H. M. DAWLEY.

ARTICULATED EFFIGY.

APPLICATION FILED FEB. 26, 1920.

1,347,993.

Patented July 27, 1920.

2 SHEETS—SHEET 1.

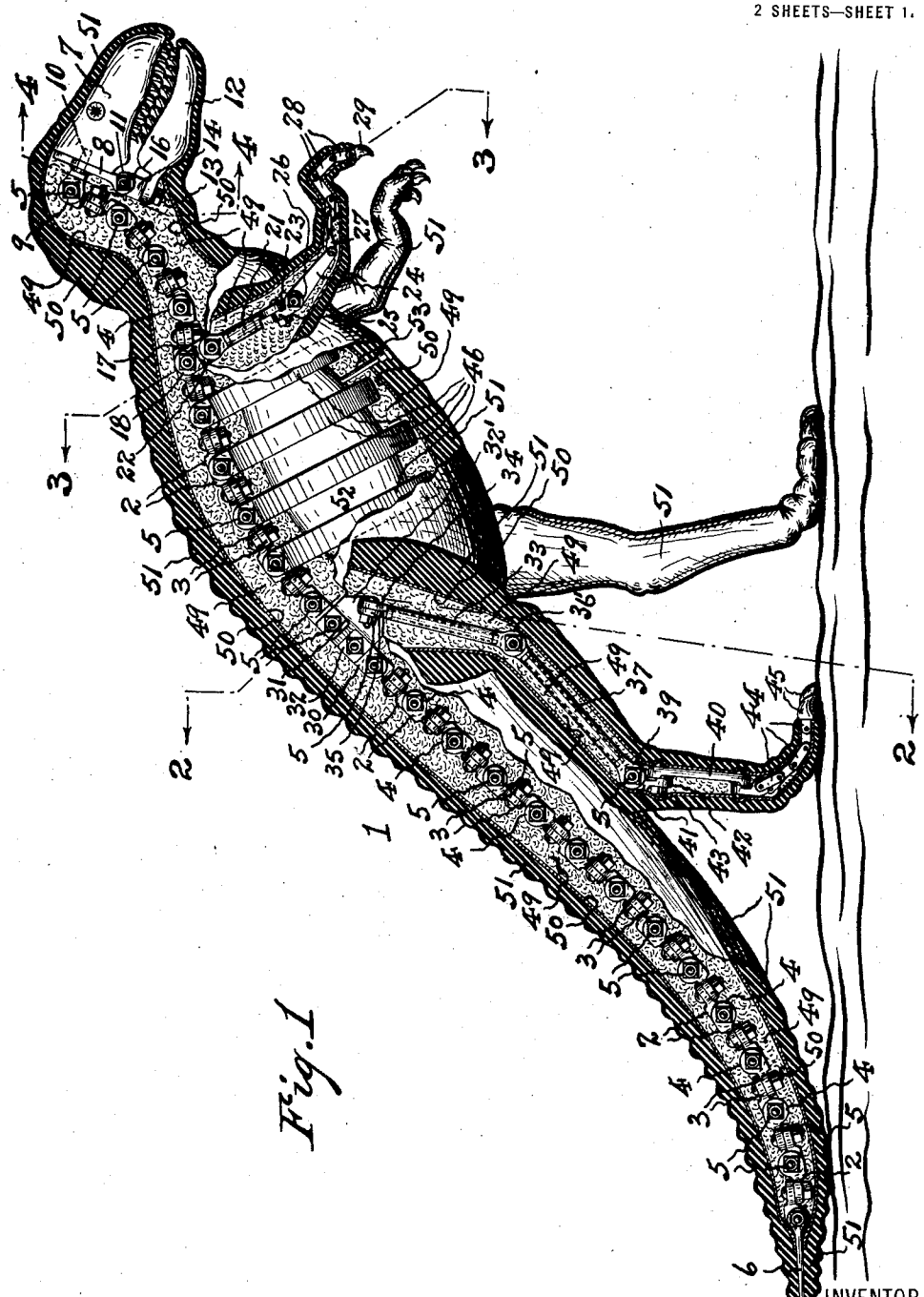


Fig. 1

INVENTOR

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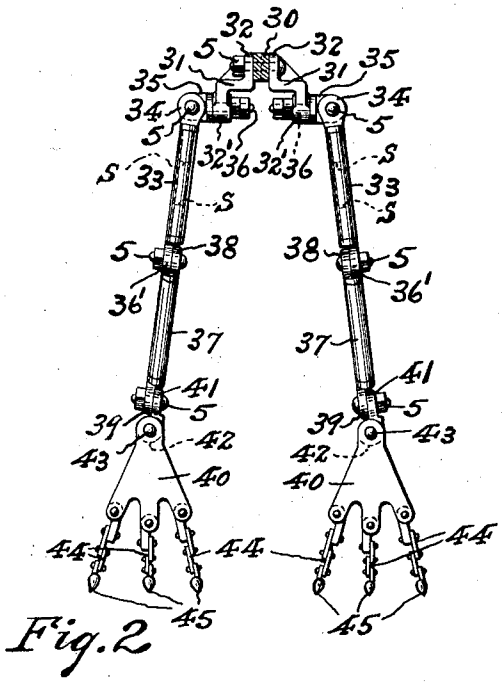


Fig. 2

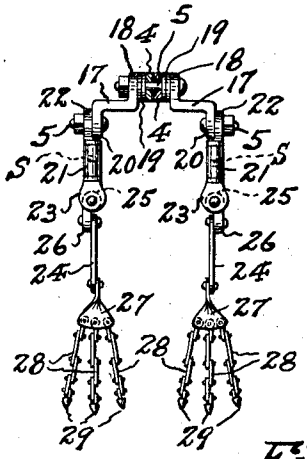


Fig. 3

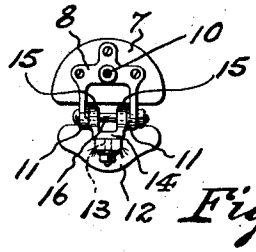


Fig. 4

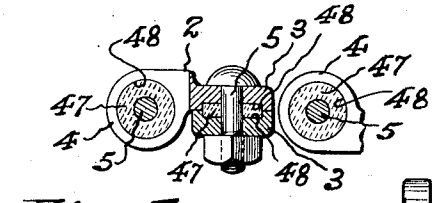


Fig. 5

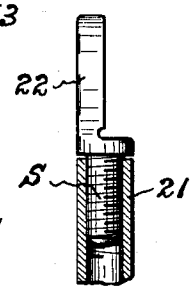


Fig. 6

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UNITED STATES PATENT OFFICE.

HERBERT M. DAWLEY, OF CHATHAM, NEW JERSEY.

ARTICULATED EFFIGY.

1,347,993. Specification of Letters Patent. Patented July 27, 1920.

Application filed February 26, 1920. Serial No. 361,390.

To all whom it may concern:

Be it known that I, HERBERT M. DAWLEY, a citizen of the United States, residing at Chatham, in the county of Morris and State of New Jersey, have invented certain new and useful Improvements in Articulated Effigies; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

The present invention relates, generally, to improvements in articulated figures or effigies; and the invention has reference, more particularly, to a novel construction of articulated figure or effigy capable of being posed in substantially all attitudes possible to be assumed by the animate creature it is designed to represent, including attitudes making up transition phases of possible bodily movements, as well as attitudes of rest and suspended action; the novel figure or effigy, constructed to function as above stated, being thus adapted to many useful purposes, but principally for use in producing motion or animated pictures, such, for example, as realistic motion pictures of prehistoric animals, and of other subjects impossible to be photographed from life, either because of their present non-existence, or, if existent, because of difficulties incident to their environment and control.

The invention has for its principal object to provide a novel construction of figure or effigy comprising an articulated skeleton or frame-work with which is associated and combined an external body structure of novel character, both with respect to its construction, as well as to its arrangement in properly supported relation to said skeleton or framework, whereby the members of said figure or effigy may be easily and quickly posed in desired attitudes.

Another object of the present invention is to provide a novel construction of joint for articulating the skeleton members, and means for permanently lubricating the same, whereby a smooth and easy movement of said members, together with the ability to hold or maintain, against accidental displacement, the position to which the same have been moved, is assured.

Other objects of the present invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

With the various objects of the invention in view, the same consists, primarily, in the novel articulated figure or effigy hereinafter set forth; and, the invention consists, furthermore, in the novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, all of which will be hereinafter more fully described, and then finally embodied in the claims appended hereto.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a part elevation and part longitudinal vertical section of a novel figure or effigy made according to and embodying the principles of my present invention; Fig. 2 is a detail transverse section of the skeleton structure with the body structure removed, taken on line 2—2 in said Fig. 1, and illustrating the hip and hind leg structure of said skeleton; Fig. 3 is another detail transverse section of said skeleton structure, taken on line 3—3 in said Fig. 1, and illustrating the shoulder and fore leg structure of said skeleton; Fig. 4 is a detail transverse section of said skeleton, taken on line 4—4 in said Fig. 1, illustrating the means connecting the head and jaw structure to the spinal column; and Fig. 5 is a detail longitudinal section through a portion of the spinal column of the skeleton, illustrating the means for permanently lubricating the joints thereof, the said lubricating means being typical of that used for all the principal joints of said skeleton; and Fig. 6 is a detail view illustrating the means permitting a slight axial swiveling movement of the leg structure of the skeleton.

Similar characters of reference are employed in all of the hereinabove described views, to indicate corresponding parts.

Referring now to said drawings, the reference-character 1 indicates the complete novel figure or effigy made according to the principles of my present invention, and which comprises a skeleton or frame-work consisting of a spinal column made up of a novel form of pivotally interconnected vertebra members 2, each of which possesses, in integral formation, a horizontal perfo-

rate member 3 at one end, and a vertical perforate member 4 at the opposite end, each with their inner faces alined with the longitudinal axis of the spinal column. In assembling said vertebra members together, the horizontal perforate members 3 of adjoining vertebra members are faced together, and both pivoted and secured in connected relation by a bolt and nut device 5, and in like manner the vertical perforate members 4 of adjoining vertebra members are also faced together, and both pivoted and secured in connected relation by a bolt and nut device 5. When thus assembled together the interconnected vertebra members will be alternately pivoted for movement in vertical and horizontal planes, and consequently said complete spinal column will be capable of a substantially universal adjustment throughout its length to produce any natural bending movement thereof which may be desired. The posterior end of the spinal column thus constructed, may be provided with a tip portion 6, preferably made of lead wire, or some material capable of bending and holding the shape to which it may be bent. The reference-character 7 indicates a cranium member, to the rear end of which is secured a supporting bracket 8, provided with a rearwardly projecting perforate lug 9, having a stem 10 arranged in swiveling relation to said bracket 8 and said cranium member 7 carried thereby, said perforate lug 9 being pivoted to the anterior end of said spinal column, for movement in a vertical plane, by means of a bolt and nut device 5. Said bracket 8 is provided with a pair of downwardly projecting perforate ears 11. The reference-character 12 indicates an inferior maxillary or jaw member, the rear end of which is pivoted upon the stud 13 of a yoke 14 having upwardly projecting perforate ears 15 for registration with said ears 11 of the bracket 8 to be pivoted thereto by a bolt and nut device 16, so that in addition to the horizontal swinging movement of the jaw upon the stud 13, the same may also swing in a vertical plane relative to said cranium member 7. Connected with the spinal column at a suitable point are a pair of laterally projecting shoulder brackets 17, having upwardly projecting perforate ears 18, which are arranged respectively against opposite faces of vertical perforate members 4, and suitably off-set therefrom by intermediate washers 19, the same being secured by the bolt and nut device 5 engaged with said vertical perforate member 4. Said shoulder brackets are further provided at their outer ends with downwardly projecting perforate ears 20. The fore-leg skeleton portions are pivoted to said perforate ears 20 so as to swing in a vertical plane parallel to the axis of the spinal column. The said fore-leg skeleton portions comprise an upper member 21, having a perforate ear 22 pivoted to an ear of a shoulder bracket by means of a bolt and nut device 5, said upper member having at its lower end a transversely positioned perforate ear 23; said ears 22 and 23 are each provided with longitudinal threaded shanks S which respectively screw into the ends of said upper member 21, and thus serve to attach said ears thereto. One or both of said ears may be permitted an axial swiveling movement relative to said upper member 21, so that the fore-leg members, in addition to the swinging movements of their articulated parts, may also be capable of limited axial twisting movements, which are accomplished by permitting one or both of the shanks S to be loosely screwed into place so that a slight turning movement on the threads is allowed for. This feature is illustrated more particularly in Fig. 6 of the drawings. A lower member 24 is connected with said upper member 21 by an intermediate link provided with a transversely alined perforate ear 25, secured by a bolt and nut device 5 to said ear 23, and a longitudinally alined perforate ear 26 to which the upper end of said lower member 24 is pivoted and connected by means of a bolt and nut device 5, whereby said lower member is capable of swinging movements or adjustments in planes both transverse and parallel to the axis of the spinal column. Pivoted to the lower end of said lower member 24, for vertical movement or adjustment, is a fore-foot member 27, to which are in turn pivoted, for transverse movement or adjustment, a plurality of toe-members 28, terminating in claws 29 if desired, each comprising a plurality of articulated links adapted to permit clutching poses of said toe-members. Connected in the line of the spinal column, at a suitable location, is a link 30, disposed intermediate of and connected at each end to vertical perforate members 4 of vertebra members 2 by means of said bolt and nut devices 5. Secured to said link 30 are a pair of laterally projecting hip brackets 31, having upwardly projecting flanges 32 through which are passed said bolt and nut devices 5 serving to secure the said hip-brackets to opposite sides of said link. Said hip-brackets 31 are further provided at their outer ends with downwardly projecting perforate ears 32′. The hind-leg skeleton portions are pivoted to said perforate ears 32′ so as to swing in a vertical plane parallel to the axis of said spinal column. The hind-leg skeleton portions comprise a thigh member 33, having at its upper end a perforate ear 34 disposed in a plane transverse to the axis of the spinal column. An outwardly projecting perforate lug 35, provided with an inwardly pro-

jecting stud 36 secured in swiveling relation to said ear 32′ of a hip-bracket 31, is arranged to receive the pivotal engagement of said upper perforate ear 34 of said thigh member 33 by means of an interconnecting bolt and nut device 5, so that said hind-leg structure through the swiveling movement of said lug 35 may swing in a vertical plane parallel to the spinal column, and at the same time, by reason of the pivotal interconnection of the ear 34 with the lug 35, may also swing in a plane transverse to the axis of said spinal column, thus providing a substantially universal hip-joint. The lower end of said thigh member 33 is provided with a perforate ear 36′ disposed in a vertical plane parallel to the axis of said spinal column. Said ears 34 and 36′ are each provided with longitudinal threaded shanks S which respectively screw into the ends of said thigh member 33, and thus serve to attach said ears thereto. One or both of said ears may be permitted an axial swiveling movement relative to said thigh member 33, so that the hind-leg members, in addition to the swinging movements of their articulated parts, may also be capable of limited axial twisting movements, by reason of leaving one or both of said shanks S loosely screwed in connection with the thigh member, in a manner similar to that described in connection with said fore-leg structure and illustrated in Fig. 6 of the drawings. The reference-character 37 indicates a lower leg or shin member, having at its upper end a perforate ear 38 disposed in a vertical plane parallel to the axis of said spinal column, for association and pivotal connection with said ear 36′ of said thigh member by means of a bolt and nut device 5, consequently providing a knee joint permitting a swinging motion of said shin member in a vertical plane parallel to the axis of said spinal column. Said shin member 37 is also provided at its lower end with a perforate ear 39 disposed in vertical plane parallel to the axis of the spinal column. The reference-character 40 indicates a hind-foot member which is connected with the lower end of said shin member by an intermediate link having a longitudinally alined perforate ear 41, secured by a bolt and nut device 5 to said perforate ear 39, and a transversely alined perforate ear 42 to which the upper end of said hind-foot member 40 is pivotally connected by a similar bolt and nut device 43, whereby said hind-foot member is capable of swinging movements or adjustments in planes both transverse and parallel to the axis of the spinal column. Pivotally connected with the lower end of said hind-foot member 40, for transverse swinging movements or adjustments, are a plurality of toe-members 44, terminating in claws 45 if desired, each comprising a plurality of articulated links adapted to permit bending adjustments of said toe-members in planes substantially parallel to the axis of the spinal column. Connected with the spinal column, intermediate the fore-leg and hind-leg structures, are outwardly bowed rib members 46, as shown.

The meeting faces of the registered perforate members 3 and 4 of the vertebra members 2 making up the spinal column, as well as the meeting faces of connected perforate ears providing the main leg, cranium and jaw joints, are provided with a coating of bees-wax 47 (as illustrated more particularly in Fig. 5 of the drawings), the same, by reason of its constant viscosity, serving to permanently lubricate the surfaces of said meeting faces as they move against each other when disposing the skeleton to produce the desired pose of the figure or effigy, whereby easy and smooth movement of the skeleton members relative to each other is at all times attained, and also, because of the viscosity of the said bees-wax, tending to assure the maintenance of the pose in which the skeleton has been disposed. While I mention bees-wax as the preferred lubricant, I do not necessarily limit myself to the use of such material, since I may use any material which will serve to produce the results above specified. Preferably I slightly counter-sink the meeting faces of the parts between which the lubricant is applied to provide pockets or depressions 48 to retain the same, all as shown in Fig. 5, this arrangement tending to permit the use of a substantial quantity of said lubricant at each joint, however, it is not absolutely essential that this be done since a surface dressing of the lubricant upon said meeting faces serves quite satisfactorily the purposes in view.

From the above detailed description of the skeleton or frame-work it will be apparent that I have provided an articulated arrangement of very simple character, and yet one following very closely the natural skeleton arrangement of vertebrate creatures, so that very life-like poses of the figure or effigy supported by said skeleton may be had, both as to transitional phases of motion, as well as poses of arrested or suspended motion. The skeleton devices are preferably made of metal, although I may use any other material suited to the purpose.

The complete novel articulated skeleton structure serves to support the body structure of the figure or effigy, and the construction of the latter as well as its relation to the former will now be described. The said body structure comprises an interior padding 49 which is applied about the skeleton or frame to produce the general body conformation of the creature to be represented

by the completed figure or effigy, said padding 49 being secured in place by an inner flexible envelop or covering 50, preferably made of sheet rubber. Said padding 49 is preferably of light fibrous material, such as cotton, jute or some similar material which will be sufficiently yielding, when in place, to permit the necessary movements of the skeleton in producing the desired poses without destroying the general body shape or conformation of the padding; said envelop or covering being made of resilient or flexible material is also adapted therefore to readily yield to and accommodate itself to the skeleton movements. Applied over the said inner envelop or covering 50 is an exterior body member 51 which is molded upon or otherwise applied to provide an exterior covering shaped externally to reproduce in a very faithful manner the exterior body contours and conformation of the creature to be represented by the completed figure or effigy. The material employed for said exterior body member 51 must possess elastic tissue so as to be capable of both resilient stretch and resilient stricture, whereby the same will readily conform itself to the various pose dispositions, which the skeleton is caused to assume, in a natural and life-like manner. I use for the purpose a specially prepared resilient or elastic compound, which is very similar to the compound made up of glue, glycerin and molasses, but, of course, I may use any material having the elastic or resilient characteristics required. The said exterior body member being preferably molded in place, so as to provide a complete integral envelop of desired outer contour, always maintained in proper relation to the internal skeleton, it follows that movements of said internal skeleton will produce relative stretching and contracting movements of said body member very closely simulating in outward appearance the natural muscular movements which would accompany similar movements in life of the creature represented.

There is one other feature of the construction of my novel figure or effigy, by means of which breathing motions of the body may be simulated, this means comprising an air bladder 52 which is disposed within the rib structure of the skeleton, and embedded in the padding 49, the same having an interconnecting tube 53 the outer end of which penetrates to the exterior surface of the body member 51. By forcing air into the said air bladder the chest and stomach of the figure or effigy may be distended, and by releasing air from the same a contraction or return to normal position of said chest and stomach may be produced

From the above description it will be apparent that my present invention provides a very complete articulated and movable figure or effigy which may be quickly and easily posed in many various attitudes of rest and suspended action, as well as in the various successive and component attitudes of analyzed body motions. It will therefore be clear that the complete figure or effigy is adapted to serve admirably as an artist's lay figure, and for all similar purposes. The chief use for which I have conceived the figure or effigy, is that affording means for producing moving pictures simulating natural movements of the creature represented, and by such means rendering possible the photographic reproduction in motion-picture form of the movements of extinct species of animal life, such, for example, as prehistoric animals. This effect is accomplished by what may be termed stop-motion photography. In the drawing I have illustrated a figure or effigy made up to represent and reproduce the motions of the prehistoric animal known as the tyranosaurus. The possible bodily motions of this animal, which it is desired to reproduce, are analyzed to determine a succession of transition phase attitudes, which successively projected will picture the motions. The successive attitudes being determined the figure or effigy is successively posed in said attitudes and a photograph of each transition attitude made; this method being carried on until all the pictures of the motion activities of the animal desired to be depicted are completed. The photographs thus secured, when properly successively assembled in the usual motion picture film strip, may then be utilized to project upon the screen, in the usual manner, an exceedingly life-like reproduction or rather simulation of the selected animal's natural activities.

The principles of construction involved in my present invention, may be applied, with the necessary modifications of skeleton shape and body portion contours, to produce figures or effigies of any desired form of vertebrate animal life.

I am aware that some changes may be made in the arrangements and combinations of the various devices and parts of my invention, as well as in the details of the construction of the same, without departing from the scope of my said invention as set forth in the foregoing specification and as defined in the appended claims. Hence, I do not limit my invention to the exact arrangements and combinations of the various parts as described in said specification, nor do I confine myself to the exact details of the construction of said parts as illustrated in the accompanying drawings.

I claim:—

1. An effigy comprising an internal structure consisting of an articulated skeleton frame, a padding in which said frame is

embedded, and means for retaining said padding in place; and an external body member of elastic material superimposed on said internal structure, said body member being shaped to conform to the external surface contours of the creature represented by the effigy.

2. An effigy comprising an internal structure consisting of an articulated skeleton frame, a padding of yielding material in which said frame is embedded, and a flexible elastic envelop inclosing said padding; and an integral external body member of elastic material superimposed on said internal structure, said body member being shaped to conform to the external surface contours of the creature represented by the effigy.

3. An effigy comprising an internal structure consisting of a skeleton frame having a spinal column made up of vertebra members alternately pivoted together to swing in both horizontal and vertical planes, a cranium member connected with the anterior end of said spinal column for both swiveling movement about the axis of said spinal column and swinging movement in a vertical plane, a jaw member connected with said cranium member for swinging movement both in vertical and horizontal planes, shoulder-brackets attached to said spinal column, articulated fore-leg members pivotally connected with said shoulder-brackets, hip-brackets attached to said spinal column, articulated hind-leg members pivotally connected with said hip-brackets, rib members connected with said spinal column intermediate said fore-leg and hind-leg members, a padding of yieldable material in which said skeleton frame is embedded, and a flexible elastic envelop inclosing said padding; and an external body member of elastic material superimposed on said internal structure, said body member being shaped to conform to the external contours of the creature represented by the effigy.

4. An effigy comprising an internal structure consisting of an articulated skeleton frame having ribs of springy material, an inflatable air bladder disposed within the embrace of the ribs of said skeleton frame having a tubular stem leading to the exterior surface of the effigy, a padding of yielding material in which said skeleton frame is embedded, and a flexible elastic envelop inclosing said padding; and an external body member of elastic material superimposed on said internal structure, said body member being shaped to conform to the external contours of the creature represented by the effigy.

5. An effigy comprising a skeleton frame consisting of pivotally interconnected vertebra members providing a spinal column bendable throughout its length in both horizontal and vertical planes, a cranium structure connected with the anterior end of said spinal column for both axial swiveling movement and swinging movement in a vertical plane, articulated fore-leg structures attached to said spinal column, articulated hind-leg structures attached to said spinal column, laterally extending and downwardly curving rib-members of springy material attached to said spinal column intermediate said fore-leg and hind-leg structures, a padding of yielding material mounted on said skeleton frame, means for retaining said padding in place, and an external body member of elastic material superimposed on said padding and its retaining means, said body member being shaped to conform to the external contours of the creature represented by the effigy.

6. An effigy comprising a skeleton frame consisting of pivotally interconnected vertebra members providing a spinal column bendable throughout its length in both horizontal and vertical planes, a cranium structure connected with the anterior end of said spinal column for both axial swiveling movement and swinging movement in a vertical plane, articulated fore-leg structures attached to said spinal column, articulated hind-leg structures attached to said spinal column, laterally extending and downwardly curving rib members of springy material attached to said spinal column intermediate said fore-leg and hind-leg structures, an inflatable air bladder disposed within the embrace of said rib members having a tubular stem leading to the exterior surface of the effigy, a padding of yielding material mounted on said skeleton frame, means for retaining said padding in place, and an external body member of elastic material superimposed on said padding and its retaining means, said body member being shaped to conform to the external contours of the creature represented by the effigy.

7. An effigy comprising a skeleton frame consisting of pivotally interconnected vertebra members providing a spinal column bendable throughout its length in both horizontal and vertical planes, a cranium structure connected with the anterior end of said spinal column for both axial swiveling movement and swinging movement in a vertical plane, articulated fore-leg structures attached to said spinal column, articulated hind-leg structures attached to said spinal column, laterally extending and downwardly curving rib members of springy material attached to said spinal column intermediate said fore-leg and hind-leg structures, the articulate joints of said skeleton frame having a permanent lubrication in the form of a layer of bees-wax disposed between the meeting faces of said joints, a padding of yielding material mounted on said skeleton frame, means for retaining said

padding in place, and an external body member of elastic material superimposed on said padding and its retaining means, said body member being shaped to conform to the external contours of the creature represented by the effigy.

8. An effigy comprising an internal structure consisting of an articulated skeleton frame, the articulate joints of said skeleton frame having a permanent lubrication in the form of a layer of bees-wax disposed between the meeting faces of said joints, a padding in which said skeleton frame is embedded, and means for retaining said padding in place; and an external body member of elastic material superimposed on said internal structure, said body member being shaped to conform to the external contours of the creature represented by the effigy.

9. A supporting frame-work for effigies comprising an articulated skeleton, the articulate joints of which are provided with a permanent lubrication in the form of a layer of bees-wax disposed between the meeting faces of said joints.

10. An articulated skeleton frame for effigies comprising a spinal column made up of vertebra members alternately pivoted together to swing in both horizontal and vertical planes, a cranium structure, means connecting said cranium structure with the anterior end of said spinal column for both axial swiveling movement and swinging movement in a vertical plane, articulated fore-leg structures attached to said spinal column, articulated hind-leg structures attached to said spinal column, and laterally extending and downwardly curving rib members attached to said spinal column intermediate said fore-leg and hind-leg structures.

11. An articulated skeleton frame for effigies comprising a spinal column made up of vertebra members alternately pivoted together to swing in both horizontal and vertical planes, a cranium structure, means connecting said cranium structure with the anterior end of said spinal column for both axial swiveling movement and swinging movement in a vertical plane, articulated fore-leg structures attached to said spinal column, articulated hind-leg structures attached to said spinal column, laterally extending and downwardly curving rib members attached to said spinal column intermediate said fore-leg, and hind-leg structures, and the articulate joints of said skeleton frame having a permanent lubrication in the form of a layer of bees-wax disposed between the meeting faces of said joints.

12. An articulated skeleton frame for effigies comprising a spinal column made up of vertebra members alternately pivoted together to swing in both horizontal and vertical planes, a cranium member, means connecting said cranium member with the anterior end of said spinal column for both axial swiveling movement and swinging movement in a vertical plane, a jaw-member, means connecting said jaw-member with said cranium member for swinging movements both in vertical and horizontal planes, shoulder brackets attached to said spinal column, articulated fore-leg members pivotally connected with said shoulder brackets for swinging movement in longitudinal vertical plane, hip brackets attached to said spinal column, articulated hind-leg members pivotally connected with said hip-brackets for swinging movement in both longitudinal vertical and transverse vertical planes, and laterally extending downwardly curved rib members attached to said spinal column intermediate said fore-leg and hind-leg members.

13. An articulated skeleton frame for effigies comprising a spinal column made up of vertebra members alternately pivoted together to swing in both horizontal and vertical planes, a cranium member, means connecting said cranium member with the anterior end of said spinal column for both axial swiveling movement and swinging movement in a vertical plane, a jaw-member, means connecting said jaw-member with said cranium member for swinging movements both in vertical and horizontal planes, shoulder brackets attached to said spinal column, articulated fore-leg members pivotally connected with said shoulder brackets for swinging movement in longitudinal vertical plane, hip brackets attached to said spinal column, articulated hind-leg members pivotally connected with said hip brackets for swinging movement in both longitudinal vertical and transverse vertical planes, laterally extending downwardly curved rib members attached to said spinal column intermediate said fore-leg and hind-leg members, and the articulate joints of said skeleton frame having a permanent lubrication in the form of a layer of bees-wax disposed between the meeting faces of said joints.

14. An articulated skeleton frame for effigies comprising a spinal column made up of vertebra members alternately pivoted together to swing in both horizontal and vertical planes, a cranium member, means connecting said cranium member with the anterior end of said spinal column for both axial swiveling movement and swinging movement in a vertical plane, a jaw-member, means connecting said jaw-member with said cranium member for swinging movements both in vertical and horizontal planes, shoulder brackets attached to said spinal column, articulated fore-leg members pivotally connected with said shoulder brackets for swinging movement in longitudinal vertical plane, said fore-leg mem-

bers consisting of upper members connected with said shoulder brackets for both pivotal and axial swiveling movement, lower members, links pivotally interconnecting said lower members with said upper members for movements in both longitudinal and transverse vertical planes, fore-foot members pivoted to said lower members for movement in longitudinal vertical plane, and articulated toe-portions pivoted to said fore-foot members for movement in transverse plane; hip brackets attached to said spinal column, articulated hind-leg members pivotally connected with said hip brackets for swinging movement in both longitudinal vertical and transverse vertical planes, said hind-leg members consisting of thigh members connected with said hip-brackets, shin members pivoted to said thigh members for movement in longitudinal vertical plane, and for axial swiveling movement, hind-foot members, links pivotally interconnecting said hind-foot members with said shin members for movements in both longitudinal and transverse vertical planes, and articulated toe-portions pivoted to said hind-foot members for movement in transverse plane; and laterally extending downwardly curved rib members attached to said spinal column intermediate said fore-leg and hind-leg members.

15. An articulated skeleton frame for effigies comprising a spinal column made up of vertebra members alternately pivoted together to swing in both horizontal and vertical planes, a cranium member, means connecting said cranium member with the anterior end of said spinal column for both axial swiveling movement and swinging movement in a vertical plane, a jaw-member, means connecting said jaw-member with said cranium member for swinging movements both in vertical and horizontal planes, shoulder brackets attached to said spinal column, articulated fore-leg members pivotally connected with said shoulder brackets for swinging movement in longitudinal vertical plane, said fore-leg members consisting of upper members connected with said shoulder brackets for both pivotal and axial swiveling movement, lower members, links pivotally interconnecting said lower members with said upper members for movements in both longitudinal and transverse vertical planes, fore-foot members pivoted to said lower members for movement in longitudinal vertical plane, and articulated toe-portions pivoted to said fore-foot members for movement in transverse plane; hip brackets attached to said spinal column, articulated hind-leg members pivotally connected with said hip brackets for swinging movement in both longitudinal vertical and transverse vertical planes, said hind-leg members consisting of thigh members connected with said hip-brackets, shin members pivoted to said thigh members for movement in longitudinal vertical plane and for axial swiveling movement, hind-foot members, links pivotally interconnecting said hind-foot members with said shin members for movements in both longitudinal and transverse vertical planes, and articulated toe-portions pivoted to said hind-foot members for movement in transverse plane; laterally extending downwardly curved rib members attached to said spinal column intermediate said fore-leg and hind-leg members, and the articulate joints of said skeleton frame having a permanent lubrication in the form of a layer of bees-wax disposed between the meeting faces of said joints.

In testimony that I claim the invention set forth above I have hereunto set my hand this 18th day of February, 1920.

HERBERT M. DAWLEY.

Witnesses:
C. C. HOIN,
J. THOMAS SCOTT.