

No. 865,413.

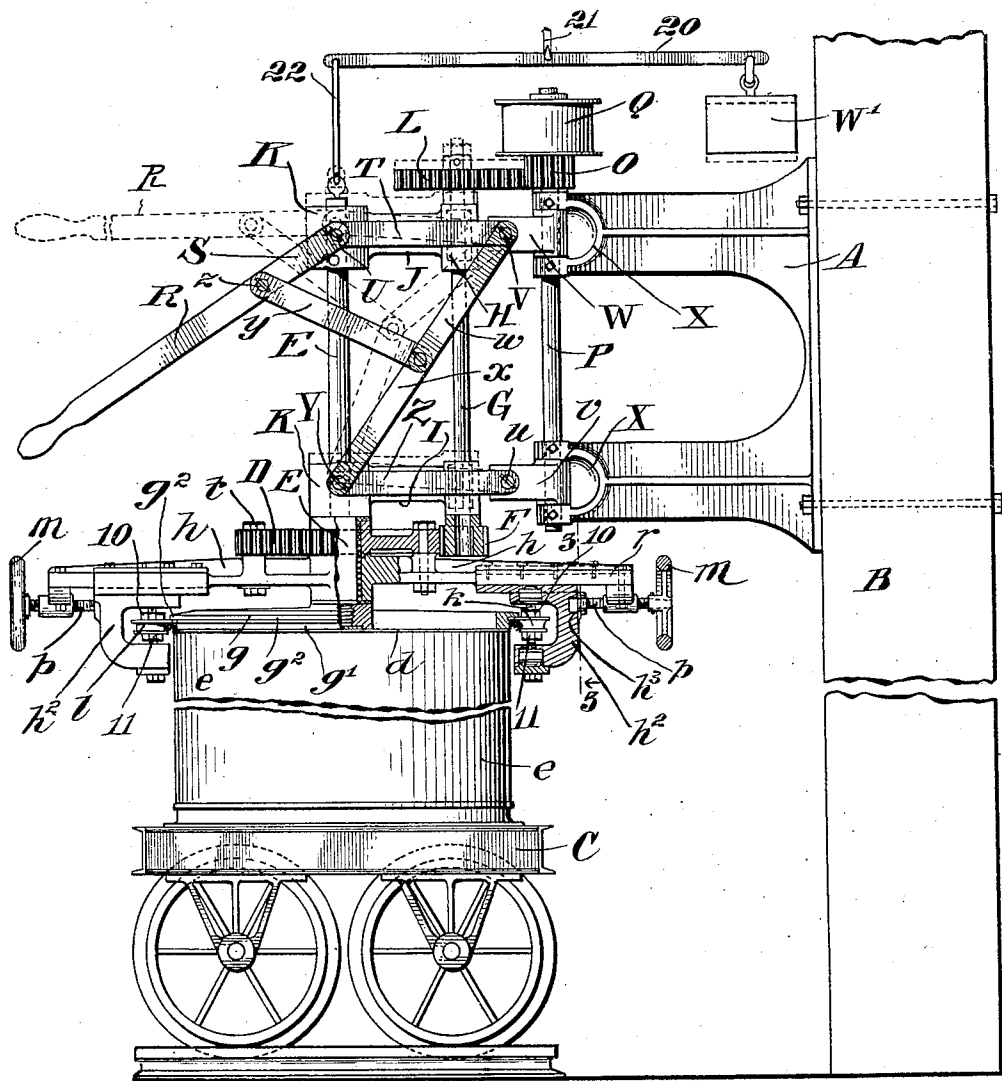
PATENTED SEPT. 10, 1907.

M. MAURAN.
DRUMHEADING MACHINE.

APPLICATION FILED AUG. 10, 1906.

4 SHEETS—SHEET 1.

Fig. 1.



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A. K. Schneider

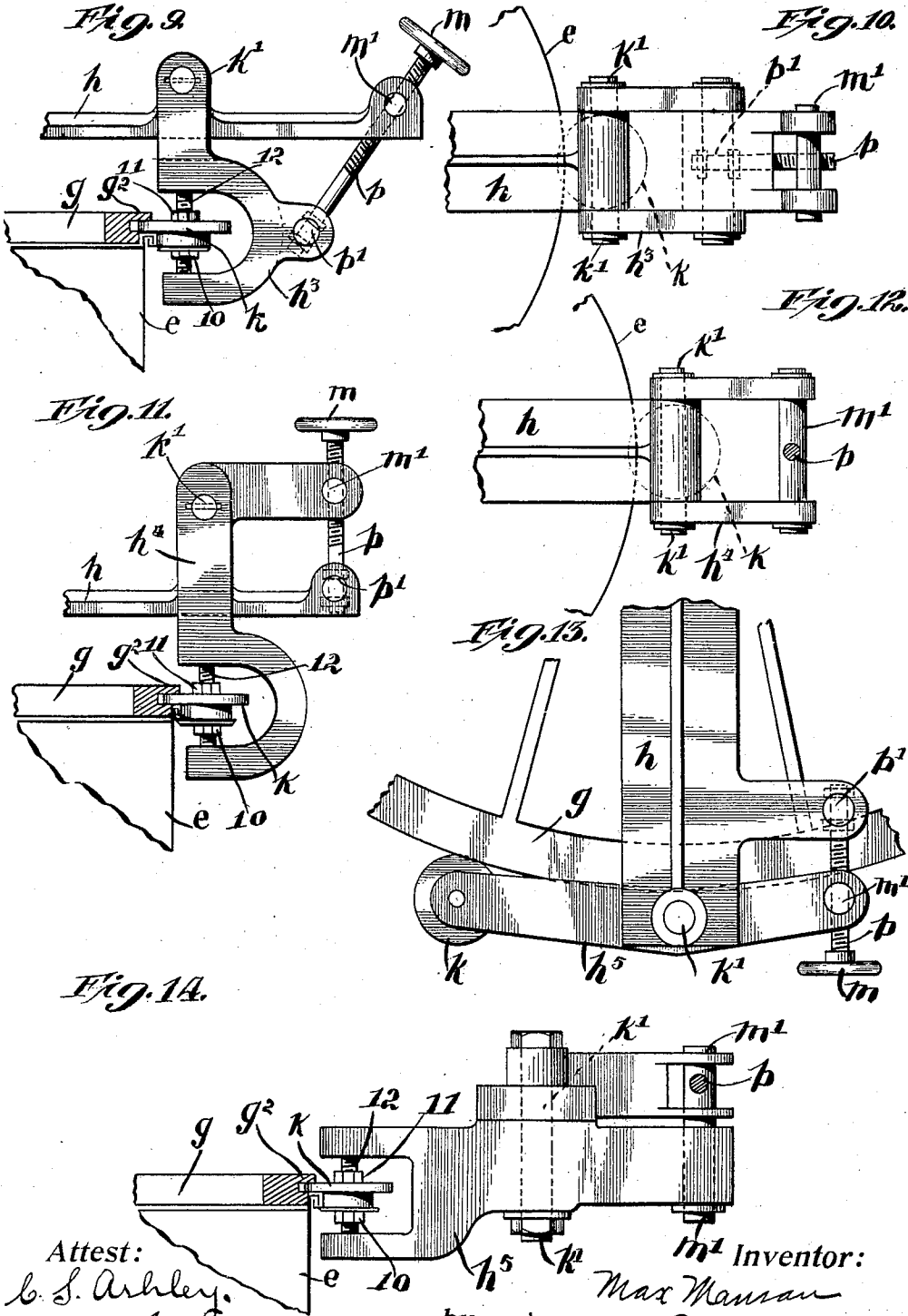
Inventor:
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4 SHEETS—SHEET 3.



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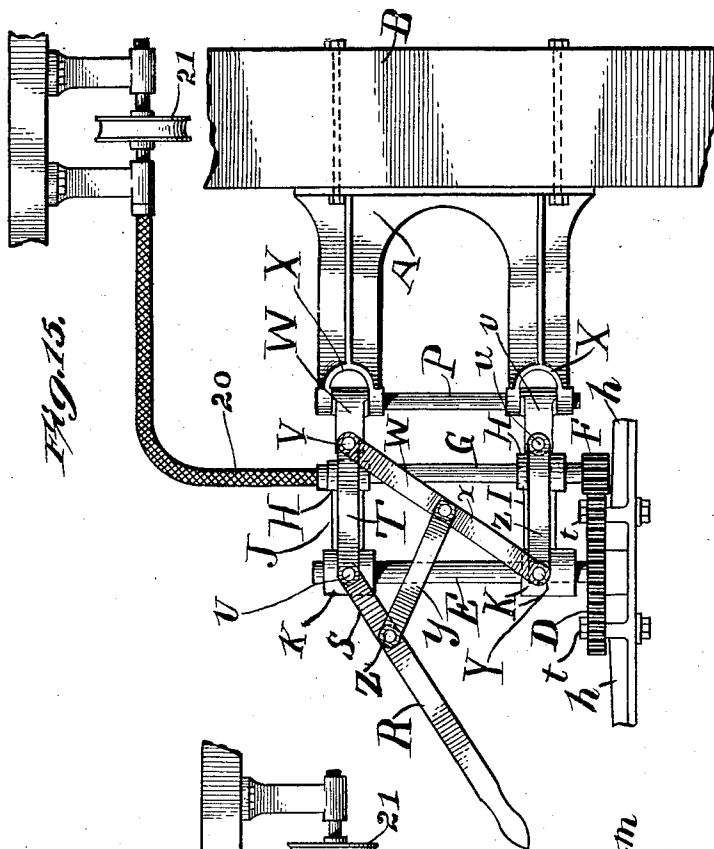


Fig. 15.

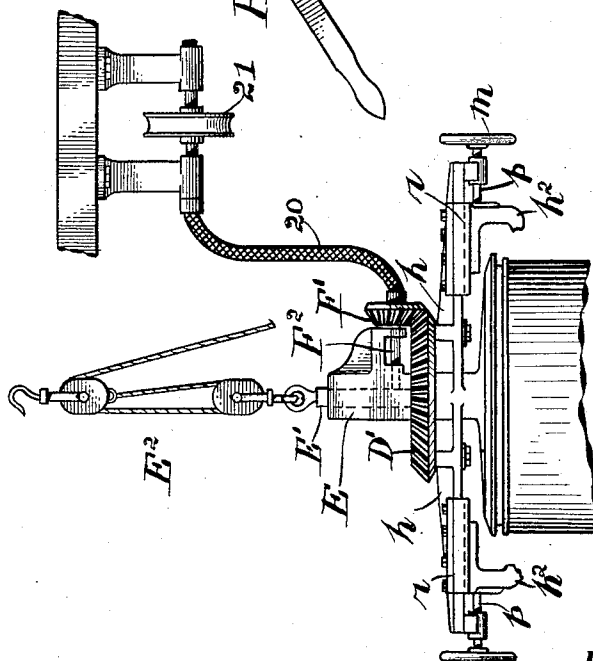


Fig. 16.

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UNITED STATES PATENT OFFICE.

MAX MAURAN, OF NIAGARA FALLS, NEW YORK.

DRUMHEADING-MACHINE.

No. 865,413.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed August 10, 1906. Serial No. 329,955.

To all whom it may concern:

Be it known that I, MAX MAURAN, a citizen of the United States, and a resident of Niagara Falls, Niagara county, and State of New York, have invented certain new and useful Improvements in Drumheading-Machines, of which the following is a specification.

This invention relates to machines for closing and heading-up sheet metal drums or packages after they have been filled with chlorid of lime or other materials, from which it is desired to exclude air and moisture. The invention is not limited to these uses, but it is applicable to many other uses.

The main object of the invention is that of heading or sealing large drums after they are filled, without removing the drum, or package, from the carriage or car on which it is brought to the machine.

Other objects are to improve upon the construction and operation of such machines, and enable the work to be done by power instead of manually, as shown by my machine disclosed in my Letters Patent No. 674929, thereby enabling a greater number of cans to be headed in a given time.

Further objects of the invention will hereinafter appear, and to these ends the invention consists of a drum-heading machine for carrying out the above objects embodying the features of construction, combinations of elements and arrangement of parts having the general mode of operation substantially as herein-after fully described and claimed in this specification and shown in the accompanying drawings, in which,—

Figure 1 is a side elevation of the machine; Fig. 2 is a plan view of the same; Fig. 3 is a cross-section on the plane 3—3 of Fig. 1; Figs. 4 and 5 are elevations of the two wheels to accomplish the upsetting and turning down of the metal flanges; Figs. 6, 7 and 8 are sectional views in detail showing the manner of upsetting, flanging and turning of the edge of the drum-head; Figs. 9 and 10 are detail side and plan views of modifications of the mounting of the crimping rolls; Figs. 11 and 12 are detail side and plan views of another modification; Figs. 13 and 14 are detail side and plan views of a further modification; Figs. 15 and 16 are detail side views of modifications of the driving mechanism for the machine.

It will be convenient first to consider the manner in which the metal drum-head and drum are acted upon to form the joint between them, and then the construction and operation of the machine will be more readily apparent.

Figs. 6, 7 and 8 show respectively in sectional view a portion of the drum-head *d* lying in place upon the drum *e*; secondly, the condition when the extreme outer edge of the drum-head *d* has been upset and turned back under the flange *e'* of the drum, and thirdly, the final condition when the turned-over edge *d'* interlocked with the flange *e'* has been turned

down against the cylindrical portion of the drum and the joint completed. Preferably, the central portion of the drum-head *d* is dished, so as to lie within the end of the drum *e*, as indicated at *d³*. The advantages of this are two-fold, for it contributes greater strength to the closed drum, and secondly, it permits the insertion of a backing or anvil, against which the turned-over flanges *d'*, *e'* can be firmly pressed in the process of closing and heading the drum.

According to this invention, the heading machine is power-driven and suitably supported from a bracket or frame A connected to the wall or frame B, so that the machine may be operated. A rolling carriage or truck C is adapted to carry the drums *e* to the machine. The carriage C and drum *e* thereon are rolled underneath the machine so that the drum may be operated upon.

The drum-heading machine consists when in use of the stationary member *g*, which lies in the dished central portion of the drum-head *d*, and a pair of rotary arms *h*, which are centered in the stationary member or skeleton-head *g*, and carry the upsetting and flanging wheels *k*, *l*. These wheels are preferably mounted upon cross-heads or slides so as to be readily adjustable in the arms *h* by means of the hand wheels *m* and screws *p*. The skeleton-head *g* should fit with fair accuracy into the recessed or dished portion of the head *d* so as to support the head *d* and wall of the drum *e* against the inward pressure of the wheels *k* and *l*. For this reason the skeleton-head *g* has a cylindrical face *g'*, which fits within the drum-head, and in addition to so supporting the drum and drum-head serves to accurately center the skeleton-head *g*. The arms *h* are carried by a vertical shaft on the skeleton-head *g*, and are free to turn thereon in a horizontal plane, thereby carrying the crimping wheels *k* and *l* around the periphery of the drum-head. The crimping rolls are preferably held between two clamping nuts 10 and 11 on a shaft 12 which runs in roller bearings. The nuts afford means for adjusting the crimping rolls up or down so as to bring them in proper relation to the other parts of the machine and the work to be done. The crimping rolls by this means are fastened rigidly to the shaft and the shaft revolves. According to this construction, the crimping rolls are maintained rotating in the proper plane and are prevented from getting out of true and from wobbling as is the case when the rolls run loosely on their shafts. The bearings that carry the crimping rolls are preferably widely separated, thereby giving rigidity to the important wearing points in the heading machine.

Each of the wheels *k* and *l* is mounted in a slide *r*, which partially embraces the rectangular end *h'* of the arm *h*. The extreme ends of the arms *h* each carry a depending bracket *h²*, through which the screws *p* carrying the hand wheels *m* are threaded. The inner en-

larged ends of the screws p pass into sockets on the slides r and are secured by collars h^3 so as to turn freely in the sockets, but not to move endwise. Consequently, by turning the hand wheels m or other suitable feeding means the slides r are caused to move slowly along the arms h and feed the wheels toward the drum-head. To relieve all upward strain which might otherwise be transmitted from the wheels k or l to the arms h , the skeleton-head g is provided with a flange g^2 which lies directly upon the upper face of the respective wheels k and l and receives any upward thrust that may occur during the operation.

To the rotatable arm h is suitably secured a large gear wheel D as by means of the bolts t , so that the gear and arms h are revoluble around the central shaft E supported upon the skeleton-head g . Meshing with the gear D is a pinion F secured fast to another vertical shaft G arranged substantially parallel to the shaft E and suitably supported in bearings H in lower and upper brackets I and J , which brackets also afford bearings K for the shaft E . Suitable means are provided for forcing the skeleton-head g and parts attached thereto down or into the dished head of the drum, holding both drum and machine rigid, the reverse motion raising the said parts and allowing the drum which has been operated upon to be removed and leaving the machine in position to have another drum placed under it. By raising the brackets I and J the skeleton-head g , the arms h and the gear D and pinion F are all raised. To the upper end of the shaft G is secured a gear L meshing with a pinion O on a shaft P , which shaft is supported in suitable bearings in the bracket A , and is provided with a belt pulley Q or other suitable means for transmitting power to the machine. Rotation from the pulley Q is transmitted through the pinion O and gear L to the shaft G , and from thence through the pinion F and gear D to the rotary arms h . The gear L is made somewhat thinner than the pinions O so that it may slide along the face of said pinion vertically through a given vertical height.

In order to manually raise and lower the heading mechanism from the drum, and also to permit the heading mechanism to be swung horizontally to facilitate in placing the skeleton-head over the center of the drum, suitable mechanism is provided, operated by the handle R having forks S pivoted to links T , which are in turn pivoted to the bearing K of bracket J at U , and also pivoted at V to the revoluble sleeve W carried on the shaft P in the fork X of bracket A . The bearing K of bracket I is pivoted at Y to arms Z , which arms are also pivoted at u to the revoluble sleeve v carried on the shaft P in the lower fork X of bracket A . Pivoted between the points V and Y are toggle acting levers w and x , to the knuckle of which is pivoted a connecting link y , and this last-named link is also pivoted at z to the operating handle R . By raising the handle R the toggle acting joint w, x , is broken, as shown in dotted lines, and the outer ends of the links T and Z are raised, thereby raising the brackets I and J and their shafts E and G , which raises the heading machine from the drum. The whole machine may then be swung in a horizontal plane through an angle in either direction about the shaft P as an axis, as shown in dotted lines in Fig. 2.

The operation of the machine is as follows: Upon the

drum filled with the material to be inclosed the head d is laid, as in Fig. 1, and then the carriage and drum are rolled into position for the heading operations. The heading machine is turned about the axis of the shaft P until it is centrally over the drum and then the machine is lowered into position by lowering the manual handle R , which closes the toggle acting joint w, x , and forces the skeleton-head g and its connected parts down upon the head d , the wheels k and l having previously been withdrawn toward the extreme ends of the arms h by turning the hand wheels left-handedly. The hand wheel m is then adjusted to bring the roller k into contact with the extreme edge d' of the drum-head d , and power is applied to the pulley Q , thereby transmitting power to the gear D , which revolves the arms h and the wheel k , whereupon the edge d' of the drum-head d is turned over little by little as the arms h revolve and as the wheel k is gradually adjusted or fed toward the center of the drum-head until the parts are in the position shown in Fig. 7. Thereupon the other wheel l is brought into play and gradually advances until the overturned edge d' and the flange e' are finally turned down in the position shown in Fig. 8. Thereupon the wheel l is withdrawn clear of the work and the machine may be raised by raising the handle R and if necessary moved to one side. The finished work may then be removed on the carriage C , another one brought into place, the machine lowered down upon it, and the heading operation repeated.

In order to enable the heading machine to be raised and lowered easily without very much effort, a counter-balance weight W' is hung upon one end of a lever 20 fulcrumed at 21 over the top of the machine. To the other end of the lever is hung the shaft E by means of the link 22, so that the weight W' counterbalances the weight of the adjustable parts of the drum-heading machine.

It will of course be understood that many modifications of the minor details of the machine will readily suggest themselves according to the varying mechanical conditions, and in the following claims I point out the characteristic novelties that distinguish the invention. For instance, the forming rolls might run in bearings at one end of the bell crank, the bell crank held in brackets fastened to the end of the rotating arms, with suitable means for adjusting the rolls to and from the center of the machine. I prefer, however, the method of adjusting the rolls by mounting them on slides, as shown in the accompanying drawings and described in the specification. It is also possible to operate these adjusting rolls automatically. I prefer, however, that this be accomplished by hand.

In the modification of the mounting of the crimping rolls shown in Figs. 9 and 10, the rolls swing in a vertical plane, and one of the rolls is brought to bear against the spider or skeleton head g by operating the hand wheel m connected to the screw p , which is mounted in trunnions m' carried on the end of the arm h . The other end of the screw p is connected by a pivotal joint p' with the bracket h^3 which is pivoted to swing in and out on the pivot k' carried on the arm h . When the seam is finished the crimping roll lies in a horizontal plane, but in starting the operation it is apparent that the roll is not in a horizontal plane, but swings downwardly into position. In Figs. 11 and 12,

the operation of the crimping roll is similar but the bracket h^4 which carries the roll is in the form of a bell crank pivoted at k' , one end of the bell crank carrying the trunnions m' for the screw p , said screw being pivotally connected at p' to the arm h . In Figs. 13 and 14, the crimping roll is shown swinging in a horizontal plane instead of in a vertical plane. In this instance the bracket h^5 carrying the roll is pivoted on vertical pivots k' carried by the arm h , so that by manipulating the hand wheel m , the crimping roll k will be moved in and out.

In Fig. 15 the machine is constructed substantially like Fig. 1, except that the gear L and pinion O are dispensed with for rotating the heavy mechanism, and a flexible shaft 20^a or other suitable shaft with universal couplings is connected directly to the shaft G, whereby the heading mechanism can be raised and lowered owing to the flexibility of the shaft 20^a. Any suitable means, as for instance a pulley 21^a, may be provided for connecting the flexible shaft 20^a to a suitable source of power.

In Fig. 16 a bevel gear D' is substituted for the gear D on the heading mechanism, and a bevel pinion F' meshes with the bevel gear D' and is connected to be operated by the flexible shaft 20^a or other suitable flexible connection, which shaft is in turn provided with the pulley 21^a. The bevel pinion F' is carried upon a shaft F² having bearings in the frame E', which also affords a bearing for the shaft E. Suitable means, as for instance, a block and tackle E² are provided for raising and lowering the heading mechanism. Any suitable mechanism, as for instance toggle joints or a screw or other means, may be provided for forcing the heading mechanism down upon the drum.

I claim and desire to obtain by Letters Patent the following:

1. In a drum-heading machine, the combination of a vertically immovable support or carriage for the drum a circular base, a rotary arm centrally pivoted to said base, an independently adjustable upsetting mechanism mounted on said arm, power-driven means for mechanically rotating said arm and upsetting mechanism, means for mechanically raising and lowering said circular base and arm and means for swinging said parts sidewise.

2. In a drum-heading machine, the combination of a vertically immovable support or carriage for the drum rotary means for upsetting the drum-head, power-driven means for mechanically operating said upsetting mechanism, means for raising and lowering said mechanism, and means for swinging said parts sidewise.

3. In a drum-heading machine, the combination of a vertically immovable support or carriage for the drum a circular base, a rotary arm centrally pivoted to said base, an independently adjustable upsetting mechanism mounted on said arm, the same comprising a slide moving in a right

line, an adjusting screw therefor mounted on said arm and positively moving said slide in both directions, power-driven means for operating the rotary arm, means for mechanically raising and lowering said circular base and arm, and means for swinging said parts sidewise.

4. In a drum-heading machine, the combination of a vertically immovable support or carriage for the drum a circular base, which also constitutes a skeleton-head or center and is adapted to be carried and supported by the article to be headed, a rotary arm centrally pivoted to said base or false-head, an independently adjustable upsetting mechanism mounted on said arm, the same comprising a slide moving in a right line and an adjusting screw therefor mounted in said arm and positively moving said slide in both directions, power-driven means for operating said rotary arm, mechanical means for raising and lowering said circular base and arm, and means for swinging said parts sidewise.

5. In a drum-heading machine, the combination of a vertically immovable support or carriage for the drum rotary means for upsetting the drum-head, a counter-balance therefor, power-driven means for rotating said upsetting mechanism, mechanical means for raising and lowering said mechanism, and means for swinging said parts sidewise.

6. In a drum-heading machine, the combination of a vertically immovable support or carriage for the drum a circular base, a rotary arm centrally pivoted to said base, an independently adjustable upsetting mechanism mounted for movement upon said arm, adjusting means therefor mounted on said arm and positively moving the upsetting mechanism in both directions, power driven means for operating the rotary arm, means for mechanically raising and lowering said circular base and arm, and means for swinging said parts sidewise.

7. In a drum-heading machine, the combination of a vertically immovable support or carriage for the drum rotary mechanism for upsetting the drum-head, and means for raising and lowering said mechanism to permit a drum to be placed beneath the machine, and means for swinging said mechanism centrally over the drums to be headed.

8. In a drum heading machine, power driving means, a support, a swinging frame thereon carrying a rotatable upsetting mechanism, means for raising and lowering the frame, and driving connections between the upsetting mechanism and the power driving means.

9. In a drum heading machine, power driving means, a support, a swinging frame thereon carrying a rotatable upsetting mechanism, means for raising and lowering the frame comprising a toggle mechanism and driving connections between the upsetting mechanism and the power driving means.

10. In a drum heading machine power driving means, a support, a swinging frame thereon carrying a rotatable upsetting mechanism, means for raising and lowering the frame and gearing carried thereby and connecting the upsetting mechanism with the power driving means.

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

MAX MAURAN.

Witnesses:

FRANCIS B. RICHARDS,
HENRY J. MCGOWAN.