

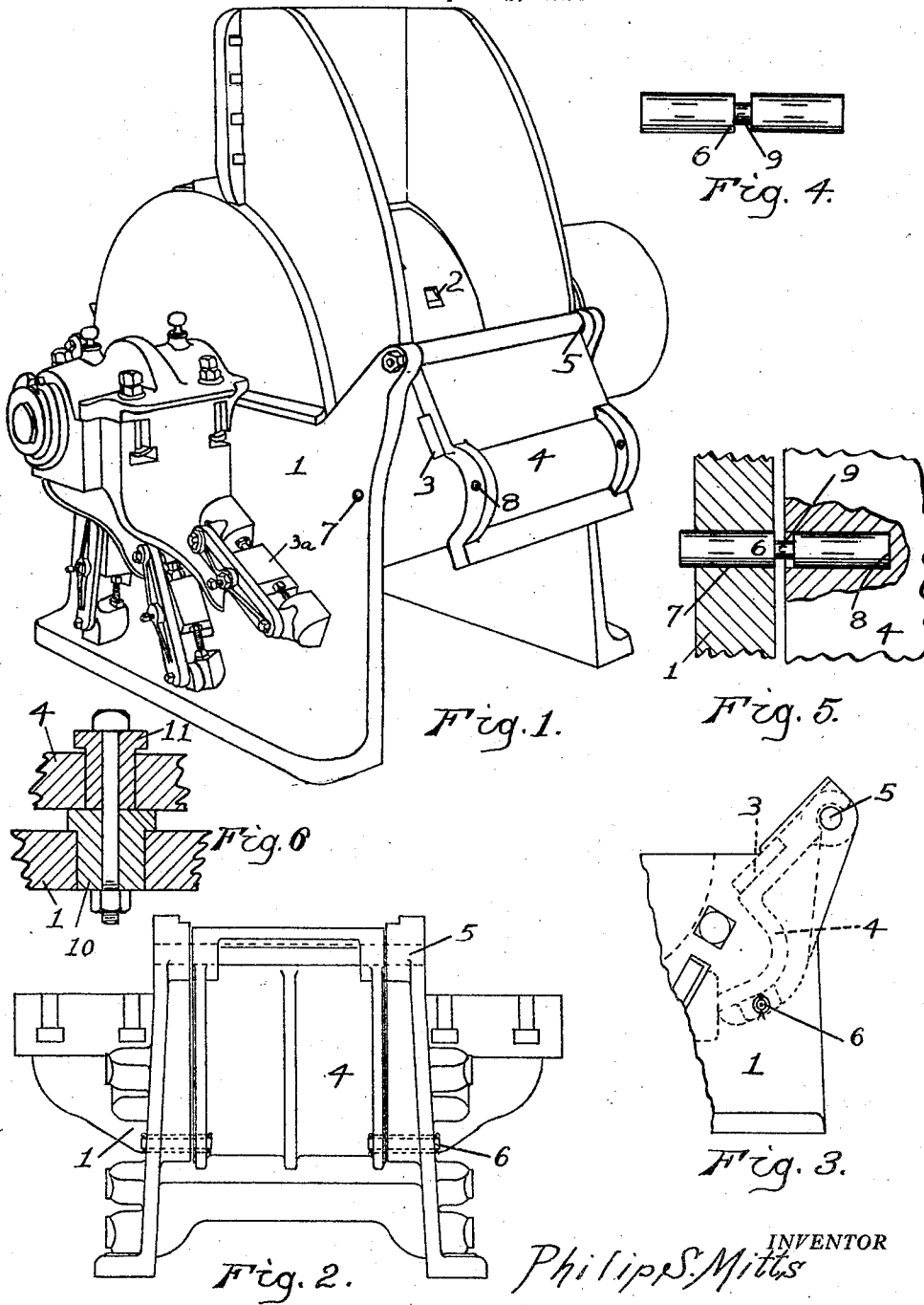
Nov. 9, 1926.

P. S. MITTS

1,606,035

SAFETY DEVICE FOR DISINTEGRATING MACHINES

Filed April 2, 1924



INVENTOR
Philip S. Mitts
BY
Geo. B. Wilcox
ATTORNEY

UNITED STATES PATENT OFFICE.

PHILIP S. MITTS, OF SAGINAW, MICHIGAN, ASSIGNOR TO MITTS & MERRILL, OF SAGINAW, MICHIGAN, A CORPORATION OF MICHIGAN.

SAFETY DEVICE FOR DISINTEGRATING MACHINES.

Application filed April 2, 1924. Serial No. 703,658.

This invention relates to cutting and disintegrating machines and more particularly to that type of machines commonly known as hogs and employed for reducing many kinds of substances, such as wood refuse.

These machines are usually employed for heavy duty and their construction is massive and strong.

The hog usually consists in a housing which encloses a drum revolvable on a shaft carried by bearings on the housing. The drum has cutting knives on its periphery and in the housing are mounted stationary cutter bars arranged one after the other around that part of the periphery of the drum between the throat of the inlet hopper or feed spout and the discharge outlet on the opposite side of the machine.

The first bar of the series, that is, the one located at the base of the feed spout, acts on the material, and the material is then recut at each succeeding stationary bar until it is ejected from the discharge opening. Obviously the first bar of the series must withstand the hardest usage. My present invention is an improvement in the construction and arrangement of the parts associated with this first bar and in a novel means whereby the bar is kept in its working position under the action of all stresses to which it is subjected in ordinary use, but when an extraordinary strain is brought upon it, as by feeding into the machine a mass of material too large or too refractory to be handled safely, the bar will be released automatically and swung back away from the drum, permitting the chunk of material to be discharged from the machine before it can pass to the subsequent bars. If a piece of dangerous material, such as iron or steel, enters the machine, it will be discharged at the first bar by the breaking of the safety device and the opening of the door. The obstruction, therefore, can not continue on through the machine to wreck it by getting caught in the fixed knives as heretofore.

With the foregoing and certain other objects in view which will appear later in the specification, my invention comprises the devices described and claimed and the equivalents thereof.

In the drawings Fig. 1 is a perspective view of a hog with my improvement applied

thereto, the first cutter bar in released position.

Fig. 2 is a front view with the drum and hopper removed.

Fig. 3 is a fragmentary side view of the parts shown in Fig. 2.

Fig. 4 is a side view of the safety breaking pin.

Fig. 5 is a part sectional detail of the frame and door, showing the breaking pin in place.

Fig. 6 is a sectional view of a modified form of shearing pin set in bushings.

As is clearly shown in the drawings the hog consists in the usual frame 1 carrying the revolvable knife-drum 2 or its equivalent and having stationary cutter bars 3 and 3^a arranged in the housing around the periphery of the drum.

In my improvement I mount the first cutter bar 3 on a closure, such as a movable door 4 or its equivalent. This door is preferably made movable by being suspended from a hinge 5 on the frame 1 or by any other suitable means.

6 is a shearing or breaking pin preferably of metal, which can be inserted in a hole 7 bored through the frame, and entering the aligned hole 8 in the door. The middle part 9 of the shearing pin is preferably reduced in diameter where it extends from the frame 1 into the movable door 4 as shown in Fig. 5. Preferably there is provided one such pin at each side edge of the door 4, but the number and location of the pins can be varied to suit the conditions under which the machine is to operate.

The door 4 constitutes a movable support for the cutter bar 3 which is a stationary bar so long as the door is held in place by the pin 6, and the stationary knife then performs its cutting functions the same as in an ordinary hog having all its cutter bars immovably mounted on the frame. If, however, excessive strain is brought upon the knife 3 as above described, the pin 6 will break where it crosses the joint of the door and frame, in this case at its reduced part 9, and the movable door will be released and forced outward. The knife 3 will move away from the drum 2, allowing the chunk of material or the obstruction that caused the break to drop down and out of the machine. Then it is only necessary for the attend-

ant to close the door and insert new pins, which can be readily done.

As shown in Figs. 4 and 5 I prefer to make the pins with a reduced part 9 in which the break occurs, in order that the ends of the pins 7 and 8 may have larger bearing in the frame housing 1 and door 4, and also that the breaking part 9 of the pins may function by breaking without forming a burr. Another advantage of this form of pin is that by making the parts 9 of suitable diameters a given diameter of bar may be employed for pins requiring different breaking strengths.

These pins may conveniently be made of any suitable material, but I prefer to make them of cast iron for most kinds of service.

In Fig. 6 I have shown a shearing bolt which may be of steel, the bolt inserted in hardened bushings 10, 11 that are removably mounted in the frame 1 and door 4 respectively.

The bolt or pin releases by shearing and the adjacent ends of the two bushings provide shear edges that cut the bolt clean without leaving objectionable burrs, so that the sheared pieces can be easily removed from the bushings and new pins can be inserted, or if a burr is formed, the entire bushing can be taken out, and the pieces of the bolt can be driven out of the bushing.

By the arrangement above described I avoid the possibility of wrecking the cutting hog when an unusually refractory chunk of material is fed to it, yet the rigidity of the machine and of its stationary cutter bars is maintained so long as the machine is performing the work for which it is adapted.

While I have shown and described my invention as applied specifically to a cutting machine, in which there is a definite cutting or shearing action between the knives on the drum and the stationary knives on the housing, yet I may employ the same device in a disintegrating machine in which there is not necessarily any true shearing, but merely disintegration of the material by impact of the revolving parts on the material and resulting impact of the material on the stationary bars or closures. Use of my present improvement in such disintegrating machines can be made without departing from the spirit of my invention as set forth in the claim.

A modified arrangement of releasable doors is described and claimed in my co-pending application, Serial No. 703,357 filed April 2, 1924.

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

In a structure of the class described including a frame, a swingable door thereon carrying an impact-receiving cutter bar, a flange on each edge of said door overlapping a side member of said frame, a recess in said flange, a hole in said frame registering with said recess when the door is closed, a breakable pin slidably received in said recess and in said hole, the middle part of said pin of reduced diameter and so placed as to span the joint between said flange and frame member when an end of said pin is bottomed in said recess.

In testimony whereof, I affix my signature.

PHILIP S. MITTS.