B. F. COLEMAN.

STAMP LIFTER.

APPLICATION FILED MAR. 10, 1908.

925,156.

Patented June 15, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

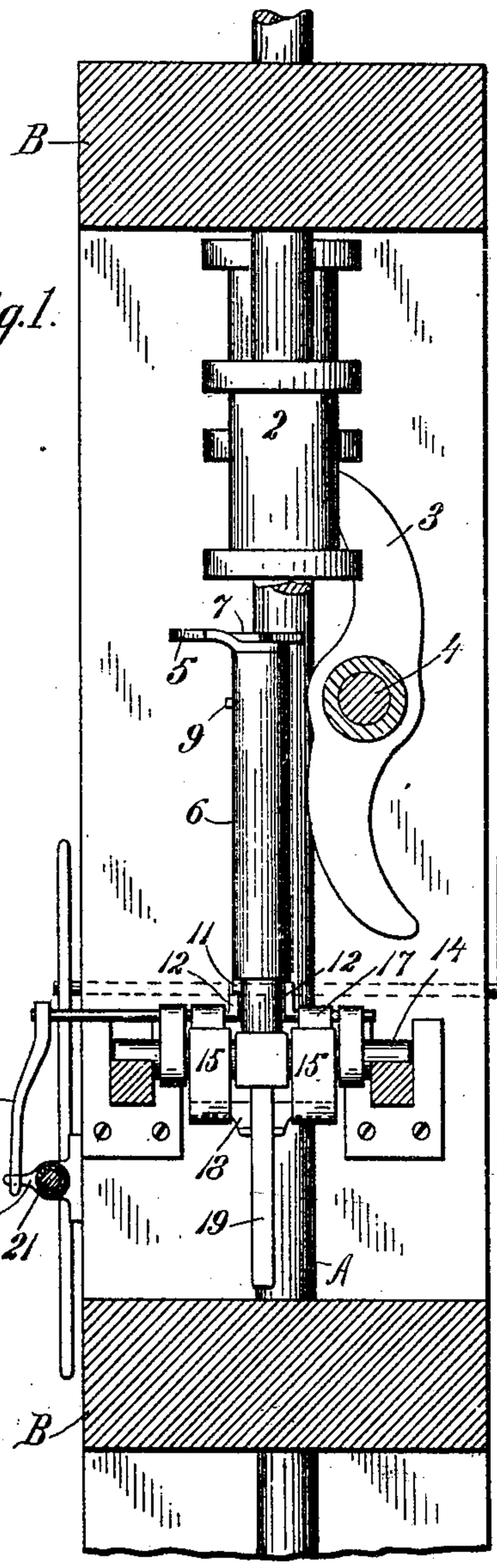
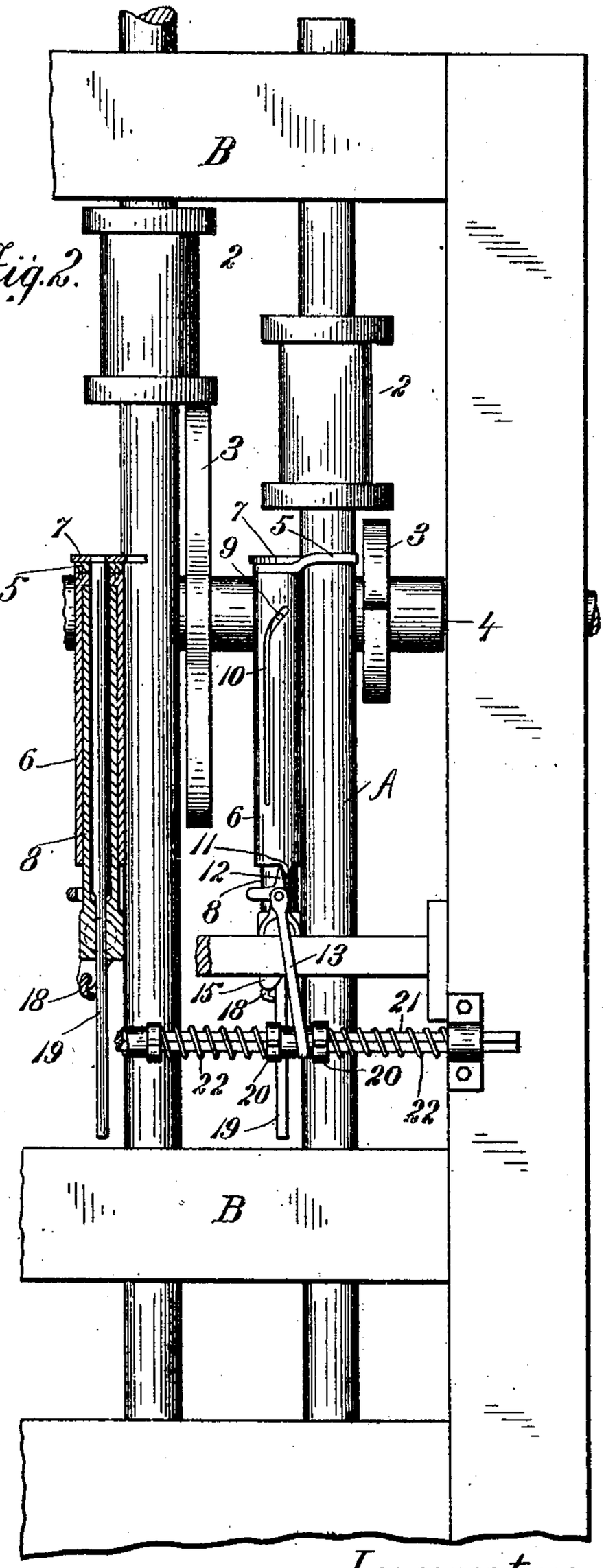


Fig. 2.



Witnesses

Alex. C. Currie.

E. A. Penfield

Inventor

Benley F. Coleman

by Geo. H. Strong.

Attorney

B. F. COLEMAN.

STAMP LIFTER.

APPLICATION FILED MAR. 10, 1908.

925,156.

Patented June 15, 1909.

2 SHEETS—SHEET 2.

Fig. 3.

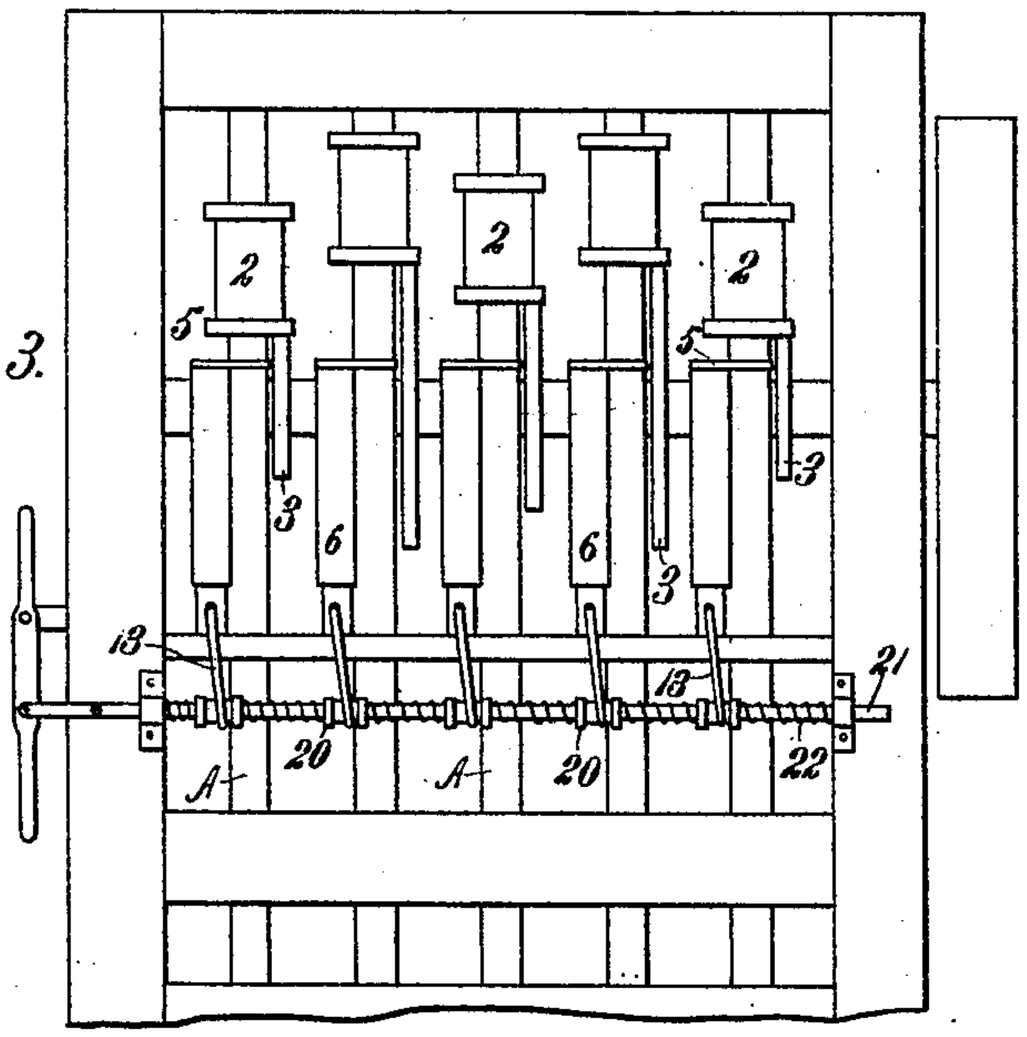


Fig. 4.

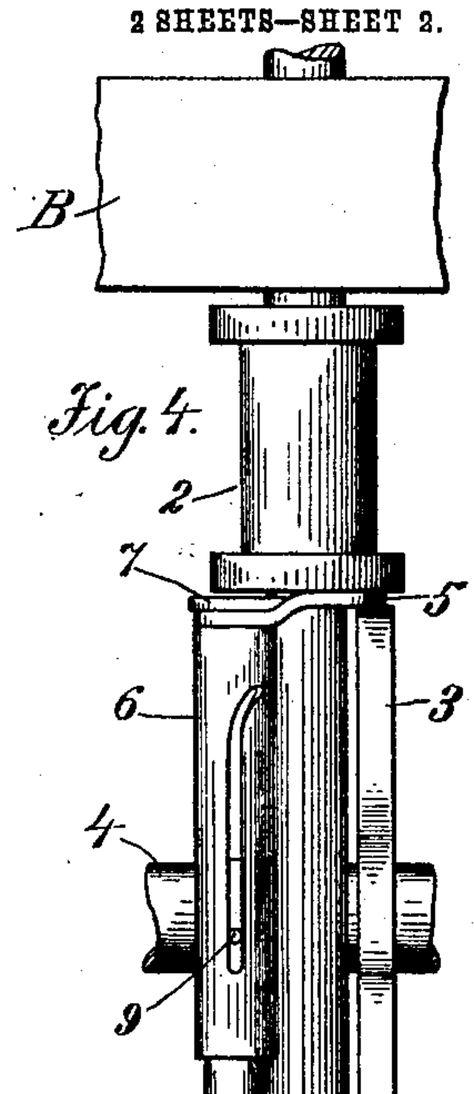


Fig. 7.

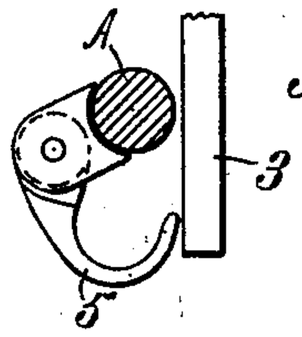
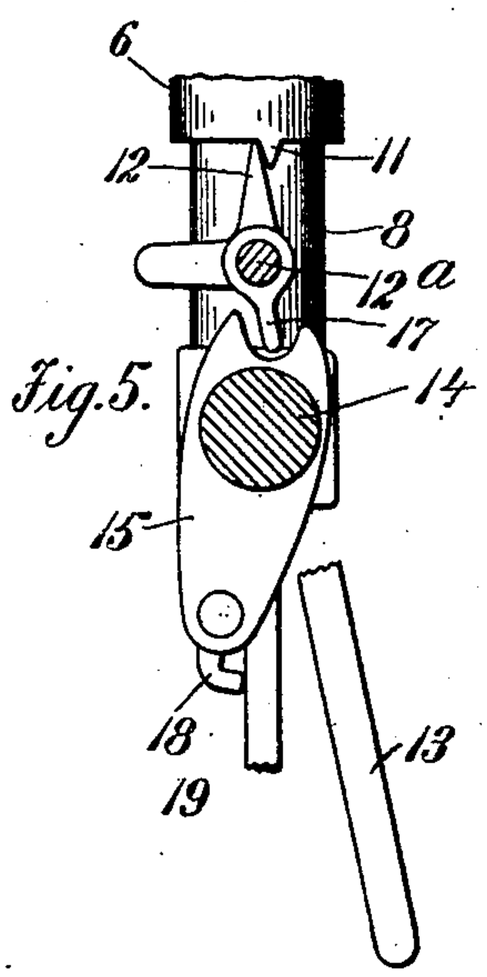


Fig. 5.



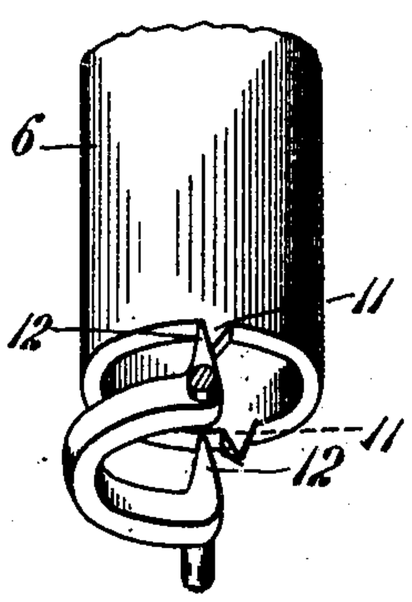


Fig. 6.

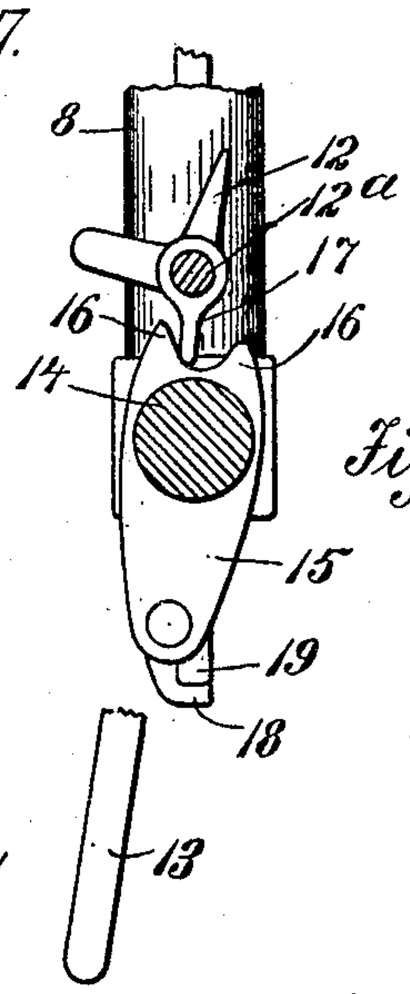


Fig. 8.

Witnesses

Alex Gunnie.

C. A. Penfield

Inventor

Benley F. Coleman.

by Geo. H. Strong.

Attorney

UNITED STATES PATENT OFFICE.

BENLEY F. COLEMAN, OF CONFIDENCE, CALIFORNIA.

STAMP-LIFTER.

No. 925,156. Specification of Letters Patent. Patented June 15, 1909.

Application filed March 10, 1908. Serial No. 420,147.

To all whom it may concern:

Be it known that I, BENLEY F. COLEMAN, citizen of United States, residing at Confidence, in the county of Tuolumne and State of California, have invented new and useful Improvements in Stamp-Lifters, of which the following is a specification.

My invention relates to a device for lifting and holding up one or more of the stamps of a crushing mill so that such stamps may be held out of operation at pleasure.

It consists in the combination of parts, and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a view in line with the cam shaft. Fig. 2 is a side elevation showing two stamps. Fig. 3 shows the device applied to a five stamp mill. Fig. 4 is a view showing one stamp stem and its tappet in an elevated position. Figs. 5, 6, 7 and 8 are enlarged details of the operating devices.

In ore crushing mills in which vertically rising and falling stamps are employed, the stamp stems A are slidable in guides B upon the frame.

Tappets 2 are fixed to the stamp stems at suitable points so as to be engaged by cams 3 which are fixed to the cam shaft 4 at such positions that they revolve close beside the stamp stem, and in such a plane as to engage the lower surfaces of the tappets, and alternately raise the tappet, the stem and the stamp carried at the lower end of the stem, and when at its highest point, the cam passes beyond the tappet, the latter and the stamp will drop upon the ore which is contained within what is termed a "mortar" where the crushing takes place.

It is frequently necessary to place one or more of the stamps temporarily out of operation, and in order to do this either the cam shaft and its tappets must be stopped, or the stamps must be raised so that the cams will not engage the tappets.

In order to avoid the necessity of stopping a number of the stamps where only one or more needs attention, I have constructed the present device.

This device consists of a cam-shaped plate 5 fixed upon the upper end of a sleeve 6.

The sleeve 6 is parallel with and contiguous to the stamp stem A, and in such a position relative to the lifting cam 3 that when the cam or arm 5 has been turned into operative position, it will extend into the path of travel of the cam 3 which, engaging the arm 5, will lift it and with it, its sleeve and other connected parts.

Above the arm 5 is a plate 7. Both the arm 5 and the plate 7 are comparatively thin, and after the cam has raised the arm 5 and the parts connected therewith, the plate 7 will be interposed beneath the tappet, and thus permanently hold it at an elevation just sufficient to clear the cam 3 while the latter is being revolved. The arm 5 may be withdrawn meanwhile so that the cam does not engage it while the stamp has been thus hung up or supported. This condition may continue as long as desired, and when the stamp is to be again released, the arm 5 being placed in position to be engaged by the cam, will raise the tappet sufficiently to release the plate 7, and again allow the stamp to be thrown into operation. The mechanism by which these movements are effected is as follows: 8 is a vertical cylindrical guide upon which the sleeve 6 is slidable. This guide has a pin 9 projecting from one side, and this pin enters a slot 10 made in the sleeve 6; and this slot 10 is curved at the upper end as shown in Figs. 2 and 4, so that when the sleeve 6 is slightly raised, the stationary pin 9 acting in the curved slot causes the sleeve 6 to turn a little, and thus engage the arm 5 with the cam 3. This turning is effected as follows: At the bottom of the sleeve 6 are projecting V-shaped points 11, and fulcrumed to the guide 8 is an arm or tongue 12 which projects upwardly sufficiently to engage the projection 11. This tongue is movable by means of a hand lever 13 within reach of the operator. To balance the strain upon these parts, I prefer to employ two of the tongues 12 located upon opposite sides of the guide 8, and each engaging a similar point 11 upon the sleeve 6.

14 is a support extending transversely beneath the guide 8 which is supported thereon. Turnable upon the cylindrical portion of the support 14 are arms 15, one upon each side of the line of the guide 8, and having grooves or channels, with upwardly extending points 16 upon each side.

17 are arms connected with the shaft or fulcrum of the tongue 12 and turnable therewith so that when the hand-lever 13 which is fixed to the fulcrum shaft 12^a, is turned in either direction, the projecting points 17

which engage with the lugs or projections 16, will swing the arms 15 upon the support 14.

Between the lower ends of the levers or arms 15 is fixed an angular support 18 plainly shown in Figs. 5 and 6.

The guide 8 is hollow, and through this guide extends a rod 19. The supporting plate 7 is fixed upon the upper end of this rod, and as this plate is just above the arm 5, it will be understood that when the arm 5 is engaged with the cam 3, and the sleeve 6 is lifted thereby, it will by engagement with the plate 7, lift this plate and the rod 19 in unison with its own upward movement. When these parts have reached their highest point, the support 18 impelled by arm 17 will project under the lower end of the rod 19, and the plate 7 will thus be supported beneath the tappet, and thus prevent the latter from descending as long as it is in this position.

When it is desired to again release the stamp and allow it to resume its movements, the arm 5 will be again turned into the line of travel of the cam 3, and when the cam has raised the arm to its highest point it will temporarily relieve the pressure upon the plate 7, thus allowing the support 18 to be withdrawn by arm 17 from beneath the rod 19 which carries the plate 7, and the latter may then drop to its normal position, the arm being at the same time withdrawn from the line of travel of the cam so that the latter will act upon the tappet unimpeded.

In order to provide a yielding movement of the parts, the lever arm 13 extends between collars 20 which are slidable upon a supporting bar 21, and are normally held to their inward position by springs 22. The object of this device is to allow the parts to yield if, when the arm is turned it first strikes the side of the cam 3, before passing into the line of movement of the cam, and as soon as the cam has reached the point where the cam can pass over it, the springs will insure its movement.

In Fig. 3 I have shown a battery of five stamp stems, and the operation of this device is plainly apparent in this view, as the cams are all so set upon the shaft with relation to each other as to substantially divide the lift of the various stamps, and it will be manifest that if it were desirable to hang up all the stamps at once, some of the arms 5 might pass immediately over the cams, while others would strike the side of the cam and be afterward thrown into proper position by the action of the springs.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. The combination with the rising and falling stems and tappets and cams of a stamp battery, of arms, mechanism by which said arms may be turned into the path of travel of the cams and lift the tappets, and supports engaging the tappets in their elevated position.

2. The combination with the rising and falling stems and tappets and cams of a stamp battery, of arms, mechanism by which said arms may be turned into the path of travel of the cams and lift the tappets, means including a plate raised in unison with an arm to contact with a tappet, and a support engaging said plate in its elevated position.

3. The combination with the rising and falling stems, tappets and cams of a stamp battery, of arms, mechanism by which said arms may be turned into the path of travel of cams and lift the tappets, rods slidable in unison with the upward movement of the arms, said rods each having a plate upon its upper end to contact with the bottom of a tappet in its highest position, supports for each of the rods, and means by which said supports are placed beneath the lower ends of the rods to support the tappets after the arms have been moved out of contact with the cams.

4. A stamp supporting device consisting of an arm, a vertical sleeve upon which said arm is carried and with which it is turnable, means for turning said arm, a shaft, contact points carried by the shaft and by the sleeve whereby the sleeve and arm may be turned, a cam between which and the tappet the arm is turned, a rod slidable within the sleeve, and a plate fixed to the upper end of the rod, a support and means whereby it is moved beneath the lower end of the rod when the plate and tappet are at their highest elevation.

5. In a stamp stem support, a vertical guide contiguous to the stamp stem having a projecting pin, a sleeve turnable and slidable upon the guide having a slot through which the pin projects, an arm carried by and turnable with the sleeve, a rod extending through the guide having a plate fixed to its upper end, a support for the rod, a tappet lifting cam into and out of line with which the arm is turnable, projections upon the lower end of the sleeve, a shaft, tongues carried thereby to engage the projections whereby the sleeve and arm may be turned.

6. In a stamp stem and tappet supporting device, a vertical guide contiguous to the stamp stem, a slotted sleeve turnable and slidable upon the guide said guide having a pin projecting into the slot, an arm carried upon the upper end of the sleeve, projections upon the lower end of the sleeve, a shaft, tongues carried thereby engaging the projections to turn the sleeve and move the arm carried thereby into the path of travel of tappet lifting cams whereby the sleeve and its arm are raised in unison with the tappet, a rod slidable within the guide having a plate upon its upper end adapted to engage with the tappet, said plate being lifted in unison

with the upward movement of the sleeve and arm, a transversely tiltable lever, a support carried at its lower end and adapted to be moved beneath the lower end of the rod when the latter and the tappet are at the highest point, and means carried by said shaft to tilt the lever.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

BENLEY F. COLEMAN.

Witnesses:

CHARLES A. RUFIELD,

S. H. NOURSE.