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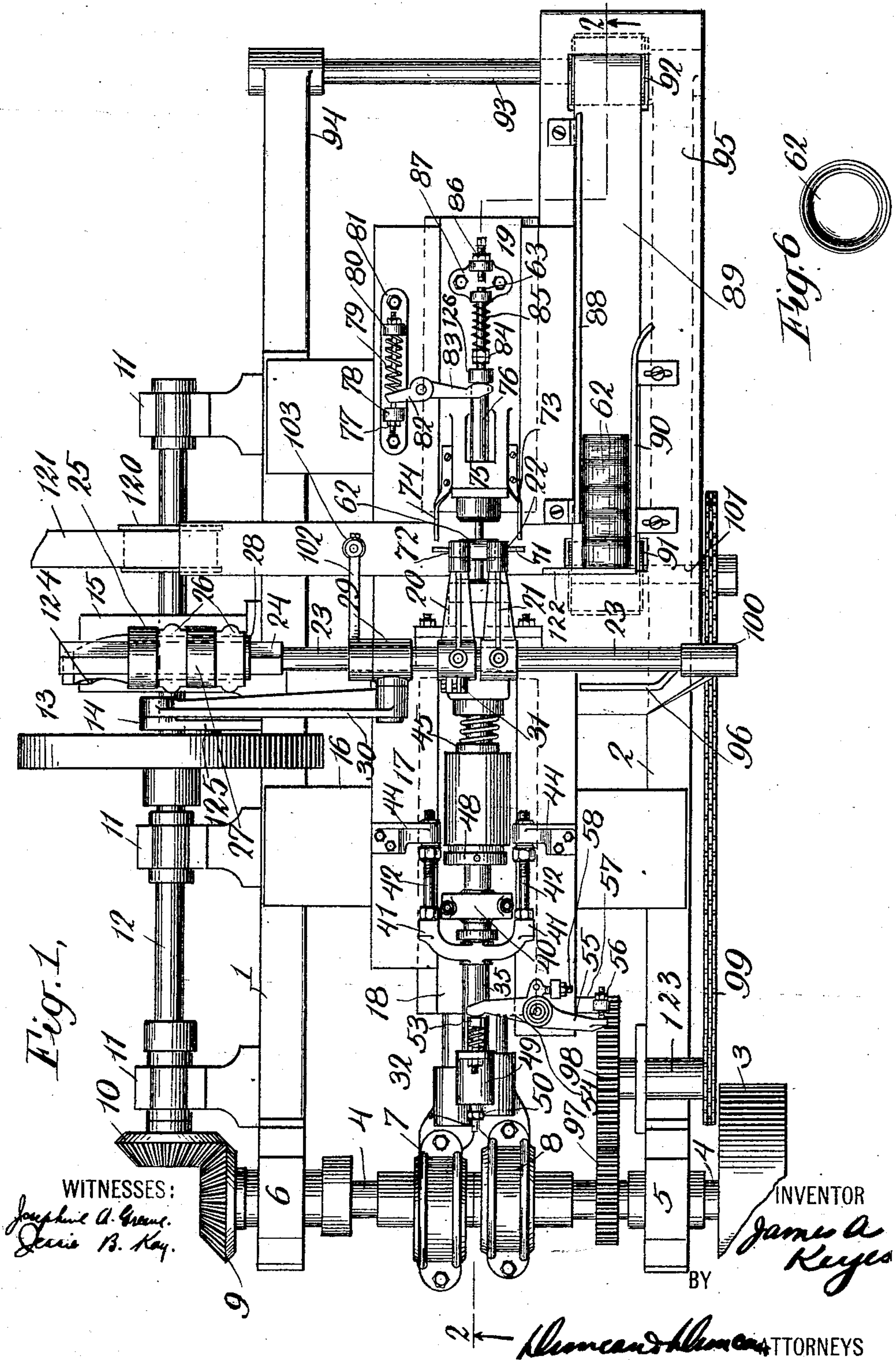
J. A. KEYES.

PRESS.

APPLICATION FILED OCT. 14, 1907

Patented Jan. 26, 1909.

3 SHEETS—SHEET 1.



J. A. KEYES.

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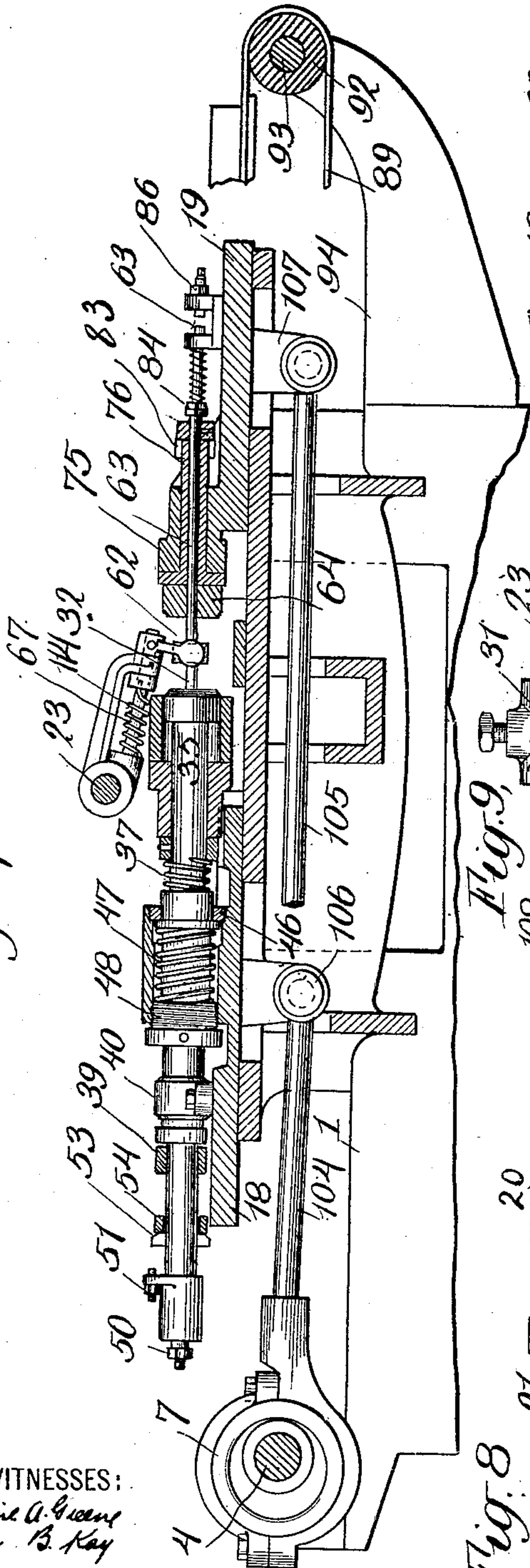
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3 SHEETS—SHEET 2.

Fig. 2,



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Fig. 8

Fig. 9

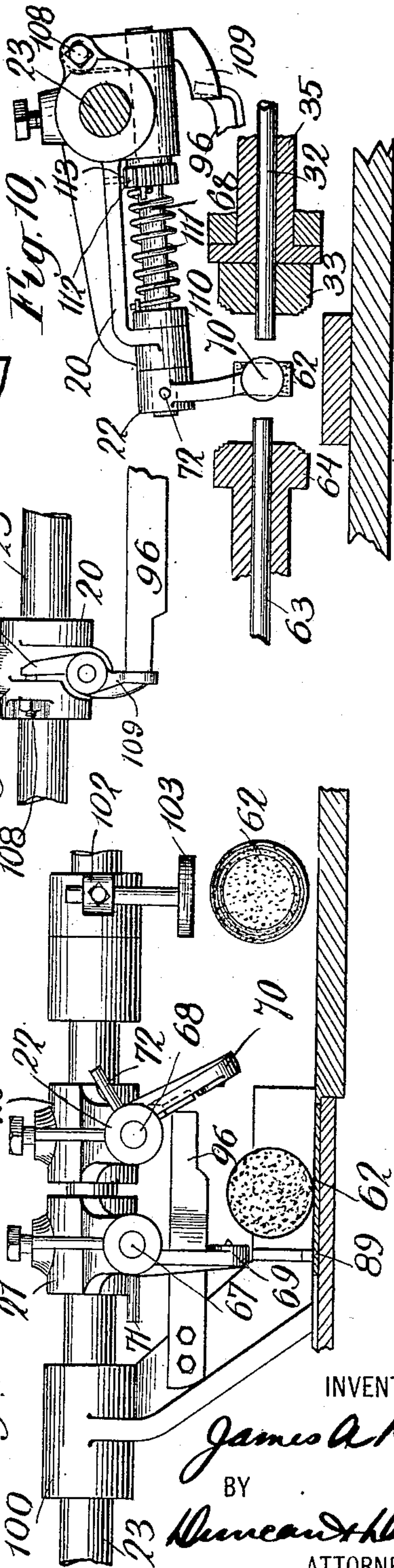
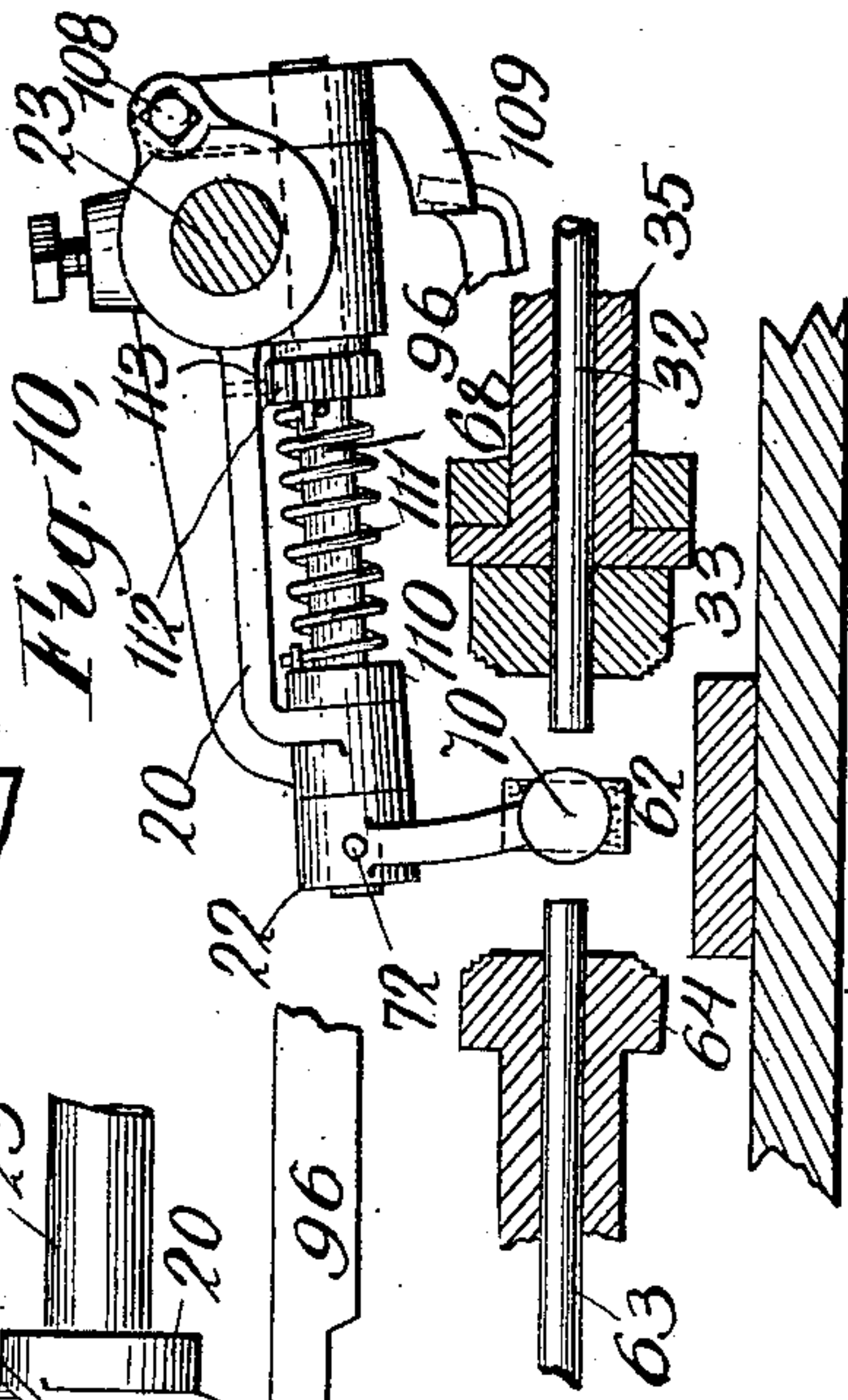


Fig. 10



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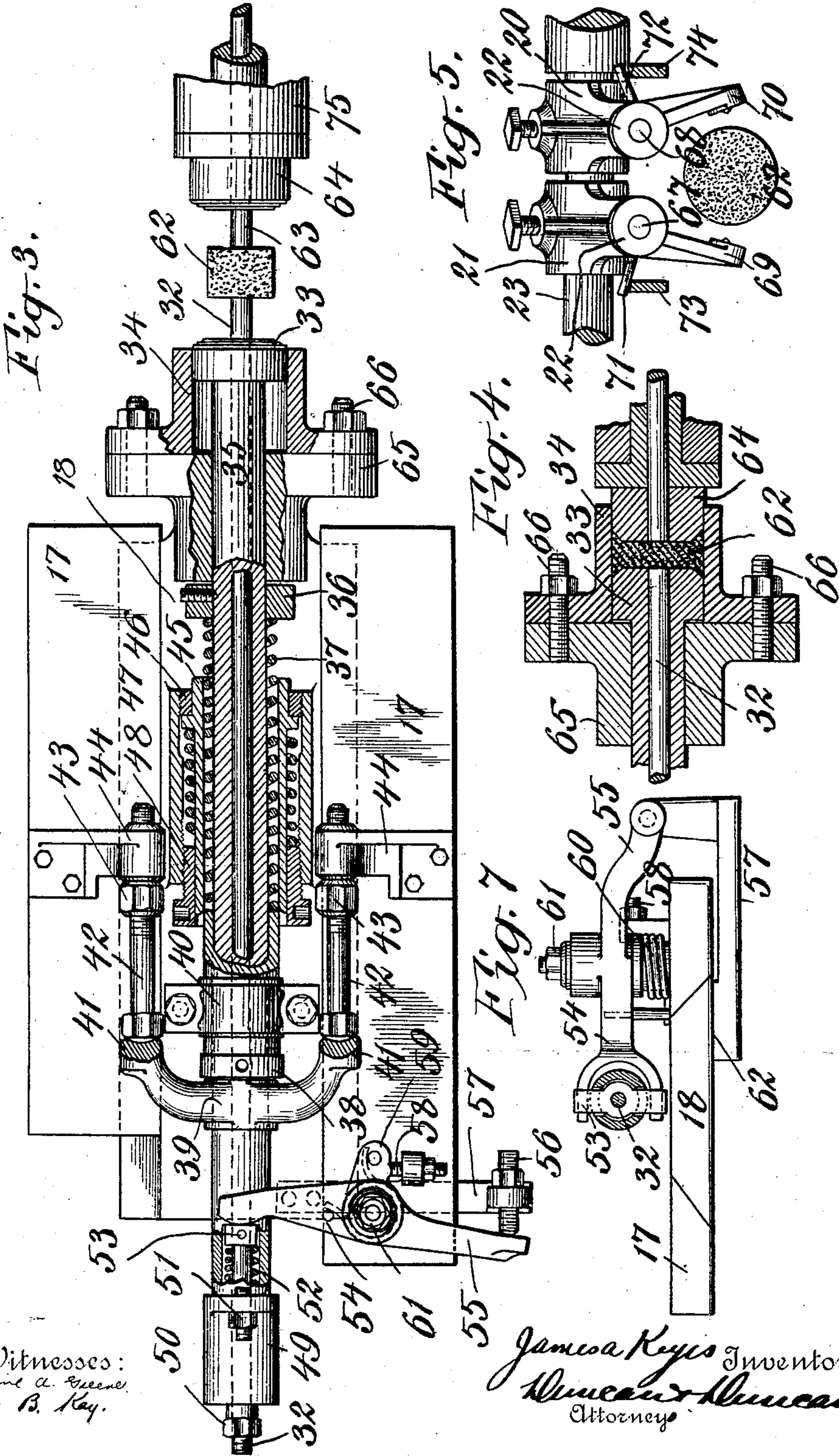
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3 SHEETS—SHEET 3.

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UNITED STATES PATENT OFFICE.

JAMES A. KEYES, OF NEW YORK, N. Y.

PRESS.

No. 910,544.

Specification of Letters Patent.

Patented Jan. 26, 1909.

Application filed October 14, 1907. Serial No. 397,301.

To all whom it may concern:

Be it known that I, JAMES A. KEYES, a citizen of the United States, and resident of the city, county, and State of New York, have made certain new and useful Inventions Relating to Presses, of which the following is a specification, taken in connection with the accompanying drawings, which form a part of the same.

This invention relates to presses and relates especially to power presses for the production of cakes of soap or other articles.

In the accompanying drawings showing an illustrative embodiment of this invention, and in which the same reference numeral refers to similar parts in the several figures, Figure 1 is a plan view. Fig. 2 is a longitudinal section taken along the line 2—2 of Fig. 1. Fig. 3 is an enlarged top view partly in section showing the dies and die plunger. Fig. 4 is a similarly enlarged view showing the parts in a different position. Fig. 5 is an enlarged side view showing the feeder grips. Fig. 6 shows the finished soap cake. Fig. 7 is a detail showing the spring detent. Figs. 8, 9 and 10 are enlarged views showing the feeder in different positions.

In the illustrative embodiment of this invention shown in the drawings, the heavy frame for the operating parts of the machine may be formed by the members 1, 2 connected by suitable transverse braces and having bearings 5, 6, in which the drive shaft 4 having the pulley 3 thereon may be mounted. The bevel gears 9, 10 drive the cam shaft 12 from the drive shaft, this cam shaft being mounted in suitable bearings 11 on the frame and carrying the cams 13, 15, as well as the pulley 120 which operates the discharge belt 121. The table 95 may be provided with suitable adjustable guides 88, 90 and with an aliner 122 by which the articles may be properly fed in connection with the supply belt 89, if desired. This belt is mounted on a loose pulley 92 on the shaft or connector 93 and is driven by the pulley 91 mounted on the stub shaft 101 and driven by a sprocket chain 99 from the intermediate shaft 123 which carries the spur gear 98 meshing with the gear 97 on the drive shaft 4.

The articles fed into the press against the aliner 122 may be fed along to the dies or other compressing apparatus by a suitable feeder 23 which may be mounted in bearings 26 at one side of the machine and in the bear-

ing 100 supported in the bracket 96 at the other side. This feeder may be given a reciprocating movement by the link 30 connected with the collar 29 on the feeder and pivoted at its other end to the lever 14 having a suitable follower 125 to engage a cam groove in the face cam 13. It is also preferably given an oscillating movement at the same time by forming the feeder end 24 polygonal to properly engage the sleeve 28 having a suitable collar 27 between the two bearings 26. The arm 25 on this sleeve 28 may carry a suitable follower 124 to cooperate with a cam groove in the cam 15 so that the feeder arms 20, 21 adjustably secured on this feeder may be raised by oscillating the feeder, then reciprocated rearward, then swung down to engage a blank and reciprocate with the same forward to bring the blank into cooperation with the dies. The detach 103 may also be adjustably mounted on a similar arm 102 on the feeder, as indicated in Figs. 1 and 8.

The feeder arms 20, 21 may be formed as indicated in Figs. 8, 9 and 10 and comprise suitable pins 67, 68 to which the heads 22 carrying the grips 69, 70 are secured, for instance by the projecting studs 71, 72. A suitable spring 111 may be used to force the grip 70 inward and this spring may be secured to the collar 110 on the pin 68, and at its other end to a suitable detent sleeve 112 which cooperates with a detent 113 mounted in the arm so as to cause the desired intensity of spring action. The lever 109 is mounted on the inner end of the pin 68 and its upper end 31 cooperates with a suitable adjustable stop 108, as seen in Fig. 9. This lever engages at its lower end the cam 96 so that during the rearward movement of the feeder the lever and grip 70 are swung upward away from the corresponding grip, as 69. When the feeder comes into its extreme rear position as in Fig. 8, it is oscillated so that the grips swing downward on either side of the article 62 and then when the feeder again moves forward the lever rides over the projecting end of the cam 96 so as to gradually swing downward and engage the forward end of the article, force it rearward against the grip 69 and grip it in connection therewith.

As indicated in Fig. 1, the drive shaft 4 may carry two cams 7, 8 in opposite phase to actuate the connectors 104, 104, which as indicated in Fig. 2, are pivoted to the lugs 106, 107 on the two slides 18, 19. The slide 19

may be formed with the slide head 75 to which is secured the plunger 76 carrying in its forward end the die 64, which of course, may have a working face of any desired shape. The releasers 73, 74 having downwardly inclined cam faces may be mounted on either side of this slide head so as to engage the studs 72 and swing the grips apart out of engagement with the blank as the slide moves forward, see Figs. 1 and 2. A cylindrical ejector 63 may be mounted within the die and plunger and normally pressed forward by a spring 85 acting between the bracket 87 and the set nuts 84 on the ejector, as indicated in Fig. 1. A suitable aliner 86 in this bracket coöperates with the end of the plunger 63 so as to properly aline its forward end with respect to the die 64. The detent 83 may be pivoted in the frame so that its end coöperates with the collar 126 on the ejector, as is seen in Fig. 1. The other end of this detent is engaged by a suitable strong spring 79 mounted in the bracket 81 and operating to force the end of the detent against the adjustable stop 77 mounted in the lug 78. The slide 18 may be provided with the slide head 65 to which the die casing 34 may be secured in any desired way as by the bolts 66. The plunger 35, to the outer end of which the rear die 33 may be secured, passes through the slide head and also through the slide yoke 40 secured to the slide, the fork 39 being secured to the plunger to the rear of this slide yoke. The ends 41 of this fork coöperate with the adjustable stops 42 mounted in brackets 44 secured to the machine frame and rigidly held in adjusted position by the set nuts 43. In this way, the forward movement of the plunger and rear die 33 is positively limited. The plunger 35 is normally pressed forward by spring action which may involve the primary spring 37 operating between a suitable adjustable abutment 36 on the plunger and the forward end of the slide yoke. At the time when the final compression takes place a secondary spring may also be brought into operation, if desired, by using the spring sleeve 45 which, as indicated in Fig. 1 may be mounted loosely within the slide collar 48 secured to the slide 18 below. The forward movement of this spring sleeve may be limited by the ring 46 and the secondary spring 47 engages and presses this spring sleeve forward, the annular collar stop 48 being adjustable within the collar to secure the proper intensity of this spring action. A similar cylindrical ejector 32 may be mounted within the plunger 35 and provided with the set nuts 50 on its rear end to limit its forward motion with respect to the plunger. Its extreme rearward movement with respect to the plunger may be accurately limited by the adjustable aliner 41 mounted in the enlargement 49 of the plunger so as to properly coöperate with the lug

53 secured to the ejector which is normally pressed forward by the spring 52 acting on this lug. The detent 54, Figs. 3 and 7, coöperates with this lug to retract the ejector overcoming the spring 52 which normally tends to protrude it. This detent may be mounted on the stud 61 in the frame and normally pressed toward the lug by a suitable spring 60 having one end engaging the detent and the other end secured to the pivoted spring clip 59 which is engaged by a suitable adjusting screw 58 to adjust the intensity of this spring action, which should be sufficient to overcome the spring 52. The distance piece 56 is mounted on a suitable extension of the slide and is adjustable so as to properly engage the tail 55 of the detent 54 so that the other end of the detent engages the lug 53 at the proper time.

During the operation of the press, the blanks 62 are engaged by the grips 69, 70 at the proper time and fed forward while held between the grips so as to be brought accurately between the dies 33, 64. At that time, the slides approach each other and the ejectors come together, engaging the blank on either side so as to hold it between them, as is shown in Fig. 3, the inward movement of the ejectors being adjusted so as to give the desired intensity of this gripping action. Then the further movement of the slide 19 brings the releasers into engagement with the studs 71, 72 so as to wedge the studs upward and swing the connected grips apart away from the blank held by the ejectors so that the feeder may be swung up and moved backward to engage another article. Then as the slides move together still further the fork 39 may come into engagement with the stops 42, preventing further forward movement of the rear die 33. As the slide 19 moves forward from the position indicated in Figs. 1 and 3, the strong spring 79 causes the detent 83 engaging the collar 126 on the ejector 63 to overcome the action of the spring 85 and gradually force the ejector backward with respect to the plunger and die until when it comes into engagement with the aliner 86 this ejector is accurately flush with the die 64 as indicated in Fig. 4 and held accurately in that position. The forward movement of the slide 18 moves the distance piece 56 so that the detent 54 is swung around and retracts the lug 53 and the connected ejector 32 so that the outer end of this ejector is gradually withdrawn until it is brought and held accurately flush with the working face of the die 33, as is indicated in Fig. 4, and maintained in this position by the aliner 51 engaging the lug 53. The ejectors during these relative movements maintain their grip on the blank 62 and support the same symmetrically with respect to the dies. The forward movement of the

slide 18 carries the slide head and connected die casing 34 forward so as to inclose the blank 62 and when the two dies 33, 63 engage the blank the further movement of the die 5 64 presses the die 33 and its plunger backward against the action of the primary spring 37 so that the blank may be gradually and symmetrically expanded until its edges engage the die casing. At this point the 10 secondary spring may be brought into action to increase the resistance to the further rearward movement of the rear die, the plunger abutment 36 coming into engagement with the spring sleeve 45 at this time. 15 A slight further movement of the front die 64 gives the final compression which completes the forming of the article, the parts then having the positions indicated in Fig. 4, this position being held while the eccentrics 20 pass their dead centers. The slides thereupon move apart and the slide 19 and front die 64 are withdrawn, moving out of engagement with the die casing and the article, the springs pushing forward the plunger 35 25 and connected rear die 33 during this time until the rear die is in about the position indicated in Fig. 3. The ejector spring 52 is preferably so adjusted that the adhesion of the article to the face of the die 33 where 30 soap is acted on, is sufficient to keep the ejector in its retracted position within the die so that its outer end is flush with the working face of the same, as indicated in Fig. 4, until the die face is clear of the die 35 casing. Thereupon the oscillation of the feeder 23 brings the detach 103 sharply into engagement with the article, as is indicated in Fig. 8, freeing it from the die face. Then the ejector springs forward under the 40 action of its protruding spring 52 so that the completed article is immediately forced away from the die face and can be moved along toward the discharge belt by the grip 70, the slide 18 having sufficient rearward 45 movement, if desired, to carry the fork 39 clear of its stops and give ample clearance as the feeder brings forward a new blank between the ejectors.

Having described this invention in connection with an illustrative embodiment thereof, to the details of which disclosure the invention is not, of course, to be limited, what is claimed as new and what is desired to be secured by Letters Patent is set forth 55 in the appended claims.

1. In presses, a slide carrying a front die, an ejector mounted within said front die, an aliner cooperating with said ejector to aline the same with respect to the working face of 60 said die, a spring to normally protrude the ejector from said die, a spring-pressed detent to engage the ejector and force the same back against the action of the spring during the forward movement of the slide, a 65 rear slide having a slide head, a die casing se-

cured to said slide head, a rear die and plunger yieldingly mounted in said slide and casing, a primary spring acting between said slide and plunger to resist the rearward movement of said rear die, a secondary spring 70 mounted in said slide and actuating a spring sleeve to engage said plunger during the extreme rearward movement of said rear die, a fork secured to said plunger and cooperating with stops on the machine frame to limit the 75 forward movement of the plunger and rear die, an ejector mounted within said plunger and die, to engage and support a blank, a spring normally protruding said ejector from said die, a spring-pressed detent pivoted 80 on the frame, a distance piece mounted on said slide to engage said detent and thereby retract the ejector within said rear die, an aliner on said plunger to aline the ejector with respect to said rear die, eccentrics to op- 85 erate said slides in unison, a reciprocating and oscillating feeder provided with arms, spring-pressed grips swingingly mounted in said arms, levers connected with said grips, a cam to cooperate with one of said levers to 90 hold the connected grip in inoperative position during the rearward movement of said feeder and releasing means on one of said slides to swing said grips into released position during the forward movement of said 95 slide.

2. In presses, a slide carrying a front die, an ejector mounted within said front die, an aliner cooperating with said ejector to aline the same with respect to the working face of 100 said die, a spring to normally protrude the ejector from said die, a spring-pressed detent to engage the ejector and force the same back against the action of its spring during the forward movement of the slide, a rear 105 slide having a slide head, a die casing secured to said slide head, a rear die and plunger yieldingly mounted in said slide and casing, a primary spring acting between said slide and plunger to resist the rearward 110 movement of said rear slide, a secondary spring mounted in said slide and actuating a spring sleeve to engage said plunger during the extreme rearward movement of said rear die, means to limit the forward movement of 115 the plunger and rear die, an ejector mounted within said plunger and die to engage and support a blank in connection with the other ejector, a spring normally protruding said ejector from said rear die, a spring-pressed 120 detent pivoted on the frame, a distance piece mounted on said slide to engage said detent and thereby retract the ejector within said rear die, an aliner on said plunger to aline the ejector with respect to said rear die, 125 means to operate said slides in unison and a feeder to feed blanks to said dies and remove the completed articles therefrom.

3. In presses, a slide carrying a front die, an ejector mounted within said front die, an 130

aliner cooperating with said ejector to aline the same with respect to the working face of said die, a spring to normally protrude the ejector from said die, yielding means to en-
 5 gage said ejector and force the same back against the action of its spring during the forward movement of said die, a rear slide having a slide head, a die casing secured to
 10 said slide head, a rear die and plunger yieldingly mounted in said slide and casing, springs to resist the rearward movement of said rear die, an ejector mounted within said plunger and die to engage and support a
 15 blank in connection with the ejector in said front die, a spring normally protruding said ejector from said die, means to retract said ejector within said rear die during the forward movement of said rear die and means to operate said slides in unison.

20 4. In presses, a slide carrying a front die, a spring-pressed ejector mounted within said front die and normally protruding therefrom, a rear slide, a die casing secured to said rear slide, a rear die yieldingly mounted in said
 25 rear slide and casing, yielding means to resist the rearward movement of said rear slide, a spring-pressed ejector mounted within said plunger and rear die and means to cause said ejectors to be gradually retracted
 30 into said guides as said dies approach each other to support a blank by said ejectors symmetrically with respect to said dies.

5. In presses, a front die, a spring-pressed ejector mounted within said front die, a
 35 slide, a die casing secured to said slide, a rear die yieldingly mounted in said slide and casing, an ejector mounted in said rear die to support a blank in connection with the other ejector as said dies approach each
 40 other.

6. In presses, a front die, a spring-pressed aliner mounted within said front die, a rear slide, a die casing secured to said rear slide, a rear die and plunger yieldingly mounted
 45 in said slide and casing and a spring-pressed ejector mounted in said rear die to engage and support a blank in connection with the other ejector as said dies approach each other.

50 7. In presses, a front die, a yieldingly mounted ejector normally protruding from said front die, a slide, a die casing secured to said slide, a rear die yieldingly mounted in said slide and casing and a yielding ejector
 55 normally protruding from said rear die to engage and support a blank in connection with the other ejector as said dies approach each other.

8. In presses, a front die, a rear slide, a
 60 die casing secured to said rear slide, a rear die movably mounted in said slide and casing and a yielding ejector normally protruding from said rear die to engage and assist in supporting an article as said dies approach
 65 each other.

9. In presses, a slide carrying a front die, an ejector mounted within said front die, an aliner cooperating with said ejector to aline the same with respect to the working face of
 said die, a spring to normally protrude the
 70 ejector from said die, a spring-pressed detent to engage the ejector and force the same back against the action of its spring during the forward movement of the slide, a rear slide
 75 having a slide head, a rear die and plunger yieldingly mounted in said slide; a primary spring acting between said slide and plunger to resist the rearward movement of said rear slide, a secondary spring mounted in
 80 said slide and actuating a spring sleeve to engage said plunger during the extreme rearward movement of said rear die, means to limit the forward movement of the plunger and rear die, an ejector mounted within said
 85 plunger and die to engage and support a blank in connection with the other ejector, a spring normally protruding said ejector from said rear die, a spring-pressed detent pivoted on the frame, a distance piece mounted on
 90 said slide to engage said detent and thereby retract the ejector within said rear die, an aliner on said plunger to aline the ejector with respect to said rear die, means to operate said slides in unison and a feeder to feed
 95 blanks to said dies and remove the completed articles therefrom.

10. In presses, a slide carrying a front die, an ejector mounted within said front die, an aliner cooperating with said ejector to aline the same with respect to the working face
 100 of said die, a spring to normally protrude the ejector from said die, yielding means to engage said ejector and force the same back against the action of its spring during the forward movement of said die, a rear slide
 105 having a slide head, a rear die and plunger yieldingly mounted in said slide, springs to resist the rearward movement of said rear die, an ejector mounted within said plunger and die to engage and support a blank in
 110 connection with the ejector in said front die, a spring normally protruding said ejector from said die, means to retract said ejector within said rear die during the forward movement of said rear die and means to
 115 operate said slides in unison.

11. In presses, a slide carrying a front die, a spring-pressed ejector mounted within said front die and normally protruding therefrom, a rear slide, a rear die yieldingly mounted in
 120 said rear slide, yielding means to resist the rearward movement of said rear slide, a spring-pressed ejector mounted within said plunger and rear die and means to cause said ejectors to be gradually retracted into said
 125 guides as said dies approach each other to support a blank by said ejectors symmetrically with respect to said dies.

12. In presses, a front die, a spring-pressed ejector mounted within said front die, a slide, 130

a rear die yieldingly mounted in said slide, an ejector mounted in said rear die to support a blank in connection with the other ejector as said dies approach each other.

5 13. In presses, a front die, a spring-pressed aliner mounted within said front die, a rear slide, a rear die and plunger yieldingly mounted in said slide and a spring-pressed ejector mounted in said rear die to engage and support a blank in connection with the other ejector as said dies approach each other.

10 14. In presses, a front die, a yieldingly mounted ejector normally protruding from said front die, a slide, a rear die yieldingly mounted in said slide and a yielding ejector normally protruding from said rear die to engage and support a blank in connection with the other ejector as said dies approach each other.

15 15. In presses, a front die, a rear slide, a rear die movably mounted in said slide and a yielding ejector normally protruding from said rear die to engage and assist in supporting an article as said dies approach each other.

20 16. In presses, a movable front die, a rear slide, a die casing mounted on said slide, a rear die movably mounted in said slide and casing, a primary spring between said slide and die to resist the rearward movement of said die and a spring-pressed sleeve having a limited movement to come into action during the extreme rearward movement of said rear die and resist the same.

25 17. In presses, a front die, a slide, a die casing secured to said slide, a rear die movably mounted in said slide and casing, yielding means to resist the rearward movement of said rear die and a spring member having a limited movement to come into action during the extreme rearward movement of said rear die to resist the same.

30 18. In presses, a front die, a slide, a die casing secured to said slide, a rear die and plunger movably mounted in said slide, an adjustable abutment on said plunger, a primary spring between said slide and said abutment, a spring sleeve having a limited movement with respect to said slide to engage said abutment during the extreme rearward movement of said rear die to resist the same.

35 19. In presses, a movable front die, a rear slide, a rear die movably mounted in said slide, a primary spring between said slide and die to resist the rearward movement of said

die and a spring-pressed sleeve having a limited movement to come into action during the extreme rearward movement of said rear die and resist the same.

20. In presses, a front die, a slide, a rear die movably mounted in said slide, yielding means to resist the rearward movement of said rear die and a spring member having a limited movement to come into action during the extreme rearward movement of said rear die to resist the same.

21. In presses, a front die, a slide, a rear die and plunger movably mounted in said slide, an adjustable abutment on said plunger, a primary spring between said slide and said abutment, a spring sleeve having a limited movement with respect to said slide to engage said abutment during the extreme rearward movement of said rear die to resist the same.

22. In presses, a slide, a die movably mounted in said slide, a spring-pressed ejector in said die and normally protruding therefrom, a spring-pressed detent mounted adjacent said ejector and a distance piece mounted on said slide to engage the tail of said detent to retract said ejector during the forward movement of said slide.

23. In presses, dies, a reciprocating and oscillating feeder to cooperate with said dies, adjustable arms on said feeder, spring-actuated rotary pins in said arms, grips mounted on said pins, aliners mounted in said dies to engage and support blanks held by said grips and means on said dies to swing said grips apart out of engagement with said blank.

24. In presses, dies, means protruding from said dies to engage and support a blank with respect to said dies as they approach each other, a feeder having movable grips to carry a blank to said dies and means connected with said dies to disengage said grips from said blank.

25. In presses, dies, means protruding from the working faces of said dies to engage and support a blank with respect to said dies as they approach each other, a moving feeder having movable grips to carry a blank to said dies, and members on said dies to contact with said grips and disengage them from said blank.

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