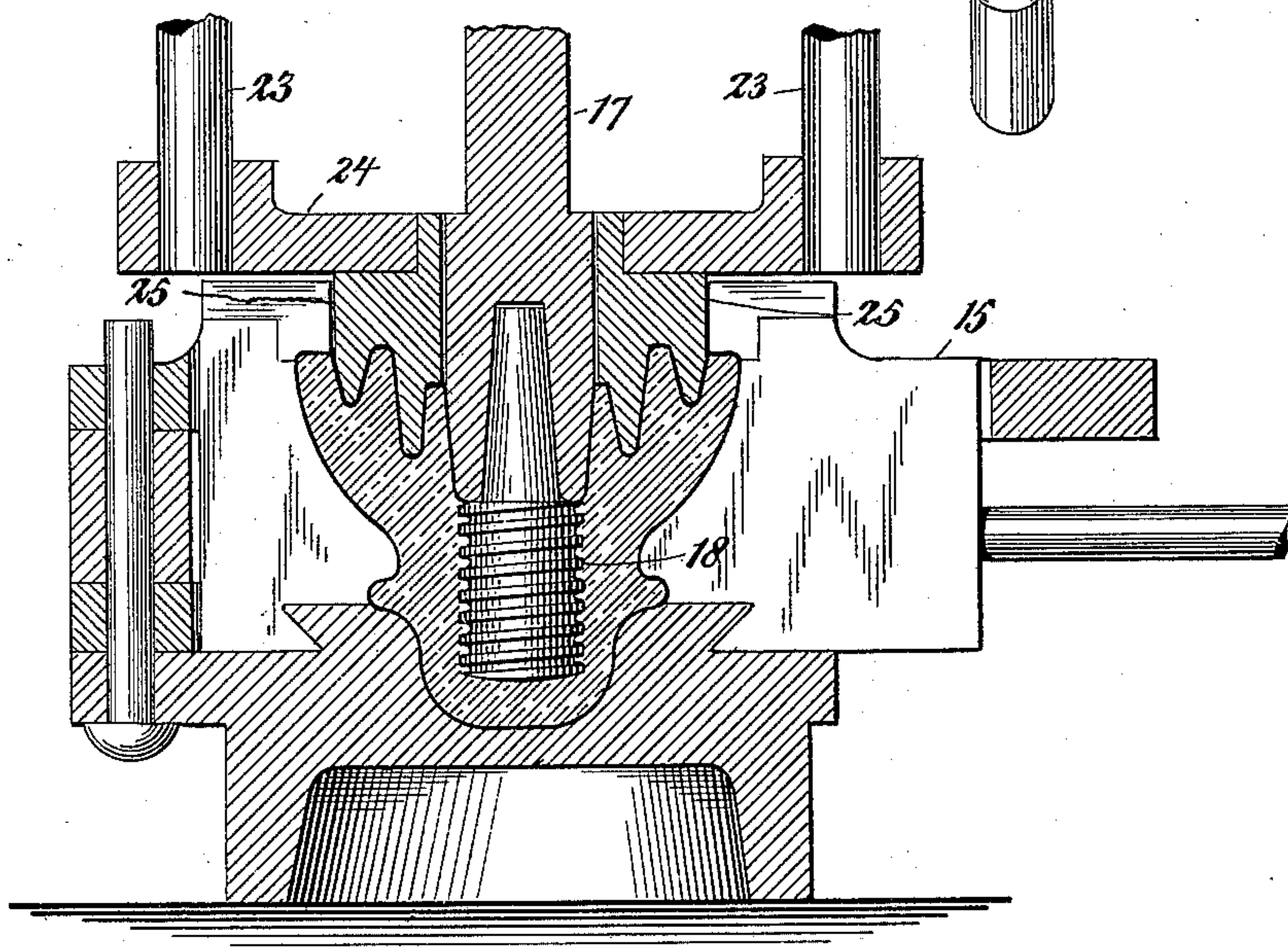
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*Fig. 4,*



*Fig. 5,*



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(No Model.)

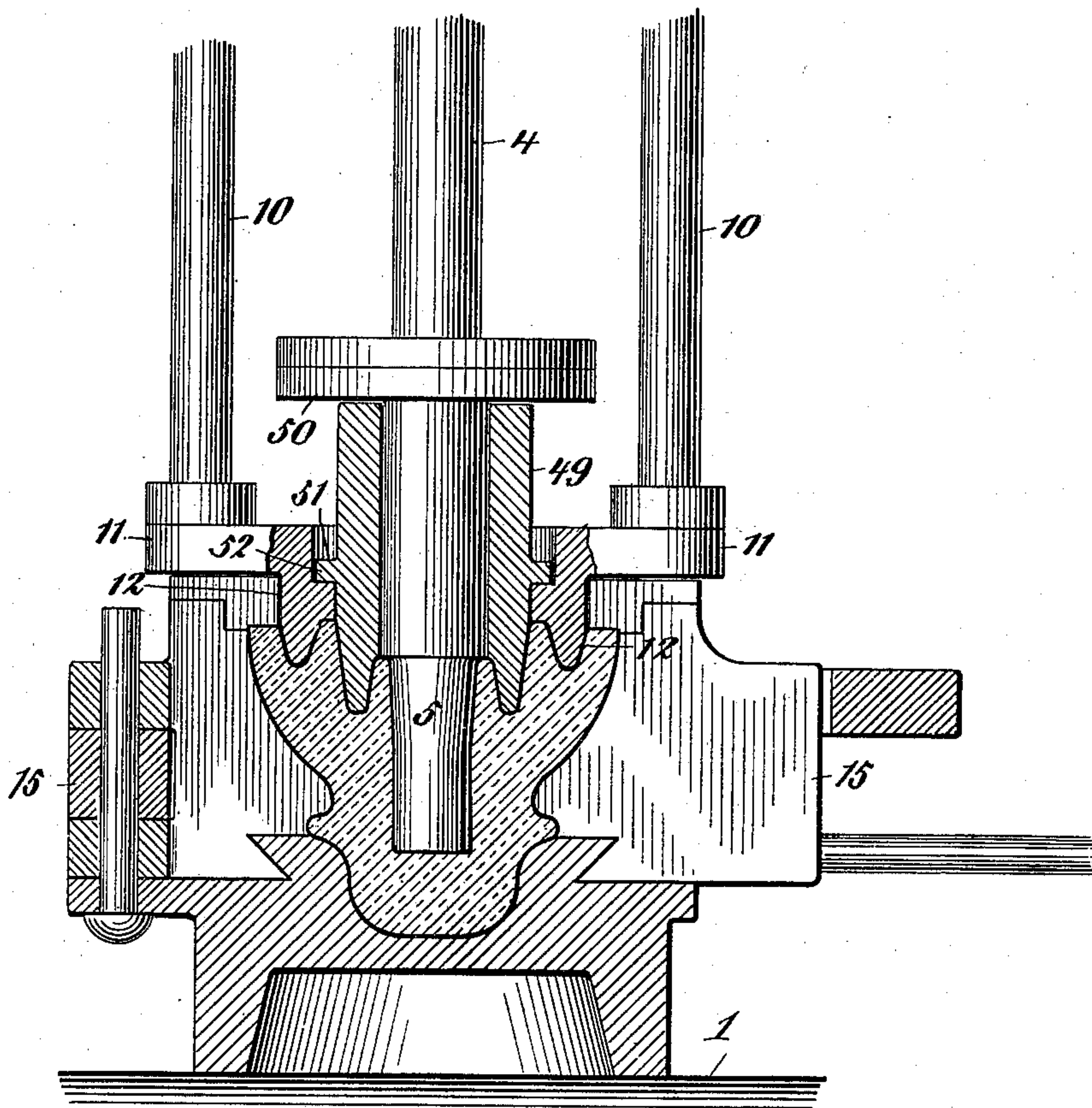
5 Sheets—Sheet 5.

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*Fig. 6,*



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# UNITED STATES PATENT OFFICE.

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## PRESS FOR MAKING INSULATORS.

SPECIFICATION forming part of Letters Patent No. 596,682, dated January 4, 1898.

Application filed January 30, 1897. Serial No. 621,287. (No model.)

*To all whom it may concern:*

Be it known that I, SERAPHIN KRIBS, a subject of the Emperor of Germany, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Presses for Making Insulators or Similar Articles, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to presses for manufacturing insulators for telegraph-lines and other similar articles; and it is especially adapted for use in the manufacture of the particular form of insulator shown in the accompanying drawings, in which the recess on the interior of the insulator is provided with a screw-thread; but my invention is also applicable to the manufacture of other forms of articles.

The objects of my invention are to enable the insulators or other articles to be made quickly, easily, and economically, to secure with certainty and uniformity an article of perfect outline or form, to prevent any part of the article from being cooled too rapidly, and in general to improve the construction and efficiency of the press and the quality of the article produced thereby.

My invention consists, first, in the combination of an actuating device of any suitable kind or form having at its lower end a plain plunger which is reciprocated up and down by the actuating device and which has substantially the same outline or form that is to be given to the interior of the article, not including, however, the screw-threads; a follower connected with the actuating device by a spring connection whereby the plunger may continue to descend after the follower has reached its lowest position; a mold of suitable form; an actuating-rod adapted to revolve in bearings in the machine and adapted also to be reciprocated vertically without being revolved at the same time; a screw-plunger carried by the lower end thereof and having such form or outline as is to be given to the interior of the article; a follower connected with the actuating-rod so as to move therewith; means for revolving the actuating-rod,

and means for reciprocating the rod vertically without at the same time revolving it.

My invention also consists in making the follower which is connected with the second actuating device or rod adjustable thereon, whereby after the actuating device and follower have been forced down upon the material in the mold and the material has been suitably compressed therein the follower can be moved away from the material without withdrawing the screw-plunger. To accomplish this, I place a cam upon the actuating device and provide the rod or rods which support the follower with an adjusting device adapted to slide on the said cam-surface, and also employ a spring device to operate against the cam and hold the adjusting device up against the cam-surface.

My invention also consists in combining two actuating devices or rods provided with screw-plungers at their lower ends and with feathered gear-wheels and a common driving-shaft provided with clutching mechanism whereby the actuating devices or rods can be alternately revolved and one can be operated while the other is at rest.

My invention also consists in certain other features of construction and combinations of parts hereinafter described and claimed.

It will be understood that certain parts of my invention can be used separately from the other parts or in other combinations.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the press. Fig. 2 is a side view or elevation of the first plunger with its actuating parts, the mold being shown in section. Fig. 3 is a vertical section on the line  $x x$  of Fig. 1. Fig. 4 is a horizontal section of the actuating-rods for the screw-plungers and the connected parts on the line  $y y$  of Fig. 1. Fig. 5 is a vertical section of the lower end of one of the actuating-rods carrying the screw-plunger and of the follower and the mold; and Fig. 6 shows the best form of my first actuating device, being partly in section.

Similar numbers indicate similar parts in the different figures.

Referring to the drawings, 1 is a suitable



bed plate or table, which may be supported in any ordinary manner.

2 is a standard or post projecting up from the table.

5 3 3 are arms extending out from the standard and adapted to support the operating parts.

4 is the first actuating device or rod adapted to slide up and down in bearings in the arms 3 3.

5 is a plain plunger forming or carried by the lower end of the device. The plunger is made of substantially the same size and of the same general outline or shape as is desired for the recess or cavity of the completed insulator or article, not including, however, the screw-threads that are to be formed on the interior of the article.

6 is a cross-head, to which the upper end of the rod 4 is secured.

7 is an operating-lever of any suitable construction, pivoted to the cross-head 6 and connected with one of the arms 3 by means of the pivoted links 8. The lever is provided at its other end with a weight 9, adapted to raise the actuating-rod 4 when the lever is relieved from pressure.

10 10 are rods adapted to slide in bearings in the projecting parts of the arms 3 and also adapted to slide in bearings in the cross-head 6. These rods carry a follower-plate 11 at their lower ends, with which is connected the follower 12. The follower-plate and follower are reciprocated up and down by the rods 10. The rods 10 are also provided with collars 13 13, fastened thereto to cause the rods to be lifted by the cross-head 6.

14 14 are coiled springs on the rods 10, bearing at their upper ends against the under side of the cross-head and at their lower ends against the upper side of the collars 13 13, which are fastened in any suitable way to the rods. The springs therefore tend to force the rods down.

15 is a mold of any suitable kind, which is provided with a recess or cavity having the outline or form which is to be given to the insulator or other article.

16 is a frame of any suitable form projecting up from the bed-plate 1, adapted to support the second actuating device or rod.

17 17 are two actuating devices or rods provided with screw-plungers 18 18 at their lower ends.

19 19 are cross-heads, to which the upper ends of the rods 17 are attached in any suitable way, but so as to permit the rods 17 to revolve.

20 20 are levers connected with the cross-head 19. These levers are attached to the frame by means of pivoted links 21 21. The levers are also provided at their other ends with weights 22 22, which operate to raise the rods 17 when the levers are relieved from pressure. The rods 17 are adapted not only to revolve, but to slide up and down in bearings in the frame of the machine.

23 23 are reciprocating rods adapted to slide in bearings in the frame of the machine and carrying at their lower ends the follower-plates 24 24, to which the followers 25 25 are attached. The rods 23 23 are also adapted to slide in bearings in the cross-heads 19 and are provided near their upper ends with collars 26 26. Between these collars and the cross-heads 19 are the coiled springs 27 27, which tend to press the rods 23 upward.

28 is a cross-piece fastened to the rods 23, so as to move therewith and having a central opening through which the rod 17 slides.

29 is a cam on the actuating device. It is preferably attached, as shown, to the cross-head 19.

30 is an adjusting device which is adapted to revolve around the rod 17 and to slide on the surface of the cam 29. This adjusting device bears on the top of the cross-piece 28. The adjusting device is provided with a handle 31, by which it can be turned in either direction. When the adjusting device is turned to the left, its inclined surface is forced down the inclined surface of the cam 29, as a result of which the cross-piece 28 and with it the rods 23 23 are forced down relatively to the rods 17, the coiled springs 27 being thereby compressed. When the adjusting device is turned in the opposite direction—that is, toward the right—the springs 27 force the rods 23 and the cross-piece 28 up again into the position shown in Fig. 1.

Each of the rods 17 is provided with a gear-wheel 32, which is feathered to the rod, as a result of which the rod may be moved up and down in the gear-wheel, but will revolve with the gear-wheel. These gear-wheels mesh with larger gear-wheels 33, which are adapted to turn or revolve loosely on the common driving-shaft 34, as shown in Fig. 4.

35 is a clutch-sleeve adapted to slide on the shaft 34, but keyed thereto so as to revolve with said shaft. The clutch-sleeve can be moved in either direction, so as to engage with either one of the larger gear-wheels 33. The driving-shaft is provided at one end with a pinion 36, which meshes with a pinion 37 on the shaft 38. This shaft is provided with a hand-wheel 39 at its outer end, by means of which the driving-shaft can be revolved in either direction.

40 is an arm forked at one end where it projects into a groove in the clutch-sleeve 35. This arm 40 is carried by a rod 41, adapted to slide in bearings in the frame of the machine. This rod is operated by a cam 42 on the frame of the machine and a shifting device 43, adapted to move on the surface of the cam. The shifting device has a handle or lever 44, by which it can be turned.

45 is a collar on the sliding rod 41, against which the shifting device 43 bears at one end. It will be apparent that when the handle of the shifting device is depressed from the position shown in Fig. 1 the rod will be shifted to the left, as a result of which the sleeve-



clutch and the driving-shaft will be made to engage with the gear-wheel at the left. When the shifting device is turned in the other direction, a spring 46, operated to press the rod 41 back to its former position and to engage the sleeve-clutch and the driving-shaft with the large gear-wheel on the right.

47 is a guide by means of which the mold is maintained in its proper place underneath the operating devices.

The operation of the device is as follows: A suitable quantity of glass or other material is put in the mold and the mold thus charged is placed in proper position under the actuating device 4. By means of the lever 7 the rod 4 is depressed and the plunger 5 is forced into the material in the mold, as shown in Fig. 6. At the same time the follower is brought down upon the top of the material. The material is thus subjected to sufficient pressure to mold the article into the form shown in Fig. 2. The follower and the lower end of the plunger come in contact with the material at nearly the same time. As soon as the follower-plate strikes on top of the mold the downward motion of the follower ceases. The plunger continues to descend, however, and thereby forces the material into all parts of the cavity of the mold and against the lower surface of the follower. The plunger used in this operation is made of substantially the same size and general shape as the recess which it is desired to produce in the completed article. The lever 7 is then released from pressure, as a result of which the weight 9 causes the actuating device 4 and its follower to be lifted away from the mold, thus withdrawing the plunger from the mold. The mold is then placed under one of the rods 17, its position being properly adjusted by the guide 47. The adjusting device 30 is then turned to the left, so as to depress the rods 23 and thereby depress the follower-plate and the follower 25, bringing the follower 25 into its lowest position relatively to the screw-plunger, which position is illustrated in Fig. 5. The lever 20 is then depressed, forcing down the actuating-rods 17 and the follower-rods 23. The follower is brought down on top of the article in the mold, as shown in Fig. 5, and at the same time the screw-plunger is forced into the material, thus forming upon the inner surface of the material a screw-thread, as shown in Fig. 5. In this second operation the follower-plate does not strike the top of the mold, but the follower is brought down until it strikes the top of the article and can go no farther. The follower moves down rigidly with the actuating-rod. The follower is left in this position only for a moment or two, and then the adjusting device 30 is turned to the right, as a result of which the rods 23 are raised and the follower 25 is drawn away from the surface of the article. The screw-plunger is, however, left in position in the mold for a somewhat longer time. The object of withdrawing the follower before the screw-plunger is withdrawn

is to prevent the upper surface of the article from being cooled or chilled too rapidly, which might result in its being cracked or broken. While the screw-plunger is being left in the mold a second mold can be placed under the first actuating device or rod 4 and an article can be molded by means of the plunger in the way already described. This mold can then be placed under the second actuating-rod 17, and can be operated upon by that rod and its screw-plunger and follower in the way already described. When the screw-plunger has been left in the first mold for the proper length of time, the clutch-sleeve 35 is moved so as to engage the driving-shaft with the gear-wheel which is connected with the actuating-rod carrying the screw-plunger, and the hand-wheel 39 is turned so as to cause the actuating-rod to be revolved in such a direction as to unscrew the plunger from the article in the mold. The mold is then removed from the machine and the insulator is taken out of the mold.

In the particular arrangement of gear-wheels shown in Fig. 4 in order to turn the left-hand actuating-rod 17 so as to unscrew its plunger the hand-wheel 39 must be turned to the right, whereas to unscrew the other plunger the hand-wheel must be turned in the other direction. It is of course apparent that the right-hand gear-wheel 33 might be made to mesh with the other side of its gear-wheel 32, in which case the hand-wheel would always be turned to the right, no matter which actuating-rod 17 it was connected with.

In Fig. 6 the best form of follower and connected parts is shown for use with the first actuating device or rod 4. Instead of making the follower in a single piece, it is made in two parts, the inner part consisting of a sleeve or shell 49, adapted to slide on the rod 4. 50 is a projection on the rod 4, adapted to strike the upper end of the sleeve and force it down. 51 is a shoulder on the sleeve which strikes upon the shoulder or projection 52 on the follower. When the rod 4 is depressed, the sleeve rests by its own weight against the shoulder on the follower and moves downward with the follower until the lower end of the sleeve strikes the material in the mold. Then the sleeve remains stationary until the projection 50 on the rod strikes against its upper end and forces it down into the mold into the position shown in Fig. 6. As a result of this operation the lower end of the shell is not forced into the mold until the material has been well forced out by the plunger into the outer and upper parts of the mold. When the shell is then forced down into the material, it also tends to force the material sideways into the outer parts of the mold and thus to fill up any remaining space. This insures the complete and perfect filling of the recess of the mold.

In my improved press there are two forming or molding operations, in each of which the material is subjected to the full pressure. This results in the production of a superior



article. Moreover, the glass or other material having been subjected to one compression and having already come into contact with one plunger and follower is cooled somewhat before it is operated upon by the screw-plunger, and for this reason, while it can be molded as readily, it is not so apt to adhere to the plunger.

In the first operation a recess or cavity is formed in the mold of substantially the same shape or contour as is desired in the completed article. The screw-plunger is then forced into this recess instead of being screwed into it, as in processes heretofore in use. This produces a superior article and makes the threads better and more uniform. Where the screw-plunger is screwed into the glass, there is a much greater friction to overcome, the glass tends to adhere to the screw and is thereby liable to be distorted, and if the screw is at all eccentric or out of true, as it frequently is, the insulator is apt to be damaged and rendered imperfect. Where, on the other hand, a screw-plunger is forced directly into a solid mass of hot glass not previously molded with a plain plunger the plunger is quickly burned out and destroyed and the hot glass tends to adhere to the screw when it is screwed out of the article. My invention overcomes these difficulties.

One advantage of combining two screw-plungers and rods in the manner described is that they can be used alternately, so that one will be cooling while the other is being used.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of an actuating device, a plain plunger carried by the lower end of said actuating device so as to be reciprocated thereby, and having substantially the form that is to be given to the interior of the article, a follower, a spring connection between the actuating device and the follower whereby the plunger may descend farther than the follower, a mold, an actuating-rod adapted to revolve in bearings in the machine and to be reciprocated vertically without revolving, a screw-plunger carried by the lower end of said actuating-rod, a follower connected with said rod, and means for revolving the said rod and means for reciprocating the said rod vertically without revolving it, substantially as set forth.

2. The combination of an actuating device, a plain plunger carried by the lower end of said actuating device so as to be reciprocated thereby, and having substantially the form that is to be given to the interior of the article, a follower, a spring connection between the actuating device and the follower whereby the plunger may descend farther than the follower, a mold, an actuating-rod adapted to revolve in bearings in the machine and to be reciprocated vertically without revolving, a cam on said actuating-rod, a screw-plunger carried by the lower end of said actuating-

rod, a follower connected with said rod and provided with an adjusting-device adapted to slide on the said cam-surface, a spring or springs adapted to operate against the cam, and means for revolving the said rod and means for reciprocating the said rod vertically without revolving it, substantially as set forth.

3. The combination of an actuating device, a plain plunger carried by the lower end of said actuating device so as to be reciprocated thereby and having substantially the form that is to be given to the interior of the article, a follower, a spring connection between the actuating device and the follower whereby the plunger may descend farther than the follower, a mold, an actuating-rod adapted to revolve in bearings in the machine and to be reciprocated vertically without revolving, a screw-plunger carried by the lower end of said actuating-rod, a follower connected with the said rod, a gear-wheel feathered to the rod and means for revolving the gear-wheel and means for reciprocating the actuating-rod vertically without revolving it, substantially as set forth.

4. The combination of an actuating device, a plain plunger carried by the lower end of said actuating device so as to be reciprocated thereby and having substantially the form that is to be given to the interior of the article, a follower, a spring connection between the actuating device and the follower whereby the plunger may descend farther than the follower, a mold, two actuating-rods adapted to revolve in bearings in the machine and to be reciprocated vertically without revolving, a screw-plunger carried by the lower end of each actuating-rod, a follower connected with each actuating-rod, a gear-wheel feathered to each actuating-rod, a common driving-shaft and clutching mechanism to connect the driving-shaft with either one of the gear-wheels on the actuating-rods and means for revolving the driving-shaft and means for reciprocating the actuating-rods vertically without revolving them, substantially as set forth.

5. The combination of an actuating device, a plain plunger carried by the lower end of said actuating device so as to be reciprocated thereby and having substantially the form that is to be given to the interior of the article, a follower, a spring connection between the actuating device and the follower whereby the plunger may descend farther than the follower, a mold, two actuating-rods adapted to revolve in bearings in the machine and to be reciprocated vertically without revolving, a screw-plunger carried by the lower end of each actuating-rod, a follower connected with each actuating-rod, a gear-wheel feathered to each actuating-rod, a common driving-shaft, two gear-wheels adapted to revolve loosely on the shaft and to engage with the gear-wheels on the actuating-rods, a clutch sleeved on the driving-shaft so as to revolve therewith and means for sliding the clutch on the shaft so



as to engage with either one of the loose gears, and means for revolving the driving-shaft and means for reciprocating the actuating-rods vertically without revolving them, substantially as set forth.

6. The combination of an actuating device, a plain plunger carried by the lower end of said actuating device so as to be reciprocated thereby, a follower, a spring connection between the actuating device and the follower whereby the plunger may descend farther than the follower, a mold, two actuating-rods adapted to revolve in bearings in the machine, a screw-plunger carried by the lower end of each actuating-rod, a cam on each actuating-rod, a follower for each actuating-rod, a rod or rods supporting each follower and provided with an adjusting device adapted to slide on said cam-surface, and one or more springs connected with the follower-rods and adapted to operate against the cam, a gear-wheel feathered to each actuating-rod, a common driving-shaft and clutching mechanism to connect the driving-shaft with either one of the gear-wheels on the actuating-rods and means for revolving the driving-shaft, substantially as set forth.

7. The combination of the actuating device 4, the plunger 5, the follower 12, the rods 10, the springs 14, the mold 15, the actuating-rods 17 adapted to revolve in bearings in the machine, the screw-plungers 18, the cams 29, the followers 25, the rods 23, the cross-heads 19, the adjusting devices 30, the springs 27, the operating-levers 20, the gear-wheels 32 feathered to the rods 17, the gear-wheels 33, the clutch-sleeve 35, the driving-shaft 34, the arm

40, the sliding rod 41, the spring 46, and means for moving the rod against the spring, substantially as set forth.

8. In a machine for making insulators or similar articles, the combination of two actuating-rods, a screw-plunger carried by the lower end of each actuating-rod, a follower connected with each actuating-rod, a gear-wheel feathered to each actuating-rod, a common driving-shaft, clutching mechanism to connect the driving-shaft with either one of the gear-wheels on the actuating-rods, means for revolving the driving-shaft, and a suitable mold, substantially as set forth.

9. The combination of the actuating-rod 17, the screw-plunger 18, the cam 29, the lever 20, the follower 25, the rods 23, the cross-piece 28, the adjusting device 30, the springs 27, and the mold 15, substantially as set forth.

10. The combination of the actuating-rods 17, the screw-plungers 18, the cams 29, the followers 25, the rods 23, the cross-pieces 28, the adjusting devices 30, the springs 27, the operating-levers 20, the gear-wheels 32 feathered to the rods 17, the gear-wheels 33, the clutch-sleeve 35, the driving-shaft 34, the arm 40, the sliding rod 41, the spring 46, means for moving the rod against the spring 46, and the mold 15, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SERAPHIN KRIBS.

Witnesses:

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SIDNEY MANN.