No. 775,612. PATENTED NOV. 22, 1904.

E. A. SMITH.

HAY PRESS.

APPLICATION FILED DEC. 12, 1903.

NO MODEL.

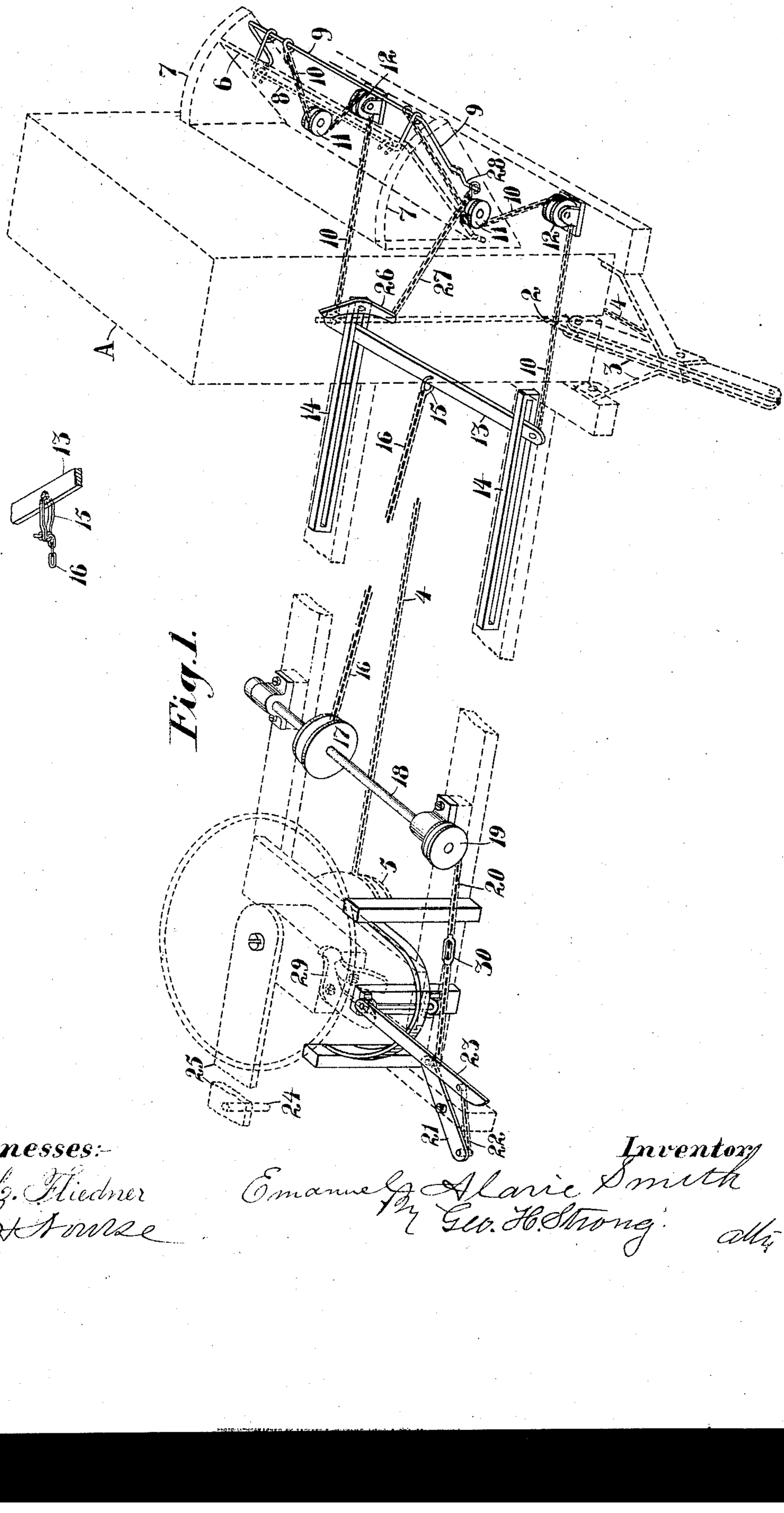

Fig. 1.

Fig. 2.

Witnesses:-
F. G. Fliedner
J. L. Stonze

Inventor
Emanuel Alarie Smith
by Geo. H. Strong: Atty

No. 775,612. Patented November 22, 1904.

UNITED STATES PATENT OFFICE.

EMANUEL ALARIC SMITH, OF WARMSPRINGS, CALIFORNIA.

HAY-PRESS.

SPECIFICATION forming part of Letters Patent No. 775,612, dated November 22, 1904.

Application filed December 12, 1903. Serial No. 184,926. (No model.)

To all whom it may concern:

Be it known that I, EMANUEL ALARIC SMITH, a citizen of the United States, residing at Warmsprings, in the county of Alameda and State of California, have invented new and useful Improvements in Hay-Presses, of which the following is a specification.

My invention relates to improvements in baling-presses, and particularly in means for automatically opening and closing the doors of hay-presses of the vertical type. Its object is to provide a simple and durable means for quickly and positively closing the door to the baling-chamber through the medium of the sweep and of again opening it automatically after compression.

It consists of the parts and the construction and combination of parts as hereinafter more fully described, having reference to the accompanying drawings, in which—

Figure 1 is a perspective showing my improvement. Fig. 2 is a detail of the grab-link.

The novel parts of the apparatus are shown in heavy lines.

A represents a vertical press-box in which the follower 2 is reciprocable through the agency of the usual toggles 3 and connections 4 with the drum 5 of the horse-power. The charge is delivered upon the follower through an opening in the side of the press, which opening is closed by the usual door 6. The latter is hinged at the bottom and is movable between suitable guide-walls 7.

The means for closing and opening the door includes the usual knee-levers, consisting of the members 8, pivoted to the door, and a cranked rock-shaft 9, having its ends journaled in the guide-walls 7. From the cranked portion of shaft 9 two chains 10 extend downward around direction-pulleys 11 12 and connect with the ends of a yoke 13, slidable in guides 14 on a fixed part of the apparatus. The yoke has a grip connection 15 for the attachment of the chain 16, leading back to a grooved fast pulley 17 on shaft 18. Shaft 18 carries a second grooved fast pulley 19, to which is secured a chain 20, leading back to one end of a lever 21, fulcrumed on or adjacent to the horse-power. The opposite end of lever 21 is connected by a chain 22 with an operating-lever 23, protruding into the path of a projection 24 on the sweep 25.

To close the door, the sweep is operated to cause projection 24 to engage lever 23, and thus oscillate lever 21, rotate pulleys 19 17, wind up chain 16, and turn shaft 9.

On the closing of the door suitable locking mechanism of well-known construction, not necessary here to be shown, is engaged to hold the door fast during compression and the traverse upward of the follower across the door-opening. When the follower has passed above the top of the door, this locking mechanism is released, allowing the door to be opened by the following means.

26 is a bell-crank lever fulcrumed on the side of the press-box and having one arm projecting into the path of an end of the follower above the upper edge of the door-opening. The opposite arm of lever 26 connects by chain 27 with a crank 28 on the end of shaft 9. Crank 28 is so disposed relative to the cranked toggle portion of shaft 9 that a pull on crank 28 toward the follower tends to rock shaft 9 to throw the door open. As drum 5 is revolved through the agency of the sweep to lift the follower the latter after passing the door-opening and after the release of the locking mechanism, before mentioned, engages the protruding end of lever 26 to turn it on its pivot, thereby oscillating shaft 9 and opening the door.

The usual connections, as the dog 29 and trip mechanism (not here shown) between the sweep and drum 5, are employed to cause the drum to rotate in unison with the sweep during a portion of a revolution of the latter and then to leave go and swing back to position as the follower falls.

The closing of the door is of course antecedent to the rotation of drum 5 and the lifting of the follower. The opening of the door takes place just before the follower reaches its highest point.

Chain 20 has interposed in it a turnbuckle 30 to allow for the take-up of such slack between lever 23 and shaft 9 as cannot be taken up by means of the engagement of the links of chain 16 in the grab-link 15, the object being

to reduce the amount of lost motion of lever 23 and its connections as much as possible, while the grab-link 15 affords an adjustable connection for chain 16. The latter is intended to be kept taut when the door is open and hold the door out of contact with pulleys 11.

The improvements which I have thus indicated permit the door to be closed and opened automatically, positively, and quickly. The horses have to walk but a short distance to close the door, consequently giving more time for compression, the engagement of the sweep with the dog, by which the drum is revolved to lift the follower, takes place just as the projection 24 is about to leave lever 23 in such manner as to avoid any jerk or extra strain on the team. By the adjustment afforded by the turnbuckle 30 and the grab-link 15 the door can always be made to close tight, and there is no chance for lost motion.

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

1. In a baling-press, the combination of a press-box, a follower reciprocable therein, a door for said press-box, means operable by the follower for throwing the door open, said means including a bell-crank lever on the side of the press-box and having one arm projecting into the path of the follower and connections between the opposite arm of the lever and the gate, and gate-closing means including a crank-shaft, suitable direction-pulleys, flexible connections extending from said shaft around said pulleys, a slidable yoke actuated by the sweep and to the ends of which yoke the said flexible connections are attached, a shaft having two fast pulleys, a centrally-fulcrumed lever, means whereby one of the fast pulleys is connected to the yoke and the other is connected to the lever, and a member actuated by the sweep and connected to the lever.

2. In a baling-press, the combination of a press-box, a follower therein, a hinged door, toggle members connected with said door, chains or the like connected with said toggle members, direction-pulleys around which said chains pass, a yoke to which said chains attach, guides in which said yoke is reciprocable, and means for reciprocating the yoke to close the door, said means including a shaft having two fast pulleys, a connection between one of said pulleys and the yoke, a centrally-fulcrumed lever and a connection from one end thereof to the other pulley, and a member actuated by the sweep and connected to the other end of said lever.

3. In a baling-press, the combination with a press-box, of a hinged door therefor, toggles connected with said door, a sweep, a lever disposed in the path of the sweep, a second lever having one end connected with the first lever and the other with a fast pulley, a shaft for said pulley, a second fast pulley on said shaft, and connections between said second pulley and the toggles whereby the door may be closed on the oscillation of said pulley.

4. In a baling-press, the combination with a press-box of a hinged door therefor, toggles connected with said door, a sweep, and means operable by the sweep for actuating said toggles to close the door, said means including a rock-shaft, pulleys fast on said shaft, flexible connections between one of said pulleys and the toggles, and connection between the other of said pulleys and actuating means in the path of the sweep.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EMANUEL ALARIC SMITH.

Witnesses:
JNO. GALLEGOS, Jr.,
E. W. STEINMETZ.