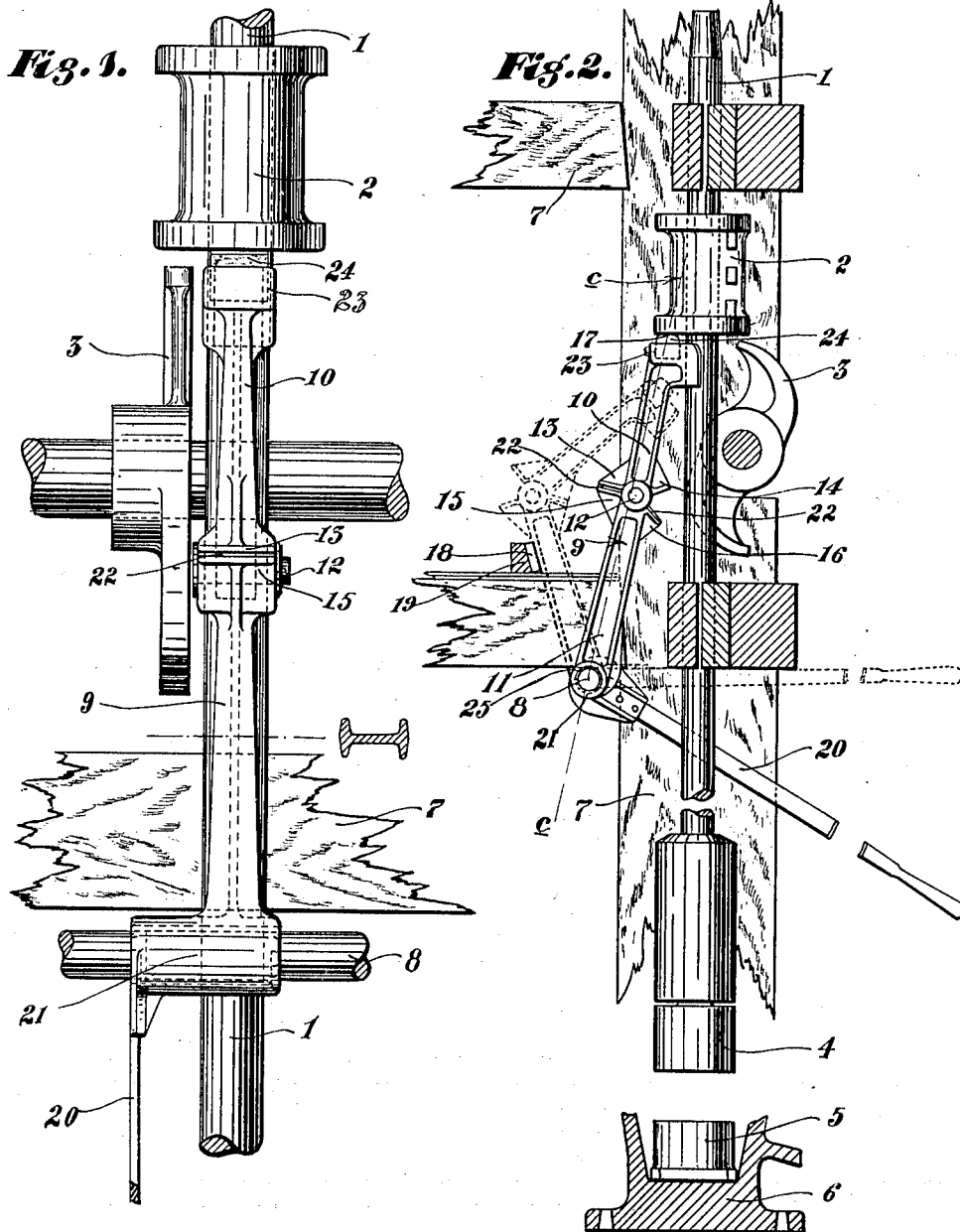


E. H. MOYLE.
SUPPORTING AND LIFTING AND ADJUSTING DEVICE FOR STAMP MILLS.
APPLICATION FILED JULY 3, 1905.

1,040,235.

Patented Oct. 1, 1912.

4 SHEETS—SHEET 1.



WITNESSES:
Trinity Eckel
J. Townsend.

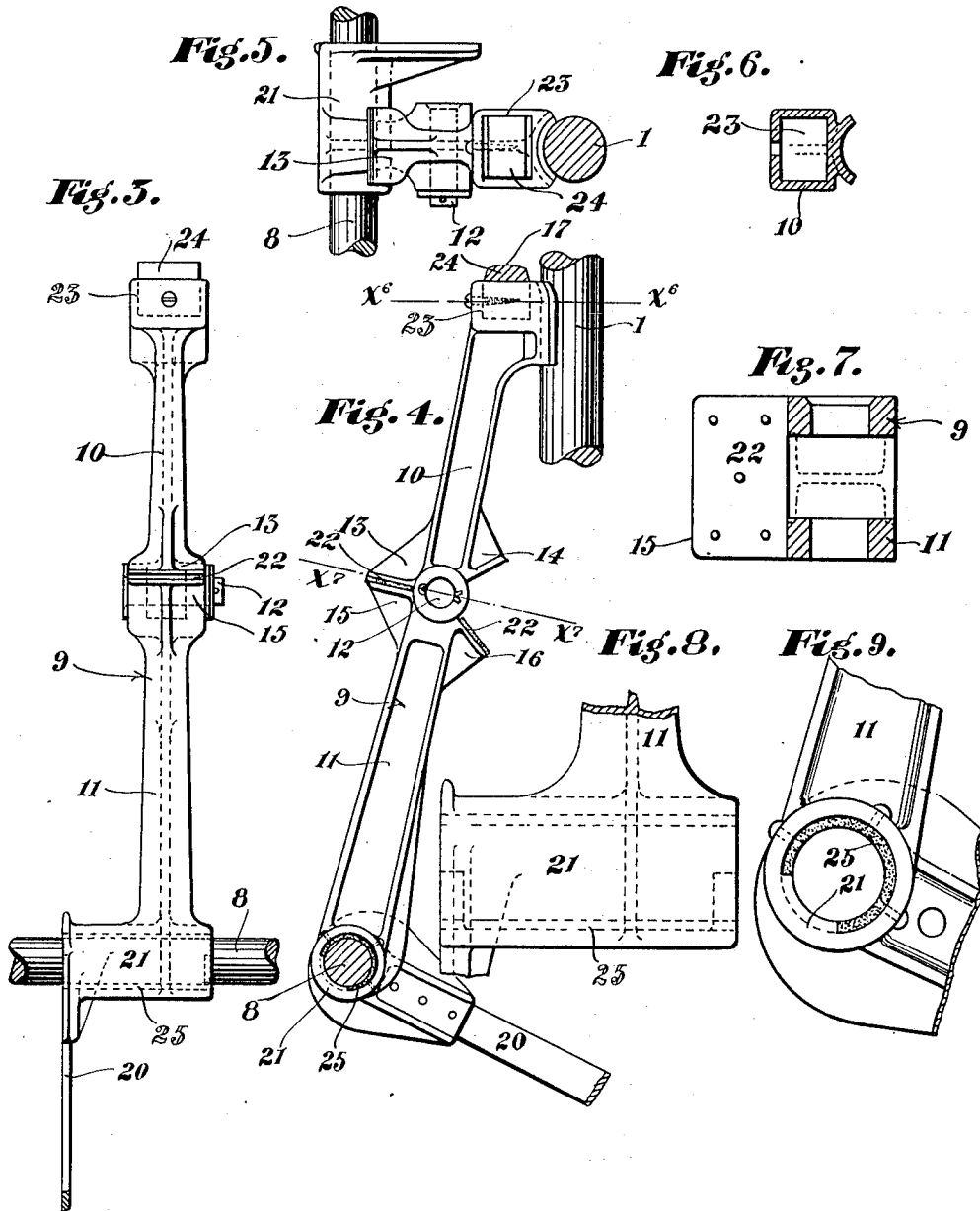
INVENTOR
Edward H. Moyle
BY *James R. Townsend*
his ATTORNEY

E. H. MOYLE.
SUPPORTING AND LIFTING AND ADJUSTING DEVICE FOR STAMP MILLS.
APPLICATION FILED JULY 3, 1905.

1,040,235.

Patented Oct. 1, 1912.

4 SHEETS—SHEET 2.



WITNESSES:
Frank Bachelier
J. Townsend

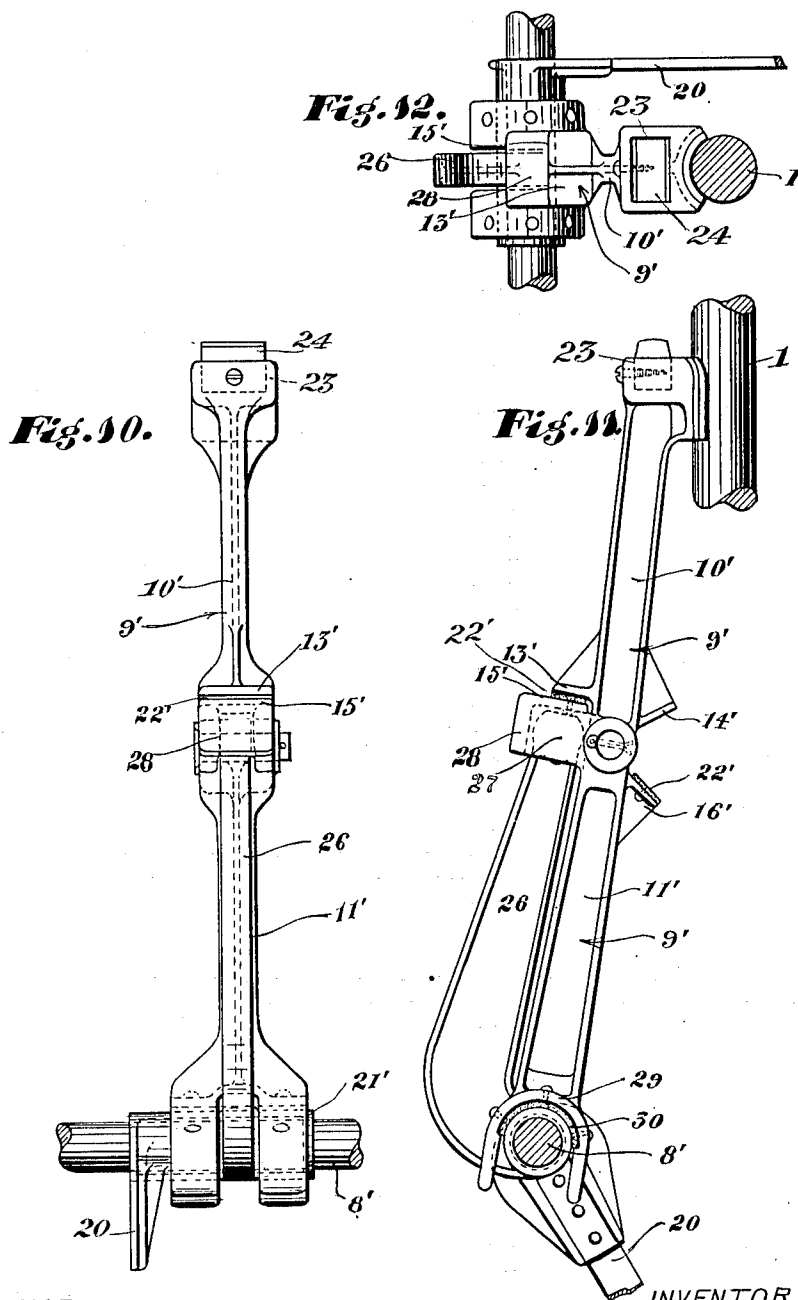
INVENTOR
Edward H. Moyle
BY
James R. Townsend
his ATTORNEY

E. H. MOYLE.
SUPPORTING AND LIFTING AND ADJUSTING DEVICE FOR STAMP MILLS.
APPLICATION FILED JULY 3, 1905.

1,040,235.

Patented Oct. 1, 1912.

4 SHEETS—SHEET 3.



WITNESSES:
John H. Buckle
J. Townsend

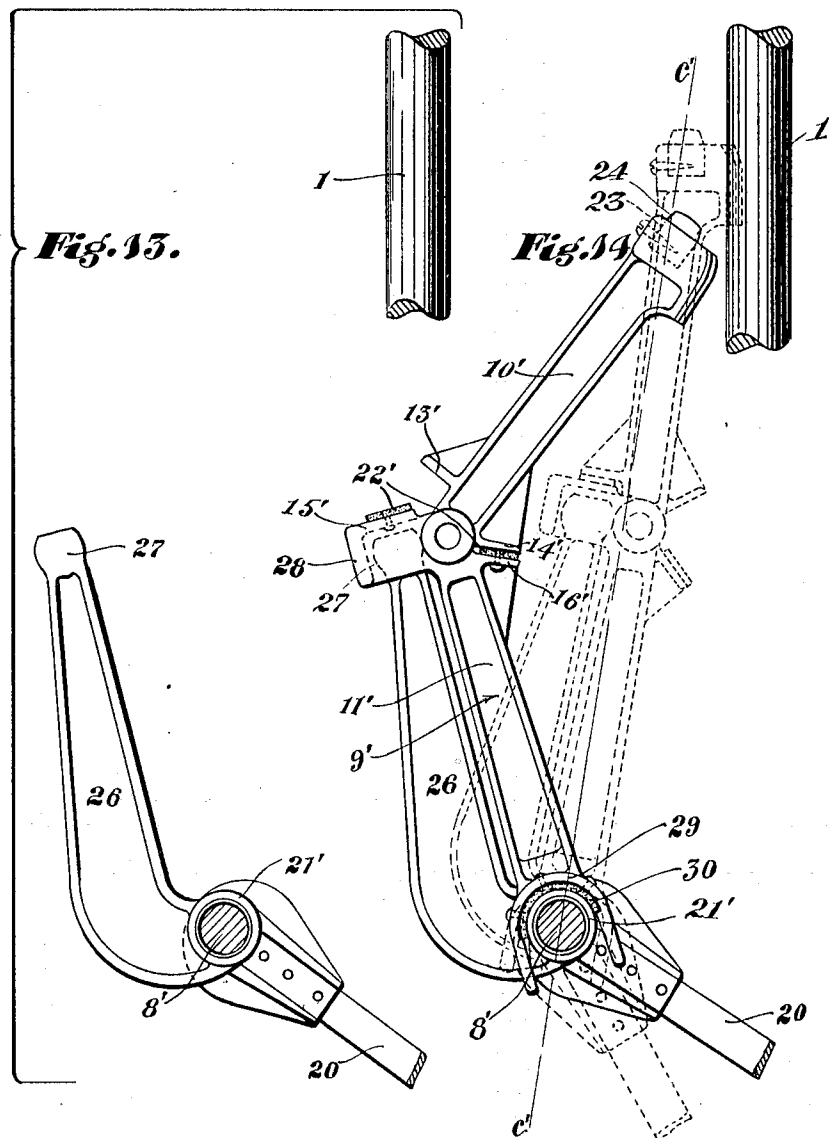
INVENTOR
Edward H. Moyle
BY *James R. Townsend*
his ATTORNEY

E. H. MOYLE.
SUPPORTING AND LIFTING AND ADJUSTING DEVICE FOR STAMP MILLS.
APPLICATION FILED JULY 3, 1905.

1,040,235.

Patented Oct. 1, 1912.

4 SHEETS—SHEET 4.



WITNESSES:
Amos G. Gackler
J. Townsend

INVENTOR
Edward H. Moyle
BY
James R. Townsend
his ATTORNEY

UNITED STATES PATENT OFFICE.

EDWARD H. MOYLE, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO EDWARD MOYLE, OF GRASS VALLEY, CALIFORNIA.

SUPPORTING AND LIFTING AND ADJUSTING DEVICE FOR STAMP-MILLS.

1,040,235.

Specification of Letters Patent.

Patented Oct. 1, 1912.

Application filed July 3, 1905. Serial No. 268,019.

To all whom it may concern:

Be it known that I, EDWARD H. MOYLE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful supporting and lifting and adjusting device for stamp-mills in which the reciprocating stamp is required to be hung up or placed out of action when not in use, and thereby permitting the revolving of the actuating-cam upon the lifting-shaft when said stamp is out of use, and of which the following is a specification.

It is of the objects of this invention to provide a simple and easily manipulated means whereby the stamp may be easily raised off the cam with a small expenditure of physical power; to provide a means by which the stem supporter can be made to follow up the movement of the tappet on the stem, and by virtue of this movement be made to take a position under the tappet so that the supporter is always in a position to support the stem; to provide a means whereby the stem may be lifted farther than the cam would ordinarily lift the stem with the minimum amount of physical power; and to provide a means which can be readily removed for repairs should repairs be necessary.

A further object of the invention is to provide a device which can also be used for re-setting the tappet 2 upon the stem 1 when the shoe 4 and die 5 have worn, thereby discarding the block & tackle which was commonly used before.

The accompanying drawings illustrate the invention.

Figure 1 is a front elevation of my device in which parts of the stem and the cam shaft are shown. Fig. 2 is a side elevation of the same showing the supporting finger in position to support the stem, and indicating in dotted lines the position taken by the finger when the stem is in action. Fig. 3 is a front elevation of the lifting finger. Fig. 4 is a side elevation of the same, showing a fragment of the stem. Fig. 5 is a plan view of the same. Fig. 6 is a section on line x^a-x^b , Fig. 4. Fig. 7 is a section on line x^c-x^d , Fig. 4. Fig. 8 is a fragmentary view of the hub of the lower joint of the finger which encircles the supporting shaft. Fig. 9 is an end view of the same.

Fig. 10 is a front elevation of a supporting finger, which is removable, in position to support the stem. Fig. 11 is a side elevation of the same. Fig. 12 is a plan view of the same. Fig. 13 is a side elevation of the actuating lever and a fragment of the stem, showing the relation between the operating lever and the stem when the removable finger is removed. Fig. 14 is a side elevation of the complete removable finger, showing it in position to allow the action of the stem, and indicating in dotted lines the supporting position. Figs. 10 to 14 inclusive show the invention applied in a form different from that shown in the other views.

1 represents the stem of the stamp mill on which the tappet 2 is placed.

3 is the actuating cam; 4 the shoe, 5 the die, and 6 the mortar.

The stem 1 and tappet 2 with the shoe 4 and its connection to stem 1 constitutes that part of mill called the stamp. The stamp is raised by contact face of cam 3 engaging contact face of tappet 2 which is keyed or fastened to stem 1.

On the supporting frame 7 is mounted a supporting shaft 8 upon which the supporting finger 9 is mounted. The supporting finger 9 consists of a toggle having an upper section 10 and a lower section 11. The upper and lower sections are pivoted together by a pivot 12 about midway between the ends of the finger. On the upper section are the stops 13 and 14, and on the lower section are the stops 15 and 16. When the finger is out of use, as shown in dotted lines in Fig. 2, the inner stops 14 and 16 are against each other, preventing any further relative movement of the two sections of the finger. When in the position to support the stem, the outer stops 13 and 15 contact with each other and prevent the finger from buckling under the supporting strain. Stops 13 and 15 are so situated that they allow the center of the pivot 12 to pass the line of centers connecting the point of support 17 and the center of the supporting shaft 8. When not in use, the lower section of the finger bears against the rubber stop 18 secured to the support 19. The lower section of the finger is turned into the supporting position by means of the lever 20 which is secured to the hub 21 of the lower section 9 of the finger. This lever 20 is sufficiently

long to allow of the weight of the stem and stamp being lifted with a minimum physical exertion. The combined weights of upper section 10 and lower section 11 when in position shown by dotted lines of Fig. 2 could be such that they more than counter-balance the weight of lever 20 when said lever is rigidly fixed to hub 21, however, if necessary, an extension could be carried out from section 11, in that direction, which would act as a counter-balance to lever 20.

On the faces of the stops 15 and 16 I have provided leather bearings 22 which serve to take the continual vibration shock off of the iron faces. This is to prevent the iron faces from flouting (as they would otherwise do) under the continual strain and vibration. These bearings, however, could be of rubber, or any like compressible material.

In the top end of the upper section 10 of the finger is a recess 23 which is provided to hold a wooden block 24, adjustable in said recess 23, to form a bearing surface for the tappet 2. This wooden block serves the same purpose as the leather bearings 22 and is also used in such a manner that a filling can be placed underneath, in order to lengthen same, if it is found necessary. On the inside of the hub 21 around the supporting shaft 8 is a leather facing or compressible material 25 (Figs. 4 and 9) which serves the same purpose as the wooden block 24 and the leather bearings 22.

In the operation of my supporting device the finger 9 is gradually straightened out as the tappet rises so that the block 24 follows up immediately under the tappet 2 as the upper member of said bendable support or finger 9 projects toward the stamp and having its end permanently in line of movement of stamp, said operating member being arranged to turn around shaft and to impart its supporting and lifting movement to said bendable support or finger 9 by the change in angle of said operating member, this is accomplished by applying power to lever 20. When the cam 3 passes out from underneath the tappet the finger is in an obtuse angle, but almost straightened position so that it requires very little force exerted downwardly on the end of the lever 20 to force the finger into the straight position and thereby raise the tappet 2 entirely off the cam 3. When the finger is in the straightened position and is subsequently thrown farther over so that the pivot 12 is on the opposite side of the center line *c, c*, (see Fig. 2) from the original position, the weight of the stem and stamp will force the stops 13 and 15 into contact with each other. In this position the finger will hold the stamp off the cam until the finger is turned back to the original position by power applied upwardly to the lever 20.

In the modification shown in Figs. 10, 11 and the following figures, instead of directly attaching lever 20 to the lower finger section 11 it is fastened to an auxiliary lever 26 the two making one bent lever adapted to be grasped at one end 20 and turned on shaft 8' to bring a knob 27 at the end of lever 26 to bear directly against the central joint of the two finger sections, and thus straighten it out, forcing the tappet away from the cam face at its highest point. The knob 27 is socketed in a cup 28 formed integral with the upper end of section 11. The finger 9' is provided with a bifurcated end 29 in which the leather face 30 is placed, adapted to straddle the hub 21' which is supported by the supporting shaft 8'. The lower section 11' of the finger 9' is provided with stops 15' and 16', which are provided with leather facings 22', as in the form heretofore described. The upper arm 10' of the finger is provided with stops 13' and 14', similar to the ones heretofore described. The construction of the upper end of the upper section of the finger is identical with that heretofore described. In straightening the finger to the supporting position the operating lever 26 bears against the central section of the finger, and when sufficient force is applied to the lever 20, forces the finger into the straightened position. With the above exception, the finger acts precisely as the form heretofore described. As the finger 9' is not permanently attached to any of the supporting parts, it may be easily removed for repairs, leaving the operating lever 26 and the lever 20 still on the shaft 8'. The support, therefore, which is bendable centrally of its length, is arranged to act upon the stamp in the same relative time with the cam; that is to say, the action of the cam against the tappet, or preferably the lower or contact face thereof, is synchronous with the movement of the lifting and supporting members. By thus making the fingers of the toggle approximately the same length, applicant attains a greater lateral play by the movement of the central joint and consequently a greater downward movement of the head at the upper finger.

Fig. 13 shows the relation between the operating lever 26 and the stem 1 when the supporting finger is removed from the shaft. It will readily be seen that the lever 26 in no way hinders the action of the shaft or the convenience in working around it for repairs, or any other contingency.

In case the supporting finger 9' is displaced, another finger may be mounted on the hub of the operating lever and put into service immediately.

It is obvious that the device as described is not only capable of supporting the stamp but also of raising the same away from the cam when it is desired to discontinue the

stamping operation. The object of the toggle is therefore not restricted to merely a supporting function, but it performs the important work of lifting the tappet away from the surface of the cam when the stems are hung up.

As in most stamp mills the stamps are mounted in batteries, I have provided that the supporting shaft 8 shall continue along the whole battery of stamps, and for each stamp there will be mounted on the supporting shaft a supporting finger. Thus, it will be seen that my system is extensible to any desired degree for any number of stamps placed in the battery.

The above-described supporting device comprises a toggle, each section of which is of approximately the same length so that comparatively slight movement of the operating lever 20 is necessary in order to create considerable vertical movement of the upper end of the upper section of the toggle, that end of the toggle being adapted to follow up the stamp and being limited solely to a vertical movement. Hence, it will be seen that all the movement imparted to the actuating lever is converted into upward movement at the upper end of the toggle.

I have thus provided a stem-lifter or supporting device for a stamp mill, that can be used for "hanging up" the stamp when the tappet is at its lowest position as when the cam 3 is not in motion; this is very advantageous for the reason that if the motive power should stop for any reason, the stamps could immediately be hung up on the supporting devices by applying force to the lever 20. I have also provided simple means for resetting the tappet 2 on the stem 1 when the shoe 4 and die 5 are worn; this being accomplished by the lever 20 after the fastening means of tappet 2 are loosened.

The invention as distinguished from others now in use, comprises a stem lifter and tappet adjuster combined, made up of pivoted parts which are capable of following up the tappet of the stamp, and in such following up movement engages the stamp itself, which acts as a guide, for one of the pivoted members. Thus, when the cam has attained its highest lift, and likewise the tappet, the pivoted stem lifter and tappet adjuster is then in its strongest position, by reason of the straightening of the toggle.

At this point the force exerted by the lever for operating the toggle is the most powerful and the stem lifter is straightened and then moved slightly past center line to an angle determined by plurality of abutments which are fixed and made on to the members.

The operation of my stem lifter is gradual, and the supporting member need not be thrown into contact with such speed and force as would be liable to injure the supporting member, this is absolutely necessary

in the stamp stem supporters used at present. While removing these obstacles, the efficiency and the speed by which the stem lifter and tappet adjuster can be removed from the tappet contact is in no way minimized as on release of stamp same is allowed to settle freely and without any force caused by its own weight, thereby preparing the stamp for easy contact of cam and subsequent operation.

What I claim is:—

1. The combination with a stamp and its tappet, of a shaft, a bendable support upon the shaft in operative relation to said tappet comprising two members pivoted together, one of said members provided with an adjustable block and the other of said members having a cup fixed to the end thereof, a lever having a knob fitting said cup and arranged to bear against the joint of the pivoted members, and means for operating the lever.

2. A stamp mill supporting device comprising the combination of a shaft, of an operating member on said shaft and a bendable support pivotally and removably connected to said operating member, the upper end of said bendable support projecting toward the stem and having its end permanently in line of movement of stamp, said operating member being arranged to turn around said shaft and to impart its supporting and lifting movement to said bendable support by the change in angle of said operating member.

3. A stamp lifting and supporting device consisting of a support bendable centrally of its length and arranged to act upon the stamp tappet, a cam for lifting the same, a lever for operating said bendable support for raising the contact face of the stamp tappet from the stamp actuating cam, and means for supporting said bendable support.

4. The combination with a stamp and its tappet, of a shaft, a bendable support upon the shaft in operative relation to said tappet comprising a toggle having fingers of approximately the same length, means for operating the fingers of said toggle, and means carried by each finger for preventing the downward movement of the toggle.

5. In a stamp mill, a stem, a tappet, a support therefor jointed approximately at its central point, a shaft on the mill-frame, engaging one end of said support, and operating means for said support.

6. In a stamp mill, a stem, a tappet, a support therefor consisting of two members united by a pivot, stops on said members adjacent to said pivot, leather facings on certain of said stops, a shaft on the mill-frame carrying said support, and operating means for said support.

7. In a stamp mill, a stem, a tappet, a jointed support therefor, a bearing cup on

said support, a shaft on the mill-frame carrying said support, and a lever having a knob fitting said cup, substantially as described.

8. A stamp lifting and supporting device, consisting of a support bendable centrally of its length, and arranged so that the upper end of said support would be directly beneath stamp tappet in its lowest position, a shaft upon the mill-frame, the lower end of said support engaging said shaft, and a lever operating said bendable support.

9. The combination with a stamp and its tappet, of a bendable support in operative relation to said tappet comprising a toggle having members of approximately the same length, means for engaging said members for forcing the upper part of the upper member toward the stamp when said toggle is in its lowest position, and means for retaining both members of the toggle in an approximate extreme position, when the toggle is at highest position, means for supporting said members of said toggle, and an operating lever for said engaging means.

10. In a stamp mill, a stem, a tappet, a support therefor consisting of two members united by a pivot, stops on said members adjacent to said pivot, cushioned facings on certain of said stops, a shaft on the mill-frame carrying said support, a cushioned facing between lower member and shaft, and operating means for said support.

11. In a stamp mill, a stem, a tappet, a support therefor consisting of an upper member and a lower member united by a pivot, stops on said members adjacent to said pivot, cushioned facings on certain of said stops, a shaft on the mill-frame carrying said support, a cushioned facing between lower member and shaft, an adjustable block inserted at upper end of upper member, and operating means for said support.

12. In combination, a gravity stamp provided with a tappet, a stamp hanging lever provided with a tappet engaging portion arranged and disposed with respect to the length of movement of the tappet to bring such engaging portion below the tappet when the same is in its lowermost position, and means for moving said lever to bring the engaging portion beneath the tappet during operation and from its lowermost position to cause the engaging portion to follow the tappet during its upward stroke

and hang the stamp above its uppermost normal position, or to raise and so hang the stamp from a rest or non-operating position.

13. In a stamp mill, a stem, a tappet, a support lifter and adjuster therefor consisting of two members united by a pivot, compressible facings on certain of said stops, a shaft on the mill-frame carrying said support, a compressible facing between lower member and shaft, means for adjusting upper end of upper member, and operating means for said support.

14. A lifting and supporting device consisting of two members united by a pivot, comprising a toggle, certain stops on said toggle, compressible facings on certain of said stops, means for adjusting upper end of upper member, a removable bifurcated bearing end on lower part of lower member, having a compressible facing, a shaft on the mill-frame for carrying said toggle, and an operating lever engaging said toggle.

15. In combination, a gravity stamp provided with a tappet, a stamp hanging and tappet adjusting lever provided with a tappet engaging portion arranged and disposed with respect to the length of movement of the tappet and held in such position by its own weight or counterbalance so as to bring such engaging portion below the tappet when the same is in its lowermost position, and means for moving said lever to bring the engaging portion beneath the tappet during operation and from its lowermost position to cause the engaging portion to follow the tappet during its upward stroke and hang the stamp above its uppermost normal position, or to follow up the stamp from a rest or non-operating position and lift same higher than its uppermost movement to a rest or non-operating position.

16. In a stamp mill, a stem, a tappet on the stem, toggle means independent of and supporting the tappet and having an intermediate joint, and means bearing upon the joint to operate the toggle means.

In testimony whereof, I have hereunto set my hand at Los Angeles, California this 26th day of June 1905.

EDWARD H. MOYLE.

In presence of—

JAMES R. TOWNSEND,
JULIA TOWNSEND.