

B. W. BOYD.

PULP SCREEN.

APPLICATION FILED DEC. 4, 1907.

911,469.

Patented Feb. 2, 1909.

Fig. 1

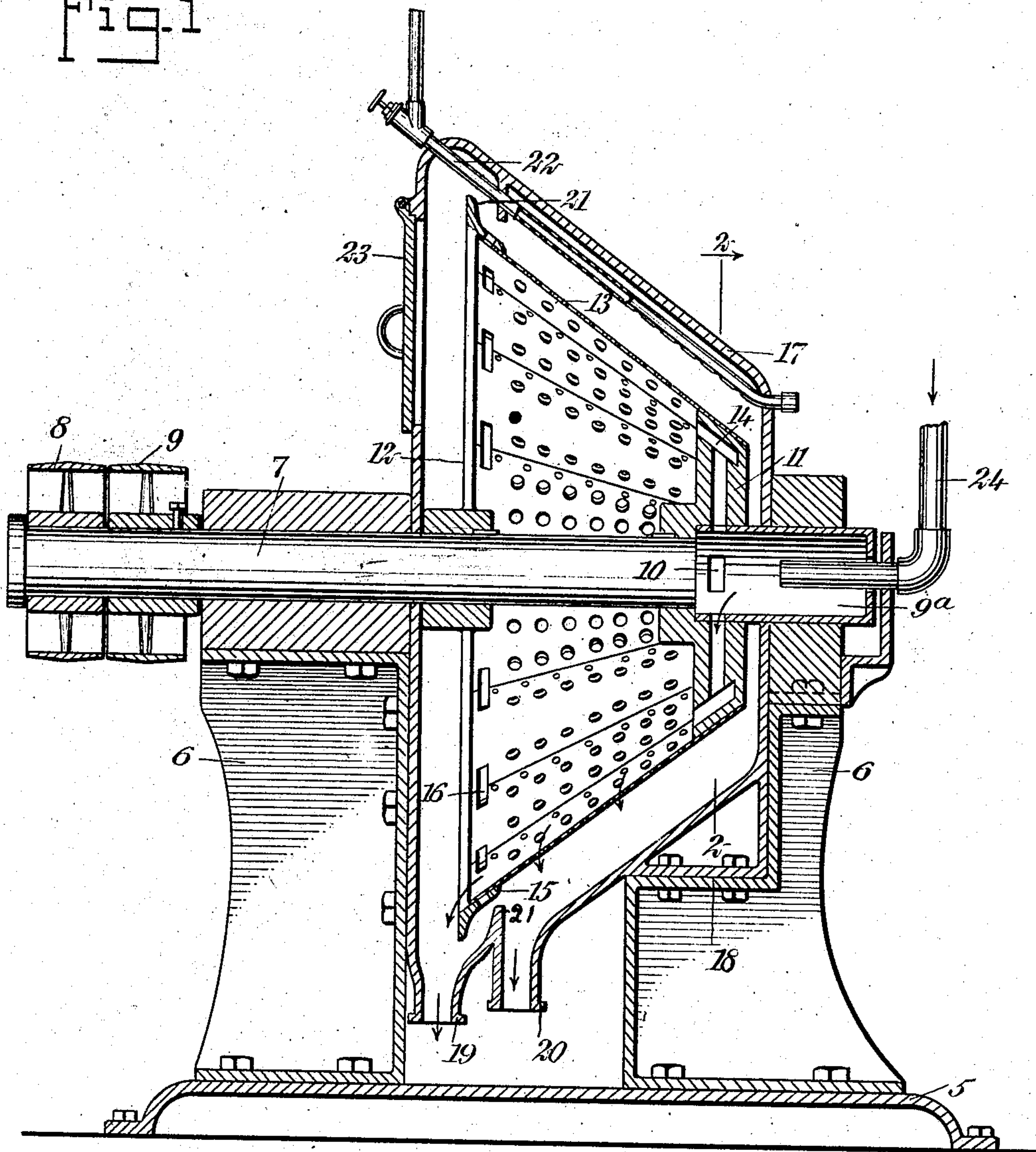
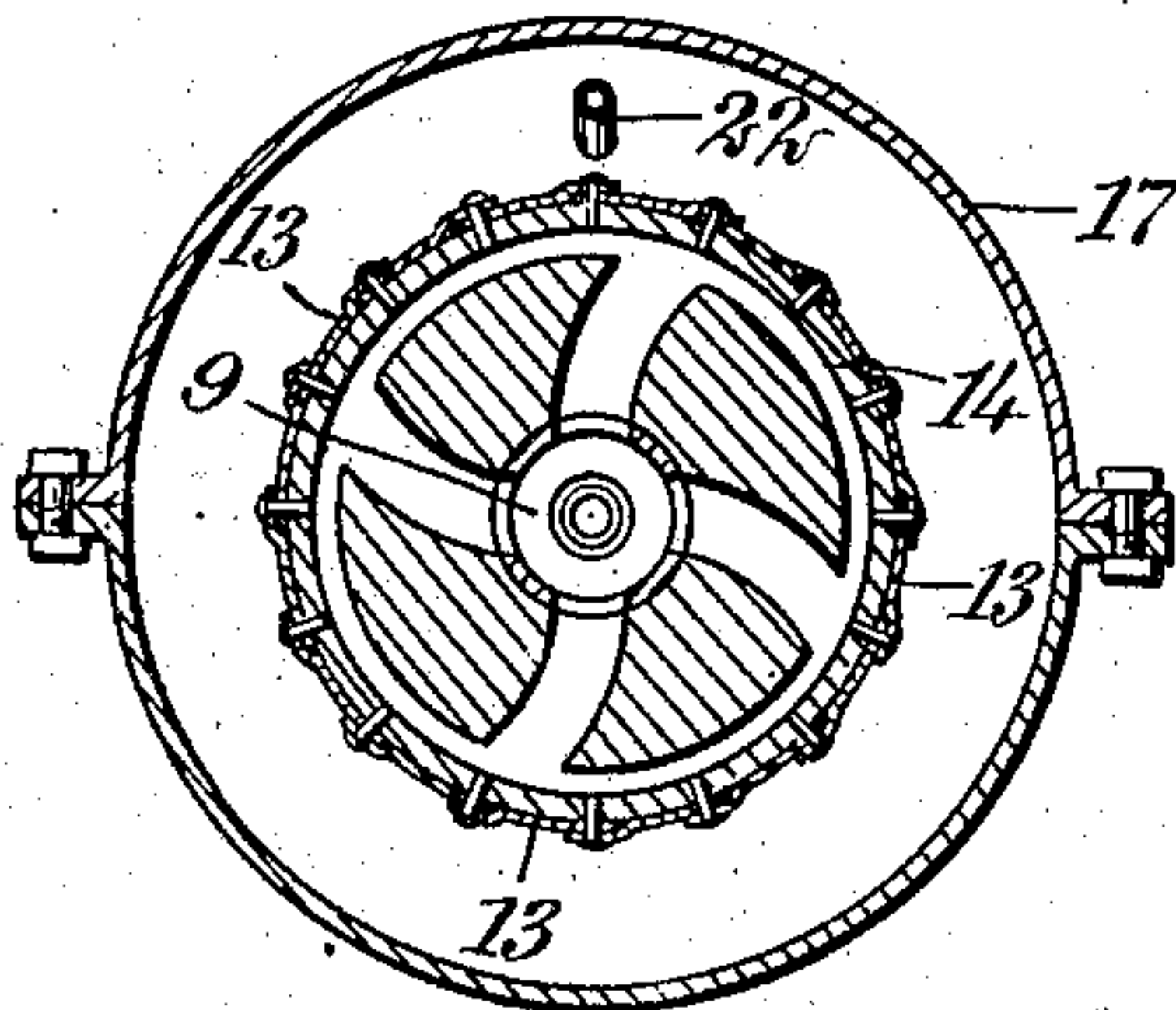


Fig. 2



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BYRON WILLARD BOYD, OF READSBORO, VERMONT.

PULP-SCREEN.

No. 911,469.

Specification of Letters Patent.

Patented Feb. 2, 1909.

Application filed December 4, 1907. Serial No. 404,983.

To all whom it may concern:

Be it known that I, BYRON W. BOYD, a citizen of the United States, and a resident of Readsboro, in the county of Bennington and State of Vermont, have invented a new and Improved Pulp-Screen, of which the following is a full, clear, and exact description.

This invention is an improvement in pulp screens of a simple and compact nature, adapted to effectively and rapidly separate the coarse product of pulp and such similar materials from the fine pulp and water, by centrifugal action.

The invention further resides in certain special features of construction and combination of parts as will be hereinafter particularly described and set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1, is a central vertical section through a pulp screen embodying my invention; and Fig. 2 is a section on the line 2—2 of Fig. 1, looking in the direction of the arrow.

In the construction of the machine any suitable base 5 is employed, to which are rigidly fixed by bolts or other suitable means, standards 6, spaced apart and carrying bearings at their upper ends, in which is journaled a substantially horizontally-arranged shaft 7, the latter being provided at one end with the usual loose and fixed pulleys 8 and 9 respectively, and at its opposite end is slightly enlarged and of hollow form as indicated at 9^a, and provided with a series of radial openings 10 at the inner portion thereof.

Rigidly attached to the shaft 7, between the standards 6, is the screen proper, which is of conical form and consists of a head 11 and a spider 12, connected together at or near their perimeters by a series of perforated plates 13. The head 11 surrounds the slots in the hollow portion 9^a of the shaft 7, and is constructed with a number of curved channels, each registering with one of said slots, as shown in Fig. 2, and discharging in an annular groove 14 near the circumference of the head in communication with the perforated portion of the screen. The spider 12 has an inwardly-projecting flange 15, arranged at an inclination to correspond with the taper of the screen, and to which the several perforated

plates 13 are attached. These plates, as also the flange, are provided with a series of elongated openings or slots 16, which facilitate the discharge of the coarser portions of the pulp, especially such as lodge against the spokes of the spider.

The perforated plates 13, as best seen in Fig. 2, are each slightly off-set at one edge and overlap the next adjacent plate, at which points they are riveted or otherwise secured together and to the head and spider of the screen. Surrounding this screen, and substantially conforming thereto, is a casing 17, rigidly attached to the standards 6, one of the latter being cut out on its inside face to provide a shoulder 18, on which the casing is seated, and incidental thereto, making the machine more compact. The casing is separated from the screen a substantial distance at all sides, and is constructed at the under side of its enlarged end with two outlets 19 and 20, respectively for the discharging of the coarser portions of the pulp and the slivers or watery fluid, the outlet 19 being positioned contiguous to the enlarged end of the casing, and is separated from the outlet 20 by an inwardly-projecting flange 21, the latter extending to near the perimeter of the screen and to the right of the openings 16, whereby the discharge through these openings will pass into the outlet 19.

Above the screen a water supply pipe 22, passes into the casing and has a perforated under side to provide a shower to keep the screen free and clear during the operation of the machine. At the enlarged end of the casing a door 23, preferably hinged at its upper edge, provides access within the casing and to the screen for inspection, cleaning, and other purposes.

The pulp is introduced into the hollow portion of the shaft 7 through a pipe 24, and thence passes through the slots 10 and registering channels of the head 11, the latter discharging into the screen through the annular groove; this travel of the pulp being enforced by the centrifugal force developed by the revolution of the screen. The watery portion or slivers of the pulp will be forced through the perforations of the screen under centrifugal action, and the coarser portions of the pulp will pass out between the spokes of the spider and the slots 16. The flange 21 will prevent any intermingling of the screened and coarser products of the

pulp, and the said products will pass out through their respective outlets to the required points of discharge.

The machine may be either used for screening the pulp or for thickening the same, the operation in both cases being the same; for thickening the pulp, however, the perforations in the screen should be very small to allow the passage of the water only therethrough.

The invention as shown and described while embodying the preferred practical construction of my improved pulp screen, is nevertheless susceptible of modifications falling within the scope of the invention as defined in the claims annexed.

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

1. In a pulp screen, a revoluble conical screen, a head forming the small end of the screen, having an annular groove in its inner face and provided with channels passing through the center thereof to said groove, means for introducing pulp in the channels of said head, and means for revolving the screen.

2. In a pulp screen, a screen comprising a head having an annular groove in its inner face, with passages discharging into said groove from the center of the head, a spider spaced from said head and having a flange projecting from one side thereof, and perforated plates forming the circumference of the screen, secured to the head and flange of the spider.

3. In a pulp screen, a conical screen having the axis thereof substantially horizontally disposed and with the enlarged end thereof open, said screen having a series of enlarged openings therein adjacent to its enlarged end, a casing surrounding the screen, having an outlet for receiving the material passing through the enlarged end of the screen and said enlarged openings and an outlet for receiving the material passing through the screen openings, means for introducing the pulp in the small end of the screen, and means for revolving the screen.

4. In a pulp screen, a substantially horizontally-arranged shaft having a hollow portion, a screen having a head provided with a series of radiating channels communicating with the hollow portion of the

shaft and discharging into the screen, means for introducing the pulp into the hollow portion of the shaft, and means for revolving the shaft.

5. In a pulp screen, a substantially horizontally-arranged revoluble screen having a head provided with an annular groove in its inner face, with a series of curved channels discharging from the center of the head to said groove, means for introducing the pulp into said channels, and means for revolving the screen.

6. In a pulp screen, a shaft having a hollow portion, a screen carried by the shaft, having a head provided with channels communicating with the hollow portion of the shaft and discharging into the screen, a casing surrounding the screen, having outlets for the discharge of the materials, means for introducing the pulp into the hollow portion of the shaft, means for revolving the shaft, and a shower pipe located within the casing over the screen.

7. In a pulp screen, a substantially horizontally-disposed shaft having a hollow portion, a screen attached to the shaft, having a head provided with passages discharging into the screen adjacent to its inner surface and communicating with said hollow portion of the shaft, means for introducing the pulp into the hollow portion of the shaft, and means for revolving said shaft.

8. In a pulp screen, a conical screen having an open enlarged end and provided with enlarged openings adjacent to said end, a substantially horizontally-arranged shaft to which said screen is attached, a casing surrounding the screen, having outlets separated by an inwardly-projecting flange operating to discharge the material passing through the screen openings through one of said outlets and the material passing through the enlarged end of the screen and the enlarged openings through the other outlet, means for introducing the pulp in the small end of the screen, and means for revolving the screen.

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

BYRON WILLARD BOYD.

Witnesses:

GEORGE G. JOHNSON,
GILBERT A. BOYD.