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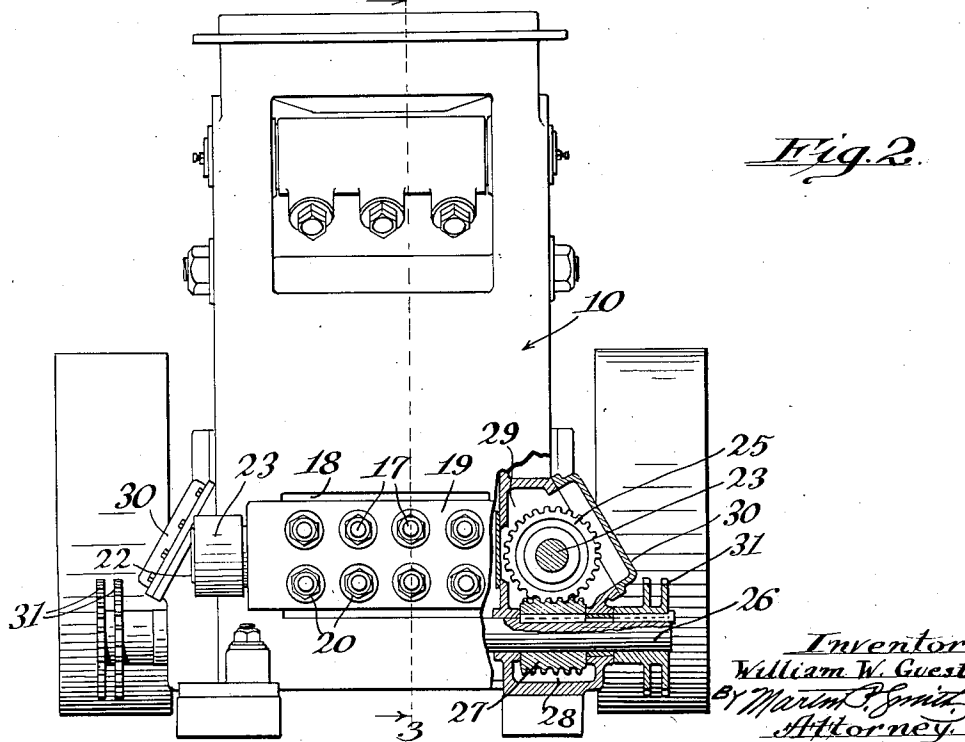
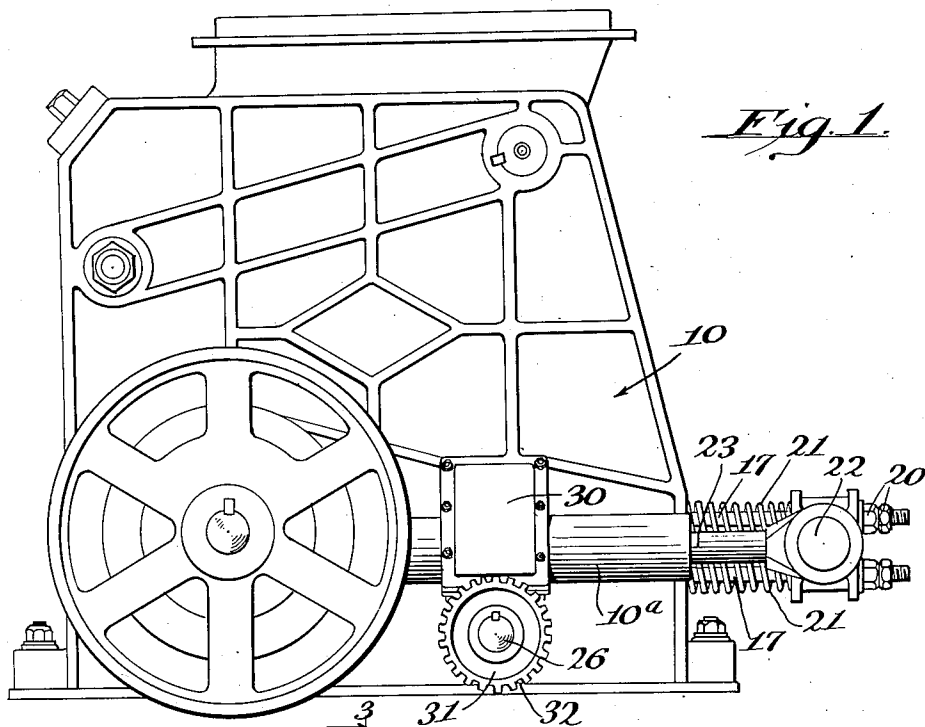
W. W. GUEST

1,972,096

YIELDING JAW CRUSHING MACHINE

Filed Dec. 6, 1930

2 Sheets-Sheet 1



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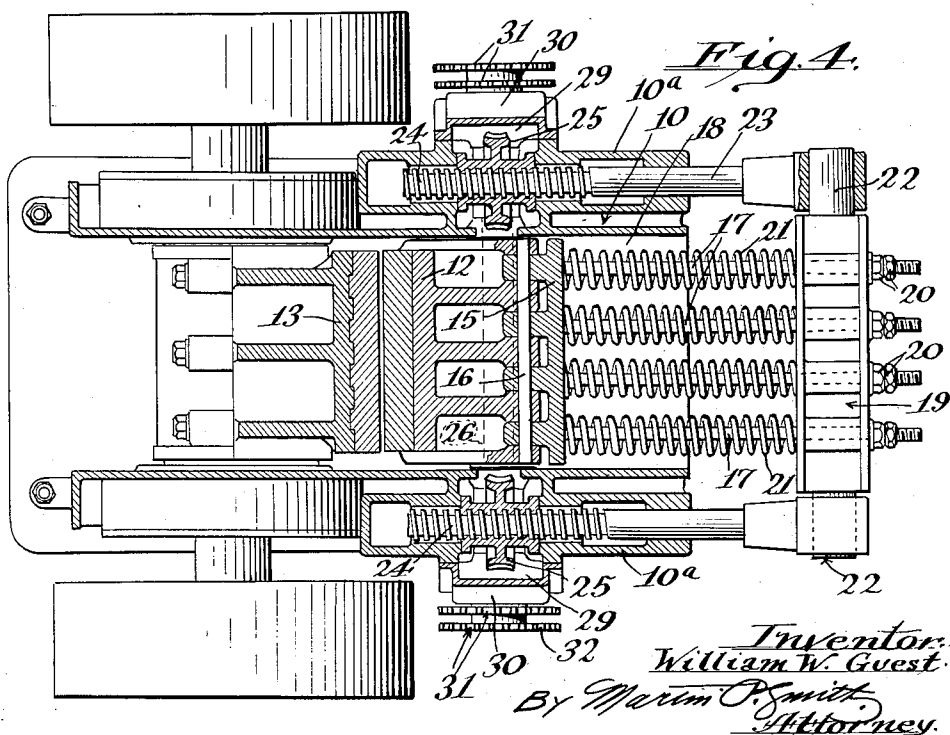
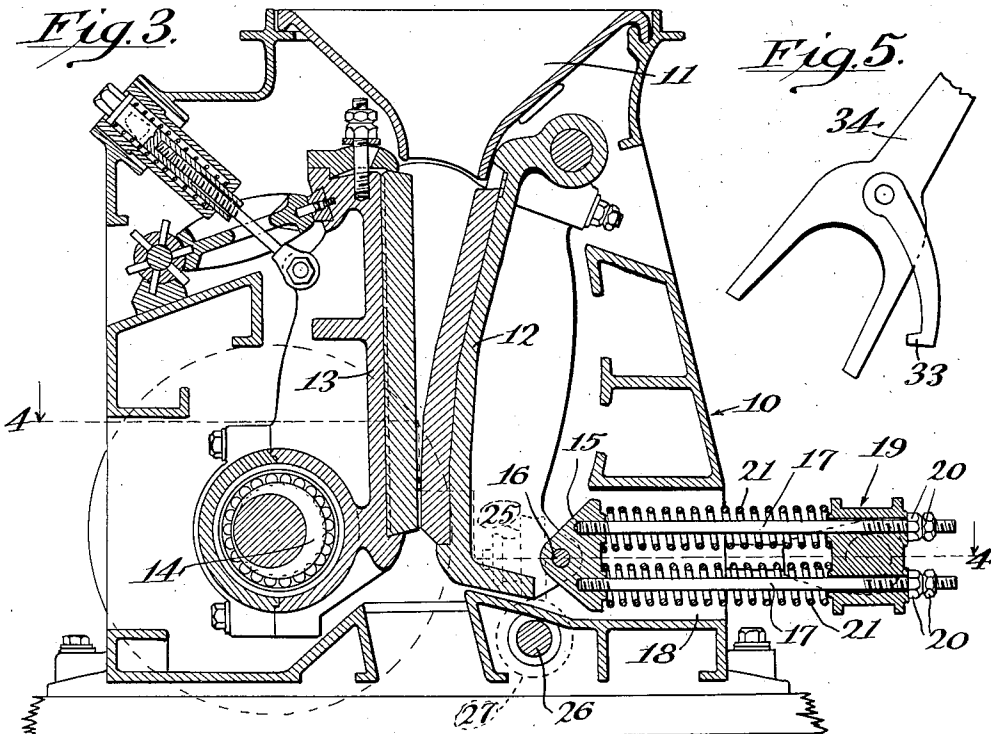
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

1,972,096

YIELDING JAW CRUSHING MACHINE

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Application December 6, 1930, Serial No. 500,577

10 Claims. (Cl. 83—53)

My invention relates generally to yielding jaw rock crushing machines of the particular type disclosed in my co-pending application for U. S. Letters Patent filed May 26, 1930, Serial No. 455,793 and more particularly to means for adjusting the spring cushion that is associated with the yielding jaw of the machine.

The principal objects of my invention are, to provide relatively simple, practical and efficient means for effecting positive and accurate adjustment of the yielding jaw of a rock crushing machine, relative to the swinging jaw and which adjustment is effected independently of the individual adjustment of the springs forming a part of the spring cushion, further, to provide simple and practical means whereby the yielding jaw may be readily backed off or moved away from the swinging jaw to permit the discharge of an uncrushable piece of material or a foreign object such as a piece of metal from between the jaws, further, to provide means for adjusting the yielding jaw for the purpose of regulating and controlling the size of the material that is crushed between the jaws and further, to provide a construction of the character referred to that may be easily and conveniently adjusted for taking up any wear that may occur on the faces of the crushing jaws.

Further objects of my invention are, to provide simple and efficient yielding jaw adjusting means that may be conveniently operated with relatively little effort on the part of the operator and further, to arrange certain of the operating parts of the adjusting means in oil tight compartments, in order to protect the enclosed parts from dust and other foreign substances that might otherwise cause comparatively rapid wear of the operating parts.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts that will hereinafter be more fully described and claimed and illustrated in the accompanying drawings, in which:

Fig. 1 is a side elevational view of a crushing machine provided with an adjustable spring cushion, as contemplated by my invention.

Fig. 2 is an end elevational view of a crushing machine, with parts broken away and in section.

Fig. 3 is a vertical section taken on the line 3—3 of Fig. 2.

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 3.

Fig. 5 is a detail elevational view of a wrench

that is utilized in the operation of my improved adjustable spring cushion.

Referring by numerals to the accompanying drawings which illustrate a practical embodiment of my invention, 10 designates the main frame of the rock crushing machine provided at its upper end with a hopper 11 and arranged within the frame below said hopper and to the sides thereof is a yielding jaw 12 and an opposed swinging jaw 13 that is actuated through the medium of an eccentric 14.

A horizontally disposed spring plate 15 is pivotally connected by means of a horizontally disposed pin or shaft 16 to the lower rear portion of jaw 12 and seated in said spring plate are the inner ends of rods 17 that project outwardly through the opening 18 in the lower rear portion of frame 10.

The outer portions of the rods 17 are arranged for sliding movement through a spring beam 19 that is positioned a short distance outwardly from opening 18 and the ends of the rods 17 that project through this spring beam are threaded for the reception of nuts 20.

Arranged between the spring beam 19 and plate 15 and surrounding the rods 17, are expansive coil springs 21, which cooperate to form a spring cushion to yieldingly resist the outward movement of yielding jaw 12.

The ends of spring beam 19 terminate in trunnions 22 that are journaled in the outer ends of eyebolts 23 and the shanks of the latter extend through suitable openings in the lower portions of the side walls 10^a of frame 10.

The inner portions of the shanks of the eyebolts are threaded, as designated by 24, and mounted on said threaded portions are the hubs of worm gears 25.

The ends of the hubs of these worm gears bear directly against shoulders formed in the sides 10^a of the main frame of the machine.

Journaled in suitable bearings in the lower portions of the sides 10^a of the frame is a transversely disposed shaft 26 and secured thereto adjacent to its ends in any suitable manner, preferably by means of keys, are worms 27 that engage the worm gears 25.

Worms 27 occupy chambers 28 that are formed in the lower portions of the side walls 10^a and worm gears 25 occupy chambers 29 that are formed in the side frame directly above the chambers 28.

The openings into the upper outer portions of chambers 29 are closed by readily removable caps 30 and said chambers 28 and 29 are filled with a

suitable lubricant, thereby facilitating the operation of the worms and worm gears.

Detachably secured on the ends of shaft 26, that project beyond the side walls 10 are capstans 31, provided in their peripheries with notches 32, which latter are adapted to receive a hook 33 that is pivotally mounted on the bifurcated end of a hand lever 34.

This hand lever and its hook provides a wrench or capstan bar for effecting rotation of shaft 26 by engagement with the capstans 31.

To bodily adjust the spring cushion for controlling the position of the lower portion of the yielding body and consequently regulating the size of the material crushed in the machine, the bifurcated end of bar 34 is engaged over one of the capstans and by rocking said bar backwardly and forwardly the hook 33 will engage the teeth 32 so as to move the engaged capstan and consequently impart rotary motion to shaft 26.

The worms 27 carried by the shaft engaging within the worm gears 25 rotate the latter and as a result of the threaded engagement of the shanks of the eyebolts 23 with the hubs of the worm gears, said eyebolts will be moved inwardly or outwardly, depending on the direction of rotation of shaft 26, with the end springs 21, the lower end of the yielding jaw will be adjusted inwardly or outwardly relative to the lower portion of the swinging jaw 13.

Thus it will be seen that the spring cushion may be adjusted bodily entirely independent of the adjustment of the tension of the springs 21 and which latter adjustment is effected by manipulation of the nuts 20 on the threaded outer ends of the rods 17.

Inasmuch as the worms and worm gears operate in bodies of lubricant enclosed in leak-proof chambers, said worm and worm gears are constantly lubricated, thereby enabling the same to be readily actuated during the bodily adjustment of the spring cushion, as just described.

Thus it will be seen that I have provided a spring cushion adjustment for yielding jaw crushing machines that is relatively simple in construction, inexpensive of manufacture and very effective in performing the functions for which it is intended.

It will be understood that minor changes in the size, form and construction of the various parts of my improved yielding jaw crushing machine may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. In a crushing machine having a yielding jaw and a swinging jaw, a spring cushion pivotally connected to the yielding jaw for resisting its movement away from the swinging jaw threaded members pivotally connected to said spring cushion, worm pinions mounted on said threaded members, the hubs of which worm pinions bear against shoulders on the sides of the main frame of the machine, a journaled shaft and worms carried by said shaft and engaging said worm pinions.

2. In a yielding jaw crushing machine, a spring cushion connected to the yielding jaw of said crushing machine for yieldingly resisting its movement away from the swinging jaw, a transversely disposed shaft journaled in the frame of the machine, worms secured on said shaft, eyebolts connected to the spring cushion and extending into the sides of the frame of the machine above the ends of said shaft, portions of which eyebolts are

threaded and worm gears screw seated on the threaded portions of said eyebolts and engaging said worms.

3. In a yielding jaw crushing machine, a spring cushion connected to the yielding jaw of said crushing machine for yieldingly resisting its movement away from the swinging jaw, a transversely disposed shaft journaled in the frame of the machine, worms secured on said shaft, eyebolts connected to the frame of the machine, worms secured on said shaft, eyebolts connected to the spring cushion and extending into the sides of the frame of the machine above the ends of said shaft, portions of which eyebolts are threaded, worm gears screw seated on the threaded portions of said eyebolts and engaging said worms and oil tight housings enclosing said worms and worm gears.

4. In a yielding jaw crushing machine, a spring cushion connected to the yielding jaw of said crushing machine for yieldingly resisting its movement away from the swinging jaw, a transversely disposed shaft journaled in the frame of the machine, worms secured on said shaft, eyebolts connected to the spring cushion and extending into the sides of the frame of the machine above the ends of said shaft, portions of which eyebolts are threaded, worm gears screw seated on the threaded portions of said eyebolts and engaging said worms and capstans carried by the ends of said shaft.

5. In a yielding jaw crushing machine, a spring cushion having the inner portion connected to the yielding jaw for yieldingly resisting the movement thereof away from the swinging jaw, a spring beam forming a bearing for the outer ends of the springs of said spring cushion, eyebolts journaled on the ends of said spring beam, which eyebolts have threaded shanks that project into the lower portions of the side walls of the crushing machine frame, a transversely disposed shaft journaled in bearings in the lower portion of the machine frame and worm and worm gear connections between said shaft and the threaded portions of the shanks of said eyebolts.

6. In a yielding jaw crushing machine, a spring cushion having its inner portion connected to the yielding jaw for yieldingly resisting the movement thereof away from the swinging jaw, a spring beam forming a bearing for the outer ends of the springs of said spring cushion, eyebolts journaled on the ends of said spring beam, which eyebolts have threaded shanks that project into the lower portions of the side walls of the crushing machine frame, a transversely disposed shaft journaled in bearings in the lower portion of the machine frame, worm and worm gear connections between said shaft and the threaded portions of the shanks of said eyebolts and oil tight boxes enclosing said worm and worm gears.

7. In a yielding jaw crushing machine, a spring cushion having its inner portion connected to the yielding jaw for yieldingly resisting the movement thereof away from the swinging jaw, a spring beam forming a bearing for the outer ends of the springs of said spring cushion, eyebolts journaled on the ends of said spring beam, which eyebolts have threaded shanks that project into the lower portions of the side walls of the crushing machine frame, a transversely disposed shaft journaled in bearings in the lower portion of the machine frame, worm and worm gear connections between said shaft and the threaded portions of the shanks of said eyebolts and capstans located on the ends of said shaft.

8. In a crushing machine having a yielding jaw, a spring plate pivotally connected to the lower rear portion of the yielding jaw, rods seated in said spring plate, a spring beam through which the outer portions of said rods pass, nuts located on the rods outside said spring beam, expansive springs interposed between said spring beam and spring plate, eyebolts pivotally connected to the ends of said spring beam, the shanks of which eyebolts have threaded portions that extend into the sides of the frame of the machine and manually operable means arranged for operation within the frame and including worms and worm gears for imparting longitudinal movement to said eyebolts.

9. In a crushing machine having a yielding jaw, a spring plate pivotally connected to the lower rear portion of the yielding jaw, rods seated in said spring plate, a spring beam through which the outer portions of said rods pass, nuts located on the rods outside said spring beam, expansive springs interposed between said spring beam and spring plate, eyebolts pivotally connected to the ends of said spring beam,

the shanks of which eyebolts have threaded portions that extend into the sides of the frame of the machine, a shaft journaled in the lower portion of the frame of the machine and worm and worm gear connections between said shaft and the threaded portions of the eyebolts.

10. In a crushing machine having a yielding jaw, a spring plate pivotally connected to the lower rear portion of the yielding jaw, rods seated in said spring plate, a spring beam through which the outer portions of said rods pass, nuts located on the rods outside said spring beam, expansive springs interposed between said spring beam and spring plate, eyebolts pivotally connected to the ends of said spring beam, the shanks of which eyebolts have threaded portions that extend into the sides of the frame of the machine, a shaft journaled in the lower portion of the frame of the machine, worm and worm gear connections between said shaft and the threaded portions of the eyebolts and capstans located on the ends of said shaft.

WILLIAM W. GUEST.

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